BEACON SOLAR ENERGY PROJECT

Presiding Member's Proposed Decision

CALIFORNIA
ENERGY COMMISSION
Arnold Schwarzenegger, Governor

JULY 2010
CEC-800-2010-005 PMPD

DOCKET NUMBER 08-AFC-2

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BY HAND DELIVERY

Karen Douglas, Chairman
Presiding Member
California Energy Commission
1516 Ninth Street
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Jeffrey D. Byron, Commissioner
Associate Member
California Energy Commission
1516 Ninth Street
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Ken Celli, Hearing Officer
California Energy Commission
1516 Ninth Street
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Re: Beacon Solar Energy Project, 08-AFC-2

Dear Commissioners Douglas & Byron and Mr. Celli:

On July 20, 2010, the Beacon Solar Energy Project ("Project") Application for Certification Committee (the "Committee") issued its Presiding Member's Proposed Decision ("PMPD"). The conditions of certification in the Cultural Resources and Soil and Water Resources sections of the PMPD are erroneous, as they do not reflect the conditions of certification agreed upon and stipulated to by Beacon Solar, LLC ("Beacon") and Energy Commission Staff ("Staff").[1] It is worth noting that the discussion in the body of the PMPD regarding soil and water resources correctly refers to information found in the final soil and water conditions. For example, the text identifies the phasing-in of California City recycled water and the use of approximately 8,000 acre-feet of construction water. (See PMPD at 306-307.) Given this discussion, it is apparent that the final conditions of certification in these topic areas were not included simply due to clerical error.

The PMPD further errs in referring back to the FSA for Soil & Water Appendices I and J. Both appendices were revised subsequent to publication of the FSA as a result of the meet and confer process between Beacon and Staff. Intervenor California Unions for Reliable Energy ("CURE") was part of this meet and confer process, and while CURE has not formally endorsed the revised

[1] At the March 15, 2010 Prehearing Conference, the Committee directed the parties to meet, confer, and attempt to resolve their differences of opinion regarding the proposed Conditions of Certification put forth by Staff in the FSA. (See March 15, 2010 Prehearing Conference Transcript at 46:17-47:7.) The parties did so, and Exhibits 337, 338 and 339 reflect the final agreement on Conditions of Certification in the areas of Biological Resources, Cultural Resources, and Soil & Water Resources. These exhibits were formally received into evidence at the evidentiary hearing. (See March 22, 2010 Evidentiary Hearing Transcript at 70:16-71:8; 247:2-17; 33:19-36:14.)

conditions agreed upon by Beacon and Staff, the exhibits reflect the agreement reached between Beacon and Staff and were properly entered into the record.[2]

Beacon and Staff hereby respectfully request the Committee to immediately issue an errata to the PMPD that includes the correct conditions of certification for the Project, which are included below. The Cultural Resources conditions attached below as Attachment A derive from Exhibit 339, with one small revision made and read into the record at the evidentiary hearing (see March 22, 2010 Evidentiary Hearing Transcript at 33:19-34:16.) The Soil and Water Resources conditions attached below as Attachment B are based on Exhibit 501, as modified by Exhibit 337. Because Beacon and Staff have also agreed upon changes to Appendices I and J since the FSA (see Exhibit 337 for Appendix I, and Exhibit 501 for Appendix J), we propose to correct the PMPD by adding these revised appendices. These appendices are included below in Attachments C and D.

We appreciate the Committee's attention and assistance in correcting these errors in the PMPD as quickly as possible.

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[2] Beacon contacted Tanya Gulessarian, counsel for CURE, on July 26, 2010 with the intent of including CURE as a party to this letter. However, as Ms. Gulesserian was out of the office that day, Beacon and Staff decided to jointly file this request without further delay to ensure an adequate public review period prior to the August 25, 2010 hearing on the PMPD.

Very truly yours,

Downey Brand, LLP

By: _____/s/_____
Nicholas H. Rabinowitsh
On Behalf of Beacon Solar, LLC

California Energy Commission

By: _____/s/_____
Jared Babula, Staff Counsel
On Behalf of CEC Staff

NHR:ln

Attachments

cc: Service List

ATTACHMENT A

ERRATA TO THE PRESIDING MEMBER'S PROPOSED DECISION
FINAL CONDITIONS OF CERTIFICATION
CULTURAL RESOURCES
JULY 26, 2010

CUL-1 *Cultural Resources Personnel.* Prior to the start of ground disturbance (includes "preconstruction site mobilization," "construction ground disturbance," and "construction grading, boring and trenching," as defined in the General Conditions for this project) the project owner shall obtain the services of a Cultural Resources Specialist (CRS) and one or more alternate CRSs, if alternates are needed. The CRS shall manage all monitoring, mitigation, curation, and reporting activities required in accordance with the Conditions of Certification (Conditions). The CRS may elect to obtain the services of Cultural Resources Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. No ground disturbance shall occur prior to Compliance Project Manager (CPM) approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Approval of a CRS may be denied or revoked for non-compliance on this or other projects.

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 CFR Part 61). In addition, the CRS shall have the following qualifications:

1. The CRS's qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field;

2. At least three years of archaeological or historical, as appropriate (per nature of predominant cultural resources on the project site), resource mitigation and field experience in California; and

3. At least one year of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS/alternate CRS has the appropriate training and experience to implement effectively the Conditions.

CULTURAL RESOURCES MONITORS

CRMs shall have the following qualifications:

1. a B.S. or B.A. degree in anthropology, archaeology, historical archaeology or a related field and one year experience monitoring in California; or

2. an A.S. or A.A. degree in anthropology, archaeology, historical archaeology or a related field, and four years experience monitoring in California; or

3. enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology or a related field, and two years of monitoring experience in California.

CULTURAL RESOURCES TECHNICAL SPECIALISTS

The resume(s) of any additional technical specialist(s), e.g., historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the CPM for approval.

Verification:

1. At least 180 days prior to the start of ground disturbance anywhere on the project site, the project owner shall submit the resume for the CRS, and alternate(s) if desired, to the CPM for review and approval.

2. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If there is no alternate CRS in place to conduct the duties of the CRS, a previously approved monitor may serve in place of a CRS so that construction -related ground disturbance may continue up to a maximum of 3 days without a CRS. If cultural resources are discovered then ground disturbance will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

3. At least 20 days prior to any construction-related ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition.

4. At least 5 days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide additional letters to the CPM identifying the CRMs and attesting to their qualifications. If additional CRMs are obtained during the project, the CRS shall provide additional letters to the CPM identifying the CRMs and attesting to the qualifications of the CRMs, at least 5 days prior to the CRMs beginning on-site duties.

5. At least 10 days prior to any technical specialists beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.

6. At least 7 days prior to the start of the preparation of the Historical Resources Management Plan (HRMP) (**CUL-4**), the project owner shall confirm in writing to the CPM that the approved CRS will be available for and is prepared to implement the cultural resources conditions.

CUL-2 *Project Documentation for Cultural Resources Personnel.* Prior to the start of ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological Zone 1 or on the portions of the project area beyond the project site, if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the AFC, data responses, confidential cultural resources reports, all supplements, and the Energy Commission's Final Staff Assessment (FSA) for the project. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological Zone 1 or on the portions of the project area beyond the project site shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be submitted prior to the start of each construction phase. Written notification identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

Verification:

1. At least 180 days prior to the start of ground disturbance anywhere on the project site, the project owner shall provide the AFC, data responses, confidential cultural resources documents, all supplements, and the Energy Commission's Final Staff Assessment (FSA) to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

2. At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.

3. At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.

4. Weekly, during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

5. Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

CUL-3 *Alteration of Project Area*. Changes to the proposed project or to the character of its construction, operation, and maintenance that may become necessary subsequent to the approval of the project, were such approval to occur, may in turn require the re-consideration of the extent of the original project area. Where such changes indicate the need to alter the original project area to include additional lands that were not elements of analysis during the certification process, the effects of any proposed changes on historical resources that may be on such lands would need to be taken into account. Changes in the character of the construction, operation, and maintenance of the proposed project may include such actions as decisions to use non-commercial borrow sites or disposal sites.

Upon the recognition that proposed changes to the project would require the use of lands that were not a part of the original project area, the project owner shall ensure that the CRS surveys any such lands for cultural resources and record each newly found resource on DPR 523 forms. Exceptions would be made to this protocol in cases where cultural resources surveys no greater than five years in age are documented for the entirety of the subject lands and approved by the CPM. Where new cultural resources surveys are warranted, the project owner shall convey the results of such surveys, along with the CRS's recommendations for further action, to the CPM, who will determine whether further action is necessary. If the CPM determines that historical resources may be present and that any such resource may be subject to a substantial adverse change in its significance, the project owner shall ensure that the CRS provides the CPM with substantiated recommendations on whether each such resource is eligible for listing in the CRHR and recommendations for the resolution of any such significant effects. The CRS, the project owner, and the CPM shall then confer on said recommendations, and, upon the concurrence of the CPM with those recommendations, the project owner shall ensure that the CRS proceeds to implement them, and reports on the methods and the results of any such work in the final Cultural Resources Report (CRR) (**CUL-10**).

Verification:

1. Upon the recognition that proposed changes to the project or to the character of the construction, operation, and maintenance of the project would require the use of lands that were not a part of the original project area, the project owner shall notify the CRS and CPM. The project owner shall then provide, for CPM review and approval, documentation of any cultural resources surveys five years or less in age that exist for the additional lands.

2. At least 75 days prior to the use of the new additional project area lands, in the absence of any such cultural resources surveys or when the extant cultural resources surveys do not cover the entirety of the lands to be added to the project area, the project owner shall ensure that the CRS surveys the

additional lands for cultural resources, notifies the project owner and the CPM of the results of the new cultural resources survey, and recommends further action.

3. No more than 15 days subsequent to the receipt of the information in verification 2, CUL-3, above, the CPM shall determine whether historical resources may be present and whether any such resources may be subject to substantial adverse changes in significance.

4. At least 60 days prior to the use of the new additional project area lands, if the CPM determines that historical resources may be subject to substantial adverse changes in significance, the project owner shall ensure that the CRS provides the CPM with substantiated evaluations, based on archival and field research, on whether each such resource is eligible for listing in the CRHR and recommendations for the resolution of any potential significant effects.

5. For no longer than 15 days, the project owner, the CRS, and the CPM shall confer about the above evaluations and recommendations, and, upon the concurrence of the CPM with those evaluations and recommendations, the project owner shall ensure that the CRS proceeds to resolve any significant effects pursuant to the above recommendations prior to the use of the new additional project area lands.

6. The project owner shall ensure that the CRS reports on the methods and the results of all such work in the CRR (**CUL-10**).

CUL-4 *Historical Resources Management Plan*. The Historical Resources Management Plan (HRMP) shall govern the implementation of the overarching program to reduce the effects of the proposed project on historical resources to less than significant. The preparation and implementation of the different elements of the historical resources management program, by the project owner, shall be the result of a number of protocols and consultations set out in this condition of certification and others (**CUL-5** through **CUL-10**) below.

Prior to the start of any construction_-related ground disturbance (includes “preconstruction site mobilization,” “construction ground disturbance,” and “construction grading, boring and trenching,” as defined in the General Conditions for this project), the project owner shall submit the HRMP, as prepared by or under the direction of the CRS, to the CPM for review and approval. The HRMP shall follow the content and organization of a similar document, the Cultural Resources Monitoring and Mitigation Plan, a draft model version of which will be provided by the CPM, as general guidance. The authors’ name(s) shall appear on the title page of the HRMP. The HRMP shall also incorporate the final results of the January 2009 geoarchaeology study for the proposed project into the appropriate elements of the HRMP. Implementation of the HRMP shall be the responsibility of the CRS and the project owner. Copies of the HRMP shall reside with the CRS, alternate CRS, each CRM, and the project owner’s on-site construction manager. No ground disturbance shall occur prior to CPM approval of the HRMP, unless such activities are specifically approved by the CPM.

The HRMP shall include, but not be limited to, the following elements:

Primacy of the Conditions of Certification

1. The statement in the introduction to the HRMP that “any discussion, summary, or paraphrasing of the Conditions of Certification in this HRMP is intended as general guidance and as an aid to the user in understanding the conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the HRMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A.”

Implementation of the Historical Resources Management Program

2. Specification of the implementation sequence and the estimated time frames needed to accomplish all historical resources management program tasks prior to and during construction-related ground disturbance, and during those analysis phases of the management program that may occur subsequent to construction-related ground disturbance.

3. Identification of the person(s) expected to perform each of the historical resources management program tasks, their responsibilities, and the reporting relationships between project construction management and the treatment and monitoring teams.

4. A statement from the project owner that the CRS shall have, for the duration of construction-related ground disturbance, access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resource materials that are found during such ground disturbance, where such materials cannot be treated prescriptively.

Historical Resources Management Program Research Design

5. A project area-specific research design that includes a discussion of archaeological research questions and testable hypotheses appropriate to the archaeological data sets known for the project area. The research design shall provide the broader context for and facilitate tiering down to the research design that the project owner shall prepare, pursuant to **CUL6**, for Archaeological Zone 1. The project area research design shall clearly articulate why it is in the public interest to address the research questions that it poses. That research design shall also develop a discussion of artifact and ecofact collection, retention, and disposal policies as related to the research questions in the research design.

Documentation and Curation Standards

6. A statement that all found cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 Series forms, and mapped and photographed. In addition, all artifacts and ecofacts retained as a result of the archaeological investigations (survey, testing, and data recovery) shall be curated in accordance with the California State Historical Resources Commission’s *Guidelines*

for the Curation of Archaeological Collections, into a retrievable storage collection in a public repository or museum.

7. A statement that the project owner shall pay all curation fees for artifacts and ecofacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.

8. A description of the contents, the format, and the review and approval process for the CRR (**CUL-10**), which shall be prepared according to ARMR guidelines (COHP 1990).

Native American Participation

9. A description of the roles which Native American observers or monitors shall play in the implementation of the HRMP, including the procedures that shall govern the selection of such observers and monitors, and the authority and responsibility of each role.

Treatment and Management of Historical Resources

10. A protocol that articulates, pursuant to **CUL-5**, the avoidance measures that the project owner shall implement to preserve archaeological site Site 17. **CUL-5** sets out the structure and the details of the avoidance measures. If the applicant determines that it is not feasible to avoid Site 17, the applicant shall notify the CPM of that determination and prepare a treatment plan for the site that will be subject to review and approval by the CPM. The purpose of the treatment plan will be to reduce the effects of the proposed project on the historical resource to less than significant through a program of data recovery, in addition to, as appropriate, resource registration or public outreach.

11. A treatment plan for Archaeological Zone 1, pursuant to **CUL-6**, the purpose of which is to reduce the effects of the proposed project on the historical resource to less than significant through a program of data recovery, resource registration, and public outreach. The structure and the details of the program are set out in **CUL-6**.

Construction Monitoring and Discovery

12. A Worker Environmental Awareness Program (WEAP) to guide the orientation of every new worker in the project area to cultural resources statutes and regulations, to the effects of the proposed project on cultural resources, to the management program that has been negotiated to address those effects, to the role of the workers in the management program, to the types of cultural resources in the project area and how to recognize them, and to the protocols that workers are to follow upon the discovery of different types of cultural resources. The structure and the details of the WEAP program are set out in **CUL-7**.

13. A description of the structure, and the review and approval process for the Monitoring and Discovery Plan (**CUL-8** and **CUL-9**).

14. Prescriptive treatment plans, where appropriate, for cultural resources that represent marginal data sets (**CUL-9**).

Verification:

1. Prior to the preparation of the HRMP, the project owner shall submit the final technical report for the January 2009 geoarchaeology study for the proposed project to the CPM for review and approval.

2. Upon approval of the CRS proposed by the project owner, the CPM shall provide to the project owner, as general guidance, an electronic copy of the draft model Cultural Resources Monitoring and Mitigation Plan for the use of the CRS.

3. At least 150 days prior to the start of ground disturbance anywhere on the project site, the project owner shall submit the HRMP to the CPM for review and approval.

4. At least 30 days prior to the start of ground disturbance anywhere on the project site, a letter shall be provided to the CPM indicating that the project owner agrees to pay curation fees for any materials collected as a result of the archaeological investigations (survey, monitoring, testing, data recovery).

CUL-5 *Historical Resource Avoidance Measures, Site 17*. The project owner shall direct the CRS to actively implement a sequence of avoidance measures to ensure that there would be no physical damage to Site 17 as a result of the construction, operation, or maintenance of the project. Prior to the onset of any construction-related ground disturbance in the southwestern portion of the project site, the CRS shall re-establish the known boundary of Site 17, add a 10-meter wide buffer around the periphery of that boundary, and flag the boundary around the site and the buffer in a conspicuous manner. The CRS, alternate CRS, or a CRM would subsequently enforce the avoidance of the flagged area during project construction.

The CRS would, subsequent to the construction of the project, permanently mark the boundary around Site 17 and the above buffer, and then set the bounded area aside as an environmentally sensitive area that would not be subject to disturbance during the life of the project. The character of the permanent marking shall be decided on the basis of consultation and consensus among the property owner, the CRS, and the CPM. If avoidance of Site 17 is not feasible, a treatment plan for Site 17 will be prepared in accordance with Subpart 10 of CUL-4.

Verification:

1. At least 30 days prior to the onset of construction-related ground disturbance in the SE 1/4 of section 8, T. 31 S., R. 37 E., the CRS shall re-establish the known boundary of Site 17, add a 10-meter wide buffer around the periphery of that boundary, and flag the boundary around the site and the buffer in a conspicuous manner.

2. The CRS, alternate CRS, or a CRM shall enforce the avoidance of the above flagged area for the duration of construction-related ground disturbance.

3. No longer than 30 days subsequent to the conclusion of construction-related ground disturbance in the SE 1/4 of section 8, T. 31 S., R. 37 E., the CRS shall permanently mark the boundary around Site 17 and the above buffer. The area so marked shall then be an environmentally sensitive area that shall not be subject to any disturbance during the life of the project. The CRS shall continue to enforce the avoidance of the originally flagged area until the area has been permanently marked.

4. The CRS shall ensure that the measures and verifications of this condition of certification are, pursuant to subpart 10, **CUL-4**, completely incorporated as a protocol in the HRMP.

CUL-6 *Archaeological Zone 1 Historical Resource Treatment Plan.* The project owner shall prepare and implement a treatment plan the purpose of which is to reduce the effects of the proposed project on Archaeological Zone 1 to less than significant. The treatment plan shall accomplish the reduction of effects through a program of data recovery, resource registration, and public outreach. Prior to the onset of any construction-related ground disturbance within 30 meters of the provisional boundary for Archaeological Zone 1, the project owner shall prepare, secure the approval of the CPM for, and conclude the field investigation portions of the Archaeological Zone 1 Historical Resource Treatment Plan (HRTP). The HRTP shall, at a minimum, include and set out the details of each of the following elements:

1. *Research Design*. A research design specific to Archaeological Zone 1 that tiers off of the research design for the project area in the HRMP (Subpart 5, **CUL-4**) and that clearly articulates why it is in the public interest to address the research questions that it poses. The research design shall evidence consideration of archaeological themes that relate to the identity and the lifeways of Native American groups in the prehistoric and historic periods.

2. *Data Recovery Program.* Thorough descriptions of the overall goals of the data recovery program, how the data sets that are anticipated for Archaeological Zone 1 will contribute to our knowledge of the prehistoric and historic period Native American themes of the research design and answer particular research questions, of the purposes and the methods of the different field phases of the data recovery program, and of the purposes and methods of the material analyses that will also occur. The descriptions of the field and laboratory efforts for the data recovery program shall include, at a minimum, and more thoroughly articulate the following phases:

    a. *Inventory, Phase 1 (Geophysical Test).* The initial component of the data recovery program shall be a discontiguous 1-acre test of the efficacy of the use of magnetometry to derive a representative sample of the predominant type of archaeological deposits that are now thought to make up Archaeological Zone 1, fire features or hearths that occur both as feature clusters and as isolate features and that may or may not occur in association with fire-affected rock. The test shall include a small magnetometer survey through and in the near vicinity of (approximately 30 meters beyond) known archaeological sites in Archaeological Zone 1, and the subsequent ground truthing of a representative sample of the magnetic anomalies found in the survey areas for the test. The ground truthing sample shall, at a minimum, be the lesser of 25 percent of the anomalies or 12 individual anomalies. The

excavation of the anomalies may, at the discretion of the CRS, be by hand or mechanical means. The CRS shall ensure that the field notes and the forms for the survey areas and for the ground truthing are sufficient to completely document the geophysical test.

b. *Inventory, Phase 2a (Geophysical Survey)*. If the CRS and CPM agree, after consultation, that the geophysical test demonstrates that the use of magnetometry appears to be reasonably reliable, the project owner shall ensure that the CRS proceeds to a broader magnetometry sample survey of Archaeological Zone 1 and of the area 30 meters to the southwest of the provisional district boundary (Cultural Resources Figure 2). The CRS and CPM shall first derive and agree upon, in consultation with one another, the precise location of the provisional district boundary on the surface of the project site. The project owner shall then ensure that the CRS develops a single stratified random sample for Archaeological Zone 1 and the adjacent area 30 meters to the southwest of the provisional district boundary that would result in a magnetometry survey of no more than 7.5 percent of that total area not to exceed 45 acres. The CRS and the CPM shall, in consultation, derive and agree upon criteria that shall form the basis for the stratification of the survey sample. The criteria shall reflect the spatial variability in the physical and material character and in the chronology of Archaeological Zone 1, as such variability is presently known from the field investigations in the project area. The results of the broader magnetometry survey would also be subject to the ground truthing of a representative sample of the magnetic anomalies found in the survey areas to more precisely establish the range of error of the survey results. The ground truthing sample shall, at a minimum, be the lesser of 10 percent of the anomalies or 48 individual anomalies. The excavation of the anomalies may, at the discretion of the CRS, be by hand or mechanical means. The project owner shall ensure that the CRS's field notes and the forms for the survey areas and for the ground truthing are sufficient to completely document the geophysical survey to the satisfaction of the CPM.

c. *Inventory, Phase 2b (Mechanical Subsurface Survey)*. Should the results of the initial geophysical test demonstrate that the use of magnetometry is not reasonably well able to locate the types of archaeological deposits that make up Archaeological Zone 1, the applicant would conduct a broader subsurface sample survey of the Zone using construction equipment such as a road grader or a backhoe rather than proceeding with the broader geophysical survey. This mechanical subsurface survey would employ transects, the proposed width and length of which the CPM would approve, and would involve the excavation of the transects in thin (no thicker than approximately 5 centimeters) layers to carefully expose and facilitate the accurate preliminary documentation of target archaeological deposits. The project owner shall ensure that the CRS, with CPM concurrence, derives criteria to form the basis for the stratification of the survey sample and develops a single stratified random sample for the Zone and the adjacent

area to the southwest that would result in the mechanical subsurface survey of no more than 2.5 percent of that total area not to exceed 15 acres. The criteria shall reflect the spatial variability in the physical and material character and in the chronology of Archaeological Zone 1, as such variability is presently known from the field investigations in the project area. The project owner shall submit, for CPM review and approval, the CRS's methodology for the mechanical subsurface survey. The methodology would prescribe how archaeological deposits found during the survey would be preserved intact until the conclusion of the survey so that the CRS could structure a representative data recovery sample of the found deposits. The methodology would also take into account how the CRS would recover a sample of the buried land surfaces that may surround individual hearths or groups of hearths and document the material culture assemblages that may be found on such surfaces when the act of the mechanical exposure of the hearths may often truncate the surface from which they were constructed and used. The project owner shall ensure that the CRS's field notes and the forms for the survey areas are sufficient to completely document the mechanical subsurface survey to the satisfaction of the CPM.

d. *Inventory, Phase 3 (Refinement of Provisional District Boundary)*. The project owner shall ensure that the CRS, on the basis of the results of either phase 2a or phase 2b of the data recovery program, drafts a refined provisional boundary for Archaeological Zone 1 that shall become an integral part of the implementation of, among other conditions of certification, **CUL-8 and** subparts 2e and 2f of this condition, **CUL-6**.

e. *Data Recovery, Phase 1 (Hearth Excavations)*. One component of the actual data recovery phase of the data recovery program would be to excavate small exposures to uncover and document a sample of the individual hearths that are one constituent of the Zone. These small exposures shall consist of 1 to 9 excavation units (1 meter by 1 meter) based on the size and configuration of the cultural deposit. The purpose of this documentation would be to gather data to describe the physical variability of the features, to identify and inventory the artifacts and ecofacts that are found in them, and to interpret the methods of construction and the potential uses of the features. The excavation of the hearths shall proceed by hand to, where feasible, remove the archaeological deposits in anthropogenic layers. Where appropriate, the project owner shall ensure that the CRS retain samples of each layer sufficient to submit for radiocarbon assays, and macrobotanical, palynological, geochemical, or other analyses. The balance of each layer shall be screened through hardware cloth of no greater than 1/8-inch mesh. The project owner shall ensure that the CRS excavates a maximum of 12 such small exposures. In consultation, the CRS and the CPM shall develop and agree upon a sample of the hearths found as a result of the entire cumulative effort to inventory the archaeological deposits of Archaeological Zone 1 to subject to data recovery excavation. The sample shall reflect the apparent physical,

material, and chronological variability of the found features. The project owner shall ensure that the CRS's field notes and the forms for the excavation of the hearths are sufficient to acquire the thorough complement of data necessary to the description of each feature, and the interpretation of the construction and use of each feature to the satisfaction of the CPM.

f. *Data Recovery, Phase 2 (Excavation of Former Land Surfaces)*. The other component of the actual data recovery phase of the data recovery program would be to excavate larger block exposures to attempt to uncover a sample of the buried land surfaces that may surround individual hearths or groups of them, and to document the material culture assemblages that may be found on such surfaces. If such surfaces are indicated, two 1 meter by 5 meter excavations oriented perpendicularly shall be centered on the cultural material. If living surfaces are identified in the 1 meter by 5 meter excavations, the area of excavation can be expanded to a maximum of 5 meters square. The excavation of the surfaces shall proceed by hand to, where feasible, remove the archaeological deposits in anthropogenic layers. Where appropriate, the project owner shall ensure that the CRS retain samples of each layer sufficient to submit for radiocarbon assays, and macrobotanical, palynological, geochemical, or other analyses. The balance of each layer shall be screened through hardware cloth of no greater than 1/8-inch mesh. The CRS shall try to excavate each block exposure as a single excavation unit rather than as separate one meter square excavation units. The project owner shall ensure that the CRS excavate a maximum of 4 block exposures or excavation blocks where intact buried land surfaces are found. The CRS shall excavate a maximum of 8 block exposures, where intact buried land surfaces are not found in at least four of the blocks exposures. In consultation, the CRS and the CPM shall develop and agree upon a sample of the buried surfaces that would be subject to excavation. The sample shall reflect the apparent physical, material, and chronological variability of the hearth features around which the buried surfaces may be found. The project owner shall ensure that the CRS's field notes and the forms for the excavation of the surfaces are sufficient to acquire the thorough complement of data necessary to the description of the distributions of artifacts and ecofacts across each surface, and the interpretation of the use of each surface, to the satisfaction of the CPM.

g. *Material Analyses*. The project owner shall ensure that the HRTP articulates the anticipated scope of the analyses of the cumulative artifact and ecofact collections that have been and will be the result of the investigations of Archaeological Zone 1, articulates the analytic methods to be used, and articulates how the data sets that such analyses will produce are relevant to the themes and questions in the research design for the Zone.

h. *Report Preparation*. The project owner shall ensure that the HRTP states that a conclusory report is one of the requirements of the data recovery program,

and also articulates the outline of, and the production schedule and approval process for the subject report.

3. *California Register of Historical Resources Registration*. The project owner shall prepare a California Register of Historical Resources nomination for Archaeological Zone 1 and submit the nomination to the State Historic Resources Commission for formal consideration. The project owner shall ensure that the CRS, as a part of the registration effort, derives a permanent district name for the Zone to replace the temporary designation of "Archaeological Zone 1." The CRS shall also ensure that the nomination reflects a final formal boundary for the district, a boundary that the CRS shall derive on the basis of the results of the data recovery program and present in the conclusory report for that program.

4. *Outreach Initiatives*

   a *Professional Outreach*. The project owner shall prepare a research paper and present it at a professional conference, or prepare and publish a peer-reviewed journal article to inform the professional archaeological community about Archaeological Zone 1 and to interpret its implications for our understanding of the prehistory and early history of Native American life in the region.

   b. *Public Outreach*. The project owner shall prepare and present materials that interpret Archaeological Zone 1 for the public. Potential public interpretation efforts may include the preparation of an instructional module for use in local school districts, or the preparation of a display for existing public interpretation venues such as Red Rock Canyon State Park.

Verification:

1. At least 120 days prior to the onset of construction-related ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, the project owner shall ensure that the CRS completes the geophysical test referred to in subpart 2a, **CUL-6,** above, and as set out in the HRTP component of the HRMP (**CUL-4**), and submit, for the review and approval of the CPM, a formal assessment of the reliability of the use of magnetometry to locate buried hearths in the Zone. If the geophysical test demonstrates that the use of magnetometry appears to be reasonably reliable in this regard, then the project owner shall also submit, for the review and approval of the CPM, the precise geographic coordinates of the provisional boundary of Archaeological Zone 1 and a stratified random sample for a broader magnetometry survey of 7.5 percent of Archaeological Zone 1 and of the area 30 meters to the southwest of the provisional district boundary. If the geophysical test demonstrates that the use of magnetometry does not appear to be reasonably reliable, then the project owner shall submit, for the review and approval of the CPM, a stratified random sample for a mechanical subsurface survey of 2.5 percent of Archaeological Zone 1 and of the area 30 meters to the southwest of the provisional district boundary.

2. At least 60 days prior to the onset of construction-related ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, the project owner shall ensure that the CRS completes the formal inventory of that area under, as appropriate, subparts 2b or 2c, **CUL-6** and submits, for the review and approval of the CPM, a preliminary report, prepared by or under the direction of the CRS, of the results of the

formal inventory, the precise geographic coordinates of the refined provisional district boundary (subpart 2d, **CUL6**), and separate samples for the data recovery excavation of a finite number of the hearths found in Archaeological Zone 1 (subpart 2e, **CUL-6**) and of a finite number of block exposures to reveal intact buried land surfaces there (subpart 2f, **CUL-6**). The project owner shall ensure that the preliminary report is a concise document that provides descriptions of the schedule and methods of the inventory field effort, a preliminary tally of the numbers and, where feasible, the types of archaeological deposits that were found, a discussion of the potential range of error in that tally, and a map of the locations of the found archaeological deposits that has topographic contours and the project site landform designations as overlays. The results of the formal inventory, as set out in the preliminary report, shall be the basis for the refinement of the provisional district boundary. The project owner shall ensure that the CRS then derives the samples for the hearths and the buried land surface block exposures relative to the refined provisional district boundary.

3. At least 30 days prior to the onset of construction-related ground disturbance the project owner shall ensure that the CRS completes the data recovery phases of the data recovery program (subparts 2e and 2f, **CUL-6**) and submits, for the review and approval of the CPM, a preliminary report of the results of those phases. The project owner may conduct the data recovery program in phases and report on each phase in a separate preliminary report. The preliminary report shall be a concise document that provides descriptions of the schedule and methods of the data recovery effort, technical descriptions of excavated archaeological features and buried land surfaces that, while draft in format, present the highest resolution of technical data that can be derived from the data recovery field notes, plan and, as appropriate, profile drawings and photographs of excavated archaeological features and buried land surfaces, and technical descriptions and appropriate graphics of the stratigraphic contexts of excavated archaeological features and buried land surfaces. No construction-related ground disturbance shall occur to the northeast of the refined provisional boundary for Archaeological Zone 1 prior to the project owner's receipt, in writing, of the CPM's approval of the preliminary data recovery report for a specified phase (e.g., the rerouted wash portion) of the data recovery program.

4. No longer than 180 days subsequent to the CPM's approval of the preliminary data recovery report, the project owner shall ensure that the CRS completes the requisite material analyses for, prepare, and submits, for the approval of the CPM, the conclusory report for the data recovery program (subpart 2h, **CUL-6**).

5. No longer than 240 days subsequent to the CPM's approval of the preliminary data recovery report, the project owner shall ensure that the CRS completes the preparation of the California Register of Historical Resources nomination for Archaeological Zone 1 and submits the nomination to the State Historic Resources Commission for formal consideration (subpart 3, **CUL-6**). The nomination shall reflect the formal district boundary that shall be one result of the implementation of the data recovery program, as presented in the conclusory report for that program.

6. No longer than 240 days subsequent to the CPM's approval of the preliminary data recovery report, the project owner shall ensure that the CRS completes requirements of subpart 4a, **CUL-6** and provides the CPM with three copies of the final product of that effort, and prepares, and submits for the approval of the CPM, a product that fulfills the requirements of subpart 4b, **CUL-6**. Upon the CPM's approval of the latter product, the project owner shall ensure, as appropriate, the product's installation, implementation, or display.

CUL-7 *Worker Environmental Awareness Program (WEAP)*. Prior to and for the duration of construction_-related ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, laydown area, and along the linear facilities routes. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

1. A discussion of applicable cultural resources statutes, regulations, and related enforcement provisions;

2. A summary of the effects of the proposed project on cultural resources;

3. A summary of the historical resources management program that has been negotiated to address the effects of the proposed project on cultural resources;

4. A discussion of the role of the workers in the historical resources management program;

5. Samples or visuals of artifacts that might be found in the project area;

6. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;

7. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, the range of variation in the appearance of such deposits across the project area, and, more especially, the known range of variation in the archaeological deposits of Archaeological Zone 1;

8. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt construction_-related ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;

9. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery, particularly in Archaeological Zone 1 for prehistoric archaeological deposits that are inconsistent with the known range of variation in the archaeological deposits there, and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;

10. An informational brochure that identifies the reporting procedures for Archaeological Zone 1 and non-Archaeological Zone 1 areas in the event of a discovery;

11. An acknowledgement form signed by each worker indicating that they have received the training; and

12. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification:

1. At least 30 days prior to the start of construction-related ground disturbance anywhere on the project site, the CRS shall provide, as a stand-alone document or as an element of the HRMP, the training program draft text and graphics and the informational brochure to the CPM for review and approval.

2. At least 30 days prior to the start of construction-related ground disturbance anywhere on the project site, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

3. Monthly, until all construction-related ground disturbance is complete, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers at the project site and on the linear facilities who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-8 *Construction Monitoring Program*. The Monitoring and Discovery Plan (subpart 13, **CUL-4**) shall include separate protocols for construction monitoring, and for the discovery and treatment of new cultural resources that are found or when unanticipated effects to known cultural resources become evident during construction-related ground disturbance. The construction monitoring protocol shall specify the different procedures below that the project owner shall follow during construction-related ground disturbance in different parts of the project area and on different landforms in the project area, where the lateral extent and the character of project area landforms are known. As the source of the water that would be necessary to operate the proposed project remains an active focus of discussion, staff includes specifications here for the monitoring procedures that the project owner would need to follow in the event that the project owner ultimately chooses to construct either the Rosamond Community Service District or the City of California City treated wastewater pipeline alternative. Other alterations of the project area under **CUL-3** shall require the project owner to append the Monitoring and Discovery Plan to include monitoring procedures for the actions that would occur in any lands added to the original project area. The appended procedures shall be consistent with the landform-specific monitoring protocols below.

The project owner shall ensure that the CRS, alternate CRS, or CRMs actively monitor, full time, all construction-related ground disturbance in the project area, in accordance with the landform-specific protocols below, to ensure that there are no impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner. Additionally, the project owner shall ensure that construction personnel, trained to recognize what archaeological site types are and are not known for Archaeological Zone 1, passively monitor construction-related ground disturbance in the project area, also in accordance with the landform-specific protocols below.

Landform-specific Monitoring Protocols. The construction monitoring protocols specific to the different landform contexts in the project area variously have active and passive components. The active components relate to the construction monitoring protocols that are required for landform contexts that are outside of Archaeological Zone 1, and the passive components relate to the protocols for such contexts that are in Archaeological Zone 1. The efficacy of the whole series of construction monitoring protocols below depends on the project owner, prior to the initiation of construction-related ground disturbance, physically staking out the boundary of each landform and the refined provisional district boundary for Archaeological Zone 1, and making a reasonable and good faith effort to engage the primary author of the February geoarchaeological study for the proposed project conduct field orientations for the CRS, the alternate CRS, and each CRM so that they are able to recognize the project area landforms and key subsurface sedimentary features such as paleosols and sedimentary contacts. Should the project owner be unable to engage the above cited author, the project owner may engage another professional geoarchaeologist to conduct subject field orientations for the CRS, the alternative CRS, and each CRM. Should the project owner exercise this latter option, the implementation of the Construction Monitoring Protocol shall be subject to periodic field review and approval by the CPM. "Professional geoarchaeologist" means a person who meets the Secretary of Interior's Professional Qualification Standards in prehistoric archaeology (36 CFR Part 61) and can demonstrate graduate-level coursework in Quaternary science, sedimentary geology, or geomorphology. The boundary lines on the surface of the project site are the referents that direct the differential implementation of the active and passive components of the protocols, and the subsurface paleosols and sedimentary contacts are the referents that vertically bound the requisite construction monitoring areas.

Monitoring Protocol for Landform Hf1

Active component. The active component of the monitoring protocol for the Hf1 landform requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction_-related ground disturbance down to the upper boundary of the paleosol that is buried in the landform. That boundary, which is the upper boundary of a preserved A horizon, is approximately 2 meters below the present surface of the landform.

Passive component. The owner shall have construction personnel on the project passively monitor for and halt construction upon the discovery of buried archaeological deposits in the portion of Archaeological Zone 1 on the Hf1 landform that appear to represent archaeological site types not previously known for the Zone. Any such discovery shall be subject to the discovery protocol of **CUL-9**. Construction personnel shall be given training, as part of the training program of **CUL-7**, which would facilitate the field recognition of archaeological site types that are and are not known for the district.

Applicability

Project Site. Active monitoring to the southwest of the refined provisional district boundary, and passive monitoring to the northeast of the refined provisional district boundary.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Passive monitoring to the northeast of the refined provisional district boundary.

Monitoring Protocol for Landform Hf1d

Active component. The active component of the monitoring protocol for the Hf1d landform requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction-related ground disturbance down approximately 2 meters from the present surface of the landform to the upper contact of what are presently thought to be Pleistocene-age deposits of pebbles and cobbles.

Passive component. No passive monitoring on the Hf1d landform.

Applicability

Project Site. Active monitoring across the whole extent of the landform on the project site.

Transmission Line Infrastructure. Active monitoring across the whole extent of the landform in the portion of the project area that encompasses the construction area for the transmission line infrastructure. To implement the protocol for the Hf1d landform in the construction area for the transmission line infrastructure, the project owner shall project out the boundary between the Hf1d and Hf3 landforms, which appears to be coincident with the Cantil Valley fault, to the southwest of the project site, and implement the protocol for the Hf1d landform to the southeast of that projected boundary.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Not applicable.

Monitoring Protocol for Landform Hf2

Active component. The active component of the monitoring protocol for the Hf2 landform requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction-related ground disturbance to the maximum depth of such disturbance.

Passive component. The project owner shall have construction personnel on the project passively monitor for and halt construction upon the discovery of buried archaeological deposits in the portion of Archaeological Zone 1 on the Hf2 landform that appear to represent archaeological site types not previously known for the Zone. Any such discovery shall be subject to the discovery protocol of **CUL-9**. Construction personnel shall be given training, as part of the training program of **CUL-7**, which would facilitate the field recognition of archaeological site types that are and are not known for the district.

Applicability

Project Site. Active monitoring to the southwest of the refined provisional district boundary, and passive monitoring to the northeast of the refined provisional district boundary.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Passive monitoring to the northeast of the refined provisional district boundary.

Monitoring Protocol for Landform Hf3

Active component. No active monitoring on the Hf3 landform.

Passive component. No passive monitoring on the Hf3 landform.

Applicability

Project Site. Not applicable.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Not applicable.

Monitoring Protocol for Landform Hf4

Active component. The active component of the monitoring protocol for the Hf4 landform requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction-related ground disturbance to the maximum depth of 4 meters.

Passive component. The owner shall have construction personnel on the project passively monitor for and halt construction upon the discovery of buried archaeological deposits in the portion of Archaeological Zone 1 on the Hf4 landform that appear to represent archaeological site types not previously known for the Zone. Any such discovery shall be subject to the discovery protocol of **CUL-9**. Construction personnel shall be given training, as part of the training program of **CUL-7**, which would facilitate the field recognition of archaeological site types that are and are not known for the district.

Applicability

Project Site. Active monitoring to the southwest of the refined provisional district boundary, and passive monitoring to the northeast of the refined provisional district boundary.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Active monitoring to the southwest of the refined provisional district boundary, and passive monitoring to the northeast of the refined provisional district boundary.

Monitoring Protocol for Unknown Landforms

Active component. The active component of the monitoring protocol for unknown landforms requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction-related ground disturbance to the maximum depth of any such disturbance.

Passive component. No passive monitoring on unknown landforms.

Applicability

Project Site. Not applicable.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Active monitoring for the whole length of the proposed emergency access road, which is outside and projects east of the project site to Neuralia Road.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Active monitoring for the whole length of either pipeline route alternative, both of which are outside and to the east and south of the project site.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of all construction-related ground disturbance in the project area, in accordance with the Landform-specific Monitoring Protocols, above. Where scrapers are used for excavation, full-time archaeological monitoring shall require one monitor to observe the placement of and inspect dumped material for every four monitors observing excavation. For excavation areas where scrapers are not used for excavation, one monitor shall both observe the location of active excavation and inspect the dumped material.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The research design in the HRMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the

area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of noncompliance with the Conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification:

1. At least 30 days prior to the start of ground disturbance anywhere on the project site, the project owner shall submit the Monitoring and Discovery Plan to the CPM for review and approval.

2. At least 30 days prior to the start of construction-related ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.

3. Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the HRMP.

4. At least 10 days prior to the start of construction-related ground disturbance, the project owner shall physically stake out, every 200 feet along the surface of the ground and in a conspicuous manner, either the provisional boundary of Archaeological Zone 1, or, if it has been given the approval of the CPM, the refined provisional district boundary for the Zone, and the known boundary of each landform on the project site as each such boundary is reported in the February 6, 2009 preliminary field report for the geoarchaeology study (Young 2009b). The project owner shall make a reasonable and good faith effort to engage the author of that preliminary report to assist in the location of each landform boundary on the ground.

5. At least 30 days prior to the start of construction-related ground disturbance, the project owner shall make a reasonable and good faith effort to engage the author of the February 6, 2009 preliminary field report for the geoarchaeology study (Young 2009b) or another professional geoarchaeologist to whom the author has given a field orientation of the study results to conduct field orientations for the CRS, the alternate CRS, and each CRM so that they are each able to recognize the project area landforms and key subsurface sedimentary features in the landform-specific monitoring protocols such as paleosols and sedimentary contacts. The replacement of the CRS, the alternate CRS, or CRMs shall necessitate new field orientations to train new personnel. Should the project owner be unable to engage the above cited author, the project owner may engage another professional geoarchaeologist to conduct subject field orientations for the CRS, the alternative CRS, and each CRM. Should the project owner exercise this latter option, the implementation of the Construction Monitoring Protocol shall be subject to periodic field review and approval by the CPM. "Professional geoarchaeologist" means a person who meets the Secretary of Interior's Professional Qualification Standards in prehistoric archaeology (36 CFR Part 61) and can demonstrate graduate-level coursework in Quaternary science, sedimentary geology, or geomorphology.

6. At least 30 days prior to the start of construction_-related ground disturbance in any portion of the project area added under **CUL-3**, the project owner shall submit a numbered appendix to the Monitoring and Discovery Plan to the CPM for review and approval. Each such appendix shall include monitoring procedures for the actions that would occur in lands added to the original project area. The appended procedures shall be consistent with the landform-specific monitoring protocols of **CUL-8**.

7. Daily, as long as no cultural resources are found, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the CPM as an email, or in some other form acceptable to the CPM.

8. At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for reducing or ending daily reporting.

9. At least 24 hours prior to implementing a proposed change in monitoring level, documentation justifying the change shall be submitted to the CPM for review and approval.

10. No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the Chairpersons of the Native American tribes or groups who requested the information.

11. Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner's transmittals of information.

CUL-9 *Discovery and Discovery Treatment Protocols*. The Monitoring and Discovery Plan (subpart 13, **CUL-4**) shall include separate protocols for construction monitoring, and for the discovery and treatment of new cultural resources that are found outside of the refined provisional boundary for Archaeological Zone 1, when archaeological site types not previously known for the Zone are found inside said boundary, or when unanticipated effects to known cultural resources become evident during construction-related ground disturbance. The Discovery Protocol shall specify the procedures that the project owner shall follow upon the discovery of a new resource outside of Archaeological Zone 1, of a new archaeological site type in Archaeological Zone 1, or upon the recognition of an unanticipated effect. The project owner shall, in any such instance, grant authority to halt construction-related ground disturbance to the CRS, alternate CRS, and the CRMs. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that cultural resources that may be over 50 years of age are found, or, if younger, determined exceptionally significant by the CPM, or archaeological site types not previously known for Archaeological Zone 1 are found in it, or impacts to such resources can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting as provided in **CUL-8** shall continue during all ground-disturbing activities elsewhere on the project site. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for mitigation of any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.

2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.

3. The CRS has completed field notes, measurements, and photography for a DPR 523A "Primary Record" form. Unless the find can be treated prescriptively, as specified in the HRMP, the "Description" entry of the DPR 523A "Primary Record" form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.

4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

The discovery and discovery treatment protocols in the Monitoring and Discovery Plan shall specify that the preferred treatment strategy for any buried archaeological deposits found during the course of the construction, operation, and maintenance of the proposed project is avoidance. A mitigation plan shall be prepared for any CRHR-eligible (as determined by the CPM) resource, impacts to which cannot be avoided, except for archaeological site types in Archaeological Zone 1 that are already known to be characteristic of that district.

Prescriptive treatment plans may be included, where appropriate, in the HRMP for cultural resources that represent marginal data sets.

Verification:

1. At least 30 days prior to the start of ground disturbance anywhere on the project site, the project owner shall submit the Monitoring and Discovery Plan to the CPM for review and approval.

2. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt construction-related ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

3. Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery.

4. Unless the discovery can be treated prescriptively, as specified in the HRMP, completed DPR 523 Series forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

CUL-10 *Cultural Resources Report (CRR)*. The project owner shall submit the final CRR to the CPM for approval. The final CRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format (COHP 1990). The final CRR shall report on all field activities including dates, times and locations, findings, samplings, and analyses. All survey reports, DPR 523 Series forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

If the project owner requests a suspension of construction-related ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 90 days after completion of all construction-related ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

2. Within 90 days after completion of all construction-related ground disturbance (including landscaping), if cultural materials requiring curation were collected, the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, to accept cultural materials, if any, from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

3. Within 10 days after CPM approval, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Tribal Chairpersons of any Native American groups requesting copies of project-related reports.

4. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

ATTACHMENT B

ERRATA TO THE PRESIDING MEMBER'S PROPOSED DECISION
FINAL CONDITIONS OF CERTIFICATION
SOIL AND WATER RESOURCES
JULY 26, 2010

SOIL&WATER-1: **Groundwater Water Use For Project Construction:** The project owner may use up to 8,086 acre feet of onsite groundwater for project construction. Groundwater use and potential impacts will be monitored and mitigated as outlined in items A. B. and C. below.

Groundwater Use For Project Operation: The project owner may use up to 153 acre feet per year (AFY) of onsite groundwater to meet non-cooling operational needs. The project owner may also use 47 AFY of groundwater for emergency purposes. For the purpose of this condition, the term "emergency" shall mean the inability for BSEP to receive, or for the recycled water supplier to deliver, recycled water to BSEP due to Acts of God, natural disaster or other circumstances beyond the control of the project owner in a quantity sufficient for BSEP to operate at its normal operational level for the season in which the emergency occurred.

The project owner shall use recycled water for all power plant cooling needs. On a temporary basis, groundwater may only be used for cooling purposes while the California City recycled water option, discussed below, is being developed and until it becomes fully implemented. Groundwater use and potential impacts will be monitored and mitigated as outlined in items A. and C. below.

California City Recycled Water Supply – If the California City Recycled Water supply is developed for project operation, then groundwater may be used in accordance with the table presented below:

Operations Water Use – California City Alternative

California City Collection System Construction Year	Maximum Volume of Site Groundwater Extracted for BSEP Operation [1,2]
1 (end of month 12)	1,353AFY
2 (end of month 24)	1,053 AFY
3 (end of month 36)	753 AFY
4 (end of month 48)	453 AFY
5 (end of collection system construction)	153 AFY

[1] Includes potable demand
[2] Excludes yearly emergency supply

Rosamond Community Services District Recycled Water Supply – If the Rosamond Community Services District Recycled Water Supply is developed for project use groundwater shall be limited to a volume of no more than 153 AFY.

Monitoring and Mitigation for Groundwater Use

The project owner shall also develop and implement a groundwater monitoring and mitigation program. The monitoring and mitigation program shall be consistent with the intent of **Soil & Water APPENDIX I**. The primary objective for the monitoring is to establish pre-construction and project related water level trends that can be quantitatively compared against observed and simulated trends near the project pumping wells, at the property boundary, and near potentially impacted existing wells. Specifically, the project owner shall do all of the following:

A. Prior to construction:

1 In accordance with the provisions set forth in **Soil & Water Appendix I**, create the Fremont Valley Groundwater Monitoring Committee to monitor project pumping impacts during construction and (if recycled water is incrementally delivered to the site) the "phase-in" period during initial project operation. The purpose of the Fremont Valley Groundwater Monitoring Committee is to provide for land owner protection and include stakeholder participation in evaluation of project impacts. The monitoring committee's function will be to implement and oversee the project owner's groundwater monitoring program and to confer with the CPM to verify that there are no unacceptable impacts to groundwater levels, water quality or well performance in water supply wells affected by the proposed pumping during construction of the BSEP and during project operation. The committee will review the applicability of the groundwater monitoring and mitigation program on a recurring 5 year basis following project construction. During their review of the monitoring data, the committee will recommend to the CPM whether the program should be expanded or if some or all of the monitoring should be terminated. In the event that a committee cannot be formed or maintained the CPM will continue to implement and oversee the groundwater monitoring program.

2 Prior to construction identify representative water supply wells in the potentially impacted area predicted by the groundwater model, and secure access to those wells to allow monitoring of groundwater levels and water quality. Wells shall be identified by comparison to the "No" Project and Project pumping simulations. The potentially impacted area shall be defined as the area model results project a water level change of 5 feet or more at the end of construction and after the first five years of operation. Wells identified in the potentially impacted area will be included in the monitoring network. Any new wells within the potentially impacted area not previously identified shall also be included in the monitoring network. Abandoned wells, or wells no longer in use, that are accessible and provide reliable water level data within the potentially impacted area may also be included as part of the monitoring network. Additional wells located outside the potentially impacted area ("background" wells) shall also be included in the monitoring network to discern between background trends and changes caused by Project pumping. Wells representing background conditions shall be selected from outside the potentially impacted area indicated by the groundwater-flow model. For example, a minimum of three wells located outside the area indicated by the groundwater-flow model as having a water level change of 1 foot or less at the end of construction and after the first five years of operation are potential candidates for background wells. The final selection of background wells shall be subject to approval by the CPM.

3 In addition to the potentially impacted area discussed above, identify available wells between the BSEP site and California City, in both the Koehn and California City sub-basins, and include

representative well(s) into the monitoring network. Inclusion of these wells into the monitoring network is necessary to assess the potential changes in hydraulic gradients and subsurface flow between basins. Some candidate wells in the Koehn and California City sub-basin may already be monitored as part of other water management programs. This condition does not intend to duplicate those efforts, but instead requires in these circumstances the integration of data from the other relevant activities and including this information in analyses and reports submitted to the CPM.

4 At least 30-days prior to project construction, accessible abandoned or unused wells within the monitoring network shall be instrumented with recorders to track groundwater levels during project construction. The water level recorders shall continuously collect and store the data every four hours and shall be serviced at least quarterly.

5 Obtain all historic water level and water quality data for each water supply well within the monitoring network as defined by the groundwater model where access to monitor groundwater conditions can be obtained. Additionally, conduct a well reconnaissance and identify all wells within the monitoring area as defined by the groundwater model. Obtain well construction information (completion depth, well screen depth interval, and pump intake depth), historic well performance data, including pumping and non-pumping water levels, and pump specifications for each of those wells.

6 Update the groundwater database presented in the AFC, and updated in January 2009, with all new information obtained from the wells where access to monitor groundwater conditions has been obtained.

7 Prepare time series graphs for water level and total dissolved solids (TDS) concentrations data for each well within the monitoring network where information is available.

8 Perform statistical trend analysis using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data to statistically analyze the data. Determine the significance of an apparent trend and estimate the magnitude of that trend.

9 At least once prior to construction, collect groundwater levels from the off-site and on-site monitoring network wells and collect and analyze groundwater samples for TDS concentrations to provide baseline and background groundwater levels and TDS concentrations for both on-site and off-site monitoring network wells. Groundwater samples shall be analyzed for TDS by a California Certified Analytical Laboratory in accordance with Standard Methods 2540C.

10 Map TDS data and groundwater levels within the Koehn and California City Sub-basins from the groundwater data collected prior to construction. Update trend plots and statistical analyses, as data is available.

B. During Construction:

1 Collect static water levels and TDS data from the monitoring network wells on a quarterly basis throughout the construction period, and at the end of the construction period. The continuous monitoring discussed in Condition **SOIL & WATER-1.A.4**, above shall continue a minimum of 30-days after completion of project construction. Perform statistical trend analysis using Mann-

Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data to statistically analyze the data. Determine the significance of an apparent trend and estimate the magnitude of that trend.

C. During Operation:

1 On a quarterly basis, collect static water level measurements and TDS data from the wells in the groundwater monitoring network to evaluate operational influence from the project. Quarterly operational parameters (i.e., pumping rate) of the water supply wells shall be monitored. Additionally, quarterly groundwater-use in the Koehn sub-basin shall be estimated and the values submitted to the Fremont Valley Basin Groundwater Monitoring Committee for evaluation and consultation with the CPM.

2 On an annual basis, perform statistical trend analyses using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data to statistically analyze the data. The significance of an apparent trend shall be determined and the magnitude of that trend estimated. Based on the results of the statistical trend analyses, the project owner shall determine if the project pumping has induced a drawdown (i.e. reduction in the static water level) in the water supply at a level of ten feet or more below the background trend.

3 If water levels have been lowered below pre-site operational trends, and monitoring data provided by the project owner show the water level changes are different from background trends and are solely caused by project pumping, then the project owner shall provide mitigation to the well owner(s) consistent with the following **SOIL & WATER-1.C.3.a** through **C.3.i**. Mitigation shall be provided if the CPM's inspection of the well monitoring data confirms changes to water levels and water level trends relative to measured pre-project water levels, and the well yield has been lowered by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline and site specific well construction and water use characteristics. The mitigation of impacts will be determined as follows:

a. If project pumping has lowered water levels and increased pumping lifts by 10 feet or more, increased energy costs shall be calculated in accordance with item **SOIL & WATER-1.C.3.e** below. The compensation and payment schedule for the increased costs shall be provided at the option of the affected well owner as provided in **SOIL & WATER-1.C.3.g**.

b. If groundwater monitoring data indicate project pumping has lowered water levels below the top of the well screen, and the well yield is shown to have decreased by 10-percent or more of the average seasonal yield, compensation shall be provided for the diagnosis and maintenance to treat and remove encrustation from the well screen. Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen encrustation.

Should the well yield reductions be reoccurring, the project owner shall provide payment or reimbursement for periodic maintenance throughout the life of the Project. If with treatment the well yield is incapable of meeting 110% of the well owner's maximum daily demand, dry season demand, or annual demand the well owner should be compensated by reimbursement or well replacement as described under Condition **SOIL&WATER-1.C.3.c**.

c. If project pumping has lowered water levels to significantly impact well yield below property water supply requirements or cause casing collapse, payment or reimbursement of an amount equal to the cost of deepening or replacing the well shall be provided to accommodate these effects. Compensation shall be at an amount equal to the customary local cost of deepening the existing well or constructing a new well. The demand for water, which determines the required well yield, shall be determined on a per well basis using historic seasonal yield data, well owner interviews and field verification of property conditions and historical seasonal water requirements compiled as part of the pre-project well reconnaissance. Well yield shall be considered significantly impacted if it is incapable of meeting 110-percent of the well owner's maximum daily demand, dry-season demand, or annual demand – assuming the pre-project well yield documented by the well reconnaissance met or exceeded these yield levels.

d. Electrical cost reimbursement – Through a statistical analysis of the water level data, if the pumping water level falls below a depth of 10 feet from the background trend, and is shown to be caused by project pumping, the well owner shall be compensated by the project owner for the additional electrical costs commensurate with the additional lift required to pump. The water level in the well will be assessed relative to the pumping rate established during the pre-site development period.

e. Where it is determined by the CPM that the project owner shall reimburse a private well owner for increased energy costs, the project owner shall calculate the compensation owed to the owner of any impacted well as described below.

<u>Increased cost for energy</u> = change in lift/total system head x total energy consumption x costs/unit of energy

Where:

change in lift (ft) = calculated change in water level in the well resulting from project pumping

total system head (ft) = elevation head + discharge pressure head

elevation head (ft) = difference in elevation between wellhead discharge pressure gauge and water level in well during pumping.

discharge pressure head (ft) = pressure at wellhead discharge gauge (psi) X 2.31

f. The project owner shall notify all owners of the impacted wells within one month of CPM approval of the compensation analysis for increased energy costs.

g. Compensation shall be provided on an annual basis, as described below:

Compensation provided on an annual basis shall be calculated prospectively for each year by estimating energy costs that will be incurred to provide the additional lift required as a result of the project. With the permission of the impacted well owner, the project owner shall provide energy meters for each well or well field affected by the project, as described under 3e

above. The impacted well owner to receive compensation must provide documentation of energy consumption in the form of meter readings or other verification of fuel consumption. For each year after the first year of operation, the project owner shall include an adjustment for any deviations between projected and actual energy costs for the previous calendar year.

h. Pump lowering – If pumps are exposed but well screens remain submerged, the pumps shall be lowered to maintain production in the well. All costs associated with lowering pumps shall be borne by the project owner. Reimbursement shall be provided at an amount equal to the customary local cost of performing the lowering of the pump.

i. Deepening of wells – If the groundwater is lowered enough that the well screen is exposed, and lowering of the pump cannot be done to maintain well yield above a level of significance described in **SOIL& WATER-1.C.3c**, the well shall be deepened or a new well constructed. The well shall be completed in a manner that provides water to the property in consideration of historic seasonal use requirements. All costs associated with deepening existing wells or constructing new wells shall be borne by the project owner. Reimbursement shall be provided at an amount equal to the customary local cost of installing a new well.

4 During or after the first five-year operational and monitoring period, the CPM, after consultation with the Fremont Valley Basin Groundwater Monitoring Committee, shall evaluate the data and determine if the monitoring program water level measurements and TDS sampling frequencies should be revised or eliminated. Revision or elimination of any monitoring program elements shall be based on the consistency of the data collected. The determination of whether the monitoring program should be revised or eliminated shall be made by the CPM after consultation with the Fremont Valley Basin Groundwater Monitoring Committee.

5 At the end of each subsequent five-year monitoring period, the collected data shall be evaluated by the CPM after consultation with the Fremont Valley Basin Groundwater Monitoring Committee and the CPM shall determine if the sampling frequency and TDS sampling should be revised or eliminated.

6 If the project owner elects to utilize the California City option, groundwater monitoring results, whether conducted by the project owner or by another entity as part of basin water management activities (for example, monitoring wells in the California City area), shall be analyzed and reported to the CPM. This is necessary because of the expected reduction in groundwater recharge resulting from diversion of septic system recharge resulting from diversion of septic system discharge that otherwise percolated into the groundwater basin. Consideration of the need to continue the groundwater monitoring program will be in accordance with item **SOIL & WATER - 1.C.4** above. The project owner shall also compensate California City for implementation of a Tamarisk Removal Program as described in Appendix I. The Tamarisk Removal Program shall target the species commonly referred to as Salt Cedar.

7 If the Rosamond option is implemented, all off site groundwater monitoring will likely be eliminated within the five year post construction period. Consideration of the need to continue the groundwater monitoring program will be in accordance with item **SOIL & WATER - 1.C.4** above.

8 If the California City option is implemented, all off site groundwater monitoring will likely be eliminated within the five year post construction period. Consideration of the need to continue

the groundwater monitoring program will be in accordance with item **SOIL& WATER-1.C.4** above.

9 Comply with Condition of Certification **SOIL & WATER -19**, which requires metering of water used for power plant construction and operation.

Verification: The project owner shall do all of the following:

1 At least 60 days prior to start of construction, the project owner shall submit to the CPM a list identifying the members of the Fremont Valley Basin Groundwater Monitoring Committee and each member's written agreement to participate in accordance with the Committee's stated purpose and function and assist the project owner in implementing the groundwater monitoring program.

2 At least 30 days prior to project construction, the project owner shall submit to the CPM, a comprehensive report presenting all the data and information required in items **SOIL & WATER – 1.A.2** through **-1.A.10**.

The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations, along with comments to the draft report made by Committee members or well owners within the monitoring network on the data, calculations and assumptions used in development of the report. The project owner shall also provide documentation of communications and negotiation for securing access and inclusion of a well in the monitoring program. Further, documentation shall be provided that shows adequate inquiry of each well owner in the monitoring network, and any subsequent refusal by the well owner to be included in the monitoring network.

3 During project construction, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in items **SOIL & WATER –1.B.1** through **-1.B.2**.

The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations, along with comments to the draft report made by Committee members or local well owners within the monitoring network on the data, calculations, and assumptions used in development of the report.

4 No later than March 31 of each year of construction and 60 days following completion of construction, the project owner shall provide to the CPM for review and approval, documentation showing that any mitigation to private well owners during project construction was satisfied, based on the requirements of the property owner as determined by the CPM.

5 During project operation, the project owner shall submit to the CPM, applicable quarterly and annual reports presenting all the data and information required in items **SOIL & WATER – 1.C.1** through **-1.C.8**.

The project owner shall submit to the CPM all calculations and assumptions made in development of report data and interpretations, along with any agreement or dissenting opinions voiced by Committee members or local well owners on the data, calculations, and assumptions used in development of any reports.

6 After the first five year operational and monitoring period, the project owner shall submit a 5 year monitoring report to the Fremont Valley Basin Groundwater Monitoring Committee and to the CPM that submits all monitoring data collected and provides a summary of the findings. After consultation with the Fremont Valley Basin Groundwater Monitoring Committee, the CPM will determine if the water level measurements and TDS sampling frequencies should be revised or eliminated.

7 The project owner shall provide mitigation as described in **SOIL & WATER-1.C.3**, if the CPM's inspection of the monitoring information confirms changes to water levels and water level trends relative to measured pre-project water levels, and well yield has been lowered by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline and site specific well construction and water use characteristics. The mitigation of impacts will be determined as set forth in **SOIL & WATER-1.C.3**.

8 Eliminated, redundant with #4.

9 During the life of the project, the project owner shall provide to the CPM and Fremont Valley Basin Groundwater Monitoring Committee, all monitoring reports, complaints, studies and other relevant data within 30 days of being received by the project owner.

10 In accordance with Appendix I, the applicant shall provide to the CPM appropriate documentation (notes, diagrams, photographs and other records) on a quarterly basis that clearly demonstrates the success of the Tamarisk Removal Program. This documentation shall provide the mapped location, pre and post eradication photographs, a description of the areal extent of salt cedar removed and the percent completion of the removal program.

SOIL&WATER-2: The project owner will comply with the requirements of the Kern County Environmental Health Services Department, regarding sanitary waste disposal facilities such as septic systems and leach fields.

Verification: The project owner will submit all necessary information and the appropriate fee to the county of Kern to ensure that the project has complied with the county's sanitary waste disposal facilities requirements. A written assessment prepared by Kern County of the project's compliance with these requirements must be submitted to the CPM for review and approval 30-days prior to the start of power plant operation.

SOIL&WATER-3: The project owner shall comply with the Waste Discharge Requirements for discharge of storm water associated with construction activity that are presented in **Soil and Water Appendices E, F, G** and **H** and submit the appropriate compliance fee to the LRWQCB. The project owner shall develop, obtain compliance project manager (CPM) approval of, and implement a Storm Water Pollution Prevention Plan (SWPPP) for the construction of the BSEP site, laydown area, and all linear facilities.

Verification: At least 60 days prior to site mobilization, the project owner shall submit to the CPM and LRWQCB, a copy of the construction SWPPP for review and CPM approval prior to site mobilization. The project owner shall also submit to the CPM evidence of payment to LRWQCB of the appropriate compliance fee. The project owner shall retain a copy of the SWPPP on site. The project owner shall submit to the CPM copies of all correspondence between the project owner and the LRWQCB regarding

the Waste Discharge Requirements for the discharge of storm water associated with construction activity within 10 days of its receipt or submittal.

SOIL&WATER-4: The project owner shall comply with the requirements of the Waste Discharge Requirements in **Soil and Water Appendices E, F, G and H**, for discharges of process water and storm water associated with industrial activity. The project owner shall develop, obtain CPM approval of, and implement an industrial SWPPP for the operation of the project.

Verification: At least 60 days prior to commercial operation, the project owner shall submit to the CPM a copy of the industrial SWPPP for operation of the project for review and approval prior to commercial operation. The project owner shall retain a copy on site. The project owner shall submit copies to the CPM of all correspondence between the project owner and the LRWQCB regarding the Requirements of Waste Discharge of process water and storm water associated with industrial activity within 10 days of its receipt or submittal. Copies of correspondence shall include the Notice of Intent sent by the project owner to the SWRCB.

SOIL&WATER-5: Prior to site mobilization, the project owner shall obtain CPM approval for a site specific DESCP that ensures protection of water quality and soil resources of the project site and all linear facilities for both the construction and operation phases of the project. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in risk to off-site properties from flooding, and identify all storm water monitoring and maintenance activities. The project owner shall complete all necessary engineering plans, reports, and documents necessary for Kern County to conduct a review of the proposed project and provide its written evaluation as to whether the proposed grading, drainage improvements, diversion channel design, and flood management activities comply with all county requirements. The project owner shall ensure compliance with all county standards and requirements for grading, erosion control, and flooding for the life of the project. The plan shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1,** and with requirements described in Condition of Certification **BIO-18**. The DESCP shall contain the following elements:

- ***Vicinity Map*** – A map shall be provided indicating the location of all project elements with depictions of all significant geographic features to include watercourses, washes, irrigation and drainage canals, major utilities, and sensitive areas, such as Waters of the State.

- ***Site Delineation –*** The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, underground utilities, roads, and drainage facilities. Adjacent property owners shall be identified on the plan maps. All maps shall be presented at a legible scale

- ***Drainage –*** The DESCP shall include the following elements suitable for submittal to FEMA as part of compliance with Condition of Certification SOIL&WATER-6:

    a. Topography – Topography for offsite areas are required to define the existing upstream tributary areas to the site and downstream to provide enough definition to map the existing Pine Tree Creek flood hazard. Spot elevations shall be required where relatively flat conditions exist.

b. Proposed Grade – Proposed grade contours shall be shown at a scale appropriate for delineation of onsite sub-basins, drainage ditches, pond contours, diversion channel, and tie-ins to the existing topography.

c. Hydrology - Existing and proposed hydrologic calculations for on-site areas and offsite areas that drain to the site; include maps showing the drainage area boundaries and sizes in acres, topography and typical overland flow directions, and show all existing, interim, and proposed drainage infrastructure and their intended direction of flow.

d. Hydraulics - Provide hydraulic calculations to support the selection and sizing of the onsite drainage network, retention facilities and best management practices (BMPs). Design calculations and the results of the hydraulic backwater model for the Pine Tree Creek diversion channel shall be included.

e. Channel Stabilization Plan – The Project Owner shall present methods to mitigate for adverse hydraulic conditions (high velocities, high shear stress, Froude Numbers greater than 0.8) in the proposed diversion channel. Channel plan and profile maps showing water surface elevations, channel slope, bank protection, channel stabilization elements. Channel bank elevations shall also be identified.

- ***Watercourses and Critical Areas –*** The DESCP shall show the location of all nearby watercourses including washes, irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site. Maps shall identify high hazard flood prone areas:

  a. FEMA Regulated Special Flood Hazard Areas (Effective floodplain from DFIRM) shall be shown on site as well as upstream and downstream within 2,000 feet from the BSEP property boundary;

  b. Existing Conditions 100-year Floodplain – Shall be continuous with the effective floodplain; and

  c. Proposed (Revised) Conditions 100-year Floodplain – Shall be continuous with the effective floodplain.

- ***Clearing and Grading –*** The plan shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, cut/fill depths or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Proposed contours shall tie into existing topography. The DESCP shall include a statement of the quantities of material excavated at the site, whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there would be no clearing and/or grading conducted for each element of the project. Areas of no disturbance shall be properly identified and delineated on the plan maps.

- ***Project Schedule –*** The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element and diversion channel excavation, and construction, and final grading/stabilization). The

project schedule shall identify the construction sequence for the Pine Tree Creek diversion channel. Separate BMP implementation schedules shall be provided for each project element for each phase of construction.

- ***Best Management Practices –*** The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during project element excavation and construction, during final grading/stabilization, and after construction. BMPs shall include measures designed to control dust and stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs, including application of soil stabilizers, applied to disturbed areas following construction.

- ***Erosion Control Drawings –*** The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer (PE) or a Certified Professional in Erosion and Sediment Control (CPESC).

- ***Agency Comments –*** The DESCP shall include copies of recommendations, conditions, and provisions from Kern County, CDFG, and LRWQCB.

- ***Monitoring Plan –*** Monitoring activities shall include routine measurement of the volume of accumulated sediment in the onsite drainage ditches, storm water retention basins, and the diversion channel.

  - Additional monitoring requirements shall be presented in a Desert Wash Mitigation and Monitoring Plan as discussed in Condition of Certification **BIO-18**.

- ***Maintenance Plan –*** The maintenance plan shall identify activities and procedures needed to maintain capacity within all onsite drainage ditches, and the drainage ditch that currently diverts flow along the western property boundary. Channel maintenance may include BMP repairs, bank stabilization, debris removal, grade control, and revegetation. The maintenance plan shall support the objectives of the revegetation plan and mitigation effort. Maintenance activities must also include removal of accumulated sediment from all retention basins when an average depth of 0.5 feet of sediment has accumulated in the retention basin. The maintenance plan shall be developed in accordance with the activities and procedures identified for the Pine Tree Creek diversion channel as part of compliance with Condition of Certification **SOIL&WATER-7** and **SOIL&WATER-8**.

Verification: The project owner shall do all of the following:

1. No later than 90 days prior to start of site mobilization, the project owner shall submit a copy of the DESCP to Kern County and the LRWQCB for review and comment. A copy shall be submitted to the CPM no later than 60 days prior to the start of site mobilization for review and approval. The CPM shall consider comments received from both Kern County and LRWQCB.

2. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-, erosion- and sediment-control measures and the results of monitoring and maintenance activities.

3. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities.

4. Provide the CPM with two (2) copies of all monitoring or other reports required for compliance with Kern County, CDFG, and LRWQCB.

5. Provide Kern County, LRWQCB and the CPM with quarterly maintenance activity reports for all onsite drainage ditches and the drainage ditch that currently diverts flow along the western property boundary. These reports shall also provide an account of any significant runoff event and will describe channel performance.

SOIL&WATER-6: In accordance with Kern County's Floodplain Management Ordinance and 44 CFR 65.12, the project owner shall prepare all necessary engineering plans and documents to support a Conditional Letter of Map Revision (CLOMR) application submittal to FEMA. The project shall not commence construction in the SFHA until Kern County receives from FEMA an approved CLOMR. Following construction, the Project Owner shall prepare all necessary documents required for a final Letter of Map Revision (LOMR). The project owner shall use FEMA's Guidelines and Specifications for Mapping Partners for guidance. The project owner shall:

a. Prepare hydrologic analyses to estimate the 1-percent annual chance flood events for the Pine Tree Creek watershed. The analyses shall be conducted using numerical models approved by FEMA;

b. Prepare design drawings in accordance with FEMA CLOMR standards for the channel, include typical channel cross section dimensions, typical details for all structural elements needed to protect the channel from erosion, and a grading plan for proposed conditions that ties into existing topography;

c. Conduct hydraulic analyses for existing and proposed conditions. Plot the water surface and energy grade line profile for the constructed channel. Tie the proposed conditions water surface elevation profile into the water surface profile from the existing hydraulic model upstream and downstream of the site;

d. Prepare flood hazard mapping for the existing and proposed conditions. Floodplain mapping shall tie-into the upstream and downstream special flood hazard mapping shown on the effective DFIRM;

e. Provide required sediment transport study and bulking factor information per FEMA standards;

f. Provide notification to all adjacent property owners, impacted by the proposed change to the SFHA;

g. Complete the necessary FEMA MT-2 application forms package and pay all applicable CLOMR review fees. The submittal shall be certified by a California-licensed professional engineer; and

h. Address all FEMA review comments as needed to receive an approved CLOMR. Prior to mobilization, the Project Owner shall receive confirmation from Kern County that FEMA has issued a CLOMR for the BSEP. The Project Owner shall address all “conditions” in the CLOMR during project construction. No later than six months after the end of construction, the project owner, through a request from Kern County, must notify FEMA of the changes in accordance with 44 CFR 65.3. The Project Owner shall submit the following technical or scientific data as part of a Letter of Map Revision (LOMR) request:

i. Conduct an As-Built survey of the completed construction;

j. Update the Proposed Conditions Model to reflect the As-Built Revised Conditions and delineate the resulting flood hazards;

k. Complete the necessary FEMA MT-2 application forms package and pay all applicable LOMR review fees. The submittal shall be certified by a California-licensed professional engineer;

l. Address all FEMA review comments as needed to receive approval of the LOMR; and

m. Notify the CPM of the approved LOMR.

Verification: The project owner shall do all of the following:

1. Submit a copy of the application for a CLOMR to the CPM concurrently with the submission to FEMA.

2. No later than thirty (30) days after receiving notification from FEMA that all required CLOMR or LOMR documents have been received by FEMA, the Project Owner shall notify the CPM that the project is currently being reviewed by FEMA. During the review process, the project owner shall submit all correspondence between FEMA and project owner’s engineer representative responsible for addressing FEMA’s comments.

3. Prior to construction activity within the effective SFHA the Project Owner shall provide a copy of the CLOMR to the CPM for verification.

4. Following construction of the channel improvements, the Project Owner shall complete an As-built survey of the improvements, update the hydraulic model, and prepare a final submittal, to include forms and fees, for a FEMA LOMR request. The Project Owner shall submit a copy of the completed LOMR submittal to the CPM and Kern County for review.

5. No later than thirty (30) days after receiving notification from FEMA that the LOMR has been issued to Kern County the project owner shall submit a copy of the LOMR to the CPM as verification.

SOIL&WATER-7: The property owner shall coordinate with a public entity to establish a BSEP Reclamation District. The property owner shall be responsible for maintaining the integrity, engineering design, and design discharge capacity of the rerouted Pine Tree Creek channel. The reclamation district shall be formed with consideration of all appropriate Waste Discharge

requirements presented in **Soil and Water Appendices E** through **H**. The project owner shall also ensure that the BSEP Reclamation District manages utility crossings of the rerouted Pine Tree Creek channel. The property owner shall develop the Reclamation District according to the stream alteration agreement as described in the Biological Resources section and in accordance with Condition of Certification **BIO-18**. Funding for the reclamation district shall be provided by the property owner in perpetuity. The property owner shall ensure the following duties are performed:

1. In coordination with the public entity, develop and supervise the implementation of a Channel Maintenance Program in accordance with conditions of certification;

2. Consult with the Reclamation District Manager on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP);

3. Be available to coordinate with the Designated Biologist on mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat, as they relate to maintenance district responsibilities;

4. Notify the CPM of any non-compliance with conditions of certification related to the reclamation district;

5. Respond directly to inquiries of the CPM regarding the reclamation district or the Channel Maintenance Program;

6. Maintain written records of the tasks specified above and those included in the Channel Maintenance Program. Summaries of these records shall be provided to the CPM, as required, per the conditions of certification;

7. Train the Reclamation District personnel as appropriate, and ensure their familiarity with the Channel Maintenance Program;

8. Manage utility crossings at the Diversion Channel;

9. Develop the Reclamation District's CIP Plan and manage the available funds;

10. Be available to coordinate with the public entity during emergency repairs conducted by the Reclamation District;

11. Report to the CPM and the public entity annually the Reclamation District's available funds and annual costs each year since the District was created.

12. Prior to receiving a FEMA approved CLOMR, required as a part of Condition of Certification **SOIL & WATER -6**, the property owner shall receive written consent from a public entity allowing BSEP to create a special reclamation district. The property owner shall provide a copy of the final Maintenance Agreement to the CPM for approval and shall include a detailed discussion of the funding mechanism for the Channel Maintenance Program and Capital Improvement Projects. The maintenance agreement shall report the name and contact information of the Reclamation District supervisor.

SOIL&WATER-8: Following creation of the Reclamation District, the project owner shall coordinate with the public entity and the Reclamation District supervisor to develop and implement a Channel Maintenance Program that provides long-term guidance to the Reclamation District to implement routine channel maintenance projects and comply with conditions of certification in a feasible and environmentally-sensitive manner. The Channel Maintenance Program will be a process and policy document prepared by the project owner, reviewed by the CPM and the public entity, and adopted by the Reclamation District.

The project owner is responsible for implementing a Channel Maintenance Program as presented in **Soil and Water APPENDIX J**. The Channel Maintenance Program shall be developed in consultation with the Reclamation District and the public entity and shall include the following:

1. **Purpose and Objectives** – establishes the main goals of the Program, of indefinite length, to maintain the diversion channel to meet its original design to provide flood protection, facilitation of applicable biological mitigation measures and maintain groundwater recharge.

2. **Application and Use -** The channel maintenance work area is defined as the BSEP engineered channel, typically extending to the top of bank, include access roads, and any adjacent property that BSEP or the District owns or holds an easement for access and maintenance. The Program would include Pine Tree Creek maintenance as needed to protect the BSEP facilities.

3. **Channel Maintenance Activities**

    a. **Sediment Removal** - sediment is removed when it: (1) reduces the diversion channel effective flood capacity, to less than the design discharge, (2) prevents appurtenant hydraulic structures from functioning as intended, and (3) becomes a permanent, non-erodible barrier to instream flows.

    b. **Vegetation Management -** manage vegetation in and adjacent to the diversion channel to control invasive or nonnative vegetation as prescribed in Condition of Certification **BIO-18**.

    c. **Bank Protection and Grade Control Repairs -** bank protection and grade control structure repairs involve any action by the District to repair eroding banks, incising toes, scoured channel beds, as well as preventative erosion protection. The District would implement instream repairs when the problem (1) causes or could cause significant damage to BSEP, adjacent property, or the structural elements of the diversion channel, (2) is a public safety concern, (3) negatively affects groundwater recharge, or (4) negatively affects the mitigation vegetation, habitat, or species of concern.

    d. **Routine Channel Maintenance -** trash removal and associated debris to maintain channel design capacity; repair and installation of fences, gates and signs; grading and other repairs to restore the original contour of access roads and levees (if applicable); and removal of flow obstructions at BSEP storm drain outfalls.

    e. **Channel Maintenance Program –** exclusions including: emergency repair and CIP.

4. **Related Programmatic Documentation –** CPM will review and approve the Channel Maintenance Program programmatic documentation. Maintenance activities shall comply with the

stream alteration agreement provisions and requirements for channel maintenance activities consistent with California's endangered species protection regulations and with NFIP regulations.

5. **Channel Maintenance Process Overview**

   a. **Program Development and Documentation** – This documentation provides the permitting requirements for channel maintenance work in accordance with the conditions of certification for individual routine maintenance of the engineered channel without having to perform separate CEQA review or obtain permits.

   b. **Maintenance Guidelines -** based on two concepts: (1) the maintenance standard and (2) the acceptable maintenance condition, and applies to sediment removal, vegetation management, trash and debris collection, blockage removal, fence repairs, and access road maintenance.

   c. **Implementation –** Sets Maintenance Guidelines for vegetation and sediment management. BSEP's vegetation management activities are established in Condition of Certification **BIO-18**. Maintenance Guidelines for sediment removal provide information on the allowable depth of sediment for the engineered channel that would continue to provide design discharge protection. The final determination on allowable sediment accumulation will be studied by the applicant as part of compliance with Condition of Certification **SOIL&WATER-7**.

   d. **Reporting –** CPM requires the following reports to be submitted each year as part of the ACR:

      i. Channel Maintenance Work Plan - Describes the planned "major" maintenance activities and extent of work to be accomplished; and

      ii. Channel Maintenance Program Annual Report - Specifies which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed).

      iii. A report describing "Lessons Learned" to evaluate the effectiveness of both resource protection and maintenance methods used throughout the year.

6. **Resource Protection Policies -** establishes policies to ensure that resources would be protected to the fullest extent feasible during routine channel maintenance activities. Policies would be developed to guide decision-making for channel maintenance activities. BMPs shall be developed to implement these policies.

Verification: Following creation of the Reclamation District and at least 60 days prior to the start of any project-related site disturbance activities, the property owner shall coordinate with public entity and the Reclamation District supervisor to develop the Channel Maintenance Program. The property owner shall submit two copies of the programmatic documentation, describing the proposed Channel Maintenance Program, to the CPM (for review and approval). The property owner shall provide written notification from the Reclamation District that they plan to adopt and implement the measures identified in the approved Channel Maintenance Program. The project owner shall:

1. In coordination with the public entity and the Reclamation District staff, develop and supervise the implementation of a Channel Maintenance Program in accordance with conditions of certification;

2. Ensure the BSEP Construction and Operation Managers receive training on the Channel Maintenance Program and coordinate with the Reclamation District staff;

3. Coordinate with the Reclamation District staff to develop Maintenance Guidelines; and

4. As part of the BSEP Annual Compliance Report to the CPM, submit a Channel Maintenance Program Annual Report specifying which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed).

SOIL&WATER-9: The project owner shall submit two (2) copies of the 60-percent and 90-percent design drawings for the diversion channel to Kern county and the CPM for review and comment. The project owner shall prepare a set of design specifications to supplement the 90-percent design drawings. Plans, specifications, computations and other data shall be prepared by persons properly authorized by the State of California. If the 60-percent plans or 90-percent plans and specifications do not comply with the appropriate Conditions of Certification, the necessary changes or revisions to the plans shall be made by the project owner. If the CPM finds that the work described in the plans and specifications conform to the Conditions of Certifications in the Energy Commission Decision and other pertinent LORS, then the project owner shall submit two (2) copies of the 100-percent set for CPM approval. All design drawings must be submitted on bound or stapled 24” x 36” size paper.

Verification: The project owner shall submit two (2) copies of the 60-percent and 90-percent (with specifications) design drawings to the CPM for review and comment. The design drawings shall be submitted as required in the verification for Condition of Certification **SOIL&WATER-6**. No later than 30 days after publication of the Energy Commission Decision, the 60-percent set of design drawings shall be submitted to the CPM for review and comment in consultation with CDFG and Kern County. The project owner shall submit the 90-percent design drawings to the CPM after the person who originally drew the plan or their duly authorized agent addresses the CPM’s 60-percent submittal comments and required changes directed by FEMA during the CLOMR review. The 100-percent design drawings and specifications (construction documents), shall be signed and sealed by a Registered Professional Engineer in the State of California, are to be submitted as the final, approved set of construction documents prior to site mobilization.

SOIL&WATER-10: The project owner shall comply with the Kern County Division Four Standards for Drainage to estimate an appropriate imperviousness value to apply to onsite storm water runoff and retention basin analyses. Retention basin sizing shall take into account the effects of dust suppressants on infiltration. The applicant shall assess all offsite drainage areas tributary to the site in the hydrologic study. Runoff from tributaries mapped as a water of the state shall not be piped.

Verification: The project owner shall do the following:

1. Estimate an appropriate imperviousness for the BSEP developed conditions site. Include a description of the methods used to calculate imperviousness in the DESCP.

2. Prepare a hydrologic study to estimate the peak flood flows to the BSEP site for two offsite watersheds that drain toward the BSEP: A) the 8.0 square-mile drainage area east of the Barren Ridge watershed and B) the 1.5 square-mile area draining the Chuckwalla Mountains. Submit the hydrologic analysis results to the CPM as part of the DESCP, required as part of Condition of Certification SOIL&WATER-5.

3. Provide the open channel design across the solar field for undetained runoff originating from the offsite tributary west of BSEP. Provide the CPM with evidence that a maintenance easement is established for the channel.

SOIL&WATER-11: Deleted. See SOIL&WATER-6, part E.

SOIL&WATER-12: The project owner shall comply with the Kern County Standards for Drainage, Chapter IV and provide engineering analyses and design details for the transition where the diversion channel intercepts the natural channel. The project owner shall provide engineering analyses showing that the shallow flooding along uncertain paths from the south will not cause diversion channel bank failure from lateral overtopping. The project owner shall submit a proposed- conditions grading plan as evidence to show the diversion channel will capture shallow flooding along the left bank (looking downstream) of the natural wash.

Verification: The project owner shall complete the engineering analyses, design, and grading for the transition from the natural channel to the proposed diversion channel to intercept the design discharge along the southern property boundary. The engineered design for this transition shall be provided to the CPM for review and approval at the same time the 30 percent design drawings are submitted to the CPM as required in Condition of Certification **SOIL&WATER-6**. The project owner shall also provide final design details for the transition in the 60 percent and 90 percent design drawings to the CPM for approval as required in Condition of Certification **SOIL&WATER-9**.

SOIL&WATER-13: The project owner shall complete the hydraulic analyses and final basis of design for the diversion channel, upstream- and downstream- transitions, bank protection, levees (if applicable), and grade control structures using hydraulic criteria for flood velocity, depth, Froude Number, and shear stress appropriate for the anticipated channel stability thresholds. These thresholds are based on the Kern County Division Four Standards for Drainage, Chapter X, where applicable. The value of the Froude Number between grade control structures shall be less than 0.8. Channel design elements not in compliance with Kern County Division Four standards will require a written variance from the County. All grade control structure stilling basins shall be designed with weep drains to prevent perched groundwater conditions and promote groundwater recharge. The project owner shall also be responsible for a geotechnical investigation to test the soils as necessary for final design of the grade control structures and bank stabilization measures if required by FEMA or Kern County Standards. The results of the hydraulic analyses and applicable geotechnical investigations, if any, shall be presented in the basis of design report submitted with the FEMA application (Condition of Certification **SOIL&WATER-6)**.

Verification: The results of the hydraulic analysis and applicable geotechnical investigations, if any, shall be presented in the basis of design report submitted with the CLOMR application. All design variances approved by Kern County shall be provided to the CPM.

SOIL&WATER-14: The project owner shall design the diversion channel to avoid soil cement lining on the bed of the channel between grade control structures to address resource agency comments. The project owner shall install bank toe protection along the entire length of the diversion channel to protect the banks from under-cutting, channel migration, and local erosion.

Verification: The project owner shall provide channel design drawings to the CPM for review and approval. The channel design drawings shall show the cross section detail for the bank toe protection measures, the longitudinal extent of the bank treatment with linear dimensions, and the area of the exposed diversion channel bed between each grade control structure. The design drawings shall be submitted as part of the design submittals identified in Condition of Certification **SOIL&WATER-9.**

SOIL&WATER-15: The project owner shall prepare a final sediment transport analysis to verify the final channel slope for the diversion channel that provides a slightly aggredational system that is predicted to result in a braided low flow channel.

Verification: The results of the sediment transport analysis shall be in the basis of design report submitted with the FEMA application as required in Condition of Certification **SOIL&WATER-13.**

SOIL&WATER-16: The project owner, in accordance with Kern County Division Four Standards for Drainage, Chapter IV, shall provide engineering analyses or evidence showing that the diversion channel structural design elements will provide protection from hazards associated with the possible relocation of the Pine Tree Creek wash upstream of BSEP project boundaries.

Verification: The project owner shall provide engineering analyses or evidence to the CPM showing that the BSEP flood control facilities will provide protection from hazards associated with the relocation of Pine Tree Creek upstream from the site.

SOIL & WATER 17 deleted see BIO-18

SOIL&WATER-18: The project owner shall provide the CPM two copies of the executed Recycled Water Purchase Agreement (agreement) with the recycled waste water purveyor for the long-term supply (30 – 35 years) of disinfected tertiary recycled water to the BSEP. The project shall not operate without a long term agreement for recycled water delivery and connection to a recycled water pipeline for project use. The agreement shall specify a delivery rate to meet BSEP's maximum operation requirements and all terms and costs for the delivery and use of recycled water at the BSEP. The BSEP shall not connect to the new recycled water pipeline without the final agreement in place and submitted to the CPM. The project owner shall comply with the requirements of Title 22 and Title 17 of the California Code of Regulations and section 13523 of the California Water Code.

Verification: No later than 60 days prior to the connection to the recycled water pipeline, the project owner shall submit two copies of the executed agreement for the supply and on-site use of disinfected tertiary recycled water at the BSEP. The agreement shall specify that the recycled waste water purveyor can deliver recycled water at a minimum rate of 900-gpm and will provide the BSEP a minimum of 1,424 AFY.

The project owner shall submit to the CPM a signed agreement between the applicant and the recycled waste water purveyor for the long-term supply of disinfected tertiary recycled water from the recycled wastewater purveyors treatment plant to the BSEP for industrial and landscape irrigation purposes.

The project owner shall submit to the CPM a copy of the Producer/User Water Recycling Requirements, the recycled wastewater criteria, the Engineering Report, and the Cross Connection Inspection and Approval report prior to the connection to the disinfected tertiary recycled wastewater pipeline.

SOIL&WATER-19: Prior to the use of groundwater or recycled wastewater for operation of the BSEP, the project owner shall install and maintain metering devices as part of the water supply and distribution system to monitor and record in gallons per day the volume of water supplied to the BSEP. The metering devices shall be operational for the life of the project. An annual summary of daily water use by the BSEP, differentiating between potable and recycled wastewater, shall be submitted to the CPM in the annual compliance report.

Verification: At least 60 days prior to use of any water source for BSEP operation, the project owner shall submit to the CPM evidence that metering devices have been installed and are operational on the water pipelines serving the project. The project owner shall provide a report on the servicing, testing, and calibration of the metering devices in the annual compliance report.

The project owner shall submit a water use summary report to the CPM in the annual compliance report for the life of the project. The annual summary report shall be based on volume of water used and shall distinguish recorded daily use of potable and recycled water. Included in the annual summary of water use, the project owner shall submit copies of meter records from the potable water and recycled water supplies documenting the volume of water supplied over the previous year. The report shall include calculated monthly range, monthly average, and annual use by the project in both gallons per day and acre-feet. After the first year and for subsequent years, this information shall also include the yearly range and yearly average potable and recycled water used by the project.

ATTACHMENT C

ERRATA TO THE PRESIDING MEMBER'S PROPOSED DECISION
FINAL CONDITIONS OF CERTIFICATION
SOIL AND WATER - APPENDIX I
GROUNDWATER MITIGATION PLAN

Groundwater Monitoring

This groundwater monitoring program was provided in Attachment 5 of the Project Design Refinements (DB2009r) submitted to the CEC by the applicant in June 2009. As proposed by the applicant, the following describes the groundwater mitigation plan to be incorporated if the use of site groundwater is approved by CEC for power plant operation.

Proposed Groundwater Monitoring Program

To provide for land owner protection and participation in evaluation of project impacts, a Fremont Valley Groundwater Monitoring Committee will be formed. The committee will include a representative from the following:

- California City
- Community of Cantil
- Rancho Seco
- Honda
- Beacon Solar LLC

The monitoring committee's function will be to implement and oversee the groundwater monitoring program and to verify that there are no unacceptable impacts to groundwater levels or quality in water supply wells adjacent to the BSEP.

<u>Gather Historic Water Level and Water Quality Data</u>

- Initially identify representative water supply wells in the potentially impacted area predicted by the groundwater model, and secure access to those wells to allow monitoring of groundwater levels and water quality. Wells shall be identified by comparison to the "No" Project and Project pumping simulations. The potentially impacted area shall be defined as the area model results project a water level change of 5 feet or more at the end of construction and after the first five years of operation. Wells identified in the potentially impacted area will be included in the monitoring network. Additional wells located outside the potentially impacted area ("background" wells) shall also be included in the monitoring network to discern between background trends and changes caused by Project pumping. A minimum of three wells representing background conditions shall be selected from outside the area indicated by the groundwater-flow model as having a water level change of 1 foot or less at the end of construction and after the first five years of operation.

- Through the access agreement, obtain all historic water level and water quality data for each water supply well identified by the model. Additionally, obtain well completion information, historic well performance data, including pumping and non-pumping water levels and pump specifications for each well to be monitored.

- Update the application for certification (AFC) water level and geochemical and water level database with all new information.

- Prepare time series graphs (i.e., trend plots) for water level and total dissolved solids (TDS) data, as information is available for each well.

- Perform statistical trend analysis using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data. The Mann-Kendall Trend Test and the Sen's Slope Estimator are proposed to statistically analyze the data because they are the accepted non-parametric trend analysis methods for data that are not normally distributed. Use trend analysis to determine the significance of an apparent trend and to estimate the magnitude of that trend. Further, use adjacent well data to evaluate local affects from pumping in water level trends.

<u>Establish Pre-Project Baseline Water Quality and Water Level Database</u>

- To the extent possible, prior to project construction collect groundwater levels from the off-site and on-site wells to evaluate groundwater levels in the area of wells that could be impacted by project pumping as indicated by the model. Additionally, collect groundwater samples to provide baseline TDS data for both on-site and off-site wells. Analyze TDS samples using Standard Methods 2540C by a California Certified Analytical Laboratory.

- Map TDS data and groundwater levels within the Koehn Sub-basin from the groundwater data collected prior to construction. Update trend plots and statistical analyses, as data is available.

<u>Groundwater Monitoring During Construction</u>

- During construction, collect water levels on a quarterly basis for a period of one year or on a quarterly basis through the construction period, and collect TDS data at the end of the construction period and prior to site operations.

<u>Groundwater Monitoring During Operation</u>

- On a quarterly basis for the first five years, collect water level measurements from the wells and collect TDS data to evaluate operational influence from the project. Additionally, monitor quarterly operational parameters (i.e., pumping rate) of the water supply wells.

- After a period of five years, on a well-by-well basis, evaluate the data and determine if the sampling frequency and TDS sampling should be revised or eliminated.

- Subsequently, evaluate the data set every five years and determine if the sampling frequency and TDS sampling should be revised or eliminated.

Proposed Mitigation Options

Water Level Offset Mitigation Options

Based on the results of the statistical trend analyses, determine if the project pumping has induced a drawdown in the water supply at a level of ten feet or more below the baseline trend. If water levels have been lowered below pre-site operational trends, then implement any of the following options, as appropriate and considering the cost effectiveness of each option.

- Electrical cost reimbursement – If the pumping water level falls below a depth of 5 feet from an average of the baseline measurements, the well owner will be compensated for the additional electrical costs commensurate with the additional lift required to pump. The water level in the well will be assessed relative to the pumping rate during pre-site operational period.

- Pump lowering – In the event that groundwater is lowered and existing pumps are day lighted, pumps can be lowered to maintain production in the well.

- Deepening of wells – If the groundwater is lowered enough that there is insufficient water in the well and pump lowering is not an option, then wells can be deepened.

Groundwater Storage Mitigation Options

Maximum expected groundwater usage during BSEP operation is estimated to be no more than 153 acre feet per year (AFY) (excluding annual emergency allotment of 47 acre-feet). Initially, the applicant proposed to use 1,388 AFY of groundwater for power plant operation and provided options to offset that water consumption which included implementation of a partial ZLD and tamarisk removal program, which are described in the Project Design Refinements (DB 2009r).

The applicant now proposes to use recycled waste water for power plant cooling. The recycled wastewater will be provided by either Rosamond Community Services District or California City. Both option will provide approximately 1,400 AFY of recycled wastewater.

If the California City option is selected, existing residential on-site septic systems would be connected to the City sewer system. This connection to the City sewer system would reduce recharge to the City aquifer. The reduction in groundwater recharge would result from diversion of septic system recharge due to diversion of septic system discharge that would otherwise percolate into the groundwater basin. Model results show that a reduction in recharge to the CA City area influences water levels beneath the City.]

To minimize the potential impact of reduced recharge to the California City aquifer, ,the project owners shall provide funding to California City or BLM for the implementation of a tamarisk removal program to address infestation within and or upgradient of the City in the initial amount of $100,000 at the start of construction and $10,000 on the commercial operation date (COD) and for a period of 4 years thereafter on the anniversary of the COD.

The project owner shall provide to the CPM appropriate documentation (notes, diagrams, photographs and other records) on a quarterly basis that clearly demonstrates the results of the Tamarisk Removal Program. This documentation shall provide the mapped location, pre and post eradication photographs, a description of the aerial extent of salt cedar removed and an accounting of the funds spent.

ATTACHMENT D

ERRATA TO THE PRESIDING MEMBER'S PROPOSED DECISION
FINAL CONDITIONS OF CERTIFICATION
SOIL AND WATER - APPENDIX J

GUIDANCE FOR BSEP RECLAMATION DISTRICT'S CHANNEL MAINTENANCE PROGRAM DEVELOPMENT

Channel Maintenance Program

Purpose and Objectives

This Appendix describes the purpose, objectives and applicability of Staff's requirements for the BSEP Reclamation District's Channel Maintenance Program (Program). Staff is requiring as part of Condition of Certification **SOIL&WATER-8** that the Channel Maintenance Program provide long-term guidance to the applicant to implement routine channel maintenance projects and comply with BSEP's related biological (**BIO-18**) and flood protection (**SOIL&WATER -5 and -6**) Conditions of Certification in a feasible and environmentally-sensitive manner. The main goals of the Program would be to maintain the diversion channel to meet its original design to provide flood protection, maintain native plant communities, provide wildlife habitat and a wildlife movement corridor, and maintain groundwater recharge. In this appendix, staff provides a summary of related programmatic documentation required for implementation of the Channel Maintenance Program.

The Channel Maintenance Program would be used by the applicant and the CPM to ensure that routine channel maintenance practices would be conducted in an efficient, consistent, and environmentally-sensitive manner. Staff's objectives for the Channel Maintenance Program are as follows:

1. Develop standardized practices and protocols for routine sediment removal, vegetation management, channel maintenance, and structural repair.

2. Ensure routine channel maintenance activities reflect the Energy Commission's Conditions of Certification for BSEP.

3. Avoid or minimize adverse environmental impacts and encourage preservation and restoration of the diversion channel and its revegetated areas.

Applicability and Use of the Channel Maintenance Program

The Channel Maintenance Program applies to routine channel maintenance activities, including three major types of activities: sediment removal, vegetation management, and bank protection and grade control maintenance/repairs. These activities would be undertaken to ensure flood conveyance capacity is maintained in the channel. Additional minor maintenance activities would also be included in routine channel maintenance.

The channel maintenance work area addressed by this Channel Maintenance Program would include the BSEP engineered channel, typically extending to the top of bank, include access roads, and any adjacent property that BSEP or the District owns or holds an easement for access and maintenance. The Program

would include Pine Tree Creek diversion channel maintenance as needed to protect the BSEP facilities. The District would not provide maintenance on private property, unless requested, or an easement was provided.

The Channel Maintenance Program would be a process and policy document prepared by BSEP, reviewed and approved by the CPM through consultation with CDFG and Kern County, and adopted by the District. Once adopted, the Channel Maintenance Program would be used by the applicant to guide the implementation of routine channel maintenance activities and projects. The Channel Maintenance Program would outline specific measures, protocols, policies, and inspection and reporting requirements to ensure that routine channel maintenance projects would be implemented in an efficient and environmentally-sensitive manner. This Channel Maintenance Program would be a living program that would change as improvements and modifications are made to reflect the best available knowledge, technology, and practices.

The Channel Maintenance Program is intended to establish an ongoing program for the life of the channel. Projections of future channel maintenance activities for the Channel Maintenance Program cannot represent the exact extent of work that would occur. Actual channel maintenance activities would vary from year to year. The Channel Maintenance Program would be reviewed annually by the CPM in the Annual Compliance Report as required in Condition of Certification **SOIL&WATER-8**. The overall program would be reviewed in ten years as part of the **BIO-18** revegetation milestone. Condition of Certification **BIO-18** specifies that within 10 years the applicant shall establish at least 15 percent of the 41.5-acre channel bottom, or 6.2 acres, with native desert shrub plant community, and that non-native weeds constitute less than 2 percent cover of the vegetated channel.

Channel Maintenance Activities

The following provides an overview and brief discussion of the major activities to be addressed by the Channel Maintenance Program. In addition, the Channel Maintenance Program applies to more minor, routine activities such as fence repair, trash removal, or other blockage clearing.

Sediment Removal

In most cases, sediment deposition is a natural process that occurs where the channel gradient flattens out or where the gradient is otherwise flat over long reaches. Some sediment is desirable in the engineered channel to support biological functions such as vegetation colonization. Unfortunately, sediment can build up to a point where it begins to compromise the design. Sediment removal is the act of mechanically removing sediment that has been deposited in the channel. Typically, sediment is removed when it: (1) reduces flood capacity, (2) prevents appurtenant hydraulic structures from functioning as intended, and (3) becomes a permanent, non-erodible barrier to instream flows. Staff recommends that sediment removal projects be implemented in the dry season. The applicant would be required to implement BMPs to ensure that sediment removal projects have the least impact possible to native plant communities and wildlife habitat.

The method of sediment removal is dependent on the channel type (earth bottom, soil concrete bed, or stilling basin), equipment, soil characteristics, and maintenance access location. The average annual quantity of sediment to be removed would vary from year to year depending on rainfall conditions and sediment delivery from the watershed. During some or most years, no sediment would need to be removed. Aeolian processes may also cause a significant volume of sediment to accumulate from wind

blown sand collecting in the low lying channel. Staff anticipates that the location of sediment removal within the channel would vary each year. The applicant and the District would develop Maintenance Guidelines (discussed below) to determine when and where sediment removal is required.

Vegetation Management

The applicant would manage vegetation in and adjacent to the diversion channel to maintain the biological functions and values described in **BIO-18**. Vegetation is not expected to adversely affect the ability of the channel to contain the design discharge owing to the relatively sparse nature of arid zone vegetation typically found in ephemeral channels. The applicant's vegetation management would include control of invasive or nonnative vegetation as described in **BIO-18**. Vegetation management can be accomplished through hand clearing or herbicide applications. A method or combination of methods could be chosen for each area depending on the maintenance needs. Staff recommends that the applicant only use herbicides according to the label directions and for uses approved by the United States Environmental Protection Agency (USEPA) and the California Department of Pesticide Regulation (DPR).

The applicant would also plant and maintain revegetation for the BSEP instream mitigation. In the first few years after initial planting, the applicant would provide weed control at mitigation areas to increase the number of native shrubs and establish a self-sustaining plant community which provides wildlife habitat as required in Condition of Certification **BIO-18**. The applicant would manage vegetation for other purposes including the protection of soil cement linings from plant roots, levees (if applicable), and maintaining access roads.

The frequency of vegetation management activities and inspections shall be as described in **BIO-18**.

Bank Protection and Grade Control Repairs

Channel erosion is a natural process, which mostly happens during major storm events. Erosion can occur because of hydraulic forces and geotechnical instabilities. Bank protection and grade control structure repairs involve any action by the applicant to repair eroded banks, incised toes, scoured channel beds, as well as preventative erosion protection. The applicant would implement instream repairs when the problem (1) causes or could cause significant damage to BSEP, adjacent property, or the structural elements of the diversion channel, (2) is a public safety concern, (3) negatively affects groundwater recharge, or (4) negatively affects the native plant communities and wildlife habitat within the channel, or poses an entrapment hazard to desert tortoise and other wildlife.

Erosion of banks can result in increased sediment deposition, which can lead to decreased flood flow capacities and potential flood hazards. A major failure to the soil cement bank cover or grade control structure would cause severe erosion, may cause property damage, and would create a safety hazard and threat to wildlife. Repair of soil cement bank protection and grade control structures shall occur when these structures show substantial erosion and/or fail and would be replaced with in-kind, in-place materials within the same footprint. Obstructions at grade control structures would be removed to maintain functions of such structures and access for desert tortoise and other wildlife.

Banks and grade control structures would be inspected after all major storms for damage and maintenance needs. The applicant would make an inspection of the channel upstream and downstream of an erosion site to determine if there is an identifiable cause of the erosion. Design of a particular facilities repair may require evaluation of other site-specific characteristics such as bank slope, shear

stress, soil type, flow velocity and depth, Froude number, or the active channel's geomorphic characteristics.

Routine Channel Maintenance

Routine channel maintenance activities included in this Channel Maintenance Program would be: trash removal and associated debris to maintain channel design capacity; repair and installation of fences, gates and signs; grading and other repairs to restore the original contour of access roads and levees (if applicable); and removal of flow obstructions at BSEP storm drain (flap gate) outfalls.

Routine maintenance occurs on a year-round basis. Typically, routine maintenance that requires the operation of heavy equipment in the channel would be limited to the dry conditions.

Channel Maintenance Program - Exclusions

Routine channel maintenance would not include emergency repair. A situation is considered an "emergency" if it is a sudden, unexpected occurrence involving a clear and imminent danger that demands immediate action to prevent or mitigate loss of or damage to life, health, property, or essential public services (Public Resource Code Section 21060.3).

Large construction projects or Capital Improvement Projects (CIP) would not be considered routine channel maintenance and would not be addressed through the Channel Maintenance Program. Staff recommends that the applicant coordinate with Kern County and the CPM to develop a long-term plan that deals with CIP for the diversion channel.

Related Programmatic Documentation

Because this Channel Maintenance Program would be designed to guide the implementation of routine channel maintenance projects and activities over the long-term, it shall address channel maintenance at a general or "programmatic" level. As such, staff's Condition of Certification **SOIL&WATER-8** provides guidelines and implementation measures that characterize how channel maintenance would be conducted by the District.

The applicant would be required to comply with the Requirements of Waste Discharge provided in **Soil and Water Appendices E, F, G & H** as discussed in Condition of Certification **Soil&Water-4.** The applicant would also be required to meet CDFG requirements for channel maintenance activities and provide CDFG with a copy of the Channel Maintenance Program for review and comment. Because the diversion channel would be mapped as a SFHA, the applicant would be required to comply with NFIP regulations. The CPM would review all agency permits for routine channel maintenance activities and approve the Channel Maintenance Program.

Channel Maintenance Process Overview

This section describes Staff's recommendation for three distinct phases of the Channel Maintenance Program: program development and documentation, implementation of annual routine channel maintenance activities, and annual compliance reporting.

Program Development and Documentation

This Channel Maintenance Program would be developed to guide the long-term implementation of the District's annual routine channel maintenance work. The Channel Maintenance Program would enable the applicant to participate in a watershed-wide approach to environmental protection. Through these programmatic documents, the applicant would be committed to implementing individual maintenance projects in an environmentally-sensitive manner.

Maintenance Guidelines

Staff's Maintenance Guidelines are based on two concepts: (1) the maintenance standard and (2) the acceptable maintenance condition. The maintenance standard is defined as the design facility condition, where the engineered channel has full design capacity and freeboard. The acceptable maintenance condition is the condition to which a channel can be allowed to deteriorate before capacity is determined to be compromised and maintenance work becomes essential. The focus of BSEP's hydraulic and sediment transport analyses were related to the study of these two concepts. These analyses were prepared to investigate the *annual* accumulation of sediment and forecast the threshold of an acceptable maintenance condition. Further study is needed to understand annual sediment contribution, accumulation and capacity constraints.

The Maintenance Guidelines may also apply to other activities such as vegetation management, trash and debris collection, blockage removal, fence repairs, and access road maintenance. Vegetation in the desert channel environment does affect the channel's roughness, but increases in channel roughness would be slight because of the sparse vegetation and it is not expected to have an impact on the channel's flood capacity. By conducting these routine maintenance activities, the applicant would ensure that facilities continue to provide the level of flood protection for which they were constructed. These efforts protect channel function and help to comply with NFIP regulations and Kern County's Floodplain Management Ordinance.

Implementation

Maintenance work would be proposed either as part of a Channel Maintenance Work Plan or as other work identified later in the year through inspection. Staff recommends specific Maintenance Guidelines be developed to ensure that the maintenance meets pre-established conditions of certification and engineering requirements. Staff recommends that field reconnaissance, inspection or survey be implemented to monitor the channel's maintenance condition and compare to specific Maintenance Guidelines. Maintenance Guidelines for BSEP's vegetation management activities are established in Condition of Certification **BIO-18**.

BSEP's Maintenance Guidelines for sediment removal would provide information on the allowable depth of sediment for the engineered channel that would continue to provide design discharge protection. Sediment should be allowed to store in the channel as minor aggradation which is part of the sediment transport and geomorphic function of the channel. Staff believe that sediment storage in the basin of the grade control structures provide an excellent source of sediment for long-term transport through the engineered channel. Staff recommends that the channel sediment be allowed to accumulate, on average, up to the sill elevation plus the depth of the active channel. Staff estimates that the depth of the active or bank full channel is roughly 1.5 to 2.5 feet, but further study is recommended. BSEP's engineer should verify that this sediment storage threshold, several feet above the sill elevation, would not affect the grade

control structures ability to perform under the design discharge. Staff also recommends that BSEP verify that the channel would maintain capacity for the design discharge as part of compliance with Conditions of Certification **SOIL&WATER- 6(E), 7,** and **-15**.

Reporting

To assess the overall progress of the mitigation program and determine the accuracy of the impact projections, annual reports would be made to the CPM for review as part of the BSEP's Annual Compliance Report. The Channel Maintenance Program Annual Report would specify which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed). Staff requires that the applicant provide a report describing "Lessons Learned" to evaluate the effectiveness of both resource protection and maintenance methods used throughout the year. The information and assessments would be used to update BMPs, Channel Maintenance Program processes, and the Maintenance Guidelines and to create a greater understanding of how to accomplish environmentally-sensitive maintenance work. The report should also include a section describing any planned "major" maintenance activities and the extent of work to be accomplished.

In addition to reporting on the maintenance activity completed for the year, the applicant would also provide reporting on the implementation of the mitigation program. For the first 10 years of the program, the applicant would provide photographs of the diversion channel and meet the verification requirements of Condition of Certification **BIO-18**.

Resource Protection Policies

Staff recommends the Channel Maintenance Program establish policies to ensure that resources would be protected to the furthest extent feasible during routine channel maintenance activities and are consistent with state and federal laws protecting special status species. The Channel Maintenance Program policies would be developed to guide decision-making for channel maintenance activities. The applicant would develop these policies through the routine channel maintenance planning process. BMPs would be developed to implement these policies. All routine channel maintenance activities would adhere to the policies contained in the program. Staff recommends that the applicant implement the following policies:

Policy 1*: The applicant will conduct all routine channel maintenance activities according to the process and protocols established in the Channel Maintenance Program.*

Policy 2*: Decisions regarding the necessity of routine sediment removal (to restore design discharge capacities) and vegetation management activities will be made by the applicant using the thresholds established in the Maintenance Guidelines. This information will be used to formulate in part an annual routine maintenance work plan.*

Policy 3*: The District will continue to develop, implement, and update BMPs for implementation of channel maintenance projects to ensure that maintenance activities are conducted in the most effective and environmentally-sensitive way possible and are technically feasible and economically reasonable.*

Policy 4*: The applicant will use the Channel Maintenance Program to manage its routine channel maintenance activities in a programmatic way.*

Policy 5*: The applicant will implement measures to avoid and minimize impacts to native species, especially special-status and riparian-dependent species. All management actions taken shall be consistent with state and federal laws protecting special status species (California Endangered Species Act of 1984, Fish and Game Code, sections 2050 through 2098; Federal Endangered Species Act (Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.)*

Policy 6*: Control and removal of native vegetation will be minimized to the extent practicable. Where appropriate, measures will be taken to leave the work site in a vegetated condition after routine channel maintenance activities are completed.*

Policy 7*: The applicant's use of herbicides will be consistent with environmental goals, including protection, preservation, and restoration. Herbicides will be used such that negative effects to the environment are avoided or minimized.*

Policy 8*: The applicant will implement measures to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means when removing sediments from the channel.*

Policy 9*: The temporary stockpiling, transportation, and disposal of removed sediments from channel maintenance projects shall be implemented, avoiding or minimizing impacts to the surrounding natural environment.*

Policy 10*: Channel maintenance projects shall be implemented, avoiding or minimizing the potential for short-term noise nuisances and short-term air quality impacts to the surrounding community.*

Policy 11*: Measures shall be implemented at the work site to ensure that the potential for significant impacts to previously undiscovered cultural resources are reduced to less-than-significant levels.*

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT	DOCKET NO. 08-AFC-2 **PROOF OF SERVICE** (Revised 2/8/10)

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Declaration of Service

I, Lois Navarrot, declare that on July 26, 2010, I served and filed copies of the attached **Letter from Applicant and Staff – Request for Errata to PMPD.** The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: www.energy.ca.gov/sitingcases/beacon. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service List) and to the Commission's Docket Unit, in the following manner:

(check all that apply)

For Service to All Other Parties

__X__ sent electronically to all email addresses on the Proof of Service list;

__X__ by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service List above to those addresses **NOT** marked "email preferred."

AND

For Filing with the Energy Commission

__X__ sending an original paper copy and one electronic copy, mailed and e-mailed respectively, to the address below **(preferred method)**;

OR

_____ depositing in the mail an original and 12 paper copies as follow:

California Energy Commission
Attn: Docket No. 08-AFC-2
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

_____/s/_____
Lois Navarrot

CALIFORNIA
ENERGY COMMISSION

1516 Ninth Street
Sacramento, CA 95814

http://www.energy.ca.gov/sitingcases/beacon/index.html

KAREN DOUGLAS
Chair
Presiding Committee Member

JEFFREY BRYON
Commissioner
Associate Committee Member

KENNETH CELLI
Hearing Officer

DISCLAIMER

This report was prepared by the California Energy Commission Beacon Solar Energy Project AFC Committee as part of Beacon Solar Energy Project, Docket No. 08-AFC-2. The views and recommendations contained in this document are not official policy of the Energy Commission until the report is adopted at an Energy Commission Business Meeting.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

The Committee hereby submits its Presiding Member's Proposed Decision for the ***Beacon Solar Energy Project*** (Docket Number 08-AFC-2). We have prepared this document pursuant to the requirements set forth in the Commission's regulations. (20 Cal. Code of Regs., §§ 1749-1752.5.)

The Committee recommends that the Application for Certification be approved, subject to the Conditions of Certification set forth herein, and that the Energy Commission grant the Project Owner a license to construct and operate the Project.

Dated July 20, 2010, at Sacramento, California.

KAREN DOUGLAS
Chair and Presiding Committee Member
Beacon Solar Energy Project AFC Committee

JEFFREY D. BYRON
Commissioner and Associate Committee Member
Beacon Solar Energy Project AFC Committee

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INTRODUCTION

A. SUMMARY OF THE DECISION

This Decision contains the Commission's rationale in determining that the proposed Beacon Solar Energy Project (BSEP) will, as mitigated, have no significant impacts on the environment and complies with all applicable laws, ordinances, regulations, and standards (LORS). The project may therefore be licensed. Our Decision is based exclusively upon the record established during this certification proceeding and summarized in this document. We have independently evaluated the evidence, provided references to the record[1] supporting our findings and conclusions, and specified the measures required to ensure that the BSEP is designed, constructed, and operated in the manner necessary to protect public health and safety, promote the general welfare, and preserve environmental quality.

On March 14, 2008, the California Energy Commission received an Application for Certification (AFC) from Beacon Solar, LLC (Beacon Solar), a subsidiary of FPL Energy, LLC. The project would use established parabolic trough solar thermal technology to produce electrical power using a steam turbine generator fed from a solar steam generator. The solar steam generator receives heated heat transfer fluid from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun. The project would have a nominal electrical output of 250 megawatts (MW) The Energy Commission has exclusive jurisdiction to license this project and is considering the proposal under a review process established by Public Resources Code section 25540.6. The Energy Commission began review of the BSEP on May 7, 2008.

The proposed BSEP is a 2,012-acre site in eastern Kern County near the City of California City, California at the western edge of the Mojave Desert. The project site is located along the California State Route (SR)-14 corridor, approximately four miles north-northwest of the northern boundary of California City, approximately 15 miles north of the Town of Mojave, approximately 17 miles north of Edwards Air Force Base, and approximately 24 miles northeast of the City of Tehachapi. Koehn Lake (usually dry) is located approximately five miles

[1] The Reporter's Transcript of the evidentiary hearings is cited as "date of hearing RT page __." For example: 3/22/09 RT 77. The exhibits included in the evidentiary record are cited as "Ex. number." A list of all exhibits is contained in **Appendix B** of this Decision.

to the east-northeast, and Red Rock Canyon State Park is located approximately four miles to the north.

The solar field will encompass approximately 1,244 acres and will utilize solar trough technology. The collector field is made up of a large field of single-axis-tracking parabolic trough solar collectors. The solar field is modular in nature and comprises many parallel rows of solar collectors, aligned on a north-south axis. Each solar collector has a linear parabolic-shaped reflector that focuses the sun's direct normal radiation on a linear receiver known as a heat collection element (HCE) located at the focus of the parabola. The collectors track the sun from east to west during the diurnal cycle to ensure that the sun is continuously focused on the linear receiver. The heat transfer fluid (HTF) is heated up to approximately 740 °F as it circulates through the HCEs and returns to a series of heat exchangers where the fluid is used to generate high-pressure steam in the Solar Steam Generator at the power block, which provides steam to the Project's single Steam Turbine Generator.

Water for cooling will be tertiary treated recycled water supplied either by California City or Rosamond Community Sanitary District. Water for other industrial uses such as mirror washing, would be supplied from onsite groundwater wells, which also would be used to supply water for employee use (e.g., drinking, showers, sinks, and toilets). A package water treatment system would be used to treat the groundwater to meet potable standards for employee use and a septic system and onsite leach field would be used to dispose of sanitary wastewater.

It is estimated that the project would use approximately 1,400-acre feet per year of recycled water and 153 acre feet per year of groundwater with another 47 acre feet per year held for emergency reserve. According to pumping test data provided in the AFC, groundwater supply wells on the plant site have sufficient capacity (at least 2,000 gallons per minute) to meet the project's water supply requirements.

The project's solar thermal technology would provide 100 percent of the power generated by the plant; no supplementary energy source (e.g., natural gas combustion to generate electricity) is proposed. The project would utilize two auxiliary boilers fueled by propane to reduce startup time and to keep the temperature of the heat transfer fluid above its relatively high freezing point (54 degrees Fahrenheit (°F)). Propane would be delivered to the site by truck.

Beacon Solar has filed an electrical interconnection request for the project with the Los Angeles Department of Water and Power (LADWP). LADWP's 230 kilovolt (kV) Barren Ridge Switching Station is located across California State Route 14 (SR-14) approximately 1.5 miles southwest of the project site. Beacon Solar will construct a new, approximately 3.5-mile 230 kV transmission line (approximately 1.6 miles within the 2,012-acre plant site boundary), that would run west from the power block across SR-14 and south across private property to the Barren Ridge Switching Station.

Construction will take an estimated 25 months to complete. The project's life is estimated to be 30 years.

If approved, Beacon Solar Construction will result in the influx of temporary workers to the area during the two-year construction period. The peak number of temporary workers needed for the project is 836 and the average number of workers per day, 477. Once operational, the plant will employ approximately 66 workers. (Ex. 500, p. 4.8-6.)

Applicant estimates capital costs associated with the project to be approximately $530 million. (Ex. 200, p. 4.8-11.)

B. SITE CERTIFICATION PROCESS

The BSEP and its related facilities are subject to Energy Commission licensing jurisdiction. (Pub. Res. Code, § 25500 et seq.). During licensing proceedings, the Commission acts as lead state agency under the California Environmental Quality Act (CEQA). (Pub. Res. Code, §§ 25519(c), 21000 et seq.) The Commission's regulatory process, including the evidentiary record and associated analyses, is functionally equivalent to the preparation of an Environmental Impact Report. (Pub. Res. Code, § 21080.5.) The process is designed to complete the review within a specified time period when the required information is submitted in a timely manner; a license issued by the Commission is in lieu of other state and local permits.

The Commission's certification process provides a thorough review and analysis of all aspects of a proposed power plant project. During this process, the Energy Commission conducts a comprehensive examination of a project's potential economic, public health and safety, reliability, engineering, and environmental ramifications.

Specifically, the Commission's process allows for and encourages public participation so that members of the public may become involved either informally or on a formal level as intervenor parties who have the opportunity to present evidence and cross-examine witnesses. Public participation is encouraged at every stage of the process.

The process begins when an Applicant submits an AFC. Commission staff reviews the data submitted as part of the AFC and makes a recommendation to the Commission on whether the AFC contains adequate information to begin the certification process. After the Commission determines an AFC contains sufficient analytic information, it appoints a Committee of two Commissioners to conduct the formal licensing process. This process includes public conferences and evidentiary hearings, where the evidentiary record is developed and becomes the basis for the Presiding Member's Proposed Decision (PMPD). The PMPD determines a project's environmental impact and conformity with applicable laws, ordinances, regulations, and standards and provides recommendations to the full Commission.

The initial portion of the certification process is weighted heavily toward assuring public awareness of the proposed Project and obtaining necessary technical information. During this time, the Commission staff sponsors public workshops at which intervenors, agency representatives, and members of the public meet with Staff and Applicant to discuss, clarify, and negotiate pertinent issues. Staff publishes its initial technical evaluation of the Project in its Preliminary Staff Assessment (PSA), which is made available for a 30-day public comment period. Staff's responses to public comment on the PSA and its complete analyses and recommendations are published in the Final Staff Assessment (FSA, also Exhibit 500).

Following this, the Committee conducts a Prehearing Conference to assess the adequacy of available information, identify issues, and determine the positions of the parties. Based on information presented at this event, the Committee issues a Hearing Order to schedule formal evidentiary hearings. At the evidentiary hearings, all formal parties, including intervenors, may present sworn testimony, which is subject to cross-examination by other parties and questioning by the Committee. Members of the public may offer oral or written comments at these hearings. Evidence submitted at the hearings provides the basis for the Committee's analysis and recommendations to the full Commission.

The Committee's analysis and recommendations appear in the PMPD, which is available for a 30-day public comment period. Depending upon the extent of revisions necessary after considering comments received during this period, the Committee may elect to publish a revised version. If so, the Revised PMPD triggers an additional public comment period. Finally, the full Commission decides whether to accept, reject, or modify the Committee's recommendations at a public hearing.

Throughout the licensing process, members of the Committee, and ultimately the Commission, serve as fact-finders and decision-makers. Other parties, including the Applicant, Commission staff, and formal intervenors, function independently with equal legal status. An "ex parte" rule prohibits parties in the case, or other persons with an interest in the case, from communicating on substantive matters with the decision-makers, their staffs, or assigned hearing officer unless these communications are made on the public record. The Office of the Public Adviser is available to assist the public in participating in all aspects of the certification proceeding.

C. PROCEDURAL HISTORY

Public Resources Code, sections 25500 et seq. and Energy Commission regulations (Cal. Code Regs., tit. 20, § 1701, et seq.) mandate a public review process and specify the occurrence of certain procedural events in which the public may participate. The key procedural events that occurred in the present case are summarized below.

On March 14, 2008, the California Energy Commission received an Application for Certification (AFC) from Beacon Solar, LLC (Beacon Solar), a subsidiary of FPL Energy, LLC, seeking approval to construct and operate a concentrated solar electric generating facility. On May 8, 2008, the Energy Commission deemed the AFC data adequate (sufficient data to proceed) and assigned a Committee of two Commissioners to conduct proceedings.

The formal parties included the Applicant, the Energy Commission staff (Staff), and Intervenor, California Unions for Reliable Energy (CURE).

On May 9, 2008, the Committee issued a Notice of "Informational Hearing and Site Visit". The Notice was mailed to local agencies and members of the community who were known to be interested in the project, including the owners of land adjacent to or in the vicinity of the BSEP. The Public Adviser's Office also

advertised the public hearing and site visit and distributed information to local officials and sensitive receptors surrounding the project site.[2]

On Wednesday, June 11, 2008, the Committee conducted a Site Visit to tour the proposed BSEP site and then convened a public Informational Hearing at the California City Council Chambers in California City, CA. At that event, the Committee, the parties, interested governmental agencies, and other public participants discussed issues related to development of the project, described the Commission's review process, and explained opportunities for public participation.

On June 18, 2008, the Committee issued an initial Scheduling Order. The Committee Schedule was based on both Applicant and Staff's proposed schedules and related discussion at the Informational Hearing.

The schedule contained a list of events that must occur in order to complete the certification process within twelve months. The initial schedule covered the period up to the Prehearing Conference. The balance of the schedule will be determined at the Prehearing Conference.

In the course of the review process, Staff conducted a public workshop on July 22, 2008, which was a publicly noticed Data Response and Issue Resolution workshop at the California City Council Chambers. The purpose of the workshop was to provide members of the community and governmental agencies opportunity to obtain project information, and to offer comments they may have had regarding any aspect of the proposed project.

On August 25, 2008, staff conducted a second publicly noticed Data Response and Issue Resolution workshop and discussed potential project-related impacts to desert tortoise, Mohave ground squirrel, and other species of special concern.

On November 6 2008, staff conducted a third publicly noticed Data Response and Issue Resolution workshop in California City to discuss mitigation plans and compensation ratios for special status species and associated habitat, among other issues.

The Preliminary Staff Assessment was issued on April 1, 2009, and on April 14, 2009, Staff conducted a fourth publicly noticed workshop at the California City

[2] Sensitive receptors are people or institutions with people that are particularly susceptible to illness, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise.

Council Chambers and to solicit and address public comments. The Final Staff Assessment was published on October 22, 2009.

On December 1, 2009, the Committee conducted a Status Conference to discuss issues in the proceedings. On Monday, January 11, 2010, Staff held a workshop to discuss staff's analysis of the proposed project's environmental impacts and the Applicant's suggested changes to some of staff's recommended Conditions of Certification in the Final Staff Assessment.

The Committee scheduled the Prehearing Conference for March 15, 2010, and Evidentiary Hearings for March 22, 2010 and June 8, 2010.

The Committee published this PMPD on July 20, 2010, and scheduled a Committee Conference in Sacramento at Commission Headquarters for August 19, 2010. At the hearing, the parties may comment on the PMPD. The 30-day comment period on the PMPD will expire on August 19, 2010. A Notice of Availability was published in the *Mojave Desert News*, a general circulation publication.

D. COMMISSION OUTREACH

Several entities within the Energy Commission provide various notices concerning power plant siting cases. Staff provides notices of staff workshops and the release of the Preliminary and Final Staff Assessments. The Hearing Office notices Committee-led events such as the informational hearing and site visit, status conferences, the prehearing conference, and evidentiary hearings. The Public Adviser's Office provides additional outreach for critical events as well as provides information to interested persons that would like to become more actively involved in a power plant siting proceeding. Further, the Media Office provides notice of events to local and regional press through press releases. The public may also subscribe to the proceeding's e-mail List Server offered on the web page for each project which gives an immediate notification of documents posted to the project web page. Through the activities of these entities, the Energy Commission has made every effort to ensure that interested persons are notified of activities in this proceeding.

E. PUBLIC COMMENT

The record contains public comments from concerned individuals and organizations. Throughout these proceedings, as reflected in the transcribed record, the Committee provided an opportunity for public comment at each Committee-sponsored conference and hearing.

I. PROJECT DESCRIPTION AND PURPOSE

On March 14, 2008, Beacon Solar LLC, a Delaware limited liability company and wholly owned subsidiary of NextEra Energy Resources, LLC submitted an Application for Certification (AFC) to the California Energy Commission to construct and operate the Beacon Solar Energy Center Project (BSEP), a nominal 250 megawatt (MW) solar thermal power plant in eastern Kern County, California. (Ex. 500, p. 3-1.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Project Location

The site for the BSEP is a 2,012-acre project site located in eastern Kern County at the western edge of the Mojave Desert, just east of the southern end of the Sierra Nevada mountain range. The site is located approximately 4 miles northwest of California City's northern boundary, approximately 15 miles north of the town of Mojave, and approximately 24 miles northeast of the City of Tehachapi. Koehn Lake is located approximately five miles to the east-northeast, and Red Rock Canyon State Park is located approximately four miles to the north. (Ex. 500, p. 3-1.)

2. Project Construction and Operation

The Applicant expects project construction to take 25 months to complete, with an average workforce of 477 employees and a peak workforce of approximately 836 workers. Development and construction is expected to cost approximately $950 million. Typical operating hours for the project will be an average of approximately 12 hours per day, equating to an annual average of 4,380 hours per year. (Ex. 500, p. 3-6.)

3. Solar Field, Power Generation Equipment and Process

The project site arrangement generally consists of a 1,266-acre, rectangular arrangement of parabolic trough solar collectors surrounding a centrally located power block. The power block facility houses the majority of electrical generation equipment and related systems, with exception of the solar field. The solar collectors will be constructed in long rows (troughs) across the project site and aligned side by side in a north-south orientation to allow the troughs to slowly rotate from east to west, tracking the movement of the sun. Adjoining the solar

field, immediately to the west, are various support facilities, including administration and storage buildings, and evaporation ponds. The site also includes Pine Tree Creek, which currently bisects the site. Pine Tree Creek is a dry desert wash that the Applicant proposes to reroute to the southern and eastern boundaries of the project site. Together, the solar field, support facilities, transmission lines, and the drainage feature consume the majority of the 2,012-acre project site. (Ex. 500, p. 3-2.)

The process for solar electric power generation will be to utilize parabolic trough solar collectors to concentrate solar energy onto heat collection elements (HCE) that contain a fluid, referred to as heat transfer fluid (HTF). After being heated in the solar troughs, the HTF is run through a heat exchanger where it heats water into steam. In the next stage, the steam is converted into electricity utilizing a Rankine-cycle reheat steam turbine electric generator, which is housed in the power block facility. After the steam is cycled through the turbine, it is processed through a cooling tower where it is condensed back to a liquid form (water) and recycled through the system again to drive the steam turbine generator. The solar heat used in the boiler (steam) process will be supplemented by two propane-fired auxiliary boilers that will provide steam to supplement plant start-up and also preheat HTF whenever its temperature drops below 76 degrees Fahrenheit (°F). The total supplemental heat derived from the propane-fired auxiliary boilers is not expected to surpass 1 percent of power generation. (Ex. 500, p. 3-3.)

The power block facility will include the main electrical building, two propane-fired auxiliary boilers, an air emission control system for the combustion of propane in the auxiliary boilers, a steam turbine generator, a cooling tower, water treatment equipment, a hazardous materials storage area, propane storage and delivery system, auxiliary equipment (emergency diesel generator, diesel fire pump, etc.), a raw water storage tank (2.9 million gallons), a treated water storage tank (2.4 million gallons), a de-mineralized water storage tank (150,000 gallons), and a neutralization water storage tank (80,000 gallons). Other support facilities include: a land farm for remediation of contaminated soils; an administration building and warehouse; three 2-acre, evaporation ponds (6 acres total); on-site access and maintenance roads (dirt road); rerouted and engineered desert dry wash; and perimeter fencing. (Ex. 500, p. 3-3.)

4. Water Demand and Source of Supply

The BSEP will consume approximately 1,400-acre feet per year of recycled water and 153 acre feet per year of groundwater with another 47 acre feet per year held for emergency reserve. There are 12 existing water supply wells that were previously used to support alfalfa farming on the project site. The Applicant proposes that three of these wells (Nos. 41, 49, and 63) be used to supply the project's non-cooling water needs. The wells draw water from a lower aquifer at a depth of approximately 600 feet below ground surface.

Tertiary treated recycled water for cooling will be conveyed by underground pipe from wastewater treatment facilities located either in Rosamond or California City. In order to accommodate BSEP's recycled water demands, both Rosamond Community Service District and California City would be required to expand their wastewater treatment facilities within their existing boundaries. In California City, this would include new sewer mains and connections to be located within the city, installation of an approximately twelve mile long recycled water pipeline from the wastewater treatment facilities to the Project, and the upgrade of the head works, aerator, clarifier, tertiary filter and replacing the chlorination equipment with UV disinfection within the existing wastewater treatment facilities. Rosamond Community Service District will convert two million gallons a day from secondary to tertiary treatment. These upgrades will include retrofits to existing equipment, and a twenty acre extension of a waste water pond, all of which would occur within the existing wastewater treatment facility. The recycled water pipeline from Rosamond is approximately 40 miles and will occur almost entirely along already disturbed and/or developed roadsides with paved and unpaved shoulders. (Ex. 346, 348, Ex. 500, p. 4.2-8, 500, pp.4.9-62-63, 507, 508, 510.)

Additional water will be required for make-up to the solar thermal and steam turbine system, washing of solar reflectors and collectors, potable water needs, and fire protection. The water is expected to be treated on site using a package water treatment system. The treatment system will be comprised of equipment for filtering, softening, de-mineralizing, and sanitizing the raw water. (Ex. 500, p. 3-3.)

5. Water Treatment Systems

The on-site water treatment process includes the post-treatment brine concentrator system, which allows the treatment process to be classified as a partial ZLD system. The discharge (blowdown) from the brine concentrator system consists of highly concentrated waste water that is directed to evaporation ponds.

The overall water treatment system will include a pre-treatment ion exchange unit to reduce scale-forming species from entering the cooling water system. The pre-treatment system will contain cation exchange vessels, a degasifier, and anion exchange vessels, along with associated piping, pumps, valves and tanks.

To further inhibit mineral scale formation, an organic phosphate inhibitor solution may be fed into the circulating water system in an amount proportional to the circulating water blowdown flow. The inhibitor solution feed equipment includes a bulk storage tank and two full-capacity metering pumps. To inhibit biofouling, sodium hypochlorite is shock-fed into the circulating water system as a biocide. The sodium hypochlorite feed equipment also includes a bulk storage tank and two full capacity metering pumps. (Ex. 500, p. 3-4.)

6. Evaporation Ponds

Three evaporation ponds will be required, each with a nominal surface area of two acres, for a total surface area of six acres. The ponds will be designed with an average depth of eight feet which allows for two feet of freeboard, three feet of wastewater and three feet of accumulated solids. The pond liner system is expected to consist of a 60 mil high density polyethylene (HDPE) primary liner and a minimum 40 mil HDPE secondary liner. Between the liners is a synthetic drainage geonet that is used as part of the leachate collection and removal system (LCRS). There will be a hard surface protective layer on top of the 60 mil HPDE, which will consist of a non-woven geotextile, one foot thick granular fill/free draining material and a one foot thick hard surface such as roller-compacted concrete. (Ex. 500, p. 3-4.)

7. Wastewater and Sludge

The BSEP will have two types of wastewater streams. The primary wastewater stream will come from cooling tower blowdown and be piped to on-site evaporation ponds where the solids will settle to the bottom and the water will evaporate. For safety and operational purposes, the ponds will be cleaned when three feet of sludge has accumulated in the base of the ponds, which is estimated to be every four and one-half years. (Ex. 500, p. 3-4.)

8. Propane Storage and Delivery System

The propane storage and delivery system will consist of an uploading station, storage tanks, vaporizing skids, and other ancillary equipment. Safety pressure relief valves, regulators, excess flow valves, and an emergency shutdown system

will be included in the storage and delivery system. Each tank will be constructed from carbon steel and have storage capacity of 18,000 gallons. (Ex. 500, p. 3-4.)

9. Air Pollution Control

Air pollution emissions from the combustion of propane in the auxiliary boilers will be controlled using the best available control technology (BACT). To ensure that the systems perform correctly, continuous emission monitoring for nitrogen oxides (NO_x), carbon monoxide (CO), and other pollutants will be performed. Annual propane usage is expected to be approximately 410,000 gallons. The **Air Quality** section of this Decision includes complete information on emission control and monitoring. (Ex. 500, p. 3-5.)

10. Hazardous Waste Management

Several methods will be used to properly manage and dispose of hazardous wastes. Waste lubricating oil will be recovered and recycled by a waste oil recycling contractor. Chemicals will be stored in appropriate chemical storage facilities. Bulk chemicals will be stored in large storage tanks, while most other chemicals will be stored in smaller returnable delivery containers. All chemical storage areas will be designed to contain leaks and spills in concrete containment areas. The Applicant will have an approved Risk Management Plan in place to deal with any potential problems related to the use and handling of hazardous waste. (Ex. 500, p, 3-5.)

11. Fire Protection

The fire protection system will be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The primary source of fire protection water will be the raw water storage tank. An electric jockey pump and electric motor-driven main fire pump will be provided to increase the water pressure to the level required to serve all fire fighting systems. In addition, a backup diesel engine-driven fire pump will be provided to pressurize the fire loop if the power supply to the electric motor-driven main fire pump fails. Fire support services to the site will be under the jurisdiction of the Kern County Fire Department (KCFD). (Ex. 500, p. 3-5.)

12. Transmission System Interconnection

The BSEP project will be located approximately 1.5 miles north of the 230 kilovolt (kV) Barren Ridge Switching Stationed owned by the Los Angeles Department of Water and Power (LADWP). The BSEP project will interconnect to the Barren

Ridge Switching Station as the primary point of interconnection (POI). The new interconnection route will be approximately 3.5 miles in length. The interconnection will be made by installing a new 230-kV line using up to 39 concrete monopoles. Each monopole will average 79 feet in height and be spaced approximately 500 feet apart. (Ex. 500, pp. 3-5 to 3-6.)

13. Telecommunication Facilities

The BSEP will obtain telecommunications service by connecting to existing capacity located on Neuralia Road, directly east of the project site. The new service connection will be made by obtaining an easement to use the existing utility poles and maintenance access road owned by Southern California Edison (SCE). The existing SCE electrical distribution line runs from Neuralia Road to through the project site. (Ex. 500, p. 3-6.)

14. Facility Closure

The BSEP will be designed for an operating life of between 30 years to 40 years. Depending on maintenance factors, at an appropriate point beyond the designed operating life, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts.

Although the setting for this project does not appear to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made which provide the flexibility to deal with the specific situation and project setting at the time of closure. Facility closure will be consistent with laws, ordinances, regulations, and standards in effect at the time of closure. (Ex. 500. p. 3-6.)

15. Public Comment

At the evidentiary hearing, **Lorelei Oviatt**, Acting Planning Director of the Kern County Planning Department and commenting on behalf of the Kern County Board of Supervisors, **Dawn Martin**, president of the Rancho Seco Mutual Water Corporation, **Corky Corcoran**, resident of California City, Kim **Collins**, resident of California City, Wally **Melendez**, resident and candidate for California City Mayor, and **Michael Sellard**, resident of California City, all expressed their support for the BSEP. The Committee did not receive any comments opposing the project. (3/22/10 RT 383:9 – 417:25.)

FINDINGS OF FACT

Based upon the evidentiary record, we find as follows:

1. Beacon Solar LLC will own and operate the project, which will be located within Eastern Kern County on 2,012 acres of land, 4 miles northwest of California City's northern boundary and approximately 15 miles north of the town of Mojave.

2. The project will have a nominal capacity rating of 250 MW.

3. The project site arrangement generally consists of a 1,266-acre, rectangular arrangement of parabolic trough solar collectors surrounding a centrally located power block. The power block facility houses the majority of electrical generation equipment and related systems, with exception of the solar field. The solar collectors will be constructed in long rows (troughs) across the project site and aligned side by side in a north-south orientation to allow the troughs to slowly rotate from east to west, tracking the movement of the sun. Adjoining the solar field, immediately to the west, are various support facilities, including administration and storage buildings, and evaporation ponds.

4. The project will consume approximately 1,400-acre feet per year of recycled water and 153 acre feet per year of groundwater with another 47 acre feet per year held for emergency reserve. Tertiary treated recycled water will be supplied by either California City or Rosamond Community Sanitary District. Potable water will be supplied by three on-site existing water supply wells.

5. The BSEP project will interconnect to the Barren Ridge Switching Station as the primary point of interconnection (POI). The new interconnection route will be approximately 3.5 miles in length. The interconnection will be made by installing a new 230-kV line using up to 39 concrete monopoles.

6. The project and its objectives are adequately described by the relevant documents contained in the record.

CONCLUSION OF LAW

1. We therefore conclude that the Beacon Solar Energy Project is described at a level of detail sufficient to allow review in compliance with the provisions of both the Warren- Alquist Act and the California Environmental Quality Act.

II. PROJECT ALTERNATIVES

The California Environmental Quality Act (CEQA) Guidelines and the Energy Commission's regulations require an evaluation of the comparative merits of a range of feasible site and facility alternatives which meet the basic objectives of the proposed project but would avoid or substantially lessen potentially significant environmental impacts. [Cal. Code Regs., tit. 14, §§ 15126.6(c) and (e); tit. 20, § 1765.]

The range of alternatives, including the "No Project" alternative, is governed by the "rule of reason" and need not include those alternatives whose effects cannot be reasonably ascertained and whose implementation is remote and speculative. [Cal. Code Regs. tit. 14, § 15126.6(f).] Rather, the analysis is necessarily limited to alternatives that the "lead agency determines could feasibly attain most of the basic objectives of the project." (*Id*.)

In addition, state policy favors a "loading order" for meeting electricity needs: first in this order is a preference for adding energy efficiency and demand response, followed by renewables and distributed generation, combined heat and power (cogeneration) and then fuel efficient fossil-fueled generation and infrastructure development.

Applicant provided an alternatives analysis in the Application for Certification (AFC) (Ex. 4, p. 42), describing the site selection process and project configuration in light of project objectives. Staff included a similar analysis in the Final Staff Assessment (FSA) (Ex. 500 p. 6-3). The parties submitted the following evidence under the alternatives analysis: Ex. 4; 43; 89; 100; 121; 127; 153; 166; 167; 168; 169; 184; 185; 186; 187; 189; 193; 221; 222; 224; 229; 230; 245; 258; 265; 271; 287; 297; 298; 308; 314; 317; 500; 501; 506; 616; 617; 618; 623; 624; 636; 3/22/10 RT 17:1-3, 78:2-5, 423:5-9.

SUMMARY AND DISCUSSION OF THE EVIDENCE

Energy Commission staff used the following methodology to analyze project alternatives for the Beacon Solar Energy Project (BSEP):

- identified basic objectives of the project and its potentially significant adverse impacts (which are discussed by topic in this Decision);

- identified and evaluated alternative sites to determine whether an alternative site would mitigate impacts of the proposed site and whether an alternative site would create impacts of its own;
- identified and evaluated technology alternatives, including alternative equipment and processes; and
- evaluated consequences of not constructing the project, i.e., the "No Project" alternative. (Ex. 500, p. 6-2.)

1. Project Objectives

The evidentiary record establishes that the project objectives are:

- To construct, operate and maintain an efficient, economic, reliable, safe and environmentally sound solar powered generating facility throughout its useful life to help: (i) achieve the State of California objectives mandated by SB 1078 (California Renewable Portfolio Standard Program), (ii) AB 32 (California Global Warming Solutions Act of 2006), and (iii) other local mandates adopted by the state's municipal electric utilities to meet the requirements for the long term wholesale purchase of renewable electric energy for distribution to their customers;

- To develop a site with an excellent solar resource;

- To develop a previously disturbed site with close proximity to transmission infrastructure in order to minimize environmental impacts;

- To interconnect directly to the LADWP electrical transmission system;

- To develop a new utility-scale solar energy project using proven concentrated solar trough technology; and

- To develop a site with available water resources to allow wet cooling in order to optimize power generation efficiency and reduce project cost. (Ex. 4, p. 42.)

2. Alternative Sites

The Applicant provided a general discussion of alternative areas to site the proposed project. Staff eliminated all but one of these alternatives (Antelope) from their analysis. Staff opined that although the proposed BSEP site is previously disturbed and in close proximity to transmission lines, the proposed site is bisected by designated waters of the state (Pine Tree Creek) which

Applicant proposes to relocate one-half mile to the east. An alternative site that has been previously disturbed by agriculture activities and does not contain any waters of the state, could potentially avoid impacts to several environmental resource areas. (Ex. 500, p. 6-5.)

Staff's survey of previously disturbed lands in the Antelope area found that the area south of Rosamond Boulevard contained no waters of the state and/or waters of the US. However, since the majority of large parcels were designated as "farmlands of statewide importance" by the Farmland Mapping and Monitoring Program (FMMP), Staff determined that the Antelope alternative would create a different type of impact to limited farmland resources. Therefore, Staff concluded and we find, a similar 2,000 acre project sited in the immediate Antelope area is not a viable alternative site to the proposed project. (Ex. 500, pp. 6-5 to 6-6.)

3. Generation Technology Alternatives

Commission staff considered fossil fuel based energy generation such as simple-cycle and combined-cycle, natural gas-fired power plants but ruled them out as alternatives because of their more significant impacts to air quality and failure to meet most of the project objectives. (Ex. 500, p. 6-6.)

Staff initially identified potentially significant adverse impacts to soil and water resources, biological resources, cultural resources and visual resources, largely in response to the original design of the BSEP which included a wet cooling system requiring 1,400 acre feet of potable groundwater annually and 43 acres of evaporation ponds to dispose of process wastewater. Staff determined that the use of potable groundwater to cool the BSEP did not comply with state water policy. Applicant responded by introducing a partial zero liquid discharge which reduced the pond size down to the three evaporation ponds covering only 6 acres. (Ex. 203 pp. 1 to 7, 500, pp. 4.9-63; 6-4 to 6-5.)

Staff analyzed five alternatives to BSEP's original design: photovoltaic technologies, "dry cooling" (air cooled condenser), wet cooling using brackish water near Koehn Dry Lake, wet cooling using recycled water supplied by the Rosamond Community Services District (RCSD), and wet cooling using recycled water supplied by California City. Staff determined, and we concur, that all five were reasonably feasible alternatives that would accomplish most of the projects objectives while mitigating all the adverse impacts other than visual impacts. (Ex. 500, pp. 6-6 to 6-14.)

The Applicant again responded by changing BSEP's design to utilize wet cooling using recycled (tertiary treated) water supplied by either RCSD or California City (see **Soils and Water** section of this Decision). (Ex 501.) Staff preferred the RCSD project alternative because it would facilitate compliance with state water policy, effectively bring new water (which is otherwise being evaporated) into the Koehn sub-basin, and directly increase the project's positive economic impact on the local community of Rosamond, California. (Ex. 500, pp. 6-10 to 6-11.) We find that the California City option has equivalent benefits in that it reduces the construction of the pipeline by approximately 70 percent and converts approximately 2,500 septic tanks to sewage lines, thereby averting "a [groundwater] saturation problem with too much septic density" (5/22/10 RT 136:6-21.) The California City option would likewise increase the project's positive economic impact on the local community. As is more fully explained in the **Soils and Water** section of this Decision, Condition of Certification **SOILS&WATER-1** requires the project owner to use recycled water supplied by either California City or RCSD for power plant cooling.

If the Rosamond option is selected, the project will only use groundwater in emergency situations, since normal operation will use 100 percent recycled water for cooling starting from the first day of operation. If the California City option is selected, some on-site groundwater will be used in decreasing amounts during the first five years as flow from California City increases (see section 3 Water Resources and Supply, above; Ex. 337; Condition of Certification **Soil & Water-1**.) This temporary use of groundwater will enable the use of 100 percent recycled water for cooling as soon as California City can provide it. In converting from the septic system to the sewer system, California City will curtail the practice of leaching potentially toxic septic wastewater into the Fremont Valley water basin. (3/22/10 RT 136:6-21.) Although the upgrades to the RCSD and California City water treatment facilities will proceed with or without the BSEP, BSEP's demand for tertiary treated recycled water would hasten the improvements to the existing facilities and their associated environmental benefits. (3/22/10 RT 145:6 – 146:4; 151:9 – 152:11.)

4. No Project Alternative

CEQA requires an evaluation of the "No Project" alternative "… to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." [14 Cal. Code Regs., § 15126.6(e)(1).]

The “No Project” analysis assumes that baseline environmental conditions would not change because the project would not be installed, and that the events or actions reasonably expected to occur in the foreseeable future would occur if the project were not approved. (Ex. 500, p. 6-15.)

If the project were not built, consumers of the renewable energy from BSEP would not benefit from the annual, solar power this project would provide. A primary benefit of the BSEP is that it would help achieve the State of California objectives mandated by SB 1078 (California Renewable Portfolio Standard Program), and AB 32 (California Global Warming Solutions Act of 2006). In light of these state objectives, and in the absence of the proposed Beacon Solar Energy Project, other power plants with unknown technologies would likely be constructed in the region to supply the market demand for energy. As such, the benefits to the Fremont Valley Groundwater Basin may not be realized. Therefore, we find the “No Project” alternative is not a reasonable alternative or a feasible alternative to the BSEP. (Ex. 500, p. 6-15.)

5. Arguments of Intervenor California Unions for Reliable Energy (CURE)

Intervenor CURE submitted expert testimony on Alternatives (Ex. 616) which provides economic analysis in support of the dry cooling, wet cooling with recycled water from RCSD and California City, and photovoltaic generation alternatives. The testimony concludes that the Energy Commission should either: (1) require Beacon to use an air cooled condenser, or (2) require the use of non-potable water for powerplant cooling, with the non-potable water supply to be in place prior to the start of on-site construction in order to be able to use non-potable water to meet part of the construction water requirements during the first five months of on-site construction, and all of the construction water requirements thereafter. (Ex. 616, p. 8.)

We note that although dry cooling (air cooled condenser) is generally a favored technology; in the specific case of the BSEP, dry cooling would not provide the environmental benefits to the Koehn sub-basin that recycled water options will.

As explained above, the Energy Commission will require the use of non-potable water for powerplant cooling which is the alternative recommended by CURE. If the project owner chooses the California City option for recycled water supply, then BSEP will be allowed to use a limited amount of potable groundwater for the first five years of operation pending the completion of California City’s recycled water infrastructure. The quantity of groundwater used for cooling will decrease

annually at 300 AFY from 1353 AFY in the first year to 153 in the fifth year. The RCSD option will not require the use potable water for cooling at all. (See Condition of Certification **SOIL&WATER-1**, Ex. 501, p. 1.)

As to CURE's assertion that recycled water should be used during construction, CURE's expert specifically declined to testify to the feasibility of using recycled water during construction (5/22/10 RT 97:18-23). The record indicates that recycled water will effectively be unavailable during construction (5/22/10 RT 114:22 -115:14). It will take RCSD two years to complete construction in order to pipe tertiary treated water to the BSEP site (5/22/10 RT 145:11-16) and it will take California City five years (5/22/10 RT 152:2-11). Construction of the BSEP is scheduled to be completed in 25 months (Ex. 500, p. 3-6). Thus, we find that using construction-phase tertiary treated recycled water is infeasible because it cannot be accomplished within a reasonable period of time. (Pub. Res. Code § 21061.1.)

FINDINGS OF FACT

Based upon the evidence, including that presented on each subject area described in other portions of this Decision, we find and conclude as follows:

1. The record contains an acceptable analysis of a reasonable range of site location and generation alternatives to the project as proposed.
2. None of the site location alternatives to the project offer a superior alternative in terms of feasibly meeting project objectives or of reducing any significant potential environmental impacts.
3. The evidentiary record contains an adequate review of alternative generation technology.
4. All five alternative generation technologies analyzed were reasonably feasible alternatives that would accomplish most of the projects objectives while mitigating all the adverse impacts other than visual impacts.
5. The RCSD and California City tertiary treated recycled water options have equivalent environmental benefits.
6. BSEP's demand for tertiary treated recycled water will hasten the improvements to the existing facilities and their associated environmental benefits.
7. The evidentiary record contains an adequate review of the "No Project" alternative.

8. The “No Project” alternative is not a reasonable alternative or a feasible alternative to the BSEP.

9. In the specific case of the BSEP, dry cooling will not provide the environmental benefits to the Koehn sub-basin that recycled water options will.

10. Using tertiary treated recycled water during the construction phase of the BSEP is infeasible.

11. If all Conditions of Certification contained in this Decision are implemented, construction and operation of the Beacon Solar Energy Project will not create any significant direct, indirect, or cumulative adverse environmental impacts.

CONCLUSIONS OF LAW

1. The record contains a sufficient analysis of Alternatives and complies with the requirements of the California Environmental Quality Act, the Warren-Alquist Act, and their respective regulations.

2. The proposed project’s potential adverse environmental impacts will be mitigated to a level below the threshold of significance; therefore detailed analysis of the feasibility of the alternatives discussed in the record is not necessary.

No Conditions of Certification are required for this topic.

III. COMPLIANCE AND CLOSURE

Public Resources Code section 25532 requires the Commission to establish a post-certification monitoring system. The purpose of this requirement is to assure that certified facilities are constructed and operated in compliance with applicable laws, ordinances, regulations, standards, as well as the specific Conditions of Certification adopted as part of this Decision.

SUMMARY OF THE EVIDENCE

The record contains a full explanation of the purposes and intent of the Compliance Plan (Plan). The Plan is the administrative mechanism used to ensure that the Beacon Solar Energy Project is constructed and operated according to the Conditions of Certification. It essentially describes the respective duties and expectations of the Project Owner and the Staff Compliance Project Manager (CPM) in implementing the design, construction, and operation criteria set forth in this Decision.

Compliance with the Conditions of Certification contained in this Decision is verified through mechanisms such as periodic reports and site visits. The Plan also contains requirements governing the planned closure, as well as the unexpected temporary and unexpected permanent closure, of the Project.

The Compliance Plan is composed of two broad elements. The first element establishes the "General Conditions," which:

- set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- set forth procedures for settling disputes and making post-certification changes;
- set forth the requirements for periodic compliance reports and other administrative procedures necessary to verify the compliance status of all Commission imposed Conditions; and
- set forth requirements for facility closure.

The second general element of the Plan contains the specific "Conditions of Certification." These are found following the summary and discussion of each individual topic area in this Decision. The individual Conditions contain the measures required to mitigate potentially adverse Project impacts associated with construction, operation, and closure to levels of insignificance. Each Condition also includes a verification provision describing the method of assuring that the Condition has been satisfied.

The contents of the Compliance Plan are intended to be implemented in conjunction with any additional requirements contained in the individual Conditions of Certification.

FINDINGS OF FACT

The record establishes:

1. Requirements contained in the Compliance Plan and in the specific Conditions of Certification are intended to be implemented in conjunction with one another.

2. We adopt the following Compliance Plan as part of this Decision.

CONCLUSIONS OF LAW

1. The compliance and monitoring provisions incorporated as a part of this Decision satisfy the requirements of Public Resources Code section 25532.

2. The Compliance Plan and the specific Conditions of Certification contained in this Decision assure that the Beacon Solar Energy Project will be designed, constructed, operated, and closed in conformity with applicable law.

GENERAL CONDITIONS OF CERTIFICATION

DEFINITIONS

The following terms and definitions are used to establish when Conditions of Certification are implemented.

PRE-CONSTRUCTION SITE MOBILIZATION

Site mobilization is limited preconstruction activities at the site to allow for the installation of fencing, construction trailers, construction trailer utilities, and construction trailer parking at the site. Limited ground disturbance, grading, and trenching associated with the above mentioned pre-construction activities is considered part of site mobilization. Walking, driving or parking a passenger vehicle, pickup truck and light vehicles is allowable during site mobilization.

CONSTRUCTION

Onsite work to install permanent equipment or structures for any facility.

Ground Disturbance

Construction-related ground disturbance refers to activities that result in the removal of top soil or vegetation at the site beyond site mobilization needs, and for access roads and linear facilities.

Grading, Boring, and Trenching

Construction-related grading, boring, and trenching refers to activities that result in subsurface soil work at the site and for access roads and linear facilities, e.g., alteration of the topographical features such as leveling, removal of hills or high spots, moving of soil from one area to another, and removal of soil.

Notwithstanding the definitions of ground disturbance, grading, boring and trenching above, construction does **not** include the following:

1. the installation of environmental monitoring equipment;
2. a soil or geological investigation;
3. a topographical survey;
4. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; and
5. any work to provide access to the site for any of the purposes specified in “Construction” 1, 2, 3, or 4 above.

START OF COMMERCIAL OPERATION

For compliance monitoring purposes, “commercial operation” begins after the completion of start-up and commissioning, when the power plant has reached reliable steady-state production of electricity at the rated capacity. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The Compliance Project Manager (CPM) shall oversee the compliance monitoring and is responsible for:

1. Ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Energy Commission Decision

2. Resolving complaints

3. Processing post-certification changes to the conditions of certification, project description (petition to amend), and ownership or operational control (petition for change of ownership) (See instructions for filing petitions)

4. Documenting and tracking compliance filings

5. Ensuring that compliance files are maintained and accessible

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies, Energy Commission, and staff when handling disputes, complaints, and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, the approval will involve all appropriate Energy Commission staff and management. All submittals must include searchable electronic versions (pdf or word files).

PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings is to assemble both the Energy Commission’s and project owner’s technical staff to review the status of all pre-construction or pre-operation requirements, contained in the Energy Commission’s conditions of certification. This is to confirm that all applicable conditions of certification have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight and to preclude any last minute,

unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

ENERGY COMMISSION RECORD

The Energy Commission shall maintain the following documents and information as a public record, in either the Compliance file or Dockets file, for the life of the project (or other period as required):

- All documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
- All monthly and annual compliance reports filed by the project owner;
- All complaints of noncompliance filed with the Energy Commission; and
- All petitions for project or condition of certification changes and the resulting staff or Energy Commission action.

PROJECT OWNER RESPONSIBILITIES

The project owner is responsible for ensuring that the compliance conditions of certification and all other conditions of certification that appear in the Commission Decision are satisfied. The compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, conditions of certification, or ownership. Failure to comply with any of the conditions of certification or the compliance conditions may result in reopening of the case and revocation of Energy Commission certification; an administrative fine; or other action as appropriate. A summary of the Compliance Conditions of Certification is included as **Compliance Table 1** at the conclusion of this section.

COMPLIANCE CONDITIONS OF CERTIFICATION

Unrestricted Access (COMPLIANCE-1)

The CPM, responsible Energy Commission staff, and delegated agencies or consultants shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on-site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

Compliance Record (COMPLIANCE-2)

The project owner shall maintain project files on-site or at an alternative site approved by the CPM for the life of the project, unless a lesser period of time is specified by the conditions of certification. The files shall contain copies of all “as-

built" drawings, documents submitted as verification for conditions, and other project-related documents.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.

Compliance Verification Submittals (COMPLIANCE-3)

Each condition of certification is followed by a means of verification. The verification describes the Energy Commission's procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified as necessary by the CPM.

Verification of compliance with the conditions of certification can be accomplished by the following:

1. Monthly and/or annual compliance reports, filed by the project owner or authorized agent, reporting on work done and providing pertinent documentation, as required by the specific conditions of certification;

2. Appropriate letters from delegate agencies verifying compliance;

3. Energy Commission staff audits of project records; and/or

4. Energy Commission staff inspections of work, or other evidence that the requirements are satisfied.

Verification lead times associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the project by AFC number, the appropriate condition(s) of certification by condition number(s), and a brief description of the subject of the submittal**. The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and CEC submittal number.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All hardcopy submittals shall be addressed as follows:

<u>Compliance Project Manager</u>
(08-AFC-2C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

Those submittals shall be accompanied by a searchable electronic copy, on a CD or by e-mail, as agreed upon by the CPM.

If the project owner desires Energy Commission staff action by a specific date, that request shall be made in the submittal cover letter and shall include a detailed explanation of the effects on the project if that date is not met.

Pre-Construction Matrix and Tasks Prior to Start of Construction (COMPLIANCE-4)

Prior to commencing construction, a compliance matrix addressing <u>only</u> those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner's first compliance submittal or prior to the first pre-construction meeting, whichever comes first. It will be submitted in the same format as the compliance matrix described below.

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Various lead times for submittal of compliance verification documents to the CPM for conditions of certification are established to allow sufficient staff time to review and comment and, if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

Failure to submit compliance documents within the specified lead-time may result in delays in authorization to commence various stages of project development.

If the project owner anticipates commencing project construction as soon as the project is certified, it may be necessary for the project owner to file compliance submittals prior to project certification. Compliance submittals should be completed in advance where the necessary lead time for a required compliance event extends beyond the date anticipated for start of construction. The project owner must understand that the submittal of compliance documents prior to project certification is at the owner's own risk. Any approval by Energy Commission staff is subject to change, based upon the Commission Decision.

Compliance Reporting

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Energy Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

Compliance Matrix (COMPLIANCE-5)

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all conditions of certification in a spreadsheet format. The compliance matrix must identify:

1. the technical area;
2. the condition number;
3. a brief description of the verification action or submittal required by the condition;
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. the expected or actual submittal date;
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable; and
7. the compliance status of each condition, e.g., “not started,” “in progress” or “completed” (include the date).
8. if the condition was amended, the date of the amendment.

Satisfied conditions shall be placed at the end of the matrix.

Monthly Compliance Report (COMPLIANCE-6)

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date upon which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include the AFC number and an initial list of dates for each of the events identified on the Key Events List found at the end of this section.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and an electronic searchable version of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain, at a minimum:

1. A summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;

2. Documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, as well as the conditions they satisfy and submitted as attachments to the Monthly Compliance Report;

3. An initial, and thereafter updated, compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

4. A list of conditions that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition;

5. A list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;

6. A cumulative listing of any approved changes to conditions of certification;

7. A listing of any filings submitted to, or permits issued by, other governmental agencies during the month;

8. A projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;

9. A listing of the month's additions to the on-site compliance file; and

10. A listing of complaints, notices of violation, official warnings, and citations received during the month, a description of the resolution of the resolved actions, and the status of any unresolved actions.

All sections, exhibits, or addendums shall be separated by tabbed dividers or as acceptable by the CPM.

Annual Compliance Report (COMPLIANCE-7)

After construction is complete, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by

the CPM. Annual Compliance Reports shall be submitted over the life of the project unless otherwise specified by the CPM. Each Annual Compliance Report shall include the AFC number, identify the reporting period and shall contain the following:

1. An updated compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

2. A summary of the current project operating status and an explanation of any significant changes to facility operations during the year;

3. Documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, with the condition it satisfies, and submitted as attachments to the Annual Compliance Report;

4. A cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;

5. An explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;

6. A listing of filings submitted to, or permits issued by, other governmental agencies during the year;

7. A projection of project compliance activities scheduled during the next year;

8. A listing of the year's additions to the on-site compliance file;

9. An evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date [see Compliance Conditions for Facility Closure addressed later in this section]; and
10. A listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved matters, and the status of any unresolved matters.

Confidential Information (COMPLIANCE-8)

Any information that the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq.

Annual Energy Facility Compliance Fee (COMPLIANCE-9)

Pursuant to the provisions of Section 25806(b) of the Public Resources Code, the project owner is required to pay an annual compliance fee, which is adjusted annually. The amount of the fee for FY2007-2008 was $17,676. The initial payment is due on the date the Energy Commission adopts the final decision. You will be notified of the amount due. All subsequent payments are due by July 1 of each year in which the facility retains its certification. The payment instrument shall be made payable to the California Energy Commission and mailed to: Accounting Office MS-02, California Energy Commission, 1516 9th St., Sacramento, CA 95814.

Reporting of Complaints, Notices, and Citations (COMPLIANCE-10)

Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering with date and time stamp recording. All recorded complaints shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and operation. The telephone number shall be provided to the CPM who will post it on the Energy Commission's web page at:

http://www.energy.ca.gov/sitingcases/power_plants_contacts.html

Any changes to the telephone number shall be submitted immediately to the CPM, who will update the web page.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies to the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form (Attachment A).

FACILITY CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations and Standards (LORS) pertaining to facility closure are

identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place: planned closure, unplanned temporary closure and unplanned permanent closure**.**

CLOSURE DEFINITIONS

Planned Closure

A planned closure occurs when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

Unplanned Temporary Closure

An unplanned temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency.

Unplanned Permanent Closure

An unplanned permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unplanned closure where the owner implements the on-site contingency plan. It can also include unplanned closure where the project owner fails to implement the contingency plan, and the project is essentially abandoned.

COMPLIANCE CONDITIONS FOR FACILITY CLOSURE

Planned Closure (COMPLIANCE-11)

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least 12 months (or other period of time agreed to by the CPM) prior to commencement of closure activities. The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission.

The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site;

2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;

3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and

4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

Prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Energy Commission CPM for the purpose of discussing the specific contents of the plan.

In the event that there are significant issues associated with the proposed facility closure plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Energy Commission may hold public hearings as part of its approval procedure.

As necessary, prior to or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities until the Energy Commission approves the facility closure plan.

Unplanned Temporary Closure/On-Site Contingency Plan (COMPLIANCE-12)

In order to ensure that public health and safety and the environment are protected in the event of an unplanned temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety impacts and environmental impacts are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days, unless other arrangements are agreed to by the CPM, the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment, and the safe shutdown of all equipment. (Also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management.)

In addition, consistent with requirements under unplanned permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unplanned temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that an unplanned temporary closure is likely to be permanent, or for a duration of more than 12 months, a closure plan consistent with the requirements for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

Unplanned Permanent Closure/On-Site Contingency Plan (COMPLIANCE-13)

The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the event of abandonment.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan, consistent with the requirements for a planned closure, shall be developed and submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

Post Certification Changes to the Energy Commission Decision: Amendments, Ownership Changes, Staff Approved Project Modifications and Verification Changes (COMPLIANCE-14)

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, in order to modify the project (including linear facilities) design, operation or performance requirements, and to transfer ownership or operational control of the facility. **It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769.** Implementation of a project modification without first securing Energy Commission, or Energy Commission staff approval, may result in enforcement action that could result in civil penalties in accordance with section 25534 of the Public Resources Code.

A petition is required for **amendments** and for staff approved project modifications, as specified below. Both shall be filed as a "Petition to Amend." Staff will determine if the change is significant or less than significant. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the CPM, who will file it with the Energy Commission's Dockets Unit in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of approval and the process that applies are explained below. They reflect the provisions of Section 1769 at the time this condition was drafted. If the Commission's rules regarding amendments are amended, the rules in effect at the time an amendment is requested shall apply.

Amendment

The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, Section 1769(a), when proposing modifications to the project (including linear facilities) design, operation, or performance requirements. If a proposed modification results in deletion or change of a condition of certification, or makes changes that would cause the project not to comply with any applicable laws, ordinances, regulations or standards, the petition will be processed as a formal amendment to the final decision, which requires public notice and review of the Energy Commission staff analysis, and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(a). Upon request, the CPM will provide you with a sample petition to use as a template.

Change of Ownership

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(b). Upon request, the CPM will provide you with a sample petition to use as a template.

Staff Approved Project Modification

Modifications that do not result in deletions or changes to conditions of certification, and that are compliant with laws, ordinances, regulations and standards may be authorized by the CPM as a Staff Approved Project Modification pursuant to section 1769(a) (2). This process usually requires minimal time to complete, and it requires a 14-day public review of the Notice of Staff Approved Project Modification that includes staff's intention to approve the modification unless substantive objections are filed. These requests must also be submitted in the form of a "petition to amend" as described above.

Verification Change

A verification may be modified by the CPM without requesting an amendment to the decision if the change does not conflict with the conditions of certification and provides an effective alternate means of verification.

CBO DELEGATION AND AGENCY COOPERATION

In performing construction and operation monitoring of the project, Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). Energy Commission staff may delegate CBO responsibility to either an independent third party contractor or the local building official. Energy Commission staff retains CBO authority when selecting a delegate CBO, including enforcing and interpreting state and local codes, and use of discretion, as necessary, in implementing the various codes and standards.

Energy Commission staff may also seek the cooperation of state, regional and local agencies that have an interest in environmental protection when conducting project monitoring.

ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Energy Commission Decision. The specific action and amount of any fines the Energy Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, oversight, unforeseeable events, and other factors the Energy Commission may consider.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the

Energy Commission pursuant to Title 20, California Code of Regulations, section 1237, but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by future law or regulations.

The Energy Commission has established a toll free compliance telephone number of **1-800-858-0784** for the public to contact the Energy Commission about power plant construction or operation-related questions, complaints or concerns.

Informal Dispute Resolution Process

The following procedure is designed to informally resolve disputes concerning the interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate an informal dispute resolution process. Disputes may pertain to actions or decisions made by any party, including the Energy Commission's delegate agents.

This process may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1237, but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The process encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be brought before the full Energy Commission for consideration via the complaint and investigation procedure.

Request for Informal Investigation

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter. Within seven working days of the CPM's request, provide a written report to the CPM of the results of the investigation, including

corrective measures proposed or undertaken. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to also provide an initial verbal report, within 48 hours.

Request for Informal Meeting

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures proposed or undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within 14 days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;

2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary;

3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner;

4. After the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum that fairly and accurately identifies the positions of all parties and any understandings reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230 et seq.

Formal Dispute Resolution Procedure-Complaints and Investigations

Any person may file a complaint with the Energy Commission's Dockets Unit alleging noncompliance with a Commission decision adopted pursuant to Public Resources Code section 25500. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1237.

KEY EVENTS LIST

PROJECT: _____

DOCKET #: _____

COMPLIANCE PROJECT MANAGER: _____

EVENT DESCRIPTION	DATE
Certification Date	
Obtain Site Control	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	
Start Ground Disturbance	
Start Grading	
Start Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Combustion of Gas Turbine	
Obtain Building Occupation Permit	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
Synchronization with Grid and Interconnection	
Complete T/L Construction	
FUEL SUPPLY LINE ACTIVITIES	
Start Gas Pipeline Construction and Interconnection	
Complete Gas Pipeline Construction	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	

COMPLIANCE TABLE 1
SUMMARY of COMPLIANCE CONDITIONS OF CERTIFICATION

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-1	Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COMPLIANCE-2	Compliance Record	The project owner shall maintain project files on-site. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COMPLIANCE-3	Compliance Verification Submittals	The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed or the project owner or his agent.
COMPLIANCE-4	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until the all of the following activities/submittals have been completed: ▪ property owners living within one mile of the project have been notified of a telephone number to contact for questions, complaints or concerns, ▪ a pre-construction matrix has been submitted identifying only those conditions that must be fulfilled before the start of construction, ▪ all pre-construction conditions have been complied with, ▪ the CPM has issued a letter to the project owner authorizing construction.
COMPLIANCE-5	Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each monthly and annual compliance report which includes the status of all compliance conditions of certification.
COMPLIANCE-6	Monthly Compliance Report including a Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due the month following the Energy Commission business meeting date on which the project was approved and shall include an initial list of dates for each of the events identified on the Key Events List.

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-7	Annual Compliance Reports	After construction ends and throughout the life of the project, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports.
COMPLIANCE-8	Confidential Information	Any information the project owner deems confidential shall be submitted to the Energy Commission's Dockets Unit with a request for confidentiality.
COMPLIANCE-9	Annual fees	Payment of Annual Energy Facility Compliance Fee
COMPLIANCE-10	Reporting of Complaints, Notices and Citations	Within 10 days of receipt, the project owner shall report to the CPM, all notices, complaints, and citations.
COMPLIANCE-11	Planned Facility Closure	The project owner shall submit a closure plan to the CPM at least 12 months prior to commencement of a planned closure.
COMPLIANCE-12	Unplanned Temporary Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned temporary closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-13	Unplanned Permanent Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned permanent closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-14	Post-certification changes to the Decision	The project owner must petition the Energy Commission to delete or change a condition of certification, modify the project design or operational requirements and/or transfer ownership of operational control of the facility.

ATTACHMENT A
COMPLAINT REPORT/RESOLUTION FORM

PROJECT NAME: ***BEACON SOLAR ENERGY PROJECT*** AFC Number:
COMPLAINT LOG NUMBER _____ Complainant's name and address: Phone number:
Date and time complaint received: Indicate if by telephone or in writing (attach copy if written): Date of first occurrence:
Description of complaint (including dates, frequency, and duration):
Findings of investigation by plant personnel: Indicate if complaint relates to violation of a CEC requirement: Date complainant contacted to discuss findings:
Description of corrective measures taken or other complaint resolution: Indicate if complainant agrees with proposed resolution: If not, explain: Other relevant information:
If corrective action necessary, date completed: Date first letter sent to complainant: _____(copy attached) Date final letter sent to complainant: _____(copy attached)
This information is certified to be correct. Plant Manager's Signature: _____ Date:

(Attach additional pages and supporting documentation, as required.)

IV. ENGINEERING ASSESSMENT

The broad engineering assessment of the Beacon Solar Energy Project (BSEP) consists of separate analyses that examine its facility design, engineering, efficiency, and reliability aspects. These analyses include the on-site power generating equipment and the project-related linear facilities.

A. FACILITY DESIGN

This review covers several technical disciplines including the civil, electrical, mechanical, and structural engineering elements related to project design and construction. It addresses consistency with applicable LORS, and does not extend to the project's environmental impacts under the California Environmental Quality Act (CEQA). The evidentiary presentations were uncontested. (3/22/2010 RT 14-15, 19-22; Exs. 26; 27; 28; 29; 30; 31; 95; 98; 101; 147; 149; 154; 155; 157; 158; 159; 160; 161; 162; 165; 190; 191; 196; 197; 239; 244; 256; 264; 270; 286; 311; 316; 319; 500, § 5.1.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Application for Certification (AFC) describes the preliminary facility design. In considering the adequacy of the plans, the Commission reviews whether the power plant and linear facilities are described with sufficient detail to assure the project can be designed and constructed in accordance with applicable engineering laws, ordinances, regulations, and standards (LORS). The review also includes, as appropriate, the identification of special design features that are necessary to deal with unique site conditions which could impact public health and safety or the operational reliability of the project. (Ex. 500, p. 5.1-1.)

Staff considered potential geological hazards and reviewed the preliminary project design with respect to grading, flood protection, erosion control, site drainage, and site access in addition to the criteria for designing and constructing related linear facilities such as the transmission interconnection facilities. (Ex. 500, p. 5.1-3; see also, the **Geology and Paleontology** section of this Decision.) The evidence establishes that the project will incorporate accepted industry standards. This includes design practices and construction methods for preparing and developing the site. Conditions **CIVIL-1** through **CIVIL-4** ensure that these activities will be conducted in compliance with applicable LORS.

Major structures, systems, and equipment include structures and associated components necessary for power production, those costly or time consuming to repair or replace, facilities used for storage of hazardous or toxic materials, and those capable of becoming potential health and safety hazards if not constructed properly. (Ex. 500, p. 5.1-3.) **Table 1**, contained in Condition **GEN-2,** lists the major structures and equipment included in the initial engineering design for the project.[3] Conditions **GEN-3** through **GEN-8** require that qualified individuals oversee and inspect construction of the facility. Similarly, Conditions **MECH-1** through **MECH-3** address compliance of the project's mechanical systems with appropriate standards, and a quality assurance/quality control program assures that the project will be designed, procured, fabricated, and installed as described. Condition **ELEC-1** provides assurance that design and construction of major electrical features will comply with applicable LORS. Compliance with design requirements will be verified through specific inspections and audits. (Ex. 500, p. 5.1-4.)

The project is located in Seismic Risk Zone 4. (Ex. 500, p. 5.1-2.) The 2007 CBC requires specific "dynamic" lateral force procedures for certain structures to determine their seismic design criteria; others may be designed using a "static" analysis procedure. To ensure that project structures are analyzed appropriately, Condition **STRUC-1** requires the project owner to submit its proposed lateral force procedures to the Chief Building Official[4] (CBO) for review and approval prior to the start of construction. (Ex. 500, p. 5.1-3.)

The Conditions of Certification establish a design review and construction inspection process to verify compliance with applicable standards and special requirements. The project will be designed and constructed in conformance with the latest edition of the California Building Standards Code (currently the 2007 CBSC) and other applicable codes and standards in effect at the time design approval and construction actually begin. Condition of Certification **GEN-1** incorporates this requirement. (Ex. 500, pp. 5.1-3 through 5.1-4.)

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[3] The master drawing and master specifications lists described in Condition **GEN-2** include documents based on the project's *detailed* design and may include supplemental materials for structures and equipment not currently identified in Table 1.

[4] The Energy Commission is the CBO for facilities we certify. We may delegate CBO authority to local building officials and/or independent consultants to carry out design review and construction inspections. When CBO duties are delegated, we require a Memorandum of Understanding with the delegate entity to outline respective roles, responsibilities, and qualifications of involved individuals such as those described in Conditions of Certification **GEN-1** through **GEN-8**. The Conditions further require that every appropriate element of project construction be first approved by the CBO and that qualified personnel perform or oversee inspections. (Ex. 500, p. 5.1-4.).

Finally, the evidentiary record also addresses project closure, which may range from “mothballing” the facility to removing all equipment and restoring the site. (Ex. 500, p. 5.1-5.) To ensure that decommissioning of the facility will conform to applicable LORS and be completed in a manner that protects the environment and public health and safety, the project owner is required to submit a decommissioning plan which will identify: decommissioning activities; applicable LORS in effect when decommissioning occurs; activities necessary to restore the site, if appropriate; and decommissioning alternatives. The general closure provisions of the Compliance Monitoring and Closure Plan describe related requirements (see the **Compliance And Closure** section in this Decision).

Overall, the evidentiary record conclusively establishes that the project will be designed and constructed in compliance with all applicable LORS, and that these activities will not negatively impact public health and safety.

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings:

1. The Beacon Solar Energy Project is currently in the preliminary design stage.
2. The evidence summarized in this topic area addresses consistency with applicable LORS, and does not extend to an evaluation of the project’s environmental impacts.
3. The facility can be designed and constructed in conformity with the applicable laws, ordinances, regulations, and standards (LORS) set forth in the appropriate portion of **Appendix A** of this Decision.
4. The Conditions of Certification set forth below provide, in part, that qualified personnel will perform design review, plan checking, and field inspections of the project.
5. The Conditions of Certification set forth below are necessary to ensure that the project is designed and constructed in accordance with applicable law and in a manner that protects public health and safety.
6. The **General Conditions,** included in the **Compliance and Closure** section of this Decision, establish requirements to be followed in the event of facility closure.

CONCLUSION OF LAW

1. We therefore conclude that implementation of the Conditions of Certification listed below ensure that the Beacon Solar Energy Project will be designed and constructed in conformance with the applicable LORS pertinent to the engineering aspects summarized in this section of the Decision.

CONDITIONS OF CERTIFICATION

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering LORS in effect at the time initial design plans are submitted to the CBO for review and approval. The CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously. The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility. All transmission facilities (lines, switchyards, switching stations, and substations) are covered in the Conditions of Certification in the **Transmission System Engineering** section of this Decision.

In the event that the initial engineering designs are submitted to the CBO when the successor to the 2007 CBSC is in effect, the 2007 CBSC provisions shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction, or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.

Verification: Within 30 days following receipt of the certificate of occupancy, the project owner shall submit to the Compliance Project Manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation, and inspection requirements of the

applicable LORS and the Energy Commission's Decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO. (2007 CBC, Appendix Chapter 1, § 110, Certificate of Occupancy).

Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance being performed on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. The CPM shall then determine if the CBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for CBO review, the project owner shall furnish the CPM and the CBO with a schedule of facility design submittals, and master drawing and master specifications lists. The schedule shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM upon request.

Verification: At least 60 days (or a project owner and CBO approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, the master drawing, and master specifications lists of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent design documents for the major structures and equipment listed in **Facility Design Table 1**, below. Major structures and equipment may be added to or deleted from the table only with CPM approval. The project owner shall provide schedule updates in the monthly compliance report.

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Facility Design Table 1
Major Structures and Equipment List

Equipment/System	Quantity (Plant)
Steam Turbine Generator Foundation and Connections	1
Start-up Boilers Foundations and Connections	2
Propane Storage Tanks and Associated Equipment	2
GSU Transformer Foundation and Connections	1
Unit Auxiliary Transformers Foundations and Connections	2
SUS Transformers Foundations and Connections	4
Gas Storage Area Foundation and Connections	1
Cooling Tower Foundation and Connections	1
Raw & Fire Water Storage Tank Foundation and Connections	1
Firewater Pump House Foundation and Connections	1
Process Water Storage Tank Foundation and Connections	1
Process Water Pump Skid Foundation and Connections	4
Demineralized Water Storage Tank Foundation and Connections	1
Demineralized Water Pump Skid Foundation and Connections	1
Demineralized Water Treatment Facility Foundation and Connections	1
Water Treatment Building Foundation and Connections	1
Control and Administration Building Foundation and Connections	1
Feed Water Pumps Foundations and Connections	3
Condensate Pumps Foundations and Connections	3
Economizers Foundations and Connections	4
Reheaters Foundations and Connections	9
Evaporators Foundations and Connections	9
Superheaters Foundations and Connections	5
Expansion Storage Tanks Foundations and Connections	22
HTF Freeze Protection Heat Exchangers Foundations and Connections	2
HTF Circulation Pumps Foundations and Connections	6
Steam Blowdown Tank Foundation and Connections	1
Circulating Water Pumps Foundation and Connections	1
Neutralization Storage Tank Foundation and Connections	1
Solar Field Reflectors and Receivers Foundations and Connections	1 Lot

GEN-3 The project owner shall make payments to the CBO for design review, plan checks, and construction inspections based upon a reasonable fee schedule negotiated between the project owner and the CBO. These fees may be consistent with the fees listed in the 2007 CBC (2007 CBC, Appendix Chapter 1, § 108, Fees; Chapter 1, Section 108.4, Permits, Fees, Applications and Inspections), adjusted for

inflation and other appropriate adjustments; may be based on the value of the facilities reviewed; may be based on hourly rates; or may be otherwise agreed upon by the project owner and the CBO.

Verification: The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next monthly compliance report indicating that applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California- registered architect, structural engineer, or civil engineer as the resident engineer in charge of the project (2007 California Administrative Code, § 4-209, Designation of Responsibilities). All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the Conditions of Certification in the **Transmission System Engineering** section of this Decision.

The resident engineer may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project, respectively. A project may be divided into parts, provided that each part is clearly defined as a distinct unit. Separate assignments of general responsibility may be made for each designated part.

The resident engineer shall:

1. Monitor progress of construction work requiring CBO design review and inspection to ensure compliance with LORS;

2. Ensure that construction of all facilities subject to CBO design review and inspection conforms in every material respect to applicable LORS, these Conditions of Certification, approved plans, and specifications;

3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;

4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets of stamped drawings, plans, specifications, and any other required documents;

5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and

6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests when they do not conform to approved plans and specifications.

The resident engineer shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the resident engineer or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least 30 days (or within a project owner and CBO approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval the resume and registration number of the resident engineer and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the resident engineer and other delegated engineer(s) within five days of the approval.

If the resident engineer or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California-registered engineers to the project: a civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California-registered engineers to the project: a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; a mechanical engineer; and an electrical engineer. (California Business and Professions Code section 6704 et seq., and sections 6730, 6731 and 6736 require state registration to practice as a civil engineer or structural engineer in California.) All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the Conditions of Certification in the **Transmission System Engineering** section of this Decision.

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers as long as each engineer is responsible for a particular segment of the project (for

example, proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California-registered electrical engineer.

The project owner shall submit to the CBO, for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project (2007 CBC, Appendix Chapter 1, § 104, Duties and Powers of Building Official).

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned responsible engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A. The civil engineer shall:

   1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;

   2. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities requiring design review and inspection by the CBO. At a minimum, these include: grading; site preparation; excavation; compaction; and construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems; and

   3. Provide consultation to the resident engineer during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.

B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:

   1. Review all the engineering geology reports;

   2. Prepare the foundation investigations, geotechnical or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement, or collapse when saturated under load (2007 CBC, Appendix J, §

J104.3, Soils Report; Chapter 18, § 1802.2, Foundation and Soils Investigations);

3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2007 CBC, Appendix J, section J105, Inspections, and the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and

4. Recommend field changes to the civil engineer and resident engineer.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations (2007 CBC, Appendix Chapter 1, § 114, Stop Orders).

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and

2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 2007 California Administrative Code, section 4-211, Observation and Inspection of Construction (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;

2. Provide consultation to the resident engineer during design and construction of the project;

3. Monitor construction progress to ensure compliance with engineering LORS;

4. Evaluate and recommend necessary changes in design; and

5. Prepare and sign all major building plans, specifications, and calculations.

E. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO stating that the proposed final design plans, specifications, and calculations conform to all of the mechanical engineering design requirements set forth in the Energy Commission's Decision.

F. The electrical engineer shall:

1. Be responsible for the electrical design of the project; and

2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or within a project owner and CBO approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer, and engineering geologist assigned to the project.

At least 30 days (or within a project owner and CBO approved alternative time frame) prior to the start of construction, the project owner shall submit to the CBO for review and approval resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the CBO's approvals of the responsible engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, the project owner shall assign to the project qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 2007 CBC, Chapter 17, Section 1704, Special Inspections; Chapter 17A, Section 1704A, Special Inspections; and Appendix Chapter 1, Section 109, Inspections. All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in Conditions of Certification in the **Transmission System Engineering** section of this Decision.

A certified weld inspector, certified by the American Welding Society (AWS) and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks, and pressure vessels).

The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;

2. Observe the work assigned for conformance with the approved design drawings and specifications;

3. Furnish inspection reports to the CBO and resident engineer. All discrepancies shall be brought to the immediate attention of the resident engineer for correction then, if uncorrected, to the CBO and the CPM for corrective action (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements); and

4. Submit a final signed report to the resident engineer, CBO, and CPM stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans, specifications, and other provisions of the applicable edition of the CBC.

Verification: At least 15 days (or within a project owner and CBO approved alternative time frame) prior to the start of an activity requiring special inspection; the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s) or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next monthly compliance report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; Chapter 17, § 1704.1.2, Report Requirements). The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this Condition of Certification and, if appropriate, applicable sections of the CBC and/or other LORS.

Verification: The project owner shall transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next monthly compliance report. If any corrective action is disapproved, the project

owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action necessary to obtain CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The project owner shall request that the CBO inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the CBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at an alternative site, approved by the CPM, during the operating life of the project (2007 CBC, Appendix Chapter 1, § 106.3.1, Approval of Construction Documents). Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, in the next monthly compliance report: (a) a written notice that the completed work is ready for final inspection; and (b) a signed statement that the work conforms to the final approved plans. After storing the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.

Within 90 days of the completion of construction, the project owner, at its own expense, shall provide to the CBO three sets of electronic copies of the above documents. These shall be provided in the form of "read only" files (Adobe .pdf 6.0), with restricted (password-protected) printing privileges, on archive quality compact discs.

CIVIL-1 The project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
4. Soils, geotechnical, or foundation investigation reports required by the 2007 CBC, Appendix J, section J104.3, Soils Report, and Chapter 18, section 1802.2, Foundation and Soils Investigation.

Verification: At least 15 days (or within a project owner and CBO approved alternative time frame) prior to the start of site grading, the project owner shall

submit the documents described above to the CBO for design review and approval. In the next monthly compliance report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area (2007 CBC, Appendix Chapter 1, § 114, Stop Work Orders).

Verification: The project owner shall notify the CPM, within 24 hours, when earthwork and construction are stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the CBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the CBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the 2007 CBC, Appendix Chapter 1, section 109, Inspections, and Chapter 17, section 1704, Special Inspections. All plant site-grading operations for which a grading permit is required shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a non-conformance report (NCR) and the proposed corrective action for review and approval. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs for the reporting month shall also be included in the following monthly compliance report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the

erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans (2007 CBC, Chapter 17, § 1703.2, Written Approval).

Verification: Within 30 days (or within a project owner and CBO approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO for review and approval the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans and that the facilities are adequate for their intended purposes, along with a copy of the transmittal letter to the CPM. The project owner shall submit a copy of the CBO's approval to the CPM in the next monthly compliance report.

STRUC-1 Prior to the start of any increment of construction of any major structure or component listed in **FACILITY DESIGN Table 1** of Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO for design review and approval the proposed lateral force procedures for project structures and the applicable designs, plans, and drawings for project structures. Proposed lateral force procedures, designs, plans, and drawings shall be those for the following items (from **Table 1**, above):

1. Major project structures;

2. Major foundations, equipment supports, and anchorage; and

3. Large field-fabricated tanks.

Construction of any structure or component shall not begin until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;

2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (for example, highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and

specifications (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required);

3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation (2007 California Administrative Code, § 4-210, Plans, Specifications, Computations and Other Data);

4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge); and

5. Submit to the CBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge).

Verification: At least 60 days (or within a project owner and CBO approved alternative time frame) prior to the start of any increment of construction of any structure or component listed in **FACILITY DESIGN Table 1** of Condition of Certification **GEN-2**, above, the project owner shall submit to the CBO the above final design plans, specifications, and calculations with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);

2. Concrete pour sign-off sheets;

3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);

4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and

5. Reports covering other structural activities requiring special inspections shall be in accordance with the 2007 CBC, Chapter 17, section 1704, Special Inspections, and section 1709.1, Structural Observations.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and the proposed corrective action to the CBO, with a copy of the transmittal letter to the CPM (2007 CBC, Chapter 17, § 1704.1.2, Report Requirements). The NCR shall reference the Condition(s) of Certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action necessary to obtain the CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the 2007 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes and shall give to the CBO prior notice of the intended filing (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents; § 106.4, Amended Construction Documents; 2007 California Administrative Code, § 4-215, Changes in Approved Drawings and Specifications).

On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the monthly compliance report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in the 2007 CBC, Chapter 3, Table 307.1(2) shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or within a project owner and CBO approved alternate time frame) prior to the start of installation of the tanks or vessels

containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following monthly compliance report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the monthly compliance report following completion of any inspection.

MECH-1 The project owner shall submit for CBO design review and approval the proposed final design, specifications, and calculations for each plant major piping and plumbing system listed in **FACILITY DESIGN Table 1**, Condition of Certification **GEN-2**, above. Physical layout drawings and drawings not related to code compliance and life safety need not be submitted. The submittal shall also include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of that construction (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents; § 109.5, Inspection Requests; § 109.6, Approval Required; 2007 California Plumbing Code, § 301.1.1, Approvals).

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable laws, ordinances, regulations, and industry standards (2007 CBC, Appendix Chapter 1, § 106.3.4, Design Professional in Responsible Charge) which may include, but are not limited to:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code);
- Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
- Title 24, California Code of Regulations, Part 6 (California Energy Code for building energy conservation systems and temperature control and ventilation systems);

- Title 24, California Code of Regulations, Part 2 (California Building Code); and
- Kern County codes.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency (2007 CBC, Appendix Chapter 1, § 103.3, Deputies).

Verification: At least 30 days (or within a project owner and CBO approved alternative time frame) prior to the start of any increment of major piping or plumbing construction listed in **FACILITY DESIGN Table 1**, Condition of Certification **GEN-2** above, the project owner shall submit to the CBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's inspection approvals.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal/OSHA), prior to operation, the code certification papers and other documents required by applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal/OSHA inspection of that installation (2007 CBC, Appendix Chapter 1, § 109.5, Inspection Requests).

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and

2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days (or within a project owner and CBO approved alternative time frame) prior to the start of on-site fabrication or installation of any

pressure vessel, the project owner shall submit to the CBO for design review and approval the above-listed documents, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal/OSHA inspection approvals.

MECH-3 The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC), or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of that construction. The final plans, specifications, and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings, and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications, and calculations conform with the applicable LORS (2007 CBC, Appendix Chapter 1, § 109.3.7, Energy Efficiency Inspections; § 106.3.4, Design Professionals in Responsible Charge).

Verification: At least 30 days (or within a project owner and CBO approved alternative time frame) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for all electrical equipment and systems 480 Volts or higher (see a representative list, below), with the exception of underground duct work and any physical layout drawings and drawings not related to code compliance and life safety, the project owner shall submit for CBO design review and approval the proposed final design, specifications, and calculations (2007 CBC, Appendix Chapter 1, § 106.1, Submittal Documents). Upon approval, the above-listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the

operating life of the project. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS (2007 CBC, Appendix Chapter 1, § 109.6, Approval Required; § 109.5, Inspection Requests). All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in Conditions of Certification in the **Transmission System Engineering** section of this Decision.

A. Final plant design plans shall include:

   1. one-line diagrams for the 13.8 kV, 4.16 kV, and 480 V systems; and

   2. system grounding drawings.

B. Final plant calculations must establish:

   1. short-circuit ratings of plant equipment;

   2. ampacity of feeder cables;

   3. voltage drop in feeder cables;

   4. system grounding requirements;

   5. coordination study calculations for fuses, circuit breakers, and protective relay settings for the 13.8 kV, 4.16 kV, and 480 V systems;

   6. system grounding requirements; and

   7. lighting energy calculations.

C. The following activities shall be reported to the CPM in the monthly compliance report:

   1. Receipt or delay of major electrical equipment;

   2. Testing or energization of major electrical equipment; and

   3. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission Decision.

Verification: At least 30 days (or within a project owner and CBO approved alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for design review and approval the above-listed documents. The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible

electrical engineer attesting compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

B. POWER PLANT EFFICIENCY

The Beacon Solar Energy Project (BSEP) will use solar energy to generate most of its capacity. Fossil fuel (propane) will be used only to reduce startup time and to keep the temperature of the heat transfer fluid (HTF) above its relatively high freezing point of 54 degrees Fahrenheit. Propane will be used during startup to generate approximately 25 MW of electricity for 30-60 minutes per day for an estimated total of 4,500 megawatt hours (MWH) per year. Once the plant commences generation of electricity for delivery to the electrical grid, the use of the propane-fired auxiliary boilers ceases.

Pursuant to the California Environmental Quality Act (CEQA), we must determine whether the consumption of fossil fuel (a non-renewable form of energy) will result in substantial impacts upon energy resources. (Cal. Code Regs., tit. 14 § 15126.4(a)(1), App. F.) The uncontested evidence examines the efficiency of the project design and examines whether the project will incorporate measures that prevent or reduce wasteful, inefficient, or unnecessary energy consumption. (3/22/10 RT 11, 15, 19, 23; Exs. 1; 58; 77; 93; 124; 125; 279; 289; 309; 322; 500.) Neither CURE nor any member of the public commented on power plant efficiency. There are no LORS that establish solar power plant efficiency criteria.

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Applicant proposes to build and operate the BSEP, a solar thermal power plant producing a total of 250 MW (nominal net output) and employing the concentrated parabolic trough solar thermal technology. The project will consist of arrays of parabolic mirrors, solar steam generator heat exchangers, one steam turbine generator, and a wet cooling tower. The project is intended to decrease reliance on fossil fuel and increase reliance on renewable energy sources. (Ex. 500, p. 5.3-1.)

The project's power cycle will be based on a steam cycle (also known as the Rankine cycle) (Ex. 1, section 5.2). The project will also utilize two auxiliary boilers fueled by propane to reduce startup time and to keep the temperature of the heat transfer fluid above its relatively high freezing point (54 degrees Fahrenheit [°F]). Except during startup, the project will not use fossil fuel to generate electricity. (Ex. 500, p. 5.3-3.)

Applicant and Staff evaluated alternative generating technologies. Staff independently concluded that given the project objectives, location, air pollution control requirements, and the commercial availability of various alternative technologies, that the selected solar thermal technology is a feasible selection. (Ex. 500, p. 5.3-5.)

1. Fossil Fuel Use – Impacts

The BSEP will consume insignificant amounts of fossil fuel for power generation and only to reduce startup time and to keep the temperature of the HTF above its relatively high freezing point. (Ex. 500, p. 5.3-4.)

The project will burn propane at a nominal rate of approximately 410,000 gallons per year. Compared to a typical fossil fuel fired power plant of equal capacity, and compared to the relatively considerable resources of fossil fuel in California, this rate is not significant. Propane is a relatively efficient form of fossil fuel, more efficient than natural gas and fuel oil. (Ex. 500, p. 5.3-4.)

The Applicant estimates an average overall steam cycle efficiency of 35 percent for the BSEP. (Ex. 1, Figure 2-7). The evidence establishes that this efficiency is comparable to the average efficiency of the typical modern steam turbines currently available in the market; which range from 35 percent to 40 percent. The Applicant has described its sources of propane for the project and has provided substantial evidence establishing that sufficient supplies of propane are expected to be available to the BSEP. (Ex. 1, section 2.2.1.) Therefore, we consider the impact of the project's fuel consumption on energy supplies and energy efficiency to be less than significant. (Ex. 500, p. 5.3-4.)

While the evidence does not establish that the project's fuel consumption will be significant, the record nevertheless contains an evaluation of alternatives that could reduce or eliminate the use of fossil fuel, including alternative technologies and alternatives to the use of propane for freeze protection. (Ex. 500, p. 5.3-6.)

2. Solar Land Use – Impacts

Solar power plants occupy vast tracts of land, so the focus for these types of facilities shifts from fuel efficiency to land use efficiency. To analyze the land use efficiency of a solar facility, Commission staff analyzed the project to determine its overall solar efficiency. The greater the project's solar efficiency, the less land the plant must occupy to produce a given power output. (Ex. 500, p. 5.3-2.)

The most significant environmental impacts caused by solar power plants result from occupying large expanses of land. The extent of the project's land use impacts is likely in direct proportion to the number of acres affected. For this reason, Staff evaluated the land use efficiency of the project and expressed the results in terms of power produced, or MW per acre. (Ex. 500, p. 5.3-2.)

According to the Staff analysis, the BSEP will produce power at the rate of 250 MW net, and will generate energy at the rate of 600,000 MW-hours net per year, while occupying approximately 1,321 acres[5] (Ex. 1. Section 2.3, Figure 2-4). Staff calculations for the BSEP establish:

Power-based efficiency: 250 MW ÷ 1,321 acres = **0.19 MW/acre** or **5.3 acres/MW**

Energy-based efficiency: 600,000 MWh/year ÷ 1,321 acres = **454 MWh/acre-year**

[5] (the portion of the 2,012-acre site encompassing the solar field, the power block, the evaporation ponds, and the administration buildings)

Efficiency Table 1 — Solar Land Use Efficiency

Project	Generating Capacity (MW net)	Annual Energy Production (MWh net)	Annual Fuel Consumption (MMBtu LHV)	Footprint (Acres)	Land Use Efficiency (Power-Based) (MW/acre)	Land Use Efficiency (Energy – Based) (MWh/acre-year)	
						Total	Solar Only[2]
Beacon Solar (08-AFC-2)	250	600,000	36,000	1,321	0.19	454	450
Carrizo Energy (07-AFC-8)	177	375,000	0	640	0.28	586	586
Ivanpah SEGS (07-AFC-5)	400	960,000	432,432	3,744	0.11	256	238
SES Solar One (08-AFC-13)	850	1,840,000	0	8,200	0.11	224	224
SES Solar Two (08-AFC-5)	750	1,620,000	0	6,500	0.12	249	249
Avenal Energy (08-AFC-1)[3]	600	3,023,388	24,792,786	25	24.0	120,936	N/A

[1] 1,266 + 55 = 1,321
Solar field plus power block = 1,266 acres

Staff's estimate of the footprint encompassing the evaporation ponds and administration buildings = 55 acres (DB 2009r, AFC Figure 3). The remainder of the 2,012 acres is for purposes other than power generation or power plant operation.

[2] Net energy output is reduced by natural gas-fired combined cycle proxy energy output; see **Efficiency Appendix A**.

[3] Example natural gas-fired combined cycle plant. (Source: Ex. 500, pp. 5.3-7 through 5.3-8.)

As seen in **Efficiency Table 1** above, the BSEP, employing the linear parabolic trough technology, is roughly twice as efficient in use of land as the Ivanpah SEGS project, which employs BrightSource power tower technology, the Stirling Energy Systems Solar One project, and the Stirling Energy Systems Solar Two project. (Ex. 500, p. 5.3-7.)

Based on the uncontroverted evidence, we make the following findings and reach the following conclusions:

FINDINGS OF FACT

1. BSEP will provide approximately 250 MW of electrical power, using solar energy to generate most of its capacity and two propane-fueled auxiliary boilers to reduce startup time and to keep the temperature of the heat transfer fluid above its freezing point of 54 degrees Fahrenheit [°F].

2. The project will burn propane at a nominal rate of approximately 410,000 gallons per year

3. Compared to the project's expected overall production rate of approximately 600,000 MWH per year, and compared to a typical fossil fuel fired power plant of equal capacity, the amount of the annual power production from fossil fuel is insignificant.

4. The evidence contains a comparative analysis of alternative fuel sources and generation technologies, none of which is superior to the proposed project at meeting project objectives in an efficient manner.

5. The evidence establishes that the project's fossil-fuel use efficiency is comparable to the average efficiency of the typical modern steam turbines currently available in the market.

6. The impact of the project's fuel consumption on energy supplies and energy efficiency is less than significant.

7. BSEP will not require the development of new fuel supply resources.

8. The project will decrease reliance on fossil fuel, and will increase reliance on renewable energy resources.

9. The evidentiary record contains an analysis of the project's land use impacts compared to energy output, and analyses of alternative solar technologies and heat rejection systems.

10. The project will occupy approximately five acres per MW of power output, a figure about half that of some other solar power technologies.

11. No nearby power plant projects or other projects consuming large amounts of fossil fuel hold the potential for cumulative energy consumption impacts when aggregated with the project.

12. No Federal, State, or local laws, ordinances, regulations, or standards apply to the efficiency of this project.

CONCLUSIONS OF LAW

1. The Beacon Solar Energy Project will not create adverse effects upon energy supplies or resources, require additional sources of energy supply, or consume energy in a wasteful or inefficient manner.

2. No Conditions of Certification are required for this topic area.

C. POWER PLANT RELIABILITY

We must determine whether the project will be appropriately designed and sited in order to ensure safe and reliable operation. [Pub. Res. Code, § 25520(b); Cal. Code Regs., tit. 20, § 1752(c)(2).] However, there are no LORS that establish either power plant reliability criteria or procedures for attaining reliable operation.

The responsibility for maintaining system reliability falls largely to control area operators such as the California Independent System Operator (CAISO) that purchase, dispatch, and sell electric power throughout the State. (Ex. 500, p. 5.4-1.) Protocols to ensure sufficient electrical system reliability have been established. For example, "must run" power purchase agreements and "participating generator" agreements are two mechanisms that contribute to an adequate supply of reliable power. (Ex. 500, p. 5.4-2.)

The California Public Utilities Commission consults with CAISO to establish resource adequacy requirements for all load-serving entities (basically, publicly and privately owned utility companies). These requirements include maintaining a minimum reserve margin (extra generating capacity to serve in times of equipment failure or unexpected demand) and maintaining sufficient local generating resources to satisfy the load-serving entity's peak demand and operating reserve requirements. The CAISO has begun to establish specific criteria for each load-serving entity under its jurisdiction. These criteria guide each load-serving entity in deciding how much generating capacity and ancillary services to build or purchase, after which the load-serving entity issues power purchase agreements to satisfy these needs. (Ex. 500, p. 5.4-2.)

According to the evidence, summarized below, these criteria have been developed on the assumption that individual power plants in the current competitive market will continue to exhibit historical reliability levels. However, it is possible that, if numerous power plants operated at reliability levels sufficiently lower than historical levels, this assumption would prove invalid. Therefore, to ensure adequate system reliability, we examine whether individual power plants will be built and operated to the traditional level of reliability reflected in the power generation industry. We take this approach because, where a power plant compares favorably to industry norms, it is not likely to degrade the overall reliability of the electric system it serves. (Ex. 500, pp. 5.4-2 to 5.4-3.) The evidence presented on this topic was uncontested and neither CURE nor any member of the public commented on power plant reliability. (3/22/2010 RT 14-15, 26, 27, 28, 29, 30, 31, 95, 98, 101, 147, 149, 154, 155, 157, 158, 159, 160,

161, 162, 165, 190, 191, 196, 197, 239, 244, 256, 264, 270, 286, 311, 316, 319; Ex. 500)

SUMMARY AND DISCUSSION OF THE EVIDENCE

Applicant intends that the Beacon Solar Energy Project provide dependable renewable power to the electricity grid, generally during the hours of peak power consumption such as hot summer afternoons. It expects an annual availability factor[6] of approximately 96 percent for the project. (Ex. 500, p. 5.4-2.) Both planned and unplanned outages subtract from a plant's availability. For practical purposes, a reliable power plant is one that is available when called upon to operate. The evidence shows that delivering acceptable reliability entails: 1) adequate levels of equipment availability; 2) plant maintainability with scheduled maintenance outages; 3) fuel and water availability; and 4) resistance to natural hazards. (Ex. 500, p. 5.4-3.)

The record, summarized below, reflects Commission staff's evaluation of the proposed project against typical industry norms as a benchmark for assessing plant reliability.

1. Equipment Availability

Equipment availability will be ensured by use of appropriate quality assurance/quality control (QA/QC) programs during design, procurement, construction, and operation of the plant and by providing adequate maintenance and repair of the equipment and systems. The project owner will use a QA/QC program typical in the power industry. Equipment will be purchased from qualified suppliers and the project owner will perform receipt inspections, test components, and administer independent testing contracts. To ensure these measures are taken, we have incorporated appropriate Conditions of Certification in the **Facility Design** section of this Decision. (Ex. 500, p. 5.4-3.)

2. Plant Maintainability

The Beacon Project will operate only when the sun is shining. Repairs or maintenance can thus occur at night. Moreover, redundant pieces of the equipment most likely to require service or repair will be provided in order to allow repairs when the plant is operating, if needed. (Ex. 500, pp.5.4-3 to 5.4-4.)

[6] This is the percentage of time that the power plant is available to generate power.

The project owner will establish a maintenance program based on recommendations from the various equipment manufacturers. This will encompass both preventive and predictive maintenance techniques. Maintenance outages will likely be planned for periods of low electricity demand. The evidence establishes that these measures will ensure acceptable reliability. (Ex. 500, p. 5.4-4.)

3. Fuel and Water Availability

For any power plant the long-term availability of fuel, and water for cooling or process use, is necessary to ensure reliability. The Beacon Project will use small amounts of propane to reduce start-up time and keep the temperature of the heat transfer fluid above its freezing point. This fuel will be supplied by local suppliers via truck. The evidence establishes that adequate supplies of propane are available to meet the project's needs. (Ex. 500, p. 5.4-4.)

The Applicant proposed to use well water for domestic and industrial water needs, including steam cycle makeup, mirror washing, service water and fire protection water. Staff contends that the use of on-site groundwater for power plant cooling conflicts with the State Water Board and Energy Commission policies. However, the record shows that alternative supplies are available. For example, Rosamond Community Services District (RCSD) has submitted a letter expressing its willingness to provide Beacon with 1,456 acre-feet per year of Title 22 tertiary treated recycled water during the life of the project. The quantity and quality and quality of this water appear to be adequate. California City has also submitted a letter expressing its willingness to provide Beacon with adequate supplies of treated wastewater. For a dispositive discussion of this matter, see the **Soil and Water Resources** section of this Decision. (Ex. 500, pp. 5.4-4 to 5.4-5.)

4. Natural Hazards

The site lies in Seismic Risk Zone 4. The project will be designed and constructed to the Seismic Zone 4 standards of the latest appropriate LORS. By implementing these seismic design criteria, this project will likely perform at least as well as, and perhaps better than, existing plants in the electric power system. We have adopted Conditions of Certification in the **Facility Design** section to ensure this occurs. Although a portion of the site is within the 100-year

floodplain, the Applicant's proposal to build a new diversion channel to relocate two linear miles of Pine Creek to control storm water flow eliminates reliability concerns due to flooding. (Ex. 500, p. 5.4-5.)

5. Comparison to Industry Norms

The North American Electric Reliability Corporation (NERC) maintains industry statistics for availability factors and other related reliability data. However, no statistics are currently available for solar power plants. The record therefore contains a comparison of the project's predicted availability factor of fossil-fueled plants.[7] (Ex. 500, pp. 5.4-5 to 5.4-6.) NERC reports that, for the years 2002-2006, the availability factor for fossil fueled units is 86.01 percent. (Ex. 500, p. 5.4-6.)

Moreover, the evidence shows that the concentrated parabolic trough solar thermal technology is not new. It has been employed for over 20 years at the nearby Solar Electric Generating System facilities in the Mojave Desert. The Beacon Project will also use multi-pressure condensing steam turbine technology. Steam turbines incorporating this technology have been on the market for many years and typically exhibit high availability. Furthermore, because solar-generated steam is cleaner than burnt fossil fuel, the BSEP steam cycle units will likely require less frequent maintenance than units that burn fossil fuel. (Ex. 500, p. 5.4-6.). We are persuaded by the evidence that the project will likely reach its predicted annual availability factor of approximately 96 percent.

Finally, the evidence shows that the Beacon Project will provide renewable energy on hot summer afternoons, when it is most needed. The evidence characterizes this as a "noteworthy project benefit." (Ex. 500, p. 5.4-6.)

FINDINGS OF FACT

Based on the uncontested evidence, we make the following findings:

1. No federal, state, or local/county LORS apply to the reliability of the Beacon Solar Energy Project.

2. A project's reliability is acceptable if it does not degrade the reliability of the utility system to which it is connected.

[7] Because the project's total net power output is 250 MW, Staff used the availability factor statistics for 200-299 MW fossil fueled units. (Ex. 500, p. 5.4-6.)

3. No NERC statistics for solar power plants are currently available. Therefore, the evidence contains a comparison of the project's predicted availability factor to the average availability factor of fossil-fueled plants.

4. The North American Electric Reliability Corporation (NERC) reports that, for the years 2002 through 2006, fossil-fueled units of 200-299 MW exhibited an availability factor of about 86.01 percent.

5. An availability factor approximately 96 percent is achievable by the Beacon Solar Energy Project.

6. Implementation of Quality Assurance/Quality Control (QA/QC) programs during design, procurement, construction, and operation of the plant, as well as adequate maintenance and repair of the equipment and systems, will ensure the project is adequately reliable.

7. Appropriate Conditions of Certification included in the **Facility Design** portion of this Decision ensure implementation of the QA/QC programs and conformance with seismic design criteria.

8. The project's propane fuel supply is reliable.

9. The evidence shows that adequate, reliable supplies of treated recycled or waste water exist and are available.

10. The project will meet or exceed industry norms for reliability, including reliability during seismic events, and will not degrade the overall electrical system.

11. The project will incorporate an appropriate redundancy of function for its equipment.

12. The project will provide renewable energy on hot summer days, when it is most needed.

CONCLUSIONS OF LAW

1. We therefore conclude that the Beacon Solar Energy Project will meet industry norms and not degrade the overall reliability of the electrical system.

2. There are no LORS that establish either power plant reliability criteria or procedures for attaining reliable operation. No Conditions of Certification are required for this topic area.

D. TRANSMISSION SYSTEM ENGINEERING

The Commission's jurisdiction includes "…any electric power line carrying electric power from a thermal power plant …to a point of junction with an interconnected transmission system." (Pub. Res. Code, § 25107.) The Commission assesses the engineering and planning design of new transmission facilities associated with a proposed project to ensure compliance with applicable law. The record indicates that the Applicant in this case accurately identified all necessary interconnection facilities.

The California Independent System Operator (CAISO) is responsible for ensuring electric system reliability for participating entities, and determines both the standards necessary to achieve system reliability and whether a proposed project conforms to those standards. The Commission works in conjunction with the CAISO in assessing a project.

Commission Staff's analysis evaluates the project transmission lines and equipment, both from the power plant up to the point of interconnection with the existing transmission network as well as upgrades beyond the interconnection that are attributable to the project. Staff relies upon the responsible interconnecting authority for analysis of impacts on the transmission grid, as well as for the identification and approval of new or modified facilities required downstream from the proposed interconnection for mitigation purposes. (3/22/10 RT 19:7-11; Exs. 18; 44; 67; 76; 192; 255; 313; 320; 334; 500; 616 through 622.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The BSEP site is located approximately one mile to the north of the Los Angeles Department of Water and Power (LADWP) Barren Ridge 230kV switching station site and will consist of a 250MW steam turbine generator. The steam for the prime mover will be created by utilizing collected solar energy, through a heat-exchanger. The proposed generating plant will consist of one 330 MVA Steam turbine generating unit for a total net output of 250MW. The generator auxiliary load will be 30MW, resulting in a maximum net output of 250 MW at an 85 percent power factor. The generating unit would be connected to the low side of its dedicated 18/230 kV generator step-up (GSU) transformer through 18kV, 1200-ampere SF6 circuit breakers. The step-up transformer for the steam turbine generating unit would be rated at 18/230 kV and 200/266/332 megavolt ampere (MVA) at 55 centigrade. The 230-kV side of the step-up transformer would be connected through 1200A, SF6 circuit breaker to the existing Barren Ridge

switching station via a 230-kV transmission line. The project will utilize the existing bus work within the breaker-and- a-half Barren Ridge switching station to interconnect the BSEP plant. The modification of the existing Barren Ridge switch yard would consist of two new 3000A, 230-kV circuit breakers, 230-115 kV capacitor controlled voltage transformers and four 230-kV, 3000 A disconnect switches. (Ex. 500, p. 5.5-3.)

LADWP is responsible for ensuring electric system reliability in its service territory for proposed transmission modifications. For the BSEP, LADWP performed the System Impact Study used to determine whether or not the proposed transmission modifications conform to reliability standards. Because the BSEP would be connected to the LADWP controlled Municipal utility grid via the Barren Ridge 230-kV switching station, the LADWP's role is to review and approve the SIS and its conclusions. (Ex. 500, p. 5.5-1.)

The LADWP performed an Interconnection System Impact Study (SIS) of the BSEP, as requested by Florida Power & Light Company (FPL) Energy, LLC, now known as NextEra. The study included power flow, sensitivity, and short circuit studies, and transient and post-transient analyses (Ex. 76). The study modeled the proposed project for a net output of 250 MW. The base case system representation includes all the proposed upgrades in the LADWP area and any generator and transmission interconnection requests that are currently in LADWP's interconnection application queue ahead of the project. These conditions reflect the most critical expected loading condition for the transmission system in LADWP's area. In addition, the bulk power study evaluated conditions with dispatch of generation outside of the LAWDP service territory and electrical system in a manner that maximized loadings in the LADWP Main System area. The detailed study assumptions are described in the study. The power flow studies were conducted with and without BSEP connected to LADWP's grid at the Barren Ridge, using 2011 heavy summer peak and 2011 light autumn base cases. The power flow study assessed the project's impact on thermal loading of the transmission lines and equipment. Transient and post-transient studies were conducted for BSEP using the 2011 heavy summer peak base case to determine whether the project would create instability in the system following certain selected outages. Short circuit studies were conducted to determine if BSEP would overstress existing substation facilities. (Ex. 500, p. 5.5-5.)

1. Switchyard and Interconnection Facilities

The Barren Ridge interconnection will require approximately 3.5 miles of overhead 230-kV transmission line, approximately 1.6 miles of which will be within the plant site boundary. The line will exit a pull off structure within a new project switchyard in the plant side power block and head north following the project access road for approximately 1.2 miles on monopole steel concrete structures, turning southwest to cross the existing Union Pacific rail line and SR-14. After crossing SR-14, the line will continue in a southwesterly direction for approximately 0.3 mile until it reaches the Barren Ridge switching station. (Ex. 500, pp. 5.5-3 through 5.5-4.)

The proposed 230-kV overhead single circuit would be built with 795 kcmil per phase ACSR conductors and routed through the 230-kV, 36 new steel/concrete mono-poles to interconnect plant to the existing Barren Ridge substation. The proposed overhead generator tie line is rated to carry the full capacity of the BSEP. The 230-kV poles are expected to average about 79 feet in height, with a span length expected to average approximately 500 feet. The proposed transmission line is the first point of interconnection. (Ex. 500, p. 5.5-4.)

Compliance with Condition of Certification **TSE-5** will ensure these facilities comply with LORS.

2. Study Results

a. Power Flow Study

Under heavy summer conditions, the record indicates that steady-state analysis of both primary and alternate point of interconnection cases revealed no thermal overload in the pre and post project system, except for the loss of both Rinaldi-Tarzana lines (N-2), which resulted in the overload of the Northridge-Tarzana line. However, the evidence indicates that this overload is resolved with partial load shed at Tarzana as an interim mitigation procedure. Also, the record indicates that LADWP is planning to upgrade the conductor of the impacted line with higher capacity to address a long-term solution for this overload. (Ex. 500, p. 5.5-5.)

Under light autumn conditions, the record indicates no steady-state violations and no thermal overloads were found for all contingencies in the pre and post

project system with either the primary point of interconnection or the alternate point of interconnection. (Ex. 500, p. 5.5-5.)

b. LADWP Transient Study Results

The transient study was conducted for the critical single and double contingencies affecting the area listed in the page 8 of Exhibit 76 (the LADWP SIS). The three-phase faults with normal clearing are studied for single contingencies; single -line-to-ground faults with delayed clearing are studied for double contingencies. All outage cases were evaluated with the assumption that existing Special Protection Schemes (SPS) or Remedial Action Schemes (RAS) would operate as designed where required. The transient stability study indicates there would be no system performance issues caused by the BSEP project for the primary point of interconnection. (Ex. 500, p. 5.5-6.)

c. LADWP Post-Transient Study Results

NERC/WECC planning standards require that the system maintain post-transient voltage stability when either critical path transfers or area loads increase by 5 percent for category ”B” contingencies, and 2.5 percent for category ”C” contingencies. Post-transient studies conducted for similar or larger generators in the area concluded that the voltage remains stable under both N-1 and N-2 contingencies. All outage cases were evaluated with the assumption that existing SPS or RAS would operate as designed where required. The studies determined that the system remained stable under both single and double contingency outage conditions and the addition of the BSEP project for primary point of interconnection. (Ex. 500, p. 5.5-6.)

d. LADWP Short Circuit Study Results

The record shows that short circuit studies were performed to determine the degree to which the addition of BSEP increases fault duties at LADWP’s substations, adjacent utility substations, and the other 230-kV, and 500-kV busses within the study area. The BSEP interconnection increases both three-phase and single-phase duties at several stations along the Inyo-Rinaldi line. These increased duties do not exceed the planned interrupting duty of 15kA of all Barren Ridge switching station circuit breakers. At the point of interconnection, two circuit breakers and four disconnect switches are required at the positions E31 and E32 of the Barren Ridge switching station. The continuous rating of the new circuit breakers and disconnect switches should be 3000A at the 230-kV

nominal voltage. The interruptible rating of the breakers should match with the existing level of 15kA. (Ex. 500, p. 5.5-6.)

Condition of Certification **TSE-5** will ensure that BSEP's transmission system will comply with LORS, and requires the project owner to submit, among other things, design drawings and an interconnection agreement. Intervenor CURE argued for additional conditions in Condition of Certification **TSE-5.** First, CURE requested a signed interconnection agreement as a necessary precondition to the start of power plant construction. Second, CURE requested the interconnection agreement require delivery of the full 250 MW of Beacon generation at all times when the Owens Gorge - Rinaldi line and Barren Ridge switching stations are in service under N-O conditions. Third, CURE requested the interconnection agreement prohibit the LADWP from sacrificing some of its own generation capacity to make room for Beacon generation. (CURE Opening Brief pp. 97, 101; 3/22/10 RT 193:6-194:4.)

As to CURE's first proposed modification to Condition of Certification **TSE-5,** (seeking to require a signed interconnection agreement as a necessary precondition to the start of power plant construction), the record indicates that this modification is based upon the assumption that the Barren Ridge Renewable Transmission Project (BRRTP) will not be built in time to handle BSEP's output. (CURE Opening Brief p. 98; Ex. 616, p. 2.) We note that Staff's proposed Condition of Certification **TSE-5** already requires BSEP to deliver a copy of the fully executed interconnection agreement to the CPM. However, Staff's expert testified that the interconnection agreement is usually submitted "prior to the start of construction of transmission facilities… We would not agree to a change that it be submitted prior to the start of the facility, itself." (3/22/10 RT 216:18-24.) Staff observes that "given a two year time frame for construction and all the various conditions that must be satisfied before construction can even start, the BEACON project will not be operating until 2013 so CURE's concern is moot because the Barren Ridge-Rinaldi upgrades will be done. (Staff's Reply Brief, p. 19, citing Ex. 500 p. 4.8-11.) We agree and find that CURE has not met its burden to prove that such a modification is necessary. [Cal. Code Regs., tit. 20 § 1748(e)]. Nevertheless, we will require the BSEP to deliver a copy of the fully executed interconnection agreement to the CPM prior to the start of construction of transmission facilities.

CURE also seeks to modify Condition of Certification **TSE-5** to ensure that the interconnection agreement allows for delivery of the full 250 MW of Beacon generation at all times when the Owens Gorge - Rinaldi line and Barren Ridge

switching stations are in service under N-O conditions. (CURE Opening Brief pp. 97, 101.) Here, again, CURE's evidence responds to its expert's belief that the BSEP would be in operation in 2011 but the BRRTP would not be operational until 2013. (Ex. 616, p. 2; 3/22/10 RT 206:12-18 referring to Ex. 638.) However, since BSEP will take 25 months to complete and the certification hearing on the project will not even occur until late summer or fall of 2011, we again find that such a condition is unnecessary for mootness. Therefore, we find that CURE has not proven that such a modification is necessary.

CURE's third proposed modification to **TSE-5**, would prevent the interconnection agreement from allowing the LADWP to sacrifice some of its own generation capacity to make room for Beacon generation. (CURE Opening Brief pp. 97, 101; 3/22/10 RT 193:6-194:4.) Exhibit 638 (3/16/10 e-mail from Ly Le at LADWP) makes clear that Remedial Action Schemes (RAS) will only be necessary until the BRRTP is completed. Further, CURE's own testimony indicates that RAS and Special Protection Schemes (SPS) are common and it is not unusual to "back off a power plant" under outage conditions. (3/22/10 RT 198:2-24; 202:24-203:13.) Finally, CURE's testimony acknowledges that there is nothing in the record that would require an SPS, thus indicating that this concern is merely hypothetical. (3/22/10 RT 201:15-202:17). We see no point in requiring language in an interconnection agreement to cover a temporary situation which is unlikely to exist once the project is operational. Again, the record supports our finding that this modification is both moot and unnecessary, and that CURE's burden of proof is not sustained.

3. Compliance with LORS

The SIS concludes that "no adverse system impacts were found with the Beacon Solar Project interconnection at Barren Ridge Switching Station in terms of transient and post-transient stability for the point of interconnection. The study shows that the project interconnection will comply with NERC/WECC planning standards and LADWP reliability criteria. The Applicant will design, build, and operate the proposed 230-kV overhead single circuits. With implementation of the proposed Conditions of Certification, the project will meet the requirements and standards of all applicable LORS. 14. We find the Conditions of Certification are adequate to ensure that BSEP does not adversely impact the transmission grid. (Ex. 76, p. 19; Ex. 500, p. 5.5-7.)

4. Public Comment

There was no public comment on transmission systems engineering.

FINDINGS OF FACT

Based on the uncontroverted evidence, we make the following findings and conclusions:

1. BSEP will consist of one 330 MVA Steam turbine generating unit with a 30 MW generator auxiliary load resulting in a maximum net output of 250 MW at an 85 percent power factor.
2. BSEP will connect through a 1200A, SF6 circuit breaker to the existing Barren Ridge switching station via a 230-kV transmission line.
3. The project will utilize the existing bus work within the breaker-and- a-half Barren Ridge switching station to interconnect the BSEP plant, along with the addition of two new 3000A, 230-kV circuit breakers, 230-115 kV capacitor controlled voltage transformers and four 230-kV, 3000 A disconnect switches..
4. The LADWP performed an Interconnection System Impact Study (SIS) of the BSEP which included power flow, sensitivity, and short circuit studies, and transient and post-transient analyses.
5. The Barren Ridge interconnection will require approximately 3.5 miles of overhead 230-kV transmission line, approximately 1.6 miles of which will be within the plant site boundary.
6. The proposed transmission line is the first point of interconnection.
7. Under heavy summer conditions, the record indicates that steady-state analysis of the point of interconnection cases revealed no thermal overload in the pre and post project system, except for the loss of both Rinaldi-Tarzana lines (N-2), which resulted in the overload of the Northridge-Tarzana line.
8. The Northridge-Tarzana line overload is resolved with partial load shed at Tarzana as an interim mitigation procedure, pending LADWP's upgrade the conductor of the impacted line with higher capacity to address a long-term solution for this overload.
9. Under light autumn conditions, the SIS found no steady-state violations and no thermal overloads for all contingencies in the pre and post project system.

10. The transient stability study indicates there will be no system performance issues caused by the BSEP project from the point of interconnection.

11. The post-transient study determined that the system remained stable under both single and double contingency outage conditions and the addition of the BSEP project.

12. The BSEP interconnection increases both three-phase and single-phase duties at several stations along the Inyo-Rinaldi line, but these increased duties do not exceed the planned interrupting duty of 15kA for all Barren Ridge switching station circuit breakers.

13. No adverse system impacts were found with the Beacon Solar Project interconnection at Barren Ridge Switching Station in terms of transient and post-transient stability for the point of interconnection.

14. The study shows that the project interconnection will comply with NERC/WECC planning standards and LADWP reliability criteria.

15. The Conditions of Certification are adequate to ensure that BSEP does not adversely impact the transmission grid.

CONCLUSIONS OF LAW

1. The proposed BSEP outlet transmission lines and terminations are acceptable and would comply with all applicable LORS. The project interconnection to the grid would not require additional downstream transmission facilities (other than those proposed by the Applicant) that require CEQA review.

2. We therefore conclude that with the implementation of the various mitigation measures specified in this Decision, the proposed transmission interconnection for the project will not contribute to significant adverse direct, indirect, or cumulative impacts.

3. The Conditions of Certification below ensure that the transmission-related aspects of BSEP will be designed, constructed, and operated in conformance with the applicable laws, ordinances, regulations, and standards identified in the appropriate portion of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

TSE-1 The project owner shall furnish to the Compliance Project Manager (CPM) and to the Chief Building Official (CBO) a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: At least 60 days prior to the start of construction (or a lesser number of days mutually agreed to by the project owner and the CBO), the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **Table 1: Major Equipment List** below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

TRANSMISSION SYSTEM ENGINEERING Table 1
Major Equipment List

Breakers
Step-Up Transformer
Switchyard
Busses
Surge Arrestors
Disconnects
Take Off Facilities
Electrical Control Building
Switchyard Control Building
Transmission Pole/Tower
Grounding System

TSE-2 Prior to the start of construction, the project owner shall assign an electrical engineer and at least one of each of the following to the project: A) a civil engineer; B) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; C) a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; or D) a mechanical engineer. (Business and Professions Code Sections 6704 et seq, require state registration to practice as a civil engineer or structural engineer in California.

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California-registered electrical engineer. The civil, geotechnical or civil, and design engineer assigned in conformance with Facility Design Condition **GEN-5**, may be responsible for design and review of the TSE facilities.

The project owner shall submit to the CBO for review and approval, the names, qualifications, and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer. This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations.

The electrical engineer shall:

1. Be responsible for the electrical design of the power plant switchyard, outlet and termination facilities; and

2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days prior to the start of rough grading (or a lesser number of days mutually agreed to by the project owner and the CBO), the project owner shall submit to the CBO for review and approval, the names, qualifications, and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

TSE-3 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend corrective action (California Building Code, 1998, Chapter 1, Section 108.4, Approval Required; Chapter 17, Section 1701.3,

Duties and Responsibilities of the Special Inspector; Appendix Chapter 33, Section 3317.7, Notification of Noncompliance). The discrepancy documentation shall become a controlled document and shall be submitted to the CBO for review and approval and shall reference this condition of certification.

Verification: The project owner shall submit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action required obtaining the CBO's approval.

TSE-4 For the power plant switchyard, outlet line, and termination, the project owner shall not begin any increment of construction until plans for that increment have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO

inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the Monthly Compliance Report:

1. Receipt or delay of major electrical equipment;
2. Testing or energization of major electrical equipment; and
3. The number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least 30 days prior to the start of each increment of construction (or a lesser number of days mutually agreed to by the project owner and the CBO), the project owner shall submit to the CBO for review and approval the final design plans, specifications, and calculations for equipment and systems of the power plant switchyard, outlet line, and termination, including a copy of the signed and stamped statement from the responsible electrical engineer attesting to compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

TSE-5 The project owner shall ensure that the design, construction, and operation of the proposed transmission facilities will conform to all applicable LORS, including the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations as determined by the CBO.

a) The BSEP project will be interconnected to the LADWP grid via 230-kV, 795 kcmil ACSR overhead conductors, single circuit generator tie line.

b) The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of CPUC General Order 95 and General Order 98 or National Electric Safety Code (NESC), Title 8 of the California Code and Regulations, Articles 35, 36, and 37 of the "High Voltage Electric Safety Orders", National Electric Code (NEC), and related industry standards.

c) Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

d) Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

e) The project conductors shall be sized to accommodate the full output from the project.

f) Termination facilities shall comply with applicable LADWP Utility interconnection standards.

g) The project owner shall provide to the CPM:

   a. The final Detailed Facility Study (DFS) including a description of facility upgrades, operational mitigation measures, and/or Special Protection System (SPS) sequencing and timing if applicable,

   b. Executed project owner and LADWP Facility Interconnection Agreement.

Verification: At least 60 days prior to the start of construction of transmission facilities (or a lessor number of days mutually agree to by the project owner and CBO), the project owner shall submit to the CBO for approval:

1. Design drawings, specifications, and calculations conforming with CPUC General Order 95 and General Order 98 or NESC; Title 8, California Code of Regulations, Articles 35, 36, and 37 of the "High Voltage Electric Safety Orders"; NEC; applicable interconnection standards, and related industry standards for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment.

2. For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst-case conditions,"[8] and a statement signed and sealed by the

[8] Worst-case conditions for the foundations would include for instance, a dead-end or angle pole.

registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or NESC; Title 8, California Code of Regulations, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders"; NEC; applicable interconnection standards, and related industry standards.

3. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements **TSE-5** 1) through 5) above.

4. The final Detailed Facility Study, including a description of facility upgrades, operational mitigation measures, and/or SPS sequencing and timing if applicable, shall be provided concurrently to the CPM.

5. The Executed Facility Interconnection Agreement shall be provided to the CPM prior to the start of construction of transmission facilities.

TSE-6 The project owner shall provide the following Notice to the LADWP prior to synchronizing the facility with the LADWP transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide the LADWP a letter stating the proposed date of synchronization; and

2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the LADWP Outage Coordination Department.

Verification: The project owner shall provide copies of the LADWP letter to the CPM when it is sent to the LADWP one week prior to initial synchronization with the grid. A report of the conversation with the LADWP shall be provided electronically to the CPM one day before synchronizing the facility with the LADWP transmission system for the first time.

TSE-7 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC; Title 8, CCR, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders"; applicable interconnection standards; NEC; and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

1. "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer

in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC; Title 8, California Code of Regulations, Articles 35, 36 and 37 of the “High Voltage Electric Safety Orders”; applicable interconnection standards; NEC; and related industry standards, and these conditions shall be provided concurrently.

2. An “as built” engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. “As built” drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the “Compliance Monitoring Plan.”

3. A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge

E. TRANSMISSION LINE SAFETY AND NUISANCE

The Beacon Solar Energy Project's transmission line must be constructed and operated in a manner that protects environmental quality, assures public health and safety, and complies with applicable law. This portion of the Decision assesses the potential for the generation tie line to create the various impacts mentioned below, as well as whether mitigation measures are required to reduce any adverse effects to insignificant levels. The analysis in the record takes into account both the physical presence of the line and the physical interaction of its electric and magnetic fields. The evidence submitted by Applicant and Staff was uncontested and neither CURE nor any member of the public commented on transmission line safety and nuisance. (3/22/2010 RT 14-15, 18-19; Exs. 18; 44; 67; 76; 192; 255; 313; 320, 334; 500, § 4-11.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The transmission tie line facilities associated with this project consist of:

- A 3.5-mile, 230-kV single circuit overhead transmission line, approximately 1.6 miles of which will lie within the 2,012-acre project site running west from the power generators and south across private property to LADWP's Barren Ridge switching station;
- An on-site 230-kV switchyard from which the conductors will extend to the connection points at the Barren Ridge station; and
- Project-related modifications within the Barren Ridge switching station. (Ex. 500, p. 4.11-4.)

The conductors for the line will be erected on mono-pole steel/concrete structures, between 79 feet and 110 feet in height, as typical of similar LADWP lines. A total of 36 such poles will be used. The line will connect to the LADWP power system; its conductors will be the standard low-corona aluminum, steel-reinforced cables utilized by LADWP for lines in this voltage class. The design and construction will be consistent with LADWP guidelines that ensure line safety and efficiency together with reliability and maintainability. The tie line crosses only uninhabited land, with no nearby residences. (Ex. 500, pp. 4.11-3 to 4.11-4.)

Potential impacts from the project's generation tie line involve aircraft collisions, interference with radio frequency communication, audible noise, hazardous shocks, nuisance shocks, fire danger, and electric and magnetic field (EMF) exposure. (Ex. 500, p. 4.11-1.) Regarding each of these potential impacts, the evidence conclusively establishes the following:

- *Aviation Safety*

Hazards to area aircraft arise from the potential for collision in the navigable airspace. The project site is not located near a major commercial aviation center. The nearest airport is the California City Municipal Airport, approximately 6 miles to the south. Edwards Air Force Base is about 20 miles to the southwest. The evidence shows that the project is sufficiently distant so as not to pose a hazard to either of these facilities. (Ex. 500, p. 4.11-4.)

- *Interference with Radio-Frequency Communication*

This potential impact is one of the indirect effects of line operation and is produced by the physical interaction of the electric fields. It arises from corona discharge and is primarily a concern for lines larger than 345-kV. The project's 230-kV line will be built and maintained according to standard LADWP practices aimed at minimizing any interference. Moreover, there are no nearby residential receptors as the lines traverse uninhabited open space. Condition **TLSN-2** ensures adequate mitigation even though no radio frequency interference or related complaints are likely. (Ex. 500, p. 4.11-5.)

- *Audible Noise*

This is typically perceived as a characteristic crackling, hissing, or frying sound or hum, especially in wet weather.[9] The noise level depends upon the strength of the line's electric field, and is a concern mainly from lines of 345-kV or higher. It can be limited through design, construction, and maintenance practices. The project's line (230-kV) will embody a low corona design to minimize field strengths. The evidence shows that the line is not expected to add significantly to the current background noise levels.[10] (Ex. 500, p. 4.11-5.)

- *Hazardous Shocks*

These could result from direct or indirect contact between an individual and the energized line. Adherence to minimum national safe operating clearances in areas where the line might be accessible to the public assures safety.

[9] In fair weather, audible noise from modern transmission lines is generally indistinguishable from background noise at the edge of a right-of-way 100 or more feet wide. (Ex. 500, p. 4.11-5.)

[10] Overall project noise levels are discussed in the **Noise** section of this Decision.

Compliance with the CPUC's GO-95, as required in Condition of Certification **TLSN-1**, will ensure that adequate measures are implemented to minimize this potential impact. (Ex. 500, p. 4.11-6.)

- *Nuisance Shocks*

Nuisance shocks are typically caused by direct contact with metal objects electrically charged by fields from an energized line. They are effectively minimized through grounding procedures for all metallic objects within the right-of-way as specified by the National Electrical Safety Code (NESC) as well as the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). This is required in Condition of Certification **TLSN-5**. (Ex. 500, p. 4.11-6.)

- *Fire Hazards*

Fire can be caused by sparks from the line's conductors or by direct contact between the line and nearby trees or other combustible objects. LADWP's standard fire prevention and suppression measures, and compliance with the clearance-related aspects of GO-95 as required in Condition of Certification **TLSN-4**, ensure that appropriate fire prevention measures are implemented. (Ex. 500, p. 4.11-6.)

- *Exposure to Electric and Magnetic Fields*

Electric and magnetic fields (EMF) occur whenever electricity flows. The possibility of deleterious health effects from exposure to EMF has raised public health concerns about living and working near high-voltage lines. Due to the present scientific uncertainty regarding potential health effects from EMF exposure, CPUC policy requires reduction of such fields in the design, construction, and maintenance of new or modified lines, if feasible, without affecting the safety, efficiency, reliability, and maintainability of the transmission grid. (Ex. 500, pp. 4.11-6 to 4.11-7.)

The CPUC requires each new or modified transmission line in California to be designed according to the EMF-reducing guidelines of the electric utility in the service area involved. EMF fields produced by new lines must be similar to the fields of comparable lines in that service area. (Ex. 500, p. 4.11-8.) LADWP's specific field strength-reducing measures will be incorporated into the project line's design and include:

- Increasing the distance between the conductors and the ground to an optimal level;
- Reducing the spacing between the conductors to an optimal level;
- Minimizing the current in the line; and
- Arranging current flow to maximize the cancellation effects from the interaction of conductor fields. (Ex. 500, pp. 4.11-8 to 4.11-9.)

Applicant estimated the maximum electric and magnetic field intensities expected along the line's route.[11] Condition of Certification **TLSN-3** requires that actual field strengths be measured, according to accepted procedures, to verify that the field intensities are similar to those of other LADWP lines. These measurements will reflect both the effectiveness of the field reduction techniques used and the project's potential contribution to area EMF levels. (Ex. 500, p. 4.11-9.)

Since there are no residences in the vicinity of the project's line, there will not be the long-term human residential EMF exposures primarily responsible for the health concern of recent years. The only project-related EMF exposures of potential significance are the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the immediate vicinity of the line. The evidence shows that these types of exposures are not significantly related to adverse health effects. (Ex. 500, p. 4.11-10.)

Finally, the evidence addresses potential cumulative impacts. When field intensities are measured or estimated for a specific location, they reflect the interactive, and therefore cumulative, effects of fields from all contributing conductors. This interaction can be additive or subtractive depending on prevailing conditions. In the present case, the line's conductors will be located in a new right-of-way away from the field impact zones for other area lines. This eliminates the cumulative effects of fields from existing area lines. The transmission lines from approved or reasonably foreseeable future solar and non-solar projects in the area (the Pine Tree Wind Development Project, the LADWP Barren Ridge-Castaic Project, the Opti-Solar Sapphire Project, the Opti-Solar Turquoise Project, the Solar Millennium-Ridgecrest Project, and the Solar Millennium Project) will not be located close enough to the Beacon line to create cumulative field impacts of potential significance. Since the project's

[11] Estimates are specified at a distance of 75 feet from the center line, at a height of one meter above the ground, in units of kilovolts per meter (kV/m) for the electric field and milligauss (mG) for the companion magnetic field. The maximum electric field strength (0.2 kV/m) and the maximum magnetic field intensity (15 mG) calculated are similar to those of other LADWP 230-kV lines. (Ex. 500, p. 4.11-9.)

transmission line and related switchyard will be designed according to LADWP's applicable field-reducing guidelines, any contribution to total area exposures will be at levels expected for LADWP lines of similar voltage and current-carrying capacity. (Ex. 500, p. 4.11-9.)

Overall, the evidence shows that the project's transmission tie line facilities will be designed, constructed, operated, and maintained in compliance with applicable LORS. Implementation of the Conditions of Certification will ensure that any impacts are reduced to less than significant levels. (Ex. 500, pp. 4.11-9 to 4.11-10.)

FINDINGS OF FACT

Based on the uncontroverted evidence, we make the following findings:

1. The Beacon Solar Energy Project's transmission facilities consist of an on-site 230-kV switchyard and a 3.5 mile long, 230-kV single-circuit overhead transmission line extending from the switchyard to LADWP's Barren Ridge switching station.
2. The evidentiary record includes analyses of potential impacts from the project's generation tie line involving aircraft collisions, interference with radio frequency communication, audible noise, hazardous shocks, nuisance shocks, fire danger, and EMF exposure.
3. There are no residences along the route of the project's new generation tie line.
4. The available scientific evidence does not establish that EMF fields pose a significant health hazard to humans.
5. The electric and magnetic fields generated by the project's generation tie line will be managed to the extent the CPUC considers appropriate, based on available health effects information.
6. The project's generation tie line will comply with existing LORS for public health and safety.
7. The project's generation tie line will incorporate standard EMF-reducing measures established by the CPUC and used by LADWP.
8. The project owner will provide field intensity measurements before and after line energization to assess EMF contributions from the project-related current flow.

9. The new generation tie line will not result in significant adverse impacts to public health and safety or cause significant direct, indirect, or cumulative impacts as a result of aviation collisions, radio frequency communication interference, fire danger, nuisance or hazardous shocks, or electric and magnetic field exposure.

CONCLUSIONS OF LAW

1. Implementation of the Conditions of Certification, below, will ensure that the Beacon Solar Energy Project's transmission tie line complies with all applicable laws, ordinances, regulations, and standards relating to **Transmission Line Safety and Nuisance** as identified in the pertinent portion of **Appendix A** of this Decision.

2. The Beacon Project's transmission line will not create a significant impact due to safety and nuisance factors.

CONDITIONS OF CERTIFICATION

TLSN-1 The project owner shall construct the transmission line according to the requirements of the California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2 High Voltage Electrical Safety Orders, Sections 2700 through 2974 of the California Code of Regulations, and Los Angeles Department of Water and Power's EMF reduction guidelines.

Verification: At least 30 days before starting the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California-registered electrical engineer affirming that the line will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall ensure that every reasonable effort is made to identify and correct, on a case-specific basis, any complaints of interference with radio or television signals from operation of the line or associated switchyard.

Verification: At least 30 days before starting line operations, the project owner shall submit to the CPM a letter signed by a California-registered electrical engineer affirming the project owner's intention to comply with this requirement.

TLSN-3 The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity along the route for which the applicant provided specific estimates. The measurements shall be made before and after

energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed no later than 6 months after the start of operations.

Verification: The project owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

TLSN-4 The project owner shall ensure that the right-of-way of the proposed transmission line is kept free of combustible material as required under the provisions of Section 4292 of the Public Resources Code and Section 1250 of Title 14 of the California Code of Regulations.

Verification: At least 30 days before the start of operations, the project owner shall transmit to the CPM a letter affirming the project owner's intention to comply with this condition.

TLSN-5 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related line are grounded according to industry standards, regardless of ownership.

Verification: At least 30 days before the line is energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

V. PUBLIC HEALTH AND SAFETY

A. GREENHOUSE GAS (GHG) EMISSIONS

1. INTRODUCTION AND SUMMARY

There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Man-made emissions of greenhouse gases, if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Indeed, the California Legislature has found that "[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California" (Cal. Health & Saf. Code, § 38500, division 25.5, part 1).

BSEP, as a solar energy generation project, is exempt from the mandatory GHG emission reporting requirements for electricity generating facilities as currently required by the California Air Resources Board (ARB) for compliance with the California Global Warming Solutions Act of 2006 (AB 32 Núñez, Statutes of 2006, Chapter 488, Health and Safety Code sections 38500 et seq.)[12]. However, the project may be subject to future reporting requirements and GHG reductions or trading requirements as these regulations become more fully developed and implemented.

In addition, as a solar project with a nightly shutdown that would operate at less than 60 percent of capacity, it is not subject to the requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2900 et. seq.). Nonetheless, the BSEP would easily comply with the requirements of SB 1368 and the Greenhouse Gas Emission Performance Standard.

The generation of electricity using fossil fuels, even in a back-up generator at a thermal solar plant, produces air emissions known as greenhouse gases in addition to the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. California is actively pursuing policies to reduce GHG emissions that include adding renewable generation resources to the system which do not emit GHG.

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[12] Air Resources Board. Instructional Guidance for Mandatory GHG Emissions Reporting. http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep-guid/ghg-rep-guid.htm. December 2008.

The greenhouse gases are carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), and perflurocarbons (PFC). CO_2 emissions are far and away the most common of these emissions; as a result, even though the other GHGs have a greater impact on climate change on a per-unit basis, GHG emissions are often expressed in terms of "metric tons of CO_2-equivalent" ($MTCO_2e$) for simplicity. (Ex. 500, p. 4.1-75.)

Since the impact of the GHG emissions from a power plant's operation has global, rather than local, effects, those impacts should be assessed not only by analysis of the plant's emissions, but also in the context of the operation of the entire electricity system of which the plant is an integrated part. Furthermore, the impact of the GHG emissions from a power plant's operation should be analyzed in the context of applicable GHG laws and policies, such as AB 32.

In this part of the Decision we consider:

- Whether BSEP GHG construction emissions will have significant impacts; and

- Whether BSEP operation will be consistent with the state's GHG policies and will help achieve the state's GHG goals by causing a decrease in overall electricity system GHG emissions.

2. Policy and Regulatory Framework

We begin with the simple observation that, as the Legislature stated 35 years ago, "it is the responsibility of state government to ensure that a reliable supply of electrical energy is maintained at a level consistent with the need for such energy for protection of public health and safety, for promotion of the general welfare, and for environmental quality protection." (Pub. Res. Code, § 25001.) Today, as a result of legislation, the most recent addition to "environmental quality protection" is the reduction of GHG emissions. Several laws and statements of policy are applicable.

a. AB 32

The foundation of California's GHG policy is the California Global Warming Solutions Act of 2006. [Assembly Bill 32, codified in Health & Saf. Code, § 38560 et seq. (hereinafter AB 32).] AB 32 requires the California Air Resources Board (CARB) to adopt regulations that will reduce statewide GHG emissions, by the

year 2020, to the level of statewide GHG emissions that existed in 1990. Gubernatorial Executive Order S-3-05 (June 1, 2005) requires a further reduction, to a level 80 percent below the 1990 GHG emissions, by the year 2050.

Along with all other regulatory agencies in California, the Energy Commission recognizes that meeting the AB 32 goals is vital to the state's economic and environmental health. While AB 32 goals have yet to be translated into regulations that limit GHG emissions from generating facilities, the scoping plan adopted by ARB relies heavily on cost-effective energy efficiency and demand response, renewable energy, and prioritization of generation resources to achieve significant reductions of emissions in the electricity sector by 2020. Even more dramatic reductions in electricity sector emissions would likely be required to meet California's 2050 greenhouse gas reduction goal. Facilities under our jurisdiction, such as BSEP, must be consistent with these policies.[13]

b. Renewable Portfolio Standard

California statutory law requires the state's utilities to be obtaining at least 20 percent of their electricity supplies from renewable sources by the year 2020. (Pub. Util. Code, § 399.11 et seq.) Gubernatorial Executive Orders increase the requirement to 33 percent and require CARB to adopt regulations to achieve the goal. [Governor's Exec. Orders Nos. S-21-09 (Sept. 15, 2009), S-14-08 (Nov. 17, 2008).]

c. Emissions Performance Standard

Senate Bill (SB) 1368 of 2006, and regulations adopted by the Energy Commission and the Public Utilities Commission pursuant to the bill, prohibit utilities from entering into long-term commitments with any base load facilities that exceed an Emission Performance Standard (EPS) of 0.500 metric tonnes of CO_2 per megawatt-hour (this is the equivalent of 1100 pounds CO_2/MWh). (Pub. Util. Code, § 8340 et seq.; Cal. Code Regs., tit. 20, § 2900 et seq.; CPUC D0701039.) Currently, the EPS is the only LORS that has the effect of limiting power plant GHG emissions. BSEP is exempt from SB 1368 because, as a solar

[13] Of course, BSEP and all other stationary sources will need to comply with any applicable GHG LORS that take effect in the future.

project which shuts down every night, it would operate at or below a 60 percent capacity factor.

d. Loading Order

In 2003 the Energy Commission and the CPUC agreed on a "loading order" for meeting electricity needs. The first energy resources that should be utilized are energy efficiency and demand response (at the maximum level that is feasible and cost-effective), followed by renewables and distributed generation, combined heat and power (also known as cogeneration), and finally the most efficient available fossil fuel resources and infrastructure development.[14] CARB's AB 32 Scoping Plan reflects these policy preferences. (*California Air Resources Board, Climate Change Scoping Plan, December 2008*.)

We now turn to a discussion of whether, and how well, BSEP would advance these goals and policies. We begin by reviewing the project's emissions both during construction and during operation.

3. GHG Emissions During Construction of the Facility

Construction of industrial facilities such as power plants involves concentrated on-site activities that result in short-term, unavoidable increases in vehicle and equipment emissions, including greenhouse gases. Construction of the proposed project would last about 24 months. The Applicant provided a construction emissions estimate that Commission staff used to calculate greenhouse gas emissions for the entirety of the construction activities. The greenhouse gas emissions estimate, presented below in **Greenhouse Gas Table 2,** was converted by staff into MTCO2E and totaled.

[14] California Energy Commission 2008, *2008 Integrated Energy Policy Report Update*, (IEPR) (CEC-100-2008-008-CMF.)

Greenhouse Gas Table 2
Beacon Estimated Potential Construction Greenhouse Gas Emissions

Construction Element	***CO_2-equivalent (MTCO2E)*** [a]
Solar Facility Construction	15,047
Transmission Line Construction	176
Offsite Access Road Construction	265
Heavy Delivery Trucks	1,282
Construction Total	***16,770***

Source: Ex. 500, , p. 4.1-76.
[a] One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms

There is no adopted, enforceable federal or state LORS applicable to BSEP construction emissions of GHG. Nor is there a quantitative threshold over which GHG emissions are considered "significant" under CEQA. Nevertheless, there is guidance from regulatory agencies on how the significance of such emissions should be assessed. For example, the most recent guidance from CARB staff recommends a "best practices" threshold for construction emissions. [CARB, *Preliminary Draft Staff Proposal, Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act* (Oct. 24, 2008), p. 9]. Such an approach is also recommended on an interim basis, or proposed, by major local air districts.

We understand that "best practices" includes the implementation of all feasible methods to control construction-related GHG emissions. As the "best practices" approach is currently recommended by the state agency primarily responsible not only for air quality standards but also for GHG regulation, we will use it here to assess the GHG emissions from BSEP construction.

In order to limit vehicle emissions of both criteria pollutants and GHG during construction, BSEP will use: (1) operational measures, such as limiting vehicle idling time and shutting down equipment when not in use; (2) regular preventive maintenance to prevent emission increases due to vehicular engine problems; and (3) use of low-emitting diesel engines meeting federal emissions standards for construction equipment, whenever available. (Ex. 500, p. 4.1-77.)

Control measures that we have adopted elsewhere in this Decision to address criteria pollutant emissions would further minimize greenhouse gas emissions to the extent feasible. Also, the requirement that the owner use newer construction

equipment will increase fuel efficiency and minimize tailpipe emissions. (See, e.g. Condition of Certification **AQ-SC5**.)

We find that the measures described above to directly and indirectly limit the emission of GHGs during the construction of BSEP are in accordance with current best practices. We therefore find that the evidence shows that the GHG emissions from construction activities would not exceed the level of significance. (Ex. 500, p. 4.1-77.)

4. Direct/Indirect Operation Impacts and Mitigation

a. Anticipated Emissions

For this project the primary fuel, solar energy, is greenhouse gas free, but the BSEP also employs two 30 million Btu/hr propane-fired auxiliary boilers to reduce startup time and to keep the temperature of the heat transfer fluid (HTF) above its freezing point (54 degrees F). The proposed BSEP would also cause GHG emissions from power block maintenance activities, including mirror cleaning and vegetation removal, weekly testing of the emergency generator and firewater pump, one hour per day of operation of each boiler, and employee trips. (Ex. 500, p. 4.1-76.) Operations GHG emissions are shown in **Greenhouse Gas Table 3**. All emissions are converted to CO_2-equivalent and totaled.

Greenhouse Gas Table 3
Estimated BSEP Potential Operating Greenhouse Gas Emissions

	CO_2-equivalent (MTCO2E[a] per year)
Boilers	3,787
Fire Pump Engine	7.8
Maintenance Vehicles	72.6
Worker Vehicles [b]	419.9
Delivery and Waste Haul Vehicles	519.5
Equipment Leakage (SF_6)	26.0
Total Project GHG Emissions – MTCO2E	**4,832.8**
Facility MWh per year [c]	600,000
Facility GHG Performance (MTCO2E/MWh)	0.008

Sources: Exs.1; 500, p. 4.1-76..
[a] One metric tonne (mt) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.
[b] Assume 66 full time equivalent workers commuting 60 miles round trip five times a week with 10 percent rideshare.
[c] Ex. 1, p. 2-6.

The proposed project would be permitted, on an annual basis, to emit over 48,000 metric tonnes of CO_2-equivalent per year if operated at its maximum permitted level. BSEP is a solar project with a nightly shutdown so it will operate less than 60 percent of capacity; therefore, the project is not subject to the requirements of SB 1368 and the Greenhouse Gas Emission Performance Standard. Nonetheless, the BSEP, at 0.008 MTCO2E/MWh, would easily meet both.

b. Assessment of Operational Impacts

As we have previously noted, GHG emissions have global, rather than local, impacts. While it may be true that in general, when an agency conducts a CEQA analysis of a proposed project, it does not need to analyze how the operation of the proposed project is going to affect the entire system of projects in a large multistate region, analysis of the impacts of GHG emissions from power plants requires consideration of the project's impacts on the entire electricity system.

California's electricity system – which is actually part of a system serving the entire western region of the U.S., Canada, and Mexico – is large and complex. Hundreds of power plants, thousands of miles of transmission and distribution lines, and millions of points of electricity demand operate in an interconnected, integrated, and simultaneous fashion. Because the system is integrated, and because electricity is produced and consumed instantaneously, and will continue to be until large-scale electricity storage technologies are available, any change in demand and, most important for this analysis, any change in output from any generation source, is likely to affect the output from all generators (*Committee Guidance on Fulfilling California Environmental Quality Act Responsibilities for Greenhouse Gas Impacts in Power Plant Siting Applications,* CEC-700-2009-004, pp. 20 to 22.) [15] (Hereinafter referred to as "Committee CEQA Guidance.")

The California Independent System Operator (CAISO) is responsible for operating the system so that it provides power reliably and at the lowest cost. Thus the CAISO dispatches generating facilities generally in order of cheapest to operate (i.e., typically the most efficient) to most expensive (i.e., typically the least efficient). (*Id*., p. 20.) Power plant operating cost is correlated with a plant's heat rate (the amount of fuel that it takes to generate a unit of electricity). In turn, heat rate is directly correlated with emissions (including GHG emissions). When a power plant runs it usually will take the place of another generation

[15] The report was issued in March 2009 and is found on the Commission website at: **http://www.energy.ca.gov/2009publications/CEC-700-2009-004-CEC-700-2009-004.PDF**

facility with higher emissions that otherwise would have operated. Due to the integrated nature of the electrical grid, the operational plant and the displaced plant may be hundreds of miles apart (Committee CEQA Guidance, p. 20.) Because one plant's operation could affect GHG emissions hundreds of miles away, the necessity of assessing their operational GHG emissions on a system-wide basis becomes clear.

As California moves towards an increased reliance on renewable energy, non-renewable energy resources will be curtailed or displaced. These potential reductions in non-renewable energy, shown in **Greenhouse Gas Table 4**, could be as much as 36,000 GWh. These predictions are conservative in that the predicted growth in retail sales incorporates the assumption that the impacts of energy efficiency programs are already included in the current retail sales forecast. If, for example, forecasted retail sales in 2020 were lowered by 10,000 GWh due to the success of energy efficiency programs, non-renewable energy needs would fall by an additional 6,700 to 8,000 GWh/year, depending on the RPS level, totaling as much as 45,000 GWh per year of reduced non-renewable energy, depending on the RPS assumed.

Greenhouse Gas Table 4
Estimated Changes in Non-Renewable Energy Potentially Needed to Meet California Loads, 2008-2020

California Electricity Supply	**Annual GWh**	
Statewide Retail Sales, 2008, estimated [a]	265,185	
Statewide Retail Sales, 2020, forecast [a]	308,070	
Growth in Retail Sales, 2008-20	42,885	
Growth in Net Energy for Load [b]	46,316	
California Renewable Electricity	**GWh @ 20% RPS**	**GWh @ 33% RPS**
Renewable Energy Requirements, 2020 [c]	61,614	101,663
Current Renewable Energy, 2008	29,174	
Change in Renewable Energy-2008 to 2020 [c]	32,440	72,489
Resulting Change in Non-Renewable Energy [d]	13,876	(-36,173)

Source: Ex. 500, p. 4.1-79, Greenhouse Gas Table 4
Notes:
a. Not including 8 percent transmission and distribution losses.
b. Based on 8 percent transmission and distribution losses, or 42,885 GWh x 1.08 = 46,316 GWh.

c. Renewable standards are calculated on retail sales and not on total generation, which accounts for 8 percent transmission and distribution losses.
d. Based on net energy (including 8 percent transmission and distribution losses), not based on retail sales

High GHG-emitting resources, such as coal, are effectively prohibited from entering into new contracts for California electricity deliveries as a result of the Emissions Performance Standard adopted in 2007 pursuant to SB 1368. Between now and 2020, more than 18,000 GWh of energy procured by California utilities under these contracts will have to reduce GHG emissions or be replaced; these contracts are presented in **Greenhouse Gas Table 5**.

Greenhouse Gas Table 5
Expiring Long-term Contracts with Coal-fired Generation 2009 – 2020

Utility	Facility [a]	Contract Expiration	Annual GWh Delivered to CA
PG&E, SCE	Misc In-state Qual.Facilities [a]	2009-2019	4,086
LADWP	Intermountain	2009-2013	3,163 [b]
City of Riverside	Bonanza, Hunter	2010	385
Department of Water Resources	Reid Gardner	2013 [c]	1,211
SDG&E	Boardman	2013	555
SCE	Four Corners	2016	4,920
Turlock Irrigation District	Boardman	2018	370
LADWP	Navajo	2019	3,832
		TOTAL	**18,522**

Source: Ex. 500, p. 4.1-80, Greenhouse Gas Table 5
Notes:
a. All facilities are located out-of-state except for the Miscellaneous In-state Qualifying Facilities.
b. Estimated annual reduction in energy provided to LADWP by Utah utilities from their entitlement by 2013.
c. Contract not subject to Emission Performance Standard, but the Department of Water Resources has stated its intention not to renew or extend.

This represents almost half of the energy associated with California utility contracts with coal-fired resources that will expire by 2030. If the State enacts a carbon adder[16], all the coal contracts (including those in **Greenhouse Gas Table**

[16] A carbon adder or carbon tax is a specific value added to the cost of a project for per ton of associated carbon or carbon dioxide emissions. Because it is based on, but not limited to, actual operations and emission and can be trued up at year end, it is considered a simple mechanism to assign environmental costs to a project.

5, which expire by 2020, and other contracts that expire beyond 2020 and are not shown in the table) may be retired at an accelerated rate as coal-fired energy becomes economically uncompetitive. Also shown are the approximate 500 MW of in-state coal and petroleum coke-fired capacity that may be unlikely to contract with California utilities for baseload energy due to SB1368 Emission Performance Standard. As these contracts expire, new and existing generation resources will replace the lost energy and capacity. Some will come from renewable generation; some will come from new and existing natural gas fired generation. All will emit substantially less GHG than the coal and petroleum coke-fired generation, which average about 1.0 $MTCO_2$/MWh without carbon capture and sequestration, resulting in a net reduction in GHG emissions from the California electricity sector.

The State Water Resource Control Board (SWRCB) has recently proposed substantial changes to power plants using once through cooling (OTC) units, shown in **Greenhouse Gas Table 6**, which would likely require retrofit, retirement, or substantial curtailment of dozens of generating units. In 2008, these units collectively produced about 58,000 GWh. While those OTC facilities owned and operated by utilities and recently-built combined cycles may well install dry or wet cooling towers, it is unlikely that the aging, merchant plants will do so. Most of these units already operate at low capacity factors, reflecting their limited ability to compete in the current electricity market. New resources would continue to out-compete aging plants, displacing the energy provided by OTC facilities and accelerating their retirement.

It must be noted, however, that a project like BSEP located far from coastal load pockets such as the Greater Los Angeles Local Capacity Area, would likely provide energy support to facilitate the retirement of some aging and/or OTC power plants, but would not likely provide any local capacity support at or near the coastal OTC units. We expect that local capacity and voltage support will increasingly be provided by newer, more-efficient natural gas and other forms of generation, including, to the extent practical, distributed generation resources such as rooftop solar. These resources will also help displace older, less-efficient generation and accelerate retirement of those units.

Once-Through Cooling: Capacity and 2008 Energy Output [a]

Plant, Unit Name	Owner	Local Reliability Area	Aging Plant ?	Capacity (MW)	2008 Energy Output (GWh)	GHG Performance (MTCO2/MWh)
Diablo Canyon 1, 2	Utility	None	No	2,232	17,091	Nuclear
San Onofre 2, 3	Utility	L.A. Basin	No	2,246	15,392	Nuclear
Broadway 3 [b]	Utility	L.A. Basin	Yes	75	90	0.648
El Centro 3, 4 [b]	Utility	None	Yes	132	238	0.814
Grayson 3-5 [b]	Utility	LADWP	Yes	108	150	0.799
Grayson CC [b]	Utility	LADWP	Yes	130	27	0.896
Harbor CC	Utility	LADWP	No	227	203	0.509
Haynes 1, 2, 5, 6	Utility	LADWP	Yes	1,046	1,529	0.578
Haynes CC [c]	Utility	LADWP	No	560	3,423	0.376
Humboldt Bay 1, 2 [a]	Utility	Humboldt	Yes	107	507	0.683
Olive 1, 2 [b]	Utility	LADWP	Yes	110	11	1.008
Scattergood 1-3	Utility	LADWP	Yes	803	1,327	0.618
Utility-Owned				**7,776**	**39,988**	**0.693**
Alamitos 1-6	Merchant	L.A. Basin	Yes	1,970	2,533	0.661
Contra Costa 6, 7	Merchant	S.F. Bay	Yes	680	160	0.615
Coolwater 1-4 [b]	Merchant	None	Yes	727	576	0.633
El Segundo 3, 4	Merchant	L.A. Basin	Yes	670	508	0.576
Encina 1-5	Merchant	San Diego	Yes	951	997	0.674
Etiwanda 3, 4 [b]	Merchant	L.A. Basin	Yes	666	848	0.631
Huntington Beach 1, 2	Merchant	L.A. Basin	Yes	430	916	0.591
Huntington Beach 3, 4	Merchant	L.A. Basin	No	450	620	0.563
Mandalay 1, 2	Merchant	Ventura	Yes	436	597	0.528
Morro Bay 3, 4	Merchant	None	Yes	600	83	0.524
Moss Landing 6, 7	Merchant	None	Yes	1,404	1,375	0.661
Moss Landing 1, 2	Merchant	None	No	1,080	5,791	0.378
Ormond Beach 1, 2	Merchant	Ventura	Yes	1,612	783	0.573
Pittsburg 5-7	Merchant	S.F. Bay	Yes	1,332	180	0.673
Potrero 3	Merchant	S.F. Bay	Yes	207	530	0.587
Redondo Beach 5-8	Merchant	L.A. Basin	Yes	1,343	317	0.810
South Bay 1-4	Merchant	San Diego	Yes	696	1,015	0.611
Merchant-Owned				**15,254**	**17,828**	**0.605**
Total In-State OTC				**23,030**	**57,817**	

Source: Ex. 500, p. 4.1-81, Greenhouse Gas Table 6

a. OTC Humboldt Bay Units 1 and 2 are included in this list. They must retire in 2010 when the new Humboldt Bay Generating Station (not ocean-cooled), currently under construction, enters commercial operation.

b. Units are aging but are not OTC.

The proposed BSEP promotes the state's efforts to move towards a high-renewable, low-GHG electricity system, and, therefore, reduce the amount of fossil fuel used by electricity generation and greenhouse gas emissions. Its use of solar power, resultant limited GHG emissions, and likely replacement of older existing plant capacity, furthers the state's strategy to promote generation system efficiency and reduce fossil fuel use and GHG emissions.

Net GHG emissions for the integrated electric system will decline when new renewable power plants are added to: 1) move renewable generation towards the 33 percent target; 2) improve the overall efficiency, or GHG emission rate, of the electric system; or 3) serve load growth or capacity needs more efficiently, or with fewer GHG emissions. We find that BSEP furthers the state's progress toward achieving these important goals and is consistent with the state policies concerning GHG reduction.

5. Cumulative Impacts on Greenhouse Gases

Cumulative impacts are defined as "two or more individual effects which, when considered together, are considerable or . . . compound or increase other environmental impacts." (CEQA Guidelines § 15355.) "A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts." (CEQA Guidelines § 15130[a][1].) Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

GHG assessment is by its very nature a cumulative impact assessment. BSEP would emit a limited amount of greenhouse gases and, therefore, we have analyzed its potential cumulative impact in the context of its effect on the electricity system, resulting GHG emissions from the system, and existing GHG regulatory requirements and GHG energy policies. The evidence supports our finding that BSEP would not cause or contribute to a significant adverse cumulative impact on GHG, and would in fact result in a decrease in GHG from the generation of electricity in California.

6. Closure and Decommissioning

Eventually the facility will close, either at the end of its useful life or due to some unexpected situation such as a natural disaster or catastrophic facility breakdown. When the facility closes, all sources of air emissions would cease to

operate and thus impacts associated with those greenhouse gas emissions would no longer occur. The only other expected GHG emissions would be temporary equipment exhaust (off-road and on-road) from the dismantling activities. These activities would be of much a shorter duration than construction of the project, equipment is assumed to have lower comparative GHG emissions due to technology advancement, and would be required to be controlled in a manner at least equivalent to that required during construction. Therefore, we find that while there will be a temporary CEQA impact on GHG during decommissioning, it will be less than significant.

7. Mitigation Measures/Proposed Conditions of Certification

No Conditions of Certification related to Greenhouse Gas emissions are proposed. The project owner would comply with any future applicable GHG regulations formulated by the ARB, such as GHG reporting or emissions cap and trade markets.

FINDINGS OF FACT

1. The GHG emissions from the BSEP construction are likely to be 16,770 $MTCO_2$ equivalent ("$MTCO_2E$") during the 25-month construction period, which is the annual equivalent of 4445 $MTCO_2E$.

2. There is no numerical threshold of significance under CEQA for construction-related GHG emissions.

3. BSEP will use best practices to control its construction-related GHG emissions.

4. Construction-related GHG emissions are less than significant if they are controlled with best practices.

5. State government has a responsibility to ensure a reliable electricity supply, consistent with environmental, economic, and health and safety goals.

6. California utilities are obligated to meet whatever demand exists from any and all customers.

7. Under SB 1368 and implementing regulations, California's electric utilities may not enter into long-term commitments with base load power plants with CO_2 emissions that exceed the Emissions Performance Standard ("EPS") of 0.500 $MTCO_2$ / MWh.

8. The maximum annual CO_2 emissions from BSEP operation will be 4,832.8 $MTCO_2$, which constitutes an emissions performance factor of 0.008 $MTCO_2$ / MWh.

9. The SB 1368 EPS is not applicable to BSEP GHG emissions because the project will be shut down nightly, thus operating at less than a 60 percent capacity factor.

10. AB 32 requires CARB to adopt regulations that will reduce statewide GHG emissions, by the year 2020, to the 1990 level. Executive Order S-3-05 requires a further reduction, by the year 2050, to 80 percent below the 1990 level.

11. The California Renewable Portfolio Standard (RPS) requires the state's electric utilities obtain at least 33 percent of the power supplies from renewable sources, by the year 2020.

12. California's power supply loading order requires California utilities to obtain their power first from the implementation of all feasible and cost-effective energy efficiency and demand response, then from renewables and distributed generation, and finally from the most efficient available fossil-fired generation and infrastructure improvement.

13. There is no evidence in the record that construction or operation of BSEP will be inconsistent with the loading order.

14. When it operates, BSEP will displace generation from less-efficient (i.e., higher-heat-rate and therefore higher-GHG-emitting) power plants.

15. BSEP will replace power from coal-fired power plants that will be unable to contract with California utilities under the SB 1368 EPS, and from once-through cooling power plants that must be retired.

16. BSEP operation will reduce overall GHG emissions from the electricity system.

CONCLUSIONS OF LAW

1. BSEP construction-related GHG emissions will not cause a significant adverse environmental impact.

2. The GHG emissions from a power plant's operation should be assessed in the context of the operation of the entire electricity system of which the plant is an integrated part.

3. BSEP operational GHG emissions will not cause a significant environmental impact.

4. The SB 1368 EPS does not apply to USEGS, but if it did BSEP GHG emissions will meet or exceed it .

5. BSEP operation will help California utilities meet their RPS obligations.

6. BSEP operation will be consistent with California's loading order for power supplies.

7. BSEP operation will foster the achievement of the GHG goals of AB 32 and Executive Order S-3-05.

8. The GHG emissions of any power plant must be assessed within the system on a case-by-case basis to ensure that the project will be consistent with applicable goals and policies.

9. Any new power plant that we certify must:

    a) not increase the overall system heat rate;

    b) not interfere with generation from existing renewables or with the integration of new renewable generation; and

    c) have the ability to reduce system-wide GHG emissions.

B. AIR QUALITY

This section examines the potential adverse impacts of criteria air pollutant emissions resulting from project construction and operation. In consultation with the local air pollution control district, the Commission determines whether the project will likely conform with applicable LORS, whether it will likely result in significant air quality impacts, including violations of ambient air quality standards, and whether the project's mitigation measures will likely reduce potential impacts to insignificant levels.

Applicant and Staff reached agreement on all relevant issues, including the Conditions of Certification. The evidence contained in the record is undisputed. (3/22/10 RT 26: 8-13; Exs. 6; 33; 34; 50; 51; 60; 61; 72; 96; 99; 113; 128; 163; 170; 176; 184; 204; 205; 206; 207; 209; 211; 214; 232; 247; 259; 261; 281; 301; 302; 305; 306; 500, 508.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

National Ambient Air Quality Standards (NAAQS) have been established for seven air contaminants identified as "criteria air pollutants." These include sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O3), nitrogen dioxide (NO_2), lead (Pb), particulate matter less than 10 microns in diameter (PM10) and particulate matter less than 2.5 microns in diameter (PM2.5). The review of potential impacts also includes the precursor pollutants for ozone, which are nitrogen oxides (NO_X) and volatile organic compounds (VOC), and the precursors for PM10 and PM2.5, which are primarily NO_X, sulfur oxides (SO_X), and ammonia (NH_3). Sulfur oxides (SO_X) react in the atmosphere to form particulate matter and are major contributors to acid rain. (Ex. 500, p. 4.1-1.)

Both the U.S. EPA and the California Air Resources Board (CARB) have established allowable maximum ambient concentrations for the criteria pollutants identified above. The California Ambient Air Quality Standards (CAAQS) are more stringent than federal standards. Federal and State ambient air quality standards are shown below in **AIR QUALITY Table 1** of this Decision. (Ex. 500, p. 4.1-5.)

AIR QUALITY Table 1
State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	Federal Standard
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	None
	8 Hour	0.070 ppm (137 µg/m^3)	0.075 ppm (147 µg/m^3)
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	150 µg/m^3
	Annual	20 µg/m^3	None
Fine Particulate Matter (PM2.5)	24 Hour	None	35 µg/m^3
	Annual	12 µg/m^3	15 µg/m^3
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	None
	Annual	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm (655 µg/m^3)	None
	3 Hour	None	0.5 ppm (1300 µg/m^3)
	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)
	Annual	None	0.03 ppm (80 µg/m^3)

(Ex. 500, p. 4.1-5.)

In general, an area is designated as “attainment” if the concentration of a particular air contaminant does not exceed the standard. Likewise, an area is designated as "non-attainment” for an air contaminant if that contaminant standard is violated. Where not enough ambient data are available to support designation as either attainment or non-attainment, the area can be designated as unclassified. An area could be attainment for one air contaminant while non-attainment for another, or attainment for the federal standard and non-attainment for the state standard for the same air contaminant. (Ex. 500, p. 4.1-5.)

The Beacon Solar Energy Project (BSEP) site is located in the Mojave Desert Air Basin and is under the jurisdiction of the Kern County Air Pollution Control District (KCAPCD). The Kern County portion of the Mojave Air Basin is designated as non-attainment for the state ozone standards, the federal 8-hour ozone standard, and the state PM10 standards. This area is designated as

attainment or unclassified for the state and federal CO, NOx, SOx, and PM2.5 standards and the federal PM10 standard. **Air Quality Table 2** summarizes the area's attainment status for various applicable state and federal standards. (Ex. 500, p. 4.1-6.)

Air Quality Table 2
Federal and State Attainment Status
Kern County Portion of the Mojave Desert Air Basin

Pollutant	Attainment Status [a]	
	Federal	State
Ozone	Former Subpart 1 Nonattainment [b]	Moderate Nonattainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM10	Attainment	Nonattainment
PM2.5	Attainment	Attainment

[a] Attainment = Attainment or Unclassified.
[b] Kern County is in the process of being re-classified to moderate nonattainment of the federal 8-hour state ozone standard.
(Ex. 500, 4.1-6.)

The local and recent ambient air quality data show existing violations of ambient air quality standards for ozone and PM10. The analysis in evidence uses the maximum criteria pollutant concentrations from the past three years of available data collected at the monitoring stations within the Mojave Desert Air Basin as the baseline in the analysis of potential ambient air quality impacts for the BSEP. The highest concentrations are shown in **Air Quality Table 3**. (Ex. 500, p. 4.1-9.)

Air Quality Table 3
Background Concentrations Used in Staff Assessment (µg/m^3)

Pollutant	Averaging Time	Recommended Background	Limiting Standard	Percent of Standard
NO_2	1 hour	103.6	339	31%
	Annual	9.5	57	17%
PM10	24 hour	73	50	146%
	Annual	19.5	20	98%
PM2.5	24 hour	17.8	35	57%
	Annual	6.2	12	52%
CO	1 hour	3,680	23,000	16%
	8 hour	1,778	10,000	18%
SO_2	1 hour	86.5	655	13%
	3 hour	77.8	1,300	6%
	24 hour	13.1	105	12%
	Annual	2.7	80	3%

Note: PM2.5 24-hour data shown in **Air Quality Table 3** are peak values; however, the standard is based on the three year average of the 98th percentile. The average of the available 98th percentile values from the period of 2005 to 2007 at the Mojave monitoring station was used as the basis for the PM2.5 24-hour background value.

(Ex. 500, p. 4.1-9.)

The BSEP facility would be a nominal 250 Megawatt (MW) parabolic solar trough thermal solar electrical generating facility. The direct air pollutant emissions from power generation are minimal; however, there are required auxiliary equipment and maintenance activities necessary to operate and maintain the facility. The BSEP onsite stationary and mobile emission sources would include: two 30 MMBtu propane-fueled boilers used to maintain the temperature of the heat transfer fluid (HTF) above freezing during cold months and pre-warming for daily startup year-round; an 11 cell cooling tower with a high efficiency mist eliminator; onsite diesel and gasoline fueled maintenance vehicles used for mirror washing and other maintenance/operation support activities; a 300-bhp diesel-fired emergency fire water pump engine; twenty two heat transfer fluid (HTF) expansion/ullage tanks with associated piping; an HTF system carbon adsorption based vapor emission control system; spent HTF waste loadout; and, a bio-remediation area to treat HTF contaminated soils. (Ex. 500, p. 4.1-14.)

1. Construction Emissions

Construction of BSEP is expected to take about 25 months. Construction of the transmission line and the offsite access road would occur for three months and two months respectively, and all construction elements would occur

concurrently. Construction emissions can be divided into two types; onsite emissions and offsite emissions. Onsite emissions results from site preparation and various construction activities using heavy-duty vehicles and equipment. Offsite emissions will occur from construction worker vehicles and material delivery trucks. (Ex. 500, p. 4.1-11.)

The air quality impacts were modeled by the applicant using the U. S. EPA guideline ARMS/EPA Regulatory Model (AERMOD) model to estimate ambient impacts. The emission sources for the construction site were grouped into two categories: equipment (off-road equipment); and vehicles (on-road equipment), where the exhaust and fugitive dust emissions for each type were added to the exhaust emissions for PM modeling. Using estimated peak hourly, daily and annual construction equipment exhaust emissions, the applicant modeled construction emissions to determine impacts. To determine the construction impacts on ambient standards (i.e. 1-hour through annual) the on-site construction emission levels were modeled assuming that the emissions would occur during a daily construction schedule of 8 am to 4 pm. The predicted on-site emissions concentration levels were added to a conservatively estimated background of existing emission concentration levels to determine the cumulative effect. The results of the applicant's modeling analysis are presented in **Air Quality Table 4**. The construction modeling analysis includes both the onsite fugitive dust and vehicle exhaust emissions. (ex. 500, pp. 4.1-21 to 4.1-22.)

Air Quality Table 4
Maximum Project Construction Impacts

Pollutants	Avg. Period	Impacts ($\mu g/m^3$)	Background [1] ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Percent of Standard
NO_2	1-hr	216.7	103.6	320.3	339	94%
	Annual	1.1	9.5	10.6	57	19%
PM10	24-hr	36.9	73	109.9	50	220%
	Annual	0.29	19.5	19.8	20	99%
PM2.5	24-hr	15.2	17.8	33.0	35	94%
	Annual	0.13	6.2	6.3	12	53%
CO	1-hr	1,371	3,680	5,051	23,000	22%
	8-hr	173.8	1,778	1,952	10,000	20%
SO_2	1-hr	1.6	86.5	88.1	665	13%
	3-hr	0.54	77.8	78.3	1300	6%
	24-hr	0.07	13.1	13.2	105	13%
	Annual	0.001	2.7	320.3	80	3%

Note
1. Background values have been adjusted per staff recommended background concentrations shown in **Air Quality Table 3**. (Ex. 500, p. 4.1-22)

Because staff's review of the Applicant's modeling analysis found that the construction emissions were not well planned geographically within or around the site, staff prepared a revised modeling analysis for NO_2 and PM10/PM2.5 impacts that increases the area of emissions and better places the majority of the emissions over the site's main construction areas. The results of Staff's modeling analysis are presented in **Air Quality Table 5.** (Ex. 500, pp. 4.1-22 to 4.1-23.)

Air Quality Table 5
Project Construction Emission Impacts – Staff's Modeling Analysis

Pollutants	Avg. Period	Impacts ($\mu g/m^3$)	Background [a] ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Percent of Standard
NO_2	1-hr [b]	228.3	103.6	331.9	339	98%
	Annual [c]	2.0	9.5	11.5	57	20%
PM10	24-hr	74.2	73	147.2	50	294%
	Annual	0.76	19.5	20.3	20	101%
PM2.5	24-hr	4.40	17.8	22.2	35	63%
	Annual	0.20	6.2	6.4	12	53%

Notes:
[a] Background values have been adjusted per staff recommended background concentrations shown in **Air Quality Table 3**.
[b] The 1-hour NO_2 maximum was determined using NOx_OLM modeling and comparison of actual hourly NO_2 background with the modeled NO_2 impacts.
[c] The annual NO_2 results were corrected based on the U.S.EPA default ambient ratio method of 0.75 (NO_2/NOx).
(Ex. 500, p. 4.1-23.)

The evidence indicates the potential for higher localized impacts from the construction activities than determined by the Applicant. In particular there is a potential for elevated PM10 and NO_2 levels near the project fence line, including the potential for NO_2 impacts very close to the state 1-hour standard and further exacerbation of existing violations of the state PM10 standards. (Ex. 500, p. 4.1-23.)

The evidence indicates that the GHG emission increases associated with construction activities would not be significant for several reasons. First, the period of construction would be short-term and not ongoing during the life of the project. Second, the best practices control measures such as limiting idling times and requiring, as appropriate, equipment that meets the latest emissions standards, would further minimize greenhouse gas emissions. Third, the use of newer equipment will increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment. For all these reasons, the short-term emission of greenhouse

gases during construction will be sufficiently reduced and will, therefore, not be significant. (Ex. 500, p. 4.1-83.)

To mitigate the impacts due to construction of the facility the Applicant has proposed nearly identical conditions of certification as Staff's recommended mitigation measures **AQ-SC1** through **AQ-SC5. AQ-SC1** requires the applicant to have an on-site construction mitigation manager who would be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the construction mitigation program would be provided in the monthly construction compliance report that is required in Condition of Certification **AQ-SC2**. Condition of Certification **AQ-SC3** formalizes the fugitive dust control requirements. These requirements include requiring paving of the main access road to the main power block before construction begins on that part of the site, and the requirement that durable non-toxic soil stabilizers be used on the onsite unpaved plant roads as soon as they are constructed. Condition of Certification **AQ-SC4** would limit the potential offsite impacts from visible dust emissions, to respond to situations when the control measures required by **AQ-SC3** are not working effectively to control fugitive dust from leaving the construction site area. Condition of Certification **AQ-SC5** would mitigate the PM and NOx emissions from the large diesel-fueled construction equipment. Implementation of this mitigation measure would provide additional primary and secondary PM mitigation to supplement the recommended fugitive dust mitigation measures. This condition requires the use of EPA/ARB Tier 2 engine compliant equipment for equipment over 100 horsepower where available, a good faith effort to find and use available EPA/ARB Tier 3 engine compliant equipment over 100 horsepower, and also includes equipment idle time restrictions and engine maintenance provisions. Construction air quality impacts would be less than significant with the implementation of the mitigation measures contained in the recommended Conditions of Certification. (Ex. 500, pp. 4.1-23 to 4.1-25.)

2. Initial Commissioning Emissions

Initial commissioning refers to a period prior to beginning commercial operation when the equipment undergoes initial tests. Due to this project's use of a non-fuel fired generating technology, the evidence shows that there will be no significant changes in emissions from the facility commissioning activities compared to that of full production. (Ex. 500, p. 4.1-19.)

3. Operation Emissions

The record shows that the project's stationary source operational impacts would not create violations of NO_2, PM2.5, SO_2, or CO standards, but could further exacerbate violations of the PM10 standards. Particulate matter emissions from routine operation would cause a significant impact because they will contribute to existing violations of the PM10 ambient air quality standard. The predicted maximum concentrations of non-reactive pollutants are summarized in **Air Quality Table 6**. (Ex. 500, pp. 4.1-25 to 4.1-26.)

Air Quality Table 6
Project Operation Emission Impacts – Applicant's Modeling Analysis

Pollutants	Avg. Period	Impacts ($\mu g/m^3$)	Background [a] ($\mu g/m^3$)	Total Impact ($\mu g/m^3$)	Standard ($\mu g/m^3$)	Percent of Standard
NO_2	1-hr	79.7	103.6	183.3	339	54%
	Annual	0.01	9.5	9.5	57	17%
PM10	24-hr	29.1	73	102.1	50	204%
	Annual	2.1	19.5	21.6	20	108%
PM2.5	24-hr	6.3	17.8	24,1	35	69%
	Annual	0.5	6.2	6.7	12	56%
CO	1-hr	75.4	3,680	3,755	23,000	16%
	8-hr	16.3	1,778	1,794	10,000	18%
SO_2	1-hr	5.2	86.5	91.7	665	14%
	3-hr	4.2	77.8	82.0	1300	6%
	24-hr	0.8	13.1	13.9	105	13%
	Annual	0.01	2.7	2.7	80	3%

Note:
[a] Background values have been adjusted per staff recommended background concentrations shown in **Air Quality 3.** (Ex. 500, p. 4.1-26.)

The project's gaseous emissions of NO_x, SO_x, VOC, and ammonia are precursor pollutants that can contribute to the formation of secondary pollutants, ozone, PM10, and PM2.5. There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the modeling to determine ozone impacts. There are no regulatory agency models approved for assessing single source ozone impacts. However, because of the known relationship of NOx and VOC emissions to ozone formation, it can be said that the emissions of NOx and VOC from the BSEP project do have the potential (if left unmitigated) to contribute to higher ozone levels in the region. These impacts would be cumulatively significant because they would contribute to ongoing violations of

the state and federal ozone ambient air quality standards. (Ex. 500, pp. 4.1-27 to 4.1-28.)

The record shows that BSEP would emit considerably less greenhouse gases (GHG) than existing power plants and most other generation technologies, and thus would contribute to continued improvement of the overall western United States, and specifically California, electricity system GHG emission rate average. The project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. Thus, the project would result in a cumulative overall reduction in GHG emissions from the state's power plants, would not worsen current conditions, and would thus not result in impacts that are cumulatively significant. (Ex. 500, p. 4.1-83.)

The Applicant has proposed the implementation of Best Available Control Technology (BACT) to mitigate the project's stationary source NOx, VOC, SO_2, and PM10/PM2.5 emissions. Additionally, Conditions of Certification **AQ-SC6** to **AQ-SC8** will reduce maintenance vehicle emissions, both tailpipe emission and fugitive dust emissions that could contribute to further ozone and PM10 violations. The BACT, along with mitigation measures contained in the Conditions of Certification, will reduce the air quality impacts below the level of significance. (Ex. 500, pp. 4.1-28 to 4.1-31.)

4. Cumulative Impacts and Mitigation

"Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." (CEQA Guidelines, § 15355.) Such impacts can be relatively minor yet still be significant when combined with other closely related past, present, and known or reasonably foreseeable future projects. (Ex. 500, p. 4.1-32.)

Criteria pollutants have impacts that are usually cumulative by their nature. Even if a project would not, by itself, cause a violation of a federal or state criteria pollutant standard, it may contribute to violations of criteria pollutant standards because of pre-existing elevated background conditions. Air districts attempt to reduce background criteria pollutant levels by adopting attainment plans, which are multi-faceted programmatic approaches to attainment. Attainment plans typically include new source review requirements that provide offsets and use BACT, combined with more stringent emissions controls on existing sources. (Ex. 500, p. 4.1-32.)

The Applicant, in consultation with Kern County Planning Department and the District, has conducted a survey of new development projects and stationary sources that have potential for emissions of criteria air contaminants within six miles of the project site that are either under construction, or have received permits to be built or operate in the foreseeable future. The survey results indicate that no such stationary sources exist within the six miles radius of the project site. Two non-stationary projects, the Los Angeles Department of Water and Power (LADWP) Pine Tree Wind Development Project and the LADWP Barren Ridge-Castaic Transmission Project, are located within six miles of the project site. These two projects would have temporary construction emissions and limited operating emissions consisting of inspection and maintenance operations. (Ex. 500, p. 4.1-35.)

The Pine Tree Wind Development Project, which is located approximately six miles west of the site in rugged topography, is currently under construction and scheduled to be in service in July 2009. Therefore, its construction would not significantly overlap the construction of the BSEP. Additionally, the maintenance emissions are not considered to be of a magnitude, given they would occur six miles from the BSEP site, to affect the modeling analysis on a cumulative basis. (Ex. 500, p. 4.1-35.)

The Barren Ridge-Castaic project, which has not yet completed its environmental review and licensing/permitting process, may or may not have construction activities that overlap the BSEP construction. However, those construction activities as a long linear project will be limited in duration and scope near the project site, and the operating inspection/maintenance emissions near the project site would be minimal. Therefore, this project's emissions are not considered to be of a magnitude or duration to affect the modeling analysis on a cumulative basis. (Ex. 500, p. 4.1-35.)

The record shows that since the project's cumulative air quality impacts have been mitigated to less than significant, there is no environmental justice issue for air quality. (Ex. 500, p. 4.1-35.)

4. Compliance with LORS

The FDOC was issued by the KCAPCD in final form on August 6, 2009 (Ex. 232). The Determination of Compliance would represent the federal New Source Review (NSR) permit. Compliance with all District rules and regulations was demonstrated to the District's satisfaction in the DOC. The District's FDOC

conditions are presented in the Conditions of Certification below (**AQ-1** to **AQ-79**). (Ex. 500, pp. 4.1-35 to 4.1-36.)

a. Federal

The District is responsible for issuing the federal New Source Review (NSR) permit and has been delegated enforcement of the applicable New Source Performance Standard (Subpart IIII). Additionally, this project would not require a PSD permit from U.S. EPA prior to initiating construction. (Ex. 500, p. 4.1-36.)

b. State

The applicant will demonstrate that the project would comply with Section 41700 of the California State Health and Safety Code, which restricts emissions that would cause nuisance or injury, with the issuance of the District's Final Determination of Compliance and the Energy Commission's affirmative finding for the project. In the FDOC, the District concluded that the project should comply with this requirement as the screening health risk assessment they performed found risks to be below a Prioritization Score of 1.0, or below the need for any additional analysis or action. (Ex. 232 and Ex. 500, p. 4.1-36.)

The fire pump engine is also subject to the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines. This measure limits the types of fuels allowed, established maximum emission rates, establishes recordkeeping requirements. The proposed Tier 3 engine meets the emission limit requirements of this rule. This measure would also limit the engine's testing and maintenance operation to 50 hours per year. (Ex. 500, p. 4.1-36.)

c. Local

The District rules and regulations specify the emissions control and offset requirements for new sources such as the BSEP. BACT would be implemented, and emission reduction credits (ERCs) are not required to offset the project's emissions by District rules and regulations based on the permitted stationary source emission levels for this project. Compliance with the District's new source requirements would ensure that the project would be consistent with the strategies and future emissions anticipated under the District's air quality attainment and maintenance plans. (Ex. 500, p. 4.1-36.)

The FDOC states that the project is expected to comply with all applicable District rules and regulations. The DOC evaluates whether and under what conditions the project would comply with the District's applicable rules and regulations, as described below. (Ex. 232 and Ex. 500, p. 4.1-36.)

Regulation II – Permits

RULE 210.1 – NEW AND MODIFIED STATIONARY SOURCE REVIEW

This rule establishes the stationary source requirements that must be met to obtain a PTO, including the requirement to comply with best available control technology (BACT), provide emission offsets for emission increase above specified thresholds; and provide a dispersion modeling analysis, an alternatives analysis, and a compliance certification (if applicable). In the FDOC, the District has determined that the proposed controls for the boilers, cooling tower, tank vent system, and firewater pump engine meet BACT requirements. The District has also determined that an inspection and maintenance program limiting VOC leaks on the HTF Piping Network component to less than 100 ppm would be BACT.

The BSEP, as a minor stationary source, does not require offsets, require a dispersion modeling, analysis, or require a compliance certification per District Rule 210.1. (Ex. 500, p. 4.1-37.)

Regulation IV – Prohibitions

RULE 401 - VISIBLE EMISSIONS

This rule limits visible emissions from emissions sources, including stationary source exhausts and fugitive dust emission sources. In the FDOC, the District has determined that the facility is expected to comply with this rule. (Ex. 500, p. 4.1-37.)

RULE 402 - FUGITIVE DUST

This rule limits fugitive emissions from certain bulk storage, earthmoving, construction and demolition, and manmade conditions resulting in wind erosion. With the implementation of recommended staff condition **AQ-SC7** the facility is expected to comply with this rule. (Ex. 500, p. 4.1-37.)

RULE 404.1 - PARTICULATE MATTER CONCENTRATION

The rule limits particulate matter (PM) emissions to less than 0.1 grains per standard cubic foot of gas at standard conditions. In the FDOC, the District has determined that the applicable equipment's (boiler, fire pump engine, cooling tower) PM emission concentration are less than 0.001 gr/scf and so will be well below the limits established by this rule. (Ex. 500, p. 4.1-37.)

RULE 407 - SULFUR COMPOUNDS

This rule limits discharge into the atmosphere of sulfur compounds exceeding 0.2% by volume concentration calculated as SO_2. In the FDOC, the District has determined that the use of California standard liquefied petroleum gas (including liquefied propane) and California diesel fuel in the boilers and fire pump engine, respectively, will ensure compliance with this rule. (Ex. 500, p. 4.1-37.)

RULE 409 - FUEL BURNING EQUIPMENT - COMBUSTION CONTAMINANTS

This rule limits discharge into the atmosphere from fuel burning equipment combustion contaminants exceeding in concentration at the point of discharge, 0.1 grain per cubic foot of gas calculated to 12% of carbon dioxide (CO_2) at standard conditions. In the FDOC, the District has determined that the applicable equipment's (boiler and fire pump engine) PM emission concentration are less than 0.001 gr/scf and so will be well below the limits established by this rule. (Ex. 500, p. 4.1-38.)

RULE 411 – STORAGE OF ORGANIC LIQUIDS

This rule sets standards for storage of organic liquids with a true vapor pressure of 1.5 pounds per square inch or greater. The HTF storage/expansion tanks will be equipped with a vapor control system; therefore, the requirements of this rule do not apply. (Ex. 500, p. 4.1-38.)

RULE 414.2 – SOIL DECONTAMINATION

This rule sets requirements for the VOC emissions from the handling and decontamination activities of VOC contaminated soils. In the FDOC, the District has determined that the on-site bio-remediation area will comply with "Maximum Allowable Addition Rates of Contaminated Soil" (Section V.B) and "Treatment System" (Section V.C) requirements of this rule, and that the applicant is proposing a "Land Farming" operation using bio-remediation to comply with BACT and the requirements of this rule. (Ex. 500, p. 4.1-38.)

RULE 419 – NUISANCE

This rule restricts emissions that would cause nuisance or injury to people or property (identical to California Health and Safety Code 41700). In the FDOC, the District has determined that, due to control devices and inspection and maintenance requirements contained in the District conditions, compliance with this rule was expected. (Ex. 500, p. 4.1-38.)

RULE 422 - NEW SOURCE PERFORMANCE STANDARDS

This rule incorporates the Federal NSPS (40 CFR 60) rules by reference. The proposed Tier 3 engine meets the emission limit requirements of the only NSPS ((Subpart IIII) that applies to the proposed BSEP equipment. (Ex. 500, p. 4.1-38.)

RULE 425.2 - BOILERS, STEAM GENERATORS AND PROCESS BOILERS (OXIDES OF NITROGEN)

This rule limits NOx emissions from boilers, steam generators, and process heaters to levels consistent with Reasonably Available Control Technology (RACT). The projects proposed boiler BACT emission controls provide emission levels in compliance with this Rule's RACT requirements. (Ex. 500, p. 4.1-38.)

RULE 429.1 - COOLING TOWERS (HEXAVALENT CHROMIUM)

This rule prohibits the use of hexavalent chromium-bearing compounds in cooling towers. Enforcement of District Condition **AQ-14** will ensure compliance with this regulation. (Ex. 500, p. 4.1-38.)

FINDINGS OF FACT

Based on the evidence, we find as follows:

1. The BSEP site is located within the jurisdiction of the Kern County Air Pollution Control District.

2. The BSEP facility would be a nominal 250 Megawatt (MW) parabolic solar trough thermal solar electrical generating facility.

3. The BSEP onsite stationary and mobile emission sources would include: two 30 MMBtu propane-fueled boilers; an 11 cell cooling tower with a high efficiency mist eliminator; onsite diesel and gasoline fueled maintenance vehicles; a 300-bhp diesel-fired emergency fire water pump engine; twenty two heat transfer fluid (HTF) expansion/ullage tanks with associated piping; an HTF system carbon adsorption based vapor emission control system; spent HTF waste loadout; and, a bio-remediation area to treat HTF contaminated soils.

4. Construction of the BSEP is expected to take about 25 months.

5. The project's construction-related impacts are temporary and short-term in nature.

6. The project's construction-related impacts are mitigated to below a level of significance by measures identified in the Conditions of Certification **AQ-SC1** through **AQ-SC5**.

7. The District is classified as non-attainment for the state 1-hour and federal 8-hour ozone standards, and the state PM10 standards. The District meets applicable standards for all other criteria pollutants.

8. The project will employ the best available technology (BACT) to control emissions of criteria pollutants.

9. The BACT, along with staff recommended mitigation measures in the Conditions of Certification **AQ-SC6 to AQ-SC8**, will reduce the air quality impacts below the level of significance.

10. The project will result in a cumulative overall reduction in GHG emissions from the state's power plants, will not worsen current conditions, and will not result in impacts that are cumulatively significant.

11. The District issued a Final Determination of Compliance that finds the BSEP will comply with all applicable District rules for project operation.

12. The record contains an adequate analysis of the project's contributions to cumulative air quality impacts.

CONCLUSIONS OF LAW

1. The mitigation measures imposed are sufficient to ensure that the BSEP will conform with all applicable laws, ordinances, regulations, and standards relating to air quality.

2. Implementation of the Conditions of Certification listed below ensures that the BSEP will not result in any significant direct, indirect, or cumulative impacts to air quality.

CONDITIONS OF CERTIFICATION

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with Conditions of Certification **AQ-SC3**, **AQ-SC4** and **AQ-SC5** for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the Compliance Project Manager (CPM).

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval, the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM Delegates.

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP): The project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with Conditions of Certification **AQ-SC3**, **AQ-SC4, AQ-SC5** and **AQ-SC6**.

Verification: At least 60 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The CPM will notify the project owner of any necessary modifications to the plan within 30 days from the date of receipt.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report that demonstrates compliance with the following mitigation measures for the purposes of minimizing fugitive dust emissions due to construction activities. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

A. The main access road through the facility to the power block area will be paved prior to initiating construction in the main power block area, and the LPG/propane and chemical delivery areas will be paved prior to taking initial deliveries.

B. All unpaved construction roads and unpaved operational site roads, as they are being constructed, shall be stabilized with the CARB certified Soil-Sement® product, or another non-toxic soil stabilizer that can be determined to be both as efficient for fugitive

dust control and that would not increase any other environmental impacts. All other disturbed areas in the project and linear construction sites shall be watered as frequently as necessary to comply with the dust mitigation objectives of Condition of Certification **AQ-SC4**. The frequency of watering can be reduced or eliminated during periods of precipitation.

C. No vehicle shall exceed 10 miles per hour within the construction site.

D. Visible speed limit signs shall be posted at the construction site entrances.

E. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.

F. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

G. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.

H. All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.

I. Construction areas adjacent to any paved roadway shall be provided with sandbags or other equivalently effective measures to prevent run-off to roadways, or other similar run-off control measures as specified in the Storm Water Pollution Prevention Plan (SWPPP), only when such SWPPP measures are necessary so that this condition does not conflict with the requirements of the SWPPP.

J. All paved roads within the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

K. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways.

L. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.

M. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

N. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

Verification: The AQCMM shall provide the CPM a monthly compliance report to include: (1) a summary of all actions taken to maintain compliance with this condition; (2) copies of any complaints filed with the District in relation to project construction; and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (A) off the project site and within 400 feet upwind of any regularly occupied structures not owned by the project owner or (B) 200 feet beyond the centerline of the construction of linear facilities indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMP shall include a section detailing how the additional mitigation measures will be accomplished within the time limits specified. The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:

Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1, specified above, fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the construction activity causing the emissions if Step 2, specified

above, fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes as described in (A) and (B) above will not result upon restarting the shutdown source. The owner/operator may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, if the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMM shall provide the CPM a monthly compliance report to include: (1) a summary of all actions taken to maintain compliance with this condition; (2) copies of any complaints filed with the District in relation to project construction; and (3) any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC5 Diesel-Fueled Engines Control: The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the following mitigation measures for the purposes of controlling diesel construction-related emissions. Any deviation from the following mitigation measures shall require prior CPM notification and approval.

A. All diesel-fueled engines used in the construction of the facility shall be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.

B. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.

C. A good faith effort shall be made to find and use off-road construction diesel equipment that has a rating of 100 hp to 750 hp and that meets the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines as specified in Title 13, California Code of Regulations section 2423(b)(1). This good faith effort shall be documented with signed written correspondence by the appropriate construction contractors along with documented correspondence with at least two construction equipment rental firms.

D. All construction diesel engines, which have a rating of 50 hp or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in Title 13, California Code of Regulations section 2423(b)(1). The following exceptions for specific construction equipment items may be made on a case-by-case basis.

1. Equipment with non-Tier 2 engines that have tailpipe retrofit controls that reduce exhaust emissions of NOx and PM to no more than Tier 2 levels.

2. Tier 1 equipment will be allowed on a case-by-case basis only when the project owner has documented that no Tier 2 equipment or emissions equivalent retrofit equipment is available for a particular equipment type that must be used to complete the project's construction. This shall be documented with signed written correspondence by the appropriate construction contractors along with documented correspondence with at least two construction equipment rental firms.

3. The construction equipment item is intended to be on site for five days or less.

4. Equipment owned by specialty subcontractors may be granted an exemption, for single equipment items on a case-by-case basis, if it can be demonstrated that extreme financial hardship would occur if the specialty subcontractor had to rent replacement equipment, or if it can be demonstrated that a specialized equipment item is not available by rental.

E. All heavy earthmoving equipment and heavy duty construction-related trucks with engines meeting the requirements of (c) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

F. All diesel heavy construction equipment shall not remain running at idle for more than five minutes, except for vehicles that need to idle as part of their normal operation (such as concrete trucks).

G. Construction equipment will employ electric motors when feasible.

Verification: The AQCMM shall include in the Monthly Compliance Report:

A. A summary of all actions taken to maintain compliance with this condition;

B. A list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained; and

C. Any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC6 The project owner shall use 2011 model year or newer vehicles, meeting California model year on-road vehicle emission standards,

for onsite parabolic mirror washing activities and all other facility maintenance activities.

Other vehicle/fuel types may be allowed assuming that the emission profile for those vehicles, including fugitive dust generation emissions, is comparable to the vehicles types identified above.

Verification: At least 60 days prior to the start commercial production, the project owner shall submit to the CPM a copy of the plan that identifies the size and type of the on-site electric and fossil-fueled vehicle and equipment fleet and the vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year and submitted in the Annual Compliance Report.

AQ-SC7 The project owner shall provide a Site Operations Dust Control Plan, including all applicable fugitive dust control measures identified in AQ-SC3 that would be applicable to reducing fugitive dust from ongoing operations; that:

A. describes the active operations and wind erosion control techniques such as windbreaks and chemical dust suppressants, including their ongoing maintenance procedures, that shall be used on areas that could be disturbed by vehicles or wind; and

B. identifies the location of signs throughout the facility that will limit traveling on unpaved portion of roadways to solar equipment maintenance vehicles only. In addition, vehicle speed shall be limited to no more than 10 miles per hour on these unpaved roadways.

The Site Operations Fugitive Dust Control Plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads, and shall include the inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized. The soil stabilizer used shall be the CARB certified Soil-Sement® product, or another non-toxic soil stabilizer that can be determined to be both as efficient for fugitive dust control and that would not increase any other environmental impacts.

Verification: At least 60 days prior to start of commercial operation, the project owner shall submit to the CPM for review and approval a copy of the Site Operations Fugitive Dust Control Plan that identifies the dust and erosion control procedures that will be used during operation of the project and that identifies all locations of the speed limit signs. At least 60 days after commercial operation, the project owner shall provide to the CPM a report identifying the locations of all speed limit signs, and a copy of the project employee and contractor training manual that clearly identifies that project employees and contractors are

required to comply with the dust and erosion control procedures and on-site speed limits.

AQ-SC8 The project owner shall provide the CPM copies of all District issued Authority-to-Construct (ATC) and Permit-to-Operate (PTO) for the facility.

The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the District or U.S. Environmental Protection Agency (U.S. EPA), and any revised permit issued by the District or U.S. EPA, for the project.

Verification: The project owner shall submit any ATC, PTO, and proposed air permit modification to the CPM within five working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-SC9 During site operation the project owner shall only contract with material suppliers (LPG/propane, chemicals, etc.) and waste haulers that will transport materials to and from the site using trucks that meet or exceed CARB model year 2007 emission standards, all trucks will meet CARB emission standards for their model year, and no trucks more than six years old shall be used throughout the life of the project. This requirement applies to all specific materials and wastes that require more than 40 haul trips per year. Alternatively, the project owner can buy and operate new material and waste haul trucks that meet at the time of purchase, throughout the operating life of the facility, the current model year CARB emission criteria.

Verification: The project owner shall submit documentation to the CPM at least fifteen days prior to signing material supply or waste hauling contracts, or buying haul trucks, that confirms that the contracted hauler or purchased truck will meet the requirements of this condition.

DISTRICT CONDITIONS

District Final Determination of Compliance Conditions (KCAPCD 2009a, DB 2009dd)

ATC NOS. 0369001A AND '002A (30.0-MMBTU/HR NATURAL GAS OR LIQUEFIED PETROLEUM GAS (LPG) FUELED BOILERS NO. 1 AND NO. 2)

Equipment Description

30.0-MMBtu/hr (900-hp) natural gas or LPG fueled boiler with low-NOx burner system.

Design Conditions

AQ-1 Boiler shall be fueled with natural gas or LPG. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-2 Boiler described above shall be equipped with low NOx burner and be in accordance with manufacturer's specifications. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-3 Boiler exhaust stack shall be equipped with provisions for collection of pollutant samples in manner consistent with U. S. EPA test methods. (Rule 210.1)

Verification: The project owner shall provide facilities, utilities, and safety equipment for source testing and inspections upon request of the District, ARB, and the Energy Commission.

Operational Conditions

AQ-4 Visible emissions from boiler exhaust stack shall not exceed 5% opacity or Ringelmann No. 1/4. (Rule 210.1 BACT Requirement)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-5 Boiler operation shall not exceed 1000-hours/year without prior District approval. (Rule 210.1)

Verification: The project owner shall submit to the CPM the boiler operating data demonstrating compliance with this condition as part of the Annual Operation Report.

AQ-6 Boiler exhaust concentration of sulfur oxides (calculated as SO_2) shall not exceed 2000 parts per million on a volume basis (ppmv). (Rule 407)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-7 If natural gas is use as fuel, volume of natural gas used as fuel for boiler shall not exceed 28.6 million standard cubic feet per year (MMscf/yr); if LPG is used as fuel, volume of LPG used as fuel for boiler shall not exceed 11.9 MMscf/yr. (Rule 210.1)

Verification: The project owner shall submit to the CPM the boiler fuel use data demonstrating compliance with this condition as part of the Annual Operation Report.

AQ-8 Operator shall comply with applicable monitoring, testing, and recordkeeping requirements of Rule 425.2. (Rule 425.2)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-9 Operator shall maintain annual records of fuel use. (Rule 425.2)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-10 Equipment shall be maintained according to manufacturer's specifications to ensure compliance with emissions limitations. (Rules 209 and 210.1)

Verification: The project owner shall submit maintenance reports for all equipment to the CPM as part of Annual Compliance Report. As part of the Annual Compliance Report, the project owner shall include information on any maintenance performed on the boiler.

AQ-11 No emission resulting from use of this equipment shall cause injury, detriment, nuisance, annoyance to or endanger comfort, repose, health or safety of any considerable number of persons or public. (Rule 419 and CH & SC 41700)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

Compliance Testing Requirements

AQ-12 Boiler stack shall be equipped with sampling ports (in accordance with California Air Resources Board Standards), sampling platform, access to sampling platforms, and utilities for sampling equipment to perform source-sampling operations. (Rule 108.1)

Initial compliance with NOx emission limits shall be verified by compliance test utilizing test methods listed in Subsection VI.B of Rule 425.2 within 60-days of District initial start-up inspection. (Rule 210.1)

Initial testing for Rule 425.2 shall commence within 60-days after annual boiler heat attains or exceeds 90,000 therms (9,000-MMBtu). Boiler shall be tested in accordance with test methods listed in Subsection VI.B and in accordance to schedule in Subsection VI.C of Rule 425.2. (Rule 425.2)

Should inspection reveal conditions indicative of non-compliance, compliance with any emission limitations shall be verified, within 60 days of District request. Test results shall be submitted to KCAPCD within 30 days after test completion. (Rule 108.1 and 210.1)

Verification: The project owner shall notify the District and the CPM within fifteen working days before the execution of the compliance test required in this condition. The test results shall be submitted to the District and to the CPM within 30 days after test completion.

Emission Limits

AQ-13 Emissions rate of each air contaminant from this unit shall not exceed following limits:

Particulate Matter (PM10):	0.22	lb/hr
	3.04	lb/day
	0.11	ton/yr
Sulfur Oxides (SOx as SO_2):	0.51	lb/hr
	7.14	lb/day
	0.25	ton/yr
Oxides of Nitrogen (NO_2):	9	ppmv @ 3% O_2 (Rule 210.1 BACT Rqmt.)
	0.33	lb/hr
	4.62	lb/day
	0.17	ton/yr
Volatile Organic Compounds (VOC): (as defined in Rule 210.1)	0.16	lb/hr
	2.20	lb/day
	0.08	ton/yr
Carbon Monoxide:	50	ppmv
	1.11	lb/hr
	15.54	lb/day
	0.56	ton/yr

(Emissions limits established pursuant to Rule 210.1, unless otherwise noted.)

Compliance with maximum daily emission limits shall be verified by source operator (with appropriate operational data and recordkeeping to document maximum daily emission rate) each day source is operated and such documentation of compliance shall be retained

and made readily available to District for period of three years. (Rules 209 and 210.1)

Verification: As part of the Annual Compliance Report, the project owner shall include information on operating emission rates. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

ATC NO. 0369003 (FORCED DRAFT COOLING TOWER WITH 11 CELLS AND HIGH EFFICIENCY DRIFT ELIMINATOR)

Equipment Description

A. Eleven 140-MMBtu (13,600-gpm) Cooling Tower Cells

B. Eleven 250-hp Cooling Tower Fans

C. Two 2,000-hp (79,000-gpm) Cooling Water Pumps

D. Make-Up Water Tank

E. 50-hp Make-Up Water Pump

AQ-14 No hexavalent chromium containing compounds shall be added to cooling tower circulating water. (Rule 429.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-15 Drift eliminator drift rate shall not exceed 0.0005%. (Rule 210.1)

Verification: The manufacturer guarantee data for the drift eliminator, showing compliance with this condition, shall be provided to the CPM and the District 30 days prior to cooling tower operation.

AQ-16 Cooling tower total dissolved solids (TDS) shall not exceed 1600 mg/liter (0.01335 lb/gal). (Rule 210.1)

Verification: The cooling tower recirculating water TDS content shall be tested as required in Condition **AQ-22** and those tests shall be provided in the Annual Compliance Report. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-17 Cooling water volumetric flow rate shall not exceed 149,000-gal/minute. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-18 Compliance with daily PM10 emission rate shall be determined by the product of the following factors: circulating water rate (gallons per day, total dissolved solids in blowdown water (lb/gal), and design drift rate (%). (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-19 Operator shall comply with applicable monitoring, testing, and recordkeeping requirements of Rule 429.1. (Rule 429.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-20 Equipment shall be maintained according to manufacturer's specifications to ensure compliance with emissions limitations. (Rules 209 and 210.1)

Verification: The project owner shall submit maintenance reports for all equipment to the CPM as part of Annual Compliance Report. As part of the Annual Compliance Report, the project owner shall include information on the date, time, and duration of any violation of this permit condition.

AQ-21 No emission resulting from use of this equipment shall cause injury, detriment, nuisance, annoyance to or endanger comfort, repose, health or safety of any considerable number of persons or public. (Rule 419 and CH & SC 41700)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-22 Compliance with PM10 emission limits shall be determined by continuous conductivity monitoring of blowdown water with results available to District staff available to District staff upon request, and annual calibration verification available to District staff upon request. In-lieu of continuous conductivity monitoring, tests of total solids in blowdown water sample analysis shall be completed at a minimum of once per week by independent laboratory. (Rule 210.1)

Verification: The cooling tower recirculating water TDS content test results and resulting emission estimates shall be shall be provided in the Annual Compliance Report. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Compliance Testing Requirements

AQ-23 Should inspection reveal conditions indicative of non-compliance, compliance with any emission limitations shall be verified, within 60 days of District request. Test results (i.e. conductivity calibration or

laboratory water sample testing) shall be submitted to KCAPCD within 30 days after test completion. (Rule 108.1, 210.1, and 429.1)

Verification: The project owner shall provide an emissions calculation and water sample testing protocol to the District for approval and CPM for review at least 30 days prior to initial operation of the cooling tower. The project owner shall notify the District and the CPM within fifteen working days before the execution of any compliance tests required under this condition. The test results shall be submitted to the District and to the CPM within 30 days of the completion of the tests.

Emission Limits

AQ-24 Emissions rate of each air contaminant from this unit shall not exceed following limits:

Particulate Matter (PM_{10}):	0.60 lb/hr 9.55 lb/day 1.74 ton/yr

(Emissions limits established pursuant to Rule 210.1, unless otherwise noted.)

Compliance with maximum daily emission limits shall be verified by source operator (with appropriate operational data and recordkeeping to document maximum daily emission rate) each day source is operated and such documentation of compliance shall be retained and made readily available to District for period of three years. (Rules 209 and 210.1)

Verification: As part of the Annual Compliance Report the project owner shall include information on operating emission rates to demonstrate compliance with this condition. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

ATC NO. 0369004A (TWENTY-TWO 75,000-GALLON HEAT TRANSFER FLUID (HTF) EXPANSION TANK VENTED TO VAPOR CONTROL SYSTEM, INCLUDING HTF PIPING NETWORK)

Equipment Description

A. Twenty-Two 75,000 Gallon HTF Expansion Tanks (No. 1 through No. 22) each with PV vent valve,

B. 25-hp Expansion tank pump,

C. HTF Fluid pumps (400-hp),

D. Nitrogen blanket system,

E. HTF piping header,

F. HTF ullage system,

G. Solar field piping,

H. Solar generating system piping, and

I. Piping from expansion tank to vapor control system.

Design Conditions

AQ-25 Each HTF tank shall be connected to a volatile organic compound (VOC) vapor control system (Permit No. 0369005). (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-26 Volume of each tank shall not exceed 75,000-gallons without prior District approval. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

Operational Conditions

AQ-27 HTF expansion vessel shall be gas tight and vent to vapor control system (Permit No. 0369005). (Rule 210.1 BACT Requirement)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-28 The project owner shall establish an inspection and maintenance program to determine, repair, and long leaks in HTF piping network

and expansion tanks. Inspection and maintenance program and documentation shall be available to District staff upon request. (Rule 210.1 BACT Requirement)

1. All pumps, compressors and pressure relief devices (pressure relief valves or rupture disks) shall be electronically, audio, or visually inspected once every operating period.

2. All accessible valves, fittings, pressure relief devices (PRDs), hatches, pumps, compressors, etc. shall be inspected quarterly using a leak detection device such as a Foxboro OVA 108 calibrated for methane.

3. VOC leaks greater than 100-ppmv shall be tagged (with date and concentration) and repaired within seven calendar days of detection.

4. VOC leaks greater than 10,000-ppmv shall be tagged and repaired within 24-hours of detection.

5. The project owner shall maintain a log of all VOC leaks exceeding 10,000-ppmv, including location, component type, and repair made.

6. The project owner shall maintain record of the amount of HTF replaced on a monthly basis for a period of five years.

7. Any detected leak exceeding 100-ppmv and not repaired in 7-days and 10,000-ppmv not repaired within 24-hours shall constitute a violation of the District's Authority to Construct (ATC)/Permit to Operate (PTO).

8. Pressure sensing equipment shall be installed that will be capable of sensing a major rupture or spill within the HTF network.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-29 The following component count shall be utilized to determine fugitive emissions.

Equipment	Service	Count
Valves	Light Liquid	3050
Pump Seals	Light Liquid	4
Connectors*	Light Liquid	7646
Pressure Relief Valve	Gas	22
Open-ended Lines	Light Liquid	44

Verification: The project owner shall provide the District for approval and the CPM for review any requested revisions to the component count listed in this condition 30 days prior to utilizing such component counts for fugitive emission calculations, and shall keep a record of approved changes in the component count in the inspection and maintenance program documentation kept at the site.

AQ-30 Each expansion tank shall have fixed roof without holes, tears, or other such openings, except pressure/vacuum (PV) valves, in the cover which allow the emission of VOC. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-31 All expansion tank hatches shall be kept closed and gap-free, except during maintenance, inspection, or repair. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-32 Tank roof appurtenances shall not exhibit emissions exceeding 10,000-ppmv as methane measured with an instrument calibrated with methane and conducted in accordance with U.S. Method 21. (Rule 411)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-33 Each tank shall be maintained leak-free. A "leak" is defined as the dripping of liquid volatile organic compounds at a rate of three or more drops per minute, or vapor volatile organic compounds in excess of 10,000-ppm as equivalent methane as determined by EPA Test Method 21. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-34 Project owner shall provide District with total volume require for solar power plant and annual volume of HTF used at the facility. (Rule 210.1)

Verification: As part of the Annual Compliance Report the project owner shall include information on HTF total volume and annual usage rates to demonstrate compliance with this condition.

AQ-35 Equipment shall be maintained according to manufacturer's specifications to ensure compliance with emissions limitations. (Rules 210.1 and 209)

Verification: The project owner shall submit maintenance reports for all equipment to the CPM as part of Annual Compliance Report.

AQ-36 Compliance with all operational conditions shall be verified by appropriate recordkeeping, including records of operational data needed to demonstrate compliance. Such records shall be kept on site in readily available format. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-37 No emission resulting from use of this equipment shall cause injury, detriment, nuisance, annoyance to or endanger comfort, repose, health, or safety of any considerable number of persons or public. (Rule 419 and CH&SC Sec 41700)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-38 The District shall be notified of any breakdown conditions in accordance with Rule 111 (Equipment Breakdown). (Rule 111)

Verification: The project owner shall provide equipment breakdown notification as required by District Rule 111 and shall provide such data to the CPM within five days of District notification and shall provide equipment breakdown records in the Annual Compliance Report.

Compliance Testing Requirements

AQ-39 Should inspection reveal conditions indicative of non-compliance, compliance with hourly and concentration emission limits for VOC shall be verified pursuant to Rule 108.1 and KCAPCD Guidelines for Compliance Testing, within 60 days of District request.

Verification: The project owner shall provide a test protocol to District for approval and CPM for review of any compliance tests proposed to be conducted as required under this condition at least 30 days prior to conducting such tests.

The project owner shall notify the District and the CPM within fifteen working days before the execution of any compliance tests required under this condition. The test results shall be submitted to the District and to the CPM within 30 days of the completion of the tests.

Emission Limits

AQ-40 Emissions rate of each air contaminant from this unit shall not exceed following limits:

Fugitive Emissions (Connectors, Pumps, etc.)

Volatile Organic Compounds (VOC):	34.34 lb/day 6.27 ton/yr

(Emissions limits established pursuant to Rule 210.1, unless otherwise noted.)

Compliance with maximum daily emission limits shall be verified by source operator (with appropriate operational data and recordkeeping to document maximum daily emission rate) each day source is operated and such documentation of compliance shall be retained and made readily available to District for period of three years. (Rules 209 and 210.1)

Verification: As part of the Annual Compliance Report the project owner shall include information on operating emission rates to demonstrate compliance with this condition. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

ATC NO. 0369005 (VAPOR CONTROL SYSTEM)

Equipment Description

A. Piping from expansion tanks (Permit Nos. 0369004) to vapor control system, and

B. Two Granular Activated Carbon (GAC) adsorption units in series each with 1,000-lb GAC vessel, and sampling ports at entrance and exhaust.

Design Conditions

AQ-41 Vapor control system shall serve HTF expansion tanks and HTF piping system listed on Permit No. 0369004. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-42 Carbon adsorption system shall have provisions for monitoring between carbon beds and exhaust of carbon adsorption system. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Operational Conditions

AQ-43 Carbon adsorption system shall be operated during heat transfer fluid (HTF) expansion system operation and during operation of HTF Ullage system. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-44 Control efficiency of carbon adsorption vessels shall be at least 95%. (Rule 210.1)

Verification: The project owner shall provide the District and CPM carbon adsorption manufacturer guarantee data showing compliance with this condition at least 30 days prior to the installation of the carbon adsorption vessels.

AQ-45 Vapor samples shall be taken monthly between carbon beds and at the exhaust carbon adsorption system and tested for carbon breakthrough. (Rule 210.1)

Verification: The project owner shall keep the monthly vapor sample data at the site and shall provide a summary of the vapor sample data as part of the Annual Compliance Report. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-46 Carbon breakthrough shall be defined as VOC concentration of 10-ppmv as hexane measured after primary carbon bed measured with a flame ionization detector (FID) or photo ionization detector (PID). (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-47 Primary carbon bed shall be replaced upon indication of carbon breakthrough. (Rule 210.1)

Verification: The project owner shall keep primary carbon bed replacement records on site and shall provide such records as part of the Annual Compliance Report. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-48 Operation of this equipment shall be conducted in compliance with all data and specifications submitted with application under which this permit is issued. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-49 Equipment shall be maintained according to manufacturer's specifications to ensure compliance with emissions limitations. (Rules 209 and 210.1)

Verification: The project owner shall submit maintenance reports for all equipment to the CPM as part of Annual Compliance Report.

AQ-50 No emission resulting from use of this equipment shall cause injury, detriment, nuisance, annoyance to or endanger comfort, repose, health, or safety of any considerable number of persons or public. (Rule 419 and CH&SC, Sec 41700)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Compliance Testing Requirements

AQ-51 Should inspection reveal conditions indicative of non-compliance, compliance with any emission limits for VOC shall be verified pursuant to Rule 108.1 and KCAPCD Guidelines for Compliance Testing, within 60 days of District request.

Verification: The project owner shall provide a test protocol to District for approval and CPM for review of any compliance tests proposed to be conducted as required under this condition at least 30 days prior to conducting such tests. The project owner shall notify the District and the CPM within fifteen working days before the execution of any compliance tests required under this condition. The test results shall be submitted to the District and to the CPM within 30 days of the completion of the tests.

Emission Limits

AQ-52 Emissions rate of each air contaminant from this unit shall not exceed the following emissions limits

Controlled Vapor Emissions:

Volatile Organic Compounds (VOC):	3.13 lb/hr
	6.26 lb/day
	1.14 ton/yr

(Emissions limits established pursuant to Rule 210.1 unless otherwise noted)

Compliance with maximum daily emission limits shall be verified by source operator (with appropriate operational data and record keeping to document maximum daily emission rate) each day the source is operated and such documentation of compliance shall be retained and made readily available to District for period of three years. (Rules 210.1 and 209)

Verification: As part of the Annual Compliance Report the project owner shall include information on operating emission rates to demonstrate compliance with this condition. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

ATC NO. 0369006 (EMERGENCY FIREWATER PUMP DRIVEN BY 300-BHP DIESEL PISTON ENGINE)

Equipment Description

3000-gallon per minute (gpm) Clarke firewater pump driven by 300-bhp John Deere Tier 3 diesel fueled piston engine

Design Conditions

AQ-53 Engine shall be equipped with turbocharger and aftercooler. (Rule 210.1 BACT Requirement)

Verification: The project owner shall submit the final engine specifications documenting compliance with this condition at least 30 days prior to installation of the engine.

AQ-54 Elapsed time meter shall be installed and maintained indicating cumulative hours of engine operating time. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of equipment and records by representatives of the District, ARB, and the Energy Commission.

Operational Conditions

AQ-55 Visible emissions from engine exhaust after engine has reached normal operating temperature shall not equal or exceed 5% opacity or Ringelmann No. ¼ for more than three minutes in any one hour. (Rule 210.1 BACT Requirement)

Verification: The project owner shall make the site available for inspection of equipment and records by representatives of the District, ARB, and the Energy Commission.

AQ-56 Exhaust gas particulate matter concentration shall not exceed 0.1 grains/ft3 of gas at standard conditions. (Rule 404.1)

Verification: The project owner shall make the site available for inspection of equipment and records by representatives of the District, ARB, and the Energy Commission.

AQ-57 Fuel for diesel piston engine shall conform to California Air Resources Board standards for reformulated diesel fuel (low sulfur, 0.0015% by weight and low aromatic hydrocarbon, 20% by weight). (Rule 210.1 BACT Requirement)

Verification: The project owner shall make the site available for inspection of equipment and fuel purchase records by representatives of the District, ARB, and the Energy Commission.

AQ-58 Equipment shall be maintained according to manufacturer's specifications to ensure compliance with emissions limitations. (Rule 210.1 and Rule 209)

Verification: The project owner shall make the site available for inspection of equipment and records by representatives of the District, ARB, and the Energy Commission.

AQ-59 Compliance with all operational conditions shall be verified by appropriate recordkeeping, including records of operational data needed to demonstrate compliance. Such records shall be kept on site in readily available format. (Rule 209)

Verification: The project owner shall make the site available for inspection of equipment and records by representatives of the District, ARB, and the Energy Commission.

AQ-60 Operating record of this equipment shall be maintained in format approved in writing by District, kept for minimum of two years, and made available upon request of District personnel. Record shall include, at minimum, days and hours of operation, location of operation, amount of fuel oil supplied to this engine, and date(s), check(s) and certification(s) of injection timing. (Rules 209 and 210.1)

Verification: The project owner shall make the site available for inspection of equipment and records by representatives of the District, ARB, and the Energy Commission.

AQ-61 No emission resulting from use of this equipment shall cause injury, detriment, nuisance, annoyance to or endanger comfort, repose, health or safety of any considerable number of persons or public. (Rule 419 and CH&SC 41700)

Verification: The project owner shall make the site available for inspection of equipment and records by representatives of the District, ARB, and the Energy Commission.

AQ-62 Engine operation shall not exceed 200 hours per year without prior District approval. (Rule 210.1)

Verification: As part of the Annual Compliance Report the project owner shall include information on annual engine operating hours to demonstrate compliance with this condition. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-63 Diesel engine driving emergency fire water pump shall comply with Tier 3 emissions standards and Air Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines. (California Code of Regulations 93115, Title 17)

Verification: The project owner shall submit the final engine specifications documenting compliance with this condition at least 30 days prior to installation of the engine.

AQ-64 Engine operation for maintenance and testing shall not exceed 50 hours per year without prior District approval. (Rule 210.1)

Verification: As part of the Annual Compliance Report the project owner shall include information on annual engine operating hours to demonstrate compliance with this condition. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Compliance Testing Requirements

AQ-65 Should inspection reveal conditions indicative of non-compliance, compliance with any emission limitations shall be verified, within 60 days of District request. Test results shall be submitted to KCAPCD within 30 days after test completion. (Rule 108.1 and 210.1)

Verification: The project owner shall provide a test protocol to District for approval and CPM for review of any compliance tests proposed to be conducted as required under this condition at least 30 days prior to conducting such tests. The project owner shall notify the District and the CPM within fifteen working days before the execution of any compliance tests required under this condition. The test results shall be submitted to the District and to the CPM within 30 days of the completion of the tests.

Emission Limits

AQ-66 Emissions rate of each air contaminant from this unit shall not exceed following limits:

Particulate Matter (PM10):	0.15 gm/bhp-hr
	0.10 lb/hr
	2.38 lb/day
	0.01 ton/yr

Sulfur Oxides (SOx as SO_2):	0.0030 lb/hr 0.0800 lb/day 0.0003 ton/yr
Oxides of Nitrogen (NOx as NO_2):	2.80 gm/bhp-hr 1.85 lb/hr 44.45 lb/day 0.19 ton/yr
Volatile Organic Compounds (VOC): (as defined in Rule 210.1)	0.20 gm/bhp-hr 0.13 lb/hr 3.18 lb/day 0.01 ton/yr
Carbon Monoxide:	1.72 lb/hr 41.28 lb/day 0.17 ton/yr

(Emissions limits established pursuant to Rule 210.1, unless otherwise noted.)

Compliance with maximum daily emission limits shall be verified by source operator (with appropriate operational data and recordkeeping to document maximum daily emission rate) each day source is operated and such documentation of compliance shall be retained and made readily available to District for period of three years. (Rules 209 and 210.1)

Verification: As part of the Annual Compliance Report the project owner shall include information on operating emission rates to demonstrate compliance with this condition. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

ATC NO. 0369007 (BIO-REMEDIATION OF HYDROCARBON CONTAMINATED SOIL)

Equipment Description

A. 400-ft. by 800-ft. bio-remediation/land-farm facility,

B. Irrigation system for bio-remediation/land-farm facility, and

C. Bio-remediation fertilizer for enhanced bio-remediation.

Design Conditions

AQ-67 Bio-remediation area shall be lined with minimum 60-mil high density polyethylene (HDPE) or alternate lining approved by Lahontan Regional Water Quality Board (LRWQB). (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-68 The project owner shall provide District with depth of bio-remediation operation area. (Rule 210.1)

Verification: The project owner shall submit the depth of the bio-remediation operation area to the District and CPM prior to use of the bio-remediation operation area.

Operational Conditions

AQ-69 Visible emissions from bio-remediation/land-farm facility when soil is not actively being added or removed shall not equal or exceed 0% opacity for more than five minutes in any two hour period. (Rule 210.1 BACT Requirement)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-70 The project owner shall have flame ionization detector (FID) or photo ionization detector (PID) on site to measure soil VOC emissions (measured as hexane). (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-71 The project owner shall maintain VOC readings of bio-remediation area during any period it is operated as required by an approved protocol. The project owner shall provide protocol for VOC readings, soil acidity (pH), soil moisture content (% weight), soil temperature (°F), and Nutrient Ratio (C:N:P) to be approved by District staff. (Rule 210.1)

Verification: The project owner shall provide a protocol for measuring bio-remediation soil VOC content to the District for approval and the CPM for review prior to use of the bio-remediation operation area. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-72 If soil in bio-remediation area registers a VOC reading of less than 50-ppm by volume, measured three inches above soil surface, with FID or PID compliance with Condition AQ-73 is not required. (Rule 210.1)

Verification: Logs of the bio-remediation soil VOC content measurements shall be kept with specific notation regarding whether VOC readings are above or below 50 ppm by volume. The project owner shall make the site available for

inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-73 If soil in bio-remediation area registers a VOC reading greater than or equal to 50-ppm (calibrated to methane) by volume, measured three inches above soil surface, with FID or PID bio-remediation operation shall comply with the following conditions. (Rule 210.1)

A. Affected soil stockpile shall be covered with minimum 10-mile plastic sheeting within 24-hours of detection to control emissions during treatment until VOC readings 3-inches above the uncovered soil stockpile are less than 50-ppmv. (Rule 210.1)

B. Covered soil stockpile shall be treated by enhanced bio-remediation using accepted environmental engineering practices to maintain conditions suitable for bio-remediation. Soil in stockpiles shall be conditioned as necessary through addition of nutrients, moisture and air as needed.

C. The following parameters in treatment area shall be monitored according to approval protocol: VOC readings over treatment area in use, soil acidity (pH), soil moisture content (% weight), soil temperature (°F), and Nutrient Ratio (C:N:P).

D. Records of soil treatment and monitoring results shall be maintained at the site for a period of at least 5-years, and

E. If bio-remediation operation is not effective after two months (i.e. VOC readings show no reduction in VOC content), the project owner shall propose alternate method of soil remediation for District approval.

Verification: Logs of the bio-remediation soil VOC content measurements shall be kept with specific notation regarding whether VOC readings are above or below 50 ppm by volume with other records required by this condition. A summary of the bio-remediation operation area records to demonstrate ongoing compliance with this condition shall be provided in the Annual Compliance Report.

AQ-74 Soil moisture content shall be maintained according to District approved protocol. (Rule 210.1)

Verification: A summary of the bio-remediation operation area records to demonstrate ongoing compliance with this condition shall be provided in the Annual Compliance Report.

AQ-75 Compliance with all operational conditions shall be verified by appropriate recordkeeping, including records of operational data

needed to demonstrate compliance. Such records shall be kept on site in readily available format. (Rule 209)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-76 No emission resulting from use of this equipment shall cause injury, detriment, nuisance, annoyance to or endanger comfort, repose, health or safety of any considerable number of persons or public. (Rule 419 and CH&SC 41700)

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

Compliance Testing Requirements

AQ-77 Should inspection reveal conditions indicative of non-compliance, compliance with any emission limitations shall be verified, within 60 days of District request. Test results shall be submitted to KCAPCD within 30 days after test completion. (Rule 108.1 and 210.1)

Verification: The project owner shall provide a test protocol to District for approval and CPM for review of any compliance tests proposed to be conducted as required under this condition at least 30 days prior to conducting such tests. The project owner shall notify the District and the CPM within fifteen working days before the execution of any compliance tests required under this condition. The test results shall be submitted to the District and to the CPM within 30 days of the completion of the tests.

Emission Limits

AQ-78 Emissions rate of each air contaminant from this unit shall not exceed the following emissions limits:

Volatile Organic Compounds (VOC):	0.10	lb/day
(as defined in Rule 210.1)	0.02	ton/yr

(Emissions limits established pursuant to Rule 210.1 unless otherwise noted)

Compliance with maximum daily emission limits shall be verified by source operator (with appropriate operational data and recordkeeping to document maximum daily emission rate) each day source is operated and such documentation of compliance shall be retained and made readily available to District for period of three years. (Rules 209 and 210.1)

Verification: As part of the Annual Compliance Report the project owner shall include information that demonstrates that the bio-remediation area has been operated using good engineering practices. Such operation shall be deemed to

demonstrate compliance with this condition. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

FACILITY WIDE CONDITIONS

Construction Activity

AQ-79 All construction phase emissions shall be controlled utilizing reasonably available control provisions, e.g. construction site and unsurfaced roadway dust control, conscientious maintenance of mobile and piston engine-powered equipment, etc.

Verification: The project owner shall comply with the requirements of Conditions AQ-SC1 through AQ-SC5.

Air Toxics

AQ-80 Facility shall comply with California Health and Safety Code Sections 44300 through 44384. (Rule 208.1)

Verification: The project owner shall make the site available for inspection of records by representat

C. PUBLIC HEALTH

The public health analysis supplements the previous discussion on air quality and considers the potential public health effects from project emissions of toxic air contaminants. In this analysis, we review the evidence concerning whether emissions of pollutants for which there are no established air quality standards (noncriteria pollutants) will result in significant adverse impacts that violate standards for public health protection or create adverse health impacts.[17] (Ex. 500, p. 4.7-1.) The evidence submitted by Applicant and Staff was uncontested. (3/22/2010 RT 14-15, 26; Exs. 14; 138; 139; 177; 260; 307; 500, § 4.7.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

Project construction and operation will result in routine emissions of toxic air contaminants (TACs). Those substances are categorized as noncriteria pollutants because there are no ambient air quality standards established to regulate their emissions.[18] In the absence of specific standards, state and federal regulatory programs use a health risk assessment process to evaluate the potential for public exposure to unhealthy levels and establish the degree of mitigation necessary. (Ex. 500, p. 4.7-4.)

1. Health Risk Assessment

The risk assessment procedure consists of the following steps:

- Identify the types and amounts of hazardous substances that the project could release to the environment;
- Estimate worst-case concentrations of project emissions in the environment;
- Estimate amounts of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact;[19] and

[17] This Decision discusses other potential public health concerns under various topics. For instance, the accidental release of hazardous materials is discussed in **Hazardous Materials Management.** Electromagnetic fields are discussed in **Transmission Line Safety and Nuisance**. Potential impacts from the project's wastewater streams are discussed in the **Soil and Water Resources** section. Facility releases of hazardous and non-hazardous wastes are described in the **Waste Management** section of this Decision.

[18] Criteria pollutants are discussed in the **Air Quality** section, supra.

[19] These are the primary exposure pathways, or ways in which people might come into contact with toxic substances. (Ex. 500, p. 4.7-4.)

- Characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects. (*Id*.)

Typically, the initial risk analysis for a project is performed at a "screening level" which is designed to conservatively estimate actual health risks. The risks for screening purposes are based on examining conditions that would lead to the highest, or worst-case, risks and then using those conditions in the study. Such conditions include:

- Using the highest levels of pollutants that could be emitted from the source;
- Assuming weather conditions that would cause the maximum ambient concentration of pollutants;
- Using air quality computer modeling which predicts the greatest plausible impacts;
- Calculating health risks at the location where the pollutant concentrations are estimated to be the highest;
- Assuming that an individual's exposure to cancer-causing agents occurs over a 70 year lifetime; and
- Using health-based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses). (Ex. 500, pp. 4.7-4 to 4.7-5.)

The risk assessment process[20] addresses three categories of health impacts: acute (short-term) health effects; chronic (long-term) non-cancer effects; and cancer risk (also long-term). Acute health effects result from short-term (one-hour) exposure to relatively high concentrations of pollutants. Chronic health effects are those which arise as a result of long-term exposure to lower concentrations of pollutants. (Ex. 500, p. 4.7-5.)

The analysis for non-cancer health effects compares the maximum project contaminant exposure levels to safe levels called "reference exposure levels" or RELs. These exposure levels are designed to protect the most sensitive individuals in the population[21] and represent the amounts of toxic substances to

[20] Exposure to multiple toxic substances may result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual substances. The health risk assessment assumes that the effects of each substance are additive for a given organ system. (Ex. 500, pp. 4.7-5 to 4.7-6.)

[21] Staff characterizes infants, children, the aged, and those suffering from illnesses or diseases that make them more susceptible to effects of toxic substance exposure as sensitive individuals. (Ex. 500, p. 4.7-4.)

which sensitive people can be exposed and suffer no adverse health effects. The RELs are based on the most adverse health effects reported, and include margins of safety. Health protection is expected if the estimated worst case exposure is below the pertinent REL. (Ex. 500, p. 4.7-5.)

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the cancer-causing substance occurs over a 70-year lifetime. Cancer risk is expressed in chances per million of developing cancer, and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant will cause cancer, and the length of the exposure period. The calculated risk is not meant to project the actual expected incidence of cancer, but rather is a theoretical upper-bound number based on worst-case assumptions. The conservative nature of the screening assumptions used means that actual cancer risks due to project emissions are likely to be considerably lower than those estimated. (Ex. 500, p. 5.2-6.)

Although there are minimal combustion by-products (and thus emissions) associated with a solar project such as BSEP, two natural gas auxiliary boilers will be used to reduce start-up time and maintain the temperature of the heat transfer fluid. (Ex. 500, p. 4.7-1.) The evidence therefore contains a HRA to provide consistency and direct risk comparison with similar projects. (Ex. 500, p. 4.7-6.)

2. Significance Criteria

The evidence shows that the potential significance of project related health impacts is determined separately for short-term, long-term non-cancer, and long-term carcinogenic health effects. (*Id.*) For acute and chronic non-cancer health effects, the significance is assessed by calculating a *hazard index* for the exposure being considered. This index is a ratio obtained by comparing exposure from facility emissions to the REL (safe) exposure level for a specific toxicant. A ratio of less than 1.0 signifies that the worst-case exposure is below the safe level. The hazard indices for all toxic substances that have the same type of health effect are added to yield a Total Hazard Index for the source being evaluated. The Total Hazard Index is calculated separately for acute and chronic effects. A Total Hazard Index of less than one indicates that cumulative worst-case exposure will be within safe levels, even for sensitive members of the population. (Ex. 500, pp. 4.7-6 to 4.7-7.)

For possible cancer risks, the evidence shows that the standards contained in the implementing regulations for the Safe Drinking Water and Toxic Enforcement Act (Health and Safety Code, § 25249.5 et seq.) are used. This hazard level reflects a cancer risk of 10 in 1,000,000 based upon each cancer causing substance separately. Staff applies an even more health-protective approach since it determines significance based on the total risk from all cancer-causing chemicals from the source in question. (Ex. 500, pp. 4.7-6 to 4.7-7.)

The evidence assesses the health impacts of the Beacon Project's non-criteria pollutant emissions for the construction phase and the operation phase separately.

3. Construction Impacts

These are short-term in nature (about 25 months) and caused primarily by exposure to the wind-blown dust from site excavation and grading, as well as from construction equipment emissions. (Ex. 500, pp. 4.7-10 to 4.7-11.)

As discussed in the **WASTE MANAGEMENT** section, there are no toxic pollutants at levels constituting a human health hazard at the site. The main risks arise from exposure to PM_{10} and $PM_{2.5}$ particles. These particulate emissions are criteria pollutants and, as such, are assessed in this Decision's **AIR QUALITY** section. They are mitigated sufficiently by specific Conditions of Certification to ensure no violation of applicable air standards occurs. (Ex. 500, pp. 4.7-10.)

The exhaust from diesel-fueled construction equipment can add to the risk of both carcinogenic and non-carcinogenic health impacts. These potential risks are discussed in the **AIR QUALITY** section, and are also specifically mitigated to below levels of significance through Conditions of Certification **AQ-SC1** to **AQ SC5**. (Ex. 500, p. 4.7-11.)

4. Operational Impacts

The evidence shows that the main public health risks attributable to the Beacon Project will stem from the auxiliary boilers, testing of the emergency diesel firewater pump engine, the evaporative cooling tower, and the heat transfer fluid decomposition products (biphenyl and benzene) from vents for the expansion tanks. (Ex. 500, p. 4.7-11.) The toxic emissions and the contribution to health risks are shown in **PUBLIC HEALTH** Table 1, below:

Public Health Table 1
Types of Health Impacts and Exposure Routes Attributed to Toxic Emissions

Substance	Oral Cancer	Oral Non-Cancer	Inhalation Cancer	Non-cancer (Chronic)	Non-cancer (Acute)
Benzene			✔	✔	✔
Biphenyl				✔	
Chloroform			✔	✔	
Dichlorobenzene				✔	✔
Diesel Particulate Matter			✔	✔	
Formaldehyde			✔	✔	✔
Hexane				✔	
Naphthalene	✔	✔	✔	✔	
Benzo(a)pyrene		✔		✔	✔
Naphthalene				✔	
Benzofluoranthrene			✔	✔	✔
Polynuclear Aromatic Hydrocarbons (PAHs)	✔	✔	✔	✔	
Dibenzo (a, h) anthracene				✔	
Indole(1,2,3-cd) pyrene			✔	✔	✔
7, 12-Dimethyl(a) anthracene				✔	✔
Phenol				✔	✔
Toluene				✔	

Source: Exhibit 500, p. 4.7-13.

Table 2, below, shows the results of the HRA and reflects the magnitude of the cancer and noncancer risks from facility operations.

Public Health Table 2
Beacon Solar Energy Project's Operation Hazard/Risk

Type of Hazard/Risk	Hazard Index/Risk	Significance Level	Significant?
Acute Noncancer	0.0004	1.0	No
Chronic Noncancer	0.00023	1.0	No
Individual Cancer	0.57×10^{-6}	10.0×10^{-6}	No

Source: Exhibit 500, p. 4.7-14.

As shown above, the chronic hazard index for the maximally exposed individual is 0.0003 while the maximum hazard index for acute effects is 0.0004. These values are well below the significance criterion of 1.0. This shows that the pollutants in question are unlikely to pose a significant risk of chronic or acute noncancer health effects anywhere in the project area. The cancer risk to the maximally exposed individual from normal project operations is 0.57 in 1,000,000, which is well below the significance criterion of 10 in 1,000,000. Thus, project-related cancer risk from routine operations will be less than significant for all individuals in the project area. (Ex. 500, p. 4.7-14.)

Risks from cooling tower emissions stem from Legionellosis. This is a bacterium that is ubiquitous in natural aquatic environments and widely distributed in man-made water systems. It is the principal cause of legionellosis, more commonly known as Legionnaires' disease. Untreated or inadequately treated cooling systems, such as industrial cooling towers and building heating, ventilating, and air conditioning systems have been associated with outbreaks of legionellosis. (Ex. 500, p. 4.7-15.)

Effective mitigation measures include a cleaning and maintenance program. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE 1998) emphasizes the need for such a program. The Cooling Tower Institute has issued guidelines for the best practices for control of Legionella (CTI 2000). Preventive maintenance includes effective drift eliminators, periodically cleaning the system as appropriate, maintaining mechanical components, and maintaining an effective water treatment program with appropriate biocide concentrations. (Ex. 500, p. 4.7-15.)

We have therefore included Condition of Certification **PUBLIC HEALTH-1.** This condition specifically requires the project owner to prepare and implement a cooling water management plan to ensure that bacterial growth is kept to a minimum in the cooling tower. This will assure that the risk associated with bacterial growth and dispersal will be reduced to less than significant. (Ex. 500, pp. 4.7-15 to 4.7-16.)

Finally, the evidence establishes that future projects identified (the Pine Tree Wind project and a transmission project) will be too far from BSEP to create any cumulative impacts.

FINDINGS AND CONCLUSIONS

Based on the uncontested evidence, we make the following findings and conclusions:

1. Construction and normal operation of the project will result in the release of criteria and noncriteria pollutants that have the potential to adversely impact public health.

2. Potential construction-related adverse health effects arise from diesel equipment emissions and fugitive dust. These criteria pollutants are discussed in the **AIR QUALITY** section of this Decision, and will be mitigated to levels consistent with applicable standards.

3. The record contains a health risk assessment analyzing potential adverse health effects of noncriteria toxic air contaminants.

4. The health risk assessment is based on worst case assumptions using the highest emission factors, assuming the worst weather conditions, and calculating effects at the point of maximum impact so that actual risks are expected to be much lower at any other location.

5. The accepted method used by state regulatory agencies in assessing the significance for both acute and chronic non-carcinogenic public health effects of noncriteria pollutants is known as the hazard index method. A similar method is used for assessing the significance of potential carcinogenic effects.

6. Application of the hazard index method establishes that emission of non-criteria pollutants from the project will not cause acute or chronic adverse public health effects.

7. The maximum non-cancer and the maximum cancer risks associated with the project are substantially below the significance thresholds commonly accepted for risk analysis purposes.

8. The project owner will implement a Cooling Water Management Plan to minimize the potential for growth of Legionella bacteria and other micro-organisms in cooling tower emissions.

9. Cumulative impacts from noncriteria pollutants were analyzed in accordance with the provisions of CEQA and are not expected to be significant.

CONCLUSIONS OF LAW

1. We therefore conclude that emissions of noncriteria pollutants from the construction and operation of the Beacon Project do not pose a significant direct, indirect, or cumulative adverse public health risk.

2. The project will comply with the applicable laws, ordinances, regulations, and standards specified in the appropriate portion of **Appendix A** of this Decision.

CONDITION OF CERTIFICATION

PUBLIC HEALTH-1 The project owner shall develop and implement a Cooling Water Management Plan that is consistent with either Staff's *Cooling Water Management Program Guidelines* or the Cooling Technology Institute's *Best Practices for Control of Legionella* guidelines.

Verification: At least 30 days prior to the commencement of cooling tower operations, the Cooling Water Management Plan shall be provided to the Compliance Project Manager for review and approval.

D. WORKER SAFETY AND FIRE PROTECTION

Industrial workers are exposed to potential health and safety hazards on a daily basis. Implementation of various existing laws and standards suffices to reduce these hazards to minimal levels. (Ex. 500, p. 4.14-4.) Therefore, this subsection focuses on whether Applicant's proposed health and safety plans are in accordance with all applicable LORS and thus adequate to protect industrial workers. The record also addresses the availability and adequacy of fire protection and emergency response services, as well as potential threats from wildfires. The evidence on this topic was uncontested. (3/22/2010 RT 14-15, 28-29; Exs. 22; 146; 183; 228; 254; 269; 292; 500 § 4-14; 521; 612; 625; 626; 666; 6/8/10 RT 187:16 -204:17; 210:6–226:6.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Worker Safety

Industrial environments are potentially dangerous during construction, operation, and demolition activities. Workers at the Beacon Solar Energy Project (BSEP) will be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. They may experience falls, trips, burns, lacerations, and various other injuries. They may be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, electrical sparks, and electrocution. (Ex. 500, p. 4.14-4.)

This power plant comprises a work environment which includes liquefied petroleum gas (LPG or propane) boilers, and solar thermal generation equipment, which includes the use of Therminol VP1. At the power block, workers will be exposed to hazards typical for construction and operation of a simple cycle gas-fired facility; the solar component will present similar construction risks, but minimal operational risks. (Ex. 500, p. 4.14-4; 3/22/10 RT 460:13 – 461:7.)

The area under the solar arrays must be kept free from weeds by applying herbicides as necessary. Inhalation and ingestion of dusts containing herbicides can pose a health risk. Cleaning, servicing, and inspecting the mirrors will be conducted on a routine schedule. These activities will take place year-round, especially during the summer months of peak solar power generation when outside ambient temperatures routinely reach 115º Fahrenheit and above. (Ex. 500, p. 4.14-9.) Thus, it is important that the project have well-defined policies

and procedures, training, hazard recognition, and controls to minimize injuries and protect workers.

Therminol VP1 is the heat transfer fluid (HTF) that will be used in the solar panels to collect solar heat and transfer it to generate steam to run the steam turbine. Therminol is a mixture of 73.5 percent diphenyl ether and 26.5 percent biphenyl, and is a solid at temperatures below ~54 °F. Therminol may remain liquid if a spill occurs. Therminol is highly flammable and fires have occurred at other solar generating stations that use it. (Ex. 500, pp. 4.4-8.)The management of HTF as a hazardous material is discussed in greater detail in the **Hazardous Materials** section of this Decision.

At the evidentiary hearing and later, in briefs, Intervenor, CURE, raised concerns regarding potential impacts to workers that may be associated with the use of HTF. Most of those concerns had to do with HTF spills and cleanup, which is covered in the **Waste Management** section of this Decision. At the evidentiary hearing in written testimony CURE's expert made conclusory references to potential harm to workers from HTF which were not supported with any detailed evidence of actual specific harm to workers. (3/22/10 RT 426:16 – 427:7; 427:24-428:4, Ex. 612, 625, 626). However, Applicant's expert testified unequivocally that based upon the 20 years of history at the SEGS facility, workers have never been harmed by HTF (3/22/10 RT 460:13-461:7).

The evidence extensively details the type and content of various plans which must be developed to ensure the protection of worker health and safety, as well as compliance with applicable LORS. (Ex. 500, pp. 4.14-4 to 4.14-8; 3/22/10 RT 464:8-14; 472:19-473:1; 501:3-11.) For example, the project owner will develop and implement a "Construction Safety and Health Program" and an "Operations and Maintenance Safety and Health Program," both of which must be reviewed by the Compliance Project Manager prior to project construction and operation. A separate "Injury and Illness Prevention Program," a "Personal Protective Equipment Program," an "Emergency Action Plan," a "Fire Prevention Plan," and other general safety procedures will be prepared for both the construction and operation phases of the project. (*Id.*) Conditions of Certification **WORKER SAFETY-1** and **-2** ensure that these measures will be developed and implemented. Condition **WORKER SAFETY-6** requires the development and implementation of Best Management Practices (BMPs) for the storage and application of herbicides used to control weeds beneath and around the solar array. With these conditions in place, we find that impacts to BSEP workers'

health and safety arising from the use of HTF are less than significant (Ex. 500, pp. 4.14-6 to 4.14-9.)

OSHA and Cal-OSHA standards encourage employers to monitor worker safety by employing a "competent person" who has knowledge and experience enforcing workplace safety standards, can identify hazards relating to specific project operations, and has authority to take appropriate action. To implement the intent to provide a safe workplace during power plant construction, Condition **WORKER SAFETY-3** requires the project owner to designate a power plant Construction Safety Supervisor. This individual will coordinate and implement the Construction and Operation Safety and Health Programs, as well as investigate any safety-related incidents and emergency responses. (Ex. 500, p. 4.14-10.)

To reduce and/or eliminate safety hazards during project construction and operation, it is also necessary to employ a professional Safety Monitor. The Safety Monitor, who is hired by the project owner but reports to the Chief Building Official and the Compliance Project Manager, will track compliance with OSHA/Cal-OSHA regulations and serve as an on-site OSHA expert. This professional will periodically audit safety compliance during construction, commissioning, and the transition to operational status as well as ensure that safety procedures and practices are fully implemented. (Ex. 500, p. 4.14-11.) Condition **WORKER SAFETY-4** describes the role of the Safety Monitor.

The project owner will maintain an automatic portable defibrillator on-site to provide immediate response in the event of medical emergency.[22] Condition **WORKER SAFETY-5** requires the project owner to ensure this device is available during construction and operation, and that appropriate personnel are trained to use it. (Ex. 500, p. 4.14-13.)

2. Fire Protection and Emergency Response

Project construction and operation pose the potential for both small fires and major structural fires. Electrical sparks, combustion of fuel oil, hydraulic fluid,

[22] Staff's testimony indicates that the potential for both work-related and non work-related heart attacks exists at power plants. The quickest medical intervention can be achieved with the use of an on-site defibrillator. Many modern industrial and commercial enterprises maintain defibrillators for emergency use. Staff therefore endorses this as an appropriate safety and health precaution. (Ex. 500, p. 4.14-13.)

mineral oil, HTF, insulating fluid or flammable liquids, explosions, and over-heated equipment may cause small fires.

The project will rely upon both on-site and local fire protection services. The on-site fire protection system provides the first line of defense for such occurrences. The Construction Fire Prevention Plan (Condition **WORKER SAFETY-1**) must address and detail measures to minimize the likelihood of fires during construction. These measures include the placement of portable fire extinguishers, safety procedures, and training. (Ex. 500, pp. 4.14-11 to 4.14-12.) Local fire support services are under the Kern County Fire Department's (KCFD) jurisdiction. Station 14 (19 miles from the project site) in Mojave would the first responder with a response time of approximately 23 minutes. The KCFD also has mutual aid agreements with the California City Fire Department and Edwards Air Force Base. (Ex. 500, p. 4.14-3.)

During operation the project will meet the fire protection and suppression requirements of the California Fire Code, all applicable recommended National Fire Protection Association (NFPA) standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements. Fire suppression elements will include both fixed and portable fire extinguishing systems. (Ex. 500, p. 4.14-12.) The fire protection system will be designed to protect personnel and limit property loss and plant downtime in the event of a fire. In addition to the fixed fire protection system, smoke detectors, flame detectors, high temperature detectors, appropriate class of service portable extinguishers, and fire hydrants must be located throughout the facility at code-approved intervals. These systems are standard requirements of the NFPA and the Uniform Fire Code (UFC). (*Id.*)

We also require, in Condition of Certification **WORKER SAFETY-7**, that the project owner provide a second access point to ensure adequate fire department access. This will be via Neuralia Road, from the east side of the project. This alternate access route does not require crossing the railroad tracks or using the primary entrance off SR-14 on the west side of the facility. It shall also be equipped with an entry system acceptable to the KCFD. (Ex. 500, pp. 4.14-12 to 4.14-13.)

Conditions of Certification **WORKER SAFETY-1** and **-2** require the project owner, prior to construction and operation of the project, to provide the final Fire Prevention Program to the Compliance Project Manager and the local fire authorities. These entities will then confirm its adequacy. The record shows that

the limited fire risks and potential for hazardous materials incidents at the facility do not pose significant added demands on local fire protection services.

Finally, large fires requiring multiple fire station response have happened at solar thermal power plants using HTF, for example, the fire at SEGS VIII Solar Plant at Harper Lake, San Bernardino County on Jan 10, 1990. That fire required a combined response from multiple stations of San Bernardino County, Kern County, California Department of Forestry, and Edwards Air Force Base (Ex. 521,with attached Exs. B and D). The BSEP site will contain a very large amount of flammable material, approximately 2.4 million gallons of HTF (approximately three times the amount used at SEGS VIII facility). Although safety and control designs have improved to reduce the probability of such an event in the future, its potential still exists. (Ex. 521)

Other large power plants proposed in Kern County (e.g., Ridgecrest, Hydrogen Energy CA) will put increased demands on local fire and emergency services, which may not be sustainable at current service levels. Historical solar thermal power plant emergency response requests have averaged between 2-3 incidents per five years. (Ex. 521)

The record shows that there will be a significant impact on Kern County Fire Department (KCFD) resulting from construction and operation of the BSEP. Due to proposed budget reductions of the Kern County Fire Department, the construction and operation of the proposed Beacon Solar Energy Project, in addition to construction and operation of multiple other power plants and industrial facilities with similar fire protection demands in the local service area, will result in direct impacts and contribute to cumulative impacts on the level of fire protection available in the community. Staff testified that an agreement between the Applicant and Kern County was the best way to resolve the issue, since those parties are in the best position to ascertain BSEP's impacts and determine appropriate mitigation measures (6/8/10 RT 201:3-10). Ultimately, the Applicant and Kern County agreed on the terms which have now been incorporated into Condition of Certification **WORKER SAFETY-8.** With the implementation of Condition of Certification **WORKER SAFETY-8**, BSEP will fund its share of the ongoing capital and operational costs for emergency services by making a maximum annual payment of $258,074 to Kern County for the support of the fire department's needs for capital, operations and maintenance. The record establishes that the identified impacts to fire and emergency services will be mitigated below the level of significance. (Ex. 521)

3. Public Comment

Lorelei Oviatt; Acting Planning Director of the Kern County Planning Department, submitted written comments in a letter dated March 22, 2010 and also commented in person at the March 22, 2010 evidentiary hearing. Specifically, she requested a condition of certification that requires the payment of a public services mitigation fee for the specific categories of countywide public protection, sheriff patrol and investigation and fire (3/22/10 RT 386:2-11). On July 2, 2010, the committee received a letter from Ms. Oviatt explaining that on June 29, 2010 the Kern County Board of Supervisors determined and approved the appropriated level of mitigation for all impacts on public services from the BSEP which included the language now adopted in Condition of Certification **WORKER SAFETY-8.** On July 9, 2010, Applicant's counsel confirmed BSEP's acceptance of the terms now contained in Condition of Certification **WORKER SAFETY-8**.

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings:

1. Industrial workers are exposed to potential health and safety hazards on a daily basis.

2. To protect workers from job-related injuries and illnesses, the project owner will implement comprehensive Safety and Health Programs for both the construction and the operation phases of the project.

3. The project will employ an on-site professional Safety Monitor during construction and operation.

4. The Beacon Solar Energy Project will include on-site fire protection and suppression systems as the first line of defense in the event of a fire.

5. The Kern County Fire Department (KCFD) will provide fire protection and emergency response services to the project.

6. Existing fire and emergency service resources may not be adequate to meet project needs.

7. With the implementation of Condition of Certification **WORKER SAFETY-8**, all direct, indirect and cumulative impacts to KCFD and ancillary emergency services will be mitigated below the level of significance

CONCLUSION OF LAW

1. We therefore conclude that the Beacon Solar Energy Project will not create significant health and safety impacts to workers, and will comply with all applicable laws, ordinances, regulations, and standards listed in the appropriate portion of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

- A Construction Personal Protective Equipment Program;
- A Construction Exposure Monitoring Program;
- A Construction Injury and Illness Prevention Program;
- A Construction Emergency Action Plan; and
- A Construction Fire Prevention Plan.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Kern County Fire Department, if any is received, stating the Fire Department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the program with all applicable Safety Orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the Kern County Fire Department for review and comment prior to submittal to the CPM for approval.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- An Operation Injury and Illness Prevention Plan;
- An Emergency Action Plan;
- Hazardous Materials Management Program;
- Fire Prevention Program (8 CCR § 3221); and
- Personal Protective Equipment Program (8 CCR §§ 3401-3411).

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Kern County Fire Department, if any is received, stating the Fire Department's comments on the Operations Fire Prevention Plan.

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the CPM for review and approval concerning compliance of the program with all applicable Safety Orders. The Operation Fire Prevention Plan and the Emergency Action Plan shall also be submitted to the Kern County Fire Department for review and comment.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards, is capable of identifying workplace hazards relating to the construction activities, and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- Have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
- Assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;
- Assure that all construction and commissioning workers and supervisors receive adequate safety training;
- Complete accident and safety-related incident investigations, emergency response reports for injuries, and inform the CPM of safety-related incidents; and
- Assure that all the plans identified in **Worker Safety 1 and 2** are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement (CSS) shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- A record of all employees trained for that month (all records shall be kept on site for the duration of the project);

- A summary report of safety management actions and safety-related incidents that occurred during the month;
- A report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
- A report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO, and is responsible for verifying that the Construction Safety Supervisor, as required in **Worker Safety 3**, implements all appropriate Cal/OSHA and Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 30 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on-site during construction and operations, and shall implement a program to ensure that: workers are properly trained in its use; and the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in its use and shall be on-site whenever the workers that they supervise are on-site: the Construction Project Manager or delegate; the Construction Safety Supervisor or delegate; and all shift foremen. During operations, all power plant employees shall be trained in its use. The training program shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable AED exists on-site and a copy of the training and maintenance program for review and approval.

WORKER SAFETY-6 The project owner shall prepare and implement a Best Management Practices (BMPs) for the storage and application of herbicides used to control weeds beneath and around the solar array. These plans shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM for review and approval a copy of the Best Management Practices (BMPs) for the storage and application of herbicides.

WORKER SAFETY-7 The project owner shall identify and provide a second access point for emergency personnel to enter the site. This access shall enter from Neuralia Road. This access and the method of gate operation shall be submitted to the Kern County Fire Department for review and comment and to the CPM for review and approval.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall submit to the Kern County Fire Department and the CPM preliminary plans showing the location of a second access point to the site and a description of how the gate will be opened by the fire department. At least 30 days prior to the start of site mobilization, the project owner shall submit final plans to the CPM for review and approval. The final plan submittal shall also include a letter containing comments from the Kern County Fire Department or a statement that no comments were received.

WORKER SAFETY-8 Subject to a superseding agreement between the project owner and Kern County, the project owner shall fund its share of the ongoing capital and operational costs by making an annual payment of $400,000 to Kern County for the support of the fire department's needs for capital, operations and maintenance commencing with the date of start of site mobilization and continuing annually thereafter on the anniversary until the final date of power plant decommissioning.

Verification: At least sixty (30) days prior to the start of site mobilization, the project owner shall provide to the CPM, documentation that the first annual payment of $400,000 has been paid to the KCFD, and shall also provide a statement in the Annual Compliance Report that subsequent annual payments have been made. Otherwise, the project owner shall provide to the CPM a fully executed contract between the project owner and Kern County specifying different terms for funding capital and operational costs for these emergency services.

E. HAZARDOUS MATERIALS MANAGEMENT

This analysis considers whether the construction and operation of the Beacon Solar Energy Project will create significant impacts to public health and safety resulting from the use, handling, transportation, or storage of hazardous materials. This analysis does not address the potential exposure of workers to hazardous materials used at the project site, which is covered in the **Worker Safety and Fire Protection** portion of this Decision. Several site-specific factors affect the potential for project-related hazardous materials to cause adverse impacts. These include meteorological conditions, terrain characteristics, any special site factors, and the proximity of population centers and sensitive receptors. In addition, sensitive subgroups such as the young, elderly, and those with existing conditions may be at heightened risk from exposure to emitted pollutants. (Ex. 500, p. 4.4-4)

The evidence submitted by Applicant, Intervenor and Staff incorporates these factors in the analysis of record. (3/22/10 RT 15-16; 76, 453; Exs. 10; 116; 135; 172; 179; 248; 262; 266; 303; 500; 504; 625 through 631.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Potential Risks

The evidence the method used to assess risks posed by hazardous materials. This method included the following elements:

- A review of chemicals, the amounts proposed for on-site use, and a determination of the need and appropriateness of their use.

- Chemicals which will be used in small amounts, or whose physical state is such that there is virtually no chance that a spill will migrate off the site and impact the public, were removed from further consideration.

- Measures proposed to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different size transfer-hose couplings, as well as administrative controls such as worker training and safety management programs.

- Measures proposed to respond to accidents were reviewed and evaluated. These measures included engineering controls such as catchment basins and methods to keep vapors from spreading, as well as administrative controls such as training emergency response crews.

- An analysis of the theoretical impacts on the public of a worst-case spill of hazardous materials even with the mitigation measures in place. (Ex. 500, pp. 4.4-5 to 4.4-6.)

Hazardous materials used during construction will include paint, cleaners, solvents, gasoline, diesel fuel, motor oil, and lubricants. Any impact of spills or other releases of these materials would be limited to the site because of the small quantities involved, the infrequent use and hence reduced chances of release, and/or the temporary containment berms used by contractors. Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel all have very low volatility and would represent limited off-site hazards, even in larger quantities. (Ex. 500, pp. 4.4-6.)

Appendix A (incorporated in Condition of Certification **HAZ-1** at the end of this section) lists the hazardous materials that will be used and stored on-site. Condition **HAZ-1** prohibits the project owner from using hazardous materials not listed in Appendix A, or storing them in greater quantities than specified, without prior approval of the Energy Commission's Compliance Project Manager. During operations, hazardous chemicals such as cleaning agents, lube oil, sulfuric acid, sodium hydroxide, sodium hydrochlorite, hydrogen gas, diesel fuel and other various chemicals will be used and stored on-site and represent limited off-site hazard due to their small quantities, low volatility, and/or low toxicity. (Ex. 500, pp. 4.4-6.)

During operations, liquefied petroleum gas (LPG), also known as propane, will be used in significant quantities, and will be stored on-site in two 18,000 gallon storage tanks. LPG poses a fire and/or possible explosion risk because of its flammability. LPG is composed mostly of propane, but may also contain small amounts of ethane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, tasteless, and heavier than air. LPG can cause asphyxiation when propane's concentration exceeds 90 percent. Propane is flammable when mixed in air at concentrations of 2.2 -9.6 percent, which is also its detonation range. An unconfined vapor cloud of LPG can explode under certain conditions. (Ex. 500, pp. 4.4-7.)

The risk of a fire and/or explosion on-site can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association codes (NFPA 54, 58 and 85A) require the use of double block and

bleed valves for gas shut-off and automated combustion controls, as well as adherence to ASME pressure vessel design and construction requirements. These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. The evidence establishes that a significant impact from the worst case scenario will not extend beyond the facility fence line. The storage facility will be built in conformance with State and Federal regulations to lower the probability of this occurring. The evidence supports the finding that the potential impact to the public as a result of propane storage at BSEP is less than significant. The Safety Management Program (**Condition HAZ-3**) will address both the handling and use of LPG and significantly reduce the potential for equipment failure due to either improper maintenance or human error. (Ex. 500, pp. 4.4-2, 4.4-7 to 4.4-8.)

Therminol VP1 is the heat transfer fluid (HTF) that will be used in the solar panels to collect solar heat and transfer it to generate steam to run the steam turbine. Therminol is a mixture of 73.5 percent diphenyl ether and 26.5 percent biphenyl, and is a solid at temperatures below ~54 °F. Because nighttime temperatures during the winter often drop below 54 °F in the high desert, auxiliary heating is provided to keep Therminol liquid. Therminol can therefore be expected to remain liquid if a spill occurs. While the risk of off-site migration is minimal, Therminol is highly flammable and fires have occurred at other solar generating stations that use it. The record indicates that the placement of additional isolation valves in the HTF pipe loops throughout the solar array will add significantly to the safety and operational integrity of the entire system by allowing a loop to be closed if a leak develops in a ball joint, flex-hose, or pipe, instead of closing off the entire HTF system and shutting down the plant. Condition of Certification **HAZ-7** requires the installation of a sufficient number of isolation valves that can be activated either manually or remotely. (Ex. 500, pp. 4.4-8.)

At the evidentiary hearing and later, in briefs, Intervenor, CURE, raised concerns regarding potential impacts that may be associated with the use of HTF. Most of those concerns had to do with HTF spills and cleanup, which is covered in the **Waste Management** section of this Decision. However, CURE pointed out a discrepancy in that Staff stated in the Hazardous Materials section of the FSA that “[a]pproximately 1.3 million gallons of HTF will be contained in the pipes and heat exchanger” but in the Soils and Water section of the FSA, Staff stated, “approximately 2.4 million gallons of HTF… will be utilized at any one time within the Facility.” (Ex. 500, pp. 4.4-8; 4.9-174). CURE also argues that installation of isolation valves under Condition of Certification **HAZ-7** will not mitigate significant

impacts from HTF spills. Finally, CURE argues in favor of a Condition of Certification requiring double-walled piping or secondary containment of the pipe loop containing HTF. (CURE Opening Brief at 90; 96).

Indeed, the record discloses a discrepancy in the amount of HTF to be used at the BSEP (3/22/10 RT 439:9-11; 504:2-9; Ex. 500, pp. 4.4-8; 4.9-174). However, we cannot conclude that "Staff incorrectly analyzed 1.3 million gallons of HTF used by the project" as CURE asserts in its brief. Staff's Hazardous Materials analysis analyzed the 1.3 million gallons "contained in the pipes and heat exchanger" while the Soils and Water analysis analyzed 2.4 million gallons "within the facility." (Ex. 500, pp. 4.4-8; 4.9-174). Whether the Soils and Water analysis included other stored HTF on the site while the Hazardous Materials analysis was limited to that contained in the pipes and heat exchanger is unclear. Nevertheless, the testimony of Staff's expert clarifies that the volume of HTF was not so much the focus of the analysis as its management. (3/22/10 RT 504:20-22). Staff's expert testified that given the low toxicity and low volatility of the HTF, the volumes of the material would not be considered important. (3/22/10 RT 504:14-505:1). The record contains no evidence to contradict Staff's testimony that the containment, berming, and secondary containment of the existing design of the BSEP is sufficient to safeguard against off-site migration, regardless of volume. (*Id*.)

The intent of **HAZ-7** is to limit the size of a potential spill. (Ex. 504, ¶ 1). This would be accomplished by active spill detection systems and remotely operable isolation valves placed within the solar field. (Ex. 504, ¶ 3). The record establishes that most leaks occur at joints, flanges, valves, flex tubes, ball joints, etc. (3/22/10 RT 500:5-9). We are mindful that installation of isolation valves is a two-edged sword. The applicant must consider and model the number and placement of isolation valves because the addition of each valve degrades the efficiency and performance of the power plant by increasing the resistance to HTF flow throughout the solar field and increases the construction and O&M costs for the plant. (Ex. 504, ¶ 4). Staff's expert concludes that "applicant's statement in the AFC that there will be 8-12 isolation valves to isolate individual solar field loops is adequate when considered along with the low consequences and low probability of large spills." (*Id*.) CURE's expert testified that he had "no basis to understand how effective those isolation valves will be in preventing leaks," however; CURE offered no evidence showing that isolation valves would not mitigate HTF spills. (3/22/10 RT 434:11-13). We find that CURE did not meet their burden of proving that Condition of Certification **HAZ-7** will not mitigate significant impacts from HTF spills. [Cal. Code Regs. tit. 20 § 1748(e)]. To the

contrary, the evidence persuasively leads us to the conclusion that isolation valves will substantially reduce and mitigate HTF spills.

CURE recommends double walled piping or secondary containment along the pipeline. However, the evidence shows that all HTF spills reported at the SEGS facilities erupted from "either some type of fitting or, in some cases, they were actually heat collection tubes," never from a straight pipe such as a header or a primary feeder line. (3/22/10 RT 463:2-18.) The record indicates that double walled piping would be unnecessary. We agree with CURE that secondary containment is appropriate and the record shows that BSEP will employ adequate secondary containment. (3/22/10 RT 499:9-501:1.)

The record contains considerable evidence that HTF transfer technology has substantially evolved and improved over the last twenty years. (3/22/10 RT 459:20-461:13; 462:7-463:1.) We find that the BSEP will benefit from these improvements and will pose a lesser risk of HTF spills than the SEGS facility based upon the Applicant's experience there.

2. Risk Mitigation

The potential for accidents resulting in the release of hazardous materials is greatly reduced by the implementation of a Safety Management Program (see **HAZ-3**), which includes both engineering and administrative controls. Engineering controls help prevent accidents and releases (spills) from moving off-site and impacting the community by incorporating engineering safety design criteria into the project's design. Administrative controls help prevent accidents and releases from moving off-site and impacting the community by establishing worker training programs and process safety management programs. (Ex. 500, pp. 4.4-2, 4.4-8 to 4.4-9.)

The Beacon Solar Energy Project engineering safety features include secondary containment areas surrounding each of the hazardous materials storage areas and physical separation of stored chemicals in isolated containment areas which are separated by a noncombustible partition to prevent the accidental mixing of incompatible materials which may cause the formation and release of toxic fumes. (Ex. 500, pp. 4.4-9.)

Condition of Certification **HAZ-2** requires the Applicant to prepare a Hazardous Materials Business Plan that will incorporate state requirements for the handling of hazardous materials, including worker training on chemical hazards, health

and safety issues, hazard communication, proper use of personal protective equipment, operation and maintenance of systems that use hazardous materials, fire safety and prevention, as well as emergency response actions including facility evacuation, hazardous material spill cleanup. Federal regulations require a Spill Prevention Control and Countermeasure Plan for petroleum-containing hazardous materials. (Ex. 500, p. 4.4-9.)

The BSEP project owner will be required to designate an individual with the responsibility and authority to ensure a safe and healthful workplace. This project health and safety official will oversee the health and safety program and have authority to halt any action or modify any work practice to protect the workers, facility, and the surrounding community if the health and safety program is violated (see also the **Worker Safety/Fire Protection** section in this Decision). (Ex. 500, p. 4.4-9.)

The evidence indicates that a Kern County HazMat team is currently based at Station #14 in Mojave, California, which is located approximately 19 miles from the project site. The Kern County HazMat Team response time to a hazmat emergency call from BSEP will be approximately 23 minutes (Eckroth). We find that the Kern County HazMat Team is adequately trained and equipped to respond to an emergency at BSEP in a timely manner. (Ex. 500, p. 4.4-10.)

Nevertheless, the facility will prepare and implement an emergency spill response plan which includes information on hazardous materials contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, prevention equipment and capabilities, etc. Emergency procedures will be established which include evacuation, spill cleanup, hazard prevention, and emergency response. (Ex. 500, p. 4.4-10.)

3. Transportation Risk Reduction

The evidence shows that transport of LPG poses the predominant risk associated with hazardous materials transport to the project site. Approximately 11 LPG delivery truck trips, carrying approximately 6000 gallons per delivery will be required monthly. LPG can be released during a transportation accident, and the extent of its impact in the event of a release would depend on the location of the accident, the rate of release, the rate of dispersion of the LPG from the spill area, and whether a source of ignition was found by the resulting vapor cloud before it was sufficiently dispersed. The actual likelihood of an accidental

release during transport depends upon the tanker driver's skill, the type of transport vehicle, and accident rates. (Ex. 500, p. 4.4-10.)

The record evaluated the risk of an accidental transportation release in the project area. The analysis focused on the project area after the delivery vehicle leaves the main divided California State Highway (SR-14). Because improved highways pass adjacent to the project's western boundary, there is no local off-highway area with public access that the LPG deliveries will pass through. We find it is appropriate to rely upon the extensive regulatory program that applies to shipment of hazardous materials on California Highways to ensure safe handling in general transportation (see the Federal Hazardous Materials Transportation Law 49 USC §5101 et seq., the U.S. Department of Transportation Regulations 49 CFR Subpart H, §172-700, and the California DMV Regulations on Hazardous Cargo). These regulations also address issues of driver competence. Hazardous materials delivery routes must also be approved by the California Highway Patrol. See the **Traffic and Transportation** section of this Decision for additional information on regulations governing the transportation of hazardous materials. (Ex. 500, pp. 4.4-10 through 4.4-11.)

The transportation of similar volumes of hazardous materials on the nation's highways is neither unique nor infrequent. The evidence establishes, and we find, that the risk of impact to the public resulting from accidental release of LPG during transportation to the facility is insignificant. (Ex. 500, p. 4.4-11.)

4. Seismic Issues

The record shows that an earthquake could cause the failure of a hazardous materials storage tank or cause the failure of the secondary containment system (berms and dikes), as well as electrically controlled valves and pumps. The failure of all these preventive control measures might then result in a vapor cloud of hazardous materials that could move off-site and impact residents and workers in the surrounding community. (Ex. 500, p. 4.4-11.)

The evidence indicates that after the January 1994 Northridge earthquake, some damage was caused to several large and small storage tanks at the water treatment system of a cogeneration facility. The tanks with the greatest damage, including seam leakage, were older tanks, while newer tanks sustained lesser damage with displacements and attached line failures. Similar analysis of the February 2001 Nisqually earthquake near Olympia, Washington showed no hazardous materials storage tanks were impacted by this quake. BSEP will be designed and constructed to the applicable standards of the 2007 California

Building Code for Seismic Zone 4. On the basis of occurrences at Northridge with older tanks and the lack of failures during the Nisqually earthquake with newer tanks, the record discloses, and we find, that tank failures at the BSEP during seismic events are not likely and do not represent a significant risk to the public. (Ex. 500, p. 4.4-11.)

5. Site Security

The hazardous materials used by the BSEP are listed by several federal agencies (USEPA, Homeland Security, DOJ) in Vulnerability Assessments requiring special site security measures to prevent unauthorized access. In order to ensure that this facility (or a shipment of hazardous material) is not the target of unauthorized access, Conditions of Certification **HAZ-5** and **HAZ-6** address both construction security and operational security plans. These plans will require the implementation of site security measures. (Ex. 500, p. 4.4-12.)

The evidence categorizes the BSEP as “low vulnerability” but security measures for this facility are still required. The security measures include perimeter fencing and breach detectors, possibly guards, alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contact in the event of a security breach. Site access for vendors will be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors will have to maintain their transport vehicle fleets and employ only drivers who are properly licensed and trained. The project owner will be required, through contractual language with vendors, to ensure vendors supplying hazardous materials strictly adhere to the U.S. DOT requirements that hazardous materials vendors prepare and implement security plans under 49 CFR 172.800 and ensure that all hazardous materials drivers are in compliance with personnel background security checks under 49 CFR Part 1572, Subparts A and B. (Ex. 500, pp. 4.4-12 through 4.4-13).

6. Cumulative Risks

The record contains analysis of the potential for impacts due to a simultaneous release of any of the hazardous chemicals from the BSEP with any other nearby facilities. Because of the small amounts of the hazardous chemicals to be stored at the facility, the evidence shows that there is practically no possibility of producing an off-site impact. Based on the evidence, and the additional fact that there are no nearby facilities using large amounts of hazardous chemicals, we

find there is little (if any) possibility that vapor plumes would mingle (combine) to produce an airborne concentration that will present a significant risk. (Ex. 500, p. 4.4-13.)

FINDINGS OF FACT

Based on the uncontroverted evidence of record, the Commission makes the following findings and conclusions:

1. The Beacon Solar Energy Project will use hazardous materials during construction and operation, including propane and Therminol VP1.

2. The major public health and safety dangers associated with these hazardous materials include the accidental release of Therminol VP1 as well as fire and explosion from natural gas.

3. The risk of fire and explosion from propane will be reduced to insignificant levels through adherence to applicable codes and the implementation of effective safety management practices.

4. The project owner will submit an approved Safety Management Plan for handling propane and an approved Hazardous Materials Business Plan prior to delivery of any hazardous materials to the site.

5. Therminol is highly flammable and fires have occurred at other solar generating stations that use it.

6. The placement of additional isolation valves in the HTF pipe loops throughout the solar array will add significantly to the safety and operational integrity of the entire system by allowing a loop to be closed if a leak develops in a ball joint, flex-hose, or pipe.

7. Condition of Certification **HAZ-7** requires the installation of a sufficient number of isolation valves that can be activated either manually or remotely.

8. Isolation valves will substantially reduce and mitigate HTF spills.

9. The containment, berming, and secondary containment of the existing design of the BSEP is sufficient to safeguard against off-site migration of hazardous materials.

10. The potential for accidents resulting in the release of hazardous materials is greatly reduced by the implementation of a Safety Management Program as required by Condition of Certification **HAZ-3**.

11. The Kern County HazMat Team is adequately trained and equipped to respond to an emergency at BSEP in a timely manner.

12. Potential impacts from the other hazardous substances used on-site are not considered significant since quantities will be limited and appropriate storage will be maintained in accordance with applicable law.

13. The risk of impact to the public resulting from accidental release of LPG during transportation to the facility is insignificant.

14. Tank failures at the BSEP during seismic events are not likely and do not represent a significant risk to the public.

15. Conditions of Certification **HAZ-5** and **HAZ-6** require both construction and operational site security measures.

16. There is little (if any) possibility that vapor plumes will combine to produce an airborne concentration that will present a significant cumulative risk.

17. With implementation of the Conditions of Certification, below, the Beacon Solar Energy Project will comply with all applicable laws, ordinances, regulations, and standards related to hazardous materials management as identified in the evidentiary record and in the pertinent portion of **Appendix A** of this Decision.

CONCLUSIONS OF LAW

1. The Commission concludes, therefore, that the use of hazardous materials by the Beacon Solar Energy Project will not result in any significant adverse public health and safety impacts.

CONDITIONS OF CERTIFICATION

HAZ-1 The project owner shall not use any hazardous materials not listed in **Appendix A**, below, or in greater quantities than those identified by chemical name in **Appendix A,** unless approved in advance by the Compliance Project Manager (CPM).

Verification: The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility.

HAZ-2 The project owner shall concurrently provide a Business Plan to the Kern County Environmental Health Services Department (KCEHSD)

and the CPM for review. After receiving comments from the KCEHSD and the CPM, the project owner shall reflect all recommendations in the final documents. Copies of the final Business Plan shall then be provided to the KCEHSD for information and to the CPM for approval.

Verification: At least 60 days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Business Plan to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of liquid hazardous materials. The plan shall include procedures, protective equipment requirements, training and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least sixty (60) days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 At least thirty (30) days prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction Security Plan shall include the following:

1. Perimeter security consisting of fencing enclosing the construction area;
2. Security guards;
3. Site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
4. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;
5. Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency; and
6. Evacuation procedures.
7.

Verification: At least thirty (30) days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-5 The project owner shall prepare a site-specific Security Plan for the operational phase and shall be made available to the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials

storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. Permanent full perimeter fence or wall, at least eight feet high around the Power Block and Solar Field;
2. Main entrance security gate, either hand operable or motorized;
3. Evacuation procedures;
4. Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;
5. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;
6. a. A statement (refer to sample, attachment “A”) signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and federal law regarding security and privacy;
   b. A statement(s) (refer to sample, attachment “B”) signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner) that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractor personnel that visit the project site.
7. Site access controls for employees, contractors, vendors, and visitors;
   a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;
8. Closed Circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate; and the LPG storage tanks, and
9. Additional measures to ensure adequate perimeter security consisting of either:
   a. Security guard present 24 hours per day, seven days per week, **OR**

b. Power plant personnel on-site 24 hours per day, seven days per week and **all** of the following:
   i. The CCTV monitoring system required in number 9 above shall include cameras that are able to pan, tilt, and zoom (PTZ), have low-light capability, are recordable, and are able to view 100% of the perimeter fence, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; **AND**
   ii. Perimeter breach detectors **<u>or</u>** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to the security plans. The CPM may authorize modifications to these measures, or may require additional measures, such as protective barriers for critical power pant components (e.g., transformers, gas lines, compressors, etc.) depending on circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with appropriate law enforcement agencies and the applicant.

<u>Verification:</u> At least 30 days prior to the initial receipt of hazardous materials on-site, the project owner shall notify the CPM that a site-specific Operations Site Security Plan is available for review and approval. In the Annual Compliance Report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and updated certification statements are appended to the Operations Security Plan. In the Annual Compliance Report, the project owner shall include a statement that the Operations Security Plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

HAZ-6 The project owner shall ensure that the hydrogen gas storage cylinders are stored in an area out of area potentially affected by a turbine over-speed accident and that no combustible or flammable material is stored within 50 feet of the hydrogen cylinders.

<u>Verification:</u> At least sixty (60) days prior to receipt of hydrogen gas on-site, the project owner shall provide copies of the facility design drawings showing the location of the hydrogen gas cylinders and the location of any tanks, drums, or piping containing any combustible or flammable material and the route by which such materials will be transported through the facility.

HAZ-7 The project owner shall place an adequate number of isolation valves in the Heat transfer Fluid (HTF) pipe loops so as to be able to isolate a solar panel loop in the event of a leak of fluid. These valves shall be

actuated manually and remotely. The engineering design drawings showing the number, location, and type of isolation valves shall be provided to the CPM for review and approval prior to the commencement of the solar array construction.

Verification: At least sixty (60) days prior to the commencement of solar array construction, the project owner shall provide the design drawings as described above to the CPM for review and approval.

Hazardous Materials
Appendix A

Hazardous Materials Proposed for Use
At the
BSEP Power Project
June 2009

Appendix A:
Hazardous Materials Proposed for Use at the BSEP Power Project

Hazardous Material	Relative Toxicity[1] and Hazard Class[2]	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Therminol VP-1 Diphenyl ether (73.5%) Biphenyl (26.5%	Moderate toxicity, Hazard class – Irritant; Combustible Liquid (Class III-B)	Biphenyl = PEL: 0.2 ml/m3 (8-hr TWA) TLV: 0.2 ml/m3 (1 mg/m3) (8-hr TWA) Diphenyl ether = TLV: 1 ml/m3(8-hr TWA) TLV: 2 ml/m3(15-min TWA) PEL: 1 ml/m3 (7 mg/m3) (15-min TWA)	2.4 MM gallons in system, no additional onsite storage	Continuous monitoring of pressure in piping network; routine inspections (sight, sound, smell) by operations staff; isolation valves throughout piping network to minimize fluid loss in the event of a leak; prompt clean up and repair.
Propane	Low toxicity; Flammable gas	PEL: 1,000 ppm	Two 18,000 gallon pressure tanks	Isolated from incompatible chemicals
Hydrogen	Low toxicity; Hazard class – Flammable gas	None Established	In generator cooling loop and “tube trailer”; total inventory of 63,000 SCF (335 pounds)	Pressure safety tank, crash posts, pressure relief valves
Sodium Hydroxide, 50% solution	High toxicity; Hazard class – Corrosive	PEL: 2 mg/m3	Carbon steel tank; 8,500 gallons	Isolated from incompatible chemicals and secondary containment
Sodium Hypochlorite, 12.5% solution	High toxicity; Hazard class – Poison-B, Corrosive	Workplace Environmental Exposure Limit (WEEL) - STEL: 2 mg/m3 PEL: 0.5 ppm (TWA), STEL: 1 ppm as Chlorine TLV: 1 ppm (TWA), STEL: 3 ppm as Chlorine	Plastic tanks; 17,000 gallons total inventory (2 x 8,500 gallons)	Secondary containment

Sulfuric Acid, 29.5% solution	High toxicity; Hazard class – Corrosive, water reactive	PEL: 1 mg/m3	Contained in batteries; 2,000 gallons total inventory	Isolated from incompatible chemicals and secondary containment
Carbon Dioxide	Low toxicity; Hazard class – Non flammable gas	TLV: 5,000 ppm (9,000 mg/m3) TWA	Carbon steel tank, 15 tons maximum onsite inventory	Carbon steel tank with crash posts
Lube Oil	Low toxicity Hazard class – NA	None established	Carbon steel tanks, 10,000 gallons in equipment and piping, additional maintenance inventory of up to 550 gallons in 55-gallon steel drums.	Secondary containment for tank and for maintenance inventory
Mineral Insulating Oil	Low toxicity Hazard class – NA	None established	Carbon steel transformers; total onsite inventory of 32,000 gallons	Used only in transformers, secondary containment for each transformer
Diesel Fuel	Low toxicity; Hazard class – Combustible liquid	PEL: none established TLV: 100 mg/m3	Carbon steel tank (300 gallons)	Stored only in fuel tank of emergency engine, secondary containment.
Nitrogen	Low toxicity; Hazard class – Non flammable gas	None established	Carbon steel tank; 7,500 pounds total inventory	Carbon steel tank with crash posts
Water treatment chemical NALCO Acti-Brom (R) 7342 Sodium bromide	Low toxicity; Hazard class – Irritant	Sodium bromide = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO pHreedom® 5200M Sodium salt of phosphonomethylated diamine	Low to moderate toxicity; Hazard class – Irritant	Sodium salt of phosphonomethylated diamine = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment

Water treatment chemical NALCO PCL-1346	Low toxicity; Hazard class – Irritant	None established for mixture	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO Permacare (R) PC-7408 Sodium bisulfite	Low toxicity; Hazard class – Irritant	Sodium bisulfite = PEL: none established: TLV: 5 mg/m3 TWA	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO BT-3000 Sodium hydroxide Sodium tripolyphosphate	High toxicity; Hazard class – Corrosive	Sodium hydroxide = PEL: 2 mg/m3 Sodium tripolyphosphate = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Water treatment chemical NALCO 8338 Sodium nitrite Sodium tolytriazole Sodium hydroxide	Moderate toxicity; Hazard class – Toxic	Sodium nitrite = PEL: none established Sodium tolytriazole = PEL: none established Sodium hydroxide = PEL: 2 mg/m3	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Welding gas Acetylene	Moderate toxicity; Hazard class – Toxic	PEL: none established	Steel cylinders; 200 cubic foot each, 800 cubic foot total on site	Inventory management, isolated from incompatible chemicals,
Welding gas Oxygen	Low toxicity; Hazard class – Oxidizer	PEL: none established	Steel cylinders; 200 cubic foot each, 800 cubic foot total on site	Inventory management, isolated from incompatible chemicals
Welding gas Argon	Low toxicity; Hazard class – Nonflammable gas	PEL: none established	Steel cylinders; 200 cubic foot each, 800 cubic foot total on site	Inventory management

Fertilizer Urea	Low toxicity; Hazard class - NA	WEEL: 10 mg/m3, 8-hour TWA	Stored in bags (dry pellets), 5 x 50-pound, 250 pound total inventory	Inventory management, indoor storage
Fertilizer Monopotassium phosphate	Low toxicity; Hazard class - Irritant	TLV: 10 mg/m3 (inhalable) 8-hr TWA, 3 mg/m3 (respirable) 8-hr TWA PEL: 15 mg/m3 (total dust) 8-hr TWA, 5 mg/m3 (respirable) 8-hr TWA	Stored in bags (dry pellets), 5 x 50-pound, 250 pound total inventory	Inventory management, indoor storage
Activated Carbon	Non-toxic (when unsaturated), low to moderate toxicity when saturated, depending on the adsorbed material; Hazard class – combustible solid	TWA (total particulate): 15 mg/m3 TWA (respirable fraction): 5 mg/m3 TLV (graphite, all forms except graphite fibers): 2 mg/m3 TWA	Used in two x 2,000-lb canisters, 4,000 pounds total inventory, no additional storage	No excess inventory stored onsite, prompt disposal when spent
Herbicide Roundup® or equivalent	Low toxicity; Hazard class - Irritant	Isoproplyamine salt of glyphosphate = no specific occupational exposure has been established	No onsite storage, brought on site by licensed contractor, used immediately	No excess inventory stored onsite
Soil stabilizer Active ingredient: acrylic or vinyl acetate polymer or equivalent	Non-toxic; Hazard class - NA	None established	No onsite storage, supplied in 55-gallon drums or 400gallon totes, used immediately	No excess inventory stored onsite
Calcium Hydroxide (Lime) (water treatment chemical)	Moderate toxicity; Irritant	PEL: 15 mg/m3 (total dust); PEL: 5 mg/m3 (respirable fraction) TLV: 5 mg/m3 (ACGIH)	Bulk Lime Feed System (1 x 100%): 14' D x 56' H Solid	Isolated from incompatible chemicals
Sodium Carbonate (Soda Ash) (water treatment chemical)	Low toxicity; Hazard class – NA.	No specific limits; Only inert dust limits: PEL: 15 mg/m3 (total dust); PEL: 5 mg/m3 (respirable fraction)	Bulk Soda Ash Feed System (1 x 100%): 12' D x 40' H solid	Isolated from incompatible chemicals

Polymer (water treatment chemical)	Low toxicity Hazard class – NA	None	FRP tank; 3000 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Magnesium Chloride (water treatment chemical)	Low toxicity; Hazard class – NA	No specific limits; only inert dust limits: PEL: 15 mg/m3 (total dust); PEL: 5 mg/m3 (respirable fraction)	FRP tank; 3000 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Ferric Chloride (water treatment chemical)	High toxicity; Hazard class – Corrosive	No specific limits. TLV: 1 mg/m3 iron salts; TLV: 1 mg/m3 HCl salts;	FRP tank; 3000 gallons	Inventory management, isolated from incompatible chemicals and secondary containment
Sodium Hydroxide, 50% solution (WAC resin regenerant)	High toxicity; Hazard class – Corrosive	PEL: 2 mg/m3 total dust	Plastic totes, 2 x 400 gallons	Isolated from incompatible chemicals and secondary containment
Hydrochloric Acid, 93% solution (WAC resin regenerant)	High toxicity; Hazard class – Corrosive, water reactive	PEL: 5 ppm TLV: 2 ppm	Plastic totes, 2 x 400 gallons	Isolated from incompatible chemicals and secondary containment
Sodium Hypochlorite, 12.5% solution	High toxicity; Hazard class – Poison-B, Corrosive	Workplace Environmental Exposure Limit (WEEL) - STEL: 2 mg/m3 PEL: 0.5 ppm (TWA), STEL: 1 ppm as Chlorine TLV: 1 ppm (TWA), STEL: 3 ppm as Chlorine	Plastic tanks; 8,500 gallons total inventory (1 x 8,500 gallons)	Secondary containment
Sulfuric Acid, 93% solution (water treatment chemical)	High toxicity; Hazard class – Corrosive, water reactive	PEL: 1 mg/m3	Lined, carbon steel tanks; 8,000 gallons total inventory (1 x 8,000 gallons)	Isolated from incompatible chemicals, lined tank, and secondary containment

[1] Low toxicity is used to describe materials with an NFPA Health rating of 0 or 1. Moderate toxicity is used describe materials with an NFPA rating of 2. High toxicity is used to describe materials with an NFPA rating of 3. Extreme toxicity is used to describe materials with an NFPA rating of 4. [2] NA denotes materials that do not meet the criteria for any hazard class defined in the 1997 Uniform Fire Code.

Source: (Ex. 500, pp. 4.4-24 through 4.4-31)

SAMPLE CERTIFICATIONS

(Attachments A, B, and C)

SAMPLE CERTIFICATION (Attachment A)

Affidavit of Compliance for Project Owners

I, _____
(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of:

_____
(Company name)

for employment at:

_____
(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____
(Signature of Officer or Agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment B)

Affidavit of Compliance for Contractors

I, _____
(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of:

_____
(Company name)

for contract work at:

_____
(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____
(Signature of Officer or Agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment C)

Affidavit of Compliance for Hazardous Materials Transport Vendors

I,

_____

(Name of person signing affidavit)(Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B:

_____

(Company name)

for hazardous materials delivery to:

_____

(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

_____

(Signature of Officer or Agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

F. WASTE MANAGEMENT

The Beacon Solar Energy Project (BSEP) will generate nonhazardous and hazardous wastes during construction and operation. This section reviews the project's waste management plans for reducing the risks and environmental impacts associated with handling, storage, and disposal of project-related nonhazardous and hazardous wastes. (Ex. 20; 32; 40; 48; 68; 97; 145; 175; 182; 208; 253; 263; 268; 276; 291; 304; 332; 333; 500; 504; 518; 521; 612; 613; 614; 615; 625; 626; 627; 628; 629; 630, 631; 5/22/10 RT 17:1-3, 78:2-5, 456:3-6.)

Nonhazardous wastes are degradable or inert materials, which do not contain concentrations of soluble pollutants that could degrade water quality and are therefore eligible for disposal at Class II or III disposal facilities. (Cal. Code Regs., tit. 14, § 17200 et seq.)

Hazardous waste consists of materials that exceed criteria for toxicity, corrosivity, ignitability, or reactivity as established by the California Department of Toxic Substances Control (DTSC). (See California Health and Saf. Code, § 25100 et seq.; Hazardous Waste Control Act of 1972, as amended; and Cal. Code Regs., tit. 22, § 66261.1 et seq.) State law requires hazardous waste generators to obtain U.S. EPA identification numbers and contract with registered hazardous waste transporters to transfer hazardous waste to appropriate Class I disposal facilities. (Cal. Code Regs., tit. 22, § 66262.10 et seq.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Site Excavation

The BSEP facility will be located on approximately 2,012 acres of land, adjacent to California State Route 14 (SR-14) just north of the community of California City, in an unincorporated area of eastern Kern County, California, on the western edge of the Mojave Desert. (Ex. 500, p. 4.13-7.)

The certification process requires a Phase I Environmental Site Assessment (ESA) to provide the history of how the site has been used and a list of hazardous waste releases on or near the site to document the presence of any actual or potential soil or water contamination. If there is reasonable potential that the site contains hazardous substances, a Phase II ESA must be conducted to analyze the contamination and to establish a remediation plan. Four individual Phase I Environmental Site Assessments (ESAs) were completed for the project,

including the transmission line and pipeline route. The evidence indicates that no recognized environmental conditions (REC), or historical RECs were identified along the transmission or pipeline route. All RECs are located outside the plant site boundary so any existing environmental conditions that may result in an impact will not be mitigated as a part of this project. (Ex. 500, pp. 4.13-6 through 4.13-7.)

2. Construction

Site preparation and construction of the BSEP and its associated facilities will last approximately 25 months and generate both non-hazardous and hazardous wastes in solid and liquid forms. Before construction can begin, the project owner will be required to develop and implement a Construction Waste Management Plan as described in Condition of Certification **WASTE-1**. This plan must describe all waste streams and methods of managing each waste. Implementation of this plan will ensure that wastes are managed in accordance with appropriate LORS. (Ex. 500, pp. 4.13-7 through 4.13-8.)

a. Nonhazardous Wastes

Construction activities will include site clearing and grading, installation of footings, and installation of the parabolic troughs. Construction non-hazardous solid waste, totaling about 40 cubic yards per week, will consist of paper, wood, glass, plastics from packing material, waste lumber, insulation, scrap metal and concrete, and empty non-hazardous chemical containers. All non-hazardous wastes will be recycled to the greatest extent possible and non-recyclable wastes will be collected by a licensed hauler and disposed of in a solid waste disposal facility (Class III landfill), per Title 14, California Code of Regulations, Section 17200 et seq. (*Minimum Standards for Solid Waste Handling and Disposal*), or in clean fill sites. Condition of Certification **WASTE-2** requires the project owner to identify facilities receiving waste and maintain documentation showing the type and volume of waste disposed. This information must be maintained at the project site and made accessible to regulatory agencies. (Ex. 500, p. 4.13-8.)

Non-hazardous liquid wastes will also be generated during construction, including sanitary wastes, dust suppression drainage, and equipment wash water. See the **Soil and Water Resources** section of this Decision for further discussion of project wastewater. (Ex. 500, p. 4.13-8.)

b. Hazardous Wastes

During construction, anticipated hazardous wastes include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, waste batteries, and spent welding materials. Approximately 175 gallons of solvents, used oil, paint and oily rags, and 1,000 gallons of Chelant (a heat exchanger cleaning waste), plus 30 batteries, will be generated from construction of the project. Empty hazardous material containers will be returned to the vendor or disposed at a hazardous waste facility; solvents, used oils, paint, oily rags, and adhesives will be recycled or disposed at a hazardous waste facility; and spent batteries will be disposed at a recycling facility. (Ex. 500, p. 6.14-8.)

The construction contractor and the project owner/operator is required to obtain a unique hazardous waste generator identification number for the site prior to starting construction, pursuant Condition of Certification **WASTE-3**, which will ensure compliance with California Code of Regulation Title 22, Division 4.5. Hazardous waste will be collected in hazardous waste accumulation containers and stored in a lay down area, warehouse/shop area, or storage tank on equipment skids for less than 90 days. The accumulated wastes will then be properly manifested, transported, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. We find that all construction wastes will be disposed of in accordance with all applicable LORS. (Ex. 500, pp. 4.13-8 through 4.13-9.)

In the event that construction excavation, grading, or trenching activities for the project encounter potentially contaminated soils and/or specific handling, disposal, and other precautions that may be necessary pursuant to hazardous waste management LORS, Conditions of Certification **Waste-4** and **Waste-5** adequately address any soil contamination contingency that may be encountered during construction of the project and ensure compliance with LORS. We find project compliance with LORS to be sufficient to ensure that no significant impacts will occur as a result of project waste management activities during construction. (Ex. 500, p. 4.13-9.)

3. Operation

Condition **WASTE-6** requires the Project Owner to develop and implement an Operation Waste Management Plan to identify all waste streams and the methods of managing each waste. (Ex. 500, p. 4.13-9.)

a. Heat Transfer Fluid Waste

The BSEP will use solar thermal technology to power a steam-turbine generator. The solar collectors consist of parabolic trough mirrors that heat Therminol VP-1, a petroleum based oil that serves as a heat transfer fluid (HTF). This HTF is a mixture of 26.5 percent biphenyl and 73.5 percent diphenyl oxide. The HTF is circulated through a solar steam generator where it transfers heat and generates high pressure steam that turns a steam turbine generator and produces electrical power. (Ex. 500, p. 4.13-9.)

Occasional spills of HTF from either equipment failure or human error can result in the generation of contaminated soil. HTF spills typically spread laterally on the bare ground and soak down to a relatively shallow depth. In these cases, the soil must be removed from the spill site and properly managed. The HTF is regulated as a hazardous material by the State of California due to the constituent biphenyl which is listed in Title 22, California Code of Regulations, Chapter 11, Appendix X (list #299) as an extremely hazardous waste. The listing of a chemical in Appendix X creates the regulatory presumption that a waste containing that chemical (*i.e*., HTF contaminated soil) is hazardous unless determined otherwise by the DTSC, pursuant to specified procedures. (Ex. 500, p. 4.13-9).

The record indicates that a DTSC determination of whether a discharge of HTF constituted a hazardous waste is made on a case by case basis. Once a generator establishes a history of managing waste discharges and develops a sufficient data set for characterization of the discharges as hazardous or non-hazardous, DTSC can be petitioned for their concurrence on a standardized waste classification for HTF contaminated soils generated at the facility. Depending on DTSC findings, an operator could modify their operations to standardize treatment and eliminate the need for case by case determinations. (Ex. 500, pp. 4.13-9 through 4.13-10.)

The record shows that BSEP is owned by NextEra which has operated Luz Solar Energy Generating Stations (SEGS) III through IX in San Bernardino County since 1989. The SEGS plants use the same solar technology as will be used in the BSEP. SEGS has a history of using, storing, and treating HTF contaminated soils on-site in bioremediation units and land treatment units LTUs, primarily LTUs. The DTSC in an April 4, 1995, letter [Ex. 48] determined that a sample of soil contaminated with HTF in concentrations of less than 10,000 mg/kg was classified as a non-hazardous waste. Soils with concentrations below 10,000 mg/kg are placed in the LTU for treatment and are used as back fill material on

the project property. Soil with concentrations in excess of 10,000 mg/kg is contained, handled, managed, and disposed of as a hazardous waste at an approved disposal facility. These criteria are currently used as a basis for ongoing operation of the SEGS facility. Also, based on their operation data from this facility, the Applicant estimates that approximately 750 cubic yards of HTF-affected soil may be treated per year at the project site. (Ex. 500, p. 4.13-10).

CURE raised several concerns regarding the management of spilled HTF based upon the track record established at the SEGS facilities. However, upon a close reading of CURE's briefs in relation to the evidence, several misconceptions or misunderstandings that undercut CURE's positions reveal themselves.

First, CURE argues that Staff's analysis is flawed because Staff limited its assessment of potential impacts from HTF spills to an estimated 750 cubic yards of contaminated soil per year. CURE's brief, citing its expert's testimony and supporting exhibits, claims that HTF spills at SEGS have been, "on the order of ***thousands*** of gallons of HTF and ***thousands*** of cubic yards of HTF-contaminated soil that have occurred at the SEGS facilities. (Ex. 612, pp. 1-2; Ex. 615; Ex. 625, p. 6; Ex. 631)" (CURE Opening Brief, p. 83, emphasis in the original).

We begin with the simple observation that it takes about 202 liquid gallons or 174 dry gallons to make a cubic yard [official notice]. Using the lesser number, in order to attain "triple digits" in cubic yards, it requires at least, 17,350 gallons. Staff's analysis, based upon 750 cubic yards of soil, equates to 130,125 gallons of contaminated soil. This number represents more contaminated soil than the SEGS facility has produced in its entire twenty years of operation combined. Thus, we are satisfied that Staff's analysis based upon an estimated 750 cubic yards of contaminated soil *per year* is an adequate baseline.

CURE's second misconception is that there is a one-to-one correlation between quantity of HTF spilled and quantity of soil contaminated. However, the testimony clearly establishes that this is not the case. Spills of HTF are vacuumed up into a truck and returned to the HTF storage tank. (3/2210 RT 479:18 – 480:12) The HTF material itself does not easily migrate in the environment (3/2210 RT 475:8 – 13). The evidence establishes that Therminol VP-1 turns to a waxy state at ambient temperatures. (3/2210 RT 427:24 – 428:2; 460:18-22; 468:1-2). This evidence suggests that more HTF will float upon the surface than will permeate the soil below. We can only infer that the amount of contaminated soil will be considerably less than the total volume of HTF spilled.

The third misconception conveyed by CURE is the idea that Staff's analysis failed because it did not conduct a separate analysis for spilled HTF in its solid state apart from Staff's analysis of spilled HTF in its liquid state. (CURE Opening Brief, p.84.) This is akin to the difference between spilling a cup of ice or a cup of water onto the ground. They only significant difference between the two is that the ice is easier to retrieve. We recognize that a chemical change occurs when HTF is spilled but that appears to happen in its liquid state immediately upon release (3/2210 RT 467:23–13). Once the HTF is spilled, the chemical composition of spilled liquid HTF and spilled solid HTF is the same. The only difference is temperature. Again, we find that Staff's analysis of the liquid spills applies to spills in a solid state as well.

CURE appears to assume that all HTF used by the Project is a "hazardous material" that poses acute and chronic health hazards. (CURE Opening Brief, p. 87.) This is not the case. The record clearly explains the method for determining the hazards posed by HTF. (Ex. 500 pp. 4.13-9 through 4.13-11.) DTSC makes a determination of whether a discharge of HTF constitutes a hazardous waste on a case by case basis. (Ex. 500 p. 4.13-9.) CURE argues staging HTF-impacted soil in the facility's land treatment unit (LTU) would cause significant environmental impacts and violates LORS. (CURE Opening Brief, p. 88) and CURE argues that HTF-contaminated soil is a "hazardous waste" that must comply with Heath and Safety Code § 25113(a). (CURE Opening Brief p. 91.) As explained above, not all HTF impacted soil is a "hazardous waste."

The record establishes that spills of HTF at BSEP must be cleaned up at the point of origin within 48 hours, and the contaminated soil will be placed on plastic in the staging area of the LTU and covered with plastic sheeting. Samples of excavated HTF contaminated soil will be collected in accordance with the United States Environmental Protection Agency's (USEPA) current version of the manual "Test Methods for Evaluating Solid Waste." The waste material will be characterized in accordance with State and Federal requirements and the results will be submitted to DTSC for a determination of the appropriate disposal method based on whether the waste is considered hazardous or non-hazardous. HTF contaminated soil will remain in the LTU staging area until the impacted soils are properly characterized using modified USEPA Method 8015. The method reports the concentration of purgeable and extractable hydrocarbons, such as gasoline and diesel range organics. Soil characterized as hazardous waste must be transported from the site by a licensed hazardous waste hauler for disposal at a Class I landfill. Soils characterized as non-hazardous will remain and be treated

in the LTU. The project owner may petition DTSC, as described above, to eliminate the need for case by case determinations once a history of discharges has been established. (Ex. 203, pp. 8, 60, and Figure 7; Ex. 500, p. 4.13-10; 3/2210 RT 473:5–474:13.)

As we found in the **Hazardous Materials** section of this Decision, the record contains considerable evidence that HTF transfer technology has substantially evolved and improved over the last twenty years. (3/22/10 RT 459:20-461:13; 462:7-463:1). BSEP will benefit from these improvements and will pose a lesser risk of HTF spills than the SEGS facility based upon the Applicant's experience there. We are satisfied that all of the issues raised by CURE in its brief are adequately addressed in the record. Further, we find that the testing, handling, reporting and disposal of HTF, as described in the record and Conditions of Certification, dispel the need for the additional Conditions proposed by CURE. (CURE Opening Brief, p. 95.)

The record indicates that the treatment and disposal methods comply with the Requirements of Waste Discharge established by the Lahontan Regional Water Quality Control Board (LRWQCB) and presented in **Soil and Water Resources Appendices E, F, and H**. Condition of Certification **WASTE-7** addresses the Requirements of Waste Discharge and requires the applicant to comply with the requirements for accidental discharges of HTF and ensures that hazardous concentrations of contaminated HTF-soil will not be treated in the LTU. (Ex. 500, p. 4.13-11). With the implementation of Condition of Certification **WASTE-7** we find there will be no significant impacts due to HTF spills during project operation.

b. Nonhazardous Wastes

Non-hazardous solid wastes generated during project operations will consist of HTF waste from spills, spent dematerialized resin, cooling tower basin sludge, and spent softener resin. To ensure proper disposal of the 10 tons per year of cooling tower basin sludge, **WASTE-8** requires the project owner to perform the appropriate tests to classify the waste and determine the appropriate method of disposal. Wastes must be recycled to the greatest extent possible and non-recyclable wastes will be removed on a regular basis for disposal in a Class III landfill. BSEP is expected to generate approximately 800 cubic yards of non-hazardous solid waste per year. (Ex. 500, p. 4.13-11.)

Non-hazardous cooling tower blowdown and sanitary wastewater will be disposed of in evaporation ponds and a septic leach field, respectively.

Nonhazardous liquid wastes generated during project operation are further discussed in the **Soil and Water Resources** section of this Decision. (Ex. 500, p. 4.13-11.)

c. Hazardous Wastes

Condition of Certification **WASTE-3**, which requires the Project Owner to obtain a hazardous waste generator identification number, applies during project operation. Hazardous solid wastes that may be generated during routine project operation include used hydraulic fluids, oils, greases, oily filters and rags, spent selective catalytic reduction catalysts, cleaning solutions and solvents, and batteries. In addition, spills and unauthorized releases of hazardous materials or hazardous wastes may generate contaminated soils or materials that may require corrective action and management as hazardous waste. (Ex. 500, p. 4.13-11.)

Proper hazardous material handling and good housekeeping practices will help keep spill wastes to a minimum. However, to ensure proper cleanup and management of any contaminated soils or waste materials generated from hazardous materials spills, Condition of Certification **Waste-9** requires the project owner/operator to report, clean up, and remediate as necessary, any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements. More information on hazardous material management, spill reporting, containment, and spill control and countermeasures plan provisions for the project are provided in the **Hazardous Materials Management** section of this Decision. (Ex. 500, pp. 4.13-11 through 4.13-12.)

The hazardous wastes generated during the operation of BSEP will be minor, with source reduction and recycling of wastes implemented whenever possible. The hazardous wastes will be temporarily stored on site, transported off site by licensed hazardous waste haulers, and recycled or disposed at authorized disposal facilities in accordance with established standards applicable to generators of hazardous waste. (Cal. Code Regs., tit. 22, §§ 66262.10 et seq.; Ex. 500, p. 4.13-12.)

4. Potential Impacts on Waste Disposal Facilities

Non-hazardous solid waste will be disposed at the six permitted Class III landfills located in Kern County. The evidence establishes that the six landfills combined have 65 million cubic yards of remaining capacity to operate through their

estimated closure dates which vary from 2014 through 2038. The evidence establishes and we find that the disposal of the solid wastes generated by BSEP can occur without significantly impacting the capacity or remaining life of any of the facilities located in Kern County. (Ex. 500, p. 4.13-12.)

Hazardous wastes generated during construction and operation will be recycled to the extent possible and practical. Those wastes that cannot be recycled will be transported off site to a permitted treatment, storage, or disposal facility. Hazardous wastes will be transported to one of two available Class I landfills: Clean Harbors Buttonwillow Landfill in Kern County, and Waste Management's Kettleman Hills Landfill in Kings County. The Kettleman Hills facility accepts Class I waste. In total, there is a combined excess of 16 million cubic yards of remaining hazardous waste disposal capacity at these landfills, with at least 30 years remaining in their operating lifetimes. In addition, the Kettleman Hills facility is in the process of permitting an additional 15 million cubic yards of disposal capacity, and the Buttonwillow facility has 40 years to reach its capacity at its current disposal rate. The approximately 4 tons of hazardous waste from the BSEP requiring off-site disposal is estimated to occupy less than 10 cubic yards. Therefore, we find that the disposal of the hazardous wastes generated by BSEP will not significantly impact the capacity or remaining life of any of the Class I landfills. (Ex. 500, p. 4.13-12.)

5. Cumulative Impacts

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects [14 Cal. Code Regs., § 15065(A)(3)]. Cumulative impacts can result from actions taking place over time in the same area that are minor when taken individually, but are collectively significant. Since no projects have been identified in the project vicinity that will create significant cumulative waste management impacts when considered together with the BSEP, we find that BSEP's waste management practices will not cause a significant adverse cumulative impact. (Ex. 500, p. 4.13-13.)

6. Public Comment

No public comment was received regarding **Waste Management**.

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings:

1. The project will generate nonhazardous and hazardous wastes during excavation, construction, and operation.

2. Four individual Phase I Environmental Site Assessments (ESAs) were completed for the project, including the transmission line and pipeline route.

3. No recognized environmental conditions (REC), or historical RECs were identified on the site, along the transmission or pipeline route.

4. The project owner will be required to develop and implement a Construction Waste Management Plan as described in the Condition of Certification **WASTE-1**.

5. All non-hazardous wastes will be recycled to the greatest extent possible and non-recyclable wastes will be collected by a licensed hauler and disposed of in a solid waste disposal facility (Class III landfill) or in clean fill sites.

6. Condition of Certification **WASTE-2** requires the project owner to identify facilities receiving waste and maintain documentation showing the type and volume of waste disposed.

7. The construction contractor and the project owner/operator is required to obtain a unique hazardous waste generator identification number for the site prior to starting construction, pursuant Condition of Certification **WASTE-3**.

8. All construction wastes will be disposed of in accordance with all applicable LORS.

9. Conditions of Certification **Waste-4** and **Waste-5** adequately address any soil contamination contingency that may be encountered during construction of the project and ensure compliance with LORS.

10. Project compliance with LORS is sufficient to ensure that no significant impacts will occur as a result of project waste management activities during construction.

11. Condition **WASTE-6** requires the Project Owner to develop and implement an Operation Waste Management Plan to identify all waste streams and the methods of managing each waste.

12. The BSEP will use Therminol VP-1 as a heat transfer fluid (HTF).

13. Occasional spills of HTF from either equipment failure or human error can result in the generation of contaminated soil.

14. Applicant, NextEra, has owned and operated Luz Solar Energy Generating Stations (SEGS) III through IX in San Bernardino County since 1989, which has a 21-year history of successfully using, storing and treating HTF contaminated soils.

15. The treatment and disposal methods comply with the Requirements of Waste Discharge established by the Lahontan Regional Water Quality Control Board.

16. **WASTE-7** addresses the Requirements of Waste Discharge and the requirements for accidental discharges of HTF and ensures that hazardous concentrations of contaminated HTF-soil will not be treated in the LTU.

17. Condition of Certification **WASTE-7** ensures that there will be no significant impacts due to HTF spills during project operation.

18. Condition of Certification **WASTE-8** requires the project owner to perform the appropriate tests to classify the waste and determine the appropriate method of disposal.

19. Condition of Certification **Waste-9** requires the project owner/operator to report, clean up, and remediate as necessary, any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements.

20. The disposal of the solid wastes generated by BSEP can occur without significantly impacting the capacity or remaining life of any of the facilities located in Kern County.

21. Solid nonhazardous wastes that cannot be recycled will be deposited at Class II and III landfills in the local area.

22. Liquid wastes will be classified for appropriate disposal and managed in accordance with the Conditions of Certification listed in the **Soil and Water Resources** section of this Decision.

23. Disposal of project wastes will not result in any significant direct, indirect, or cumulative impacts on existing waste disposal facilities.

CONCLUSIONS OF LAW

1. Implementation of the Conditions of Certification, below, and the waste management practices described in the evidentiary record will reduce potential impacts to insignificant levels and ensure that project wastes are handled in an environmentally safe manner.

2. The management of project wastes will comply with all applicable laws, ordinances, regulations, and standards related to waste management as identified in the pertinent portions of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

WASTE-1: The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility, and shall submit the plan to the Compliance Project Manager (CPM) for review and approval. The plan shall contain, at a minimum, the following:

- a description of all construction waste streams, including projections of frequency, amounts generated and hazard classifications;
- a survey of structures to be demolished that identifies the types of waste to be managed; and
- management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods, and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

Verification: No fewer than 30 days before the start of site mobilization, the project owner shall submit the Construction Waste Management Plan to the CPM for approval.

WASTE-2: During the construction and operation phase, the project owner shall maintain copies of the contracted waste and/or refuse haulers documentation of each waste load transferred from the construction site to a disposal site and/or recycling center. The project owner shall maintain the haulers lists of the names of permitted solid waste facilities or recycling centers locations receiving the project's construction waste, and copies of all weigh tickets.

Verification: The project owner shall identify permitted solid waste facilities or recycling centers that receive construction waste and maintain copies of weigh

tickets and manifests showing the type and volume of waste disposed. This information shall be maintained at the project site and made accessible to CPM and the Kern County Environmental Health Service Department Solid Waste Program.

WASTE-3: The project owner shall obtain a hazardous waste generator identification number from the United States Environmental Protection Agency prior to generating any hazardous waste during project construction and operations.

Verification: The project owner shall keep a copy of the identification number on file at the project site and provide documentation of the hazardous waste generation notification and receipt of the number to the CPM in the next scheduled Monthly Compliance Report after receipt of the number. Submittal of the notification and issued number documentation to the CPM is only needed once unless there is a change in ownership, operation, waste generation, or waste characteristics that requires a new notification to USEPA. Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM in the next scheduled compliance report.

WASTE-4: The project owner shall provide the resume of an experienced and qualified Professional Engineer or Professional Geologist, who shall be available for consultation during building removal, and soil excavation and grading activities, to the CPM for review and approval. The resume shall demonstrate experience in remedial investigation and feasibility studies.

The registered professional engineer or geologist shall be given full authority by the project owner to oversee and modify earth-moving activities to prevent the release or disturbance of contaminated soil.

Verification: At least 30 days before the start of site mobilization, the project owner shall submit the resume to the CPM for review and approval.

WASTE-5: If potentially contaminated soil is unearthed during building removal or excavation at either the proposed site or at linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Professional Engineer or Professional Geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and file a written report to the project owner and to the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the Professional Engineer or Professional Geologist shall have the authority to temporarily suspend further activity at that location for the protection of workers or the public. If, in the opinion of the Professional Engineer or

Professional Geologist, significant remediation may be required, the project owner shall contact the CPM and representatives of the Hazardous Materials Division of Kern County's Environmental Health Services Department for guidance and possible oversight.

Verification: The project owner shall submit any final reports filed by the Professional Engineer or Professional Geologist to the CPM within five days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-6: The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility (including construction, operation and dismantling of the onsite manufacturing building) and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- a detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;
- management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to ensure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
- information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- a detailed description of how facility wastes will be managed and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and
- a detailed description of how facility wastes will be managed and disposed upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary. The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste

Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-7: The project owner shall submit to the CPM and DTSC for approval the applicant's assessment of whether the HTF contaminated soil is considered hazardous or non-hazardous under state regulations. HTF-contaminated soil that exceeds the hazardous waste levels must be disposed of in accordance with California Health and Safety Code (HSC) Section 25203. HTF-contaminated soil that does not exceed the hazardous waste levels may be discharged into the land treatment unit (LTU). For discharges into the LTU, the project owner shall comply with the Waste Discharge Requirements contained within Appendix E, F, and H, in the Soil & Water Resources section of the Final Staff Assessment.

Verification: The project owner shall document all releases and spills of HTF as described in Condition of Certification **WASTE-9** and as required in Appendix E, F, and H, in the Soil & Water Resources section of the Final Staff Assessment. Cleanup and temporary staging of HTF-contaminated soils shall be conducted in accordance with the approved Operation Waste Management Plan required in Condition of Certification of **WASTE-6**. The project owner shall sample HTF-contaminated soil in accordance with the United States Environmental Protection Agency's (USEPA) current version of "Test Methods for Evaluating Solid Waste" (SW-846). Samples shall be analyzed in accordance with USEPA Method 8015 or other method to be reviewed and approved by DTSC and the CPM.

Within 14 days of an HTF spill the project owner shall provide the results of the analyses and their assessment of whether the HTF-contaminated soil is considered hazardous or non-hazardous to DTSC and the CPM for review and approval.

If DTSC and the CPM determine the HTF-contaminated soil is considered hazardous it shall be disposed of in accordance with California Health and Safety Code (HSC) Section 25203 and procedures outlined in the approved Operation Waste Management Plan required in Condition of Certification **WASTE-6** and reported to the CPM in accordance with Condition of Certification **WASTE-9**.

If DTSC and the CPM determine the HTF-contaminated soil is considered non-hazardous it shall be retained in the LTU and treated on-site in accordance with the Waste Discharge Requirements contained within Appendix E, F, and H, in the Soil & Water Resources section of the Final Staff Assessment.

WASTE-8: The project owner shall ensure that the cooling tower basin sludge is tested pursuant to Title 22, California Code of Regulations, and section 66262.10 and report the findings to the CPM. The handling, testing, and disposal methods for sludge shall be identified in the

Operation Waste Management Plan required in Condition of Certification **Waste -6**.

Verification: The project owner shall report the results of filter cake testing to the CPM within seven days of sampling. If two consecutive tests show that the sludge is non-hazardous, the project owner may apply to the CPM to discontinue testing. The test results and method and location of sludge disposal shall also be reported in the Annual Compliance Report required in Condition of Certification **Waste -6**.

WASTE-9: The project owner shall ensure that all spills or releases of hazardous substances, materials, or waste are reported, cleaned up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.

Verification: The project owner shall document all unauthorized releases and spills of hazardous substances, materials, or wastes that are in excess of reportable quantities (RQs) that occur on the project property or transmission corridors during construction and on the project property during operation. The documentation shall include, at a minimum, the following information:

- location of release;
- date and time of release;
- reason for release;
- volume released;
- amount of contaminated soil/material generated;
- how release was managed and material cleaned up;
- if the release was reported;
- to whom the release was reported;
- release corrective action and cleanup requirements placed by regulating agencies;
- level of cleanup achieved and actions taken to prevent a similar release or spill; and
- disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release.

Copies of the unauthorized spill documentation shall be provided to the CPM within 30 days of the date the release was discovered.

VI. ENVIRONMENTAL ASSESSMENT

A. BIOLOGICAL RESOURCES

The Commission must consider the potential impacts of project-related activities on biological resources, including state and federally listed species, species of special concern, wetlands, and other resources of critical biological interest such as unique habitats. The evidence is contained in Exhibits 7; 35; 36; 52; 59; 62; 71; 73; 78; 79; 87; 88; 90; 92; 110; 114; 129; 130; 131; 151; 171; 178; 195; 198; 199; 219; 220; 235; 272; 277; 282; 288; 299; 325; 326; 327; 328; 338; 340; 342 through 353; 500, pp. 4.2-1 to 4.2-171; 502; 506; 507; 508; 509; 510; 600 through 611; and 632 through 635, 648; 651 through 663; (3/22/10 RT 15-16; 76; 244; 453); (6/8/10 RT 20-31, 100-106, 238-247) and describes the biological resources in the vicinity of the project site and linear alignments, assesses the potential for adverse impacts, and analyzes whether mitigation measures are necessary to ensure compliance with applicable laws, ordinances, regulations, and standards (LORS).

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Setting

Beacon Solar, LLC, (Beacon) proposes to develop and operate a 250-megawatt solar energy facility called Beacon Solar Energy Project (BSEP) in Kern County east of State Route (SR) 14. The facility will be located approximately four miles north-northwest of the northern boundary of California City, approximately 15 miles north of the Town of Mojave. The site is situated in the Fremont Valley, just east of the southernmost portion of the Sierra Nevada, in the northwestern Mojave Desert. The Fremont Valley is typified by creosote bush scrub vegetation, with patches of desert saltbush scrub, desert wash scrub, and agriculture (mostly abandoned). (Ex. 500, p. 4.2-6.)

The project includes the plant site (solar array, power generating equipment, support facilities, evaporation ponds, and access roads) and the project's linear facilities (transmission line and switchyard). The power block and solar arrays will occupy approximately 1,266 acres of the 2,012-acre plant site. The total area that will be subject to disturbance is 2,012 acres which includes an engineered channel, evaporation ponds, access road, administration buildings and other support facilities, and bioremediation areas. An existing dirt road off SR-14 will be paved to provide access to the solar array, power block, and support facilities

on the plant site. A second emergency access road occurs at the northern edge of the facility on the eastern side of the plant site connecting to Neuralia Road. The entire property will be fenced with low maintenance fencing (e.g. single or double strand barbed-wire fence) to prevent human access; in addition, desert tortoise exclusion fencing will be erected around the plant site to exclude desert tortoise and deter other wildlife from entering the site. (Ex. 500, pp. 4.2-6 to 4.2-7.)

The BSEP will require construction of a transmission line to interconnect the project to the Barren Ridge Substation, located across SR-14 southwest of the BSEP plant site. The 3.5 miles of transmission line will be supported on 36 new steel/concrete monopoles running west and southwest from the power block, across SR-14 and extending south along an expanded LADWP right-of-way, where it will tie into the existing Barren Ridge Substation. Approximately 1.6 miles of the 3.5-mile line will be within the 2,012-acre plant site boundary. Potential new access roads (14 feet by 1.9 miles), in addition to spur roads (averaging 12 feet by 110 feet) to 10 pole sites, will also be built within Mojave creosote bush scrub area. (Ex. 500, p. 4.2-8.)

BSEP will use recycled water for cooling and must select between water supplied by either the Rosamond Community Services District (RCSD) or California City. Upgrades to these wastewater treatment facilities will occur entirely within their existing fence lines which are discussed in detail in the **Soils and Water** section of this Decision.

The RCSD water supply option would provide 1,456 acre-feet per year of Title 22 tertiary treated waste water, generated from RCSD's customers, to the BSEP for a period of 30 years. Delivery of this water requires construction of a 40-mile underground pipeline extending from the community of Rosamond to the BSEP site. Appendix A of Exhibit 500 (Ex. 500, pp 4.2-127 to 4.2-158) describes the vegetation and wildlife resources occurring along the southern 23 miles of the 39.61-mile Rosamond water pipeline alignment. The remaining 17.6 miles of the pipeline route runs along the proposed natural gas pipeline that was contemplated when the AFC was commenced (the project will instead use propane delivered by truck). This water pipeline will occur almost entirely along already disturbed and/or developed roadsides with paved and unpaved roads and road shoulder, vacant and bladed urban lots. Much of the native vegetation that will be affected within the construction footprint of the pipeline is of low quality because these roadside lands are weedy, fragmented, subject to vegetation maintenance and disturbance. (Ex. 500, p. 4.2-8.)

To deliver recycled water from the California City wastewater facility to the BSEP site, a three-mile long pipeline would be buried along a three mile stretch of Mendiburu Road to Neuralia Road, and another 9 miles of pipe would be buried along Neuralia Road to the BSEP site. (Ex. 510 p. 2-3).

The plant site is traversed diagonally from southwest to northeast by Pine Tree Creek, an ephemeral desert wash approximately 10,900 feet in length. The Applicant proposes to re-route Pine Tree Creek and a smaller (2,150-foot) unnamed dry wash inside the eastern property boundary. (Ex. 500, p. 4.2-6.)

The Applicant's design for the engineered drainage will route up to approximately 28,000 cubic feet/second (cfs) of flood waters along the southern and eastern boundaries of the plant site. The channel will be offset 50 feet to the west of the eastern project boundary and 55 feet north of the southern project boundary, in order to accommodate any future roads. The new channel will be approximately 250 feet wide at the base and maintain 4-feet horizontal to 1-foot vertical side slopes except along the east-west reach, where the north side slope will be 3-feet horizontal to 1-foot vertical. The channel will be approximately 12 feet deep with a diffuser at its downstream end. (Ex. 500, p. 4.2-6.)

2. Biological Surveys

Biological surveys were conducted on the BSEP site and linear facilities. The Final Staff Assessment (Exhibit 500) describes the vegetation and wildlife that occur within the plant site and along linear facilities. (Ex. 500, pp. 4.2-8 to 4.2-23.) **Table 1**, below, lists special-status species that are known to occur or could potentially occur in the project area and vicinity. None of the rare plant species listed below was detected during the 2007 and 2008 surveys. Floristic surveys were repeated in 2008 because 2007 surveys occurred during a dry year when many of the target plant species might not be blooming. Conditions during the 2008 surveys were adequate for determining the presence/absence of the rare plant species listed below. Seven special status wildlife species were detected during the surveys and are discussed in more detail below. Species observed during the 2007/2008 surveys are indicated by **bold-face type.** (Ex. 500, pg.4.2-15.)

Biological Resources Table 1
Special-Status Species Known or Potentially Occurring in the BSEP Area

PLANTS		
Common Name	***Scientific Name***	**Status State/Fed/CNPS**
Alkali mariposa lily	*Calochortus striatus*	__/__/1B.2
Red Rock tarplant	*Deinandra arida*	R/__/1B.2
Mojave tarplant	*Deinandra mohavensis*	E/__/1B.3
Red Rock poppy	*Eschscholzia minutiflora ssp.twisselmannii*	__/__/ 1B.2
Creamy blazing star	*Mentzelia tridentata*	__/__/ 1B.3
Charlotte's phacelia	*Phacelia nashiana*	__/__/ 1B.2

WILDLIFE		
Common Name	***Scientific Name***	**Status State/Federal**
Reptiles		
Desert tortoise	***Gopherus agassizii***	**ST/FT**
Birds		
Burrowing owl	***Athene cunicularia***	**CSC/BCC**
American peregrine falcon	***Falco peregrinus anatum***	**SFP/__**
Northern harrier	**Circus cyaneus**	**CSC/__**
California horned lark	***Eremophila alpestris actia***	**WL/__**
Loggerhead shrike	***Lanius ludovicianus***	**CSC/BCC**
Le Conte's thrasher	***Toxostoma lecontei***	**WL/BCC**
Mammals		
Pallid bat	*Antrozous pallidus*	CSC/__
Spotted bat	*Euderma maculatum*	CSC/__
Mohave ground squirrel	*Spermophilus mohavensis*	ST/__
American badger	*Taxidea taxus*	CSC/__

Source: (Ex. 500, pg.4.2-15.)

Status Codes:

Federal: FE - Federally listed, endangered: species in danger of extinction throughout a significant portion of its range
FT - Federally listed, threatened: species likely to become endangered within the foreseeable future
BCC: Fish and Wildlife Service: Birds of Conservation Concern: Identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent highest conservation priorities <www.fws.gov/migratorybirds/reports/BCC2002.pdf>

State CSC = California Species of Special Concern. Species of concern to CDFG because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
SE = State listed as endangered
ST = State listed as threatened
R = State listed as rare.
SFP = Fully protected
WL = Watch List: includes species formerly on California Species of Special Concern List (Remsen 1978) but which did not meet the criteria for the current list of special concern bird species (Shuford and Gardali 2008).

California Native Plant Society
List 1B - Rare, threatened, or endangered in California and elsewhere

List 2 - Rare, threatened, or endangered in California but more common elsewhere
List 3 - Plants which need more information
List 4 - Limited distribution – a watch list
0.1 - Seriously threatened in California (high degree/immediacy of threat)
0.2 - Fairly threatened in California (moderate degree/immediacy of threat)
0.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

Intervenor, CURE disputed the legitimacy of the surveys and conclusions rendered in the testimony of Applicant and Staff's expert witnesses regarding the presence of desert tortoise, Mojave ground squirrel, and Western burrowing owl. (Ex. 601, 3/22/10 RT 251-274).

a. Desert Tortoise Surveys

The record indicates that in 2007 and 2008 protocol level surveys were conducted of the plant site and linear facilities and surrounding buffer. A total of seven desert tortoises were observed during the biological surveys in 2008, all outside the plant site boundary. Four of the seven tortoises were observed west of SR-14. Two were north of the plant site and east of the railroad tracks, and one was observed in the 1,000-foot Zone of Influence transect north of California City Boulevard. In addition, two carcasses were observed, one along Neuralia Road, approximately 4 miles north of California City, and the other carcass was observed on the west side of SR-14. (Ex. 500, p. 4.2-16, 3/22/10 RT 319:24 – 320:4)

No live desert tortoises were found within the plant site boundary during the 2007 and 2008 protocol level surveys. Desert tortoise sign detected within these boundaries include an intact juvenile carcass that had been depredated by a raven and a deteriorated adult burrow (Ex. 92). In addition, two other sets of old (greater than four years since death) bone and carapace fragments were found near the southern edge of the plant site boundary. The 2008 survey documented two live desert tortoises north of the plant site and east of the railroad tracks, one associated with a burrow. Following the 2007 surveys, another juvenile desert tortoise carcass, also apparently preyed upon by a raven, was observed during subsequent work at the site. In addition, one live adult desert tortoise was also detected on the northwestern edge of the plant site boundary, along the main access road, and was likely a transient from adjacent habitat. CURE offered no evidence of the presence of desert tortoise beyond what was found in the protocol surveys (Ex. 500, pp. 4.2-16 to 4.2-17; 3/22/10 RT 334:25-336:1.)

Transient desert tortoise might occasionally occur in these atriplex shrub patches or in the 60.3 acres of vegetated desert wash that crosses the plant site. However, the presence of transient desert tortoises in this poor habitat will likely be attributable to the proximity of the adjoining native habitat outside of the plant site rather than reflecting use by resident individuals. The 2,012-acre plant site provides little or no habitat to support resident desert tortoise because these former agricultural lands are either barren or shrub cover is less than 2 percent according to the testimony of Dr. Alice Karl, a recognized expert on the species who testified for the Applicant at the evidentiary hearing. (Exs. 235; 326; 500, p. 4.2-17; 3/22/10 RT 343:17-24).

b. Mohave Ground Squirrel Surveys

Protocol surveys were not conducted for Mohave ground squirrel, and instead the evaluation of potential presence of this species was based on two habitat assessments conducted in 2007 by Dr. Phil Leitner, a recognized expert on Mohave ground squirrel, who also testified for the Applicant at the evidentiary hearing. (Exs. 299; 327; 500, p. 4.2-18; 3/22/10 RT 279-317).

Dr. Leitner testified in substantial detail that an extensive area of Mojave creosote bush scrub immediately adjoins the plant site to the east and south, and this habitat provides suitable habitat for the Mohave ground squirrel. However, the plant site itself provides little to no habitat for this species. Approximately 430 acres of the 2,012-acre plant site supports scattered perennial vegetation; the remaining area is essentially barren, reflecting past agricultural disturbance. The 429.5 acres of the plant site with some perennial plant cover will not support a resident population of Mohave ground squirrel because essential food resources are absent. This species will eat saltbush foliage and is known to consume small amounts of the two non-native herbs present on the site, red-stemmed filaree and Mediterranean grass, but individuals cannot maintain themselves on a diet composed only of these plants. Dr. Leitner concluded that monotypic saltbush scrub such as that found in the northwest portion of the BSEP site will not support a resident population of Mohave ground squirrel. Dr. Leitner also concluded that Pine Tree Creek wash is unsuitable for resident Mohave ground squirrel because the shrub vegetation is sparse (with barren stretches extending as much as 1,875 feet), plant diversity is low, and there is little cover or forage appropriate for the species. (Ex. 500, pp. 4.2-18 to 4.2-19; 3/22/10 RT 280:7-289:2.)

The only vegetation community in the project area capable of supporting resident populations of Mohave ground squirrel is the Mojave creosote bush scrub west of

SR-14. This area is located on a large alluvial fan deposited by outflows from Pine Tree Canyon. Thus, the evidence indicates that Mohave ground squirrel has little potential to occur within the plant site for lack of suitable habitat. However, this species is assumed to be present west of SR-14, in the vicinity of the transmission lines. The assumption of the baseline presence of Mojave ground squirrels is discussed in more detail in Section 3, Impacts and Mitigation, below. (Ex. 500, p. 4.2-19 3/22/10 RT 282:25-283:11.)

c. Western Burrowing Owls Surveys

The record indicates that protocol level surveys for Western Burrowing Owls were conducted in 2007 for the plant site, and transmission area. Protocol level surveys were conducted in 2008 for the supplemental survey area, and included an 80-acre parcel in the north, a 14-acre parcel north of the access road, and the transmission corridor space. Also, protocol surveys were conducted along the proposed natural gas pipeline. (3/22/10 RT 323:8-324:10.) In 2009 surveys were conducted for the emergency access road which was added from the northeast corner of the project site to the road, which included winter surveys that were conducted in January of 2010. (3/22/10 RT 324:1-10). We find that the protocol surveys were properly conducted and the conclusions of Applicant and Staff's experts regarding the presence of Dessert tortoise, Mojave ground squirrel and Western burrowing owl are based upon substantial evidence in the record.

3. Impacts and Mitigation

Grading of the entire 2,012-acre BSEP site will not impact sensitive plant communities or rare plants, but will directly affect wildlife by removal of shrubs and herbaceous vegetation, resulting in loss and fragmentation of cover, breeding, and foraging habitat. During construction, wildlife could be crushed or entombed in dens or burrows and could collide with vehicles. Much of the plant site is barren or sparsely vegetated, but nevertheless supports a diversity of mammals, birds, and reptiles, including some special-status wildlife species. Construction on the plant site will permanently eliminate 60.3 acres of Mojave desert wash scrub, 369.2 acres of fallow agricultural-disturbed saltbush scrub, and 1,579.7 acres of fallow agricultural ruderal species. (Ex. 500, p. 4.2-26.)

a. Desert Tortoise

Protocol level surveys conducted in 2007 and 2008 indicate that no resident population of desert tortoise inhabits the 2,012-acre plant site because it is highly disturbed by past agricultural operations and is mostly barren, lacking perennial

and herbaceous vegetation that will provide appropriate forage and burrow sites for this species. Occasionally, individuals might occur within the 429.5 acre portion of the plant site that supports disturbed fallow saltbush scrub and desert wash scrub. Desert tortoise could access this habitat from the Mojave creosote bush scrub vegetation to the west. Unlike the habitat on the plant site, the Mojave creosote bush scrub west of SR-14 supports relatively undisturbed habitat with moderately diverse vegetation that could provide adequate forage and cover for a resident population of desert tortoise. (Ex. 500, p. 4.2-37; 3/22/10 RT 319:2-321:8.)

Construction activities within the area for installation of the 230-kV transmission line west of SR-14 could result in permanent loss of 5 acres of habitat loss. These impact calculations include permanent impacts resulting from construction of access roads, pole pads, and pull/splicing sites. (Ex. 500, p. 4.2-26.) During construction in this area, along the California City water pipeline and in vegetated portions of the plant site, desert tortoise could be harmed during clearing, grading, and trenching activities or might become entrapped within open trenches and pipes. Construction impacts could also result in direct mortality, injury, or harassment of individuals as a result of encounters with vehicles or heavy equipment. Other direct impacts could include individual tortoise being crushed or entombed in their burrows, collection or vandalism, disruption of tortoise behavior during construction or operation of facilities, disturbance by noise or vibrations from the heavy equipment, and injury or mortality from encounters with workers' or visitors' pets. Desert tortoise may also be attracted to the construction area by application of water to control dust, placing them at higher risk of injury or mortality. Increased human activity and vehicle travel will occur from the construction and improvement of access roads, which could disturb, injure, or kill individual tortoises. Also, tortoise may take shelter under parked vehicles and be killed, injured, or harassed when the vehicles are moved. All of these impacts to desert tortoise would be significant and adverse. (Ex. 500, pp. 4.2-37 to 4.2-38.)

Conditions of Certification **BIO-1** through **BIO-9**, which apply to protection of desert tortoise and other biological resources in and near the BSEP, impose impact avoidance and minimization measures to reduce construction impacts to desert tortoise, including hiring biologists to monitor and prevent injury to tortoise during construction (**BIO-1** through **BIO-5**), creation of a worker awareness program and a desert tortoise relocation/translocation plan (**BIO-6** and **BIO-7**), marking disturbance areas, and limiting traffic to travel only with in the marked disturbance areas at speeds under 25 miles per hour to reduce the incidence of

road kills, installation of exclusion fencing to keep desert tortoise out of construction areas, avoidance of toxic substances, minimization of lighting impacts, restricting parking to areas enclosed by exclusion fencing, providing escape ramps in all open trenches, capping the ends of all piping or culverts or sequestering them with exclusion fencing, clearing tortoises from fenced areas, burrow inspection and evacuation, relocation (**BIO-8** and **BIO-9**), and other measures. (Ex. 500, p. 4.2-38.)

Condition of Certification **BIO-11** requires acquisition of off-site habitat to compensate for possible incidental take of up to two transient desert tortoises and for habitat loss along the transmission line corridors and Condition of Certification **BIO-12** requires monitoring of the mitigation measures and proof of compliance. Here, again, CURE argues the FSA is flawed because its analysis of impacts to desert tortoise used an inaccurate baseline, provides inadequate mitigation and does not comply with the Federal Endangered Species Act (ESA) (CURE Opening Brief, p. 65-73). Again, we disagree. The record contains abundant evidence that demonstrates that the BSEP site is inhospitable to the desert tortoise. (Ex. 92; 235; 336; 3/22/10 RT 319:2-321:8; 329:19-331:8.) There were comprehensive USFWS and CDFG approved protocol level surveys conducted on the project in 2007 and 2008. No tortoises were found to occupy the site. (3/22/10 RT 320:1-4.) Most of the plant site is barren. The only place where there are shrubs is in the wash, where the shrubs are very sparsely grouped and provide no cover. There is no community of native plants and the silty, fine grain soils show evidence of standing water which would not support desert tortoise burrows. (3/22/10 RT 329:19-331:8.) Tortoise densities have declined dramatically in the last 20 years, so in many places where there is still excellent habitat there are very few tortoises. (3/22/10 RT 332:22-25.) Thus, we see no evidence in the record to show that the BSEP site would induce desert tortoise to forego good habitat for barren non-habitat.

Further, the record refutes CURE's claims that desert tortoise "sign" on the BSEP site indicates the presence of desert tortoise (3/22/10 RT 264:10-14). The evidence convinces us that it does not. (3/22/10 RT 334:18-336:7.) The desert tortoise "sign" found on the BSEP was two juvenile carcasses, some old bone fragments and a deteriorated burrow. There was no scat found. There were no desert tortoises found. (3/22/10 RT 334:25-336:10) The record suggests that, hypothetically, a desert tortoise could happen onto the BSEP site. (3/22/10 RT 343:12-24, 348:20-349:10). Based upon that hypothetical possibility, Staff, with the concurrence of CDFG, and USFWS, agreed to assume the presence of two transient tortoises for purposes of calculating compensation. We find that the

assumption of two transient desert tortoises to calculate compensation for possible incidental take is quite reasonable based upon the evidence. (3/22/10 RT 316:16; 355:20 – 356:3.)

The Applicant will acquire and enhance 115 acres to compensate for the potential take of desert tortoises on the plant site and for impacts to 5.0 acres of Mojave creosote bush scrub. Fifteen of the 115 acres of compensatory mitigation is based CDFG's recommended 3:1 mitigation for impacts to desert tortoise. As with the Mohave ground squirrel compensatory mitigation, the remaining portion of the 115-acre compensation requirement was based not on loss of habitat, but on compensation for potential construction- and operation-related impacts to desert tortoise and Mohave ground squirrel. The Applicant's Incidental Take Permit application (Ex.92) provides a detailed explanation of the analysis supporting this recommendation. (Ex. 500, p. 4.2-38.) We find that the analysis of the desert tortoise is quite adequate. Further, we find that the monitoring and avoidance measures in Conditions of Certification **BIO-1** through **BIO-9** and the mitigation measures in **BIO-11** through **BIO-12** will reduce impacts to desert tortoise to less than significant levels, because the comprehensive scheme of these conditions taken together anticipates and neutralizes every foreseeable impact to the desert tortoise identified in the record.

b. Mohave Ground Squirrel

The adverse impacts associated with the presence of MGS are largely the same as those identified for the desert tortoise, above, and most of the mitigation measures are the same (see Conditions of Certification **BIO-1** through **BIO-8**). The evidence established that the 2,012-acre plant site is not likely to be inhabited by the Mohave ground squirrel (MGS) because it is barren, lacking perennial and herbaceous vegetation that will provide appropriate forage and cover for this species. The 429.5 acres of disturbed vegetation (fallow saltbush scrub and desert wash scrub) on the plant site will also not support resident Mohave ground squirrel because it lacks the appropriate variety of native shrub and herbaceous plants needed for sustenance throughout the active season (Ex. 92). The 60.3 acres of desert wash on the site also does not provide suitable habitat or a movement corridor for Mohave ground squirrels because shrub vegetation is sparse, plant diversity is low and little cover or forage appropriate for the species is available. However, occasionally transient individuals might occupy this disturbed vegetation, accessing it from the Mojave creosote bush scrub vegetation to the west, across SR-14. The Applicant's Mohave ground squirrel expert, Dr. Philip Leitner, estimates that grading and construction within

the plant site might result in the incidental take of up to two transient Mohave ground squirrels that could occasionally enter these disturbed and degraded lands. Staff agreed that loss of two transient individuals is a reasonable estimate of take of Mohave ground squirrel during construction within the plant site. (Ex. 500, pp. 4.2-35 to 4.2-36; 3/22/10 RT 280:8-283:11.)

Again, CURE argues that the FSA fails to set forth an accurate baseline number of MGS which in turn makes the Staff's impact analysis flawed (CURE Opening Brief, p. 55-65). CURE also claims that the proposed mitigation is inadequate. We disagree. The record is clear that the Applicant assumed the presence of two MGS and that assumption was based on the well-founded habitat assessment of Dr. Leitner (Ex. 327, 3/22/10 RT 254:14-17, 259:23, 291:17-25, 366:18-21). A survey is not necessary when the project proponent prefers to assume that the Mohave ground squirrel is present on the project site and applies for a California Endangered Species Act incidental-take permit (Fish and Game Code Section 2081b) requiring mitigation and compensation (see Ex. 92). Dr. Leitner is the only expert on MGS diet to testify in these proceedings (3/22/10 RT 269:5-10; 272:5-14). In order for a site to support a population, it must have a variety of different native plants that will provide food for the squirrels through the season (3/22/10 RT 282:2-5.) The BSEP site does not provide the variety of food resources needed to support a population of MGS. (3/22/10 RT 282:22-24.) Even the shrub area on the BSEP site contains only one species of saltbush and a couple of invasive exotic annual plants, but it does not contain the community of other native species necessary to support an MGS population (3/22/10 RT 284:12-20; 306:5-12). No MGS has ever been trapped in the saltbush areas of abandoned alfalfa farms in the Western Mojave (3/22/10 RT 285:17-23.) The weight of the evidence persuades us that the site does not provide potential habitat for MGS (Ex. 327 3/22/10 RT 288:4-289:2; 291:21-293:4; 315:21-316:3). Therefore, Staff, with the concurrence of CDFG, and USFWS, agreed to assume the presence of two transient MGS for purposes of calculating compensation. We find that the assumption of two transient MGS to calculate compensation for possible incidental take is quite reasonable based upon the evidence (3/22/10 RT 316:16; 355:20 – 356:3).

Unlike the habitat on the plant site, the Mojave creosote bush scrub west of SR-14 supports relatively undisturbed habitat with moderately diverse vegetation that could provide adequate forage and cover for a resident population of Mohave ground squirrel. In response to potential impacts, Conditions of Certification **BIO-12** requires the project owner to acquire and enhance 115 acres to compensate for the potential take of two individual MGS during construction on the plant site

and for impacts to the 5.0 acres of Mojave creosote bush scrub to the west. These Conditions are predicated on the assumption that enhancement of mitigation lands will increase carrying capacity for this species, compensating for the loss of individuals and loss of habitat. Fifteen of the 115 acres of compensatory mitigation is based on impacts to 5 acres of good quality habitat west of SR-14 associated with transmission line construction and operation at a 3:1 mitigation ratio. The remaining portion of the 115-acre compensation requirement was based not on loss of habitat, but on compensation for potential construction- and operation-related impacts to desert tortoise and Mohave ground squirrel. The Incidental Take Permit application (Ex. 92) provides a detailed explanation of the analysis supporting these Conditions. (Ex. 500, p. 4.2-36.)

Condition of Certification **BIO-10** requires a clearance survey of the entire site for MGS and their burrows, a translocation plan and maintenance of records of MGS translocated. We find that the analysis of the MGS in the record is quite sufficient and that two individual MGS is an appropriate baseline given the lack of suitable MGS habitat on the BSEP site. Further, we find the avoidance and mitigation measures contained in Conditions of Certification **BIO-1** through **BIO-8, BIO-10** and the compensation required in **BIO-12** will reduce BSEP impacts to Mohave ground squirrel to less than significant levels.

c. Western Burrowing Owl

Burrowing owls, a state species of special concern, will be directly impacted by construction of the BSEP. Without implementation of impact avoidance and minimization measures, burrowing owl adults, eggs, or young could be crushed or entombed by grading activities, and nesting and foraging activities will be directly and indirectly impacted by construction and operation of the project. The project will also result in permanent loss of 2,012 acres that are currently used by burrowing owls for nesting and foraging. (Ex. 500, p. 4.2-34.)

CURE challenged the Staff's analysis of the burrowing owl claiming that the FSA failed to set forth an accurate baseline number of owls which in turn makes the FSA's impact analysis flawed. CURE also claims that the proposed mitigation is inadequate. (CURE Opening Brief, p. 73-80.) CURE's expert testified that the three Western Burrowing Owl surveys detected as many as nine burrowing owls at or near the BSEP site (3/22/10 RT 255:22 – 256:7.) However, Applicant's witness testified in substantially more detail that in 2007 there were only two western burrowing owls detected within the plant site (3/22/10 RT 323:8-324:25;

341:10-343:1). In 2008 there was one burrowing owl detected within the buffer of the plant site and two owls detected within the buffer to the gas line. In the 2009 and 2010 survey for the access road, no western burrowing owls were detected. Applicant's expert testimony suggested that CURE's expert wrongly assumed that the individuals that were detected in different years during different survey protocols were separate individual owls. No more than two owls were observed per year within the project site. (*Id.*) Applicant's expert testified that although they observed only one pair of owls, mitigation in accordance with CBOC and CDFG guidelines will be based upon two pair. (3/22/10 RT 344:4–9.) The analysis, conclusions, and mitigation contained in the FSA and Conditions of Certification was expressly endorsed by the experts from the CDFG and USFWS. (3/22/10 RT 355:20 – 356:3.) We find that the surveys support the conclusion that the baseline of two pair of owls on the BSEP site is appropriate.

To avoid potential impacts to burrowing owls that might nest or reside within burrows in the project impact area, pre-construction surveys on the plant site and along all linear facilities are required in Condition of Certification **BIO-17**. Condition of Certification **BIO-17** requires passive relocation to avoid direct take of owls and mitigate potentially significant impacts to nesting or resident owls. The project owner is required to install four burrows, and two burrows for any additional owl displaced by the project. If during the pre-construction surveys, burrowing owls are detected within the impact area or within 500 feet of any proposed construction activities, including the Rosamond pipeline, the Designated Biologist must prepare a Burrowing Owl Monitoring and Mitigation Plan in consultation with CDFG, USFWS, and Energy Commission. This plan will include detailed measures to avoid and minimize impacts to burrowing owls in and near the construction areas consistent with CDFG guidance. (Ex. 500, p. 4.2-34.)

Passive relocation for the owls occurring on the BSEP site involves encouraging the movement of on-site burrowing owls to a 14.39-acre parcel owned by the Applicant and located just outside of the plant site boundary, east of SR-14, and north of the facility access road. To facilitate the passive relocation, a total of four artificial burrows must be constructed within an approximately 6-acre portion of this 14.39-acre parcel prior to clearing and grading on the BSEP site. The relocation area provides suitable habitat for burrowing owls. (Ex. 500, p. 4.2-34.)

In addition to the potential direct impacts to nesting burrows, the BSEP will permanently eliminate a large expanse of habitat on the plant site that is currently available for foraging and breeding by burrowing owls. Habitat loss is one of the

primary threats to California's burrowing owl population and the BSEP will contribute incrementally to this significant loss. The acquisition of 20 acres will serve to compensate for loss of foraging and breeding habitat for two burrowing owl pairs, and add to the permanent protection of 6 acres within the 14.39 acre relocation parcel near the project site. These measures, which include creation of nesting burrows north of the project boundary and acquiring and enhancing off-site burrowing owl habitat, are incorporated into Condition of Certification **BIO-17.** With the implementation of Conditions of Certification **BIO-1** through **BIO-8** (described above) and **BIO-17,** we find that the mitigation is adequate and that it reduces impacts to burrowing owls to less than significant levels. (Ex. 500, pp. 4.2-34 to 4.2-35.)

d. American Badgers and Desert Kit Fox

American badgers were not detected on the BSEP site, but the site includes marginally suitable foraging and denning habitat for this species. Desert kit fox sign was detected on the BSEP site, and the site includes marginally suitable foraging and denning habitat for this species. Construction of the BSEP project could kill or injure American badgers or Desert kit fox by crushing with heavy equipment or could entomb them within a den. Construction activities could also result in disturbance or harassment of individuals.

Condition of Certification **BIO-16** requires that, concurrent with the desert tortoise clearance survey, a qualified biologist perform a preconstruction survey for badger and kit fox dens in the project area, including areas within 250 feet of all project facilities, utility corridors, and access roads. In the event that badgers or foxes are detected, the biologist must excavate the den and backfill it by hand. The biologist must monitor the area for several days thereafter to prevent the attempted reconstruction or reuse of the den onsite. (Ex. 500, p. 4.2-36.) The same avoidance, monitoring and mitigation contained in Conditions of Certification **BIO-1** through **BIO-8** (discussed above) would apply to the American badger and Desert kit fox. We find that Condition of Certification **BIO-16** mitigates potential impacts to the kit fox and badger below levels of significance.

e. Migratory Birds

Vegetation at the plant site and along linear facilities provides foraging, cover, and/or breeding habitat for migratory birds, including a number of special-status bird species confirmed to be present at the site. Loggerhead shrike, LeConte's

thrasher, and California horned lark are special-status species known to breed and forage at the site. Power plant construction will eliminate nesting habitat for these and other species and could result in direct and cumulative impacts to these species due to habitat loss, injury or fatality of individuals. No impacts to northern harrier or peregrine falcon are anticipated because these species occur only infrequently at the BSEP area and do not breed there. (Ex. 500, p. 4.2-33.)

The loss of active bird nests or young is regulated by the federal Migratory Bird Treaty Act and Fish and Game Code section 3503. Mitigation measures to avoid and minimize impacts to nesting birds have been incorporated into Conditions of Certification **BIO-8** (Impact Avoidance and Best Management Practices) and **BIO-15** (Pre-Construction Nest Surveys). Implementation of these Conditions of Certification will avoid direct impacts to nests, eggs, or young of migratory birds and will minimize the impacts of construction disturbance to nesting birds, by instituting a no-disturbance buffer zone around any nest area which is discovered by the designated biologist who will monitor the nest until the nestlings fledge or disperse. Implementation of Condition of Certification **BIO-11**, the compensatory mitigation plan, will mitigate cumulative regional habitat loss. (Ex. 500, p. 4.2-33.)

Migratory birds and resident native birds such as killdeer and red-tailed hawks were observed nesting either on the BSEP site or in the project area during 2008 surveys. Though many of the native birds are not special-status species, these birds are protected under the federal Migratory Bird Treaty Act which prohibits the take or possession of any migratory nongame bird (or any part of such migratory nongame bird), including nests with viable eggs. We find that implementation of Conditions of Certification **BIO-4**, **BIO-5**, **BIO-6**, **BIO-7**, **BIO-8**, **BIO-15** and **BIO-12** will reduce the impacts to native birds to less than significant levels. These conditions ensure the presence of a qualified biologist to monitor construction activities, create a site-specific biological resources mitigation plan and worker environmental awareness program to enforce impact avoidance and mitigation measures designed to protect migratory birds and other biological resources from noise, traffic, hazardous materials, and other construction related hazards.(Ex. 500, p. 4.2-33.)

f. Rerouted Creek Bed and Wash

Grading and construction for the BSEP will eliminate 10,900 linear feet (14.96 acres of state waters) of Pine Tree Creek and approximately 2,150 linear feet (1.04 acres of state waters) of the unnamed wash, as well as approximately 400-

650 acres of floodplain associated with the Pine Tree Creek wash. Mass grading of Pine Tree Creek, the unnamed wash, and the floodplain on the BSEP site will eliminate the hydrological and biological values and functions provided by these features. Eliminating the washes on the BSEP will fundamentally and permanently alter the natural geomorphic and hydrological processes that currently characterize the project site, which in turn will fundamentally alter the biological processes that support recruitment of native vegetation and creation of wildlife habitat within the wash and on the associated floodplain. Therefore, the evidence indicates that construction of the BSEP will significantly impact the biological functions and values of the desert washes on the BSEP site. (Ex. 500, p. 4.2-28.)

To mitigate for significant impacts to these drainages, Beacon will replace the hydrological and biological functions and values of the eliminated washes and floodplain with an engineered channel. The new channel will be constructed inside the southern and eastern property boundary, outside of the desert tortoise fencing but within a low maintenance security fence. The channel will be approximately 14,000 feet long, 250-feet wide at the base, with eleven, 10-foot high drop structures. The reaches between the drop structures will consist of long, gentle slopes (approximately 0.2 percent grade) of soil/sand, and this is the area that will be suitable for revegetation. The channel will be approximately 12 feet deep with a diffuser at its downstream end. (Ex. 500, p. 4.2-26.)

CURE contends that the mitigation for the redirected channel is inadequate because “the FSA provides no other success criteria besides maintaining a low level of noxious weeds within the channel bottom.” (CURE Opening Brief, p. 47). This contention is refuted by the evidence. The redesigned channel contains eleven drop structures to control water flow speed and to maximize habitat potential between the drop structures (Ex. 195, p. 2; Ex. 500, p. 4.2-7). The channel is designed to replicate hydrological and biological functions and processes of the wash displaced by the BSEP, thus mitigating impacts to the wash as required by Condition of Certification **BIO-18.** (Ex. 195, p. 2; Ex. 217, pp. 2-3; 500, pp. 4.2-1 through 4.2-2). Mitigation includes a 1:1 ratio for all permanent impacts to unvegetated waters of the state and a 2:1 replacement ratio for permanent impacts to ephemeral wash vegetated with southern alluvial fan scrub. (Ex. 195, p. 1; Ex. 500, p. 4.9-167.)

CURE argues that the project will result in unmitigated significant adverse impacts to sixteen acres of waters of the state. (CURE Opening Brief, p. 52). The evidence establishes that Pine Tree Creek wash within the project site provides

significant hydrological and biological values and functions, including: hydrological connections with Koehn Lake, a seasonally important wildlife resource; stream energy dissipation during high-water flows that reduces erosion and improves water quality; surface and subsurface water storage; groundwater recharge; sediment transport, storage, and deposition aiding in floodplain maintenance and development; nutrient cycling; support for vegetation communities that help stabilize stream banks and provide wildlife habitat and a movement corridor. There is no evidence, however, that the rerouted wash will not provide these same biological values and functions in time. Staff's testimony indicated that functions relating to wildlife habitat and connectivity have been impaired, but not eliminated, by the recent disturbances to vegetation from previous agricultural activities at the site. Evidence establishes that all other functions remain intact. (Ex. 500, p. 4.9-13.)

Condition of Certification **BIO-18** requires that the channel created by the applicant be designed to be geomorphologically equivalent to a typical desert wash system, maintain existing hydrological connections and levels of sediment transport, provide conditions that would support recruitment and maintenance of native vegetation, provide wildlife habitat, and maintain the biological functions and values of a natural desert wash ecosystem. The wash will be designed to avoid any movement barrier or hazard for desert tortoise or other wildlife, and will be monitored to prevent invasive weeds.

The project owner must prepare a final Desert Wash Revegetation Plan with adequate detail for implementation, maintenance, and monitoring of the revegetation. Condition of Certification **BIO-18** also specifies that if the plan is unsuccessful in meeting the goals of the Desert Wash Revegetation Plan at the end of the 10-year-revegetation period, the project owner must secure compensatory mitigation lands in addition to the other ongoing maintenance requirements for the rerouted channnel. Condition of Certification **BIO-18** specifies that within 10 years the applicant must establish at least 15 percent of the 41.5-acre channel bottom, or 6.2 acres, with native desert shrub plant community, and that non-native weeds constitute less than 2 percent cover of the vegetated channel. Revegetation must also occur on each of the reaches between drop structures. Compensatory off-site mitigation lands must include 16.0 acres of desert washes which includes the immediately adjacent watershed and floodplain. With implementation of Condition of Certification **BIO-18**, we find impacts to 16.0 acres of state waters and loss of the hydrological and biological functions of the project site desert washes will be mitigated to less-than-significant levels. This condition also fulfills requirements of CDFG's Lake and

Streambed Alteration Agreement program pursuant to California Fish and Game Code section 1600 et seq. (Ex. 500, p. 4.2-33.)

g. Impacts from Construction of Linear Facilities

Construction activities and soil disturbance could introduce new noxious weeds to lands adjacent to the BSEP site and its linear facilities and could further spread weeds already present in the project vicinity. Disturbance of the soil's surface caused by construction traffic and other activities will result in increased wind erosion of the soil. Aeolian transport of dust and sand can result in the degradation of soil and vegetation over a widening area. Dust can have deleterious physiological effects on plants and may affect their productivity and nutritional qualities. However, the impacts to adjacent native plant communities from the introduction and spread of noxious weeds as well as increased dust and other construction impacts will be minimized to insignificant levels with the implementation of Condition of Certification **BIO-8** and with **SOIL&WATER-5** which specify best management practices in dust suppression, traffic control and weed avoidance measures. (Ex. 500, p. 4.2-27.)

Construction of a transmission line and spur access roads west of SR-14 will result in permanent impacts to 5.0 acres of Mojave creosote bush scrub. These impact calculations include permanent impacts resulting from construction of access roads, pole pads, and pull/splicing sites. All of these transmission line construction activities will occur in occupied desert tortoise and Mohave ground squirrel habitat potentially impacting these listed species in the absence of the mitigation measures required in Conditions of Certification **BIO-11** and **BIO-12.** Conditions of Certification **BIO-11** and **BIO-12** require the project owner to acquire and enhance 115 acres to compensate for the potential take of the specified species (above) during construction on the plant site and for impacts to the 5.0 acres of Mojave creosote bush scrub to the west. We find that the acquisition of compensatory habitat mitigates the impacts caused by the construction of transmission lines and spur access roads to less than significant levels. (Ex. 500, p. 4.2-26.)

h. Recycled Water Pipelines

Construction of the approximately 12-mile California City pipeline will occur entirely within existing disturbed road and/or road shoulder, so no impacts to existing vegetation communities or associated biological resources would occur. (Ex. 510, p. 3).

The record indicates that construction of the 40-mile water pipeline from the community of Rosamond to the BSEP site will occur mostly within disturbed road shoulders or within the roadbed of unpaved roads, affecting approximately 81.18 acres of developed or disturbed lands. A maximum of 4.29 acres of Mojave creosote scrub and 6.91 acres of saltbush scrub will be temporarily impacted by construction. Even in disturbed areas, construction and trenching may pose some risk to wildlife, including disturbance to nesting birds and trapping wildlife in open trenches. Desert tortoise, Mohave ground squirrel, and burrowing owls could occur in the vicinity of portions of the Rosamond pipeline alignment, as could American badger and desert kit fox. All of these special status wildlife species could be directly or indirectly impacted by pipeline construction. (Ex. 500, p. 4.2-26.)

Conditions of Certification **BIO-1** through **BIO-9**, impose impact avoidance and minimization measures to reduce construction impacts to biological resources including hiring biologists to monitor and prevent injury to fauna during construction (**BIO-1** through **BIO-5**), creation of a worker awareness program and biological resources mitigation implementation and monitoring plan (**BIO-6** and **BIO-7**), marking disturbance areas, and limiting traffic to travel only with in the marked disturbance areas at speeds under 25 miles per hour to reduce the incidence of road kills, installation of exclusion fencing around construction areas, avoidance of toxic substances, minimization of lighting impacts, restricting parking to areas enclosed by exclusion fencing, providing escape ramps in all open trenches, capping the ends of all piping or culverts or sequestering them with exclusion fencing, clearance, burrow inspection and evacuation, relocation (**BIO-8** and **BIO-9**), and other measures. (Ex 510, p. 3.)

CURE contends that Staff performed insufficient analysis of the southern 23-mile segment of the Rosamond pipeline through Edwards Air Force Base and the Western Alternative of the southern 23-miles of the 40-mile Rosamond pipeline, and no analysis of the northern 17.6 mile segment of the Rosamond pipeline or the entire California City pipeline (CURE Op. Brief, pp. 23-32). Actually, a review of the record reflects that there is sufficient evidence of analyses of these segments although some of the testimony was received after CURE filed its brief.

i. The Northern 17.6 Mile Segment of the 39.61-Mile Rosamond Pipeline

We note that Staff had independently reviewed BSEP's analysis of the impacts along the 17.6 mile segment of the Rosamond pipeline, which follows the same

alignment as was extensively analyzed as the route for the Project's originally proposed natural gas pipeline. (See Applicant's Opening Brief, p.11-13 and 30; Ex. 500 at 4.2-8, 4.2-13, 4.2-127, 4.2-135; Ex. 500 Biological Resources Appendix A, Figures 1-6b; 6/8/10 RT 131:5-12). The original project design included a 17.6-mile gas line which was subject to protocol level desert tortoise and burrowing owl surveys, as well as rare plant surveys and habitat analysis. (Ex. 500, p. 4.2-8; Ex. 2, Project Description figure 2-1; Ex. 7, 2007 surveys; Ex. 62, 2008 surveys, 3/22/10 RT 321:3-8). The 17.6-mile pipeline route was incorporated into both the Rosamond recycled water line route and the California City recycled water line route. For Rosamond, the 17.6-mile route is a portion of the total length of 39.61 miles. For the California City option, the 17.6-mile route completely subsumes the 9.35 mile route that runs north along Neuralia Road to the BSEP site. (Ex. 500 4.2-8, 4.2-127; Ex. 2, Project Description, figure 2-1, Ex. 506, Ex. 510). The line connects the California City treatment facility to Neuralia Road via a 2.8 mile segment of Mendiburu Road. As with Neuralia Road, Mendiburu Road is a developed paved road which already contains buried sewer lines. (Ex. 500, pp. 4.5-7, 4.9-38, Ex. 506, Ex. 510). This 17.6-mile line that makes up the northern segment of the Rosamond Alternative and most of the length for California City line, would be buried within a broad, disturbed and managed road shoulder on Neuralia Road (Ex. 500, Biological Resources Appendix A - Figures 2g to 2l). The road is flanked by creosote bush scrub; however, construction would be confined to the existing disturbed area at the edge of California City Boulevard and will avoid areas with native vegetation. (Ex. 500, p. 4.2-135.)

In light of the extensive analysis of impacts and proposed mitigation for this segment of the pipeline, we find that there is sufficient evidence of Staff's analysis of the 17.6-mile pipeline route in the record.

j. The Southern 23-Mile Segment of the 39.61-Mile Rosamond Pipeline

There are two possible routes for the southern 23-mile segment of the 39.61-mile Rosamond pipeline. The eastern alternative would run through Edwards Air Force Base (EAFB) and the Western Alternative would be constructed largely within the existing road bed and shoulder of predominantly improved gravel and dirt roads from the water treatment plant in Rosamond, to California City Boulevard at Trescape Road. These roads occur in the rural-residential and undeveloped areas between the north boundary of EAFB and California City Boulevard, and along Rosamond Boulevard, a paved four-lane arterial in the commercial district of Rosamond. The north end of the alignment continues along the broad south shoulder of California City Boulevard (a two-lane collector) to

Neuralia Road, and then north to the BSEP plant site. Appendix A of Staff's Biological Resources analysis exhaustively analyzes the biological impacts of this segment. (Ex. 500, pp.127- 171). As to the southern 23-mile segment of the Rosamond pipeline through EAFB, the evidence discloses that there was a finding of no significant impact (FONSI) on the segment going through the base. (Ex. 639; 3/22/10 RT 356:11-359:8). CURE acknowledges that the FONSI is cited in the final staff assessment and refers to it as "the Air Force Base's exemption from environmental review for this pipeline segment." (*Id*.)

The evidence shows that the pipeline installation along the southern 23 miles of the 39.61-mile Rosamond Alternative pipeline alignment would occur almost entirely within the existing road bed and shoulder. Direct impacts to native plant communities due to pipeline construction would total 16.2 acres, including 4.29 acres of undisturbed Mohave creosote scrub and 6.91 acres of undisturbed saltbush scrub. All but 1.89 acres of these impacts would be temporary. Pipeline construction would not directly or indirectly impact sensitive plant communities, rare plants, or wetlands, but would result in temporary direct impacts to 872 ft of waters of the state within Cache Creek (two forks) and three smaller, unnamed ephemeral washes. Impacts to native plant communities and drainages would be temporary, but vegetation recovery within desert plant communities can take decades, and revegetation success is variable. (Ex. 500, pp. 4.2-162 through 163.)

Staff testified that potential impacts to native plant communities and drainages would be avoided or minimized through implementation of Conditions of Certification **BIO-8**, **BIO-20** and **BIO-21**. These conditions include measures to establish and protect Joshua trees and drainages as Environmentally Sensitive Areas, recommendations to enhance revegetation success and measures to avoid spread of noxious weeds. Implementation of Condition of Certification **BIO-18** and **Soil&Water-5** would minimize impacts to water quality during construction within ephemeral drainages. No state- or federal-listed plant species will be affected by pipeline construction. Other special-status plant species are unlikely to occur within the construction footprint because construction is confined largely to the road or road shoulder and heavily disturbed areas. Pre-construction floristic surveys were required in spring 2010 in accordance with guidelines described in Condition of Certification **BIO-20** to determine whether special-status plants occur within areas that might be directly or indirectly impacted by pipeline construction. In the unlikely event that special-status plant species are detected during surveys, direct and indirect impacts to such occurrences will be avoided with the mitigation measures described in Conditions

of Certification **BIO-8**, **BIO-20** and **BIO-21** including revegetation and weed abatement, thereby reducing potential construction impacts of the pipeline below significance. (Ex. 500, pp. 4.2-162 through 163.)

Staff also testified that native vegetation within and near the Rosamond Alternative pipeline provides foraging, cover, and potential breeding habitat for migratory birds, including a number of special-status bird species likely to be present at the site. Burrowing owls, loggerhead shrike, LeConte's thrasher, and California horned lark are special-status species likely to breed and forage in plant communities near the pipeline alignment. Implementation of Conditions of Certification **BIO-8** (Impact Avoidance and Best Management Practices) and **BIO-15** (Pre-Construction Nest Surveys) would avoid direct impacts to nests, eggs, or young of migratory birds and would avoid or minimize the impacts of construction disturbance to nesting birds. To avoid potential impacts to burrowing owls Condition of Certification **BIO-17** requires pre-construction surveys of the pipeline route for burrowing owls. If burrowing owls are detected within 500 feet of proposed construction activities, implementing the "no disturbance buffer zone" and other measures described in **BIO-17** will avoid direct and indirect impacts associated with pipeline construction. (Ex. 500, p. 4.2-163.)

Staff testified that construction of the Rosamond pipeline would temporarily impact 11.2 acres of desert tortoise and Mohave ground squirrel habitat. CURE's expert took issue with this determination arguing that the entire pipeline will be indirectly impacted (4,700 acres calculated as the pipeline construction area plus 2400 feet on either side) but he did not support his conclusion with specific facts that would demonstrate impacts to the entire area or direct impacts. (3/22/10 RT 259:21-262:2). However, Staff's witness clarified the record stating "that we studied an area that was 22 miles long, the point from the Rosamond water treatment plant to the point of delivery, 2000 feet wide. And we mapped vegetation in that area. But actual impacts of the pipeline are going to be about 11 acres to the native plant communities, to creosote bush scrub and atroplex scrub. Only about two acres of that will be permanent, because it's a buried pipeline." (3/22/10 RT 350:-352:8) Staff addressed direct and indirect impacts and laid a foundation for their recommended mitigation. (*Id*.) We are persuaded that Staff's determination of 11.2 acres of significant (albeit, temporary) impacts is reasonable. Staff further opined that pipeline construction activities could also result in direct mortality, injury, or harassment of individuals as a result of encounters with vehicles or heavy equipment. Other direct impacts could include individual tortoise being crushed or entombed in their burrows, collection or vandalism, disruption of desert tortoise or Mohave ground squirrel behavior

during construction of the pipeline, and disturbance by noise or vibrations from the heavy equipment. (Ex. 500, p. 4.2-163.)

To compensate for temporary loss of 11.2 acres of potential desert tortoise and Mohave ground squirrel habitat, Condition of Certification **BIO-21** specifies mitigation requiring acquisition of 33.6 acres of compensatory habitat suitable for these species. Again, avoidance and minimization measures are described in Conditions of Certification **BIO-1** through **BIO-8**, which apply to protection of desert tortoise, Mohave ground squirrel and other biological resources. Condition of Certification **BIO-12** requires verification that all desert tortoise and Mohave ground squirrel avoidance, minimization, and compensation measures have been implemented. In light of the ample evidence contained in the record, we find that Staff's adequately analyzed of the southern 23-mile segment of the 39.61-mile Rosamond pipeline.

k. The California City Pipeline

Finally, delivery of water from the California City wastewater facility to the BSEP site would require an underground pipeline buried along Mendiburu Road to Neuralia Road, a distance of approximately three miles, and from there about 9 miles of pipe would be buried along Neuralia Road to the BSEP site. The 9 mile segment is entirely contained within the 17.6-mile segment which was analyzed by Staff and discussed above. After the March 22, 2010 evidentiary hearing, the record was reopened to take evidence on (*inter alia*) the potential impacts to biological resources of construction along Mendiburu Road. Staff reviewed the *Beacon Solar Energy Project Biological Resource Assessment Mendiburu Road Water Pipeline, California City, Kern County, California*, prepared by AECOM Technology Corp, dated May 2010. (Ex. 352, 353, 510; 6/8/10 RT 228:6-229:11.)

The evidence shows that Mendiburu Road is approximately 115 feet wide and up to 160 feet wide and consists of paved surfaces that appear to have been developed during different time periods and highly disturbed shoulders and center divides. Because all construction and maintenance would occur within the existing disturbed road and/or road shoulder, no impacts to existing vegetation communities or associated biological resources will occur. Construction of the California City recycled water pipeline along Mendiburu would be limited to highly disturbed land including existing roads within the city and disturbed areas of the wastewater facility. (Ex. 352, p. 1.) No special status species were identified during the survey of the Mendiburu Road Study Area. Construction impacts will be temporary and minimized by measures already identified for the BSEP.

Operation of the recycled water line is not anticipated to have any affects on biological resources as the pipeline would be located below ground. (Ex 352, p. 7). While direct and indirect impacts to sensitive biological resources are always possible during construction, we find significant impacts unlikely with implementation of the avoidance and mitigation measures contained in Conditions of Certification **BIO-1** through **BIO-8**. (Ex. 510.)

We are satisfied that the analysis and record concerning the environmental impacts of the construction of the recycled water pipelines is quite sufficient. Direct and indirect construction impacts to vegetation and wildlife will be reduced to less than significant levels with implementation of impact avoidance and minimization measures described in Conditions of Certification **BIO-1** through **BIO-8** and in other Conditions of Certification. Implementation of Conditions of Certification **BIO-15** through **BIO-17** will avoid impacts to nesting birds, including burrowing owls, and will avoid impacts to American badger and Desert kit fox. Condition of Certification **BIO-21** requires the Applicant to acquire and enhance at least 33.6 acres of suitable habitat for desert tortoise and Mohave ground squirrel, and will offset anticipated habitat loss associated with construction of the Rosamond water pipeline. (Ex. 87, Ex. 500, pp. 4.2-26, 4.2-135, Ex. 510; 3/22/10 RT 362:2-25, 363:1-25, 364:1-22.) We find that with implementation of the Conditions of Certification, construction of either the RCSD or California City recycled water pipeline will mitigate potential impacts to biological resources to less than significant levels.

Biological Resources Table 2, below, summarizes the impacts to biological resources resulting from BSEP construction and operation.

Biological Resources Table 2
Summary of Impact/Mitigation

Biological Resource	Impact/Mitigation
Mojave Desert Plant Communities & Wildlife Habitat	**Impacts:** Permanent loss of 2,012 acres of marginal wildlife habitat, including 430 acres of disturbed vegetation; potential direct impacts to terrestrial wildlife by heavy equipment and grading; increased risk of roadkill; increased disturbance/dust to nearby vegetation and wildlife; spread of non-native invasive weeds. **Mitigation**: Avoidance and minimization measures (**BIO-1 - BIO 8**); off-site habitat acquisition and enhancement (**BIO-11**); implement Best Management Practices **(BIO-12)**

Biological Resource	Impact/Mitigation
Waters of the State	**Impacts:** Impacts to 10,900 feet of Pine Tree Creek and 2,150 feet of an unnamed desert wash, resulting in permanent loss of 60.3 acres of Desert Wash Shrub and 16 acres of waters of the state; loss of associated hydrological and biological functions and values. **Mitigation**: Replace functions and values of impacted desert wash with a new channel that incorporates native desert wash vegetation (**BIO-18**).
Special-Status Wildlife	
Desert tortoise	**Impact:** Potential take of individuals during operation and construction; permanent loss of 5 acres of Mohave Creosote Scrub habitat occupied by desert tortoise; increased risk of predation from ravens and other predators; increased road kill hazard from construction and operations traffic. **Mitigation**: Avoidance and minimization measures (**BIO-9, BIO-12)**; off-site habitat acquisition of 115 acres (**BIO-11** and **BIO-21**); raven management plan (**BIO-13).**
Mohave ground squirrel	**Impact:** Potential take of individuals during construction and operation; permanent loss of 5 acres of Mohave Creosote Scrub habitat occupied by Mohave ground squirrels; increased risk of disturbance to nearby populations; increased road kill hazard from construction and operations traffic. **Mitigation**: Avoidance and minimization measures (**BIO-1** through **BIO-8, BIO-10, BIO-12**); off-site habitat acquisition, endowment, and enhancement of 115 acres (**BIO-11** and **BIO-21**).
American badger	**Impact:** Potential **l**oss and fragmentation of habitat, loss of foraging grounds, crushing or entombing of animals during construction. **Mitigation**: Conduct pre-construction surveys and implement avoidance measures (**BIO-16)**.
Western burrowing owl	**Impact**: Potential loss of nest, eggs, or young; loss of breeding and foraging habitat on the plant site; disturbance of nesting and foraging activities for populations on and near the plant site and linear facilities. **Mitigation**: Implement burrowing owl impact avoidance and mitigation measures; passive relocation and protection of 6-acre relocation area; off-site habitat acquisition and enhancement of 20 acres (**BIO 17)**.
Other Special-Status Birds • Loggerhead shrike • California horned lark • Le Conte's thrasher	**Impact**: Disturbance of nesting activities, potential loss of nest, eggs, or young; loss of breeding and foraging habitat. **Mitigation**: Conduct pre-construction nesting surveys, implement avoidance measures (**BIO-15**); off-site habitat acquisition and enhancement (**BIO-11** and **BIO-21**).

Sources: (Ex. 500 pg.4.2-25)

l. Construction Noise Impacts

Noise from construction activities could temporarily discourage wildlife from foraging and nesting immediately adjacent to the project area. Many bird species rely on vocalizations during the breeding season to attract a mate within their territory, and noise from construction could disturb nesting birds and other wildlife and adversely affect nesting and other activities. (Ex. 500, p. 4.2-35.)

The loudest noise likely to occur with BSEP construction is created by steam blows, an activity needed after construction to clear out the steam system. A series of short steam blows, lasting two or three minutes each, is performed several times daily over a period of two or three weeks. Steam blows can produce noise as loud as 130 dBA at a distance of 100 feet. In order to minimize disturbance from steam blows, the steam blow piping can be equipped with a silencer that will reduce noise levels by 20 to 30 dBA. Conditions of Certification **NOISE-6** and **NOISE-8** require that any high pressure steam blows be muffled with an appropriate silencer. Based on the analysis described in the **Noise** section of this Decision, we find that noise impacts to nesting birds and other wildlife will be less than significant. (Ex. 500, p. 4.2-35.)

m. Construction Lighting

Lighting may be required to facilitate nighttime construction activities, which might disrupt the activities and affect behavior of nocturnal wildlife. As discussed in the Visual Resources section, construction lighting must be consistent with worker safety codes, directed toward the center of the construction site, shielded to prevent light from straying offsite, and task-specific. Condition of Certification **VIS-3** formalizes temporary lighting measures during construction activity and on the laydown area to ensure that construction lighting at the BSEP will have no adverse effects on wildlife. (Ex. 500, p. 4.2-43.)

n. Construction Traffic

Vehicle traffic will increase as a result of BSEP construction and improvement of access roads, increasing the risk of injuring or killing desert tortoise and other wildlife. Construction of the BSEP will be completed over a period of approximately 25 months, with a peak in the 15th month of approximately 836 workers per day. The average will be approximately 440 workers over the course of construction. Construction is also forecast to generate an average of approximately 15 to 20 one-way truck trips per day with a peak of approximately

75 truck trips per day. Condition of Certification **BIO-8** confines vehicular traffic to and from the project site to existing routes of travel, prohibiting cross country vehicle and equipment use outside designated work areas, and imposes a speed limit of 25 miles per hour on routes within desert tortoise habitat. Taken together with the other conditions discussed above, we find that impacts arising from vehicular traffic at the BSEP site are mitigated below significance by the mitigation measures contained in Condition of Certification **BIO-8** (Ex. 500, p. 4.2-42.)

4. Operational Impacts and Mitigation

Potential operation impacts to biological resources include increased risk of raven predation on desert tortoise and wildlife, impacts to birds due to hazardous conditions at the evaporation ponds, increased levels of traffic and disturbance, and potential collisions with structures. (Ex. 500, p. 4.2-39.)

a. Ravens

Construction and operation of the BSEP project area could provide new sources of food, water, and nesting sites that might draw unnaturally high numbers of tortoise predators such as the common raven. Ravens depend on human encroachment to expand into areas where they were previously absent or in low abundance. Ravens habituate to human activities and are subsidized by the food and water, as well as roosting and nesting resources that are introduced or augmented by human encroachment. Common raven populations in some areas of the Mojave Desert have increased 1,500 percent from 1968 to 1988 in response to expanding human use of the desert. Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered to be an unnatural occurrence. (Ex. 500, p. 4.2-39.)

BSEP structures such as towers, transmission poles and lines, and maintenance buildings that offer new raven nesting substrates may pose increased risk of predation to nearby desert tortoise populations. Condition of Certification **BIO-13** (raven monitoring and management plan) contains project design features to reduce raven nesting and includes physical deterrents to nesting such as bird spikes and nest removal and monitoring to make sure these design features work as intended. Also, ponding water resulting from dust suppression activities may attract ravens. Condition of Certification **BIO-8**, requires using the minimal amount of water needed for dust abatement and requires a Biological Monitor patrolling the construction sites to ensure water does not puddle. Condition of

Certification **BIO-8**, also requires that all food-related waste be placed in self-closing containers and removed daily from the site, and that food not be left unattended on the site. Condition of Certification **BIO-8**, also requires worker environmental awareness training, and prohibits pets being brought to the site, thereby eliminating another potential predator to protected species. (Ex. 500, pp. 4.2-40 to 4.2-41.)

b. Evaporation Ponds

BSEP will include three evaporation ponds that will collect blowdown water from the cooling towers. A new water source to an area where water is scarce will attract ravens to the BSEP, potentially increasing predation rates on juvenile desert tortoise in adjacent habitat. Waterfowl, shorebirds, and other resident or migratory birds that drink or forage at the ponds might be harmed by selenium or hyper-saline conditions resulting from high total-dissolved-solids concentrations. Condition of Certification **BIO-14** requires installation of netting over the evaporation ponds to exclude birds and other wildlife. This measure will reduce evaporation pond impacts to birds to less-than-significant levels by preventing bird access to the pond's surface. (Ex. 500, pp. 4.2-41 to 4.2-42.)

c. Traffic Impacts on Biological Resources

During operations approximately 38 truck trips per month are expected, based upon an estimate of vehicular traffic from 66 workers.

To minimize the risks of increased desert tortoise fatality and other hazards associated with traffic at the BSEP project site, Condition of Certification **BIO-8** confines vehicular traffic to and from the project site to existing routes of travel, prohibiting cross country vehicle and equipment use outside designated work areas, and imposing a speed limit of 25 miles per hour on routes within desert tortoise habitat. We find that the mitigation measures contained in Condition of Certification **BIO-8** reduce the potential traffic impacts to biological resources to below the level of significance. (Ex. 500, p. 4.2-42.)

d. Impacts To Biological Resources From Transmission Lines

Large raptors like golden eagles can be electrocuted by transmission lines when a bird's wings simultaneously contact two conductors of different phases, or a conductor and a ground. To minimize risk of electrocution, BSEP will use a "raptor-friendly" construction design for the transmission line with conductor wire

spacing greater than the wingspans of large birds to help prevent electrocution. With the mitigation addressed in Condition of Certification **BIO-8**, we find that the transmission lines will not pose a significant threat to birds because the conductor wire spacing of the transmission line will be greater than the wingspans of large birds which will thus prevent electrocution. (Ex. 500, p. 4.2-43.)

e. Lighting During Operation

BSEP operations will require on-site nighttime lighting for safety and security, which could disturb nocturnal wildlife. To reduce off-site lighting impacts, lighting at the BSEP facility will be restricted to areas required for safety, security, and operation. Exterior lights will be hooded, and lights will be directed on-site so that light or glare will be minimized. Low-pressure sodium lamps and fixtures of a non-glare type are required. Switched lighting will be installed in areas where continuous lighting is not required for normal operation, safety, or security; this will allow these areas to remain un-illuminated (dark) most of the time, thereby minimizing the amount of lighting potentially visible off site. These measures are described more fully in Condition of Certification **VIS-4**. With implementation of these measures, lighting at the BSEP will have no significant adverse effects on wildlife. (Ex. 500, p. 4.2-43.)

f. Noise During Operation

The primary noise sources associated with operation of the BSEP include the steam turbine generators, cooling tower, start-up boiler, and various pumps and fans. As discussed in the **Noise** section of this Decision, power plant noise levels are predicted to be less than 40 dBA at all sensitive receptors during daytime operation and less than 22 dBA at night. The impact on operational noise on surrounding wildlife will be less than significant. (Ex. 500, p. 4.2-44.)

5. Cumulative Impacts

A project may result in a significant cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (Cal. Code Regs., tit. 14, § 15130). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects is “cumulatively considerable” [14 Cal.

Code Regs., § 15130(a).] Such incremental effects are to be "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" [14 Cal. Code Regs., § 15164(b)(1).]

The Pine Tree Wind Development Project is a wind development project under construction approximately 6 miles west from the BSEP. The project consists of 80 1.5-MW wind turbine generators plus eight miles of transmission line. Although this project spans an 8,000-acre area, ground disturbance will total approximately 238 acres with permanent disturbance totaling approximately 132 acres. In addition to the Pine Tree Wind Development Project, the LADWP is also proposing to upgrade and build new transmission capacity from the new Barren Ridge Substation approximately 1.5 miles southwest of the BSEP site in unincorporated Kern County to the Castaic Power Plant near Lake Castaic/Santa Clarita in unincorporated Los Angeles County. A Notice of Intent was filed for the Barren Ridge project in April 2008 (*Federal Register*, April 7, 2008, Volume 73, Number 67, pp. 18734–18737), and the environmental review process for this project is in the early stages. The Barren Ridge-Castaic Transmission Project is designed to tie into LADWP's Pine Tree Wind Development Project and to other proposed wind and solar developments. (Ex. 500, p. 4.2-44.)

Numerous solar power project applications have been submitted to the U.S. Bureau of Land Management (BLM) in Kern County or just to the east of the Kern County line in San Bernardino County (Ex. 5, p. 5.1-3). These include several large (between 5,000 – 6,000 acres) solar thermal or photovoltaic projects within 30 miles of the BSEP. (Ex. 500, p. 4.2-44.)

Over the past 200 years California's southern deserts have been subject to major human-induced changes that have threatened native plant and animal communities by habitat loss, fragmentation, and degradation. Some of the most conspicuous threats are those activities that have resulted in large-scale habitat loss due to urbanization, agricultural uses, landfills, military operations, and mining activities, as well as activities that fragment and degrade habitats such as roads, off-highway vehicle activity, recreational use, and grazing. The introduction of non-native plant species and increases in predators such as ravens has also contributed to population declines and range contractions for many special-status plant and animal species. Against this backdrop of past projects within California's deserts, proposed wind and solar energy projects have the potential to further reduce, degrade, and fragment native plant and animal populations, in particular sensitive species such as desert tortoise and Mohave ground squirrel. BLM has received solar and wind applications for use of

BLM land for approximately one million acres of the California Desert Conservation Area. (Ex. 500, p. 4.2-45.)

The BSEP plant site is highly disturbed by past agricultural activities and currently supports marginal wildlife habitat, with little potential to support resident populations of sensitive species such as desert tortoise and Mohave ground squirrel. However, transient individuals could occur in the vegetated portions of the site, and resident populations inhabit the area west of SR-14 where transmission line construction will occur. Furthermore, over the years the disturbed vegetation on the site will have continued to recover from historical disturbances and will eventually provide improved habitat for these species. The BSEP will prevent recovery of these disturbed agricultural lands and will contribute to fragmentation of native plant communities in the project area. BSEP may also contribute to the cumulative increase in ravens in the area, increasing predation pressures on desert tortoise. (Ex. 500, p. 4.2-45.)

We find that implementation of the Conditions of Certification described below will minimize and offset the contributions of the BSEP to the cumulative loss of habitat for native plant communities and wildlife, including special-status species. Condition of Certification **BIO-11** requires the Applicant to acquire and enhance at least 115 acres of suitable habitat for desert tortoise and Mohave ground squirrel. This habitat will be connected to other suitable habitat for these species and will offset any habitat loss associated with the BSEP. Condition of Certification **BIO-17** requires 20 acres of off-site habitat acquisition to be protected and managed for burrowing owls, and Condition of Certification **BIO-13**, the Raven Management and Monitoring Plan, specifically includes measures that will address the cumulative regional increases in raven predation on desert tortoise. Finally, Condition of Certification **BIO-18** requires that the impacts to the desert washes be mitigated by re-creating natural hydrological and biological conditions in the new diversion channel, offsetting cumulative losses to waters of the state. With implementation of these Conditions of Certification, we find that the BSEP will not result in significant cumulative impacts to biological resources. (Ex. 500, pp. 4.2-45 to 4.2-46.)

6. LORS Compliance

The BSEP must comply with state and federal laws, ordinances, regulations, and standards (LORS) that address state and federally listed species, as well as other sensitive species and habitats, and must secure the appropriate permits to satisfy these LORS. The Energy Commission has a one-stop permitting process

for all thermal power plants rated 50 MW or more under the Warren-Alquist Act (Pub. Res. Code § 25500). Under the act, the Energy Commission's certificate is "in lieu of" other state, local, and regional permits. (*ibid*.) The Commission's streamlined permitting process accomplishes a primary objective of the Renewable Energy Action Team, as identified in the Governor's Executive Order S-14-08: to create a "one stop" process for permitting renewable energy generation facilities under California law. The record indicates that Commission staff coordinated joint environmental review with the California Department of Fish and Game and the Lahontan Regional Water Quality Control Board, as well as the U.S. Fish and Wildlife Service. The Conditions of Certification described below satisfy the following state LORS and take the place of terms and conditions that, but for the Commission's exclusive authority, would have been included in the following state permits:

Incidental Take Permit: California Endangered Species Act (Fish and Game Code §§ 2050 et seq.)

The California Endangered Species Act (CESA) prohibits the "take" (defined as "to hunt, pursue, catch, capture, or kill" or attempt to hunt, pursue, catch, capture, or kill") of state-listed species except as otherwise provided in state law. Construction and operation of the BSEP could result in the take of desert tortoise and Mohave ground squirrel, both listed as threatened under CESA. The evidence shows that Staff reviewed information supplied by the applicant and coordinated with CDFG to develop the conditions of certification in this section. These conditions of certification will ensure that the project is not likely to jeopardize the continued existence of desert tortoise or Mohave ground squirrel or result in the degradation of occupied habitat. The record indicates that Staff, in consultation with the CDFG, determined that: 1) the take is incidental to otherwise lawful activities, 2) impacts of the take are minimized and fully mitigated, and 3) the Applicant has provided assurance of adequate funding to implement the conditions of certification.

Streambed Alteration Agreement: California Fish and Game Code §§ 1600 1607

Pursuant to these sections, CDFG regulates all changes to the natural flow, bed, or bank, of any river, stream, or lake that supports fish or wildlife resources. Construction of the BSEP will result in permanent impacts to 16 acres of state jurisdictional waters. Implementation of Condition of Certification **BIO-18** will mitigate and offset impacts to state waters and will assure compliance with CDFG codes that provide protection to state waters.

Federal Endangered Species Act (ESA) (16 USC §§ 1531 et seq.)

Potential take of the desert tortoise, listed as threatened by the USFWS, requires compliance with the federal Endangered Species Act (ESA) (16 USC §§ 1531 et seq.). "Take" of a federally-listed species is prohibited without an Incidental Take Permit, which may be obtained through Section 7 consultation (between federal agencies) or a Section 10 Habitat Conservation Plan. The BSEP does not involve federal action; therefore the project will obtain take authorization through Section 10 of the Endangered Species Act (ESA). Section 10 permitting requires preparation of a Habitat Conservation Plan (HCP) to ensure the continued viability of listed species and their habitats, followed by issuance of an Incidental Take Permit and preparation of an Implementation Agreement. Condition of Certification **BIO-9** requires the Applicant to implement all terms and Conditions developed as part of the HCP process. Conditions of Certification **BIO-9** through **BIO-13** were developed in consultation with USFWS and are consistent with terms and conditions required as part of the HCP. These Conditions of Certification will ensure that the project is not likely to adversely affect the desert tortoise or its critical habitat.

7. Public Comment

There was no public comment regarding biological resources.

FINDINGS OF FACT

Based on the evidence, we find the following:

1. The power block and solar arrays of the BSEP will occupy approximately 1,266 acres of the 2,012-acre plant site.
2. The BSEP will require construction of a transmission line to interconnect the project to the existing 230-kilovolt (kV) Barren Ridge Substation, located approximately 2 miles across SR-14 southwest of the BSEP site.
3. Delivery of tertiary treated recycled water will either require construction of a 40-mile underground pipeline extending from the Rosamond Community Service District waste water treatment facility to the BSEP site, or a 12-mile underground pipeline extending from the California City waste water treatment facility.
4. The BSEP will re-route the 10,900 foot Pine Tree Creek and a smaller (2,150-foot) unnamed dry wash inside the eastern property boundary.
5. Seven special status wildlife species were detected during biological surveys.

6. No live desert tortoises were found within the plant site boundary during the 2007 and 2008 protocol level surveys.
7. The 2,012-acre plant site provides insufficient habitat to support resident desert tortoise.
8. Approximately 430 acres of the 2,012-acre plant site supports scattered perennial vegetation; the remaining area is essentially barren, reflecting past agricultural disturbance.
9. The BSEP site will not support a resident population of Mohave ground squirrel because essential food resources are absent.
10. Mohave ground squirrel is assumed to be present west of SR-14, in the vicinity of the transmission lines.
11. Grading of the entire 2,012-acre BSEP site will not impact sensitive plant communities or rare plants.
12. Condition of Certification **BIO-8** and with **SOIL&WATER-3** and **-4** will minimize the impacts to adjacent native plant communities from the introduction and spread of noxious weeds, increased dust and other construction impacts.
13. Construction of a transmission line and spur access roads west of SR-14 will result in permanent impacts to 5.0 acres of Mojave creosote bush scrub.
14. Construction of the 40-mile water pipeline from the community of Rosamond to the BSEP site will occur mostly within disturbed road shoulders or within the roadbed of unpaved roads, affecting approximately 81.18 acres of developed or disturbed lands.
15. Condition of Certification **BIO-21** requires the Applicant to acquire and enhance at least 33.6 acres of suitable habitat for desert tortoise and Mohave ground squirrel to offset anticipated impacts, including habitat loss, associated with construction of the Rosamond water pipeline.
16. Eliminating the washes on the BSEP will fundamentally and permanently alter the natural geomorphic and hydrological processes that currently characterize the project site, which in turn will fundamentally alter the biological processes that support recruitment of native vegetation and creation of wildlife habitat within the wash and on the associated floodplain.
17. With implementation of Condition of Certification **BIO-18**, impacts to 16.0 acres of state waters and loss of the hydrological and biological functions of the project site desert washes will be mitigated to less-than-significant levels.
18. Implementation of Conditions of Certification **BIO-8** (Impact Avoidance and Best Management Practices) and **BIO-15** (Pre-Construction Nest Surveys) will avoid direct impacts to nests, eggs, or young of migratory birds and will minimize the impacts of construction disturbance to nesting birds.

19. Implementation of Condition of Certification **BIO-11**, the compensatory mitigation plan, will offset cumulative regional habitat loss.

20. Conditions of Certification **BIO-4**, **BIO-5**, **BIO-6**, **BIO-7**, **BIO-8**, and **BIO-12** will reduce the impacts to native birds to less than significant levels.

21. The baseline of one pair of owls on the BSEP site is accurate.

22. Pre-construction surveys on the plant site and along all linear facilities, as well as passive relocation, will avoid direct take of owls and offset potentially significant impacts to nesting or resident owls.

23. The four artificial burrows constructed within an approximately 6-acre portion of a 14.39-acre relocation area prior to clearing and grading on the BSEP will provide suitable habitat for burrowing owls.

24. The creation of off-site burrowing owl habitat, under Condition of Certification **BIO-17** reduces potential impacts to burrowing owls to less-than-significant levels.

25. The loss of two transient individuals is a reasonable estimate of take of Mohave ground squirrel during construction within the plant site.

26. Conditions of Certification **BIO-10** through **BIO-12** will reduce impacts to Mohave ground squirrel to less-than-significant levels.

27. Conditions of Certification **BIO-1** through **BIO-9** impose impact avoidance and minimization measures to reduce construction impacts to desert tortoise including installation of exclusion fencing to keep desert tortoise out of construction areas, reducing construction traffic and speed limits to reduce the incidence of road kills, worker training programs, and other measures.

28. Condition of Certification **BIO-12** requires acquisition of off-site habitat to compensate for possible incidental take of up to two transient desert tortoises and for habitat loss along the transmission line corridors.

29. The assumption of the possible incidental take of two transient desert tortoises at the BSEP site is reasonable based upon the evidence.

30. Conditions of Certification **BIO-11** and **BIO-12** require the project owner to acquire and enhance 115 acres to compensate for the potential take of two Mohave ground squirrels and two transient desert tortoises during construction on the plant site and for impacts to the 5.0 acres of Mojave creosote bush scrub to the west.

31. Condition of Certification **BIO-16** mitigates potential impacts to the kit fox and badger below significance.

32. Noise impacts to nesting birds and other wildlife at BSEP will be less than significant.

33. Condition of Certification **VIS-3** and **-4** ensure that construction lighting at the BSEP will have no adverse effects on wildlife.

34. Condition of Certification **BIO-13** (raven monitoring and management plan) contains project design features to reduce raven nesting and includes physical deterrents to nesting such as bird spikes and nest removal and monitoring to make sure these design features work as intended.

35. Condition of Certification **BIO-8**, requires using the minimal amount of water needed for dust abatement, food-related waste management and worker environmental awareness training, with restrictions on pets being brought to the site.

36. Condition of Certification **BIO-14** requires installation of netting over the evaporation ponds to exclude birds and other wildlife, which will reduce evaporation pond impacts to birds to less-than-significant levels.

37. With the mitigation addressed in Condition of Certification **BIO-8**, the transmission lines will pose no significant threat to birds.

38. The Conditions of Certification described below will minimize and offset the contributions of the BSEP to the cumulative loss of habitat for native plant communities and wildlife, including special-status species to less than significant levels.

39. BSEP project will not result in significant cumulative impacts to biological resources.

40. Condition of Certification **BIO-9** requires the Applicant to implement all terms and conditions developed as part of the HCP process in consultation with USFWS, which will ensure that the project will not adversely affect the desert tortoise or its critical habitat.

CONCLUSIONS OF LAW

1. The project owner will implement appropriate avoidance and mitigation measures to prevent significant adverse impacts to all sensitive species.

2. With implementation of the mitigation measures described in the evidentiary record and incorporated into the Conditions of Certification below, as well as those in other portions of this Decision, the BSEP will not result in significant direct, indirect, or cumulative impacts to biological resources.
3. Direct and indirect construction impacts to vegetation and wildlife will be reduced to less than significant levels with implementation of impact avoidance and minimization measures described in Conditions of Certification **BIO-1** through **BIO-8**.
4. With implementation of the mitigation measures described in the evidentiary record and incorporated into the Conditions of Certification, the BSEP will conform to all applicable laws, ordinances, regulations, and standards related to biological resources as identified in the pertinent portion of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

DESIGNATED BIOLOGIST SELECTION[23]

BIO-1 The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval in consultation with the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS).

The Designated Biologist must meet the following minimum qualifications:

1. bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;

2. three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;

[23] USFWS <www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt> designates biologists who are approved to handle tortoises as “Authorized Biologists.” Such biologists have demonstrated to USFWS that they possess sufficient desert tortoise knowledge and experience to handle and move tortoises appropriately, and have received USFWS approval. Authorized Biologists are permitted to then approve specific monitors to handle tortoises, at their discretion. The California Department of Fish and Game (CDFG) must also approve such biologists, potentially including individual approvals for monitors approved by the Authorized Biologist. Designated Biologists are the equivalent of Authorized Biologists. Only Designated Biologists and certain Biological Monitors who have been approved by the Designated Biologist would be allowed to handle desert tortoises.

3. at least one year of field experience with biological resources found in or near the project area;

4. meet the current USFWS Authorized Biologist qualifications criteria (USFWS 2008) and demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS; and

5. possess a recovery permit for desert tortoise and a California ESA Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise and Mohave ground squirrel or have adequate experience and qualifications to obtain these authorizations.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM, in consultation with CDFG and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

Verification: The project owner shall submit the specified information at least 90 days prior to the start of any construction-related ground disturbance, grading, boring or trenching. No construction-related ground disturbance, grading, boring or trenching, or installation of desert tortoise exclusion fencing shall commence until an approved Designated Biologist is available to be on site.

If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least 10 working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

Designated Biologists shall complete a USFWS Qualifications Form (USFWS 2008) (www.fws.gov/ventura/speciesinfo/protocols_guidelines) and submit it to the USFWS and CPM within 60 days prior to ground breaking for review and final approval.

DESIGNATED BIOLOGIST DUTIES

BIO-2 The project owner shall ensure that the Designated Biologist performs the following during any site mobilization activities, construction-related ground disturbance, grading, boring or trenching activities or installation of desert tortoise exclusion fencing and operation and closure activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner and CPM. The Designated Biologist duties shall include the following:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;

2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;

3. Be available to supervise, conduct, and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat;

4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;

6. Notify the project owner and the CPM of any non-compliance with any biological resources condition of certification;

7. Respond directly to inquiries of the CPM regarding biological resource issues;

8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Compliance Report;

9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and USFWS guidelines on desert tortoise surveys and handling procedures: <www.fws.gov/ventura/speciesinfo/protocols_guidelines>, and

10. Maintain the ability to be in regular, direct communication with representatives of CDFG and USFWS, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Data Base.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document

biological resources compliance activities. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless his/her duties cease, as approved by the CPM.

BIOLOGICAL MONITOR QUALIFICATIONS

BIO-3 The project owner's CPM-approved Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitors to the CPM for approval in consultation with CDFG and USFWS. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks. Biological Monitors involved in any aspect of desert tortoise surveys or handling must meet the criteria to be considered a USFWS Authorized Biologist (USFWS 2008) and demonstrate familiarity with the most recent protocols and guidelines for the desert tortoise.

Biological Monitor(s) training by the Designated Biologist shall include familiarity with the conditions of certification, BRMIMP, WEAP, USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines> and all permits.

Verification: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any site mobilization or construction-related ground disturbance, grading, boring trenching activities or installation of desert tortoise exclusion fencing. The Designated Biologist shall submit a written statement to the CPM confirming that individual Biological Monitor(s) has been trained including the date when training was completed. If additional biological monitors are needed during construction the specified information shall be submitted to the CPM for approval at least 10 days prior to their first day of monitoring activities.

BIOLOGICAL MONITOR DUTIES

BIO-4 The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist shall remain the contact for the project owner and CPM.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document biological resources compliance activities, including those conducted or monitored by Biological Monitors. If actions may affect biological resources

during operation a Biological Monitor, under the supervision of the Designated Biologist, shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless his/her duties cease, as approved by the CPM.

DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY

BIO-5 The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources conditions of certification.

The Designated Biologist shall have the authority to immediately stop any activity that is not in compliance with these conditions and/or order any reasonable measure to avoid take of an individual of a listed species. If required by the Designated Biologist and Biological Monitor(s) the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, boring, trenching, construction and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;
2. Inform the project owner and the construction/operation manager when to resume activities;
3. Notify the CPM if there is a halt of any activities and advise the CPM of any corrective actions that have been taken or will be instituted as a result of the work stoppage, and
4. If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure will be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that coordination with other agencies will require additional time before a determination can be made. Continuation of any work stoppage is not required during this time, provided the Designated Biologist has determined that activities can resume. For resumption of activities potentially affecting listed species the Designated Biologist shall obtain concurrence from CDFG for state-listed species and USFWS for federally-listed species prior to lifting the work stoppage.

WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

BIO-6 The project owner shall develop and implement BSEP-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from USFWS, CDFG, and the CPM. The WEAP shall be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site mobilization, desert tortoise fence installation, ground disturbance, preconstruction, construction, operation, and closure activities. The WEAP shall:

1. be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media is made available to all participants;
2. discuss the locations and types of sensitive biological resources on the project site and adjacent areas and explain the reasons for protecting these resources;
3. place special emphasis on desert tortoise and Mohave ground squirrel, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
4. present the meaning of various temporary and permanent habitat protection measures;
5. identify whom to contact if there are further comments and questions about the material discussed in the program; and
6. include a training acknowledgment form to be signed by each worker indicating that he/she received training and shall abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Verification: At least 60 days prior to the start of any site mobilization and construction-related ground disturbance activities, the project owner shall provide to the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. At least 10 days prior to site and related facilities mobilization, the project owner shall submit two copies of the CPM-approved final WEAP.

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the start of commercial operation.

Throughout the life of the project, the WEAP shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CPM upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate that they have completed the training.

During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-7 The project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), shall submit two copies of the proposed BRMIMP to the CPM (for review and approval) and shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate impact avoidance and minimization measures described in final versions of the Raven Monitoring, Management, and Control Plan, the Desert Tortoise Relocation/Translocation Plan, the Mohave Ground Squirrel Relocation/ Translocation Plan, Burrowing Owl Mitigation and Monitoring Plan, Sensitive Plant Protection Plan, and the Closure Plan.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include the following:

1. all biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. all biological resources conditions of certification identified as necessary to avoid or mitigate impacts;
3. all biological resource mitigation, monitoring, and compliance measures required in federal agency terms and conditions, including the federal incidental take permit;
4. all sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;
5. all required mitigation measures for each sensitive biological resource;

6. a detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
7. all locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
8. aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and one set subsequent to completion of project construction. Provide a final accounting of the before/after acreages and a determination of whether additional habitat compensation is necessary in the Construction Termination Report;
9. duration for each type of monitoring and a description of monitoring methodologies and frequency;
10. performance standards to be used to help decide if/when proposed mitigation is or is not successful;
11. all performance standards and remedial measures to be implemented if performance standards are not met;
12. a discussion of biological resources-related facility closure measures including a description of funding mechanism(s); and
13. a process for proposing plan modifications to the CPM and appropriate agencies for review and approval.
14. a requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Data Base (CNDDB) per CDFG requirements.

Verification: The project owner shall submit the BRMIMP to the CPM at least 60 days prior to start of any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching The CPM, in consultation with other appropriate agencies, will determine the BRMIMP's acceptability within 45 days of receipt. The BRMIMP shall contain all of the required measures included in all biological conditions of certification. No construction-related ground disturbance, grading, boring or trenching may occur prior to the CPM's approval of the final BRMIMP.

The project owner shall notify the CPM no less than five working days before implementing any modifications to the approved BRMIMP to obtain CPM approval. Any changes to the approved BRMIMP must also be approved by the CPM in consultation with appropriate agencies to ensure no conflicts exist.

Implementation of BRMIMP measures (construction activities that were monitored, species observed) will be reported in the Monthly Compliance

Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying which items of the BRMIMP have been completed; a summary of all modifications to mitigation measures made during the project's preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching and which mitigation and monitoring items are still outstanding.

The project owner shall submit sightings of any special-status species observed on the project site within five working days of such sightings to the CPM, the regional CDFG office, and to the California Natural Diversity Data Base (CNDDB) (California Department of Fish and Game, Natural Diversity Data Base, 1807 13th Street, Suite 202, Sacramento, CA 95814, (916) 324-3812). Sightings shall be reported using CNDDB forms and survey maps (available online at: www.dfg.ca.gov/whdab/pdfs/natspec.pdf).

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-8 The project owner shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to biological resources:

1. Limit Disturbance Area. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils shall be stockpiled in disturbed areas lacking native vegetation and which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads (e.g. new spur roads) or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

3. Minimize Traffic Impacts. Vehicular traffic during project construction and operation shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 25 miles per hour within the project area, on maintenance roads for linear facilities, or on access roads to the BSEP site.

4. Monitor During Construction. In areas that have not been fenced with desert tortoise exclusion fencing and cleared the Designated Biologist or the Designated Biologist directly supervising a Biological Monitor shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. The USFWS-approved Designated Biologist (or Biological Monitor supervised by the Designated Biologist) shall walk immediately ahead of equipment during brushing and grading activities.

5. Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas. Staging areas for construction on the plant site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For construction activities outside of the plant site (transmission line, pipeline alignments) access roads, pulling sites, and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Mitigating Bird Collisions with Power Lines* (APLIC 2004) to reduce the likelihood of large bird electrocutions and collisions.

6. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

7. Minimize Lighting Impacts. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat.

8. Avoid Vehicle Impacts to Desert Tortoise. Parking and storage shall occur within the desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed, it will be left to move on its own. If it does not move within 15 minutes, a Biological Monitor may remove and relocate the animal to a safe location if temperatures are within the range described in the current USFWS guidelines, the *Desert Tortoise Field Manual* (USFWS 2009) (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines)

9. Avoid Wildlife Pitfalls. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the permanently fenced area have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the

ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically throughout and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual to a safe location. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

10. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches above ground and within desert tortoise habitat (i.e., outside the permanently fenced area) for one or more days/nights, shall be inspected for tortoises before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on pipe racks. These materials would not need to be inspected or capped if they are stored within the permanently fenced area after the clearance surveys have been completed.

11. Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises and common ravens to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle and attract desert tortoise, common ravens, and other wildlife to the site and shall take appropriate action to reduce water application where necessary.

12. Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

13. Worker Guidelines. During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the

project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.

14. Avoid Spread of Noxious Weeds. The project owner shall implement the following Best Management Practices during construction and operation to prevent the spread and propagation of noxious weeds:

    a. Limit the size of any vegetation and/or ground disturbance to the absolute minimum and limit ingress and egress to defined routes;

    b. Prevent spread of non-native plants via vehicular sources by implementing Trackclean™ or other methods of vehicle cleaning for vehicles coming and going from construction sites. Earth-moving equipment shall be cleaned prior to transport to the construction site;

    c. Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations, and

    d. Avoid using invasive non-native species in landscaping plans and erosion control.

15. Deleted.

16. Implement Erosion Control Measures. Standard erosion control measures shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes threatens to enter "Waters of the State". Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the stream. All disturbed soils and roads within the project site shall be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) with slopes toward a drainage shall be stabilized to reduce erosion potential.

17. Monitor Ground Disturbing Activities Prior to Pre-Construction Site Mobilization. If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures will be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall

provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

DESERT TORTOISE RECLOCATION PLAN, CLEARANCE SURVEYS AND EXCLUSION FENCING

BIO-9 The project owner shall undertake appropriate measures to manage construction at the plant site and linear facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence specifications and installation, tortoise handling, artificial burrow construction, egg handling and other procedures shall be consistent with those described in the current USFWS guidelines, the Desert Tortoise Field Manual (USFWS 2009) (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines) or more current guidance provided by CDFG and USFWS. The project owner shall also implement terms and conditions developed as part of the Habitat Conservation Plan process with USFWS. These measures include, but are not limited to, the following:

1. Fence Installation. Prior to construction-related ground disturbance activities, the entire plant site shall be fenced with permanent desert tortoise-exclusion fence. To avoid impacts to desert tortoise during fence construction, the proposed fence alignment and limits of the fence-construction disturbance area shall be flagged and the alignment surveyed within 24 hours prior to fence construction. Surveys shall be conducted by the Designated Biologist using techniques approved by the USFWS and CDFG. Biological Monitors may assist the Designated Biologist under his or her supervision. These surveys shall provide 100 percent coverage of all areas to be disturbed during fence construction and an additional transect along both sides of the proposed fence line. Disturbance associated with fence construction shall not exceed 30 feet on either side of the proposed fence alignment. Prior to the surveys the project owner shall provide to the CPM, CDFG and USFWS a figure clearly depicting the limits of construction disturbance for the proposed fence installation. The fence line survey area shall be 90 feet wide centered on the fence alignment. Where construction disturbance for fence line installation can be limited to 15 feet on either side of the fence line, this fence line survey area may be reduced to an area approximately 60 feet wide centered on the fence alignment. Transects shall be no greater than 15 feet apart. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with USFWS-approved protocol.

a. Timing, Supervision of Fence Installation. The exclusion fencing shall be installed prior to the onset of site clearing and grubbing. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.

b. Fence Material and Installation. Tortoise exclusionary fencing shall be installed per USFWS specifications (USFWS 2009).

c. Security Gates. Security gates shall be designed with minimal ground clearance to deter ingress by tortoises, including gates that would exclude public access to the transmission line maintenance road at SR 14. The gates shall remain closed except during vehicle passage and may be electronically activated to open and close immediately after vehicle(s) have entered or exited to prevent extended periods with open gates, which might lead to a tortoise entering. Cattle grating designed to safely exclude desert tortoise shall be installed at the gated entries to discourage tortoises from gaining entry.

d. Utility Corridor Fencing. Utility corridors and tower locations shall be temporarily fenced with tortoise exclusion fencing to prevent desert tortoise entry during construction. Alternatively, site mobilization activities, construction-related ground disturbance, grading, boring or trenching activities may occur at unfenced utility corridors and tower locations if the Designated Biologist is present at all times in the immediate vicinity of such activities.

e. Fence Inspections. Following installation of the desert tortoise exclusion fencing and any temporary fencing in the utility corridors, the fencing shall be regularly inspected. Permanent fencing shall be inspected monthly and during/following all major rainfall events. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within two days of observing damage. Inspections of permanent site fencing shall occur for the life of the project. Temporary fencing must be inspected weekly and, where drainages intersect the fencing, during and immediately following major rainfall events. All temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the utility corridor or tower site for tortoise.

2. Desert Tortoise Clearance Surveys. Following construction of the tortoise exclusionary fencing around the Plant Site, all fenced areas

shall be cleared of tortoises by the Designated Biologist, who may be assisted by Biological Monitors under the supervision of the Designated Biologist. Clearance surveys shall adhere to the current USFWS clearance survey protocols described in the Desert Tortoise Field Manual (USFWS 2009).

3. Relocation for Desert Tortoise West of SR 14. If desert tortoises are detected during clearance surveys within the project impact area west of SR 14, the Designated Biologist shall move the tortoise the shortest possible distance, keeping it out of harm's way but still within its home range. Desert tortoise encountered during construction of any of the utility corridors shall be similarly treated in accordance with the Relocation Plan. Any relocation efforts shall be in accordance with techniques described in the *Guidelines for Handling Desert Tortoise during Construction Projects* (Desert Tortoise Council 1999) or more current guidance on the USFWS website.

4. Relocation/Translocation for Desert Tortoise East of SR-14. To address desert tortoise encountered during clearance surveys within the project impact area east of SR 14, the project owner shall develop and implement a desert tortoise Relocation/Translocation Plan. The Relocation/Translocation Plan shall be consistent with current USFWS approved guidelines (USFWS 2009), and shall be approved by Energy Commission staff in consultation with the USFWS and CDFG. The Relocation/Translocation Plan shall designate a relocation/translocation site as close as possible to the project impact area east of SR 14 that provides suitable conditions for long-term survival of the relocated/translocated desert tortoise.

5. Burrow Inspection. All potential desert tortoise burrows, including rodent burrows that may host juvenile tortoises, within the fenced area shall be searched for presence. In some cases, a fiber optic scope may be needed to determine presence or absence within a deep burrow. To prevent reentry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined. Tortoises excavated from burrows shall be relocated/translocated to unoccupied natural or artificial burrows in accordance with procedures outlined in the Relocation/Translocation Plan and consistent with the most current USFWS guidelines (USFWS 2009).

6. Burrow Excavation. Burrows inhabited by tortoises shall be excavated by the Designated Biologist using hand tools, and then collapsed or blocked to prevent re-occupation. If excavated during May through July, the Designated Biologist shall search for desert tortoise nests/eggs. All desert tortoise handling and removal, and

burrow excavations, including nests, shall be conducted by the Designated Biologist in accordance with the USFWS-approved protocol (Desert Tortoise Council 1999) or more current guidance on the USFWS website.

7. Monitoring Following Clearing. Following desert tortoise clearance removal from the plant site, and relocation/translocation to a new site, heavy equipment shall be allowed to enter the project site to perform earth work such as clearing, grubbing, leveling, and trenching. A Designated Biologist, or Biological Monitor supervised by the Designated Biologist shall be onsite during initial clearing and grading activities. Should a tortoise be discovered, it shall be relocated/translocated as described above in accordance with the Relocation Plan.

8. Reporting. The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert tortoise as described in the paragraph below. Desert tortoise moved from within project areas shall be marked for future identification as described in *current USFWS guidelines, the Desert Tortoise Field Manual (USFWS 2009) (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines)* or more current guidance on the USFWS website. Digital photographs of the carapace, plastron, and fourth costal scute shall be taken. Scutes shall not be notched for identification.

Verification: Within 90 days prior to start of any pre-construction site mobilization activities, the project owner shall submit to Energy Commission Staff, USFWS and CDFG a draft Desert Tortoise Relocation/Translocation Plan. At least 60 days prior to start of any construction-related ground disturbance activities, the project owner shall provide the CPM with the final version of a Relocation/Translocation Plan that has been approved by Energy Commission staff in consultation with USFWS and CDFG. The CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Desert Tortoise Relocation/Translocation Plan must be made only after approval by the Energy Commission staff in consultation with USFWS and CDFG. The project owner shall notify the CPM no fewer than 5 working days before implementing any CPM-approved modifications to the Relocation/Translocation Plan.

Within 30 days after initiation of relocation/translocation activities, the Designated Biologist shall provide to the CPM for review and approval, a written report identifying which items of the Relocation/ Translocation Plan have been completed, and a summary of all modifications to measures made during implementation.

Within 30 days of completion of desert tortoise clearance surveys the Designated Biologist shall submit a report to the CPM, USFWS, and CDFG describing how each of the mitigation measures described above has been satisfied. The report shall include the desert tortoise survey results, capture and release locations of any relocated desert tortoises, and any other information needed to demonstrate compliance with the measures described above.

MOHAVE GROUND SQUIRREL CLEARANCE SURVEYS

BIO-10 The project owner shall undertake appropriate measures to manage construction at the plant site and linear facilities in a manner to avoid or minimize impacts to Mohave ground squirrel. These measures include, but are not limited to, the following:

1. Clearance Survey. After the installation of the desert tortoise exclusion fence and prior to any construction-related ground disturbance on the plant site, the Designated Biologist(s) shall examine the area to be disturbed for Mohave ground squirrels and their burrows. The survey shall provide 100 percent coverage of the Project limits. Potentially occupied burrows shall be fully excavated by hand by the Designated Biologist(s).

2. Translocation Plan. The project owner shall develop and implement a Mohave ground squirrel translocation plan to address the handling and disposition of any Mohave ground squirrels encountered during the clearance surveys. The Translocation Plan shall be approved by Energy Commission staff in consultation with CDFG. The Translocation Plan shall designate a translocation site as close as possible to the project, and which provides suitable conditions for long-term survival of the relocated Mohave ground squirrel.

3. Records of Capture. If Mohave ground squirrels are captured via trapping or burrow excavation, the Designated Biologist shall maintain a record of each Mohave ground squirrels handled, including: a) the locations (Global Positioning System [GPS] coordinates and maps) and time of capture and/or observation as well as release; b) sex; c) approximate age (adult/juvenile); d) weight; e) general condition and health, noting all visible conditions including gait and behavior, diarrhea, emaciation, salivation, hair

loss, ectoparasites, and injuries; and f) ambient temperature when handled and released.

Verification: Within 90 days prior to start of any pre-construction site mobilization activities, the project owner shall submit to Energy Commission Staff and CDFG a draft Mohave Ground Squirrel Translocation Plan. At least 60 days prior to start of any construction related ground disturbance activities, the project owner shall provide the CPM with the final version of a Mohave Ground Squirrel Translocation Plan that has been approved by Energy Commission staff in consultation with CDFG. The CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Translocation Plan must be made only after approval the Energy Commission staff in consultation with CDFG. The project owner shall notify the CPM no fewer than 5 working days before implementing any CPM-approved modifications to the Translocation Plan.

Within 30 days of completion of Mohave ground squirrel clearance surveys the Designated Biologist shall submit a report to the CPM and CDFG describing how the mitigation measures described above have been satisfied. The report shall include the Mohave ground squirrel survey results, capture and release locations of any relocated squirrels, and any other information needed to demonstrate compliance with the measures described above.

Within 30 days after initiation of translocation activities, the Designated Biologist shall provide to the CPM for review and approval, a written report identifying which items of the Translocation Plan have been completed, and a summary of all modifications to measures made during implementation.

DESERT TORTOISE AND MOHAVE GROUND SQUIRREL COMPENSATORY MITIGATION

BIO-11 To fully mitigate for habitat loss and potential take of desert tortoise and Mohave ground squirrel, the project owner shall acquire, in fee or in easement, no less than 115 acres of land suitable for these species and shall provide funding for the enhancement and long-term management of these compensation lands. The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to Mojave Desert habitat conservation, subject to approval by the CPM, in consultation with CDFG and USFWS prior to land acquisition or management activities. If habitat disturbance exceeds that described in this analysis, the project owner shall be responsible for acquisition and management of additional compensation lands or additional funds required to compensate for any additional habitat disturbances. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. The acquisition

and management of compensation lands shall include the following elements:

1. Selection Criteria for Compensation Lands. The compensation lands selected for acquisition shall:

    a. be in the western Mojave Desert;

    b. provide moderate to good quality habitat for Mohave ground squirrel and desert tortoise with capacity to improve in quality and value for these species;

    c. be a contiguous block of land (preferably) or located so they result in a contiguous block of protected habitat;

    d. be adjacent to, or in close proximity to, larger blocks of lands that are already protected such that there is connectivity between the acquired lands and the protected lands;

    e. be connected to, or in close proximity to, lands for which there is reasonable evidence (for example, recent (<15 years) CNDDB occurrences on or immediately adjacent to the proposed lands) suggesting current occupation by desert tortoise and Mohave ground squirrel, ideally with populations that are stable, recovering, or likely to recover;

    f. not have a history of intensive recreational use, grazing, or other disturbance that might make habitat recovery and restoration infeasible;

    g. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration; and

    h. not be encumbered by easements, subsurface rights, or uses that would preclude fencing of the site or preclude or unacceptably constrain management of the site for the primary benefit of the species and their habitat for which compensation lands were secured.

2. Review and Approval of Compensation Lands Prior to Acquisition. A minimum of three months prior to acquisition of the property, the project owner, or a third-party approved by the CPM, in consultation with CDFG and USFWS, shall submit a formal acquisition proposal to the CPM, CDFG, and USFWS describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise

and Mohave ground squirrel in relation to the criteria listed above. Approval from the CPM, in consultation with USFWS and CDFG, shall be required for acquisition of all parcels comprising the 115.0 acres in advance of purchase.

3. Mitigation Security for Compensation Lands and Avoidance/Minimization Measures. The project owner or an approved third party shall complete acquisition of the proposed compensation lands prior to initiating construction-related ground disturbance project activities. If Security is provided, the project owner, or an approved third party, shall complete the proposed compensation lands acquisition within 12 months of the start of construction-related ground disturbance activities. The project owner shall also provide financial assurances to the CPM, with copies of the document(s) to CDFG and USFWS, to guarantee that an adequate level of funding is available to implement all impact avoidance, minimization, and compensation measures described in Conditions of Certification BIO-9 through BIO-12. Financial assurance shall be provided to the CPM in the form of an irrevocable letter of credit or another form of security ("Security") approved by the CPM, prior to initiating construction-related ground disturbance activities. If necessary to draw on these funds, such funds shall be used solely for implementation of the measures associated with the project.

   Prior to initiation of ground disturbance, the Security shall be provided by the project owner and approved by the CPM, in consultation with CDFG, to ensure funding in the amount of $529,000.00. These Security amounts were calculated as follows and may be revised upon completion of a Property Analysis Record (PAR) or PAR-like analysis of the proposed compensation lands:

   a. land acquisition costs for compensation lands, calculated at $3,000/acre for 115 acres: $345,000.00;

   b. costs of enhancing compensation lands, calculated at $250/acre for 115 acres: $28,750; and

   c. costs of establishing an endowment for long-term management of compensation lands, calculated at $1,350/acre for 115 acres: $155,250.

4. Compensation Lands Acquisition Conditions. The project owner shall comply with the following conditions relating to acquisition of compensation lands after the CPM, in consultation with CDFG and USFWS, has approved the proposed compensation lands and received Security, if any, as described above.

a. Preliminary Report: The project owner, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary documents for the proposed 115 acres. All documents conveying or conserving compensation lands and all conditions of title/easement are subject to a field review and approval by the CPM, in consultation with CDFG and USFWS, California Department of General Services and, if applicable, the Fish and Game Commission and/or the Wildlife Conservation Board.

b. Title/Conveyance: The project owner shall transfer fee title or a conservation easement to the 115 acres of compensation lands to CDFG under terms approved by CDFG. Alternatively, a non-profit organization qualified to manage compensation lands (pursuant to California Government Code section 65965) and approved by CDFG and the CPM may hold fee title or a conservation easement over the compensation lands. If the approved non-profit organization holds title, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If the approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary. If a Security is provided, the project owner or an approved third party shall complete the proposed compensation lands acquisition within 12 months of the start of construction-related ground disturbance activities.

c. Enhancement Fund. The project owner shall fund the initial protection and enhancement of the 115 acres by providing the enhancement funds to the CDFG. Alternatively, a non-profit organization may hold the enhancement funds if they are qualified to manage the compensation lands (pursuant to California Government Code section 65965) and if they meet the approval of CDFG and the CPM. If CDFG takes fee title to the compensation lands, the enhancement fund must go to CDFG where it will be held in the special deposit fund established for the purpose of enhancing the compensation lands.

d. Endowment Fund. Prior to construction-related ground disturbance activities, the project owner shall provide to CDFG a capital endowment in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis that will be conducted for the 115 acres of compensation lands. Alternatively, a non-profit organization may hold the endowment fees if they are qualified to manage the compensation lands (pursuant to California Government Code section 65965) and if they meet the approval of CDFG and the CPM. If CDFG takes

fee title to the compensation lands, the endowment must go to CDFG, where it will be held in the special deposit fund established for the purpose of managing the compensation lands. If the special deposit fund is not used to manage the endowment, the California Wildlife Foundation shall manage the endowment for CDFG and with CDFG guidance.

a. The project owner and the CPM shall ensure that an agreement is in place with the endowment holder/manager to ensure the following conditions:

- Interest. Interest generated from the initial capital endowment shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the compensation lands.

- Withdrawal of Principal. The endowment principal shall not be drawn upon unless such withdrawal is deemed necessary by the CDFG or the approved third-party endowment manager to ensure the continued viability of the species on the 115 acres. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision shall be deposited in a special deposit fund established pursuant to Government Code section 16370. If the special deposit fund is not used to manage the endowment, the California Wildlife Foundation will manage the endowment for CDFG with CDFG guidance.

- Pooling Endowment Funds. CDFG, or a CPM- and CDFG-approved non-profit organization qualified to hold endowments pursuant to California Government Code section 65965, may pool the endowment with other endowments for the operation, management, and protection of the 115 acres for local populations of desert tortoise and Mohave ground squirrel. However, for reporting purposes, the endowment fund must be tracked and reported individually.

e. Reimbursement Fund: The project owner shall provide reimbursement to the CDFG or approved third party for reasonable expenses incurred during title, easement, and

documentation review; expenses incurred from other state agency reviews; and overhead related to providing compensation lands.

The project owner is responsible for all compensation lands acquisition/easement costs, including but not limited to, title and document review costs, as well as expenses incurred from other state agency reviews and overhead related to providing compensation lands to CDFG or an approved third party; escrow fees or costs; environmental contaminants clearance; and other site clean up measures.

Verification: No less than 90 days prior to acquisition of the property, the project owner, or a third-party approved by the CPM, in consultation with CDFG and USFWS, shall submit a formal acquisition proposal to the CPM, CDFG, and USFWS describing the parcel(s) intended for purchase.

Draft agreements to delegate compensation lands acquisition to CDFG or an approved third party and agreements to manage compensation lands shall be submitted to Energy Commission staff for review and approval (in consultation with CDFG) prior to compensation lands acquisition. Such agreements shall be mutually approved and executed at least 60 days prior to start of any construction related ground disturbance activities. The project owner shall provide written verification to the CPM that the compensation lands and/or conservation easements have been acquired and recorded in favor of the approved recipient(s). Alternatively, before beginning project ground-disturbing activities, the project owner shall provide Security in accordance with this condition. Within 90 days after the compensation lands purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.

Within 90 days after completion of project construction, the project owner shall provide to the CPM verification that disturbance to Mojave creosote scrub habitat west of State Route 14 did not exceed 5.0 acres, and that construction activities at the plant site and along the gas pipeline alignment did not result in impacts to Mojave creosote scrub habitat adjacent to work areas.

DESERT TORTOISE AND MOHAVE GROUND SQUIRREL COMPLIANCE VERIFICATION

BIO-12 The project owner shall provide staff, CDFG, and USFWS with reasonable access to the project site and compensation lands under the control of the project owner and shall otherwise fully cooperate with the Energy Commission's efforts to verify the project owner's compliance with, or the effectiveness of, mitigation measures set forth

in the conditions of certification. The project owner shall hold harmless the Designated Biologist, the Energy Commission and staff, and any other agencies with regulatory requirements addressed by the Energy Commission's sole permitting authority for any costs the project owner incurs in complying with the management measures, including stop work orders issued by the CPM or the Designated Biologist. The Designated Biologist shall do or supervise all of the following:

1. Notification. Notify the CPM, CDFG, and USFWS at least 14 calendar days before initiating construction-related ground disturbance activities. Immediately notify the CPM, CDFG, and USFWS in writing if the project owner is not in compliance with any conditions of certification, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods specified in the conditions of certification. CDFG shall be notified at their Central Region Headquarters Office, 1234 E. Shaw Avenue, Fresno, CA 93710; (559) 243-4005. USFWS shall be notified at their Ventura office at 2493 Portola Road, Suite B, Ventura, CA 93003; (805) 644-1766

2. Monitoring During Grading. Remain on site daily while grubbing and grading are taking place to avoid or minimize take of listed species, to check for compliance with all impact avoidance and minimization measures, and to check all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protected zones.

3. Fence Monitoring. During construction maintain and check desert tortoise exclusion fences on a daily basis to ensure the integrity of the fence is maintained. The Designated Biologist shall be present on site to monitor construction and determine fence placement during fence installation. During operation of the project fence inspections shall occur at least once per month throughout the life of the project, and more frequently after storms or other events that might affect the integrity and function of desert tortoise exclusion fences. Fence repairs shall occur within two days (48 hours) of detecting problems that affect the functioning of the desert tortoise exclusion fencing.

4. Monthly Compliance Inspections. Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a monthly compliance report to the CPM, USFWS and CDFG during construction, as required under COMPLIANCE-6. All observations of listed species and their sign shall be reported to the Designated Biologist for inclusion in the monthly compliance report as required under COMPLIANCE-6.

6. Final Listed Species Mitigation Report. No later than 45 days after initiation of project operation provide the CPM a Final Listed Species Mitigation Report that shall include, at a minimum: 1) a copy of the table in the BRMIMP with notes showing when each of the mitigation measures was implemented; 2) all available information about project-related incidental take of listed species; 3) information about other project impacts on the listed species; 4) construction dates; 5) an assessment of the effectiveness of conditions of certification in minimizing and compensating for project impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the listed species; and 7) any other pertinent information, including the level of take of the listed species associated with the project.

7. Notification of Injured, Dead, or Relocated Listed Species. In the event of a sighting in an active construction area (e.g., with equipment, vehicles, or workers), injury, kill, or relocation of any listed species, the CPM, CDFG, and USFWS shall be notified immediately by phone. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine if further actions are required to protect listed species. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within two calendar days of the incident and include the following information as relevant:

   a. Injured Desert Tortoise. If a desert tortoise is injured as a result of project-related activities during construction, the Designated Biologist shall immediately take it to a CDFG-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the project owner. Following phone notification as required above, the CPM, CDFG, and USFWS shall determine the final disposition of the injured animal, if it recovers. Written notification shall include, at a minimum, the date, time, location, circumstances of the incident, and the name of the facility where the animal was taken.

   b. Desert Tortoise/Mohave Ground Squirrel Fatality. If a desert tortoise or Mohave ground squirrel is killed by project-related activities during construction or operation, or if a desert tortoise or Mohave ground squirrel is otherwise found dead, submit a written report with the same information as an injury report. These desert tortoises shall be salvaged according to guidelines described in *Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise* (Berry 2001). The project

owner shall pay to have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident.

7. Stop Work Order. The CPM may issue the project owner a written stop work order to suspend any activity related to the construction or operation of the project to prevent or remedy a violation of one or more conditions of certification (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. The project owner shall comply with the stop work order immediately upon receipt thereof.

Verification: No later than two calendar days following the above-required notification of a sighting, kill, injury, or relocation of a listed species, the project owner shall deliver to the CPM, CDFG, and USFWS via FAX or electronic communication the written report from the Designated Biologist describing all reported incidents of the sighting, injury, kill, or relocation of a listed species, identifying who was notified and explaining when the incidents occurred. In the case of a sighting in an active construction area, the project owner shall, at the same time, submit a map (e.g., using Geographic Information Systems) depicting both the limits of construction and sighting location to the CPM, CDFG, and USFWS.

No later than January 31st of every year the BSEP facility is under construction or remains in operation the Designated Biologist shall provide the CPM, CDFG and USFWS an annual Listed Species Status Report, and a summary of desert tortoise exclusion fence inspections and repairs conducted in the course of the year. The Listed Species Status Report shall include, at a minimum: 1) a general description of the status of the project site and construction/operation activities, including actual or projected completion dates, if known; 2) a copy of the table in the BRMIMP with notes showing the current implementation status of each mitigation measure; 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts, and 4) recommendations on how effectiveness of mitigation measures might be improved.

RAVEN MONITORING, MANAGEMENT, AND CONTROL PLAN

BIO-13 The project owner shall design and implement a Raven Monitoring, Management, and Control Plan (Raven Plan) that is consistent with the most current USFWS-approved raven management guidelines and that meets the approval of the USFWS, CDFG, and the Energy Commission. The Raven Plan shall: identify conditions associated with the project that might provide raven subsidies or attractants; describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities; describe control

practices for ravens; address monitoring during construction and for the life of the project; and discuss reporting requirements. For the first year of reporting the project owner shall provide quarterly reports describing implementation of the Raven Plan. Thereafter the reports shall be submitted annually for the life of the project. The Raven Plan shall also include a requirement for payment of an in-lieu fee to a third-party account established by the USFWS to support a regional raven monitoring and management plan (USFWS 2009).

Verification: At least 60 days prior to start of any construction related ground disturbance activities, the project owner shall provide the CPM, USFWS, and CDFG with the final version of the Raven Plan that has been reviewed and approved by USFWS and CDFG. The CPM shall determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Raven Plan must be made only after consultation with the Energy Commission staff, USFWS, and CDFG. The project owner shall notify the CPM no less than five working days before implementing any CPM-approved modifications to the Raven Plan.

Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval a report identifying which items of the Raven Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding.

EVAPORATION POND NETTING AND MONITORING

BIO-14 The project owner shall cover the evaporation ponds prior to any discharge with 1.5-inch mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. Netting with mesh sizes other than 1.5-inches may be installed if approved by the CPM in consultation with CDFG and USFWS. The netted ponds shall be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife. The ponds shall include a visual deterrent in addition to the netting, and the pond shall be designed such that the netting will never contact the water. Monitoring of the evaporation ponds shall include the following:

- The Designated Biologist or Biological Monitor shall regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. The purpose of the surveys shall be to determine if the netted ponds are effective in excluding birds, if the nets pose an entrapment hazard to birds and wildlife, and to assess the structural integrity of the nets. Surveys shall be of sufficient duration and intensity to provide an accurate

assessment of bird and wildlife use of the ponds during all seasons. Surveyors shall be experienced with bird identification and survey techniques. Operations staff at the BSEP site shall also report finding any dead birds or other wildlife at the evaporation ponds to the Designated Biologist within one day of the detection of the carcass. The Designated Biologists shall report any bird or other wildlife deaths or entanglements within two days of the discovery to the CPM, CDFG, and USFWS.

- If dead or entangled birds are detected, the Designated Biologist shall take immediate action to correct the source of mortality or entanglement. The Designated Biologist shall make immediate efforts to contact and consult the CPM, CDFG, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties shall not delay taking action that would, in the judgment of the Designated Biologist, prevent further mortality of birds or other wildlife at the evaporation ponds.

- If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, monitoring can be reduced to quarterly visits.

- If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, and with approval from the CPM, USFWS and CDFG, future surveys can be reduced to two surveys per year, during the spring nesting season and during fall migration. If approved by the CPM, USFWS, and CDFG, monitoring outside the nesting season may be conducted by the Environmental Compliance Manager.

- Without respect to the above requirements the project owner, CDFG or USFWS may submit to the CPM a request for modifications to the evaporation pond monitoring program based on information acquired during monitoring, and may also suggest adaptive management measures to remedy any problems that are detected during monitoring or modifications if bird impacts are not observed. Modifications to the evaporation pond monitoring described above and implementation of adaptive management measures shall be made only after approval from the CPM, in consultation with USFWS and CDFG.

PRE-CONSTRUCTION NEST SURVEYS AND IMPACT AVOIDANCE MEASURES FOR MIGRATORY BIRDS

BIO-15 Pre-construction nest surveys shall be conducted if construction activities will occur from February 1 through August 1. The Designated

Biologist or Biological Monitor conducting the surveys shall be experienced bird surveyors and familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). Surveys shall be conducted in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat in the project site and within 500 feet of the boundaries of the plant site and linear facilities;

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys needs to be conducted within the 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation;

3. If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG and USFWS) and monitoring plan shall be developed. Nest locations shall be mapped using GPS technology and submitted, along with a weekly report stating the survey results, to the CPM; and

4. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made.

Verification: At least 10 days prior to the start of any construction related ground disturbance activities, the project owner shall provide the CPM a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor(s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the no-disturbance buffer zone around the nest.

AMERICAN BADGER AND DESERT KIT FOX IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-16 To avoid direct impacts to American badgers and desert kit fox, pre-construction surveys shall be conducted for these species concurrent with the desert tortoise surveys. Surveys shall be conducted as described below:

Biological Monitors shall perform pre-construction surveys for badger and kit fox dens in the project area, including areas within 250 feet of all project facilities, utility corridors, and access roads. If dens are detected each den shall be classified as inactive, potentially active, or definitely active.

Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the badger or kit fox from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den.

Verification: The project owner shall submit a report to the CPM and CDFG within 30 days of completion of badger and kit fox surveys. The report shall describe survey methods, results, avoidance and minimization measures implemented, and the results of those measures.

BURROWING OWL IMPACT AVOIDANCE, MINIMIZATION, AND COMPENSATION MEASURES

BIO-17 The project owner shall implement the following measures to avoid and offset impacts to burrowing owls:

1. Pre-Construction Surveys. The Designated Biologist shall conduct pre-construction surveys for burrowing owls within the project site and along all linear facilities in accordance with CDFG guidelines (CDFG 1995). If burrowing owls are detected within the impact area or within 500 feet of any proposed construction activities, the Designated Biologist shall prepare a Burrowing Owl Monitoring and Mitigation Plan in consultation with CDFG, USFWS, and Energy Commission staff. This plan shall include detailed measures to avoid and minimize impacts to burrowing owls in and near the construction areas and shall be consistent with CDFG guidance (CDFG 1995).

2. Artificial Burrow Installation. Prior to any ground-disturbing activities, the project owner shall install no less than four artificial

burrows, or at least two burrows for each owl displaced by the project, in the proposed relocation area immediately north of the project site, a 6-acre area within the 14.39-acre parcel owned by Beacon Solar, LLC, (APN 469-14-011). Design of the artificial burrows shall be consistent with CDFG guidelines (CDFG 1995). The Designated Biologist shall survey the site selected for artificial burrow construction to verify that such construction will not affect desert tortoise or Mohave ground squirrel. The design of the burrows shall be approved by the CPM in consultation with CDFG and USFWS.

3. Surveys of Relocation Area. The Designated Biologist shall survey the relocation area during the nesting season to assess use of the artificial burrows by owls using methods consistent with Phase II and Phase III Burrowing Owl Consortium Guideline protocols (CBOC 1993). Surveys shall start upon completion of artificial burrow construction and shall continue for a period of five years. If survey results indicate burrowing owls are not nesting on the relocation area, site conditions shall be assessed for conditions that may be preventing owls from nesting there and, if necessary, remedial actions shall be developed and implemented in consultation with the CPM, CDFG and USFWS to correct conditions at the site.

4. Protect and Manage 6-Acre Relocation Area. The project owner shall provide a mechanism to protect 6 acres of the 14.39-acre relocation area in perpetuity as habitat for burrowing owls, either in fee title, or as a permanent deed restriction. The project owners shall prepare a draft Burrowing Owl Relocation Area Management Plan for review and approval by the CPM in consultation with CDFG. The overall objective of the plan shall be to manage the 6-acre relocation parcel for the benefit of burrowing owls, with the specific goals of:

   a. Maintaining the functionality of at least four artificial or natural burrows for the 5-year monitoring period; and

   b. Minimizing the occurrence of weeds (species considered “moderate” or “high” threat to California wildlands as defined by CAL-IPC [2006] and noxious weeds rated “A” or “B” by the California Department of Food and Agriculture and any federal-rated pest plants [CDFA 2009]) at less than 10 percent cover of the shrub and herb layers.

   The Burrowing Owl Relocation Area Management Plan shall include monitoring and maintenance requirements, details on

methods for measuring compliance goals and remedial actions to be taken if management goals are not met.

5. Acquire 20 Acres of Burrowing Owl Habitat. In addition to protecting the 6 acre relocation area north of the project site, the project owner shall acquire, in fee or in easement, 20 acres of land suitable to support a resident population of burrowing owls and shall provide funding for the enhancement and long-term management of these compensation lands. The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to Mojave Desert habitat conservation, subject to approval by the CPM, in consultation with CDFG and USFWS prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. Agreements to delegate land acquisition to CDFG or an approved third party and to manage compensation lands shall be implemented within 12 months of the Energy Commission's License Decision.

   a. Burrowing Owl Compensation Lands Criteria. The terms and conditions of this acquisition or easement shall be as described in BIO-11, with the additional criteria to include: 1) the 20 acres of mitigation land must provide suitable habitat for burrowing owls, and 2) the acquisition lands must be either currently supporting burrowing owls or be no farther than 5 miles from an active burrowing owl nesting territory. The 20 acres of burrowing owl compensation lands may be included with the 115 acres of desert tortoise and Mohave ground squirrel compensation lands ONLY if these two burrowing owl criteria are met.

   b. Security. If the 20 acres of burrowing owl compensation land is separate from the 115 acres required for desert tortoise and Mohave ground squirrel compensation lands the project owner or an approved third party shall complete acquisition of the proposed compensation lands prior to initiating construction-related ground disturbance activities. Alternatively, financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") prior to initiating construction-related ground disturbance activities. Prior to submittal to the CPM, the Security shall be approved by the CPM, in consultation with CDFG, to ensure funding in an amount determined by a Property Analysis Record (PAR) or PAR-like analysis of the proposed compensation lands.

Verification: Within 60 days prior to start of any construction -related ground disturbance activities, the project owner shall submit to the CPM, CDFG and USFWS a draft Burrowing Owl Relocation Area Management Plan. Within 30 days prior to any construction-related ground disturbance activities on the project site the project owner shall submit to the CPM a final Burrowing Owl Relocation Area Management Plan that reflects review and approval by Energy Commission staff in consultation with CDFG and USFWS.

If pre-construction surveys detect burrowing owls within 500 feet of proposed construction activities, the Designated Biologist shall provide to CDFG, USFWS, and the CPM a Burrowing Owl Monitoring and Mitigation Plan at least 30 days prior to the start of any project-related site disturbance activities. The project owner shall report monthly to CDFG, USFWS, and the CPM for the duration of construction on the implementation of burrowing owl avoidance and minimization measures described in the Burrowing Owl Monitoring and Mitigation Plan. Within 30 days after completion of construction the project owner shall provide to the CDFG and CPM a written construction termination report identifying how mitigation measures described in the plan have been completed.

No less than 90 days prior to acquisition of compensation lands, the project owner, or a third-party approved by the CPM, in consultation with CDFG and USFWS, shall submit a formal acquisition proposal to the CPM~~,~~ and CDFG, and USFWS describing the 20-acre parcel intended for purchase. Prior to start of any construction-related ground disturbance activities the project owner shall provide written verification to the CPM that the 20 acres of compensation lands and/or conservation easements have been acquired and recorded in favor of the approved easement holder(s). Alternatively, before beginning construction-related ground disturbance activities, the project owner shall provide Security to the CPM in accordance with this condition. Within 90 days of the compensation land or easement purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.

If the 20 acres of burrowing owl compensation land is separate from the 115 acres required for desert tortoise and Mohave ground squirrel compensation lands, the project owner shall fulfill the requirements described in BIO-11, including submittal of a formal acquisition proposal no less than 90 days prior to acquisition, and a management plan within 30 days after the compensation land purchase.

No later than January 31st of each year, commencing with the first year of construction and ending at the fifth year following initiation of construction, the Designated Biologist shall submit a report to the CPM, CDFG and USFWS describing survey results and remedial actions taken at the 6-acre burrowing owl relocation area. Thereafter no later than January 31st of each year the project is in operation the Designated Biologist shall provide to the CPM, CDFG and

USFWS a report describing the results of monitoring and management of the 6-acre burrowing owl relocation area.

STREAMBED IMPACT MINIMIZATION AND COMPENSATION MEASURES

BIO-18 The project owner shall compensate for permanent impacts to waters of the state by constructing a new channel that replicates the hydrological and biological functions of the impacted drainages, and shall establish a channel maintenance program. The channel created by the applicant shall: be designed to be geomorphologically equivalent to a typical desert wash system; maintain existing hydrological connections and levels of sediment transport; provide conditions that would support recruitment and maintenance of native vegetation, provide wildlife habitat, and maintain the biological functions and values of a natural desert wash ecosystem; be designed, constructed and maintained such that it would not create a movement barrier or hazard for desert tortoise or other wildlife, or be a source of invasive weeds. The project owner shall also implement Best Management Practices and other measures described below to protect jurisdictional waters of the State occurring along linear alignments. The project owner shall implement the following measures to compensate for impacts to waters of the state:

1. Submit Channel Design for Review: No later than 60 days prior to start of site mobilization, the project owner shall submit channel design and construction drawings for review and approval by the CPM in consultation with CDFG, as described in Soil&Water-5. The channel shall be designed such that it would remain accessible to desert tortoise and other wildlife at all times (i.e., all side slopes 3:1 or more gradual, with textured soil cement that would enhance traction for tortoise), and would promote a slightly aggradational (depositional) pattern of sediment deposition to allow for natural geomorphic processes;

2. Prepare a Desert Wash Revegetation Plan that follows the outline provided for rehabilitation plans described in Newton and Claassen (2003), *Appendix C: Sample Outline for a Rehabilitation Plan*. The Desert Wash Revegetation Plan shall meet the following criteria at the end of the 10-year revegetation period[24]:

    a. Establishment of at least 15 percent native desert wash shrub cover within the channel bottom (6.2 acres total within the 41.5-acre channel bottom, and under no circumstances less than 4.8 acres);

[24] The 10-year revegetation period begins upon completion of construction of the new channel.

b. Establishment of at least 7 percent native desert wash shrub cover on each of the 11 channel reaches between drop structures;

c. Maintain percent cover of noxious weeds (defined as non-native species that pose a “moderate” or “high” threat to California wildlands as defined by CAL-IPC (2006) within the channel) below 2 percent within the channel bottom (less than 0.8 total within the 41.5-acre channel bottom);

3. Acquire Off-Site Desert Wash: If at the end of the 10-year revegetation period the success criteria defined in the Desert Wash Revegetation Plan have not been achieved, the project owner shall acquire, in fee or in easement, land that includes at least 16 acres of desert wash state jurisdictional waters and their immediate watershed. Prior to acquisition the applicant shall prepare an acquisition proposal for review and approval by Energy Commission staff and CDFG describing the 16 acres of state waters and the surrounding watershed, and shall ensure that the acquired parcel(s) include sufficient area to manage the lands. The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-profit organization dedicated to Mojave Desert habitat conservation, subject to approval by the CPM, in consultation with CDFG and RWQCB prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. The terms and conditions of this acquisition or easement shall be as described in **BIO-11**, with the additional criteria that the desert wash mitigation lands: 1) include at least 16 acres of state jurisdictional waters; 2) be characterized by similar soil permeability and hydrological and biological functions as the impacted wash; and 3) be within the same watershed as the impacted wash.

4. Review and Approval of Compensation Lands Prior to Acquisition. A minimum of three months prior to acquisition of the compensation lands, the project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase. This acquisition proposal shall include a description and delineation of waters of the state within the parcel(s); shall describe the immediate watershed in the vicinity of the drainage; and shall identify the area of lands surrounding the drainage needed to adequately manage the waters of the state to protect and enhance their biological functions and values. Approval from the CPM, in consultation with CDFG, shall be required for acquisition of all

parcels comprising the compensation lands in advance of purchase.

5. Security for Implementation of Mitigation: A security in the form of an irrevocable letter of credit, pledged savings account, or certificate of deposit for the amount of all mitigation measures pursuant to this condition of certification shall be submitted to, and approved by, the CPM, in consultation with CDFG, prior to commencing project activities within waters of the state. The security shall be approved by the CPM, in consultation with CDFG's legal advisors, prior to its execution, and shall allow the CPM at its discretion to recover funds immediately if the CPM, in consultation with CDFG, determines there has been a default. Security shall include an amount equal to the final cost estimate for implementation of the Desert Wash Revegetation Plan, as described above in item 2. In addition, security shall include the costs of purchasing sufficient land to ensure acquisition of a minimum of 16 acres of desert wash state jurisdictional waters.

   Prior to initiation of ground disturbance, the security shall be approved by the CPM, in consultation with CDFG, to ensure funding for the required mitigation (onsite restoration or offsite acquisition). The amount of the security shall be based on the amount of the final estimated cost of implementing the Desert Wash Revegetation Plan over a ten year period. The security deposit shall be no less than $230,000, as estimated for the cost of sufficient acreage to ensure acquisition of 16 acres of desert wash state jurisdictional waters, should onsite mitigation not succeed. The minimum security amount is based on 50 acres, an estimated amount of acreage needed for acquisition of 16 acres of state jurisdictional waters. Security costs for land acquisition were calculated as follows and may be revised upon completion of a Property Analysis Record (PAR) or PAR-like analysis of the proposed compensation lands:

   - land acquisition costs for compensation lands, calculated at $3,000/acre for 50 acres: $150,000;

   - costs of enhancing compensation lands, calculated at $250/acre for 50 acres: $12,500; and

   - costs of establishing an endowment for long-term management of compensation lands, calculated at $1,350/acre for 50 acres: $67,500.

6. Long-Term Monitoring and Management. Long-term monitoring and management of the channel shall begin at the end of the 10-year

revegetation period and shall continue for the life of the project as described in SOIL&WATER-8, and shall occur regardless of the success or failure of the revegetation effort. The goals of the long-term monitoring shall be to:

a. Maintain percent cover of noxious weeds (defined as non-native species that pose a “moderate” or “high” threat to California wildlands as defined by CAL-IPC (2006) within the channel) below 2 percent within the channel bottom (less than 0.8 total within the 41.5-acre channel bottom).

b. Maintain the channel as safe for desert tortoise and other wildlife. At no time shall the channel pose an entrapment hazard to desert tortoise and other wildlife. An entrapment hazard is defined as a depression, pit or trench with a depth of one foot or greater and a slope steeper than 3:1.

Inspections to assess percent weed cover within the channel shall be conducted by the Designated Biologist no less than once per year and only within the peak growing season for weedy annual herbs (February 1 through April 30th). Inspections to assess entrapment hazards for desert tortoise and other wildlife shall occur within 1 day of major storm events. The same remedial actions for managing weeds and entrapment hazards described in the Desert Wash Revegetation Plan shall be employed during the long-term monitoring. Entrapment hazards shall be corrected immediately upon detection.

7. Equipment Laydown Plan: The project owner shall develop a Storm Water Pollution Prevention Plan for construction activities that includes an engineered plan for the proposed equipment laydown area within the existing wash, as described in Soil&Water 3. This engineered plan shall describe protective structures, procedures for moving equipment, fuels and materials, and plan for conveyance of stormflows, during a rainfall event. Prior to initiation of any project activities in jurisdictional areas and no later than 60 days after publication of the Energy Commission Decision, the project owner shall submit this plan for review and approval by the CPM in consultation with CDFG.

8. Right of Access and Review for Compliance Monitoring: The CPM reserves the right to enter the project site and/or allow CDFG to enter the project site at any time to ensure compliance with these conditions. The project owner herein grants to the CPM and to CDFG employees and/or their representatives the right to enter the project site at any time, to ensure compliance with the terms and conditions and/or to determine the impacts of storm events,

maintenance activities, or other actions that might affect the restoration and revegetation efforts. The CPM and CDFG may, at the CPM's discretion, review relevant documents maintained by the operator, interview the operator's employees and agents, inspect the work site, and take other actions to assess compliance with or effectiveness of mitigation measures.

9. Code of Regulations: The project owner shall provide a copy of the Energy Commission License Decision to all contractors, subcontractors, and the applicant's project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel or personnel from another agency upon demand. The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the project owner and the CPM, if the CPM in consultation with CDFG, determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:

    a. The information provided by the applicant regarding streambed alteration is incomplete or inaccurate;

    b. New information becomes available that was not known to it in preparing the terms and conditions;

    c. The project or project activities as described in the Final Staff Assessment have changed; or

    d. The conditions affecting biological resources changed or the CPM, in consultation with CDFG, determines that project activities will result in a substantial adverse effect on the environment.

10. Construction Schedule: Pine Tree Creek and the unnamed desert wash shall not be altered until the new channel is constructed and deemed by the CPM ready to accept stormwater flows.

11. Best Management Practices: The applicant shall also comply with the following conditions:

    a. The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter a lake or flowing stream or be placed in locations that may be subjected to high storm flows.

    b. The project owner shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey

these laws, and it shall be the responsibility of the operator to ensure compliance.

c. Spoil sites shall not be located within a drainage or locations that may be subjected to high storm flows, where spoil shall be washed back into a drainage or lake.

d. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering waters of the state. These materials, placed within or where they may enter a drainage or lake, by project owner or any party working under contract or with the permission of the project owner shall be removed immediately.

e. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the state.

f. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any drainage.

g. No equipment maintenance shall occur within or near any stream channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.

Verification: Within 90 days prior to any construction-related ground disturbance activities, the project owner shall submit to the CPM and CDFG a draft Desert Wash Revegetation Plan and a draft estimate of costs to fully implement the plan. Within 30 days prior to any construction-related ground disturbance activities within waters of the State, the project owner shall submit to the CPM a final Desert Wash Revegetation Plan and a final cost estimate for implementation of revegetation monitoring and management activities that reflects review and approval by Energy Commission staff in consultation with CDFG.

No later than 90 days prior to any construction-related ground disturbance activities, the project owner shall submit channel design and construction drawings for review and approval by the CPM in consultation with CDFG, as described in **Soil&Water-5**.

No fewer than 30 days prior to the start of any construction-related ground disturbance activities, the project owner shall implement the mitigation measures described above. No fewer than 30 days prior to the start of work potentially affecting jurisdictional waters of the state, the project owner shall provide written verification (i.e., through incorporation into the BRMIMP) to the CPM that the above best management practices will be implemented and provide a discussion of work in jurisdictional waters of the state in Compliance Reports for the duration of the project. Compliance reports shall be monthly for the first five years following completion of construction of the channel, and thereafter shall be submitted annually per COMPLIANCE-7

No less than 90 days prior to acquisition of the desert wash compensation acreage the project owner, or a third-party approved by the CPM, in consultation with CDFG, shall submit a formal acquisition proposal to the CPM and CDFG describing the parcel(s) intended for purchase.

The project owner shall notify the CPM and CDFG, in writing, at least five days prior to initiation of project activities in jurisdictional areas as noted and at least five days prior to completion of project activities in jurisdictional areas. The project owner shall notify the CPM and CDFG of any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts, if the conditions at the site of a proposed project change in a manner which changes risk to biological resources that may be substantially adversely affected by the proposed project. The notifying report shall be provided to the CPM and CDFG no later than seven days after the change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the project as defined below. A copy of the notifying change of conditions report shall be included in the annual reports.

a. Biological Conditions: a change in biological conditions includes, but is not limited to, the following: 1) the presence of biological resources within or adjacent to the project area, whether native or non-native, not previously known to occur in the area; or 2) the presence of biological resources within or adjacent to the project area, whether native or non-native, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

b. Physical Conditions: a change in physical conditions includes, but is not limited to, the following: 1) a change in the morphology of a river, stream, or lake, such as the lowering of a bed or scouring of a bank, or changes in stream form and configuration caused by storm events; 2) the movement of a river or stream channel to a different location; 3) a reduction of or other change in vegetation on the bed, channel, or bank of a drainage, or 4) changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.

c. Legal Conditions: a change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

After completion of the 10-year monitoring period for the Desert Wash Revegetation Plan, the project owner shall thereafter submit an annual report to the CPM and CDFG. The report shall describe the methods and results of the long term monitoring inspections for weed and entrapment hazards within the channel. The report also shall include a discussion of remedial actions taken, if any, and shall be submitted no later than January 31st of every year for the life of the project. If any entrapped animals/carcasses are detected CDFG and USFWS shall be notified in writing within 48 hours.

CLOSURE PLAN MEASURES

BIO-19 The project owner shall implement and incorporate into the facility closure plan measures to address the local biological resources related to facility closure. A funding mechanism shall be developed in consultation with the Energy Commission staff to ensure sufficient funds are available for revegetation, reclamation, and decommissioning. The facility closure plan shall address biological resources-related mitigation measures. In addition to these measures, the plan must include the following:

1. removal of transmission conductors when they are no longer used and useful;

2. removal of all above-ground and subsurface power plant site facilities and related facilities;

3. methods for restoring wildlife habitat and promoting the re-establishment of native plant and wildlife species;

4. revegetation of the project site and other disturbed areas utilizing appropriate methods for establishing native vegetation;

5. a cost estimate to complete closure-related activities.

In addition, the project owner shall secure funding to ensure implementation of the plan and provide to the CPM written evidence of the dedicated funding mechanism(s).

Verification: Prior to initiating construction-related ground disturbance activities the project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding will be available to implement decommissioning and closure activities described above. The financial assurances may be in the

form of an irrevocable letter of credit, a performance bond, a pledged savings account, or another equivalent form of security, as approved by the CPM.

At least 12 months prior to commencement of planned closure activities, the project owner shall address all biological resources-related issues associated with facility closure, and provide final measures, in a Biological Resources Element. The draft planned permanent or unplanned closure measures shall be submitted to the CPM for comment by staff, CDFG, and USFWS. After revision, final measures shall comprise the Biological Resources Element, which shall include the items listed above as well as written evidence of the dedicated funding mechanism(s) for these measures. The final Biological Resources Element shall become part of the facility closure plan, which is submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan (see **Compliance** Conditions of Certification).

Upon facility closure, the project owner shall implement measures in the Biological Resources Element and provide written status updates on all closure activities to the CPM at a frequency determined by the CPM.

SPECIAL-STATUS PLANT SURVEYS/PROTECTION PLAN

BIO-20 To avoid impacts to special-status plant species (state-plants, or California Native Plant Society List 1A, 1B, 2, or 3 plants) that might occur along the proposed northern emergency access road or the Rosamond Alternative water pipeline alignment, pre-construction surveys shall be conducted in these areas in the spring prior to anticipated construction. The surveys on the Rosamond Alternative water pipeline alignment would need to be conducted only if the Energy Commission elects to adopt this alternative. If special-status plant species are detected within 50 feet of the project footprint of the proposed northern emergency access road or the Rosamond Alternative alignment, the qualified botanist shall prepare a Sensitive Plant Protection Plan to avoid direct and indirect impacts. The project owner shall implement the following measures:

1. Pre-Construction Floristic Surveys. A qualified botanist shall conduct floristic surveys along the northern emergency access route and along the southern 23 miles of the Rosamond Alternative pipeline alignment. Surveys shall be conducted at the appropriate time of year and according to guidelines from the California Department of Fish and Game (CDFG 2000) and the California Native Plant Society (CNPS 2001).

2. Agency Notification: If state or federal listed plant species are detected during the pre-construction floristic surveys, the CPM and CDFG shall be notified in writing no more than 15 days from detection of the plants. The notification shall be prepared according to agency guidelines, and shall include submission of the GIS shape files and metadata for the plant occurrences. Concurrent with notification of the appropriate permitting agencies, the project engineer shall also be contacted to ensure adequate time for adjusting the alignment within the right-of-way or narrowing a reach of the project footprint to avoid direct and indirect impacts to the plant occurrence.

3. Sensitive Plant Protection Plan. If special status plant species are detected during pre-construction surveys a qualified botanist shall prepare a Sensitive Plant Protection Plan (Plan). The Plan shall include measures for avoiding direct impacts and accidental impacts during construction by establishing the plant occurrence and an appropriately-sized buffer as an Environmentally Sensitive Area, as described in BIO-21. The Plan would also include measures to avoid indirect impacts including: sedimentation from adjacent disturbed soils; alterations of the site hydrology from changes in the drainage patterns; dust deposition; displacement or degradation of the habitat from the introduction and spread of noxious weeds. The plan shall also include a discussion of monitoring and reporting requirements during and after construction.

4. Review and Submittal of Plan: The project owner shall submit to the CPM and CDFG a draft Sensitive Species Protection Plan. Prior to any ground-disturbing activities within 50 feet of the sensitive plant occurrences detected during the pre-construction floristic surveys, the project owner shall submit to the CPM a final Plan that reflects review and approval by Energy Commission staff in consultation with CDFG.

Verification: No later than July 31, following spring surveys the project owner shall submit a report describing the results of floristic surveys conducted along the proposed northern emergency access road and the southern 23 miles of the Rosamond Alternative pipeline alignment. The report shall be submitted to the CPM and CDFG and shall describe qualifications of the surveyor, survey methods including dates and times, a discussion of visits to reference sites, figures depicting the area(s) surveyed, and a list of plant species detected.

If special-status plant species were detected during the spring surveys the project owner shall submit to the CPM and CDFG a Sensitive Species Protection Plan (Plan) at least 60 days prior to the start of any ground-disturbing activities within 500 feet of the Rosamond Alternative alignment or the northern

emergency access road. The CPM will determine the Plan's acceptability in consultation with CDFG and USFWS within 15 days of receipt of the Plan. Any modifications to the approved Plan shall be made only after approval by Energy Commission staff in consultation with CDFG. The project owner shall notify the CPM no fewer than 5 working days before implementing any CPM-approved modifications to the Plan.

Within 30 days after completion of construction of the Rosamond Alternative pipeline and the northern emergency access road the project owner shall provide to the CPM and CDFG a construction termination report discussing how mitigation measures described in the Plan were implemented.

ROSAMOND PIPELINE MITIGATION

BIO-21 The following condition would need to be implemented only if the Energy Commission elects to adopt the Rosamond Alternative. To avoid, minimize, and mitigate potential impacts to biological resources associated with construction of the Rosamond Alternative water pipeline, the project owner shall implement the following measures:

1. Establish Environmentally Sensitive Areas: Prior to any ground disturbing activities the Designated Biologist shall flag the Joshua trees depicted in Figure A-4 and the desert washes/drainages shown in Figures A-2a, and b as Environmentally Sensitive Areas (ESAs). Work shall not begin until the ESAs are delineated on the ground with orange safety netting established under supervision of the Designated Biologist. The ESAs for desert washes shall be delineated to protect all the drainages outside of permitted construction (i.e., at the edge of pavement or edge of ROW, depending on the segment), with fencing extending 20 feet out from the drainage along the edge of the construction footprint on both sides of the stream. The ESA fences for Joshua trees shall be installed 20 feet out from the base of the trunk, except where they occur on road edges; on this boundary, the fencing shall be installed at the edge of pavement. The ESA fences shall remain in place for the entire duration of construction. No earth-moving activities, vegetation removal, vehicles, heavy equipment, or other construction shall be permitted within the ESAs.

2. Identify and Avoid Noxious Weed Occurrences. The Designated Biologist shall identify and fence noxious weed occurrences within the construction footprint to prevent their spread into uninfested areas from contaminated tires and undercarriages, or by using the contaminated soil for backill in other areas. Noxious weeds ranked as having a "high" threat to California wildlands as defined by CAL-IPC (2006), noxious weeds rated "A" by the California Department

of Food and Agriculture, and any federal-rated pest plants (CDFA 2009) shall be fenced wherever they occur within the construction footprint; fencing shall be installed at the perimeter of the occurrence. If the occurrence cannot be avoided, the area shall be scraped of its upper 12 inches of soil and the contaminated soil disposed of at an appropriate landfill under the guidance or approval of the County Agricultural Commissioner.

3. Minimize Soil Compaction: Soil compaction shall be minimized in areas that support native vegetation, except on slopes greater than 5 percent and as necessary to prevent slope failure. In areas that would support natural revegetation the upper 6-12 inches of soil shall be loosened.

4. Revegetate Disturbed Areas: Upon completion of construction, all areas not previously disturbed shall be revegetated, excluding the road and roadbed. The following measures shall be implemented for the revegetation effort:

    a. Stockpile Native Topsoil: Topsoil shall be stockpiled from the project site for use in revegetation of the disturbed soils of the trench. The upper 1 inch of topsoil which contains the seedbank shall be scraped and stockpiled for use as the top-dressing for the revegetation area. An additional 6 to 8 inches of soil below the top 1 inch of soil shall also be scraped and separately stockpiled for use in revegetation areas. All other elements of soil stockpiling shall be described on pages 39-40 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003),

    b. Revegetate With Native Species: Only seed from locally occurring species shall be used for revegetation. Seeds shall contain a mix of short-lived early pioneer species such as native annuals and perennials and subshrubs (for example, squirreltail, cheesebush, matchweed, peppergrass, rabbitbrush, creosote bush, burro-weed, wolfberry, Nevada tea, needlegrass, rice grass, goldenhead). Seeding shall be conducted as described in Chapter 5 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003). A list of plant species suitable for Mojave Desert region revegetation projects, including recommended seed treatments, are included in Appendix A-8 of the same report. The list of plants observed during the ~~2010~~ special-status plant surveys of the Rosamond Alternative can also be used as a guide to site-specific plant selection for revegetation.

5. Acquire Habitat: To fully mitigate for habitat loss and potential take of desert tortoise and Mohave ground squirrel, the project owner shall acquire, in fee or in easement, no less than 33.6 acres of land suitable for these species and shall provide funding for the enhancement and long-term management of these compensation lands. The project owner or an approved third party shall complete acquisition of the proposed compensation lands prior to initiating ground-disturbing project activities. If Security is provided, the project owner, or an approved third party, shall complete the proposed compensation lands acquisition within 12 months of the start of project ground-disturbing activities. The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-profit organization dedicated to Mojave Desert habitat conservation, subject to approval by the CPM, in consultation with CDFG and USFWS prior to land acquisition or management activities. The acquisition and management of compensation lands, including selection criteria, review and approval of lands prior to acquisition, and acquisition conditions shall be as described in staff's proposed Condition of Certification **BIO-11**.

Verification: Within 90 days after completion of project construction, the project owner shall provide to the CPM verification that disturbance to Mojave creosote scrub habitat did not result in impacts to Mojave creosote scrub habitat adjacent to work areas. If habitat disturbance exceeded that described in this analysis, the CPM shall notify the project owner of any additional funds required or compensation acreage that must be purchased to compensate for any additional habitat disturbances at the adjusted market value at the time of construction to acquire and manage habitat .

No less than 90 days prior to acquisition of the compensation lands the project owner, or a third-party approved by the CPM, in consultation with CDFG and USFWS, shall submit a formal acquisition proposal to the CPM, CDFG, and USFWS describing the parcel(s) intended for purchase.

Draft agreements to delegate land acquisition to CDFG or an approved third party and agreements to manage compensation lands shall be submitted to Energy Commission staff for review and approval (in consultation with CDFG) prior to land acquisition. Such agreements shall be mutually approved and executed at least 60 days prior to start of any project-related ground disturbance activities within 500 feet of the Rosamond Alternative alignment or the northern emergency access road. The project owner shall provide written verification to the CPM that the compensation lands and/or conservation easements have been acquired and recorded in favor of the approved recipient(s). Alternatively, before beginning project ground-disturbing activities within 500 feet of the Rosamond Alternative alignment or the northern emergency access road or any other activities that could result in take in those areas, the project owner shall provide

Security in accordance with this condition. Within 90 days after the compensation land and/or easement purchase, as determined by the date on the title, the project owner shall provide the CPM with a management plan for review and approval, in consultation with CDFG, for the compensation lands and associated funds.

B. SOIL AND WATER RESOURCES

This section focuses on the soil and water resources associated with the Beacon Solar Energy Project (BSEP), including the project's potential to induce erosion and sedimentation, adversely affect water supplies, and degrade water quality. The analysis also considers site contamination and any potential cumulative impacts to water quality in the vicinity of the project. Mitigation measures are included in the Conditions of Certification to ensure that the project will have no significant impacts on the environment and that it will comply with all LORS. The evidence supporting the record is contained in Exhibits 16, 21; 41; 42; 49; 63; 66; 69; 70; 75; 82; 83; 84; 86; 94; 102; 106; 108; 109; 120; 140; 141; 142; 150; 152; 156; 188; 194; 202; 203; 210; 216; 217; 218; 225; 226; 227; 231; 237; 238; 243; 251; 257; 273; 274; 294; 295; 296; 315; 318; 321; 335; 336; 337; 453, 500, pp. 4.9-1 through 4.9-232; 501; 506; 507; 551; 519; 520; 616; 617; 618; 623; 624; 636; 640; 641; 643; 644; 645; 646; 647; 664; 665; (3/22/10 RT: 15-16; 65; 66; 67; 68; 71; 78; 64; 65; 67; 6/8/10 RT: 20; 35; 40; 235; 238; 247).

SUMMARY AND DISCUSSION OF THE EVIDENCE

Applicant, Beacon Solar, LLC, (Beacon) proposes to develop and operate a 250 MW solar energy facility called Beacon Solar Energy Project in Kern County east of State Route (SR) 14. The facility will be located approximately four miles north-northwest of the northern boundary of California City, approximately 15 miles north of the Town of Mojave. The site is situated in the Fremont Valley, just east of the southernmost portion of the Sierra Nevada. Fremont Valley is in the northwestern portion of the Mojave Desert where water resources are extremely limited. (Ex. 500, pp. 4.9-5; 4.9-7.)

1. Soil and Erosion

BSEP site soils will be subject to wind and water erosion during facility construction and operation activities. Only two soil types will be affected by grading and excavation activities; Cajon loamy sand and Rosamond clay loam. The soils on the project site have a moderate to high hazard for wind erosion. (Ex. 500, p. 4.9-9.)

Project construction will be completed over a 25-month period. The total site grading will be significant, with up to 20 feet of cuts and fills, excavation of a diversion channel to reroute Pine Tree Creek and filling the existing Pine Tree Creek channel, amounting to approximately 8,300,000 cubic yards of soil being

moved. The earthwork will consist of primarily cut and fill grading with excavation for foundations and underground systems. The Pine Tree Creek engineered diversion channel will require nearly 3.1 million cubic yards of soil material to be cut. (Ex. 500, p. 4.9-36.)

Applicant prepared a project grading plan and Storm Water Pollution Protection Plan (SWPPP) that includes Best Management Practices (BMPs) for wind and water erosion control during project construction. The implementation of appropriate erosion control measures will conserve soil resources, maintain water quality, prevent accelerated soil loss, and protect air quality. The erosion and sedimentation control measures include: applying water to the roads in active construction and laydown areas; controlling speed on unpaved surfaces; placing gravel in entrance ways; use of straw bales, silt fences, and earthen berms to control runoff; restoration of native plant communities by natural revegetation, seeding and transplanting, and application of soil bonding and weighting agents. During grading work, soil would also be stabilized by maintaining sufficient water content to make it resistant to weathering and erosion by wind and water. Silt fences would be placed at adequate spacing perpendicular to the drainage path and generally oriented in a northwest to southeast direction to trap sediment before it can migrate. (Ex. 500, p. 4.9-36.)

Given the low frequency of precipitation and storm water runoff, BMPs implemented during construction should limit potential soil loss from water erosion caused by on-site precipitation events. As outlined in the Drainage Erosion Sediment Control Plan (DESCP), BMPs would include the following:

- Construction of Local soil berms and a retention area to contain storm water runoff;
- Confinement of clearing and grubbing during site grading to only those areas needed for facility construction as indicated in the conceptual grading plan;
- Temporary erosion controls including crushed rock, silt fences and fiber rolls to minimize erosion in active grading areas; covering soil stockpiles prior to forecasted storm events and during windy conditions with fiber rolls or gravel bags placed around the perimeter of the stockpiles to minimize potential runoff; and
- Dust control using water and/or dust palliatives, binders or weighting agents to minimize water use during construction to the extent possible. (Ex. 500, pp. 4.9-36 through 4.9-37.)

The BMPs identified in the record and contained in Condition of Certification **SOIL&WATER-3** will avoid significant soil erosion and subsequent sedimentation during construction. Condition of Certification **SOIL&WATER-5** requires implementation of BMPs in the construction of the water pipelines from Rosamond and California City to avoid significant soil erosion and sedimentation. (Ex. 500, p. 4.9-38.)

During operation, areas not covered by foundations, paving, or the solar array would be treated with soil stabilizers. Condition of Certification **SOIL&WATER–4** requires BSEP to obtain Compliance Project Manager (CPM) approval prior to implementation of the SWPPP for operations. **SOIL&WATER-5** requires the project owner to obtain CPM approval of the site-specific final DESCP that addresses storm water project elements including site runoff, retention, detention (if necessary), and BMPs to protect soil and water resources for the operation phase of the project. (Ex. 500, p. 4.9-39.)

With the implementation of proposed mitigation measures, including the construction and operation SWPPPs, and Condition of Certification **SOIL&WATER-3, -4,** and **-5,** the project will not contribute significantly to cumulative erosion and sedimentation impacts. (Ex. 500, p. 4.9-39.)

2. Surface Hydrology, Storm Water Management, and Flooding

There are three main watersheds that contribute surface water flow in the BSEP site vicinity. These watersheds are the Pine Tree Creek Watershed, Jawbone Creek Watershed and an unnamed watershed located adjacent to the Pine Tree Creek Watershed. Pine Tree Creek, a dry desert wash, trends from the south-southwest to the north-northeast through the center of the site. The channel is mapped as a 100-year special flood hazard area by the Federal Emergency Management Agency (FEMA) where it crosses the site. The BSEP will fill the existing creek channel and reroute Pine Tree Creek around the south and east periphery of the solar facility. (Ex. 500, p. 4.9-7.)

The existing storm water flow across the project site is from southwest to northeast and occurs as sheet flow or shallow flooding. Pine Tree Creek conveys flash flood flows across the site. BSEP will be built on ten individually elevated cut and fill pads or planar “cells.” The site grading slopes southwest to the northeast to direct storm induced sheet flow into transverse intercept trenches that convey collected runoff into proposed on-site retention basins. Following settlement of suspended sediments and attenuation of peak flows in the retention

basins or supplemental detention basins, the collected storm water would percolate or evaporate within 48 hours following the precipitation event. The evidence indicates that the easternmost retention ponds will be outfitted with stand pipes and subsurface drainage pipes that will convey flows that exceed pond capacity to an outlet in the rerouted Pine Tree Creek Channel. BSEP's Storm Water Pollution Prevention Plan (SWPPP) and the Drainage Erosion and Sediment Control Plan (DESCP) establish methods to control and manage storm water flow as it reaches the project, flows across the project, and then leaves the project. (Ex. 500, p. 4.9-10.)

The diversion channel construction will precede excavation and filling of Pine Tree Creek, within the limits of the effective Storm Flood Hazard Area (SFHA). Once constructed, the diversion channel will re-route flood flows around the southern and eastern sides of the project, allowing construction and grading improvements in the existing Pine Tree Creek floodplain. Following diversion channel construction, the Applicant will submit an application for a Letter of Map Revision (LOMR) to FEMA to revise the effective SFHA pursuant to Condition of Certification **SOIL&WATER-6**. Subsequently, the proposed power block will not be located within a FEMA designated floodplain.

During site construction, several site conditions could potentially contribute to significant erosion following a significant rainfall event, such as the large volume of earth graded, the long duration of the construction period, and soil properties that have a high to moderate potential for water erosion. BSEP development would increase site runoff volume because of increased impervious areas or other changes to the site's soil infiltration capacity. Recognizing these potential impacts, the Applicant prepared a SWPPP for construction activity. BSEP's construction SWPPP provides plans for construction related erosion and drainage control measures. Condition of Certification **SOIL&WATER–3** requires the Applicant to comply with the requirements of the waste discharge requirements for discharges of storm water associated with construction activity. We find that the proper application of BMPs in accordance with the Conditions of Certification will reduce the storm water impacts to water quality and soil and water resources to less than significant levels.

BSEP will construct a network of retention and drainage features to maintain pre-development peak flows from the site. Condition of Certification **SOIL&WATER-5** requires that the Applicant develop a DESCP that requires the design of the retention basins with sufficient storage volume to accommodate accumulated sediments. With implementation of the Conditions of Certification

SOIL&WATER-4 and -5, we find that storm water runoff from the site as well as potential nuisance flows from plant operation and maintenance will not cause significant impacts to the receiving waters. Mitigation required to reduce potential surface water and groundwater contamination impacts from discharges of hazardous substances or plant-contact storm water to less than significant levels are contained in Condition of Certification **SOIL&WATER-4.** We find that BSEP will avoid significant degradation to receiving waters during operations caused by storm water drainage by implementing these Conditions of Certification. We find potential flood impacts and risk attributable to erosion or sedimentation impacts due to on-site storm water runoff will be reduced to less than significant levels with the implementation of Condition of Certification **SOIL&WATER-5**. (Ex. 500, p. 4.9-41.)

Appendix C of the Final Staff Assessment (Ex. 500, pp. 4.9-121 through 4.9-148) presents a detailed discussion of BSEP's potential erosion and sedimentation hazards resulting from onsite precipitation runoff during project operation, and separately addresses on-site storm water impacts and potential impacts related to the Pine Tree Creek diversion. Appendix C also provides a detailed analysis of special flood hazard areas, hydrology, geomorphic assessment, channel hydraulics, sediment transport, bank protection and grade control. Appendix J (Ex. 500, pp. 4.9-225 through 4.9-232) supports Conditions of Certification **SOIL & WATER–7 and -8** which require the establishment of a Special Maintenance District to oversee the implementation of a Channel Maintenance Program. The maintenance district will identify and monitor key channel indicators, inspect the channel after rainfall-runoff events, conduct periodic inspections, make repairs, and adaptively manage sediment to maintain flood capacity for the design discharge. The record establishes that Energy Commission staff coordinated the environmental review of the re-routed channel with U.S. Fish and Wildlife Service, California Department of Fish and Game (CDFG), Lahontan Regional Water Quality Control Board (RWQCB) and Kern County. (Ex. 500, pp. 4.9-10 through 4.9-11; 4.9-45.)

The record indicates that the existing Pine Tree Creek flood hazard is identified in the effective Digital Flood Insurance Rate Map for Kern County. The special flood hazard area (SFHA) is mapped "Zone A" which is a result of approximate methods used to delineate an area with a high potential for flooding (FEMA 2008). Immediately downstream of the site, Pine Tree Creek joins Jawbone Creek. Jawbone Creek is mapped Zone AE with Base Flood Elevations (BFE) determined. (Ex. 500, p. 4.9-45.)

According to Kern County's Division Four Standards for Drainage, the One Percent Risk Flow is the flow on the alluvial fan based upon the joint probability of the flow distribution at the fan apex and the probability of occurring at the development site. The parties agree that analyses submitted by the Applicant have reasonably shown that the One Percent Risk Flow is equal to the design discharge of 28,000 cfs. (Ex. 500, p. 4.9-45.)

Staff identified several deficiencies in Applicant's hydrological and hydraulic design which required resolution to enable staff to determine that the channel design mitigates the effects of the discharge. Applicant and Staff settled upon Conditions of Certifications **SOIL&WATER -7** through **-17** to address these final design deficiencies. Conditions of Certifications **SOIL&WATER -9** through **-17** specify the analytical requirements needed for BSEP to reach final design for the diversion channel and its structural elements in compliance with FEMA National Flood Insurance Program (NFIP) regulations and Kern County's Division Four Standards for Drainage. The record shows that compliance with these Conditions of Certification provide sufficient evidence that the project will mitigate the effects of the design discharge and will protect BSEP and adjacent properties from significant flood related impacts. The record establishes that upon implementation of these Conditions of Certification, there will not be significant flood-related impacts attributable to the diversion channel for peak discharges less than 28,000 cfs. (Ex. 500, p. 4.9-48.)

Most of CURE's disagreement with the proposed diversion channel relates to biological resources. CURE claims that Staff's analysis has no basis to conclude that mitigation will offset impacts of the rerouted wash to less-than-significant levels (CURE Opening Brief, p. 54). We believe that the evidence establishes that the following conditions amply offset the impacts from rerouting the wash: Condition of Certifications **SOIL&WATER-7** creates a maintenance district to oversee and maintain the diversion channel. Condition of Certifications **SOIL&WATER -8** requires the maintenance district to oversee sediment removal, vegetation management, bank protection, and clean up. Condition of Certifications **SOIL&WATER -9** requires the project owner to supply the CPM with design drawings for the diversion channel at 30, 60 and 90 percent completion to ensure compliance with the Conditions of Certifications. **SOIL&WATER-10** through **-12** require compliance with Kern County Division Four Standards for Drainage to study and assess runoff and retention, sediment and debris flow, and the transition from the diversion channel back into the natural channel. Condition of Certifications **SOIL &WATER -13** requires complete hydraulic analysis of the diversion channel and **SOIL&WATER -14**

requires bank toe protection to avoid under-cutting. Condition of Certifications **SOIL&WATER -15** requires sediment transport analyses to determine the final channel slope for the diversion channel that provides a slightly aggredational system that is predicted to result in a braided low flow channel and **SOIL&WATER-16** requires proof of protection from hazards associated with the possible relocation of the Pine Tree Creek wash upstream of BSEP project boundaries. **SOIL&WATER-17** requires the project owner to maintain adequate topsoil material to backfill the energy dissipaters or stilling basins planned as part of each grade control structure. Taken together with the BSEP Maintenance District's Channel Maintenance Program, we find that these Conditions provide sufficient mitigation to offset impacts from the rerouted wash to less-than-significant levels.

CURE also argues that the rerouted wash will impact biological resources. This contention is fully analyzed in the **Biological Resources** section of this Decision. We find that the implementation of the Conditions of Certification above, along with Conditions of Certification **BIO-11, -12 and -18**, will reduce possible impacts to native plant communities and wildlife habitat due to the rerouting of the wash to a level below significance. (Ex. 500, p. 4.9-11.)

3. Water Resources and Supply

The Fremont Valley Groundwater Basin is located in the South Lahontan Hydrologic Region of the Mojave Desert. Surface water in the Fremont Valley originates in the surrounding mountains and flows toward Koehn Lake, a dry lake or playa, which is located approximately six miles northeast of the BSEP site. There is no surface water outflow from the Fremont Valley due to low precipitation rates, high soil infiltration rates, high evapotranspiration rates and the topographic low of Koehn Lake. The BSEP is located within the Koehn sub-basin of the Fremont Valley Groundwater Basin. (Ex. 500 pp. 4.9-5 through 4.9-6.)

During construction, the record indicates that water usage will be between 5 million and 10 million gallons per day (gpd), five days per week for a total period of 22 days per month for five months (or 110 days). Approximately 7,000 to 14,000 gallons per minute (gpm) of water will be required daily from seven wells to support initial construction activities. Following the initial five-month grading period, water will be used primarily for dust suppression and used in the construction of the solar field, power block and other site buildings and hydrostatic testing of the facility's pressure vessels and piping. Site construction

water use is expected to consume between 10,000 and 400,000 gpd for the remaining 22 months. During construction, total groundwater use is limited to 8,086 AFY. Potable water use would be limited to drinking water provided in bottles. Waterless portable facilities would be used for sanitary needs. (Ex. 500, p. 4.9-12.)

At the evidentiary hearing, CURE presented evidence on the issue of recycled water use during construction (3/22/10 RT 95:2-19). As to CURE's assertion that recycled water should be used during construction, CURE's expert specifically declined to testify to the feasibility of using recycled water during construction (5/22/10 RT 97:18-23). However, the countervailing evidence proved, and we find, that using recycled water during construction is infeasible due to the length of time it would take to construct the facilities and pipelines necessary to convey the recycled water to the BSEP site. The Rosamond recycled water option will take two years to complete and the California City option will take five years to complete. Total BSEP construction is expected to take 25 months, so neither recycled water option would be available prior to the completion of the construction of the BSEP. (3/22/10 RT 141:24-142:1; 145:11-16; 148:17-150:8; 185:5-7.)

During operations, BSEP will use recycled water imported from either the Rosamond Community Sanitary District (RCSD) or California City for power plant cooling. On a temporary basis, groundwater may be used for cooling purposes if the Applicant elects to use the California City recycled water option, as discussed below. The Applicant estimates that 1,388 AF of water will be consumed annually for power plant operation and potable water needs (see Condition of Certification **SOIL&WATER-1**). (Ex. 500, p. 4.9-12.)

If the California City recycled water supply is developed for project operation, then its use will be phased in over a five year period. During that time, groundwater may be used for cooling but will be phased out in accordance with the table below:

Operations Water Use – California City Alternative

California City Collection System Construction Year	Maximum Volume of Site Groundwater Extracted for BSEP Operation*
1 (end of month 12)	1,353AFY
2 (end of month 24)	1053 AFY
3 (end of month 36)	753 AFY
4 (end of month 48)	453 AFY
5 (end of collection system construction)	153 AFY

After the phase out of groundwater for cooling, or if the RCSD recycled water supply is developed for project use, Condition of Certification **SOIL&WATER-1** limits BSEP to use 153 acre feet per year (AFY) of on-site groundwater to meet non-cooling operational needs. The project owner may also use 47 AFY of groundwater for emergency purposes.

CURE argued that upgrades to the wastewater treatment facilities (WWTF) for both the RCSD and the California City options required the Energy Commission to perform an environmental impact analysis of the WWTFs in order to analyze the whole of the project. (CURE 4/19/10 Op. Brief, p. 19, et seq.) CURE relies on the California Supreme Court's decision in *Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376 ("*Laurel Heights I*"). While Staff did not agree with CURE *per se*, we granted Staff's motion to reopen the record to take further evidence on the environmental analysis of the two recycled water treatment options. (Staff Reply Brief 5/3/10.) At the second evidentiary hearing, Staff and Applicant presented abundant evidence to prove that both California City and RCSD will serve as the lead agency for the environmental analysis of their respective WWTF expansions under CEQA and that the planned upgrades will have minimal environmental impacts that are easily mitigable with standard conditions and BMPs which are likely to result in a mitigated negative declaration. Significantly, the evidence proves that the upgrades to either WWTF were conceived long before the BSEP and exist completely independently from the BSEP. (Exs. 340 - 342, 344 -356, 507, 515, 519, 520.)

Under *Laurel Heights I* (*supra*), the California Supreme Court created a two-prong test: An EIR must include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable ***consequence*** of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects. Absent these two circumstances, the future expansion need not be considered in the EIR for the proposed project." (emphasis added) (*Laurel Heights* at 396).

CURE's only evidence that the WWTF is a reasonably foreseeable consequence of the BSEP is a statement in the record made by a representative from RCSD that the construction of the planned expansions of their WWTF would not proceed "without a customer" (3/22/10 RT 141:2-17). CURE also cites a phrase in California City's letter of intent to supply tertiary treated water to BSEP (Ex. 506), which says that California City would be "expanding our Recycled Water

production to meet the needs of the Beacon Solar Project." (CURE Op. Brief, pp. 20-21).

CURE overlooks evidence that that BSEP is one of several other possible users of the tertiary treated water. Specifically, the Assistant General Manager of RCSD testified that the upgrade to tertiary treatment will happen with or without BSEP (3/22/10 RT 141:7-13; 145:17-24; 145:25-146:4). The proposed expansion is consistent with RCSD's development plans established over the last 10 years. The Initial Study and Negative Declaration for the proposed WWTP expansion was originally filed with the State Clearinghouse in October 1999 and certified by the RCSD Board on December 22, 1999. In that document, it was noted that "[S]pace has been provided in the proposed layout to allow for the phased expansion of the facility to an ultimate plant capacity of 2.34 mgd." The portion of the proposed upgrade to be funded as part of the BSEP would increase tertiary treatment capacity to 2.0 mgd; slightly less than the anticipated ultimate plant capacity envisioned in the 1999 environmental document. (Exs. 507, 512; 6/8/10 RT 49:20 – 75:21.)

Similarly, CURE ignores ample evidence that California City has been evaluating its infrastructure needs, including the expansion of the City's sewer system and WWTP, for the past eight years. Restrictions contained in the 1989 MOU with the Lahontan Regional Water Quality Control Board limits the City's ability to permit construction of residences at a density of more than two structures per acre in certain areas where sewage treatment is dependent on septic systems rather than public sewer. According to the California City's Director of Public Works, the City's Sewer Master Plan (September 30, 2002) anticipated the proposed expansion. He also noted that replacement of the existing network of septic systems is necessary if the City is to comply with the Kern Council of Governments Blueprint Program, the requirements of AB 32, SB 375, and related climate change policies. The City has awarded a contract and development of an *Upgrade Feasibility Plan for the California City Tertiary Waste Water Treatment Plant* is currently underway as the first step in expanding the WWTF which will need to be implemented regardless of the outcome of the proposed Beacon project. (Ex. 508, 512). The Director of Public Works testified unequivocally that the California City's WWTF will proceed with or without Beacon (3/22/10 RT 150:24 – 151:16; 6/8/10 RT 79:16 – 100:24.)

The word "consequence" implies a priority of cause and effect: a result. The BSEP AFC was filed in March of 2008. The original AFC contemplated using groundwater for cooling but chose recycled water as an alternative only as

recently as December of 2009. Applying the first prong of *Laurel Heights I,* we cannot say that either of the WWTFs are a reasonably foreseeable consequence of the BSEP because they pre-date BSEP by almost a decade. The impetus for the WWTFs is completely unrelated to the existence of BSEP which is simply a potential customer.

Applying the second prong of *Laurel Heights I*, there is nothing in the record to suggest that BSEP's use of tertiary treated water from *any* source would change the scope or nature of the project. BSEP will remain a 250 MW solar energy power plant and is so constrained by such limiting factors as land use and transmission system interconnection capacity that the mere availability of larger quantities of tertiary treated water would not alter its scope or nature. Accordigly, under *Laurel Heights I,* the upgrades to the two WWTFs need not be considered in the environmental analysis of the BSEP. We find, therefore, that since the WWTFs are not a part of the BSEP, the environmental analysis will properly be performed by RCSD and California City as the appropriate lead agencies.

a. Water Storage

A raw water storage tank with a capacity of 2,840,000 gallons capacity will hold 2,480,000 gallons of water for plant operations (a water supply sufficient to cover an 18-hour interruption) and 360,000 gallons of raw water dedicated to the plant's fire protection water system. The water would be treated with a biocide (sodium hypochlorite) prior to storage. There also would be a treated water tank with a capacity of 2,350,000 gallons for raw make-up water in the cooling towers and as support for domestic water use. Plant process water would be treated via ion exchange to reduce scale-forming concentrations entering the cooling water system. In addition, a 150,000-gallon tank would be utilized to store de-mineralized water, and an 80,000-gallon capacity storage tank would be used for neutralization of water treatment wastewater. (Ex. 500, p. 4.9-13.)

During plant operation, the estimated annual potable water demand is 8 AFY. With minimal treatment, groundwater from on-site wells could meet the potable water demands of the BSEP operations workforce. Condition of Certification **SOIL&WATER-1** requires BSEP to develop and implement a continuous groundwater well impact monitoring and mitigation program. (Ex. 500, p. 4.9-12.)

Because the project will use only a small volume of groundwater, the project is unlikely to affect groundwater quality. The evidence indicates that if BSEP uses the California City option, monitoring of groundwater in the California City area

shall be required due to the anticipated reduction in groundwater recharge resulting from collection and elimination of return flows from leachfields. In mitigation, the Applicant would establish an endowment fund for a Tamarisk Removal program that would include research, stakeholder coordination, mapping, removal, and monitoring. We find Compliance with Condition of Certification **SOIL&WATER-1**, which, *inter alia*, requires the project owner to monitor and mitigate impacts to groundwater, will minimize impacts to groundwater to a less than significant level. (Ex. 500, p. 4.9-33.)

4. Wastewater

The industrial wastewater system will collect blowdown from the Solar Steam Generator (SSG), circulating cooling water blowdown, chemical feed area drains, general plant drains and wastewater from the demineralization system and deliver the collected waste to the cooling tower basin. (Ex. 500, p. 4.9-13.)

For disposal of the collected wastewater, a partial ZLD will concentrate the wastewater, separating some treated water for industrial reuse and concentrating the remaining wastewater into a smaller volume of high TDS slurry. BSEP will dispose of the smaller volume of the high TDS slurry into three, 2 acre evaporation ponds, for a combined pond area of 6 acres. (Ex. 500, pp. 4.9-13 through 4.9-14.)

The evaporation ponds are designed with a base layer consisting of either a geosynthetic clay layer or a layer 2 feet thick of onsite soil material with a hydraulic conductivity of less than $1x10^{-6}$ centimeters per second, covered with a 40 mil high density polyethylene (HDPE) liner, that would be covered with an interstitial leak detection and removal system consisting of a geomembrane geonet and collection piping, in turn covered by a 60 mil HDPE liner covered with a hard surface/protective layer with granular fill/free draining sub-base. Evaporation pond monitoring will be required to detect the presence of liquid and/or constituents of concern emanating from the ponds in accordance with the Requirements of Waste Discharge established by the LRWQCB and presented in Condition of Certification **SOIL & WATER-3** and **Appendices E, F** and **H**. (Ex. 500, p. 4.9-14; 4.9-34.)

The sanitary wastewater system will collect wastewater from sinks, toilets, and other sanitary facilities and discharge those fluids to an onsite septic system. This sanitary wastewater system will be located in the power block area of the power plant site. **SOIL&WATER-2** requires the project owner to comply with the

requirements of the Kern County Environmental Health Services Department, regarding sanitary waste disposal facilities such as septic systems and leach fields. With these safeguards in place, we find wastewater impacts will be less than significant. (Ex. 500, p. 4.9-13.)

5. Cumulative Impacts and Mitigation

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. [14 Cal. Code Regs., § 15065(A)(3).] The discussion of cumulative impacts should be guided by standards of practicality and reasonableness. [Cal. Code Regs., tit. 14, § 15130(b).]

Construction and operation of the proposed project will result in both temporary and permanent changes at the project site. These changes could incrementally increase local soil erosion and storm water runoff. Potential project related soil erosion and increased sedimentation resulting from storm water runoff could be reduced to a level of insignificance through implementation of the mitigation measures, BMPs, project DESCP and implementation of the SWPPPs for the Construction and Industrial Activities as contained in the Conditions of Certification; along with compliance with all applicable erosion and storm water management LORS. (Ex. 500, p. 4.9-55.)

The record shows that the volume of groundwater used for construction of the BSEP could equal 8,086 AF over a 25-month period. After construction, the use of groundwater drops dramatically to 153 AFY and stays at that level for the life of the project. CURE argues that the cumulative impacts analysis is deficient for failure to consider the WWTFs' impact in conjunction with the BSEP (CURE's Opening Brief p. 37). However, given the distance between either of the treatment facilities (over 10 miles to California City and over 30 to RCSD) and the BSEP, the treatment facilities are outside the range of cumulative impacts analysis for the project (usually six miles). The BSEP is located within the Koehn sub-basin of the Fremont Valley Groundwater Basin. The Koehn Sub-basin is separated from the California City Sub-basin by the Randsburg-Mojave Fault. Groundwater currently flows across the fault from the California City Sub-basin to the Koehn Sub-basin, so the evidence shows that the BSEP impacts would not affect California City Sub-basin. Also, given the plan to expand both WWTFs within their existing fence line and the localized impacts of the individual projects,

their potential cumulative impacts will be negligible. Other projects occur within the site vicinity (Pine Tree Wind Farm and Barren Ridge Transmission Upgrade) were determined to not present a cumulative impact to the basin because of limited expected water use. The record indicates that impacts to the Koehn Sub-basin will be insignificant during the operation life of the BSEP. (Exs. 500, pp. 4.9-55 through 4.9-57, 4.1-34, 4.5-9, 4.12-9; 506, p. 4.2-127; 518).

At the second evidentiary hearing, CURE proffered evidence of three smaller photovoltaic (PV) projects proposed in the vicinity of the BSEP since March 2010. These projects were not part of the AFC nor were they filed in time to be included in Staff's analysis (Title 14 Cal. Code of Regs. §15126.2(a)). However, their Notices of Preparation of a Draft Environmental Impact Reports expressly state, "water and sewer services are not required." These three projects will not use local groundwater but will truck in water to wash the PV panels. This total cumulative water use for all three projects combined would amount to a mere 20.5 AFY. (Exs. 644, pp, 1, 44; 645, pp. 1, 48.) We therefore find that these proposed projects would not change the cumulative impacts analysis.

With the implementation of Condition of Certification **SOIL&WATER-1** which requires monitoring and mitigation of impacts to groundwater, we find that that the Conditions of Certification will minimize cumulative impacts to groundwater to a less than significant level.

6. Compliance with LORS

The following federal, state, and local environmental Laws, Ordinances, Regulations, and Standards (LORS) are applicable to the BSEP. BSEP's compliance with LORS ensures the most appropriate use and management of both soil and water resources. The requirements of these LORS are intended to protect human health and the environment. Refer to **APPENDIX A** of this Decision.

CURE argues in its opening and reply briefs that the BSEP use of "fresh potable groundwater" for power plant cooling violates LORS. (CURE Opening Brief, p. 6; CURE Reply Brief, p. 1, et seq.) Specifically, CURE claims the use of groundwater for cooling violates the Warren-Alquist Act. (Pub. Res. Code § 25008, Cal. Const., art. X § 2, Water Code § 13146, and State Water Resources Control Board (SWRCB) Resolutions 75-58 and 88-63 CURE Opening Brief, pp. 4-6.)

First, the section of the Warren-Alquist Act that CURE relies on sets forth the policy of the state and the intent of the legislature to "promote all feasible means of energy and water conservation and all feasible uses of alternative energy and water supply sources." (Pub. Res. Code § 25008.) Nothing in this statute specifically prohibits power plants from using fresh groundwater for cooling. Rather, the objective of promoting all feasible means of energy and water conservation is defined as a "policy." CURE overlooks the fact that the BSEP is using "alternative water supply sources," namely recycled wastewater. We find that BSEP's use of tertiary treated recycled water as an alternative water supply source complies with the policy articulated in the Warren-Alquist Act.

Second, CURE claims the BSEP violates section 2 of Article X of the California Constitution, but, like the Warren-Alquist Act section discussed above, this is not a prohibition against using fresh groundwater for power plant cooling, but a policy to be frugal with water and to put it towards a beneficial use. (Cal. Const., art., X § 2.) CURE also claims the BSEP violates Water Code § 13050 even though the statute specifically identifies "power generation" as a beneficial use of water. [Water Code § 13050(f).] Taken together, these LORS favor using recycled water for power plant cooling.

Finally, we agree with CURE that SWRCB Resolution 75-58 does not apply to the BSEP but neither does Resolution No. 88-63, since groundwater quality is not in dispute. We find nothing in Resolution No. 88-63 that prohibits using limited amounts of groundwater for the beneficial use of power generation.

The record is clear that the BSEP's primary source for power plant cooling is tertiary treated recycled water, not fresh groundwater. If the Rosamond option is selected, the project would only use groundwater in emergency situations, since normal operation will use 100 percent recycled water for cooling starting from the first day of operation. If the California City option is selected, some onsite groundwater will be used in decreasing amounts during the first five years as recycled water supply from California City increases (see section 3, Water Resources and Supply, above; Exhibit 337, Condition of Certification **SOIL&WATER-1**.) This temporary use of groundwater will enable the use of 100 percent recycled water for cooling as soon as California City can provide it. In converting from the septic system to the sewer system, California City will curtail the practice of leaching toxic septic wastewater into the Fremont Valley water basin. (3/22/10 RT 136:6-21.) We find the environmental benefits to using recycled water from California City far outweigh any minor impact that the

decreasing temporary use of groundwater the BSEP might cause. We find, therefore, that the BSEP will not violate any of the LORS cited by CURE.

CURE argues, separately, that the BSEP's use of "fresh potable groundwater" during construction violates the same LORS cited in the discussion above regarding groundwater use during operations. (CURE Opening Brief, p. 41; CURE Reply Brief, p. 58.) We disagree. For the same reasons that the BSEP will not violate LORS by using groundwater during operations as stated above, the BSEP will not violate LORS by using groundwater during construction. CURE's expert specifically declined to testify to the feasibility of using recycled water during construction (5/22/10 RT 97:18-23) and we have specifically found it infeasible, as explained in section 3 Water Resources and Supply, above.

7. Public Comment

Dawn Martin, president of the Rancho Seco Mutual Water Corporation, submitted a letter recommending a condition that requires the project owner to test the groundwater levels, chemical components and total coliform and E. coli on a monthly basis until 20 years after the closure of the plant. She also requests testing of the groundwater during construction every two weeks.

The record indicates that Condition of Certification **SOIL&WATER-1** requires the project owner to develop and implement a groundwater impact monitoring and mitigation program. The primary objective for the monitoring is to establish pre-construction and project related water level trends that can be quantitatively compared against observed and simulated trends near the project pumping wells, at the property boundary, and near potentially impacted existing wells. The Condition requires the creation of the Fremont Valley Groundwater Monitoring Committee to provide for land owner protection and include stakeholder participation in evaluation of project impacts. The monitoring committee's function will be to implement and oversee the groundwater monitoring program and to confer with the CPM to verify that there are no unacceptable impacts, as discussed in the Groundwater Impacts section in the FSA, to groundwater levels or to water quality in water supply wells adjacent to the BSEP. The Condition holds the project owner to rigorous reporting standards and the project owner will be responsible for any impacts to water quality caused by the construction and operation of the BSEP.

SOIL&WATER-2 requires the project owner to comply with the requirements of the Kern County Environmental Health Services Department, regarding sanitary

waste disposal facilities such as septic systems and leach fields. **SOIL&WATER-3** requires the project owner to develop and implement a Storm Water Pollution Prevention Plan (SWPPP) for the construction of the BSEP site, laydown area, and all linear facilities and there are 19 other conditions which protect the quality of the groundwater from BSEP impacts. The record shows that there are ample safeguards in place to protect the water supply. We would encourage Ms. Martin, or other designated representative of the Rancho Seco Mutual Water Corporation to get involved with the Fremont Valley Groundwater Monitoring Committee.

Lorelei Oviatt, Acting Planning Director of the Kern County Planning Department and commenting on behalf of the Kern County Board of Supervisors stated "[w]e believe that the mitigation for water and other environmental impacts that we brought up earlier in the process have been addressed." (3/22/10 RT 384:10-14.)

FINDINGS OF FACT

1. The total site grading will amount to approximately 8,300,000 cubic yards of soil being moved at the BSEP.

2. Adherence to the procedures in the construction SWPPP and DESCP will conserve soil resources, maintain water quality, prevent accelerated soil loss, and protect air quality.

3. The BMPs identified in the record and contained in Condition of Certification **SOIL&WATER-3** will avoid significant soil erosion and subsequent sedimentation during construction.

4. Condition of Certification **SOIL&WATER-5** requires implementation of BMPs in the construction of the water pipelines from Rosamond and California City to avoid significant soil erosion and sedimentation.

5. During operation, Conditions of Certification **SOIL&WATER–4** and **SOIL&WATER-5** will require BSEP to obtain Compliance Project Manager CPM approval prior to implementation of the SWPPP and the site-specific final DESCP that addresses storm water project elements including site runoff, retention, detention (if necessary), and BMPs to protect soil and water resources.

6. With the implementation of proposed mitigation measures in and Conditions of Certification **SOIL&WATER-3, -4,** and **-5,** including the construction and operation SWPPPs, the project will not contribute significantly to cumulative erosion and sedimentation impacts.

7. The BSEP will fill the existing creek channel and reroute Pine Tree Creek around the south and east periphery of the solar facility.

8. BSEP's SWPPP and DESCP establish methods to control and manage storm water flow as it reaches the project, flows across the project, and then leaves the project.

9. The Applicant must submit an application for a Letter of Map Revision to FEMA to revise the effective SFHA pursuant to Condition of Certification **SOIL&WATER–6** to ensure the proposed power block will not be located within a FEMA designated floodplain.

10. Condition of Certification **SOIL&WATER–3** and proper application of BMPs will reduce the storm water impacts to water quality and soil and water resources to less than significant levels.

11. With implementation of the Conditions of Certification **SOIL&WATER-4 and -5**, storm water runoff from the site as well as potential nuisance flows from plant operation and maintenance will not cause significant impacts to the receiving waters.

12. The record establishes that upon implementation of **SOIL&WATER–9** through **SOIL&WATER-17**, there will not be significant flood-related impacts attributable to the diversion channel for peak discharges less than 28,000 cfs..

13. During construction, total groundwater use is limited to 8,086 AFY.

14. Using recycled water during construction is infeasible due to the length of time it would take to construct the facilities and pipelines necessary to convey the recycled water to the BSEP site.

15. Condition of Certification **SOIL&WATER-1** allows BSEP to use 153 acre feet per year (AFY) of on-site groundwater to meet non-cooling operational needs and 47 AFY of groundwater for emergency purposes.

16. A raw water storage tank with a capacity of 2,840,000 gallons capacity will hold 2,480,000 gallons of water for plant operations and 360,000 gallons of raw water dedicated to the plant's fire protection water system.

17. During plant operation, the estimated annual potable water demand is 8 AFY.

18. Compliance with Condition of Certification **SOIL&WATER-5**, which requires the project owner to prepare an industrial SWPPP, will minimize impacts to surface and groundwater to a less than significant level.

19. Because the project will use only a small volume of groundwater, the project is unlikely to affect groundwater quality.

20. Upgrades to the RCSD and California City WWTFs are not a part of the BSEP

21. Compliance with Condition of Certification **SOIL&WATER-1**, which requires the project owner to monitor and mitigate impacts to groundwater, will minimize impacts to groundwater to a less than significant level.

22. Wastewater impacts will be less than significant.

23. BSEP's use of tertiary treated recycled water as an alternative water supply source complies with the policy articulated in the Warren-Alquist Act.

24. The environmental benefits to using recycled water from California City far outweigh any minor impact that the decreasing temporary use of groundwater the BSEP might cause.

25. BSEP will not violate LORS by using groundwater during construction or operations.

26. The BSEP will not result in any unmitigated, significant project-specific or cumulative adverse impacts to Soil or Water Resources.

CONCLUSIONS OF LAW

1. The BSEP will comply with all applicable LORS with implementation of the Conditions of Certification as set forth herein.

2. The BSEP will use recycled water for cooling and is therefore consistent with the Warren-Alquist Act (Pub. Res. Code § 25008), Article X § 2 of the California Constitution, Water Code § 13146, and State Water Resources Control Board (SWRCB) Resolutions 75-58 and 88-63.

CONDITIONS OF CERTIFICATION

SOIL&WATER-1: If the Energy Commission approves the use of site groundwater for power plant construction and/or operation, the project owner shall be limited to using no more than 1,388 AFY. The project owner shall also develop and implement a groundwater impact monitoring and mitigation program. The

monitoring and mitigation program shall be consistent with the intent of **SOIL&WATER APPENDIX I**, attached to the FSA. The primary objective for the monitoring is to establish pre-construction and project related water level trends that can be quantitatively compared against observed and simulated trends near the project pumping wells, at the property boundary, and near potentially impacted existing wells. Specifically, the project owner shall do all of the following:

A. Prior to construction,

1. Create the Fremont Valley Groundwater Monitoring Committee, in accordance with provisions set forth in Staff's FSA **SOIL&WATER APPENDIX I**, to provide for land owner protection and include stakeholder participation in evaluation of project impacts. The monitoring committee's function will be to implement and oversee the groundwater monitoring program and to confer with the CPM to verify that there are no unacceptable impacts, as discussed in the Groundwater Impacts section of this FSA, to groundwater levels or to water quality in water supply wells adjacent to the BSEP.
2. Identify and secure access to the wells predicted by the "Zero Recharge" simulation run (see Groundwater Impacts section of this FSA), to allow monitoring of groundwater levels and quality of those wells. Any new wells within the potentially impacted area not previously identified shall also be included in the monitoring network. Abandoned wells, or wells no longer in use, that are accessible and provide reliable water level data shall also be included as part of the monitoring network.
3. In addition to the Zero Recharge wells discussed above, identify and include all available wells between the BSEP site and California City, in both the Koehn and California City sub-basins, into the monitoring network. Inclusion of these wells into the monitoring network is necessary to assess potential changes in hydraulic gradients and subsurface flow between sub-basins.
4. At least 30-days prior to project construction, accessible abandoned or unused wells within the monitoring network shall be instrumented with recorders to track groundwater levels during project construction. The water level recorders shall continuously collect and store the data every four hours and shall be serviced at least quarterly.
5. Obtain all historic water level and water quality data for each water supply well where access to monitor groundwater

conditions has been obtained. Additionally, obtain well construction information (completion depth, well screen depth interval, and pump intake depth), historic well performance data, including pumping and non-pumping water levels, and pump specifications for each of those wells.

6. Update the groundwater data presented in the AFC with all new information obtained from the wells where access to monitor groundwater conditions has been obtained.

7. Prepare time series graphs for water level and total dissolved solids (TDS) concentrations data for each well where information is available.

8. Perform statistical trend analysis using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data to statistically analyze the data. Determine the significance of an apparent trend and estimate the magnitude of that trend.

9. Collect groundwater levels from the off-site and on-site wells and collect and analyze groundwater samples for TDS concentrations to provide baseline groundwater levels and TDS concentrations for both on-site and off-site wells. Groundwater samples shall be analyzed for TDS by a California Certified Analytical Laboratory in accordance with Standard Methods 2540C.

10. Map TDS data and groundwater levels within the Koehn Sub-basin from the groundwater data collected prior to construction. Update trend plots and statistical analyses, as data is available.

B. During Construction:

1. Collect water levels and TDS concentrations within the monitoring network on a quarterly basis throughout the construction period, and at the end of the construction period. The continuous monitoring discussed in item A.4, above shall continue a minimum of 30-days after completion of project construction. Perform statistical trend analysis using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data to statistically analyze the data. Determine the significance of an apparent trend and estimate the magnitude of that trend.

C. During Operation:

1. On a quarterly basis for the first five years of operation, collect water level measurements and TDS data from the wells identified in the groundwater monitoring program to evaluate operational influence from the project. Quarterly operational parameters (i.e., pumping rate) of the water supply wells shall be monitored. Additionally, quarterly groundwater-use in the Koehn sub-basin shall be estimated and the values submitted to the Fremont Valley Basin Groundwater Monitoring Committee for evaluation and consultation with the CPM.

2. On an annual basis, perform statistical trend analyses using Mann-Kendall Trend Test and Sen's Slope Estimator for water levels and the TDS data to statistically analyze the data. The significance of an apparent trend shall be determined and the magnitude of that trend estimated. Based on the results of the statistical trend analyses, the project owner shall determine if the project pumping has induced a drawdown in the water supply at a level of ten feet or more below the baseline trend.

3. If water levels have been lowered below pre-site operational trends, and monitoring data provided by the project owner show these water level changes are different from background trends and are caused by project pumping, then the project owner shall provide mitigation to the well owner(s).Mitigation shall be provided if the CPM's inspection of the well monitoring data confirms changes to water levels and water level trends relative to measured pre-project water levels, and the well yield has been lowered by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline and site specific well construction and water use characteristics. The mitigation of impacts will be determined as follows:

   a. If project pumping has lowered water levels and increased pumping lifts, increased energy costs shall be calculated in accordance with item **SOIL & WATER-1l** above. Payment or reimbursement for the increased costs shall be provided at the option of the affected well owner.

   b. If groundwater monitoring data indicate project pumping has lowered water levels below the top of the well screen, and the well yield is shown to have decreased by 10-percent or more of the initial yield, compensation shall be provided for the diagnosis and maintenance to treat and remove encrustation from the well screen.

Reimbursement shall be provided at an amount equal to the customary local cost of performing the necessary diagnosis and maintenance for well screen encrustation. Should well yield reductions be reoccurring, the project owner shall provide payment or reimbursement for either periodic maintenance throughout the life of the project or, if treatment is anticipated to be required more frequently than every 3-5 years, replacement of the well.

c. If project pumping has lowered water levels to significantly impact well yield or cause casing collapse, payment or reimbursement of an amount equal to the cost of deepening or replacing the well shall be provided to accommodate these effects. Payment or reimbursement shall be at an amount equal to the customary local cost of deepening the existing well or constructing a new well. The demand for water, which determines the required well yield, shall be determined on a per well basis using well owner interviews and field verification of property conditions and water requirements compiled as part of the pre-project well reconnaissance. Well yield shall be considered significantly impacted if it is incapable of meeting 150-percent of the well owner's maximum daily demand, dry-season demand, or annual demand – assuming the pre-project well yield documented by the initial well reconnaissance met or exceeded these yield levels. For already low-yielding wells identified prior to project construction, a reduction due solely to project pumping of 10-percent or more below the pre-project yield shall be considered a significant impact. The contribution of project pumping to observed decreases in observed well yield shall be determined using the groundwater monitoring data collected.

d. Electrical cost reimbursement – If the pumping water level falls below a depth of 10 feet from an average of the baseline measurements, the well owner shall be compensated by the project owner for the additional electrical costs commensurate with the additional lift required to pump. The water level in the well will be assessed relative to the pumping rate established during the pre-site development period.

e. Where it is determined by the CPM that the project owner shall reimburse a private well owner for

increased energy costs, the project owner shall calculate the compensation owed to the owner of any impacted well as described below.

Increased cost for energy	= change in lift/total system head x total energy consumption x costs/unit of energy

Where:

change in lift (ft)	= calculated change in water level in the well resulting from project
total system head (ft)	= elevation head + discharge pressure head
elevation head (ft)	= difference in elevation between wellhead discharge pressure gauge and water level in well during pumping.

discharge pressure head (ft) = pressure at wellhead discharge gauge (psi) X 2.31

f. The project owner shall notify all owners of the impacted wells within one month of the CPM approval of the compensation analysis for increased energy costs.

g. Compensation shall be provided on either a one-time lump-sum basis, or on an annual basis, as described below:

Annual Compensation: Compensation provided on an annual basis shall be calculated prospectively for each year by estimating energy costs that will be incurred to provide the additional lift required as a result of the project. With the permission of the impacted well owner, the project owner shall provide energy meters for each well or well field affected by the project. The impacted well owner to receive compensation must provide documentation of energy consumption in the form of meter readings or other verification of fuel consumption. For each year after the first year of operation, the project owner shall include an adjustment for any deviations between projected and actual energy costs for the previous calendar year.

One-Time Lump-Sum Compensation: Compensation provided on a one-time lump-sum basis shall be based on a well-interference analysis, assuming the maximum project-pumping rate of 20.8 AFY. Compensation associated with increased pumping lift for the life of the project shall be estimated as a lump sum payment using the following criterion:

- The current cost of energy to the affected party considering time of use or tiers of energy cost applicable to the party's billing of electricity from

the utility providing electric service, or a reasonable equivalent if the party independently generates their electricity;

- An annual inflation factor for energy cost of 3 percent; and
- A net present value determination assuming a term of 30 years and a discount rate of 9 percent.

h. Pump lowering – In the event that groundwater is lowered to an extent where pumps are exposed but well screens remain submerged the pumps shall be lowered to maintain production in the well. All costs associated with lowering pumps shall be borne by the project owner.

i. Deepening of wells – If the groundwater is lowered enough that well screens are exposed, pump lowering is not an option. In this case, the wells shall be deepened or new wells constructed. All costs associated with deepening existing wells or constructing new wells shall be borne by the project owner.

4. After the first five-year operational and monitoring period, the CPM, after consultation with the Fremont Valley Basin Groundwater Monitoring Committee, shall evaluate the data and determine if the monitoring program water level measurements and TDS sampling frequencies should be revised or eliminated. Revision or elimination of any monitoring program elements shall be based on the consistency of the data collected. The determination of whether the monitoring program should be revised or eliminated shall be made by the CPM after consultation with the Fremont Valley Basin Groundwater Monitoring Committee.

5. At the end of every subsequent five-year monitoring period, the collected data shall be evaluated by the CPM after consultation with the Fremont Valley Basin Groundwater Monitoring Committee and the CPM shall determine if the sampling frequency and TDS sampling should be revised or eliminated.

6. Comply with Condition of Certification **SOIL & WATER -19**, which requires metering of water used for power plant construction and operation.

7. During the life of the project, the project owner shall provide to the CPM and Fremont Valley Basin Groundwater Monitoring Committee, all monitoring reports, complaints, studies and other relevant data within 10 days of being received by the project owner.

Verification: The project owner shall do all of the following:

1. At least 60 days prior to start of construction, the project owner shall submit to the CPM a list identifying the members of the Fremont Valley Basin Groundwater Monitoring Committee and each member's written agreement to participate in accordance with the Committee's stated purpose and function and assist the project owner in implementing the groundwater monitoring program.

2. At least 30 days prior to project construction, the project owner shall submit to the CPM, a comprehensive report presenting all the data and information required in items **SOIL&WATER–1.A.2** through **-1.A.9**.

   The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations, along with any agreement or dissenting opinions voiced by Committee members or local well owners on the data, calculations and assumptions used in development of the report.

3. During project construction, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in items **SOIL&WATER–1.B.1** through **-1.B.2**.

   The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations, along with any agreement or dissenting opinions voiced by Committee members or local well owners on the data, calculations, and assumptions used in development of the report.

4. No later than 60 days prior to project operation, the project owner shall provide to the CPM for review and approval, documentation showing that any mitigation to private well owners during project construction was satisfied, based on the requirements of the property owner as determined by the CPM.

5. During project operation, the project owner shall submit to the CPM, applicable quarterly and annual reports presenting all the data and information required in items **SOIL&WATER–1.C.1** through **-1.C.7**.

   The project owner shall submit to the CPM all calculations and assumptions made in development of report data and interpretations, along with any agreement or dissenting opinions voiced by Committee members or local well owners on the data, calculations, and assumptions used in development of any reports.

6. The project owner shall provide mitigation as described in **SOIL&WATER-1.C.3**, if the CPM's inspection of the monitoring information confirms changes to water levels and water level trends relative to measured pre-project water levels, and well yield has been lowered by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline

and site specific well construction and water use characteristics. The mitigation of impacts will be determined as set forth in **SOIL&WATER-1.C.3**.

7. If mitigation includes monetary compensation, the project owner shall provide documentation to the CPM that compensation payments have been made by March 31 of each year of project operation or, if lump-sum payment is selected, payment is made by March 31 following the first year of operation only. Within 30 days after compensation is paid, the project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition.

After the first five year operational and monitoring period, the project owner shall submit a 5 year monitoring report to the Fremont Valley Basin Groundwater Monitoring Committee and to the CPM that submits all monitoring data collected and provides a summary of the findings. After consultation with the Fremont Valley Basin Groundwater Monitoring Committee, the CPM will determine if the water level measurements and TDS sampling frequencies should be revised or eliminated.

SOIL&WATER-2: The project owner will comply with the requirements of the Kern County Environmental Health Services Department, regarding sanitary waste disposal facilities such as septic systems and leach fields.

Verification: The project owner will submit all necessary information and the appropriate fee to the county of Kern to ensure that the project has complied with the county's sanitary waste disposal facilities requirements. A written assessment prepared by Kern County of the project's compliance with these requirements must be submitted to the CPM for review and approval 30-days prior to the start of power plant operation.

SOIL&WATER-3: The project owner shall comply with the Waste Discharge Requirements for discharge of storm water associated with construction activity that are presented in **Soil and Water Appendices E, F, G** and **H** of the FSA and submit the appropriate compliance fee to the LRWQCB. The project owner shall develop, obtain compliance project manager (CPM) approval of, and implement a Storm Water Pollution Prevention Plan (SWPPP) for the construction of the BSEP site, laydown area, and all linear facilities.

Verification: At least 60 days prior to site mobilization, the project owner shall submit to the CPM and LRWQCB, a copy of the construction SWPPP for review and CPM approval prior to site mobilization. The project owner shall also submit to the CPM evidence of payment to LRWQCB of the appropriate compliance fee. The project owner shall retain a copy of the SWPPP on site. The project owner shall submit to the CPM copies of all correspondence between the project owner

and the LRWQCB regarding the Waste Discharge Requirements for the discharge of storm water associated with construction activity within 10 days of its receipt or submittal.

SOIL&WATER-4: The project owner shall comply with the requirements of the Waste Discharge Requirements in **Soil and Water Appendices E, F, G and H** of the FSA, for discharges of process water and storm water associated with industrial activity. The project owner shall develop, obtain CPM approval of, and implement an industrial SWPPP for the operation of the project.

Verification: At least 60 days prior to commercial operation, the project owner shall submit to the CPM a copy of the industrial SWPPP for operation of the project for review and approval prior to commercial operation. The project owner shall retain a copy on site. The project owner shall submit copies to the CPM of all correspondence between the project owner and the LRWQCB regarding the Requirements of Waste Discharge of process water and storm water associated with industrial activity within 10 days of its receipt or submittal. Copies of correspondence shall include the Notice of Intent sent by the project owner to the SWRCB.

SOIL&WATER-5: Prior to site mobilization, the project owner shall obtain CPM approval for a site specific DESCP that ensures protection of water quality and soil resources of the project site and all linear facilities for both the construction and operation phases of the project. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, and identify all storm water monitoring and maintenance activities. The project owner shall complete all necessary engineering plans, reports, and documents necessary for Kern County to conduct a review of the proposed project and provide its written evaluation as to whether the proposed grading, drainage improvements, diversion channel design, and flood management activities comply with all county requirements. The project owner shall ensure compliance with all county standards and requirements for grading, erosion control, and flooding for the life of the project. The plan shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1,** and with requirements described in Condition of Certification **BIO-18**. The DESCP shall contain the following elements:

- ***Vicinity Map*** – A map shall be provided indicating the location of all project elements with depictions of all significant geographic features to include watercourses, washes, irrigation and drainage canals, major utilities, and sensitive areas, such as Waters of the State.

- ***Site Delineation*** – The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, underground utilities, roads, and drainage facilities. Adjacent property owners shall be identified on the plan maps. All maps shall be presented at a legible scale

- ***Drainage*** – The DESCP shall include the following elements suitable for submittal to FEMA as part of compliance with Condition of Certification **SOIL&WATER-6**:

  a. Topography – Topography for offsite areas are required to define the existing upstream tributary areas to the site and downstream to provide enough definition to map the existing Pine Tree Creek flood hazard. Spot elevations shall be required where relatively flat conditions exist.

  b. Proposed Grade – Proposed grade contours shall be shown at a scale appropriate for delineation of onsite sub-basins, drainage ditches, pond contours, diversion channel, and tie-ins to the existing topography.

  c. Hydrology - Existing and proposed hydrologic calculations for on-site areas and offsite areas that drain to the site; include maps showing the drainage area boundaries and sizes in acres, topography and typical overland flow directions, and show all existing, interim, and proposed drainage infrastructure and their intended direction of flow.

  d. Hydraulics - Provide hydraulic calculations to support the selection and sizing of the onsite drainage network, retention facilities and best management practices (BMPs). Design calculations and the results of the hydraulic backwater model for the Pine Tree Creek diversion channel shall be included.

  e. Channel Stabilization Plan – The Project Owner shall present methods to mitigate for adverse hydraulic conditions (high velocities, high shear stress, Froude Numbers greater than 0.8) in the proposed diversion channel. Channel plan and profile maps showing water surface elevations, channel slope, bank protection, channel stabilization elements. Channel bank elevations shall also be identified.

Watercourses and Critical Areas – The DESCP shall show the location of all nearby watercourses including washes,

irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site. Maps shall identify high hazard flood prone areas:

a. FEMA Regulated Special Flood Hazard Areas (Effective floodplain from DFIRM) shall be shown on site as well as upstream and downstream within 2,000 feet from the BSEP property boundary;

b. Existing Conditions 100-year Floodplain – Shall be continuous with the effective floodplain; and

c. Proposed (Revised) Conditions 100-year Floodplain – Shall be continuous with the effective floodplain.

- ***Clearing and Grading*** – The plan shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, cut/fill depths or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Proposed contours shall tie into existing topography. The DESCP shall include a statement of the quantities of material excavated at the site, whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there would be no clearing and/or grading conducted for each element of the project. Areas of no disturbance shall be properly identified and delineated on the plan maps.
- ***Project Schedule*** – The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element and diversion channel excavation, and construction, and final grading/stabilization). The project schedule shall identify the construction sequence for the Pine Tree Creek diversion channel. Separate BMP implementation schedules shall be provided for each project element for each phase of construction.
- ***Best Management Practices*** – The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during project element excavation and construction, during final grading/stabilization, and after construction. BMPs shall include measures designed to control dust and

stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs, including application of soil stabilizers, applied to disturbed areas following construction.

- ***Erosion Control Drawings*** – The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer (PE) or a Certified Professional in Erosion and Sediment Control (CPESC).
- ***Agency Comments*** – The DESCP shall include copies of recommendations, conditions, and provisions from Kern County, CDFG, and LRWQCB.
- ***Monitoring Plan*** – Monitoring activities shall include routine measurement of the volume of accumulated sediment in the onsite drainage ditches, storm water retention basins, and the diversion channel.

  Additional monitoring requirements shall be presented in a Desert Wash Mitigation and Monitoring Plan as discussed in Condition of Certification BIO-18.
- ***Maintenance Plan –*** The maintenance plan shall identify activities and procedures needed to maintain capacity within all onsite drainage ditches, and the drainage ditch that currently diverts flow along the western property boundary. Channel maintenance may include BMP repairs, bank stabilization, debris removal, grade control, and revegetation. The maintenance plan shall support the objectives of the revegetation plan and mitigation effort. Maintenance activities must also include removal of accumulated sediment from all retention basins when an average depth of 0.5 feet of sediment has accumulated in the retention basin. The maintenance plan shall be developed in accordance with the activities and procedures identified for the Pine Tree Creek diversion channel as part of compliance with Condition of Certification **SOIL&WATER-7** and **SOIL&WATER-8**.

Verification: The project owner shall do all of the following:

1. No later than 90 days prior to start of site mobilization, the project owner shall submit a copy of the DESCP to Kern County and the LRWQCB for review and comment. A copy shall be submitted to the CPM no later than 60 days prior to the start of site mobilization for review and approval. The CPM shall consider comments received from both Kern County and LRWQCB.

2. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage-, erosion- and sediment-control measures and the results of monitoring and maintenance activities.

3. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities.

4. Provide the CPM with two (2) copies of all monitoring or other reports required for compliance with Kern County, CDFG, and LRWQCB.

5. Provide Kern County, LRWQCB and the CPM with quarterly maintenance activity reports for all onsite drainage ditches and the drainage ditch that currently diverts flow along the western property boundary. These reports shall also provide an account of any significant runoff event and will describe channel performance.

SOIL&WATER-6: In accordance with Kern County's Floodplain Management Ordinance and 44 CFR 65.12, the project owner shall prepare all necessary engineering plans and documents to support a Conditional Letter of Map Revision (CLOMR) application submittal to FEMA. The project shall not commence construction in the SFHA until Kern County receives from FEMA an approved CLOMR. Following construction, the Project Owner shall prepare all necessary documents required for a final Letter of Map Revision (LOMR). The project owner shall use FEMA's Guidelines and Specifications for Mapping Partners for guidance. The project owner shall:

a. Prepare hydrologic analyses to estimate the 10-, 2-, 1-, and 0.2-percent annual chance flood events for the Pine Tree Creek watershed. The analyses shall be conducted using numerical models approved by FEMA;

b. Prepare preliminary (30%) design drawings for the channel, include typical channel cross section dimensions, typical details for all structural elements needed to protect the channel from erosion, and a grading plan for proposed conditions that ties into existing topography;

c. Conduct hydraulic analyses for existing and proposed conditions. Plot the water surface and energy grade line profile for the constructed channel. Tie the proposed conditions water surface elevation profile into the water surface profile from the existing hydraulic model upstream and downstream of the site;

d. Prepare flood hazard mapping for the existing and proposed conditions. Floodplain mapping shall tie-into the upstream and downstream special flood hazard mapping shown on the effective DFIRM;

e. Provide notification to all adjacent property owners, impacted by the proposed change to the SFHA;

f. Complete the necessary FEMA MT-2 application forms package and pay all applicable CLOMR review fees. The submittal shall be certified by a California-licensed professional engineer; and

g. Address all FEMA review comments as needed to receive an approved CLOMR.

Prior to mobilization, the Project Owner shall receive confirmation from Kern County that FEMA has issued a CLOMR for the BSEP. The Project Owner shall address all "conditions" in the CLOMR during project construction. No later than six months after the end of construction, the project owner, through a request from Kern County, must notify FEMA of the changes in accordance with 44 CFR 65.3. The Project Owner shall submit the following technical or scientific data as part of a Letter of Map Revision (LOMR) request:

h. Conduct an As-Built survey of the completed construction;

i. Update the Proposed Conditions Model to reflect the As-Built Revised Conditions and delineate the resulting flood hazards;

j. Complete the necessary FEMA MT-2 application forms package and pay all applicable LOMR review fees. The submittal shall be certified by a California-licensed professional engineer;

k. Address all FEMA review comments as needed to receive approval of the LOMR; and

l. Notify the CPM of the approved LOMR.

Verification: The project owner shall do all of the following:

1. Submit a copy of the draft application for a CLOMR, to include all backup calculations and the preliminary design drawings, to the CPM 60 days prior to sending the request to FEMA.

2. No later than thirty (30) days after receiving notification from FEMA that all required CLOMR or LOMR documents have been received by FEMA, the Project Owner shall notify the CPM that the project is currently being reviewed by FEMA. During the review process, the project owner shall submit all correspondence between FEMA and project owner's engineer representative responsible for addressing FEMA's comments.

3. Prior to construction activity within the effective SFHA the Project Owner shall provide a copy of the CLOMR to the CPM for verification.

4. Following construction of the channel improvements, the Project Owner shall complete an As-built survey of the improvements, update the hydraulic model, and prepare a final submittal, to include forms and fees, for a FEMA LOMR request. The Project Owner shall submit a copy of the completed LOMR submittal to the CPM and Kern County for review.

5. No later than thirty (30) days after receiving notification from FEMA that the LOMR has been issued to Kern County the project owner shall submit a copy of the LOMR to the CPM for verification.

SOIL&WATER-7: The project owner shall coordinate with a public entity to establish a BSEP Maintenance District. The project owner shall be responsible for maintaining the integrity, engineering design, and design discharge capacity of the rerouted Pine Tree Creek channel. The maintenance district shall be formed with consideration of all appropriate Waste Discharge requirements presented in **Soil and Water Appendices E** through **H** of the FSA. The project owner shall also ensure that the BSEP Maintenance District manages utility crossings of the rerouted Pine Tree Creek channel. The Project Owner shall develop the Maintenance District according to the stream alteration agreement as described in the Biological Resources section and in accordance with Condition of Certification **BIO-18**. Funding for the maintenance district shall be provided by the project owner in perpetuity. The project owner shall ensure the following duties are performed:

1. In coordination with the public entity, develop and supervise the implementation of a Channel Maintenance Program in accordance with conditions of certification;

2. Consult with the Maintenance District Manager on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP);

3. Be available to coordinate with the Designated Biologist on mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance

or containing sensitive biological resources, such as special-status species or their habitat, as they relate to maintenance district responsibilities;

4. Notify the CPM of any non-compliance with conditions of certification related to the maintenance district;

5. Respond directly to inquiries of the CPM regarding the maintenance district or the Channel Maintenance Program;

6. Maintain written records of the tasks specified above and those included in the Channel Maintenance Program. Summaries of these records shall be provided to the CPM, as required, per the conditions of certification;

7. Train the Maintenance District personnel as appropriate, and ensure their familiarity with the Channel Maintenance Program;

8. Manage utility crossings at the Diversion Channel;

9. Develop the Maintenance District's CIP Plan and manage the available funds;

10. Be available to coordinate with the public entity during emergency repairs conducted by the Maintenance District;

11. Report to the CPM and the public entity annually the Maintenance District's available funds and annual costs each year since the District was created.

Verification: Prior to receiving a FEMA approved CLOMR, required as a part of Condition of Certification **SOIL & WATER -6**, the Project Owner shall receive written consent from a public entity allowing BSEP to create a special maintenance district. The project owner shall provide a copy of the final Maintenance Agreement to the CPM for approval and shall include a detailed discussion of the funding mechanism for the Channel Maintenance Program and Capital Improvement Projects. The maintenance agreement shall report the name and contact information of the Maintenance District supervisor.

SOIL&WATER-8: Following creation of the Maintenance District, the project owner shall coordinate with the public entity and the Maintenance District supervisor to develop and implement a Channel Maintenance Program that provides long-term guidance to the Maintenance District to implement routine channel maintenance projects and comply with conditions of certification in a feasible and environmentally-sensitive manner.

The Channel Maintenance Program will be a process and policy document prepared by the project owner, reviewed by the CPM and the public entity, and adopted by the Maintenance District.

The project owner is responsible for implementing a Channel Maintenance Program as presented in **Soil and Water APPENDIX J**, attached to the FSA. The Channel Maintenance Program shall be developed in consultation with the Maintenance District and the public entity and shall include the following:

1. **Purpose and Objectives** – establishes the main goals of the Program, of indefinite length, to maintain the diversion channel to meet its original design to provide flood protection, support BSEP mitigation, protect wildlife habitat and movement/ migration, and maintain groundwater recharge.

2. **Application and Use** - The channel maintenance work area is defined as the BSEP engineered channel, typically extending to the top of bank, include access roads, and any adjacent property that BSEP or the District owns or holds an easement for access and maintenance. The Program would include Pine Tree Creek maintenance as needed to protect the BSEP facilities.

3. **Channel Maintenance Activities**

   a. **Sediment Removal** - sediment is removed when it: (1) reduces the diversion channel effective flood capacity, to less than the design discharge, (2) prevents appurtenant hydraulic structures from functioning as intended, and (3) becomes a permanent, non-erodible barrier to instream flows.

   b. **Vegetation Management** - manage vegetation in and adjacent to the diversion channel to maintain the biological functions and values proposed in the mitigation. Vegetation management shall include control of invasive or nonnative vegetation as prescribed in Condition of Certification **BIO-18**.

   c. **Bank Protection and Grade Control Repairs** - Bank protection and grade control structure repairs involve any action by the District to repair eroding banks, incising toes, scoured channel beds, as well as preventative erosion protection. The District would implement instream repairs when the problem (1) causes or could cause

significant damage to BSEP, adjacent property, or the structural elements of the diversion channel, (2) is a public safety concern, (3) negatively affects groundwater recharge, or (4) negatively affects the mitigation vegetation, habitat, or species of concern.

d. **Routine Channel Maintenance** - trash removal and associated debris to maintain channel design capacity; repair and installation of fences, gates and signs; grading and other repairs to restore the original contour of access roads and levees (if applicable); and removal of flow obstructions at BSEP storm drain outfalls.

e. **Channel Maintenance Program –** Exclusions including: emergency repair and CIP.

4. **Related Programmatic Documentation** – CPM will review and approve the Channel Maintenance Program programmatic documentation. Maintenance activities shall comply with the stream alteration agreement provisions and requirements for channel maintenance activities consistent with California's endangered species protection regulations and with NFIP regulations.

5. **Channel Maintenance Process Overview**

a. **Program Development and Documentation** – This documentation provides the permitting requirements for channel maintenance work in accordance with the conditions of certification for individual routine maintenance of the engineered channel without having to perform separate CEQA review or obtain permits.

b. **Maintenance Guidelines** - based on two concepts: (1) the maintenance standard and (2) the acceptable maintenance condition, and applies to sediment removal, vegetation management, trash and debris collection, blockage removal, fence repairs, and access road maintenance.

c. **Implementation** – Sets Maintenance Guidelines for vegetation and sediment management. BSEP's vegetation management activities are established in Condition of Certification **BIO-18**. Maintenance Guidelines for sediment removal provide information on the allowable depth of sediment for the engineered channel that would continue to provide design discharge protection. The final determination on allowable sediment

accumulation will be studied by the applicant as part of compliance with Condition of Certification **SOIL&WATER-7**.

d. Reporting – CPM requires the following reports to be submitted each year as part of the ACR:

i. Channel Maintenance Work Plan - Describes the planned “major” maintenance activities and extent of work to be accomplished; and

ii. Channel Maintenance Program Annual Report - Specifies which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed).

iii. A report describing "Lessons Learned" to evaluate the effectiveness of both resource protection and maintenance methods used throughout the year.

6. Resource Protection Policies - establishes policies to ensure that resources would be protected to the fullest extent feasible during routine channel maintenance activities. Policies would be developed to guide decision-making for channel maintenance activities. BMPs shall be developed to implement these policies.

Verification: Following creation of the Maintenance District and at least 60 days prior to the start of any project-related site disturbance activities, the project owner shall coordinate with public entity and the Maintenance District supervisor to develop the Channel Maintenance Program. The project owner shall submit two copies of the programmatic documentation, describing the proposed Channel Maintenance Program, to the CPM (for review and approval). The Project Owner shall provide written notification from the Maintenance District that they plan to adopt and implement the measures identified in the approved Channel Maintenance Program. The project owner shall:

1. In coordination with the public entity and the Maintenance District staff, develop and supervise the implementation of a Channel Maintenance Program in accordance with conditions of certification;

2. Ensure the BSEP Construction and Operation Managers receive training on the Channel Maintenance Program and coordinate with the Maintenance District staff;

3. Coordinate with the Maintenance District staff to develop Maintenance Guidelines;

4. Coordinate with the Maintenance District staff to develop annual and project specific Channel Maintenance Work Plans; and

5. As part of the BSEP Annual Compliance Report to the CPM, submit a Channel Maintenance Program Annual Report specifying which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed).

SOIL&WATER-9: The project owner shall submit two (2) copies of the 30-percent, 60-percent and 90-percent design drawings for the diversion channel to the CPM for review and comment. The project owner shall prepare a set of design specifications to supplement the 90-percent design drawings. Plans, specifications, computations and other data shall be prepared by persons properly authorized by the State of California. If the 60-percent plans or 90-percent plans and specifications do not comply with the appropriate Conditions of Certification, the necessary changes or revisions to the plans shall be made by the project owner. If the CPM finds that the work described in the plans and specifications conform to the Conditions of Certifications in the Energy Commission Decision and other pertinent LORS, then the project owner shall submit two (2) copies of the 100-percent set for CPM approval. All design drawings must be submitted on bound or stapled 24" x 36" size paper.

Verification: The project owner shall prepare preliminary (30-percent) diversion channel design drawings for CPM review and comment. The preliminary design drawings shall be submitted as required in the verification for Condition of Certification **SOIL&WATER-6**. The project owner shall submit two (2) copies of the 60-percent and 90-percent (with specifications) design drawings to the CPM for review and comment. No later than 30 days after publication of the Energy Commission Decision, the 60-percent set of design drawings shall be submitted to the CPM for review and comment in consultation with CDFG and Kern County. The project owner shall submit the 90-percent design drawings to the CPM after the person who originally drew the plan or their duly authorized agent addresses the CPM's 60-percent submittal comments and required changes directed by FEMA during the CLOMR review. The 100-percent design drawings and specifications (construction documents), shall be signed and sealed by a Registered Professional Engineer in the State of California, are to be submitted as the final, approved set of construction documents prior to site mobilization.

SOIL&WATER-10: The project owner shall comply with the Kern County Division Four Standards for Drainage to estimate an appropriate imperviousness value to apply to onsite storm water runoff and retention basin analyses. Retention basin sizing shall take into

account the effects of dust suppressants on infiltration. The applicant shall assess all offsite drainage areas tributary to the site in the hydrologic study. Runoff from tributaries mapped as a water of the state shall not be piped.

Verification: **Verification:** The project owner shall do the following:

1. Estimate an appropriate imperviousness for the BSEP developed conditions site. Submit a description of the methods used to calculate imperviousness to the CPM for approval at least 60 days prior to submitting the DESCP.

2. Prepare a hydrologic study to estimate the peak flood flows to the BSEP site for two offsite watersheds that drain toward the BSEP: A) the 8.0 square-mile drainage area east of the Barren Ridge watershed and B) the 1.5 square-mile area draining the Chuckwalla Mountains. Submit the hydrologic analysis results to the CPM as part of the DESCP, required as part of Condition of Certification **SOIL&WATER-5**.

3. Provide the open channel design across the solar field for undetained runoff originating from the offsite tributary west of BSEP. Provide the CPM with evidence that a maintenance easement is established for the channel.

SOIL&WATER-11: The Kern County Division Four Standards for Drainage and 44CFR Part 65 require that projects on alluvial fans study the potential for debris flow and sediment movement using engineering methods acceptable to FEMA. The project owner shall analyze the potential for sediment to influence the Pine Tree Creek design discharge. The final analyses shall be reported in the hydrology section of the DESCP, required as part of Condition of Certification **SOIL&WATER-5**.

Verification: The project owner shall submit all calculations necessary for determining a bulking factor to the CPM for review and approval 30-days prior to submittal of the CLOMR application required in Condition of Certification **SOIL&WATER-6**. After FEMA has issued a CLOMR, the final hydrologic analyses with bulking factor applied, if required by the CPM, shall be applied to the diversion channel design discharge.

SOIL&WATER-12: The project owner shall comply with the Kern County Standards for Drainage, Chapter IV and provide engineering analyses and design details for the transition where the diversion channel intercepts the natural channel. The project owner shall provide engineering analyses showing that the shallow flooding along uncertain paths from the south will not cause diversion channel bank failure from lateral overtopping. The project owner shall submit a proposed- conditions grading plan as evidence to show the diversion channel will capture shallow flooding along the left bank (looking downstream) of the natural wash.

Verification: The project owner shall complete the engineering analyses, design, and grading for the transition from the natural channel to the proposed diversion channel to intercept the design discharge along the southern property boundary. The engineered design for this transition shall be provided to the CPM for review and approval at the same time the 30 percent design drawings are submitted to the CPM as required in Condition of Certification **SOIL&WATER-6**. The project owner shall also provide final design details for the transition in the 60 percent and 90 percent design drawings to the CPM for approval as required in Condition of Certification **SOIL&WATER-9**.

SOIL&WATER-13: The project owner shall complete the hydraulic analyses and final basis of design for the diversion channel, upstream- and downstream- transitions, bank protection, levees (if applicable), and grade control structures using hydraulic criteria for flood velocity, depth, Froude Number, and shear stress appropriate for the anticipated channel stability thresholds. These thresholds are based on the Kern County Division Four Standards for Drainage, Chapter X, where applicable. The value of the Froude Number between grade control structures shall be less than 0.8. Channel design elements not in compliance with Kern County Division Four standards will require a written variance from the County. All grade control structure stilling basins shall be designed with weep drains to prevent perched groundwater conditions and promote groundwater recharge. The project owner shall also be responsible for a geotechnical investigation to test the soils as necessary for final design of the grade control structures and bank stabilization measures. The results of the hydraulic analyses and the geotechnical investigations shall be presented in an Engineer's Report that accompanies each iterative stage of final design (30-percent, 60-percent and 90-percent as required in Condition of Certification **SOIL&WATER-9)**.

Verification: At each iterative stage of final design (30-percent, 60-percent and 90) the project owner shall submit an Engineer's Report that includes the hydraulic analyses and geotechnical investigation results for the diversion channel to the CPM for review and approval. All design variances approved by Kern County shall be provided to the CPM.

SOIL&WATER-14: The project owner shall design the diversion channel to avoid soil cement lining on the bed of the channel between grade control structures to address resource agency comments. The project owner shall install bank toe protection along the entire length of the diversion channel to protect the banks from under-cutting, channel migration, and local erosion.

Verification: The project owner shall provide channel design drawings to the CPM for review and approval. The channel design drawings shall show the cross

section detail for the bank toe protection measures, the longitudinal extent of the bank treatment with linear dimensions, and the area of the exposed diversion channel bed between each grade control structure. The design drawings shall be submitted with each verification requirement in Condition of Certification **SOIL&WATER-9.**

SOIL&WATER-15: The project owner shall complete a proposed-conditions sediment transport analyses to determine the final channel slope for the diversion channel that provides a slightly aggredational system that is predicted to result in a braided low flow channel.

Verification: The project owner shall provide to the CPM for review and approval a proposed-conditions sediment transport analyses that predicts an aggredational system for the final diversion channel design. The sediment transport analyses shall be submitted to the CPM at the same time as the engineer's report, required in Condition of Certification **SOIL&WATER-13.**

SOIL&WATER-16: The project owner, in accordance with Kern County Division Four Standards for Drainage, Chapter IV, shall provide engineering analyses or evidence showing that the diversion channel structural design elements will provide protection from hazards associated with the possible relocation of the Pine Tree Creek wash upstream of BSEP project boundaries.

Verification: The project owner shall provide engineering analyses or evidence to the CPM showing that the BSEP flood control facilities will provide protection from hazards associated with the relocation of Pine Tree Creek upstream from the site.

SOIL&WATER-17: The project owner shall stockpile topsoil excavated from the Pine Tree Creek wash separately. The topsoil material shall be used to backfill the energy dissipaters or stilling basins planned as part of each grade control structure. This requirement is in consistent with Condition of Certification **BIO-18**.

Verification: Following construction of the grade control structures and after FEMA approves the CLOMR, the project owner shall use the stockpiled topsoil from the existing Pine Tree Creek wash excavation to backfill the grade control structure stilling basins up to the height of the sill.

SOIL&WATER-18: The project owner shall provide the CPM two copies of the executed Recycled Water Purchase Agreement (agreement) with the recycled waste water purveyor for the long-term supply (30 – 35 years) of disinfected tertiary recycled water to the BSEP. The agreement shall specify a delivery rate to meet BSEP's maximum operation requirements and all terms and

costs for the delivery and use of recycled water at the BSEP. The BSEP shall not connect to the new recycled water pipeline without the final agreement in place and submitted to the CPM. The project owner shall comply with the requirements of Title 22 and Title 17 of the California Code of Regulations and section 13523 of the California Water Code.

Verification: No later than 60 days prior to the connection to the recycled water pipeline, the project owner shall submit two copies of the executed agreement for the supply and on-site use of disinfected tertiary recycled water at the BSEP. The agreement shall specify that the recycled waste water purveyor can deliver recycled water at a maximum rate up to 900-gpm and will provide the BSEP a minimum of 1,424-AFY.

The project owner shall submit to the CPM a signed agreement between the applicant and the recycled waste water purveyor for the long-term supply of disinfected tertiary recycled water from the recycled wastewater purveyors treatment plant to the BSEP for industrial and landscape irrigation purposes.

The project owner shall submit to the CPM a copy of the Producer/User Water Recycling Requirements, the recycled wastewater criteria, the Engineering Report, and the Cross Connection Inspection and Approval report prior to the connection to the disinfected tertiary recycled wastewater pipeline.

SOIL&WATER-19: Prior to the use of groundwater or recycled wastewater for operation of the BSEP, the project owner shall install and maintain metering devices as part of the water supply and distribution system to monitor and record in gallons per day the volume of water supplied to the BSEP. The metering devices shall be operational for the life of the project. An annual summary of daily water use by the BSEP, differentiating between potable, recycled wastewater or groundwater, shall be submitted to the CPM in the annual compliance report.

Verification: At least 60 days prior to use of any water source for BSEP operation, the project owner shall submit to the CPM evidence that metering devices have been installed and are operational on the water pipelines serving the project. The project owner shall provide a report on the servicing, testing, and calibration of the metering devices in the annual compliance report.

The project owner shall submit a water use summary report to the CPM in the annual compliance report for the life of the project. The annual summary report shall be based on volume of water used and shall distinguish recorded daily use of potable and recycled water. Included in the annual summary of water use, the project owner shall submit copies of meter records from the potable water and recycled water supplies documenting the volume of water supplied over the previous year. The report shall include calculated monthly range, monthly average, and annual use by the project in both gallons per day and acre-feet.

After the first year and for subsequent years, this information shall also include the yearly range and yearly average potable and recycled water used by the project.

C. CULTURAL RESOURCES

The potential for impacts to cultural resources depends upon whether such resources are present and whether they would actually be encountered during project development and construction activities. Cultural resource materials such as artifacts, structures, or land modifications reflect the history of human development. Certain places that are important to Native Americans or local national/ethnic groups are also considered valuable cultural resources. Analysis in this topic area pertains to the structural and cultural evidence of human development in the project vicinity, as well as appropriate mitigation measures should cultural resources be disturbed by project excavation and construction.

The term "cultural resource" is used broadly to include the following categories of resources: buildings, sites, structures, objects, and historic districts. When a cultural resource is determined to be significant, it is eligible for inclusion in the California Register of Historic Resources (CRHR). (Pub. Res. Code, § 5024.1; Cal. Code Regs., tit. 14, § 4850 et seq.) An archaeological resource that does not qualify as an historic resource may be considered a "unique" archaeological resource under California Environmental Quality (CEQA) (*see* Pub. Res. Code, § 21083.2.) In addition, structures older than 50 years (or less if the resource is deemed exceptional) can be considered for listing as significant historic structures. The Office of Historic Preservation's Instructions for Recording Historical Resources (1995) endorses recording and evaluating resources over 45 years of age to accommodate a five-year lag in the planning process.

The CEQA Guidelines provide a definition of a historical resource as a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR," or "a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code," or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record." [Cal. Code Regs., tit. 14, § 15064.5(a).] Historical resources that are automatically listed in the CRHR include California historical resources listed in or formally determined eligible for the National Register of Historic Places (NRHP) and California Registered Historical Landmarks from No. 770 onward. [Pub. Res. Code, § 5024.1(d).]

Under the CEQA Guidelines, a resource is generally considered to be historically significant if it meets the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old, a resource must meet at least one of the following four criteria: it is associated with events that have made a significant contribution to the broad patterns of our history (Criterion 1); or, it is associated with the lives of persons significant in our past (Criterion 2); or, that the resource embodies the distinctive characteristics of a type, period, or method of construction, or that it represents the work of a master, or possesses high artistic values (Criterion 3); or, that it has yielded, or may be likely to yield, information important to history or prehistory (Criterion 4). (Pub. Res. Code § 5024.1.) In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. (Cal. Code Regs., tit. 14, § 4852(c); Pub. Res. Code § 5020.1 (j) or 5024.1.) Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows the lead agency to make a determination as to whether the resource is a historical resource.

The evidence contained in the record is undisputed and neither CURE nor any member of the public commented on cultural resources. (3/22/10 RT 36:7-14; Exs. 8; 37; 38; 53; 64; 74; 85; 104; 107; 115; 123; 132 to 134; 200; 215; 236; 242; 300; 329 to 331; 339; 500; 503; 511.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Setting

The BSEP site is located in the western Mojave Desert, within the Fremont Valley of Kern County, near the southern end of the Sierra Nevada mountain range, which rises just to the west of the project area. The project site is located 4 miles north-northwest of California City, approximately 15 miles north of the City of Mojave, and approximately 24 miles northeast of the City of Tehachapi. The proposed facility would be accessed from State Route 14. (Ex. 500, p. 4.3-4.)

The site is located within a closed basin, with Koehn Dry Lake located approximately 6 miles to the east-northeast. Cottonwood and Cache Creeks, and an unnamed wash are the three major drainages that flow into this basin. The nearest seismic features are the Garlock Fault to the north and the San Andreas Fault to the west. The predominant vegetation type on the floor of Fremont Valley is Mojave creosote bush scrub. Topography throughout the region is

nearly level with elevations ranging from 2,025 to 2,220 feet above mean sea level. (Ex. 500, p. 4.3-4.)

The proposed BSEP is a concentrated solar electric generating facility. It would have a nominal electrical output of 250 megawatts (MW). Of the 2,012-acre project site, the power block area and the solar thermal field would occupy approximately 1,240 acres, with the rest of the support facilities occupying the remaining approximately 770 acres. The proposed project site is within a region that is primarily undeveloped, but, as late as the mid-1980s, it was used for agricultural purposes and, as a result, has been heavily disturbed. (Ex. 500, p. 4.3-4.)

The earliest general acceptance of human occupation in the Mojave Desert dates from approximately 8,000 to 6,000 BC in the early Holocene. The cultural unit associated the early Holocene in the region of the proposed BSEP is termed the Lake Mojave complex. For the Middle Holocene, the Pinto complex has become the widely accepted cultural complex for this region. Archaeologists have generally accepted that the Pinto complex began just after the Lake Mojave complex ended at approximately 3,000 BC. The scarcity of sites in the western Mojave Desert representing the period 3,000–2,000 BC indicates that there may have been “an occupational hiatus” at this time, or that population density in the region was low. This may have been due to the climate being much hotter and drier towards the end of the Middle Holocene. The Gypsum complex appeared during the earliest part of this period, from 2,000 BC–200 AD. During this time, the climate became wetter and cooler than during the previous period. The Rose Spring complex followed the Gypsum complex, appearing in the period 200–1100 AD, the time during which the bow and arrow were introduced. The Late Prehistoric began in 1000 AD and ended with European contact. During this period, populations decreased; however, new technologies were developing and several new cultural complexes appeared, most likely developing into the ethnographic groups of the region. The marker artifacts of this period include Desert series projectile points, ceramics, shell beads, and mortars and pestles (Ex. 500, pp. 4.3-6 to 4.3-9.)

The Kawaiisu were the Native American group known ethnographically to have occupied the BSEP area. Kawaiisu territory was composed of a big portion of the western Mojave Desert, with their territory also branching into the Tehachapi Mountains near the Tehachapi Pass and extending north into the southern Sierra Nevada near the Kern River. During historic times, the Kawaiisu occupied the desert floor only ephemerally, spending most of the year in the higher elevations.

The Kawaiisu were hunter-gatherers who did not practice agriculture, but, did, however, prune tobacco plants to refine them. They also burned wild seed fields to increase plant production. (Ex. 500, p. 4.3-9.)

The earliest European account of the Fremont Valley dates to the eighteenth century. A Franciscan missionary, Francisco Garcés, while exploring overland routes between the southern California missions and those in New Mexico, camped at Castle Butte in what is now California City in the Fremont Valley in the summer of 1776, as recorded in his diary. (Ex. 500, pp. 4.3-9 – 4.3-10.)

The Gold Rush brought the earliest Euro-American settlement to the Fremont Valley. North of the BSEP area, in the El Paso Mountains, gold and silver mining began in the early 1860s at the Manzanillo Mine in the El Paso Mining District on Laurel Mountain, but after August 1864, bandits or Indians kept the miners out of this remote and dangerous area. The depression of the early 1890s, however, brought prospectors back to the El Paso Mountains, resulting in a peak mining period in this area. (Ex. 500, p. 4.3-10.)

Early trails through the Fremont Valley were located between water sources where topography favored the easiest travel. Water sources influenced where early Euro-American settlements were established. As mining in the region proved profitable in the mid-nineteenth century, roads developed connecting the mines to the sources of needed goods and services, and the roads encouraged further settlement along them. The Owens River Road tied the silver and lead mines at Cerro Gordo to Los Angeles, passing through the Fremont Valley en route. Over this freight road, in the 1870s, 20-mule teams would pull heavily loaded wagons of supplies from Los Angles north to the mine in exchange for bullion. Rail transport supplanted the mule teams in 1882. The freight road alignment is very closely followed today by SR 14. (Ex. 500, p. 4.3-10.)

The first railroad through the Mojave Desert was completed by the Southern Pacific between the towns of Mojave and Needles in 1882. In October 1884, the line was purchased by the Atlantic and Pacific Railroad (A&P) and subsequently was acquired by the Atchison, Topeka, and Santa Fe Railroad (ATSF) in 1890. The ATSF, now known as the Burlington Northern Santa Fe Railroad, continues to operate the line. (Ex. 500, p. 4.3-11.)

The first Los Angeles Aqueduct, flowing from the Owens River to Los Angeles, is located just to the west of the project area. It was constructed between 1907 and 1913. To facilitate the construction of the first Los Angeles Aqueduct, the Southern Pacific Railroad Company built what came to be referred to as its

“Jawbone Branch,” running north from Mojave to Olancha, passing just to the west of the BSEP site. With the completion of the aqueduct, the Jawbone branch eventually was extended to Owenyo in the Owens Valley, joining the Carson and Colorado Railroad to establish through service to the East. The branch was absorbed into the SP system in 1913 and is now part of the Union Pacific system. (Ex. 500, p. 4.3-11.)

The BSEP site was undeveloped desert until the 2,273-acre Fremont Valley Ranch was established in that location in 1977 to grow alfalfa for a cattle-fattening operation on the ranch. The BSEP will occupy some 2,012 acres of the former ranch. Alfalfa farming at the Fremont Valley Ranch was abandoned in approximately 1988, leaving no traces in the form of enhanced agricultural soils or surface water delivery systems. With only ground water available to support agriculture, it is considered an unsustainable industry in this location. (Ex. 500, p. 4.3-12.)

2. Cultural Resources

Applicant’s records search included all known cultural resources within a one-half-mile radius of the plant site, laydown area, and appurtenant linear facilities. Sources checked included:

- The California Historical Resources Information System (CHRIS);
- Southern San Joaquin Valley Archeological Information Center (SSJVAIC)
- Previously documented cultural resources or archaeological studies in the project area;
- National Register of Historic Places (NHRP);
- California Register of Historical Resources (CRHR);
- California Historical Landmarks;
- California Points of Historical Interest; and
- California Inventory of Historic Resources.

The CHRIS literature and records search identified 22 previous cultural resources investigations within the search area. Part of one investigation took place on the project site. The investigation was a linear pedestrian survey that covered approximately 75 acres or 4 percent of the project site, which left approximately 96 percent of the project site unsurveyed prior to the planning effort for the proposed project. Five previous linear pedestrian surveys for

highway improvement projects along SR 14 crossed the proposed rights of way for electric transmission line Options 1 and 2. The surveys covered a total of roughly 6 acres. (Ex. 500, pp. 4.3-16 to 4.3-19.)

A total of 10 cultural resources are known from the CHRIS literature and records search area. Only 2 of the 10 resources fall in the project area. Both are on the project site. One resource is the historic Jawbone Branch of the Southern Pacific Railroad (CA-KER-3366H), which delimits the southwestern boundary of the project site, and the other is a late nineteenth- to early twentieth-century refuse deposit (CA-KER-5264), which was found in the northwestern portion of the project site. (Ex. 500, p. 4.3-16.)

Three phases of fieldwork, a two-phased geo-archaeological study and two intensive pedestrian surveys conducted by the Applicant's consultant in the project area resulted in the identification of 73 new cultural resources in the project area, not including the discovery of 59 isolated resources, the re-recordation of one previously known resource (CA-KER-2142/H or Site 40), and the observation of the loss of another previously known cultural resource (CA-KER-5264H). The present cultural resources inventory conducted by the Applicant's consultant for the project area includes 58 archaeological resources, no ethnographic resources, and 16 built-environment resources, including 15 standing structures and one historic railroad in the project area. (Ex. 500, pp. 4.3-24 to 4.3-74.)

The record indicates that there are seven CRHR-eligible cultural resources in the proposed BSEP area that are recommended as eligible for listing on the CRHR. The seven historical resources are pre-historic archaeological sites FWARG-01, and Sites 8, 9, and 11-13, and prehistoric Archaeological District Zone 1. In addition, there is presently one further cultural resource (Site 17) in the proposed project area that is assumed as eligible for listing in the CRHR for the purpose of the present siting case. (Ex. 500, p. 4.3-24 to 4.3-74.)

The record shows that none of the 16 built-environment resources qualify as historical resources. (Ex. 500, pp. 4.3-72 to 4.3-74.)

The Applicant contacted the Native American Heritage Commission (NAHC) on November 5, 2007, to request information about traditional cultural properties in and around the project area and to request a list of Native Americans who have heritage ties to Kern County and want to be informed about new development projects in this area. The NAHC responded on November 8, 2007 with the information that their database had yielded no known Native American cultural

resources on or near the proposed BSEP site, and a list of the names and contact information for seven Native Americans individuals or groups interested in development projects in Kern County. The Applicant sent a letter to each of the seven on November 20, 2007, asking for their input and asking about any concerns they may have about the project. No responses were received on the original inquiry; however follow-up phone calls were made and two representatives responded including John Valenzuela, of the San Fernando Band of Mission Indians, and Robert Wermuth, affiliated with the Tubatulabel, Kawaiisu, Koso, and Yokuts groups. The consultant informed Mr. Valenzuela and Mr. Wermuth about the sites discovered during the survey and those sites proposed for testing. Both requested additional maps and expressed interest in providing monitoring for the testing phase of the project. Neither Mr. Valenzuela nor Mr. Wermuth has responded further, nor have any of the other Native Americans contacted. Therefore, at this time Native Americans have identified no ethnographic sites or additional known prehistoric archaeological sites. (Ex. 500, pp. 4.3-21 to 4.3-23.)

3. Potential Impacts

Direct impacts to cultural resources are those associated with project development, construction, and co-existence. Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historic resources when those structures must be removed to make way for new structures or when the vibrations of construction impair the stability of historic structures nearby. New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with their neighbors and the setting, and when the new structures produce something harmful to the materials or structural integrity of the historic structures, such as emissions or vibrations. (Ex. 500, p. 4.3-75.)

Generally speaking, indirect impacts to archaeological resources are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility. Similarly, historic structures can suffer indirect impacts when project construction creates improved accessibility and vandalism or greater weather exposure becomes possible. (Ex. 500, p. 4.3-75.)

The record indicates that the BSEP would have a significant direct impact on one historically significant prehistoric to early historic-period Native American archaeological district, referred to as “Archaeological Zone 1,” and has the potential to have a further significant direct impact on an individual prehistoric archaeological site, referred to herein as “Site 17.” Conditions of Certification **CUL-5** and **CUL-6** will reduce the potential impacts of the proposed project on these resources to less than significant. (Ex. 500, p. 4.3-95.)

Condition of Certification **CUL-1** requires the project owner to obtain the services of a CRS and Condition **CUL-2** requires the project owner to provide the CRS with all relevant cultural resources information and maps. **CUL-3** is a regulatory process condition that articulates the manner in which the project owner and the Compliance Project Manager (CPM) would be able to alter the extent of the project area to accommodate reconsiderations of the complete range of project components, or changes in project design. The Conditions of Certification articulate a different part of an overarching program which will reduce the effects of the proposed project on historical resources to less than significant. (Ex. 500, pp. 4.33-95 to 4.3-96.)

4. Cumulative Impacts

A cumulative impact refers to a project's incremental effects considered over time and together with those of other nearby, past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the project. (Pub. Res. Code § 21083; Cal. Code Regs., tit. 14, § 15064(h), 15065(a)(3), 15130, and 15355.) The construction of other projects in the same area as the project could affect unknown subsurface archaeological deposits, both prehistoric and historic. (Ex. 500, p. 4.3-89.)

The record identified two projects in the general area including the Los Angeles Department of Water and Power (LADWP) Barren Ridge-Castaic Transmission Project and the Pine Tree Wind development project. The LADWP project is located about 1.5 miles south the project site and is in the early stages of the environmental review process. Therefore, no data on potential cultural resources impacts are yet available. The Pine Tree Wind Development project, located six miles west of the BSEP site, identified seven archaeological sites recommended as CRHR eligible and requiring impact mitigation in the form of data recovery. Thus this project’s impacts would be mitigated, and it would not contribute to a cumulative impact to cultural resources. The record indicates BSEP, along with the other identified projects in the vicinity, is unlikely to result in significant

cumulative impacts to cultural resources with the implementation of mitigation measures. Impacts to human remains can be mitigated by following the protocols established by state law in Public Resources Code, Section 5097.98. (Ex. 500, p. 4.3-90.)

Since the impacts from the BSEP and its linear extensions will be mitigated to a less-than-significant level by the project's compliance with Conditions of Certification **CUL-1** through **CUL-10**, and since similar protocols can be applied to other projects in the area, the record establishes that the incremental effects on cultural resources of the BSEP will not be cumulatively considerable when viewed in conjunction with other projects.

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings and reaches the following conclusions:

1. Without mitigation, the BSEP would have a significant direct impact on one historically significant prehistoric to early historic-period Native American archaeological district, referred to as "Archaeological Zone 1."
2. Without mitigation, the BSEP has the potential to have a significant direct impact on an individual prehistoric archaeological site, referred to herein as "Site 17."
3. There are seven CRHR-eligible cultural resources in the proposed BSEP area
4. No potentially significant built-environmental resources were identified at the BSEP site or within the impact areas of the project's linear facilities.
5. None of the individual built-environment resources identified as being old enough to be potentially significant are likely to be eligible for the NRHR or the CRHR.
6. No ethnographic resources have been identified on or near the BSEP area.
7. The Native American Heritage Commission did not identify any Native American sacred sites with the project's impact area.
8. There are no known CRHR-eligible ethnographic resources, built-environment resources, historic districts, or cultural landscapes in or near the BSEP area.
9. Conditions of Certification **CUL-1** through **CUL-10** ensure that all impacts to cultural resources discovered during construction and operation are mitigated below the level of significance.

10. The incremental effects on cultural resources of the BSEP will not be cumulatively considerable when viewed in conjunction with other projects.

CONCLUSIONS OF LAW

1. With implementation of the Conditions of Certification below, the BSEP will conform to all applicable laws, ordinances, regulations, and standards relating to cultural resources as set forth in the pertinent portion of **Appendix A** of this Decision.

2. Through implementation of the Conditions of Certification below, the project will have no significant environmental impacts.

CONDITIONS OF CERTIFICATION

CULTURAL RESOURCES PERSONNEL

CUL-1 Prior to the start of ground disturbance (includes "preconstruction site mobilization," "construction ground disturbance," and "construction grading, boring and trenching," as defined in the General Conditions for this project) the project owner shall obtain the services of a Cultural Resources Specialist (CRS) and one or more alternate CRSs, if alternates are needed. The CRS shall manage all monitoring, mitigation, curation, and reporting activities required in accordance with the Conditions of Certification (Conditions). The CRS may elect to obtain the services of Cultural Resources Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. No ground disturbance shall occur prior to Compliance Project Manager (CPM) approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Approval of a CRS may be denied or revoked for non-compliance on this or other projects.

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 CFR Part 61). In addition, the CRS shall have the following qualifications:

1. The CRS's qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field;

2. At least three years of archaeological or historical, as appropriate (per nature of predominant cultural resources on the project site), resource mitigation and field experience in California; and

3. At least one year of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS/alternate CRS has the appropriate training and experience to implement effectively the Conditions.

CULTURAL RESOURCES MONITORS
CRMs shall have the following qualifications:

1. a B.S. or B.A. degree in anthropology, archaeology, historical archaeology or a related field and one year experience monitoring in California; or

2. an A.S. or A.A. degree in anthropology, archaeology, historical archaeology or a related field, and four years experience monitoring in California; or

3. enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology or a related field, and two years of monitoring experience in California.

CULTURAL RESOURCES TECHNICAL SPECIALISTS
The resume(s) of any additional technical specialist(s), e.g., historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the CPM for approval.

Verification: At least 112 days prior to the start of construction-related ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological Zone 1 or on the portions of the project area beyond the project site, or at least 352 days prior to the start of ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, whichever

portion of the project area is to be subject to construction-related ground disturbance first, the project owner shall submit the resume for the CRS, and alternate(s) if desired, to the CPM for review and approval.

At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If there is no alternate CRS in place to conduct the duties of the CRS, a previously approved monitor may serve in place of a CRS so that construction related ground disturbance may continue up to a maximum of 3 days without a CRS. If cultural resources are discovered then ground disturbance will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

At least 20 days prior to any construction-related ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition.

At least 5 days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide additional letters to the CPM identifying the CRMs and attesting to their qualifications. If additional CRMs are obtained during the project, the CRS shall provide additional letters to the CPM identifying the CRMs and attesting to the qualifications of the CRMs, at least 5 days prior to the CRMs beginning on-site duties.

At least 10 days prior to any technical specialists beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.

At least 7 days prior to the start of the preparation of the Historical Resources Management Plan (HRMP) (**CUL-4**), the project owner shall confirm in writing to the CPM that the approved CRS will be available for and is prepared to implement the cultural resources conditions.

PROJECT DOCUMENTATION FOR CULTURAL RESOURCES PERSONNEL

CUL-2 Prior to the start of ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological Zone 1 or on the portions of the project area beyond the project site, if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the AFC, data responses, confidential cultural resources reports, all supplements, and the Energy Commission's Final Staff Assessment (FSA) for the project. The project owner shall also provide the CRS and the CPM

with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all lay down areas. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological Zone 1 or on the portions of the project area beyond the project site shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be submitted prior to the start of each construction phase. Written notification identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

Verification: At least 97 days prior to the start of construction-related ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological Zone 1 or on the portions of the project area beyond the project site, or at least 337 days prior to the start of ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, whichever portion of the project area is to be subject to construction-related ground disturbance first, the project owner shall provide the AFC, data responses, confidential cultural resources documents, all supplements, and the Energy Commission's Final Staff Assessment (FSA) to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.

At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.

Weekly, during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

ALTERATION OF PROJECT AREA

CUL-3 Changes to the proposed project or to the character of its construction, operation, and maintenance that may become necessary subsequent to the approval of the project, were such approval to occur, may in turn require the re-consideration of the extent of the original project area. Where such changes indicate the need to alter the original project area to include additional lands that were not elements of analysis during the certification process, the effects of any proposed changes on historical resources that may be on such lands would need to be taken into account. Changes in the character of the construction, operation, and maintenance of the proposed project may include such actions as decisions to use non-commercial borrow sites or disposal sites.

Upon the recognition that proposed changes to the project would require the use of lands that were not a part of the original project area, the project owner shall ensure that the CRS surveys any such lands for cultural resources and record each newly found resource on DPR 523 forms. Exceptions would be made to this protocol in cases where cultural resources surveys no greater than five years in age are documented for the entirety of the subject lands and approved by the CPM. Where new cultural resources surveys are warranted, the project owner shall convey the results of such surveys, along with the CRS's recommendations for further action, to the CPM, who will determine whether further action is necessary. If the CPM determines that historical resources may be present and that any such resource may be subject to a substantial adverse change in its significance, the project owner shall ensure that the CRS provides the CPM with substantiated recommendations on whether each such resource is eligible for listing in the CRHR and recommendations for the resolution of any such significant effects. The CRS, the project owner, and the

CPM shall then confer on said recommendations, and, upon the concurrence of the CPM with those recommendations, the project owner shall ensure that the CRS proceeds to implement them, and reports on the methods and the results of any such work in the final Cultural Resources Report (CRR) (**CUL-10**).

Verification: Upon the recognition that proposed changes to the project or to the character of the construction, operation, and maintenance of the project would require the use of lands that were not a part of the original project area, the project owner shall notify the CRS and CPM. The project owner shall then provide, for CPM review and approval, documentation of any cultural resources surveys five years or less in age that exist for the additional lands.

At least 75 days prior to the use of the new additional project area lands, in the absence of any such cultural resources surveys or when the extant cultural resources surveys do not cover the entirety of the lands to be added to the project area, the project owner shall ensure that the CRS surveys the additional lands for cultural resources, notifies the project owner and the CPM of the results of the new cultural resources survey, and recommends further action.

No more than 15 days subsequent to the receipt of the information in verification 2, CUL-3, above, the CPM shall determine whether historical resources may be present and whether any such resources may be subject to substantial adverse changes in significance.

At least 60 days prior to the use of the new additional project area lands, if the CPM determines that historical resources may be subject to substantial adverse changes in significance, the project owner shall ensure that the CRS provides the CPM with substantiated evaluations, based on archival and field research, on whether each such resource is eligible for listing in the CRHR and recommendations for the resolution of any potential significant effects.

For no longer than 15 days, the project owner, the CRS, and the CPM shall confer about the above evaluations and recommendations, and, upon the concurrence of the CPM with those evaluations and recommendations, the project owner shall ensure that the CRS proceeds to resolve any significant effects pursuant to the above recommendations prior to the use of the new additional project area lands.

The project owner shall ensure that the CRS reports on the methods and the results of all such work in the CRR (**CUL-10**).

HISTORICAL RESOURCES MANAGEMENT PLAN

CUL-4 The Historical Resources Management Plan (HRMP) shall govern the implementation of the overarching program to reduce the effects

of the proposed project on historical resources to less than significant. The preparation and implementation of the different elements of the historical resources management program, by the project owner, shall be the result of a number of protocols and consultations set out in this condition of certification and others (**CUL-5** through **CUL-10**) below.

Prior to the start of any project -related ground disturbance (includes "preconstruction site mobilization," "construction ground disturbance," and "construction grading, boring and trenching," as defined in the General Conditions for this project), the project owner shall submit the HRMP, as prepared by or under the direction of the CRS, to the CPM for review and approval. The HRMP shall follow the content and organization of a similar document, the Cultural Resources Monitoring and Mitigation Plan, a draft model version of which will be provided by the CPM, as general guidance. The authors' name(s) shall appear on the title page of the HRMP. The HRMP shall also incorporate the final results of the January 2009 geo-archaeology study for the proposed project into the appropriate elements of the HRMP. Implementation of the HRMP shall be the responsibility of the CRS and the project owner. Copies of the HRMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the HRMP, unless such activities are specifically approved by the CPM.

The HRMP shall include, but not be limited to, the following elements:

Primacy of the Conditions of Certification

1. The statement in the introduction to the HRMP that "any discussion, summary, or paraphrasing of the Conditions of Certification in this HRMP is intended as general guidance and as an aid to the user in understanding the conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the HRMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A."

Implementation of the Historical Resources Management Program

2. Specification of the implementation sequence and the estimated time frames needed to accomplish all historical resources management program tasks prior to and during construction -related ground disturbance, and during those analysis phases of the management program that may occur subsequent to construction-related ground disturbance.

3. Identification of the person(s) expected to perform each of the historical resources management program tasks, their responsibilities, and the reporting relationships between project construction management and the treatment and monitoring teams.

4. A statement from the project owner that the CRS shall have, for the duration of construction-related ground disturbance, access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resource materials that are found during such ground disturbance, where such materials cannot be treated prescriptively.

Historical Resources Management Program Research Design

5. A project area-specific research design that includes a discussion of archaeological research questions and testable hypotheses appropriate to the archaeological data sets known for the project area. The research design shall provide the broader context for and facilitate tiering down to the research design that the project owner shall prepare, pursuant to **CUL6**, for Archaeological Zone 1. The project area research design shall clearly articulate why it is in the public interest to address the research questions that it poses. That research design shall also develop a discussion of artifact and ecofact collection, retention, and disposal policies as related to the research questions in the research design.

Documentation and Curation Standards

6. A statement that all found cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 Series forms, and mapped and photographed. In addition, all artifacts and ecofacts retained as a result of the archaeological investigations (survey, testing, and data recovery) shall be curated in accordance with the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, into a retrievable storage collection in a public repository or museum.

7. A statement that the project owner shall pay all curation fees for artifacts and ecofacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.

8. A description of the contents, the format, and the review and approval process for the CRR (**CUL-10**), which shall be prepared according to ARMR guidelines (COHP 1990).

Native American Participation

9. A description of the roles which Native American observers or monitors shall play in the implementation of the HRMP, including the procedures that shall govern the selection of such observers and monitors, and the authority and responsibility of each role.

Treatment and Management of Historical Resources

10. A protocol that articulates, pursuant to **CUL-5**, the avoidance measures that the project owner shall implement to preserve archaeological Site 17. **CUL-5** sets out the structure and the details of the avoidance measures. If the applicant determines that it is not feasible to avoid Site 17, the Applicant shall notify the CPM of that determination and prepare a treatment plan for the site that will be subject to the review and approval of the CPM. The purpose of the treatment plan will be to reduce the effects of the proposed project on the historical resource to less than significant through a program of data recovery, in addition to, as appropriate, other treatments such as resource registration, or public outreach.

11. A treatment plan for Archaeological Zone 1, pursuant to **CUL-6**, the purpose of which is to reduce the effects of the proposed project on the historical resource to less than significant through a program of data recovery, resource registration, and public outreach. The structure and the details of the program are set out in **CUL-6**.

Construction Monitoring and Discovery

12. A Worker Environmental Awareness Program (WEAP) to guide the orientation of every new worker in the project area to cultural resources statutes and regulations, to the effects of the proposed project on cultural resources, to the management program that has been negotiated to address those effects, to the role of the workers in the management program, to the types of cultural resources in the project area and how to recognize them, and to the protocols that workers are to follow upon the discovery of different types of cultural resources. The structure and the details of the WEAP program are set out in **CUL-7**.

13. A description of the structure, and the review and approval process for the Monitoring and Discovery Plan (**CUL-8** and **CUL-9**).

14. Prescriptive treatment plans, where appropriate, for cultural resources that represent marginal data sets (**CUL-9**).

Verification: Prior to the preparation of the HRMP, the project owner shall submit the final technical report for the January 2009 geoarchaeology study for the proposed project to the CPM for review and approval.

Upon approval of the CRS proposed by the project owner, the CPM shall provide to the project owner, as general guidance, an electronic copy of the draft model Cultural Resources Monitoring and Mitigation Plan for the use of the CRS.

At least 30 days prior to the start of construction-related ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological Zone 1 or on the portions of the project area beyond the project site, or at least 270 days prior to the start of ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, whichever portion of the project area is to be subject to construction-related ground disturbance first, the project owner shall submit the HRMP to the CPM for review and approval.

At least 30 days prior to the start of construction-related ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological Zone 1 or on the portions of the project area beyond the project site, or at least 270 days prior to the start of ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, whichever portion of the project area is to be subject to construction-related ground disturbance first, a letter shall be provided to the CPM indicating that the project owner agrees to pay curation fees for any materials collected as a result of the archaeological investigations (survey, monitoring, testing, data recovery).

HISTORICAL RESOURCE AVOIDANCE MEASURES, SITE 17

CUL-5 The project owner shall direct the CRS to actively implement a sequence of avoidance measures to ensure that there would be no physical damage to Site 17 as a result of the construction, operation, or maintenance of the project. Prior to the onset of any construction-related ground disturbance in the southwestern portion of the project site, the CRS shall re-establish the known boundary of Site 17, add a 10-meter wide buffer around the periphery of that boundary, and flag the boundary around the site and the buffer in a conspicuous manner. The CRS, alternate CRS, or a CRM would subsequently enforce the avoidance of the flagged area during project construction.

The CRS would, subsequent to the construction of the project, permanently mark the boundary around Site 17 and the above buffer, and then set the bounded area aside as an environmentally sensitive area that would not be subject to disturbance during the life of the project. The character of the permanent marking shall be decided on the basis of consultation and consensus among the property owner, the CRS, and the CPM. If avoidance of Site 17 is not feasible, a treatment plan for Site 17 will be prepared in accordance with subpart 10 of CUL-4.

Verification: At least 30 days prior to the onset of construction-related ground disturbance in the SE 1/4 of section 8, T. 31 S., R. 37 E., the CRS shall re-establish the known boundary of Site 17, add a 10-meter wide buffer around the periphery of that boundary, and flag the boundary around the site and the buffer in a conspicuous manner.

The CRS, alternate CRS, or a CRM shall enforce the avoidance of the above flagged area for the duration of construction-related ground disturbance.

No longer than 30 days subsequent to the conclusion of construction-related ground disturbance in the SE 1/4 of section 8, T. 31 S., R. 37 E., the CRS shall permanently mark the boundary around Site 17 and the above buffer. The area so marked shall then be an environmentally sensitive area that shall not be subject to any disturbance during the life of the project. The CRS shall continue to enforce the avoidance of the originally flagged area until the area has been permanently marked.

The CRS shall ensure that the measures and verifications of this condition of certification are, pursuant to subpart 10, **CUL-4**, completely incorporated as a protocol in the HRMP.

ARCHAEOLOGICAL ZONE 1 HISTORICAL RESOURCE TREATMENT PLAN

CUL-6 The project owner shall prepare and implement a treatment plan the purpose of which is to reduce the effects of the proposed project on Archaeological Zone 1 to less than significant. The treatment plan shall accomplish the reduction of effects through a program of data recovery, resource registration, and public outreach. Prior to the onset of any construction-related ground disturbance within 30 meters of the provisional boundary for Archaeological Zone 1, the project owner shall prepare, secure the approval of the CPM for, and conclude the field investigation portions of the Archaeological Zone 1 Historical Resource Treatment Plan (HRTP). The HRTP shall, at a minimum, include and set out the details of each of the following elements:

1. *Research Design*. A research design specific to Archaeological Zone 1 that tiers off of the research design for the project area in the HRMP (Subpart 5, **CUL-4**) and that clearly articulates why it is in the public interest to address the research questions that it poses. The research design shall evidence consideration of archaeological themes that relate to the identity and the lifeways of Native American groups in the prehistoric and historic periods.

2. *Data Recovery Program.* Thorough descriptions of the overall goals of the data recovery program, how the data sets that are anticipated for Archaeological Zone 1 will contribute to our knowledge of the prehistoric and historic period Native American themes of the research design and answer particular research questions, of the purposes and the methods of the different field phases of the data recovery program, and of the purposes and methods of the material analyses that will also occur. The descriptions of the field and laboratory efforts for the data recovery program shall include, at a minimum, and more thoroughly articulate the following phases:

    a. *Inventory, Phase 1 (Geophysical Test).* The initial component of the data recovery program shall be a discontiguous 1-acre test of the efficacy of the use of magnetometry to derive a representative sample of the predominant type of archaeological deposits that are now thought to make up Archaeological Zone 1, fire features or hearths that occur both as feature clusters and as isolate features and that may or may not occur in association with fire-affected rock. The test shall include a small magnetometer survey through and in the near vicinity of (approximately 30 meters beyond) known archaeological sites in Archaeological Zone 1, and the subsequent ground truthing of a representative sample of the magnetic anomalies found in the survey areas for the test. The ground truthing sample shall, at a minimum, be the lesser of 25 percent of the anomalies or 12 individual anomalies. The excavation of the anomalies may, at the discretion of the CRS, be by hand or mechanical means. The CRS shall ensure that the field notes and the forms for the survey areas and for the ground truthing are sufficient to completely document the geophysical test.

    b. *Inventory, Phase 2a (Geophysical Survey)*. If the CRS and CPM agree, after consultation, that the geophysical

test demonstrates that the use of magnetometry appears to be reasonably reliable, the project owner shall ensure that the CRS proceeds to a broader magnetometry sample survey of Archaeological Zone 1 and of the area 30 meters to the southwest of the provisional district boundary (Cultural Resources Figure 2). The CRS and CPM shall first derive and agree upon, in consultation with one another, the precise location of the provisional district boundary on the surface of the project site. The project owner shall then ensure that the CRS develops a single stratified random sample for Archaeological Zone 1 and the adjacent area 30 meters to the southwest of the provisional district boundary that would result in a magnetometry survey of a minimum of 10 percent of that total area. The CRS and the CPM shall, in consultation, derive and agree upon criteria that shall form the basis for the stratification of the survey sample. The criteria shall reflect the spatial variability in the physical and material character and in the chronology of Archaeological Zone 1, as such variability is presently known from the field investigations in the project area. The results of the broader magnetometry survey would also be subject to the ground truthing of a representative sample of the magnetic anomalies found in the survey areas to more precisely establish the range of error of the survey results. The ground truthing sample shall, at a minimum, be the lesser of 10 percent of the anomalies or 48 individual anomalies. The excavation of the anomalies may, at the discretion of the CRS, be by hand or mechanical means. The project owner shall ensure that the CRS's field notes and the forms for the survey areas and for the ground truthing are sufficient to completely document the geophysical survey to the satisfaction of the CPM.

c. *Inventory, Phase 2b (Mechanical Subsurface Survey)*. Should the results of the initial geophysical test demonstrate that the use of magnetometry is not reasonably well able to locate the types of archaeological deposits that make up Archaeological Zone 1, the applicant would conduct a broader subsurface sample survey of the Zone using construction equipment such as a road grader or a backhoe rather than proceeding with the broader geophysical survey. This mechanical subsurface survey would employ transects, the proposed width and length

of which the CPM would approve, and would involve the excavation of the transects in thin (no thicker than approximately 5 centimeters) layers to carefully expose and facilitate the accurate preliminary documentation of target archaeological deposits. The project owner shall ensure that the CRS, with CPM concurrence, derives criteria to form the basis for the stratification of the survey sample and develops a single stratified random sample for the Zone and the adjacent area to the southwest that would result in the mechanical subsurface survey of no more than 2.5 percent of that total area. The criteria shall reflect the spatial variability in the physical and material character and in the chronology of Archaeological Zone 1, as such variability is presently known from the field investigations in the project area. The project owner shall submit, for CPM review and approval, the CRS's methodology for the mechanical subsurface survey. The methodology would prescribe how archaeological deposits found during the survey would be preserved intact until the conclusion of the survey so that the CRS could structure a representative data recovery sample of the found deposits. The methodology would also take into account how the CRS would recover a sample of the buried land surfaces that may surround individual hearths or groups of hearths and document the material culture assemblages that may be found on such surfaces when the act of the mechanical exposure of the hearths may often truncate the surface from which they were constructed and used. The project owner shall ensure that the CRS's field notes and the forms for the survey areas are sufficient to completely document the mechanical subsurface survey to the satisfaction of the CPM.

d. *Inventory, Phase 3 (Refinement of Provisional District Boundary)*. The project owner shall ensure that the CRS, on the basis of the results of either phase 2a or phase 2b of the data recovery program, drafts a refined provisional boundary for Archaeological Zone 1 that shall become an integral part of the implementation of, among other conditions of certification, **CUL-8 and** subparts 2e and 2f of this condition, **CUL-6**.

e. *Data Recovery, Phase 1 (Hearth Excavations)*. One component of the actual data recovery phase of the data

recovery program would be to excavate small (approximately 1–3 meters square) exposures to uncover and document a sample of the individual hearths that are one constituent of the Zone. The purpose of this documentation would be to gather data to describe the physical variability of the features, to identify and inventory the artifacts and ecofacts that are found in them, and to interpret the methods of construction and the potential uses of the features. The excavation of the hearths shall proceed by hand to, where feasible, remove the archaeological deposits in anthropogenic layers. Where appropriate, the project owner shall ensure that the CRS retain samples of each layer sufficient to submit for radiocarbon assays, and macrobotanical, palynological, geochemical, or other analyses. The balance of each layer shall be screened through hardware cloth of no greater than 1/8-inch mesh. The project owner shall ensure that the CRS excavates a maximum of 12 such small exposures. In consultation, the CRS and the CPM shall develop and agree upon a sample of the hearths found as a result of the entire cumulative effort to inventory the archaeological deposits of Archaeological Zone 1 to subject to data recovery excavation. The sample shall reflect the apparent physical, material, and chronological variability of the found features. The project owner shall ensure that the CRS's field notes and the forms for the excavation of the hearths are sufficient to acquire the thorough complement of data necessary to the description of each feature, and the interpretation of the construction and use of each feature to the satisfaction of the CPM.

f. *Data Recovery, Phase 2 (Excavation of Former Land Surfaces)*. The other component of the actual data recovery phase of the data recovery program would be to excavate larger (5 meters square) block exposures to attempt to uncover a sample of the buried land surfaces that may surround individual hearths or groups of them, and to document the material culture assemblages that may be found on such surfaces. The excavation of the surfaces shall proceed by hand to, where feasible, remove the archaeological deposits in anthropogenic layers. Where appropriate, the project owner shall ensure that the CRS retain samples of each layer sufficient to submit for radiocarbon assays, and

macrobotanical, palynological, geochemical, or other analyses. The balance of each layer shall be screened through hardware cloth of no greater than 1/8-inch mesh. The CRS shall try to excavate each block exposure as a single excavation unit rather than as separate one meter square excavation units. The project owner shall ensure that the CRS excavate a maximum of 4 block exposures or excavation blocks, where intact buried land surfaces are found in each excavation block**.** The CRS shall excavate a maximum of 8 block exposures, where intact buried land surfaces are not found in at least four of the blocks excavated. In consultation, the CRS and the CPM shall develop and agree upon a sample of the buried surfaces that would be subject to excavation. The sample shall reflect the apparent physical, material, and chronological variability of the hearth features around which the buried surfaces may be found. The project owner shall ensure that the CRS's field notes and the forms for the excavation of the surfaces are sufficient to acquire the thorough complement of data necessary to the description of the distributions of artifacts and ecofacts across each surface, and the interpretation of the use of each surface, to the satisfaction of the CPM.

g. *Material Analyses*. The project owner shall ensure that the HRTP articulates the anticipated scope of the analyses of the cumulative artifact and ecofact collections that have been and will be the result of the investigations of Archaeological Zone 1, articulates the analytic methods to be used, and articulates how the data sets that such analyses will produce are relevant to the themes and questions in the research design for the Zone.

h. *Report Preparation*. The project owner shall ensure that the HRTP states that a conclusory report is one of the requirements of the data recovery program, and also articulates the outline of, and the production schedule and approval process for the subject report.

3. *California Register of Historical Resources Registration*. The project owner shall prepare a California Register of Historical Resources nomination for Archaeological Zone 1 and submit the nomination to the State Historic Resources Commission for formal consideration. The

project owner shall ensure that the CRS, as a part of the registration effort, derives a permanent district name for the Zone to replace the temporary designation of "Archaeological Zone 1." The CRS shall also ensure that the nomination reflects a final formal boundary for the district, a boundary that the CRS shall derive on the basis of the results of the data recovery program and present in the conclusory report for that program.

4. *Outreach Initiatives*
   a *Professional Outreach*. The project owner shall prepare a research paper and present it at a professional conference, or prepare and publish a peer-reviewed journal article to inform the professional archaeological community about Archaeological Zone 1 and to interpret its implications for our understanding of the prehistory and early history of Native American life in the region.

   b. *Public Outreach*. The project owner shall prepare and present materials that interpret Archaeological Zone 1 for the public. Potential public interpretation efforts may include the preparation of an instructional module for use in local school districts, or the preparation of a display for existing public interpretation venues such as Red Rock Canyon State Park.

Verification: At least 210 prior to the onset of construction-related ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, the project owner shall ensure that the CRS completes the geophysical test referred to in subpart 2a, **CUL-6,** above, and as set out in the HRTP component of the HRMP (**CUL-4**), and submit, for the review and approval of the CPM, a formal assessment of the reliability of the use of magnetometry to locate buried hearths in the Zone. If the geophysical test demonstrates that the use of magnetometry appears to be reasonably reliable in this regard, then the project owner shall also submit, for the review and approval of the CPM, the precise geographic coordinates of the provisional boundary of Archaeological Zone 1 and a stratified random sample for a broader magnetometry survey of 10 percent of Archaeological Zone 1 and of the area 30 meters to the southwest of the provisional district boundary. If the geophysical test demonstrates that the use of magnetometry does not appear to be reasonably reliable, then the project owner shall submit, for the review and approval of the CPM, a stratified random sample for a mechanical subsurface survey of 2.5 percent of Archaeological Zone 1 and of the area 30 meters to the southwest of the provisional district boundary.

At least 105 days prior to the onset of construction-related ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, the project owner shall ensure that the CRS completes the formal inventory of that area under, as appropriate, subparts 2b or 2c, **CUL-6** and submits, for the review and approval of the CPM, a preliminary report, prepared by or under the direction of the CRS, of the results of the formal inventory, the precise geographic coordinates of the refined provisional district boundary (subpart 2d, **CUL6**), and separate samples for the data recovery excavation of a finite number of the hearths found in Archaeological Zone 1 (subpart 2e, **CUL-6**) and of a finite number of block exposures to reveal intact buried land surfaces there (subpart 2f, **CUL-6**). The project owner shall ensure that the preliminary report is a concise document that provides descriptions of the schedule and methods of the inventory field effort, a preliminary tally of the numbers and, where feasible, the types of archaeological deposits that were found, a discussion of the potential range of error in that tally, and a map of the locations of the found archaeological deposits that has topographic contours and the project site landform designations as overlays. The results of the formal inventory, as set out in the preliminary report, shall be the basis for the refinement of the provisional district boundary. The project owner shall ensure that the CRS then derives the samples for the hearths and the buried land surface block exposures relative to the refined provisional district boundary.

At least 30 days prior to the onset of construction-related ground disturbance anywhere to the northeast of the refined provisional boundary for Archaeological Zone 1, subsequent to the CPM's approval of said boundary, the project owner shall ensure that the CRS completes the data recovery phases of the data recovery program (subparts 2e and 2f, **CUL-6**) and submits, for the review and approval of the CPM, a preliminary report of the results of those phases. The preliminary report shall be a concise document that provides descriptions of the schedule and methods of the data recovery effort, technical descriptions of excavated archaeological features and buried land surfaces that, while draft in format, present the highest resolution of technical data that can be derived from the data recovery field notes, plan and, as appropriate, profile drawings and photographs of excavated archaeological features and buried land surfaces, and technical descriptions and appropriate graphics of the stratigraphic contexts of excavated archaeological features and buried land surfaces. No construction-related ground disturbance shall occur to the northeast of the refined provisional boundary for Archaeological Zone 1 prior to the project owner's receipt, in writing, of the CPM's approval of the preliminary data recovery report.

No longer than 180 days subsequent to the CPM's approval of the preliminary data recovery report, the project owner shall ensure that the CRS completes the requisite material analyses for, prepare, and submits, for the approval of

the CPM, the conclusory report for the data recovery program (subpart 2h, **CUL-6**).

No longer than 240 days subsequent to the CPM's approval of the preliminary data recovery report, the project owner shall ensure that the CRS completes the preparation of the California Register of Historical Resources nomination for Archaeological Zone 1 and submits the nomination to the State Historic Resources Commission for formal consideration (subpart 3, **CUL-6**). The nomination shall reflect the formal district boundary that shall be one result of the implementation of the data recovery program, as presented in the conclusory report for that program.

No longer than 240 days subsequent to the CPM's approval of the preliminary data recovery report, the project owner shall ensure that the CRS completes requirements of subpart 4a, **CUL-6** and provides the CPM with three copies of the final product of that effort, and prepares, and submits for the approval of the CPM, a product that fulfills the requirements of subpart 4b, **CUL-6**. Upon the CPM's approval of the latter product, the project owner shall ensure, as appropriate, the product's installation, implementation, or display.

WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

CUL-7 Prior to and for the duration of construction-related ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, lay down area, and along the linear facilities routes. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

1. A discussion of applicable cultural resources statutes, regulations, and related enforcement provisions;

2. A summary of the effects of the proposed project on cultural resources;

3. A summary of the historical resources management program that has been negotiated to address the effects of the proposed project on cultural resources;

4. A discussion of the role of the workers in the historical resources management program;

5. Samples or visuals of artifacts that might be found in the project area;

6. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;

7. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, the range of variation in the appearance of such deposits across the project area, and, more especially, the known range of variation in the archaeological deposits of Archaeological Zone 1;

8. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt construction-related ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;

9. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery, particularly in Archaeological Zone 1 for prehistoric archaeological deposits that are inconsistent with the known range of variation in the archaeological deposits there, and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;

10. An informational brochure that identifies the reporting procedures for Archaeological Zone 1 and non-Archaeological Zone 1 areas in the event of a discovery;

11. An acknowledgement form signed by each worker indicating that they have received the training; and

12. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification: At least 30 days prior to the start of ground disturbance anywhere on the project site the CRS shall provide, as a stand-alone document or as an element of the HRMP, the training program draft text and graphics and the informational brochure to the CPM for review and approval.

At least 30 days prior to the start of ground disturbance anywhere on the project site, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

Monthly, until all construction-related ground disturbance is complete, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers at the project site and on the linear facilities who have completed the training in the prior month and a running total of all persons who have completed training to date.

CONSTRUCTION MONITORING PROGRAM

CUL-8 The Monitoring and Discovery Plan (subpart 13, **CUL-4**) shall include separate protocols for construction monitoring, and for the discovery and treatment of new cultural resources that are found or when unanticipated effects to known cultural resources become evident during construction-related ground disturbance. The construction monitoring protocol shall specify the different procedures below that the project owner shall follow during construction-related ground disturbance in different parts of the project area and on different landforms in the project area, where the lateral extent and the character of project area landforms are known. As the source of the water that would be necessary to operate the proposed project remains an active focus of discussion, staff includes specifications here for the monitoring procedures that the project owner would need to follow in the event that the project owner ultimately chooses to construct either the Rosamond Community Service District or the City of California City treated wastewater pipeline alternative. Other alterations of the project area under **CUL-3** shall require the project owner to append the Monitoring and Discovery Plan to include monitoring procedures for the actions that would occur in any lands added to the original project area. The appended procedures shall be consistent with the landform-specific monitoring protocols below.

The project owner shall ensure that the CRS, alternate CRS, or CRMs actively monitor, full time, all construction-related ground disturbance in the project area, in accordance with the landform-specific protocols below, to ensure that there are no impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner. Additionally, the project owner shall ensure that construction personnel, trained to recognize what archaeological site types are and are not known for Archaeological Zone 1, passively monitor construction-related ground disturbance in the project area, also in accordance with the landform-specific protocols below.

Landform-specific Monitoring Protocols. The construction monitoring protocols specific to the different landform contexts in the project area

variously have active and passive components. The active components relate to the construction monitoring protocols that are required for landform contexts that are outside of Archaeological Zone 1, and the passive components relate to the protocols for such contexts that are in Archaeological Zone 1. The efficacy of the whole series of construction monitoring protocols below depends on the project owner, prior to the initiation of construction-related ground disturbance, physically staking out the boundary of each landform and the refined provisional district boundary for Archaeological Zone 1, and ensuring that the primary author of the January 2009 geoarchaeology study for the proposed project conduct field orientations for the CRS, the alternate CRS, and each CRM so that they are able to recognize the project area landforms and key subsurface sedimentary features such as paleosols and sedimentary contacts. The boundary lines on the surface of the project site are the referents that direct the differential implementation of the active and passive components of the protocols, and the subsurface paleosols and sedimentary contacts are the referents that vertically bound the requisite construction monitoring areas.

Monitoring Protocol for Landform Hf1

Active component. The active component of the monitoring protocol for the Hf1 landform requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction-related ground disturbance down to the upper boundary of the paleosol that is buried in the landform. That boundary, which is the upper boundary of a preserved A horizon, is approximately 2 meters below the present surface of the landform.

Passive component. The owner shall have construction personnel on the project passively monitor for and halt construction upon the discovery of buried archaeological deposits in the portion of Archaeological Zone 1 on the Hf1 landform that appear to represent archaeological site types not previously known for the Zone. Any such discovery shall be subject to the discovery protocol of **CUL-9**. Construction personnel shall be given training, as part of the training program of **CUL-7**, which would facilitate the field recognition of archaeological site types that are and are not known for the district.

Applicability

Project Site. Active monitoring to the southwest of the refined provisional district boundary, and passive monitoring to the northeast of the refined provisional district boundary.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Passive monitoring to the northeast of the refined provisional district boundary.

Monitoring Protocol for Landform Hf1d

Active component. The active component of the monitoring protocol for the Hf1d landform requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction-related ground disturbance down approximately 2 meters from the present surface of the landform to the upper contact of what are presently thought to be Pleistocene-age deposits of pebbles and cobbles.

Passive component. No passive monitoring on the Hf1d landform.

Applicability
Project Site. Active monitoring across the whole extent of the landform on the project site.

Transmission Line Infrastructure. Active monitoring across the whole extent of the landform in the portion of the project area that encompasses the construction area for the transmission line infrastructure. To implement the protocol for the Hf1d landform in the construction area for the transmission line infrastructure, the project owner shall project out the boundary between the Hf1d and Hf3 landforms, which appears to be coincident with the Cantil Valley fault, to the southwest of the project site, and implement the protocol for the Hf1d landform to the southeast of that projected boundary.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Not applicable.

Monitoring Protocol for Landform Hf2

Active component. The active component of the monitoring protocol for the Hf2 landform requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction-related ground disturbance to the maximum depth of such disturbance.

Passive component. The project owner shall have construction personnel on the project passively monitor for and halt construction upon the discovery of buried archaeological deposits in the portion of

Archaeological Zone 1 on the Hf2 landform that appear to represent archaeological site types not previously known for the Zone. Any such discovery shall be subject to the discovery protocol of **CUL-9**. Construction personnel shall be given training, as part of the training program of **CUL-7**, which would facilitate the field recognition of archaeological site types that are and are not known for the district.

Applicability

Project Site. Active monitoring to the southwest of the refined provisional district boundary, and passive monitoring to the northeast of the refined provisional district boundary.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Passive monitoring to the northeast of the refined provisional district boundary.

Monitoring Protocol for Landform Hf3

Active component. No active monitoring on the Hf3 landform.

Passive component. No passive monitoring on the Hf3 landform.

Applicability

Project Site. Not applicable.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Not applicable.

Monitoring Protocol for Landform Hf4

Active component. The active component of the monitoring protocol for the Hf4 landform requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction-related ground disturbance to the maximum depth of 4 meters.

Passive component. The owner shall have construction personnel on the project passively monitor for and halt construction upon the discovery of

buried archaeological deposits in the portion of Archaeological Zone 1 on the Hf4 landform that appear to represent archaeological site types not previously known for the Zone. Any such discovery shall be subject to the discovery protocol of **CUL-9**. Construction personnel shall be given training, as part of the training program of **CUL-7**, which would facilitate the field recognition of archaeological site types that are and are not known for the district.

Applicability
Project Site. Active monitoring to the southwest of the refined provisional district boundary, and passive monitoring to the northeast of the refined provisional district boundary.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Not applicable.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Active monitoring to the southwest of the refined provisional district boundary, and passive monitoring to the northeast of the refined provisional district boundary.

Monitoring Protocol for Unknown Landforms

Active component. The active component of the monitoring protocol for unknown landforms requires the project owner to have the CRS, alternate CRS, or CRMs actively monitor all construction-related ground disturbance to the maximum depth of any such disturbance.

Passive component. No passive monitoring on unknown landforms.

Applicability
Project Site. Not applicable.

Transmission Line Infrastructure. Not applicable.

Emergency Access Road. Active monitoring for the whole length of the proposed emergency access road, which is outside and projects east of the project site to Neuralia Road.

Rosamond Community Service District or City of California City Treated Wastewater Pipeline Alternatives. Active monitoring for the whole length of either pipeline route alternative, both of which are outside and to the east and south of the project site.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of all construction-related ground disturbance in the project area, in accordance with the Landform-specific Monitoring Protocols, above. Where excavation equipment is actively removing dirt and hauling the excavated material farther than fifty feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no further than fifty feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The research design in the HRMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of noncompliance with the Conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or

ending daily reporting is requested by the CRS and approved by the CPM.

In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.
Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification: At least 30 days prior to the start of ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological. Zone 1 or on the portions of the project area beyond the project site, and at least 270 days prior to the start of ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, the project owner shall submit the Monitoring and Discovery Plan to the CPM for review and approval.

At least 30 days prior to the start of construction-related ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.

Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the HRMP.

At least 10 days prior to the start of construction-related ground disturbance, the project owner shall physically stake out a minimum of every 200 feet along the

surface of the ground and in a conspicuous manner, either the provisional boundary of Archaeological Zone 1, or, if it has been given the approval of the CPM, the refined provisional district boundary for the Zone, and the known boundary of each landform on the project site as each such boundary is reported in the February 6, 2009 preliminary field report for the geo-archaeology study (Young 2009b). The project owner shall engage the author of that preliminary report to assist in the location of each landform boundary on the ground.

At least 30 days prior to the start of construction-related ground disturbance, the project owner shall engage the author of the February 6, 2009 preliminary field report for the geo-archaeology study (Young 2009b) to conduct field orientations for the CRS, the alternate CRS, and each CRM so that they are each able to recognize the project area landforms and key subsurface sedimentary features in the landform-specific monitoring protocols such as paleosols and sedimentary contacts. The replacement of the CRS, the alternate CRS, or CRMs shall necessitate new field orientations to train new personnel.

At least 30 days prior to the start of construction-related ground disturbance in any portion of the project area added under **CUL-3**, the project owner shall submit a numbered appendix to the Monitoring and Discovery Plan to the CPM for review and approval. Each such appendix shall include monitoring procedures for the actions that would occur in lands added to the original project area. The appended procedures shall be consistent with the landform-specific monitoring protocols of **CUL-8**.

Daily, as long as no cultural resources are found, the CRS shall provide a statement that “no cultural resources over 50 years of age were discovered” to the CPM as an e-mail, or in some other form acceptable to the CPM.

At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS’s justification for reducing or ending daily reporting.

At least 24 hours prior to implementing a proposed change in monitoring level, documentation justifying the change shall be submitted to the CPM for review and approval.

No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the Chairpersons of the Native American tribes or groups who requested the information.

Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner’s transmittals of information.

DISCOVERY AND DISCOVERY TREATMENT PROTOCOLS

CUL-9 The Monitoring and Discovery Plan (subpart 13, **CUL-4**) shall include separate protocols for construction monitoring, and for the discovery and treatment of new cultural resources that are found outside of the refined provisional boundary for Archaeological Zone 1, when archaeological site types not previously known for the Zone are found inside said boundary, or when unanticipated effects to known cultural resources become evident during construction-related ground disturbance. The Discovery Protocol shall specify the procedures that the project owner shall follow upon the discovery of a new resource outside of Archaeological Zone 1, of a new archaeological site type in Archaeological Zone 1, or upon the recognition of an unanticipated effect. The project owner shall, in any such instance, grant authority to halt construction-related ground disturbance to the CRS, alternate CRS, and the CRMs. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that cultural resources that may be over 50 years of age are found, or, if younger, determined exceptionally significant by the CPM, or archaeological site types not previously known for Archaeological Zone 1 are found in it, or impacts to such resources can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting as provided in **CUL-8** shall continue during all ground-disturbing activities elsewhere on the project site. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for mitigation of any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.

2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.

3. The CRS has completed field notes, measurements, and photography for a DPR 523A “Primary Record” form. Unless the find can be treated prescriptively, as specified in the HRMP, the “Description” entry of the DPR 523A “Primary Record” form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.

4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS’s proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

   The discovery and discovery treatment protocols in the Monitoring and Discovery Plan shall specify that the preferred treatment strategy for any buried archaeological deposits found during the course of the construction, operation, and maintenance of the proposed project is avoidance. A mitigation plan shall be prepared for any CRHR-eligible (as determined by the CPM) resource, impacts to which cannot be avoided, except for archaeological site types in Archaeological Zone 1 that are already known to be characteristic of that district.

   Prescriptive treatment plans may be included, where appropriate, in the HRMP for cultural resources that represent marginal data sets.

Verification: At least 30 days prior to the start of ground disturbance anywhere on the project site 30 meters or greater to the southwest of the provisional boundary of Archaeological Zone 1 or on the portions of the project area beyond the project site, and at least 270 days prior to the start of ground disturbance anywhere in Archaeological Zone 1 or 30 meters or less to the southwest of the provisional boundary for the Zone, the project owner shall submit the Monitoring and Discovery Plan to the CPM for review and approval.

At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt construction-related ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery.

Unless the discovery can be treated prescriptively, as specified in the HRMP, completed DPR 523 Series forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

CULTURAL RESOURCES REPORT (CRR)

CUL-10 The project owner shall submit the final CRR to the CPM for approval. The final CRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format (COHP 1990). The final CRR shall report on all field activities including dates, times and locations, findings, samplings, and analyses. All survey reports, DPR 523 Series forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

If the project owner requests a suspension of construction-related ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification: Within 90 days after completion of all construction-related ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

Within 90 days after completion of all construction-related ground disturbance (including landscaping), if cultural materials requiring curation were collected, the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, to accept cultural materials, if any, from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

Within 10 days after CPM approval, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Tribal Chairpersons of any Native American groups requesting copies of project-related reports.

Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

D. GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

This section summarizes the record concerning the project's potential effects relating to geological and paleontological resources. The evidence evaluates whether project-related activities could result in exposure to geological hazards, as well as whether the facility can be designed and constructed to avoid any such hazard which could impair its proper functioning. These include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, and seiches. Of these, dynamic compaction, hydrocompaction, subsidence, and expansive soils are geotechnical engineering issues which do not typically raise public safety concerns. Next, the evidence assesses whether the project will impact any geologic or mineralogical resources. Finally, the analysis of record examines whether fossilized remains or trace remnants of prehistoric plants or animals are likely to be present at the site and, if so, whether the project's potential impacts to these resources are adequately mitigated. The parties did not dispute any matters in this discipline and neither CURE nor any member of the public commented on geological and paleontological resources. (3/22/2010 RT 14-15, 22-23; Exs. 9; 13; 24; 25, 39; 54; 148; 201; 236; 241; 284; 293; 500, § 5.2; 514.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Geologic Hazards

The BSEP will be located in the Koehn Lake sub-basin of Fremont Valley, an enclosed drainage basin in the northwest corner of the Mojave Desert Geomorphic Province in eastern Kern County, California. The Mojave Desert is a broad interior region of isolated mountain ranges which separates vast expanses of desert plains and interior drainage basins. In California, its overall topography is dominated by southeast to northwest trending faulting with a secondary east to west trending alignment. The BSEP site is located near the northwest boundary of the Mojave Desert Geomorphic Province where it terminates against the Garlock Fault. In Fremont Valley, the Garlock Fault defines the northwest border of the Mojave Desert province, separating it from the southern end of the Sierra Nevada Geomorphic Province. (Ex. 500, p. 5.2-4.)

The surface areas of the plant site, which were disturbed by agricultural activities, are characterized by fine to coarse sand and subangular to subrounded fine to coarse gravel cover. Subsurface investigation indicates the near surface formation is composed of sand and silt dominated layers, with a minor clay

component in scattered locations. Ground water depth in the area is 304 to 487 feet below the surface. However, ground water levels in the valley may be slowly rising as annual recharge replenishes the aquifer(s) beneath the site. (Ex. 500, p. 5.2-6.)

Staff independently reviewed available maps, reports, and related data pertaining to the site. (Ex. 500, p. 5.2-9.) Ground shaking and fissuring due to subsidence settlement represent the main geologic hazards. (Ex. 500, p. 5.2-7.) Due to its location near the junction of three geomorphic provinces, the project site is close to several active and potentially active faults related to regional strike-slip faulting and extensional tectonics. (Ex. 500, pp. 5.2-4 to 5.2-5.)

There are 20 Type A and Type B faults and fault segments within 70 miles of the site.[25] Of these, the closest and most likely to impact operation of the BSEP are the central and western segments of the Garlock Fault System. The Garlock Fault is one of the major fault systems in southern California, marking the geographic boundary between the Mojave Desert geomorphic province and, in the project area, the southern end of the Sierra Nevada Geomorphic province. Although the fault has not produced any large historic earthquakes, geomorphic and stratigraphic evidence indicates it has done so in the past. The most recent documented fault movement occurred along the Central Garlock Fault segment, northwest of the project site, between approximately 200 to 550 years ago. The western segment of the Garlock Fault is traceable across the southeast portion of the site. This segment forms a prominent scarp in this area, but no movement has been documented. (Ex. 500, pp. 5.2-9 through 5.2-10.)

Based on previous drilling and on the soil profile generated for this site by the geotechnical investigation, the site soil class is assumed to be seismic Class D. The estimated peak horizontal ground acceleration for the power plant is 0.85 times the acceleration of gravity (0.85g) for bedrock acceleration based on 2 percent probability of exceedence in 50 years under 2007 CBC criteria. For a Class D site, the soils profile amplifies the acceleration of the ground surface to 1.94g. (Ex. 500, p. 5.2-10.)

[25] These are identified in Exhibit 500, Table 2, pp. 5.2-5 to 5.2-6. Type A faults have slip-rates of $\geq$5 millimeters per year (mm/year) and are capable of producing an earthquake of magnitude 7.0 or greater. Type B faults have slip-rates of 2 to 5 mm per year and are capable of producing an earthquake of magnitude 6.5 to 7.0. (Ex. 500, p. 5.2-5.)

The evidence also shows that:

- The deep groundwater table (greater than 300 feet down) alleviates the potential for liquefaction. Consequently, there is also no potential for lateral spreading at the site during seismic events. (Ex. 500, pp. 5.2-10 to 5.2-11.)

- Site specific geotechnical investigation indicates that the site's underlying subsurface alluvial deposits are generally too dense to allow significant hydrocompaction or dynamic compaction. (Ex. 500, p. 5.2-11.)

- The dense alluvial deposits and the absence of petroleum, natural gas, or water withdrawals at the site minimize the possibility of site-wide subsidence. (Ex. 500, pp. 5.2-11 to 5.2-12.)

- The silts and silty sand which form most of the site's subsurface are not expansive. (Ex. 500, p. 5.2-12.)

- Landslides, flooding, tsunamis, and seiches pose insignificant risks. (Ex. 500, pp. 5.2-12 to 5.2-13.)

In addition, the evidence shows that either historic ground water withdrawals, lateral extension between the western and central segments of the Garlock Fault, or possibly a combination of the two forces have resulted in formation of near-surface tension cracking and fissures in the site area. Near surface fissuring related to the Garlock Fault has also been documented near the eastern end of the Central Segment. In the site area, surface fissures appear to form when runoff from storm events causes erosion along the plane of tension cracks. These fissures can grow to several yards in width and depth, and have caused historic damage to roads, power lines, and buried pipelines. (Ex. 500, p. 5.2-12.)

Therefore, we believe that additional examination in the power block area during construction is necessary to verify near surface soil stability and the absence of faults, tension cracks, or fissures which could fail and affect the integrity of power block structures. A geologist experienced in recognition and examination of faults and fissures shall be available during trenching for the ancillary facilities, particularly the natural gas pipeline, to document any potential near surface soil anomalies and facilitate any appropriate changes in design. (Ex. 500, pp. 5.2.-1, 5.2-12; Condition **GEO-1**.) Furthermore, the evidence establishes that, assuming compliance with the required design standards set forth in the **FACILITY DESIGN** section, the potential is low that geologic hazards will impact the project during its practical design life. (Ex. 500 pp. 5.2-1, 5.2-7 to 5.2-9, 5.2-13 to 5.2-15.)

2. Mineralogic and Paleontologic Impacts

There are no known viable geological or mineralogical resources at the project site. Thus, development will not result in the loss of a known mineral resource valuable to the region or the State, nor will it interfere with active mining claims or operations. (Ex. 500, pp. 5.2-1, 5.2-8, 5.2-14.)

The evidence shows that Staff reviewed Applicant's paleontological resources assessment as well as literature and records searches from the San Bernardino County Museum and the Natural History Museum of Los Angeles County. (Ex. 500, p. 5.2-7.) The site's near-surface formation is composed, to an unknown and probably variable depth, of unconsolidated Holocene flood plain and fan deposits. Given their recent age (<10,000 years), these deposits are unlikely to contain significant paleontological resources. (Ex. 500, p. 5.2-8.) Moreover, no vertebrate fossils have been found at the site or within a one-mile radius, nor were important paleontological resources observed on the BSEP site during the paleontological field survey conducted for the AFC. (Ex. 500, pp. 5.2-8, 5.2-13.)

Overall, the evidence establishes that the probability of encountering paleontological resources during construction is low. Should such resources be discovered, however, Conditions of Certification **PAL-1** to **PAL-7** provide adequate protection as they will mitigate any construction impacts to less than significant levels. This mitigation will occur through a worker education program in conjunction with the monitoring of earthworks activities by a professional paleontologist. (Ex. 500, pp. 5.2-8, 5.2-13 to 5.2-14.)

FINDINGS OF FACT

Based on the uncontroverted evidence, we make the following findings:

1. The project is located in an active geologic area.

2. Ground shaking and fissuring are the main geologic hazards which could affect the Beacon Solar Energy Project.

3. Potential geologic hazards to the project are effectively mitigated by standard engineering design measures as specified in Conditions **GEN-1, GEN-5,** and **CIVIL-1** of the **Facility Design** section of this Decision and by Condition **GEO-1,** below.

4. Liquefaction, lateral spreading, dynamic compaction, hydrocompaction, landslides, flooding, tsunamis, and seiches pose low or negligible project risks.

5. There is no evidence of existing or potential geological or mineralogical resources at the project site or along the linear alignments.

6. There are no known paleontological resources on the project site.

7. The project owner will implement several mitigation measures to avoid impacts to paleontological resources, if discovered, including worker education, preparing a Paleontological Monitoring and Mitigation Plan, and having a Paleontologic Resource Specialist on-site.

CONCLUSIONS OF LAW

1. The Conditions listed below ensure that project activities will not cause significant adverse direct, indirect, or cumulative impacts to geological, mineralogical, or paleontological resources.

2. Compliance with the Conditions of Certification specified below will ensure that the Beacon Solar Energy Project conforms to all applicable laws, ordinances, regulations, and standards related to geological, mineralogical, and paleontological resources as identified in **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

GEO-1 The project owner shall have all trenching for underground utilities located within 500 feet of a known active or potentially active fault examined by a licensed geologist. The faults to be examined are:

- Garlock Fault East
- Garlock Fault West
- Randsburg-Mojave Fault
- Muroc Fault.

In addition, the foundation excavations for occupied structures, the turbine-generators, and the steam generator shall be similarly examined. The purpose of the examination is to verify the absence or presence of splay or fissures related to the major fault systems in the areas described. Fissures and/or fault splays, if present, may require mitigation in accordance with supplementary recommendations from the project geotechnical and structural engineers.

Verification: The geologist shall submit to the CPM appropriate, brief field reports describing and documenting his/her findings and interpretation. Any recommendations for mitigation developed by the geologist or the geotechnical or structural engineers must also be submitted for review.

PAL-1 The project owner shall provide the compliance project manager (CPM) with the resume and qualifications of its paleontological resource specialist (PRS) for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain approval from the CPM of the replacement PRS. The project owner shall keep resumes on file for qualified paleontological resource monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the Society of Vertebrate Paleontology (SVP) guidelines of 1995. The experience of the PRS shall include the following:

1. Institutional affiliations, appropriate credentials, and college degree;

2. Ability to recognize and collect fossils in the field;

3. Local geological and biostratigraphic expertise;

4. Proficiency in identifying vertebrate and invertebrate fossils; and

5. At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors as he or she deems necessary on the project. Paleontological Resource Monitors (PRMs) shall have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or

- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification:

At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project and stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor's beginning on-site duties.

Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction lay-down areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and plan and profile drawings for the utility lines are acceptable for this purpose. The plan drawings shall show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the project or its linear facilities changes, the project owner shall provide maps and drawings reflecting those changes to the PRS and the CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS and the CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week, and until ground disturbance is completed.

Verification:

At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares, and the project owner submits to the CPM for review and approval, a paleontological resources monitoring and mitigation plan (PRMMP) to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities and may be modified with CPM approval. This document shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the Society of Vertebrate Paleontology (SVP 1995) and shall include, but not be limited to, the following:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to PRMMP procedures;

2. Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the Conditions of Certification;

3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;

4. An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different

5. A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling;

6. A discussion of procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;

7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;

8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum which meets the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources;

9. Identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution; and

10. A copy of the paleontological Conditions of Certification.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for the following workers: project managers, construction supervisors, foremen, and general workers involved with or who operate ground-disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of an initial in-person PRS training during the project kick off for those mentioned above. Following initial training, a CPM-approved video or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or

other areas of interest or concern. No ground disturbance shall occur prior to CPM approval of the Worker Environmental Awareness Program (WEAP) unless specifically approved by the CPM.

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;

2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontological sensitivity;

3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;

4. Instruction that employees shall halt or redirect work in the vicinity of a find and contact their supervisor and the PRS or PRM;

5. An informational brochure that identifies reporting procedures in the event of a discovery;

6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and

7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

Verification: At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow. At least 30 days prior to ground disturbance, the project owner shall submit the script and final video to the CPM for approval if the project owner is planning to use a video for interim training. If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to authorization from the CPM. In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and auguring in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and will be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.

2. The project owner shall ensure that the PRM(s) keeps a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

3. The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources Conditions of Certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the Conditions of Certification.

4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours, or Monday morning in the case of a weekend event, where construction has been halted because of a paleontological find.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities to be placed in the monthly compliance reports. The summary shall include the name(s) of PRS or PRM(s) active during the month; general descriptions of training and monitored construction activities; and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of

samplings within each unit, and a list of identified fossils. A final section of the report shall address any issues or concerns about the project relating to paleontological monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring which differ from the plan identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-6 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during project construction.

Verification: The project owner shall maintain in his/her compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after project completion and approval by the CPM of the paleontological resource report (see Condition of Certification **PAL-7**). The project owner is responsible for paying any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information, and be submitted to the CPM for review and approval.The report shall include, but is not limited to: a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

Certification of Completion
Worker Environmental Awareness Program
Beacon Solar Energy Project (08-AFC-2)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
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24.			
25.			

Cultural Trainer: _____ Signature:_____ Date: ___/___/____

PaleoTrainer: _____ Signature:_____ Date: ___/___/____

Biological Trainer: _____Signature:_____ Date:___/___/____

VII. LOCAL IMPACT ASSESSMENT

In the following sections of this Decision, we review whether the Beacon Solar Energy Project will result in significant local impacts on nearby population centers, including an excessive burden on community services, unmitigated noise, increased traffic congestion, and/or adverse visual effects. These potential impacts are discussed under the technical topics of land use, socioeconomics, noise, traffic and transportation, and visual resources.

A. LAND USE

The evidence on land use was heard in the evidentiary hearings conducted on March 22, 2010 and June 8, 2010. (3/22/10 RT 31-32; Exs. 11; 46; 47; 55; 57; 111; 122; 136; 213; 223; 249; 275; 283; 312; 356; 357; 358; 363; 364; 365; 500; 512; 521; 666; 6/8/10 RT 187:16 -204:17; 210:6–226:6.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

According to CEQA Guidelines [Cal. Code Regs., tit. 14, §§ 15000 et seq., Appen. G, §§ II, IX, XVI], a project results in significant land use impacts if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.
- Conflict with existing zoning for agricultural use or a Williamson Act contract.
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural uses.
- Physically disrupt or divide an established community.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project. This includes, but is not limited to, a General Plan, community or specific plan, local coastal program, airport land use compatibility plan, or zoning ordinance.

- Create individual environmental effects which, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable, compound, or increase other environmental impacts. (Ex. 500, pp. 4.5-3 to 4.5-4.)

Local ordinances and policies applicable to the project include the Kern County General Plan 2007 including the Land Use, Open Space and Conservation Element, Energy Element and Military Readiness Element; the Kern County Airport Land Use Compatibility Plan (Policy 1.7c); and, the Kern County Ordinance Code (2005) (Ex. 500, p. 4.5-2.)

1. The Site

The site of the Beacon Solar Energy Project (BSEP) is located along the eastern side of State Route (SR) -14 about four miles north-northwest of California City's northern boundary, 15 miles north of the town of Mojave, and 24 miles northeast of the city of Tehachapi. The project area is lightly populated with about 35 to 40 single family residences on 2.5-acre to 10-acre parcels within a community called Cantil, which is just north of the BSEP site. Land surrounding the project site, and the project site itself, is largely undeveloped, flat, desert terrain. The closest residence is approximately 0.3-mile north of the nearest project site boundary. BSEP will connect with the Los Angeles Department of Water and Power's (LADWP's) 230 kV Barren Ridge Switching Station, which is on the west side of SR-14 about 1.5 miles southwest of the project site (Ex. 500, p. 4.5-1.)

The BSEP plant site, construction laydown areas, power block, and transmission line route are all located within designated agricultural zones and parts of the project site are in flood and seismic hazard zones. The transmission line route is displayed on **Land Use Figure 1**. The Applicant owns 26 of the 29 separate parcels of the 2,012-acre site for the project and is in the process of acquiring the remaining three. The construction parking area will also be located onsite. (Ex. 500, p. 4.5-3.)

2. Potential Impacts

a. Conversion of Farmland

The project site was previously used for intensive agricultural activities in the mid 1980s. The evidence indicates that site has not been irrigated since 2000 and the property is not designated as "farmland" in the Farmland Mapping and

Monitoring Program maintained by the California Department of Conservation. There are no lands within the project site under Williamson Act contract. Neither the construction nor operational activities of the project will result in any impacts to existing agricultural operations or foreseeable future agricultural use. Therefore, the project will not result in the conversion of farmland to non-agricultural use or conflict with existing agricultural zoning or Williamson Act contracts. The existing zoning of the project site allows for solar energy electrical generators. The project will have no impact with respect to farmland conversion. (Ex. 500, p. 4.5-4.)

b. Division of Existing Community

The BSEP site is located near the community of Cantil which is designated as a Special Treatment Area as noted in Kern County General Plan Chapter 1.5. These areas are generally small rural communities located throughout the county that are historically identifiable as a mixture of residential and supportive commercial and other uses serving the community and the surrounding population. The county is committed to ensuring that these communities retain their unique character and that they are preserved and enhanced by recognizing the scale, density, size, and composition of development. The northern portion of the plant site is within the Cantil Rural Community Area as designated in Map Unit 5.6 of the Residential chapter within the Special Treatment Areas section of the General Plan. The applicable goal in this chapter is to minimize land use conflicts between residential and resource, commercial, or industrial land uses (Ibid, pg. 35). The evidence indicates the project's footprint on the Cantil Community Area is bounded to the north by Richards Avenue and to the west by Sixtieth Street and will not divide this community. (Ex. 11, Figure 5.7-5; Ex. 500, pp. 4.5-4 to 4.5-5.)

c. Conflict with Habitat or Conservation Plan

The project site is not subject to any Habitat or Natural Community Conservation Plan or within the boundaries of any wildlife preserve or critical habitat area. (Ex. 500, p. 4.5-5.)

d. Growth Inducing Impacts

CURE raised the issue of growth inducing impacts that might arise from upgrading the existing wastewater treatment facilities (WWTF) at Rosamond Community Services District (RCSD) and California City claiming that the

upgrades would result in further residential, commercial and industrial growth (CURE Response Brief 6/1/10, p. 12 et seq.). CURE argues that both RCSD and California City underestimate "significant Project and cumulative impacts on growth and water resources." (CURE Response Brief 6/1/10, pp. 14 and 15). Energy Commission Staff analyzed the growth inducing impacts of upgrades to the WWTFs at RCSD and California City separately. (Ex. 512 citing Ex. 507, 508; see also Exs. 340, 342 through 356.)

For RCSD, Assistant General Manager and District Engineer, Dennis Lamoreaux testified that the WWTF upgrade "is not an expansion of the plant's capacity to process incoming waste water, only to further process existing secondary treated wastewater to tertiary treated. Therefore, phase II cannot reasonably be expected to induce additional population growth." (Ex. 507, p. 2 ¶ 8.)

As noted in the Energy Commission Staff Reply Brief, the Phase II expansion, as it relates to the Beacon project, is only an upgrade of the existing secondary treatment facility to tertiary levels. Beacon's projected costs cover only that portion of the transmission main and booster stations, seasonal storage, and tertiary wastewater treatment plant expansion necessary to provide a constant flow rate of tertiary-treated water to the Beacon facility. (Ex. 512, p. 2.)

Staff's expert testified that upgrades of the existing WWTF's ability to further treat effluent to a greater level of clarity would not substantially contribute to population growth, distribution, or concentration, or increased demand for public services in the Rosamond area. It also would not remove or expedite removal of existing obstacles to population growth or expand existing service areas beyond projections that do not include the proposed project or upgrade to the existing WWTF. (*Id*.)

We concur with Staff's and Mr. LaMoreaux's conclusions that the proposed upgrade of the RCSD WWTF from secondary to tertiary treatment facilities is not an expansion of the WWTF's capacity to process incoming wastewater and would not induce additional population growth. An increase in the level of treatment for the effluent produced by the existing WWTF would not increase the overall capacity of the plant to treat sewage inflow or the number of homes or businesses that can be served by the existing system. Additionally, even effluent treated to the tertiary level is not considered potable and may not be used for drinking water. Therefore, increased availability of tertiary-treated water would not provide a source of public water to serve additional customers. We find that

there would be no growth-inducing impact from the proposed upgrade to the RCSD WWTF secondary treatment facilities.

Staff analyzed the testimony of Michael Blevins, Director of Public Works for California City in conjunction with the city's General Plan, census data, MOU with Lahontan RWQCB and housing listings. (Exs. 344; 345; 346; 347; 508; 512.) Staff's expert explains that California City is a planned community, with a projected population by 2020 in excess of 20,000, which would represent an increase of approximately 3.5 percent. There are currently 23,000 undeveloped residential lots in California City, designed to provide for the projected population growth through 2100. Restrictions associated with the 1989 MOU with the Lahontan RWQCB limits the City's ability to permit construction of residences at a density of more than two structures per acre in certain areas where sewage treatment is dependent on septic systems rather than public sewer. Replacement of the existing network of septic systems is necessary if the City is to comply with the Kern Council of Governments Blueprint Program, the requirements of AB 32, SB 375, and related climate change policies. Development of an *Upgrade.*

Feasibility Plan for the California City Tertiary Waste Water Treatment Plant is currently underway as the first step in expanding the WWTF and will need to be implemented regardless of the outcome of the BSEP. (Ex. 512, p. 3.) Conversion from septic to sewer system is also necessary to halt and prevent further contamination of California City's groundwater. (Ex. 354, pp. 74, 77; 6/8/10 RT 179:18-22.)

Energy Commission staff agreed with CURE in assuming that an increase in the capacity of the California City WWTF to accept and treat additional sewage would increase the permitted density of development within certain zoning districts in California City. It would also expedite removal of an existing obstacle to construction on existing subdivided plats. However, increased density does not necessarily equate to a substantial increase in population, as existing renters may become new homeowners or existing homeowners may upgrade. WWTF expansion will allow up to 2,500 existing homes to connect to the public sewer system, which will provide sufficient recycled water to supply the BSEP. However, the planned capacity will also allow a limited number of new homes to be connected to the system to accommodate future growth, and provide a surplus of recycled water for City use. The City anticipates the WWTF expansion could allow up to a 10 percent increase in housing starts in some areas, compared to the 3.5 percent annual growth potential on individual septic

systems, but the evidence shows that this is totally unrelated to approval and construction of the BSEP. (Ex. 512, p. 3; 6/8/10 RT 87:5-20; 96:7-97:21.)

Explained in the **Soil and Water** section of this Decision is that while a contract to supply the BSEP with recycled water and payment of the plant's proportional share of the WWTF expansion cost would facilitate construction of the expansion, it will not cause it. Expansion of the existing WWTF is not the result of or dependent on approval and construction of the BSEP. The proposed use of the tertiary-treated water produced by the WWTF, as the byproduct of sewage treatment, will not provide the City with a new or additional source of potable water and, therefore, will not contribute to any expansion of the City's public water supply system or allow it to serve additional customers. (Ex. 512, pp. 3-4.)

Finally, during operation, the BSEP will employ approximately 66 people. Accommodation of this small population increase is not dependent on either the RCSD WWTF tertiary treatment upgrade or expansion of the California City WWTF and connection system. (See **Socioeconomics** section of this Decision for additional information.) (Ex. 512, p. 4.)

On balance, the evidence supports the conclusion that, while upgrades and improvements to California City's waste water treatment system may facilitate development on existing lots, the BSEP's use of tertiary treated water supplied by California City will not directly or indirectly induce substantial population growth in the vicinity of California City. We find that the BSEP will not cause direct, indirect or cumulative significant growth inducing impacts to California City or the surrounding environment.

3. Consistency with Land Use LORS

As required by California Code of Regulations, section 1744, Energy Commission staff evaluates the information provided by the Applicant in the AFC to determine if elements of the project would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or that would normally have jurisdiction over the project except for the Energy Commission's exclusive authority. This includes all applicable federal, state, and local laws, ordinances, regulations, and standards, including those adopted by Kern County. (Ex. 500, p. 4.5-5.)

Portions of the BSEP site are in seismic (Alquist-Priolo Earthquake Fault Zone) and flood hazard (Pine Creek) areas as described in the Physical and

Environmental Constraint chapter of the Land Use, Open Space, and Conservation Element of the General Plan. Policy #10 states that "the County will allow lands which are within flood hazard areas, other than primary floodplains, to be developed in accordance with the General Plan and Floodplain Management Ordinance, if mitigation measures are incorporated so as to ensure that the proposed development will not be hazardous within the requirements of the Safety Element of the General Plan." Condition of Certification **LAND-1** ensures that relevant measures from the Physical and Environment Constraint chapter will be implemented by the Applicant. (Ex. 500, pp. 4.5-5 to 4.5-6.)

The entire length of Pine Tree Creek and an un-named flood wash on the project site will be rerouted to the south and east. Changes to the Federal Emergency Management Agency (FEMA) special flood hazard area (SFHA) would require a Conditional Letter of Map Revision (CLOMR) to address LORS and comply with the Kern County Floodplain Management Ordinance. Because the site is mapped as a Zone A SFHA, the project will be required to follow Zone A map revision requirements described in FEMA's Managing Floodplain Development in Approximate Zone A Areas. Condition of Certification **LAND-1** ensures the project will be consistent with FEMA requirements for floodplain construction. (Ex. 4.5-6.)

The Kern County General Plan also has an Energy Element which has a primary objective of promoting and facilitating energy development. One of the energy related goals is encouraging commercial solar development. Therefore, the project is consistent with the Kern County General Plan. (Ex. 500, p. 4.5-6.)

The BSEP is situated on 2,012 acres which is currently undeveloped and consists of approximately 30 underlying parcels created in the past for future rural residential development. The record indicates that all parcels shall be merged into one parcel in order to comply with all applicable provisions of the Subdivision Map Act. Condition of Certification **LAND-3** requires the merger of these parcels to ensure compliance with this chapter. (Ex. 500, p. 4.5-6.)

The new 3.5-mile transmission line route will extend west across SR-14 and will head south and connect with the existing Barren Ridge Switching Station (see **Land Use Figure 1**). The new transmission line will not present a new physical barrier within the community. Activities associated with the existing rights-of-way and installation of the transmission pole upgrades will not block existing transportation corridors and will only result in limited road delays. (Ex. 500, p. 4.5-6.)

Because the project is consistent with the local land use designations, there will no adverse land impacts. (Ex. 500, p. 4.5-6.)

The project site is zoned Exclusive or Limited Agriculture (A and A-1), which is consistent with the Kern County General Plan Land Use designation shown in **Land Use Figure 1**. Portions of the site are in a Seismic Hazard zone and Flood Zone A (see **Water Resources** section of this Decision for discussion on requirements for building in a flood zone). In addition, the transmission line will cross over land that is zoned Platted Lands. Title 19 of the Kern County Ordinance Code contains ordinances that deal with planning and zoning standards, requirements, and restrictions. Limited agriculture (A-1) specifically provides for resource extraction and energy development uses including solar energy electrical generators, commercial or domestic, exceeding five kilowatts capacity. Exclusive agriculture (A) and Recreation-Forestry (RF) also allows for the same solar energy use. Platted lands (PL) allows for utility and communication facilities such as a utility substation. Transmission option 2 will cross over an RF Zone area. Transmission lines are permitted in RF zoned areas. There are no height limitations except in areas of protected military airspace. (Ex. 500, pp. 4.5-7 to 4.5-8.)

Lorelei Oviatt, Acting Planning Director of the Kern County Planning Department, submitted written comments in a letter dated March 22, 2010 and also commented in person at the March 22, 2010 evidentiary hearing. Specifically, she requested a Condition of Certification that requires the payment of a public services mitigation fee for the specific categories of countywide public protection, sheriff patrol, and investigation and fire protection in an amount "not to exceed $1,060,439 a year" pursuant to the Kern County Capital Improvements Plan (CIP). (3/22/10 RT 386:2-11.)

On May 27, 2010, Ms. Oviatt submitted another letter to the Energy Commission requesting $400,000 per year for emergency response.

Ms. Oviatt submitted live testimony at the June 10, 2010 evidentiary hearing. She requested that the CIP be treated as a LORS. Specifically, she testified that the CIP qualified as a "standard" rather than a law, ordinance or regulation. (6/8/10 RT 211:9-18). However, she also stated unequivocally that the fees requested are neither development fees nor mitigation fees (6/8/10 RT 211:25-212:18; 222:2-17).

Applicant objected to the characterization of the CIP as a LORS and called into question the validity of the CIP and associated Fee Study Report which relies upon the Mitigation Fee Act (Government Code sections 66000-66025) for the authority to impose fees on development projects. [Applicant's Supplemental Brief 6/1/10; Ex. 666, (Draft Impact Fee Study), p. 100.]

The CIP projects the public facilities that will be needed in Kern County due to increased development through year 2030. Although, the development fees are referenced in the CIP, the fee itself is not specifically calculated or adopted in the CIP. To determine the appropriate development fee, Kern County commissioned the Public Facilities Impact Fee Study (Ex. 666, p. 3, et seq.). According to Lorelei Oviatt's January 15, 2010 letter, the Impact Fee Study was "finalized" in May 2009. However, we have no evidence that the Fee Study was adopted by resolution or by ordinance. Kern County's other development fees have been formally adopted as ordinances, for example, fees for park development (Kern County Code of Ordinances § 17.70.020 *et. seq*.), Sewer Facility Impact Fee (Kern County Code of Ordinances § 17.80.030 *et. seq.*). However, Ms. Oviatt testified that "we agree the monetary factors have not been adopted." (6/8/10 RT 213:5-6.) The record establishes that neither the fee nor the Fee Study is a LORS.

Nevertheless, evidence received at the June 8, 2010 evidentiary hearing supported the imposition of Condition of Certification **WORKER SAFETY-8** which requires the project owner to fund its share of ongoing capital and operational costs by making an annual payment to Kern County for the support of emergency services and the fire department's needs for capital, operations and maintenance. Staff's expert testified that an agreement between the Applicant and Kern County was the best way to resolve the issue, since those parties are in the best position to ascertain BSEP's impacts and determine appropriate mitigation measures (6/8/10 RT 189:11 - 201:10.)

On July 2, 2010, the committee received a letter from Ms. Oviatt explaining that on June 29, 2010 the Kern County Board of Supervisors determined and approved the appropriated level of mitigation for all impacts on public services from the BSEP which included the language now adopted in Condition of Certification **WORKER SAFETY-8.** On July 9, 2010, Applicant's counsel confirmed BSEP's acceptance of the terms of Condition of Certification **WORKER SAFETY-8**.

We find that Condition of Certification **WORKER SAFETY-8** adequately mitigates the BSEP's projected impacts on emergency services so no further mitigation is necessary.

4 Land Use Compatibility

The project will be located within the county of Kern General Plan boundaries, in an area that supports agricultural and resource management activities. Most of the BSEP site has a General Plan land use designation of extensive or intensive agriculture. The project is consistent with other uses currently permitted within that land use designation. Surrounding properties are proposed primarily for agriculture and resource management. (Ex. 500, 4.5-8.)

When a jurisdictional authority, such as the county of Kern, establishes zoning districts, it is that agency's responsibility to ensure the compatibility of adjacent zoning districts and permitted uses, and incorporate conditions and restrictions that ensure those uses will not result in a significant adverse impact ("minimum of detriment") to surrounding properties. Therefore, the permitted industrial uses or those deemed equivalent to a permitted use sited on properties zoned agricultural or resource management are compatible with surrounding uses and zoning districts. Those uses operating under a valid use permit will also be considered compatible. (Ex. 500, 4.5-8.)

The BSEP site is located within the 20,000-square-mile R-2508 military range complex and, more specifically, is under a "special use airspace" and a "low level flight path." The California Office of Planning and Research has prepared a R-2508 Joint Land Use Study that examines land use issues involved with this military range complex. Staff has reviewed a letter from the R-2508 Complex Sustainability Office that notes that the BSEP underlies several military air routes and special use airspace. The evidence indicates that the project will not have significant impacts on military activities if certain mitigation measures are implemented. Condition of Certification **LAND-2** will ensure that the project owner advise Department of Defense (DOD) representatives about the radio transmission frequencies used during the project's construction and operation. This will allow DOD representatives an opportunity to determine if project radio transmissions would interfere with military activities. (Exs. 47; 500, p. 4.5-8.)

The record indicates that the BSEP would not result in unmitigated project-related impacts to surrounding properties. As discussed in the **Air Quality, Hazardous Materials, Noise, Public Health, Traffic and Transportation,** and **Visual Resources** sections of this Decision, there is no evidence that the project

will result in any unmitigated public health of environmental impacts to sensitive receptors within a one mile radius of the site. (Ex. 500, p. 4.5-8.)

5. Cumulative Impacts

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects [Cal. Code Regs., tit. 14, § 15065(a)(3).]

The Applicant has identified two additional projects in the general area of the BSEP site. The first is LADWP Barren Ridge-Castaic Transmission Line Project which would begin at the Barren Ridge Switching Station about 1.5 miles south of the project site and would proceed south to Los Angeles County. The second project is the Pine Tree Wind Development which would be located six miles west of the BSEP site. Due to the distance from the BSEP site and the absence of significant land use impacts associated with either project or with the BSEP, cumulative impacts to existing land uses and policies will be less than significant. The Pine Tree site was previously used for grazing and/or was undeveloped land and the new transmission line will be built in an existing transmission corridor. No projects have been identified in the project vicinity that would create significant cumulative land use impacts when considered together with the BSEP. (Exs. 11, p. 5.7-12; 500, p. 4.5-9.)

6. Public Comment

Lorelei Oviatt; Acting Planning Director of the Kern County Planning Department, submitted written comments in a letter dated March 22, 2010 and also commented at the March 22, 2010 evidentiary hearing. Ms. Oviatt submitted live testimony at the June 10, 2010 evidentiary hearing. The Committee's response to Ms. Oviatt's comments is contained under section "3. LORS Consistency", above.

FINDINGS OF FACT

Based on the uncontroverted evidence, the Commission makes the following findings:

1. Local land use ordinances and policies applicable to the BSEP include the Kern County General Plan 2007 including the Land Use, Open Space and Conservation Element, Energy Element and Military Readiness Element; the Kern County Airport Land Use Compatibility Plan (Policy 1.7c); and, the Kern County Ordinance Code (2005).

2. The BSEP plant site, construction laydown areas, power block, and transmission line route are all located within designated agricultural zones and parts of the project site are in flood and seismic hazard zones.

3. The BSEP is not subject to a Williamson Act contract and will not result in conversion of farmland to non-agricultural uses.

4. There is no evidence that the project will physically divide or disrupt an established community.

5. The BSEP will not cause direct, indirect or cumulative significant growth inducing impacts to California City or the surrounding environment.

6. The BSEP will not cause direct, indirect or cumulative significant growth inducing impacts to the City of Rosamond or the surrounding environment.

7. The BSEP is consistent with applicable land use LORS.

8. The BSEP is compatible with surrounding land uses and will not result in any unmitigated public health or environmental impacts to sensitive receptors.

9. The BSEP will comply with Kern County's requirements for construction within a flood hazard area as described in Condition of Certification **LAND-1**.

10. The BSEP will not have a significant impact on military airspace, specifically military R-2508 Complex Sustainability operations or missions as described in Condition **LAND-2**.

11. The BSEP will comply with Kern County's Municipal Code Title 17 (Subdivision Ordinance) by merging all project site parcels as described in Condition **LAND-3**, below.

12. There is no evidence of any direct, indirect, or cumulative land use impacts resulting from development of the BSEP.

CONCLUSIONS OF LAW

1. With implementation of the mitigation measures specified in this Decision, and in the Condition of Certification below, we conclude that construction and operation of the Beacon Solar Energy Project will not result in significant direct, indirect, and cumulative land use impacts.

2. The record contains an adequate analysis of the land use laws, ordinances, regulations, and standards that are relevant to the project and establishes that the project will not create any unmitigated, significant land use effects as defined under the California Environmental Quality Act.

3. The Condition of Certification, below, ensures that Beacon Solar Energy Project will be designed, constructed, and operated in conformance with the applicable land use laws, ordinances, regulations, and standards identified in the evidentiary record and listed in the pertinent portion of **Appendix A** of this Decision.

CONDITIONS OF CERTIFICATION

LAND-1 The project owner shall design and construct the project in accordance with the applicable standards found in the Kern County Ordinance Code (Title 17) which includes the following:

- Building and grading codes ;
- Floodplain management and Storm Water Pollution Prevention Plan;
- Mechanical and electrical code; and
- Energy code.

Verification: At least 90 calendar days prior to the start of construction, including any grading or site remediation on the power plant project site or its associated easements, the project owner shall submit the proposed development plan to the Kern County Planning Department, Kern County Engineering and Survey Services Department Building Inspection Division and Kern County Engineering and Survey Services Department/Floodplain Management Division for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the Kern County Planning Department, Kern County Engineering and Survey Services Department Building Inspection Division and Kern County Engineering and Survey Services Department/Floodplain Management Division. At least 30 calendar days prior to site mobilization, the project owner shall provide copies of any comment letters received from the Kern County Departments, along with any changes to the proposed development plan, to the CPM for review and approval.

LAND-2 The project owner shall notify the Department of Defense (DOD) about the radio frequencies that would be used during the BSEP's operation. This will allow the DOD to determine if the project's use of those radio frequencies would interfere with military activities within the R-2508 Military Complex area.

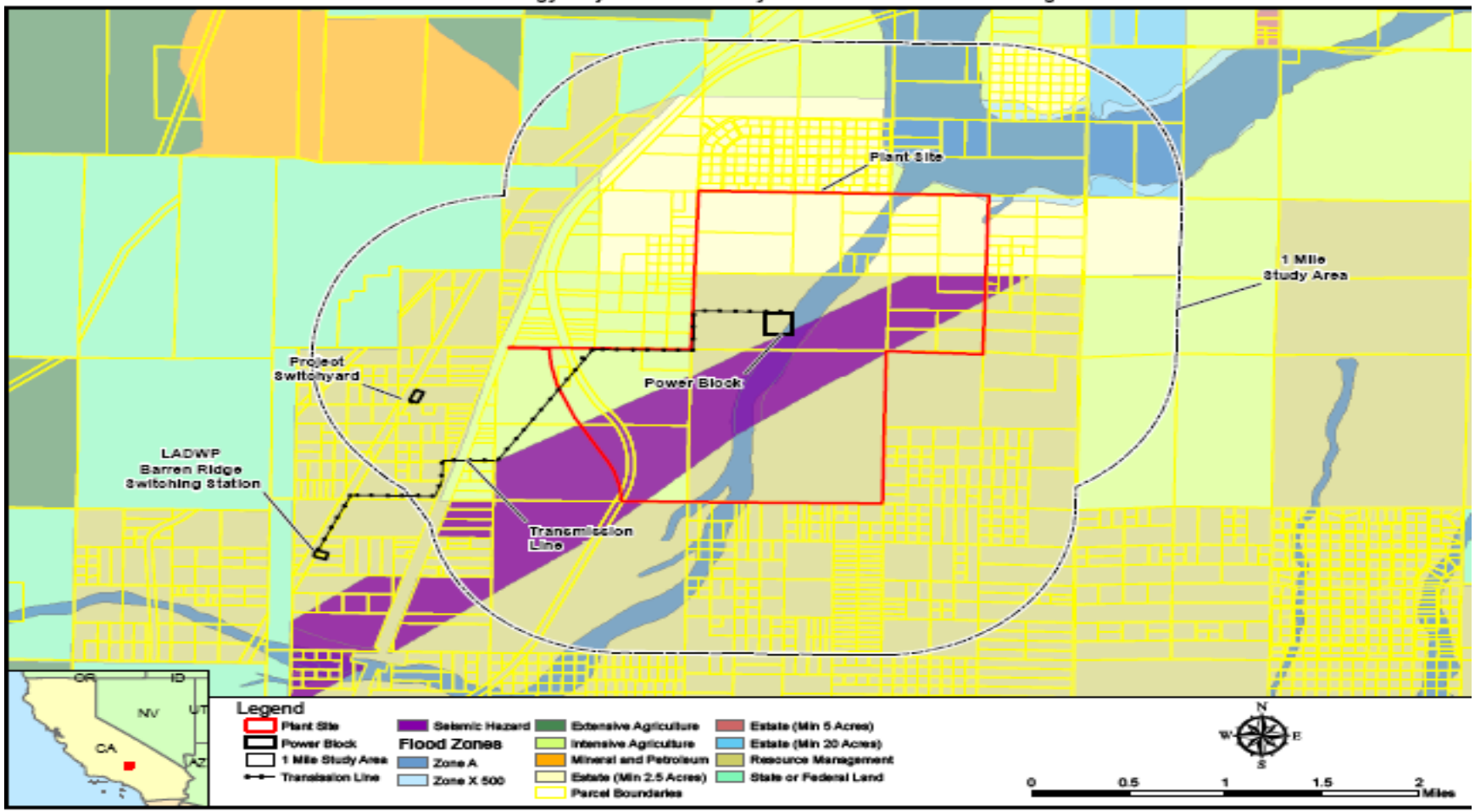
Verification: At least 30 days prior to site mobilization, the project owner shall provide DOD representatives with information about the specific radio frequencies to be used during project construction and operation. As needed, the project owner will modify the radio frequencies per DOD requirements. These modifications must be confirmed in writing from the DOD and shall be submitted to the CPM for review and approval.

LAND-3 The project owner shall adjust the boundaries of all parcels or portions of parcels that constitute the BSEP site as necessary to merge all properties into a single parcel, under single ownership, within the jurisdiction of the Kern County Planning Department, in accordance with provisions and procedures set forth in the County's Municipal Code, Title 17 (Subdivision Ordinance).

Verification: At least 30 days prior to site mobilization, the project owner shall submit evidence to the CPM, indicating approval of the merger of parcels by the Kern County Planning Department. The submittal to the CPM shall include evidence of compliance with all conditions and requirements associated with the approval of the Certificate of Merger and/or Notice of Lot Line Adjustment by the city. If all parcels or portions of parcels are not owned by the project owner at the time of the merger, a separate deed shall be executed and recorded with the County recorder, as required by the Kern County Land Division Ordinance Section §§18.25.030 (c). A copy of the recorded deed shall be submitted to the CPM, as part of the compliance package.

FIGURE 1 – LAND USE

Beacon Solar Energy Project - Kern County General Plan Land Use Designations



B. TRAFFIC AND TRANSPORTATION

This section addresses the extent to which the project will affect the local area's transportation network. The record contains an analysis of: (1) the roads and routings that are proposed to be used for construction and operation; (2) potential traffic-related problems associated with the use of those routes; (3) the anticipated encroachment upon public rights-of-way during the construction of the proposed project and associated facilities; (4) the frequency of trips and probable routes associated with the delivery of hazardous materials; and (5) the possible effect of project operations on local airport flight traffic.

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Beacon Solar Energy Project (BSEP) site is located in a remote section of Kern County, approximately 4 miles north of the northern boundary of California City. Regional access to the area is limited to State Route 14 (SR-14). A mayor portion of the roadways in the area consist of unpaved local roads extending east and west from SR-14. The local roadways include California City Boulevard, and the Randsburg cutoff which is an east-west roadway that provides the most direct route to the proposed project site. It is classified as a major arterial and connects to the regional freeway system via an interchange with the SR-14 freeway to the north and SR-58 freeway to the south. California Department of Transportation (Caltrans) records show average daily traffic volume on SR-14 in the project area (north of California City Boulevard) at 6,600 vehicles per day and 19,000 vehicles per day south of SR-58 (Ex. 500, p.4.10-3.). (See, **Traffic and Transportation Figure 1**.)

Applicant and Staff both submitted evidence in support of their respective analyses on project-related impacts to traffic and transportation. Intervenor, CURE submitted no evidence on traffic and transportation and there was no public comment on BSEP's effect on traffic and transportation. The evidence was received into the record without objection and was uncontested. (3/22/10 RT 15; 17; Exs. 17; 118; 143; 173; 180; 252; 267; 278, 500, § 4.10; 516.) The evidence establishes the existing level of Service (LOS)[26] of roadways in the

[26] Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream. The term is used to describe and quantify the congestion level on a particular roadway or intersection and generally describes these conditions in terms of such factors as speed, travel time, and delay. The *Highway Capacity Manual*[26] defines six levels of service for roadways or intersections ranging from LOS A representing the best operating conditions and LOS F, the worst.

project area. The local roadways are currently at LOS A, which represents the best operating conditions. (Ex. 500, p. 4, Traffic and Transportation Table 2.) The nearest airport facility is the California City Municipal Airport, located approximately six miles south of the project site. There are three other airports in the region, including the Mojave Air and Space Port located approximately fifteen miles southwest of the project site, the Edwards Air Force Base located approximately twenty miles to the south, and the Naval Weapons Station China Lake facility located approximately forty miles northeast of the project site. (Ex. 500, pp.4.10-3; 4.10-4.)

Regional transit in the area is provided by Kern Regional Transit with the Boron Mojave Route, East Kern Express, and the Mojave-Ridgecrest Route. There are no school bus routes or stops within the routes that will be used by the workforce going to the project site or along the truck routes proposed for use during construction of the project. During construction an established rail line off-loading area will be used for delivery of heavy equipment. The railroad off-loading site is located in the community of Mojave. It will be utilized during BSEP construction for the delivery of several pieces of major generation equipment, which will then be transported by truck to the project site. (Ex. 500, p. 4.10-5.)

Project impacts were evaluated according to Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (*Id*).

1. Construction Traffic

Project construction is expected to take 25 months. During this time all plant construction workers will park on a 6-acre parcel of land directly west of the BSEP site. (Ex. 17, p. 5.13-11.) The parcel will also serve as a laydown area for materials and equipment. (Traffic and Transportation Figure 2.) The Applicant's analysis assumed that workers will commute during the morning and afternoon peak intervals (6:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.). The average number of construction workers will be approximately 400, while the peak workforce will consist of 836 workers during month 15 of the construction period. Considering that some degree of carpooling will occur, the Applicant assumed 880 one-way daily trips during peak construction. Based on regional demographics and availability of skilled laborers, the construction workers will probably come from Kern County. However, some workers could come from San Bernardino and Los Angeles County. (Ex. 500, p. 4.10-6.)

Heavy equipment will be used throughout the construction period, including trenching and earthmoving equipment, forklifts, cranes, cement mixers, and drilling equipment. Project construction is expected to require 15 trucks on average and 19 trucks during peak construction per day. (Ex. 17.) In-bound and out-bound truck traffic will arrive and depart the project site using the same route as construction workers. (Ex. 500, p. 4.10-6.)

The total peak construction traffic impact will be from 836 worker trips plus 20 truck and delivery trips, or 1,712 one-way vehicle trips. Conditions of Certification **TRANS-2** and **TRANS-3** are intended to require the repair of any damage to various roadways identified in this analysis from construction traffic, particularly from heavy trucks during construction and installation of the tertiary water lines. (Ex. 500, p. 4.10-7.)

As reflected in Traffic and Transportation Table 3, below, the project construction related increases in traffic will be limited because project impacts will be dispersed over a number of routes. This will avoid causing a degradation of existing peak hour LOS. Roadways to the project site are forecasted to continue to operate at LOS A, as measured prior to construction. (Ex. 500, p. 4.10-4, Traffic and Transportation Table 2.). None of the study segment's LOS will deteriorate to a worse LOS due to project construction, and will not result in a significant impact. (Ex. 500, p. 4.10-7.)

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Traffic and Transportation Table 3
Peak Hour Roadway Volumes, Design Capacities, and Levels of Service
(With Project Related Traffic)

Roadway/ Freeway	Year 2011 Conditions with Project Construction Traffic[1]				Year 2011 Conditions with Project Operations Traffic[2]			
	Travel Lanes	Traffic Volume	Capacity[3]	LOS[1]	Travel Lanes	Traffic Volume	Capacity[3]	LOS
SR-14 - North of Project Site[2]	2	397	2,000	A	2	358	2,000	A
SR-14 - At the Project Site[2]	4	1,150	6,800	A	4	402	6,800	A
SR-14 - South of the Project Site[2]	2	1,150	2,000	A[4]	2	402	2,000	A
SR-14 - South of Mojave[2]	4	2,680	6,800	A	4	2,365	6,800	A
SR-58 - West of SR-14[2]	4	2,505	6,800	A	4	2,265	6,800	A
SR-58 - East of SR-14[2]	4	2,512	6,800	A	4	2,355	6,800	A

1 Assumes month 15 peak construction traffic levels with 836 workers
2 Assumes normal future project operations with total work force of 66 employees.
3 Two-Way capacity in vehicles per hour
4 Based on volume to capacity ratio, project operations are LOS A. Based on the most recent highway capacity manual methodology for rural two-way highways, which determines LOS based on an estimated percentage of drives having to follow another vehicle under worst case peak conditions, the two-lane segment of SR-14 at the BSEP site could be described as operating at LOS D.

Source: Caltrans, 2005, Ex. 500, 4.10-7.

The Applicant has proposed a new 3.5-mile electric transmission line route that will extend west across SR-14 and will head south and connect with the existing Barren Ridge Switching Station. The western boundary of the 2,012-acre BSEP plant site is located approximately one mile east of the two existing LADWP transmission lines: 1) the Celilio-Sylmar 500 kV DC intertie line and 2) the Inyo-Barren Ridge 230 kV line. There are potential construction and operation related impacts associated with the transmission line route. Construction related impacts will result from the movement of heavy equipment, trucks, and worker vehicles along access routes during construction of transmission line towers and installation of conductors. While this work will not directly impact traffic operations, several aspects of transmission line tower construction and conductor installation could potentially result in impacts. Condition of Certification **TRANS-5** requires that the Applicant install crossing structures and netting if required by Caltrans across SR-14 as a safety precaution and to reduce the potential for damage from falling construction materials or equipment during cable-stringing activities. (Ex. 500, p. 4.10-8.)

Two proposals were evaluated to supply tertiary-treated water to the BSEP. Either proposal will serve as an alternative to the project's original proposal to use potable water as process water. The alternatives are: the Rosamond Water Alternative and the City of California Alternative. (Ex. 500, p. 4.10-8.)

In order for the Rosamond Community Services District (RCSD) to supply water from the RCSD facility to the BSEP site, an underground water pipeline will need to be constructed. The city of California City (CA City) proposes to supply tertiary-treated wastewater from the CA City waste water treatment plant (WWTP) to the BSEP site via an underground water pipeline which will need to be constructed along dedicated roadways (i.e., Mendiburu Road and Neuralia Road). [See **Alternatives** section for further discussion.] (Ex. 500, p. 4.10-8.)

Heavy equipment will be used throughout the pipeline construction period, for either alternative, including trenching and earthmoving equipment, cranes, cement mixers, and drilling equipment. Conditions of Certification **TRANS-2** or **TRANS-3** will ensure that either alternative waterline segments can be constructed without deterioration of existing LOS levels and without any significant impacts. (Ex. 500, pp. 4.10-8 through 4.10-9.)

Access to the laydown and parking areas that will be used during construction will require crossing the Union Pacific Lone Pine Branch rail line. Condition of Certification **TRANS-4** requires the Applicant to obtain the necessary approvals

for construction of a crossing arm, or other required mitigation requirements. (Ex. 500, p. 4.10-9.)

The Kern County Resource Management Agency informed the Commission that existing dedicated rights-of-way exist along the section lines and mid-section lines within the project area. The County's Circulation Element requires the preservation of these open corridors for future roadways. The county stated that to delete these reservations will require a General Plan Amendment to the Circulation Element, requiring Planning Commission and the Board of Supervisors review and approval. It is anticipated that Planning Commission hearings for this amendment will be heard on April 21, 2009. (Ex. 500, p. 4.10-10.)

Regarding school bus routing in the area, the record discloses that there are no school bus routes or bus stops near the project or along the proposed worker and truck routes identified in this analysis. (Id.) The nearest fire station to the BSEP is in California City, about ten miles from the project site. Emergency service vehicles will reach the project site via the access road off SR-14 or Neuralia Road. (Ex. 500, pp. 4.10-5; 4.10-12.)

2. Operation Impacts and Mitigation

Operation of the power plant will require a labor force of 66 full-time employees that will generate 132 one-way trips to and from the BSEP site. Other project-related trips (that is, delivery trucks, visitors, and other business-related trips) are expected to be minimal and will occur during regular business hours. The evidence assumes that operational workers will follow the same routes as the construction workers. These minor trip additions to surrounding local streets and highways will not significantly affect the LOS of these roads. (Ex. 500, p. 4.10-10.)

Hazardous materials delivery at the project will be via SR-14, the preferred transportation route, with SR-58 as a backup possibility for access the BSEP site from the south. The transportation and handling of hazardous substances associated with the proposed project could increase roadway hazard potential. Impacts associated with hazardous material transport to the facility could be mitigated to a level of insignificance by compliance with existing federal and state standards established to regulate the transportation of hazardous substances. Project operation will require use of hazardous substances including sulfuric acid

and cleaning and water treatment chemicals. It is estimated that there would be a maximum of six delivery/service trucks per week. (Ex. 500, p. 4.10-10.)

The proposed water treatment option will require approximately 30 additional two-way truck trips per month for water treatment chemical delivery to the project site. This is based on the use of Koehn Lake for water. Solids removal from the evaporative ponds will require approximately 700 truck trips per event. The frequency of clean-out as indicated by the Applicant will depend on which water supply option is selected; clean out will be required once every 4.5 years for the on-site groundwater option and 3.5 years for the Koehn Lake water option. Traffic and Transportation Table 3 reflects the impacts during construction and operation of the BSEP as it was originally proposed. (Ex. 500, p. 4.10-11.)

As noted previously, the closest major airport is the California City Municipal Airport which is approximately 6 miles south of the site. Because of the remoteness of the project from the nearest civilian airport (six miles), the project will not conflict with civilian aircraft operations. (Ex. 17, pg. 5.13-17.)

3. Cumulative Impacts

No cumulative projects have been identified in the project vicinity that would create significant traffic impacts when considered together with the BSEP. The nearest known projects are the Pine Tree Wind Development Project, which is located approximately six miles west of the BSEP site and the LADWP Barren Ridge-Castaic Switching Station about 1.5 miles south of the plant site and extends south to Los Angeles County. (Ex. 500, p. 4.10-12.)

FINDINGS OF FACT

Based on the evidence of record, the Commission makes the following findings and conclusions:

1. During the construction and operation phases, local roadway and highway demand resulting from the daily movement of workers and materials will not increase beyond significance thresholds established by Kern County.

2. None of the study segment's LOS would deteriorate to a worse LOS due to project construction, so the project will not result in a significant impact.

3. The BSEP will comply with all applicable LORS related to traffic and transportation

4. The BSEP will not significantly degrade the level of service on SR-14 or SR-58.

5. During the operational phase, the BSEP will not adversely affect local roads or aviation operations associated with any airport flight traffic.

6. There will be no impact on the California City Municipal Airport Airspace or aviation safety because of the BSEP's distance from the nearest airport

7. Condition of Certification **TRANS-2,** which requires a mitigation plan to repair various roadways identified in the traffic analysis if they are damaged by installation of the California City Alternative, will ensure mitigation of construction-related impacts.

8. Condition of Certification **TRANS-3** which requires a mitigation plan to repair various roadways identified in the traffic analysis if they are damaged by installation of the Rosamond Alternative tertiary water pipeline will reduce any impacts to less than significant.

9. Since there are no significant direct or cumulative traffic and transportation impacts, there will be no environmental justice issues.

10. Condition of Certification **TRANS-4** requires all the necessary approvals for the proposed Union Pacific railroad crossing.

CONCLUSIONS OF LAW

1. The Beacon Solar Energy Project (BSEP) would be consistent with the Circulation Element in the Kern County General Plan, local circulation plans and policies and all other applicable laws, ordinances, regulations, and standards.

2. The project will not have a significant adverse impact on the local and regional road/highway network.

CONDITIONS OF CERTIFICATION

TRANS-1 Prior to the start of construction activities, the contractor shall coordinate with Caltrans District 9 staff, prepare improvement plans and submit for an encroachment permit to complete required physical improvements at the SR-14 entrance into the project site. The project owner shall complete all physical improvements and construction conditions of encroachment permit at SR-14 entrance prior to beginning on-site activities requiring more than 150 construction workers per day.

Verification: At least 30 days prior to start of construction, the project owner shall in coordination with Caltrans, design and submit for an encroachment permit to construct the roadway improvements described above. Prior to initiating construction activities requiring a workforce of 150 persons or more, the project owner shall have completed construction of the improvements and the project owner shall notify the CPM that these roadway improvements have been completed and are ready for inspection.

TRANS-2 Prior to site mobilization activities, the project owner shall prepare a mitigation plan for Neuralia Road and Mendiburu Road due to open cutting of the roadways for the installation of the tertiary water pipeline. The intent of this plan is to ensure that if these roadways are disturbed by project construction, they will be repaired and reconstructed to original or as near original condition as possible. This plan shall include:

- Documentation of the pre-construction condition of the following roadways:
  1. Neuralia Road from the project site south to Mendiburu Road and then east on Mendiburu Road where it reaches the California City waste water treatment plant.
- Prior to the start of site mobilization, the project owner shall provide to the CPM photographs or videotape of water line routes discussed above.
- Documentation of any portions of Neuralia Road and Mendiburu Road that may be inadequate to accommodate oversize or large construction vehicles and identification of necessary remediation measures;
- Provision for appropriate bonding or other assurances to ensure that any damage to Neuralia Road, and Mendiburu Road due to construction activity will be remedied by the project owner; and
- Reconstruction of portions of Neuralia Road, and Mendiburu Road that are damaged by project construction due to oversize or overweight construction vehicles.

Verification: At least 90 days prior to the start of site mobilization, the project owner shall submit a mitigation plan focused on restoring Neuralia Road and Mendiburu Road to its pre-project condition to Kern County and California City Public Works and Planning Department for review and comment and to the CPM for review and approval.

Within 90 days following the completion of construction, the project owner shall provide photo/videotape documentation to the Kern County and California City Public Works and Planning Department and the CPM that the damaged sections of Neuralia Road and Mendiburu Road have been restored to their pre-project condition.

TRANS-3 Prior to site mobilization activities, the project owner shall prepare a mitigation plan for Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California Avenue, and Neuralia Road, due to open cutting of the roadways for the installation of the tertiary water pipeline. The intent of this plan is to ensure that if these roadways are disturbed by project construction, they will be repaired and reconstructed to original or as near original condition as possible. This plan shall include:

- Documentation of the pre-construction condition of the following roadways:

  1. Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California Boulevard, and Neuralia Road.

- Prior to the start of site mobilization, the project owner shall provide to the CPM photographs or videotape of water line routes discussed above.

- Documentation of any portions of Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California Boulevard and Neuralia Road that may be inadequate to accommodate oversize or large construction vehicles and identification of necessary remediation measures;

- Provision for appropriate bonding or other assurances to ensure that any damage to Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California Boulevard and Neuralia Road due to construction activity will be remedied by the project owner; and

- Reconstruction of portions of Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California Boulevard , and Neuralia Road that are damaged by project construction due to oversize or overweight construction vehicles.

Verification: At least 90 days prior to the start of site mobilization, the project owner shall submit a mitigation plan focused on Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California Boulevard, and Neuralia Road to its pre-project condition to Kern County and California City Public Works and Planning Department for review and comment and to the CPM for review and approval.

Within 90 days following the completion of construction, the project owner shall provide photo/videotape documentation to the Kern County and California City

Public Works and Planning Department and the CPM that the damaged sections of Rosamond Boulevard, Sierra Highway, Sopp Road, Lone Butte Road, California Boulevard, and Neuralia Road have been restored to their pre-project condition.

TRANS-4 Prior to start of construction, the project owner shall obtain approval from the California Public Utilities Commission (CPUC) to install railroad crossing improvements (gates and signals) to the Union Pacific /Lone Pine Branch track for access to the BSEP site. If the warning equipment is not installed prior to the start of site preparation or earth moving activities, then the project owner shall install temporary measures, including the stationing of flag persons, to the satisfaction of Union Pacific representatives and the CPUC. These temporary measures shall remain in place until the permanent equipment is installed.

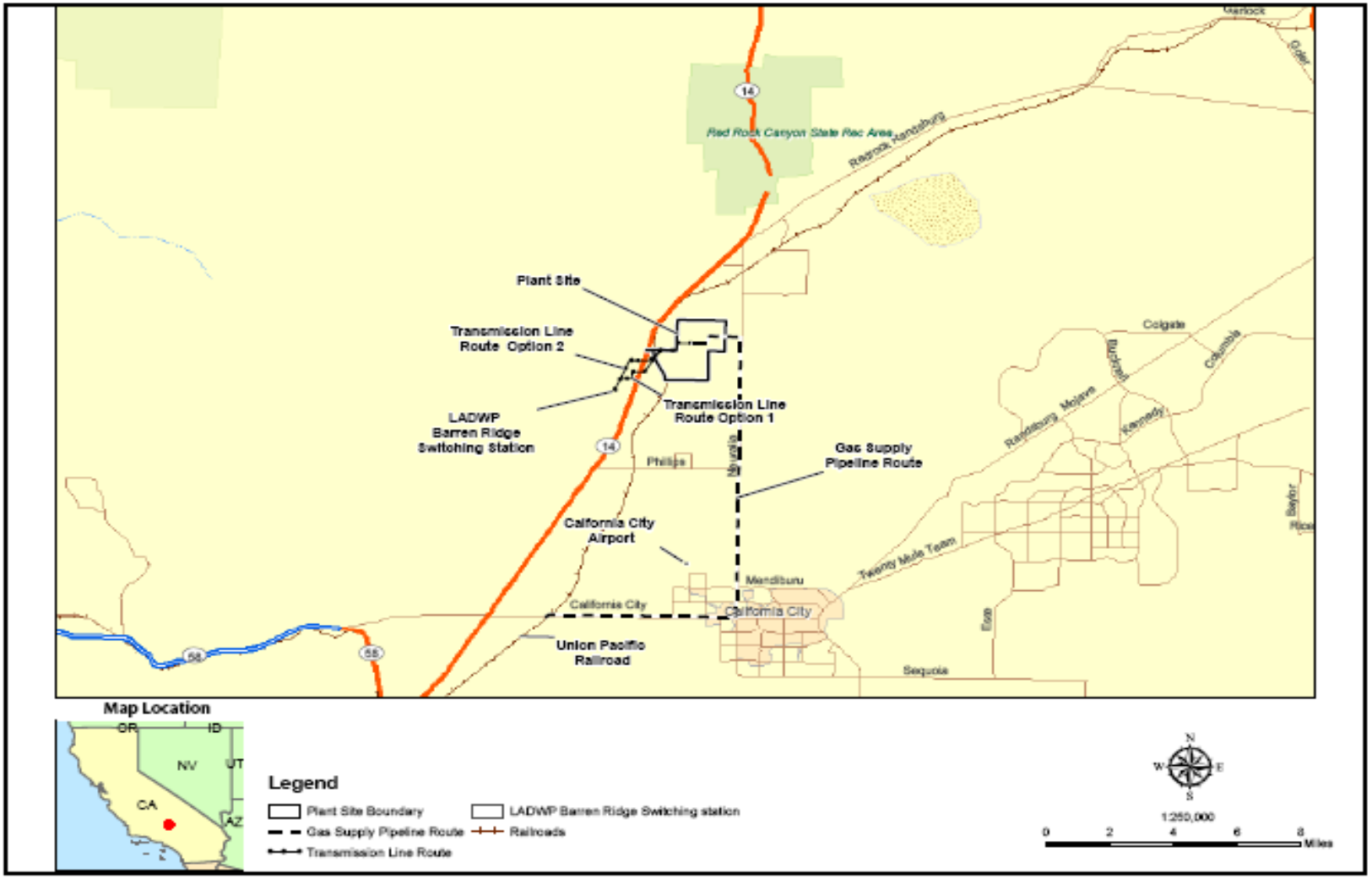
Verification: The project owner shall inform Union Pacific Railroad, Kern County, California City, CPUC, and the CPM that the final grade crossing warning equipment (gates and signals) are ready for inspection.

TRANS-5 The project owner or its contractor shall install crossing structures and netting, if required by Caltrans across SR-14 as a safety precaution and to reduce the potential for damage from falling construction materials or equipment during cable-stringing activities.

Verification: Thirty days prior to wire stringing, or a lesser period of time as mutually agreed to by the project owner and the CPM, the project owner shall provide to the CPM for review and approval, a copy of its safety plan and implementation program.

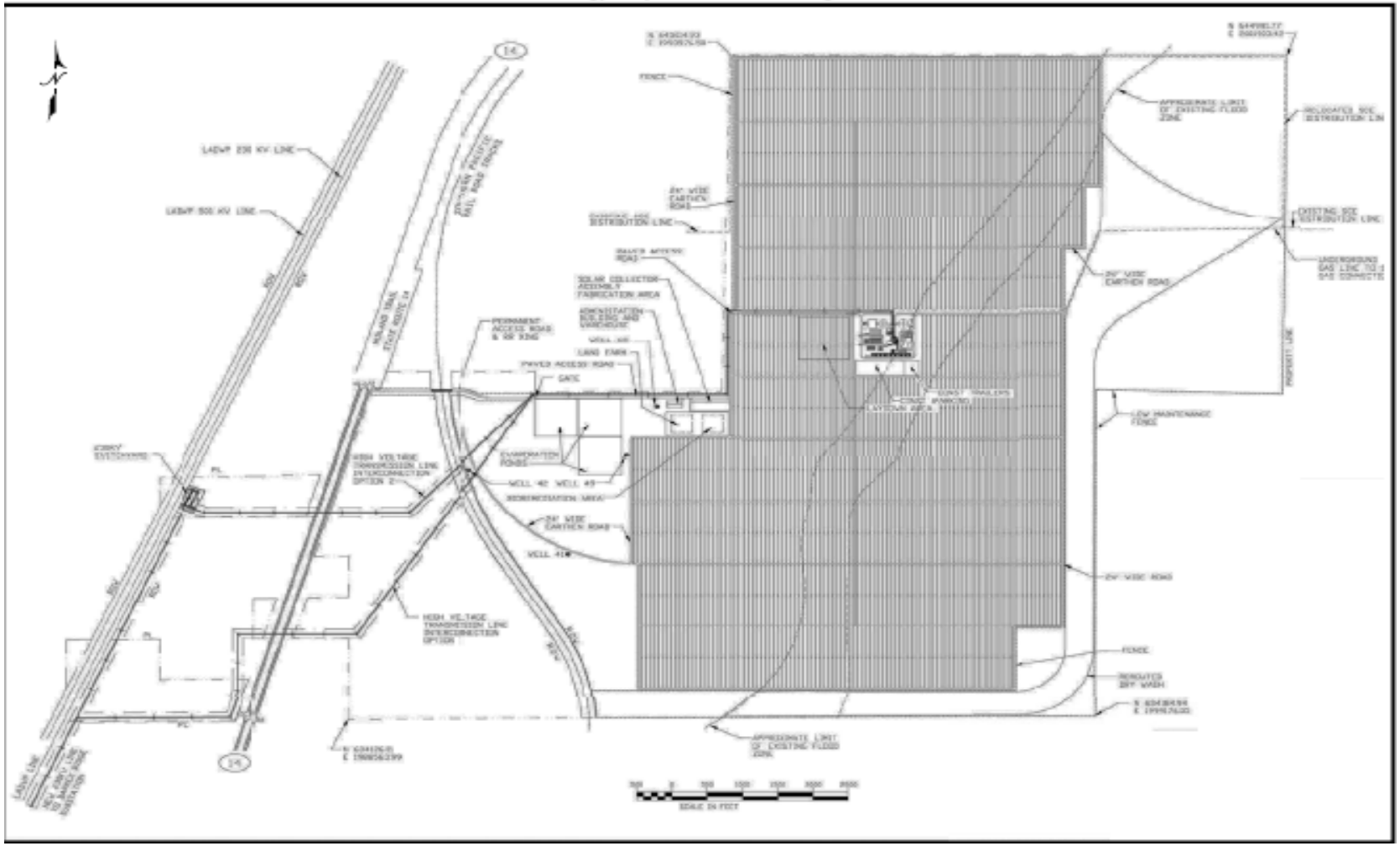
TRAFFIC AND TRANSPORTATION - FIGURE 1

Beacon Solar Energy Project - Regional Transportation Facilities



TRAFFIC AND TRANSPORTATION - FIGURE 2

Beacon Solar Energy Project - General Arrangement Site Plan



C. SOCIOECONOMICS

The first portion of the this topic focuses on pertinent demographic information within a six-mile radius of the project site, evaluates the effects of project-related population changes on local schools, medical and fire protection services, public utilities and other public services, as well as the fiscal and physical capacities of local government to meet those needs. The public benefits of the project are also reviewed. As part of this review, the analysis examines both the beneficial impacts on local finances from property and sales taxes as well as the potential adverse impacts upon public services. The evidence of record is undisputed on these matters (3/22/10 RT 27: 24-25; Exs. 15; 56; 65; 81; 234; 500.)

This section also contains a discussion concerning the Environmental Justice aspects and the analysis conducted to determine whether project-related activities would result in disproportionate impacts on low income and/or minority populations.

SUMMARY AND DISCUSSION OF THE EVIDENCE

1. Demographics, Services, and Finances

The construction phase is typically the focus of this stage of the Socioeconomics analysis because of the potential influx of workers into the area. Impacts are considered significant if a large influx of non-resident workers and dependents occurs in the project area, thus increasing demand for community resources.

The evidence indicates that the construction of the BSEP will result in the influx of temporary workers to the area during the two-year construction period, which begins in fourth quarter 2010 and is expected to be completed within 25 months of the start date. The plant is expected to be operational during first quarter of 2013. Once operational, the plant will employ approximately 66 workers, most of whom would already reside in the area. The peak number of temporary workers needed for the project is 836 and the average number of workers per day is 477. The workers will likely commute to the project site from the following counties: Kern, Los Angeles, and San Bernardino. For those workers, who will return home for the weekends, approximately 792 hotel and motel rooms are available near the BSEP site, including rooms in California City, Mojave, Rosamond, and Ridgecrest. In addition, at least five RV sites are located within 25 miles of the BSEP site. The evidence establishes that the three counties (Kern, Los Angeles,

and San Bernardino) will be able to supply temporary housing and workers required during project construction. (Ex 500, pp. 4.8-6 to 4.8-8.)

The capital costs for the BSEP are approximately $180 million; of this, construction materials and supplies are estimated at approximately $14.5 million. The total construction payroll is estimated at $165.5 million. (Ex. 500, p. 4.8-13.)

The total sales tax estimated during construction is expected to be $90,145,000. (Ex. 500, p. 4.8-13.) The estimated annual property taxes (with solar tax credit) are expected to be $440,000 and the estimated annual property taxes (without solar taxes) are expected to be between $4.24 and $4.9 million. (Ex. 500, p.4.8-13.)

Socioeconomics Table 1 provides a summary of the economic effects of the BSEP. (Ex. 500, p. 4.8-13.)

SOCIOECONOMICS Table 1 (2008 Dollars)
Noteworthy Public Benefits Related to Beacon Solar Energy Project

Fiscal Benefits	
Estimated annual property taxes (with solar tax credit)	$440,000
Estimated annual property taxes (without solar tax credit)	$4.24—$4.90 million
State and local sales taxes: Construction	$90,145,000
State and local sales taxes: Operation	$435,000 per year
School Impact Fee	$10,400
Gas franchise fees	$345,090
Gas franchise fees surcharge	$336,330
Non-Fiscal Benefits	
Total capital costs	$180 million
Construction payroll	$165.5 million
Operations payroll	$7 million to $8 million
Construction materials and supplies	$14.5 million
Operations and maintenance supplies	$6 million per year
Direct, Indirect, and Induced Benefits	
Estimated Direct Employment	
Construction and commissioning (average)	477 jobs
Operation	66 jobs
Estimated Secondary Employment	
Construction and Commissioning	298 jobs
Operation	98 jobs
Estimated Secondary Income	
Construction and Commissioning	$124 million
Operation	$1.6 million

The analysis of record characterizes the increase in employment and the increase in sales tax and generation of secondary jobs and income. The evidence further establishes that since the workforce will likely commute to the project, neither the construction nor the operation workers will place an undue stress upon available housing. Similarly, the evidence shows that existing educational, police, medical and emergency services will not be adversely impacted. (Ex. 500, pp. 4.8-9 to 4.8-10.)

2. Cumulative Impacts

In a socioeconomic analysis, cumulative impacts could occur when more than one project in the same area has an overlapping construction schedule, thus creating a demand for workers that cannot be met locally. That increased demand for labor could result in an influx of non-local workers and their dependents, resulting in a severe strain on housing, schools, parks and recreation, law enforcement, and medical services. (Ex. 500, p. 4.8-11.)

The construction schedule of a Los Angeles Department of Water and Power (LADWP) renewable energy project—Barren Ridge-Castaic Transmission Project—will overlap with the construction schedule of the BSEP. According to the Applicant, construction of the BSEP is scheduled to begin in fourth quarter 2010 and continue through first quarter 2013. As reported by LADWP, construction on the Barren Ridge-Castaic Transmission Project is expected to begin in mid-2010 and continue through mid-2013, approximately one month before construction on the BSEP is completed. Consequently, the construction schedules of the BSEP and the Barren Ridge-Castaic Transmission Project will overlap for approximately 23 months. (Ex. 500, p. 4.8-11.)

The record established that the cumulative impacts resulting from the overlapping schedules will not result in a significant cumulative impact for the following reasons:

1. For the BSEP, the average number of workers per day is expected to be 477. Those workers will likely commute from Kern, Los Angeles, and San Bernardino counties. For workers who wish to stay in the area, a sufficient number of rooms are available See Item 3, below.

2. The Barren Ridge-Castaic Transmission Project, which will span 75 miles from the Mojave Desert to San Fernando Valley, will be built in stages. Hence, workers will be working in an area ranging from Kern County to northwest Los Angeles County during the three-year construction period. Those workers are also likely to commute from Kern, Los Angeles, and San Bernardino counties.

3. Staff has identified at least 792 hotel and motel rooms in the area, including rooms in California City, Mojave, Rosamond, and Ridgecrest. In addition, at least five RV sites are located within 25 miles of the BSEP site. Consequently, a sufficient number of rooms exist in the area to accommodate workers from both projects who wish to remain in the area and not commute. However, those workers will not relocate to the area with their families. Instead, they are likely to return home on weekends.

CURE raised the issue of growth inducing impacts that might arise from upgrading the existing wastewater treatment facilities (WWTF) at Rosamond Community Services District (RCSD) and California City claiming that the upgrades would result in further residential, commercial and industrial growth (CURE Response Brief 6/1/10, p. 12 et seq.). CURE argues that both RCSD and California City underestimate "significant Project and cumulative impacts on growth and water resources." (CURE Response Brief 6/1/10, pp. 14 and 15). During operation, the BSEP will employ approximately 66 people. Assuming these employees and their families all relocate from outside the California City area, this equates to less than 200 new residents or a little over 1 percent of California City's current population of about 15,000. This would have a negligible effect on public services and there are sufficient homes and undeveloped lots available to accommodate these potential incoming residents. According to the Real Estate Multiple Listing Service for California City, there were 76 single family residences on the market in California City in May 2010. There were also 79 residences for rent and, as noted above, 23,000 undeveloped lots. Accommodation of this population increase is not dependent on either the RCSD WWTF tertiary treatment upgrade or expansion of the California City WWTF and connection system. We find that upgrading the WWTF at Rosamond and/or California City will not create growth inducing impacts (See **Land Use** section of this Decision for additional information.) (Ex. 512, p. 4).

The evidence shows that there will be no socioeconomic cumulative impacts associated with the construction and operation of the BSEP. (Ex. 500, p. 4.8-12.)

4. Environmental Justice Aspects

Section 65040.12 (e) of the Government Code defines "environmental justice" to mean "fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies." In addition, federal guidelines encourage governmental agencies to incorporate environmental justice principles in the environmental review of this project.

The steps recommended by these guidance documents to assure that environmental justice concerns are addressed include: (1) outreach and involvement; (2) a demographic screening to determine the existence of a minority or low-income population; and (3) if warranted, a detailed examination of the distribution of impacts on segments of the population.

The evidence of record contains a demographic screening conducted in accordance with information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, 1997) and *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (National Council on Environmental Quality, 1998). (Ex. 500, p. 4.8-2.) The purpose of the demographic screening is to determine whether there exists a minority or low-income population within the potentially affected area. Minority populations exist, for purposes of an environmental justice analysis, where either:

- The minority population of the affected area is greater than 50 percent of the affected area's general population; or
- The minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis; or
- One or more U.S. Census blocks in the affected area have a minority population greater than 50 percent.

Minority individuals, for present purposes, are those who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. The below poverty-level-population was also based on the 2000 U.S. Census.

The evidence shows that Census 2000 information indicates a minority population by census block of 17.57 percent within a six-mile radius of the BSEP. In addition, there are pockets (census blocks) with greater than 50 percent minority population within the six-mile radius. Census 30 data by census block group shows that the low-income population is 19.46 percent within the six-mile radius of LEC. (Ex. 500, p. 4.8-3.)

4. Public Comment

Lorelei Oviatt, Acting Planning Director of the Kern County Planning Department and commenting on behalf of the Kern County Board of Supervisors requested at

the evidentiary hearing "that the Commission put a condition of certification that requires the payment of a public services mitigation fee for the specific categories of countywide public protection, sheriff patrol and investigation and fire protection not to exceed $1,060,439 a year." (3/22/10 RT 386:4 – 11). Ms. Oviatt specifically requested that the "Commission consider allowing Staff to craft the language for this." (3/22/10 RT 387:12 – 14).

Kim Collins, resident of California City, submitted written comments in favor of the project. Mr. Collins cited statistics to show that California City was a "depressed area" with high rates of unemployment, residential vacancies and business closures. Mr. Collins stated that the project would support clean energy and increase tax revenues.

FINDINGS OF FACT

Based on the persuasive weight of the evidence, we find as follows:

1. The BSEP will draw primarily upon the local labor force from Kern, Los Angeles and San Bernardino counties for the construction and the operation workforce.
2. The project will not cause an influx of a significant number of construction or operation workers into the local area.
3. The project will not have a significant adverse effect upon local employment, housing, schools, medical resources, or fire and police protection.
4. The project will have a construction payroll of approximately $165.5 million.
5. BSEP will result in local direct, indirect, and induced benefits – both fiscal and non-fiscal.
6. The project will result in generation of secondary jobs and income and increased revenue from sales taxes due to construction activities.
7. Construction and operation of the project will not result in any direct, indirect, or cumulative adverse socioeconomic impacts.
8. Although, federal environmental justice guidelines are not binding in this case, the analysis of record has been performed in conformity therewith.
9. Minority and low income populations exist within a six mile radius of the site; however, the BSEP will not cause or contribute to disproportionate impacts upon minority or low income groups
10. Siting of the BSEP, and the analysis thereof, are consistent with the principles underlying environmental justice.

11. The BSEP's contribution to cumulative impacts, in conjunction with the impacts from other reasonably foreseeable projects, is adequately addressed in the record and in appropriate portions of this Decision.

CONCLUSIONS OF LAW

1. We therefore conclude that the project construction and operation activities will create some degree of benefit to the local area and will conform to principles of environmental justice.

2. No Conditions of Certification are required for this topic because no significant adverse socioeconomics impacts will occur as a result of construction and operation of the BSEP.

D. NOISE AND VIBRATION

The construction and operation of any power plant will create noise. The character and loudness of this noise, the times of day or night during which it is produced, and the proximity of the project to sensitive receptors combine to determine whether project noise will cause significant adverse impacts. In some cases, vibration may be produced as a result of construction activities such as blasting or pile driving; these activities have the potential to cause structural damage and annoyance. The evidence summarized below was uncontested and evaluates whether noise and vibration produced during project construction and operation will be mitigated sufficiently to comply with applicable law and avoid the creation of significant adverse impacts. (3/22/2010 RT 14-15, 27-28; Exs. 12; 117; 137; 250; 500, § 4.6; 513.)

SUMMARY AND DISCUSSION OF THE EVIDENCE

The Beacon Solar Energy Project will be constructed on a 2,012 acre site approximately four miles northwest of California City in eastern Kern County. Ambient noise in the vicinity consists of highway and train traffic, and the Honda Proving Center. The site and surrounding area are largely vacant. The nearest sensitive noise receptor is a residence 0.3 miles southeast of the project site. (Ex. 500, p. 4.6-4.)

Federal and State laws regulate worker noise exposure. (Ex. 500, p.4.6-2.) Kern County has no specific noise ordinance. (Ex. 500, pp. 4.6-2 to 4.6-3.)

CEQA Guidelines set forth characteristics of noise impacts that may indicate potentially significant effects from project-related noise, such as “a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.” (Cal. Code Regs., tit. 14, § 15000 et seq., Appen. G, Section XI.) In accordance with this standard, the Commission uses the significance threshold of 5 dBA when project-related noise emissions exceed existing ambient noise levels at the nearest sensitive receptor. We believe that an increase in background noise levels of up to 5 dBA in a residential setting is insignificant and that an increase of more than 10 dBA is clearly significant. An increase of between 5 dBA and 10 dBA may be considered adverse, but could be either significant or insignificant depending upon the particular circumstances of a given case. (Ex. 500, p. 4.6-3.)

Factors considered in determining the significance of an adverse impact as characterized above include: (1) the resulting noise level; (2) the duration and frequency of the noise; (3) the number of people affected; and (4) the land use designation of the affected receptor sites. Noise due to construction activities is usually considered insignificant in terms of CEQA compliance if the construction activity is temporary, the use of heavy equipment and noisy activities is limited to day-time hours, and industry-standard abatement measures are employed. (Ex. 500, p. 4.6-4.)

The evidence consists, in part, of an ambient noise survey conducted by Applicant on December 3 and 4, 2007. This survey monitored existing noise levels at the following locations:

1. Measuring Location 1: Near a residence located approximately 1,700 feet southeast of the project site where the project site boundary turns west. This represents the nearest sensitive receptor, the one most likely to be impacted by project noise. Long-term (25-hour) monitoring showed ambient noise levels typical of a desert environment.

2. Measuring Location 2: Near a residence located on the west side of SR-14, approximately 2,500 feet from the western edge of the project site. Long-term (25-hour) monitoring showed ambient noise levels higher than those at M-1 due to traffic on SR-14. (Ex. 500, pp. 4.6-4 to 4.6-5.)

The measured ambient noise levels are summarized on Table 1, below.

Noise Table 1
Measured Ambient Noise Levels

Measurement Location	Measured Noise Levels, dBA		
	L_{eq} – Daytime	L_{eq} – Nighttime	L_{90} – Nighttime
Location 1: East Residence	39	35	33
Location 2: West Residence	55	57	23

Source: (Ex. 500, p.4.6-5.)

1. Construction

Construction noise is a temporary event, in this case expected to occur over a period of about 25 months. (Ex. 500, p. 4.6-5.) Construction of related linear facilities, such as the transmission line, proceeds rapidly, thus subjecting nearby receptors to increased noise levels for relatively short periods of time. (Ex. 500, p. 4.6-6.) Aggregate construction noise levels and predicted increases are shown on Table 2, below.

Noise Table 2
Predicted Power Plant Construction Noise Impacts

Receptor	Highest Construction Noise Level (dBA L_{eq})	Measured Existing Ambient (dBA L_{eq})	Cumulative (dBA L_{eq})	Change (dBA)
Location 1 — Nearest residence (east)	31	39 daytime	40 daytime	+1 daytime
		35 nighttime	36 nighttime	+1 nighttime
Location 2 — Residences to west	30	55 daytime	55 daytime	+0 daytime
		57 nighttime	57 nighttime	+0 nighttime

Source: Exhibit 500, p. 4.6-6

The evidence shows that these increases will be inaudible to nearly receptors. Pile driving, if used, could result in a cumulative noise level of 61 dBA at locations 1 and 2 (an increase of 22 dBA and 6 dBA, respectively). These increases would, however, be temporary. The evidence characterizes this potential impact as "noticeable," but "tolerable" to residents. (Ex. 500, p. 4.6-8.)

The loudest noise encountered during project construction is likely to be from steam blows. (Ex. 500, p. 4.6-6.) In order to minimize disturbance from high pressure steam blows, the steam blow piping can be equipped with a silencer that reduces noise levels by 20 to 30 dBA. We therefore require that any high pressure steam blows be muffled with an appropriate silencer, and be performed only during restricted hours (see Conditions of Certification **NOISE-6** and **NOISE-8**) in order to minimize annoyance to residents. Alternatively, the project owner may employ a new, quieter steam blow process, variously referred to as QuietBlow or Silentsteam. This method utilizes lower pressure steam over a

continuous period of approximately 36 hours. Noise levels at the nearest residence would be much closer to the ambient background noise levels if this process is used. (Ex. 500, p. 4.6-7.) Regardless which steam blow process is chosen, the notification process (Condition of Certification **NOISE-*7)*** will make neighbors aware of impending steam blows. (*Id*.)

To ensure construction noise levels will not be disruptive at the nearest receptors, we have adopted Conditions of Certification **NOISE-1**, **NOISE-2**, and **NOISE-8**. The first two Conditions establish a notification and complaint process to resolve issues arising from any excessive construction noise; Condition **NOISE-8** limits pile driving to the hours between 8:00 a.m. to 5:00 p.m., and other noisy work from 7:00 a.m. to 10:00 p.m. (Ex. 500, p. 4.6-8.) Overall, the evidence establishes that construction noise impacts at potentially affected receptors will be less than significant.

To protect construction workers from injury due to excessive noise, Condition **NOISE-3** requires the project owner to implement a noise control program consistent with OSHA and Cal/OSHA requirements.Finally, there is no indication in the evidence that vibration from construction activities will be perceptible at any appreciable distance from the project site, or that it will cause any impact. . (Ex. 500, p. 4.6-8.)

2. Operations

The noise emanating from a power plant is unique. It is generally broadband, steady state in nature. This noise contributes to, and becomes part of, the background noise level when most intermittent noises cease. (Ex. 500, p. 4.6-9.) The project's primary new noise sources include the steam turbine generators, cooling tower, start-up boiler, and various pumps and fans. (Ex. 500, p. 4.6-8.)

To mitigate operational impacts, the project will incorporate:

- Metal acoustical steam turbine enclosures; and
- 25-foot high solar mirror arrays surrounding the power block.

In addition, the Beacon Project will operate primarily only during day-time hours, with night-time operation limited to the auxiliary boilers for the steam seal system of the steam turbine. (Ex. 500, pp. 4.6-8 to 4.6-9.) The evidence shows that operating noise levels are expected to be less than 40 dBA Ldn at the closest

residence the during the day, and less than 22 dBA Lmax at night. These are imperceptible changes from the existing levels. (Ex. 500, pp. 4.6-9 to 4.6-10.)
The evidence also establishes that strong tonal noises could be a source of annoyance. To avoid the creation of pure-tone noises, the project owner will balance the noise emissions of various power plant features. Condition **NOISE-4** ensures that tonal noises will not cause annoyances. (Ex. 500, p. 4.6-10.) As with construction activities, operational and maintenance activities will meet OSHA and Cal/OSHA standards to protect workers. (Condition of Certification **NOISE-5**; Ex. 500 p. 4.6-11.) The evidence also establishes that operational vibration – whether ground borne or air borne - will be undetectable by potential receptors. (Ex. 500, p. 4.6-11.)

Finally, the evidence establishes that there are no other projects in the vicinity which are close enough to result in cumulative noise impacts. (Ex. 500, p. 4.6-12.)

FINDINGS OF FACT

Based on the evidence, we make the following findings.

1. The nearest noise receptors are those identified in the evidence, as reflected in the foregoing Table 1 in the **Summary and Discussion** portion of this section.

2. Operation of the Beacon Project will not significantly increase noise levels above existing ambient levels at the nearest receptors.

3. Construction noise levels are temporary and transitory in nature and will be mitigated to the extent feasible by sound reduction devices, limiting construction to day-time hours, and providing a notice and complaint process to the public.

4. Pile driving, if used, would result in increased levels of noise at the nearest receptors.

5. Project construction will increase noise levels at the nearest sensitive receptors. The evidence establishes that these increases will be temporary and not significant.

6. Mitigation, as identified in the evidence , and adherence to the Conditions of Certification assure that noise from construction activities is reduced to below a level of significance.

7. The project owner will implement measures to protect workers from injury due to excessive noise levels during both construction and operation.

8. The Beacon Project will not create ground or air borne vibrations which will cause significant off-site impacts.

9. Implementation of the Conditions of Certification, below, ensure that project-related noise emissions will not cause significant adverse impacts to the closest noise receptors.

10. The noise from the Beacon Project will not create or contribute to a significant adverse cumulative impact.

CONCLUSIONS OF LAW

1. The Commission concludes that implementation of the following Conditions of Certification ensure that the Beacon Solar Energy Project will comply with the applicable laws, ordinances, regulations, and standards on noise and vibration as set forth in the pertinent portion of **Appendix A** of this Decision.

2. The project will not cause significant indirect, direct, or cumulative adverse noise impacts.

CONDITIONS OF CERTIFICATION

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within one-half mile of the site, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project and include that telephone number in the above notice. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the Compliance Project Manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed,

describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

NOISE COMPLAINT PROCESS

NOISE-2 Throughout the construction and operation of the Beacon Project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;
- Conduct an investigation to determine the source of noise related to the complaint;
- Take all feasible measures to reduce the noise at its source if the noise is project related; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and, if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form with the CPM documenting the resolution of the complaint. If mitigation is required to resolve a complaint and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program and a statement, signed by the project owner's project manager, verifying that the noise control program will be implemented throughout construction of the project. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM the noise control program and the project owner's project manager's signed statement. The project owner shall make the program available to Cal/OSHA upon request.

NOISE RESTRICTIONS

NOISE-4 Within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey, utilizing the same monitoring sites employed in the pre-project ambient noise survey at a minimum. The survey shall include the octave band pressure levels to ensure that no new pure-tone noise components have been introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. Steam relief valves shall be adequately muffled to preclude noise that draws legitimate complaints. If the results from the survey indicate that the project noise levels are in excess of 34 dBA L_{3q} at the residence east of the project site, additional mitigation measures shall be implemented to reduce noise to a level of compliance with this limit. If the project is equipped with an air cooled condenser, project noise levels shall be restricted to 40 dBA L_{eq} at the residence east of the project site.

Verification: Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the report shall be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits and a schedule, subject to CPM approval, for implementing these measures. Within 30 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey performed as described above and showing compliance with this condition.

NOISE-5 Following the project's first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations sections 5095–5099 and Title 29, Code of Federal Regulations section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify mitigation measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal/OSHA upon request.

STEAM BLOW RESTRICTIONS

NOISE-6 If a traditional high-pressure steam blow process is employed, the project owner shall perform the steam blow in such a way that noise from steam blows is no greater than 110 dBA measured at a distance of 100 feet. The project owner shall conduct steam blows only during the hours of 8 a.m. to 5 p.m., unless the CPM agrees to longer hours based on a demonstration by the project owner that off-site noise impacts will not cause annoyance. If a low-pressure continuous steam blow process is employed, the project owner shall submit a description of this process, with expected noise levels and projected hours of execution, to the CPM.

Verification: At least 15 days prior to the first high-pressure steam blow, the project owner shall submit to the CPM a projection of the noise levels expected and a description of the steam blow schedule. At least 15 days prior to any low-pressure continuous steam blow, the project owner shall submit to the CPM drawings or other information describing the process, including the noise levels expected and the projected time schedule for execution of the process.

NOISE-7 At least 15 days prior to the first steam blow(s), the project owner shall notify all residents or business owners within one-half mile of the site of the planned steam blow activity, and shall make the notification available to other area residents in an appropriate manner. The notification may be in the form of letters to the area residences, telephone calls, fliers, or other effective means. The notification shall include a description of the purpose and nature of the steam blow(s), the proposed schedule, the expected sound levels, and the explanation that it is a one-time operation and not a part of normal plant operations.

Verification: Within five days of notifying these entities, the project owner shall send a letter to the CPM confirming that local residents and businesses have been notified of the planned steam blow activities, including a description of the method(s) of that notification.

CONSTRUCTION TIME RESTRICTIONS

NOISE-8 Heavy equipment operation and noisy construction work relating to any project features shall be restricted as follows:

Pile driving and high-pressure steam blows:	8 a.m. to 5 p.m.
Other noisy work	7 a.m. to 10 p.m.

Haul trucks and other engine-powered equipment shall be equipped with mufflers that meet all applicable regulations. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

ATTACHMENT 1 - NOISE COMPLAINT RESOLUTION FORM

Beacon Solar Project (08-AFC-2)
NOISE COMPLAINT LOG NUMBER _____ Complainant's name and address: Phone number: _____
Date complaint received: _____ Time complaint received: _____
Nature of noise complaint:
Definition of problem after investigation by plant personnel: Date complainant first contacted: _____
Initial noise levels at 3 feet from noise source _____ dBA Date: _____ Initial noise levels at complainant's property: _____ dBA Date: _____ Final noise levels at 3 feet from noise source: _____ dBA Date: _____ Final noise levels at complainant's property: _____ dBA Date: _____
Description of corrective measures taken: Complainant's signature: _____ Date: _____
Approximate installed cost of corrective measures: $ _____ Date installation completed: _____ Date first letter sent to complainant: _____ (copy attached) Date final letter sent to complainant: _____ (copy attached)
This information is certified to be correct: Plant Manager's signature: _____

(Attach additional pages and supporting documentation, as required).

E. VISUAL RESOURCES

Visual resources are the features of the landscape that contribute to the visual character or quality of the environment. CEQA requires an examination of a project's visual impacts in order to determine whether the project has the potential to cause substantial degradation to the existing visual character of the site and its surroundings, substantially affect a scenic vista or damage scenic resources, or create a new source of substantial light or glare affecting day or nighttime views in the area. (Cal. Code Regs., tit. 14 § 15382, Appen. G.) The evidence contained in the record is undisputed. (Exs. 19, 105, 119, 144, 164, 174, 181, 233, 240, 285, 290, 323, 324, 500, 505; 517; 03/22/10 RT 17:1-3, 44:10-25.)

Key Observation Points (KOPs) represent the most critical locations from which the project would be seen. These reflect, in particular, those key sensitive viewer groups most likely to be affected by the project. Assessments of project impact are determined from these KOPs. (Ex. 500, p. 4.12-8.)

KOPs are rated from low to high using the eight factors: visual quality, viewer concern, visibility, number of viewers, duration of view, contrast, dominance, and view blockage.

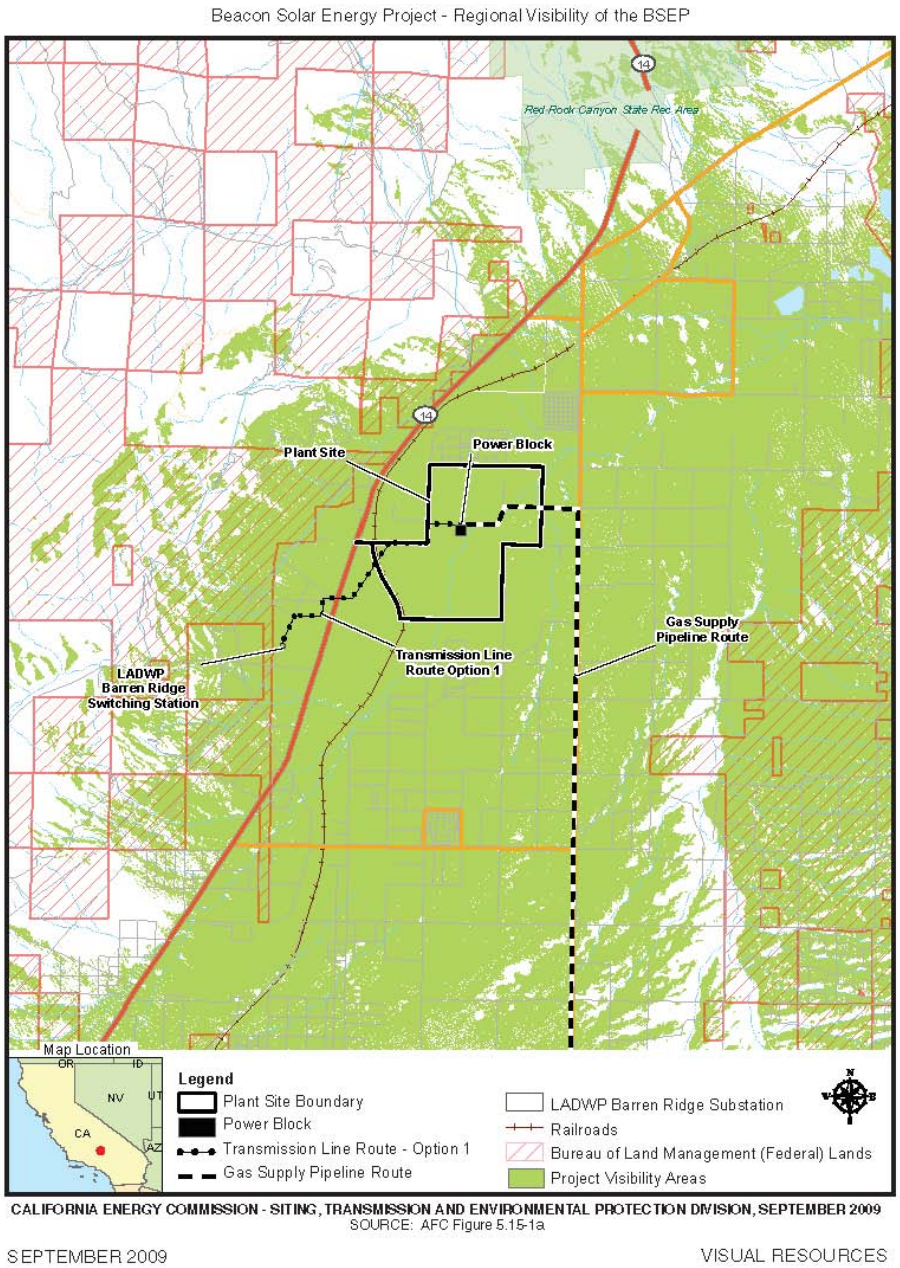
SUMMARY AND DISCUSSION OF THE EVIDENCE

The proposed Beacon Solar Energy Project (BSEP) would be built along the western edge of the northern Fremont Valley, approximately four miles north-north west of California City, in Kern County, California (**Visual Resources Figure 1** – Aerial View of Beacon Solar Energy Project and Vicinity). State Route (SR) 14, a four-lane highway, serves as the major transportation system through the Fremont Valley. (Ex. 500, p. 4.12-3.)

The proposed BSEP site would occupy approximately 2,012 acres of the Fremont Valley floor. The Fremont Valley is a slightly elongated valley bordered by the Piute Mountains to the west, the El Paso Mountains to the north and the Rand Mountains to the east. The greater portion of the Mojave Desert is to the southeast. The settlement of Rancho Seco is approximately one-mile northeast of the BSEP site and the Honda Proving Center, a 7.5 mile oval test track and a five-mile winding test track, is ½-mile to the east. The 7,000 acre Jawbone OHV (Off Highway Vehicle) Open Area is located northwest of the site and the 16,600

acre Red Rock Canyon State Park is approximately five miles to the north. (Ex. 500, p. 4.12-3.)

VISUAL RESOURCE - FIGURE 1
Beacon Solar Energy Project - Location Map



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, SEPTEMBER 2009
SOURCE: AFC Figure 5.15-1a

SEPTEMBER 2009 VISUAL RESOURCES

Source: Exhibit 500.

Visually, the primary BSEP features to be introduced to the site include:

1. Four 110-foot steel transmission line poles;
2. 32 79-foot steel transmission line poles;
3. 55-foot steam turbine generator;
4. 2 50-foot buildings and a 50-foot storage tank;
5. 45-foot high cooling tower;
6. 4 structures, including water storage tanks 34 to 40-feet high;
7. 16 20-foot Heat Transfer Fluid expansion tanks; and
8. 1,244 acres of parabolic trough mirrors, 17 to 20 feet high.

(Ex. 500, pp. 4.12-6 through 4.12-7.)

1. Direct/Indirect Impacts and Mitigation

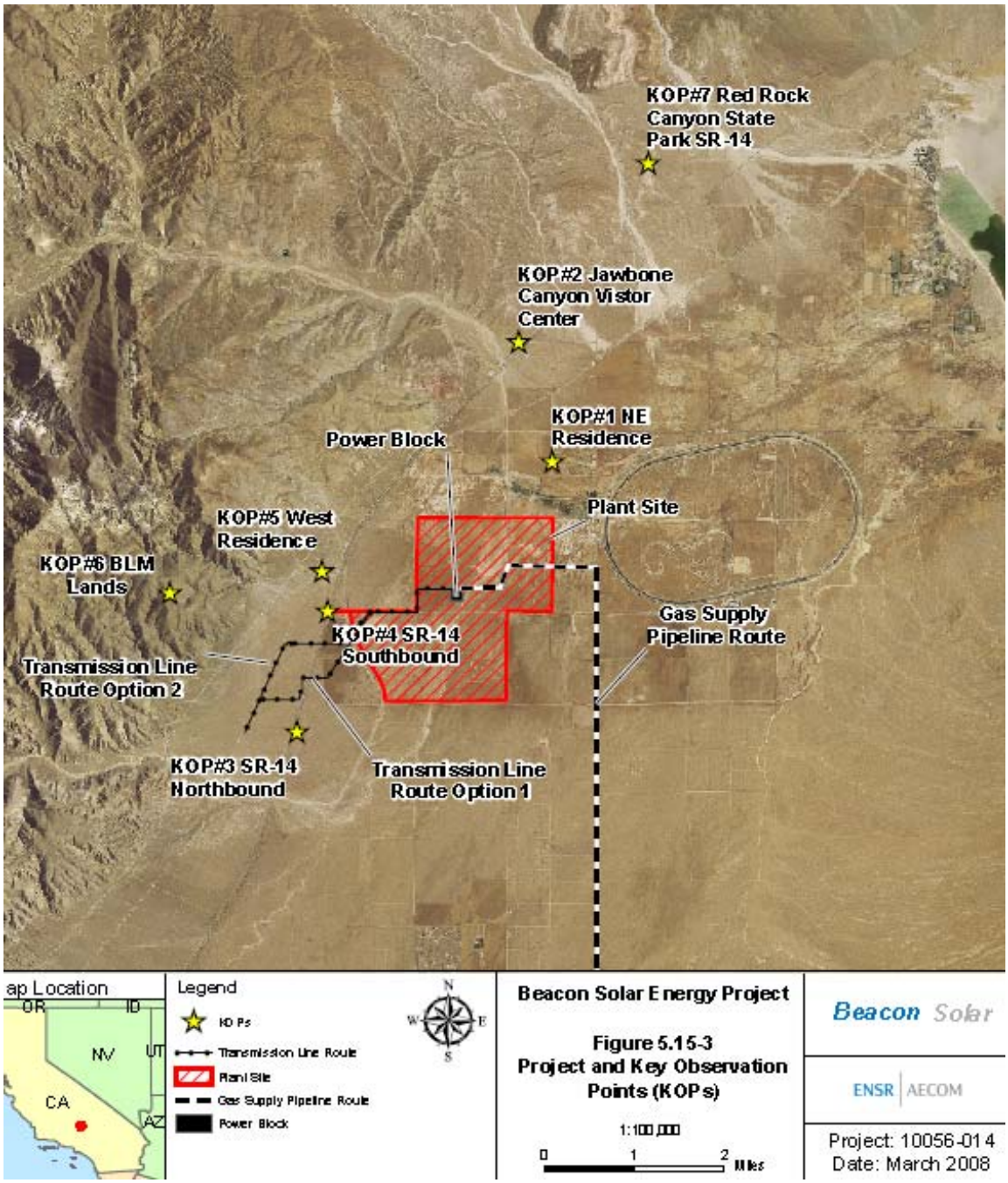
a. Construction Impacts

Construction activities will occur over approximately 25-months. A 22-acre construction laydown area will be located within the 2,012-acre project site west of the power block location (see **Visual Resources Figure 2**) and a 2.5-acre construction parking area will be located just south of it. The laydown area will be relocated periodically as the solar collector field is built out. (Ex. 500, p. 4.12-21.)

Project construction activities will take place Monday through Friday between the hours of 7:00 a.m. and 7:00 p.m. Construction activities on the BSEP site and the laydown area which would be highly visible to the surrounding area can be effectively screened by attaching fabric or adding wooden slats to a perimeter fence. Lighting that may be required to facilitate night time construction activities will, to the extent feasible and consistent with worker safety codes, be directed toward the center of the construction site and shielded to prevent light from straying offsite. Task-specific construction lighting will be used where feasible. The use of shielded directional exterior lights and fixtures of a non-glare type on the construction site and laydown area will minimize off-site light and glare impacts. We adopt Condition of Certification **VIS-3** to formalize appropriate construction lighting measures and Condition of Certification **VIS-2** to provide restoration of ground surfaces affected by temporary construction activities. We find the project's temporary construction activities, which may create a substantial visual impact, will be mitigated to a less than significant impact with

the effective implementation of Conditions of Certification **VIS-2** and **VIS-3**. (Ex. 500, p. 4.12-21.)

VISUAL RESOURCE - FIGURE 2



Source: Exhibit 500.

b. Operation Impacts

Visual Resources Figure 2 (above) shows the locations of the six KOPs selected for visual analysis:

- ***KOP 1*** – Chollo Street, North of East Quartz Road Looking South;
- ***KOP 2*** – Jawbone Canyon OHV Open Area Ridgecrest Field Office Looking South;
- ***KOP 3*** – Closest Residence West of Project Site Looking East;
- ***KOP 4*** - Northbound State Route 14, Approximately Two Miles South of Project Site Looking Northeast;
- ***KOP 5*** – Southbound State Route 14, East of the Project Site, Looking South; and
- ***KOP 6*** – Chuckwalla Mountain Hiking Trail Looking East.

Before considering individual KOPs, we consider generally whether the project will substantially affect a scenic vista or damage scenic resources, or create a new source of substantial light or glare affecting day or night time views in the area [Cal. Code Regs., tit. 14, Appendix G, section I, subds. (a), (b) and (d)]. A *scenic vista* is defined as a distant view of high pictorial quality perceived through and along a corridor or opening. There is no dispute that there are no federal, state, or local government designated scenic vistas in the northern Fremont Valley that the proposed project would substantially adversely affect. (Ex. 500, p. 4.12-5.)

Scenic resources include a unique water feature such as a waterfall; transitional water such as river mouth ecosystems, lagoons, coastal lakes, and brackish wetlands; or part of a stream, river, or estuary. No state highways near the BSEP are listed as eligible for designation by the California Department of Transportation (CalTrans) as a state scenic highway. The County of Kern has not designated SR-14 a county scenic highway according to the Kern County General Plan. There is no identified scenic resource on the project site and there is no defined scenic resource identified in the vicinity of the project site that the proposed project would substantially damage. (Ex. 500, pp. 4.12-5 to p. 4.12-6.)

During operation, the project has the potential to introduce new night-time light to the property because of safety and security needs. BSEP's specifications require lighting to be directed onsite, shielded from public view, with non-glare fixtures using switches, sensors, and timers to minimize the time that lights are on when they are not needed for safety and security. BSEP's new source of substantial light to nighttime views will be less than significant with the effective implementation of the applicant's specified mitigation measures and Condition of Certification **VIS-4**. (Ex. 500, p. 4.12-23.)

More than half of the 2,012-acre project site will be taken up by parabolic trough solar collector arrays. Parabolic troughs track the sun's movement across the sky. Troughs are stowed facing the ground so no glare occurs. When a parabolic trough rotates from stow into the tracking position, a horizontal glare may occur for a brief moment of time at the beginning and end of daily operations. A parabolic trough's tracking system during normal operation is designed to minimize horizontal glare. A tracking system includes the drive, sensors, and controls. In cases where glare occurs, it is typically addressed by aligning the unit. (Ex. 500, p. 4.12-23.)

The evidence indicates that the potential amount of spilled reflected rays from the parabolic trough solar collectors during normal operation will be so infrequent in the number of occurrences and so short in duration of time that they would not represent a substantial new source of glare in the area. (Ex. 500, p. 4.12-23.)

All BSEP equipment other than the solar arrays will have non-reflective surfaces and neutral colors to minimize their visual impacts. With the effective implementation of the proposed surface treatment, we find that project structures will not be a source of substantial glare that could adversely affect daytime views (see Condition of Certification **VIS-1**). (Ex. 500, pp. 4.12-23 to 4.12-24.)

Since the evidence establishes that BSEP will not have a substantial adverse effect on a scenic vista, nor will it substantially damage scenic resources, nor will it create a new source of substantial light or glare which would adversely affect day or nighttime views in the area; the only question remaining is whether the project would substantially degrade the existing visual character or quality of the site and its surroundings. [Cal. Code Regs., tit. 14, Appen. G, § I, subd. (c).]

The parties agree that with the effective implementation of proposed Condition of Certification **VIS-1** (requiring the use of neutral colors and non-reflective surface treatments on the project's surface structures), the introduction of the BSEP's

publicly visible structures to the existing physical environment, will not create a significant degradation to the existing visual character or quality of the site and surroundings from **KOP 1, KOP 3, KOP 4,** or **KOP 5**. (Ex. 500, pp. 4.12-10 to 4.12-17.)

Energy Commission Staff's analysis of **KOP 2** and **KOP 6** concluded that "considering the moderately high overall visual sensitivity and the moderate overall visual change, the introduction of the project's publicly visible structures may substantially degrade the existing visual character or quality of the site and its surroundings." (Ex. 500 p. 4.12-13.) No available mitigation measures were identified by Staff to reduce the impact to less than significant at either KOP. (Ex. 500, pp. 4.12-13; 4.12-18.) We analyze these two KOPs in turn.

KOP-2 – Jawbone Canyon OHV Open Area Ridgecrest Field Office Looking South

Visual Resources Figure 3 represents an existing view toward the project site from an elevated public parking/assembly area at the U.S. Bureau of Land Management Jawbone Canyon OHV Open Area Ridgecrest Field Office (BLM Ridgecrest Field Office), approximately three miles north of the project site. **Visual Resources Figure 4** is a simulation of the proposed project's publicly visible structures after completion of construction from this KOP. (Ex. 500, pp. 4.12-11 to 4.12-13.)

Visual Resources Figure 3 – Existing View of KOP-2

(Ex. 19, p. Figure. 5.15-5a.)

Visual Resources Figure 4 – Simulated View of KOP-2

(Ex. 19, p. Figure. 5.15-5b.)

Visual Sensitivity

Staff describes **KOP 2** as a physical landscape consisting "of sand, creosote bush scrub and ruderal vegetation, a portion of Jawbone Canyon Road and SR-14. Property fencing and a line of wooden utility poles are in view. In the middle ground (0.5 to 3.5 miles) and background views is the open expanse of the Fremont Valley. The view offers a little variety in color and texture in vegetation and soil. The estimated public appeal of the visual quality of the **KOP 2** view is considered to be moderate." (Ex. 500, p. 4.12-12.)

Staff makes no mention of the contrast between the bare expanse of abandoned alfalfa fields against the comparatively dense desert foliage. Indeed, the Committee has seen for itself the stark contrast between the persistent geometric patterns of the fallow alfalfa fields and the flora of the surrounding desert.

Applicant's expert testified that "the project site is identifiable from the ground and from the air because of its disturbance pattern and the fact that it's essentially just sand out there." (3/22/10 RT 49:17-20.) "The immediate site surrounding **KOP-2** consists of a paved parking lot, one-storey building and entry road. The view of the existing project site and surrounding landscape in the foreground is disturbed by past agricultural cropping practices, water and electrical distribution structures, ranch buildings, residential buildings, the railroad track and its embankments, SR-14 freeway, and the Honda Proving Center facility." (Ex. 324, p. 3.)

The parties agree that SR-14 is not a scenic highway. Staff's analysis explains that "viewers at this KOP location would be motorists on SR-14. Motorists would consist of freeway travelers and recreationists. Freeway travelers are generally engaged in long distance travel. They travel at normal freeway speeds. Their focus of attention is on long range non-peripheral views. They have a low to moderate viewer concern." (Ex. 500, p. 4.12-12.)

Applicant's expert testified that viewer concern was "in the low range from **KOP-2**." (3/22/10 RT 55:16-19.) Neither witness supported their opinion with empirical data such as interviews or scientific surveys so the nature of this evidence is speculative. Where the range of quality is measured in "low, moderate or high," and the testimony estimates that viewer concern is "low to moderate," we interpret that to mean that viewer concern ranges from low up to, but not including, moderate. Therefore, we find that the expert opinions, taken together, lead to the conclusion that viewer concern of passing motorists is low. Both experts agree, and we find, that visibility and the duration of the motorists' view of the site is high. However, given the low viewer concern, we do not find that the high number of motorists or the duration of their exposure results in an adverse visual impact.

Staff's testimony states, "recreationists" viewer concern varies. Individuals engaged in "passive" recreation or quiet recreation, such as bird watching and hiking, have a higher sensitivity than those participating in "active" recreation (e.g., off-highway vehicle use). (Ex. 500, p. 4.12-12.) However, the evidence reveals that the overwhelming majority of recreationists are not passive (3/22/10 RT 54:13-15, 181:16 – 182:6.)

Staff's analysis of KOP-2 assumes "that the viewer at this location is accustomed to an unobstructed view of the valley floor. There is no scenic focal point or unique feature in the view that draws the viewer's eye other than the open expanse of the valley." (Ex. 500, p. 4.12-12.)

Staff's analysis ignores some focal points and unique features raised by Applicant's expert and in public comment. Specifically, **KOP-2** looks onto the highly disturbed BSEP site, the highway (SR-14), the railroad track, and the Honda Test Track. (3/22/10 RT 52:24 – 53:5). The evidence confirms that the "open expanse of the valley" is not pristine desert (3/22/10 RT 57:21-25, 60:22 – 61:2, 278:13 – 14). Furthermore, viewers from **KOP-2** are not "accustomed" to an unobstructed view as the point was made by commenter, Dawn Martin, who lives next to **KOP-2** and across the highway from the site. Ms. Martin points out that the viewers would be one-time visitors, not residents because "no one…lives

up there." Ms. Martin also mentioned the glint of reflected sunlight from passing cars on SR-14. (3/22/10 RT 388:10-389:9.) We can infer that passing cars would draw the viewer's eye away from the open expanse of the valley from this KOP.

Staff's analysis concludes that overall viewer exposure and visual sensitivity at **KOP-2** is moderately high. (Ex. 500, p. 4.12-12.) Applicant's expert concludes "except for visibility, the remaining factors are in the low range from **KOP-2**..." (3/22/10 RT 55:18-21). We find the Applicant's expert testimony more accurately reflects the conditions of the visual landscape and we find that overall visual sensitivity at **KOP-2** is low.

Visual Change

After completion of construction, Staff concludes that overall visual change caused by the introduction of project structures into the view from **KOP-2** is moderate as a result of a high contrast, moderate dominance, and low view blockage. (Ex. 500, p. 4.12-13.) Applicant's expert concludes "the FSA's analysis of the project involves visual contrast, dominance, view blockage and visual change. All of these factors are in the low range from **KOP-2** and **KOP-6** because of the disturbance in the area." (3/22/10 RT 55:22-56:1.)

Both parties agree that there would be no view blockage. Staff considers the BSEP would be co-dominant to existing structures in the total view. (Ex. 500, p. 4.12-13.) Applicant's expert concludes the dominance would be low because BSEP would be less than half the size of the Honda Test Track, and, for most of the day, the painted backsides of the mirror arrays and BSEP's non-reflective structures would blend into the desert landscape except for that short period of time when the sun is at the viewer's back, at which time, the arrays would match the blue sky as reflected in Koehn Lake. (3/22/10 RT 54:4-55:5.) Applicant's expert showed a slide depicting the view when the sun is at the viewer's back, stating, "this exact view is sort of a fleeting moment in time because it's a slide, because of the requirements of the AFC, this exact view would maybe last for a half hour at the most." (3/22/10 RT 53:20-23.) Applicant's expert described the arrays' reflection of the sky as "fleeting" and "ephemeral." (3/22/10 RT 53:16.)

At the evidentiary hearing, Staff's expert focused on contrast, and specifically, the brightness and size of the structures introduced into the environment as the basis for his determination that BSEP would result in a significant impact. (3/22/10 RT 160:1-162:21.) However, Staff's expert equivocated repeatedly on the significance of the impact and ultimately admitted that in the absence of data

to the contrary, he will find a significant impact ”to err on the side of being most environmentally protective, conservative.” (3/22/10 RT 161:22-162:2; 162:17-162:21; 168:25-169:4; 171:9-13; 173:15-25.) We cannot rely on this approach for two reasons. First, our decision must be based upon substantial evidence. Second, there *is* data to the contrary, some of which is contained in Staff’s own analysis.

As we noted above regarding Staff’s analysis of glare, Staff concludes the potential amount of spilled reflected rays from the parabolic trough solar collectors during normal operation would be so infrequent in the number of occurrences and so short in duration of time that they would not represent a substantial new source of glare in the area. (Ex. 500, p. 4.12-24.)

Staff’s expert testified that “contrast concerns the degree to which the proposed project's visual characteristics or elements of form, line, color and texture differ from form, line, color and texture existing in the landscape. So if there is a similarity between the design of the project with the form, line, texture within the natural environment, it would be limited contrast.” (3/22/10 RT 168:16-24.) BSEP’s form and line closely match the disturbed footprint of the former alfalfa fields. For most of the day the arrays would be the same color as the disturbed land below. The arrays will appear blue “for a half hour at the most” (3/22/10 RT 53:20-23). When the arrays appear blue, they will differ from a shimmering body of water because what makes water shimmer are the irregular angles of the water’s surface caused by ripples or waves reflecting the sun’s rays. We know from Staff’s glare analysis (*supra*) that the arrays are designed specifically to capture and prevent the escape of the sun’s rays. Thus, during the fleeting moments when the arrays appear blue to the viewers at **KOP-2**, they will not scatter glint the same way that Koehn Lake or, more frequently, the passing cars on SR-14 will. The manmade structures will contrast in texture from the existing landscape, but the existing site is disturbed so that its texture differs from the surrounding desert landscape. The manmade structures will be more similar to and united with the existing site’s disturbed surface and manmade vehicles streaming down SR-14 in contrast to the surrounding desert foliage outside the site boundaries.

We find in light of the record as a whole that the contrast will be largely absorbed within the existing disturbed viewshed. At worst, we find the contrast would be moderate so that the overall visual change from **KOP-2** will be moderately low. Overall visual sensitivity from **KOP-2** is also moderately low. When balancing the moderately low overall visual sensitivity and the moderately low overall visual change, we find that the introduction of the project’s publicly visible structures will

not introduce a substantial degrading to the existing visual character or quality of the site and its surroundings at this KOP. We find that, with the implementation of the Conditions of Certification which mitigate the contrast of the BSEP structures, the adverse visual impacts to **KOP-2** will be less than significant.

KOP 6 – Chuckwalla Mountain Hiking Trail Looking East

Visual Resources Figure 5 represents an existing view from a public hiking trail to Chuckwalla Mountain (5,036-foot peak elevation) in the Piute Mountain Range on federal land managed by the BLM, approximately two miles west of the project site (**Visual Resources Figure 6** – is a simulation of the proposed project's publicly visible structures from **KOP-6** after completion of construction).

Visual Resources Figure 5 – Existing View of KOP-6

(Ex. 19, p. Figure. 5.15-9a.)

Visual Resources Figure 6 –Simulated View of KOP-6

(Ex. 19, p. Figure. 5.15-9b.)

Visual Sensitivity

Staff considers the overall sensitivity at **KOP-6** to be moderately high. **KOP-6** is an elevated panoramic view of the northern Fremont Valley. The view reaches the Rand Mountains, and distant views of the Granite Mountains and the greater Mojave Desert. Human-made modifications in the view include the Honda Proving Center's 7.5-mile asphalt oval track, Fremont Valley Ranch buildings, SR-14, and Rancho Seco. Staff considers the visual sensitivity of hikers at **KOP-6** to be moderately high but the number of hikers is considered low. Staff acknowledge that they have no idea how many hikers actually use the trail. Staff considers the visibility and duration of the view of the BSEP for hikers to be high and the overall viewer concern to be moderately high. Staff considers the overall viewer exposure at **KOP-6** to be moderate. (Ex. 500, p. 4.12-17.) Again, Staff does not include the highly visible and disturbed fallow alfalfa fields in their description of the viewshed from **KOP-6**.

Applicant's expert not only pointed out that viewers from **KOP-6** have a direct view of the abandoned alfalfa fields but argued that the sensitivity of the small number of hikers would be affected by the enormous amount of junk that has been dumped on the BLM roads and trails. (3/22/10 RT 49:21-50:25.) Further, the evidence indicates that the hiking trails are used by off-highway vehicles with a lower visual sensitivity than passive recreationists (see supra). (3/22/10 RT 51:15-20.) Applicant's expert concludes that "trails to nearby mountains are mostly used by off-highway, offroad vehicles and very few hikers. The FSA's analysis of existing conditions includes visual quality, viewer concern, visibility,

number of viewers and duration of view. Except for visibility the remaining factors are in the low range from **KOP-2** and **KOP-6**. And the low range of a possible range of low, moderate and high." (3/22/10 RT 55:6-21.)

After reviewing the photographs and weighing the testimony, we find that the visual quality, viewer concern, duration of view and overall viewer exposure at **KOP-6** are moderate. We find the number of viewers is low and visibility is high. We find that overall viewer sensitivity is low to moderate.

Visual Change

After completion of construction, publicly visible structures of the BSEP will include transmission line poles and parabolic troughs. Structures in the power block, and the administration building and warehouse will not be visually discernable from **KOP-6**. The project's paved access road, 24-foot wide earthen road, and its transmission line monopoles would introduce noticeable lighter colored lines into the view. Also in the view, would be stormwater retention basins in the solar collector field, and evaporation ponds. (Ex. 500, p. 4.12-18.)

Staff concludes that the overall visual change caused by the introduction of the proposed project's structures into the **KOP-6** view is considered to be moderate as a result of moderately high contrast, moderately high dominance, and low view blockage. (Ex. 500, p. 4.12-18.) Applicant's expert considers the visual contrast, dominance, view blockage and visual change to be in the low range for **KOP-6** because of the high existing disturbance in the area. (3/22/10 RT 55:22-56:1.)

Staff suggests that the degree of contrast introduced by the amount of light or brightness that is given off by the surface area of the parabolic troughs during operation would accentuate the contrast with the surrounding landscape. At this KOP, a view of the parabolic troughs during operation would introduce a "glittering" effect similar to a shimmering from a body of water. Staff therefore concludes that the degree of contrast introduced by the project from **KOP-6** is moderately high. (Ex. 500, p. 4.12-18.) Again, it is difficult to reconcile this testimony with Staff's conclusion that spilled reflected rays from the parabolic troughs during operation will be so infrequent in the number of occurrences and so short in duration of time that they would not represent a substantial new source of glare in the area. (Ex. 500, p. 4.12-23.)

Describing the slide of Figure 6 at the evidentiary hearing, Applicant's expert testified, "the sun is now at our back and that's why we see the blue. Up until the time that the sun is at our back, the arrays would be tan in color, and the same color as the desert around it. So it would blend into this rectangular pattern around it. Again, this is the power block. The color and texture of the project from this distance is very similar to the colors of the disturbed desert around it." (3/22/10 RT 54:21 through 55:5.) Applicant's expert concludes that visual contrast is low. (3/22/10 RT 55:22-25.)

Again, using Staff's analytical elements of form, line, color and texture to determine contrast (3/22/10 RT 168:16-24), Figure 6 shows that BSEP's form and line closely match the disturbed footprint of the former alfalfa fields. The disturbed footprint frames the BSEP like matting in a framed picture. For most of the day the arrays would be the same color as the disturbed land below (3/22/10 RT 54:22-25). As pointed out in our analysis of KOP-2, when the arrays appear blue, they will differ from a shimmering body of water because they will not reflect the sun's rays. Staff's glare analysis (*supra*) confirms that the arrays are designed specifically to capture and prevent the escape of the sun's rays. Thus, during the fleeting moments when the arrays appear blue to the viewers at **KOP-6**, they will not scatter glint the same way that Koehn Lake or the frequent passing cars on SR-14 will. The symmetry of the arrays will echo the symmetry of crop furrows that are still vaguely discernable at the site. Thus, the arrays' texture from the distant view of **KOP-6** will appear flatter and smoother than the site's current disturbed sandy surface, but the existing site is flatter and smoother than the surrounding desert landscape. The arrays' texture will be more similar to and united with the disturbed site's surface compared to the surrounding desert foliage.

We find in light of the record as a whole and that the degree of contrast introduced by the project from **KOP-6** is moderately low because the project will conform in harmony with the form, line, color and texture of the disturbed acreage surrounding it.

While there is no dispute that view blockage is low, there is a disagreement on the dominance of the BSEP in the field of view of **KOP-6**. Staff claims that the proportionate size relationship of the publicly visible project structures to other existing human-made and natural components is co-dominant in the total field of view. Staff considers dominance to be moderately high. (Ex. 500, p. 4.12-18.)

Applicant points out that the project is approximately 1,200 acres and the Honda test track is approximately 2,500 acres, so two BSEPs would fit inside the test track. Applicant's expert concludes that visual contrast is low. (3/22/10 RT 54:14-17.) Existing views in the general area already have many geometric features and industrial facilities, such as the highway, railroad, storage buildings, transmission lines, aqueduct, and Honda Test Track. (3/22/10 RT 55:8-12.)

Staff considers the overall visual change caused by the introduction of the BSEP structures into the **KOP-6** view to be moderate as a result of moderately high contrast, moderately high dominance, and low view blockage. (Ex. 500, p. 4.12-18.) Applicant considers the overall visual change to be low as a result of low contrast, low dominance, and low view blockage. (3/22/10 RT 55:22-25.) We find the overall visual change caused by the introduction of the BSEP structures into the KOP-6 view to be moderate.

Applicant's expert testified:

> In my opinion, none of the State CEQA criteria for significant impact was met and the impact from **KOP-2** is less than significant. I came to this conclusion based upon a comparison of the existing condition surrounding this KOP, which consists of multiple disturbances, with the form, meaning, and context of the Beacon Project as an appealing renewable energy resource. The overall shape of the project will not be unlike predominant elements of the existing project site and surrounding disturbed landscape. The Beacon Project will be low in profile in the landscape as compared to conventional energy generation and transmission structures. Initially, viewers will see the facility as a unique, renewable energy resource that replaces and contrasts with deteriorated ranch land and buildings. Over time, viewers at **KOP-2** will see the facility as a landmark and their expectations will be met by the form, meaning, and context of a sensitively designed solar field in an overall disturbed and deteriorating landscape, rather than in an otherwise natural scene. The scene surrounding **KOP-2** has not been natural for many decades. The nearest natural desert landscape is further south, beyond the project site. The Jawbone Canyon landscape has also been highly disturbed for several years by off-highway vehicles, as well as by historical mining activities and the aqueduct pipeline. (Ex. 324, p. 4.)

The Applicant's expert characterized the BSEP as an "appealing renewable energy resource…in an overall disturbed and deteriorating landscape, rather than in an otherwise natural scene." (Ex. 324, p. 4.) In determining the visual impact of the BSEP, we acknowledge the positive associations of an

environmentally favorable clean energy source compared to the failed alfalfa farm which, decades after its abandonment, still stands out in stark contrast to its surroundings. These associations color viewers' perceptions. When balancing the moderate overall visual sensitivity and the moderate overall visual change, we find that the introduction of the project's publicly visible structures will not substantially degrade the existing visual character or quality of the site and its surroundings at this KOP. We find that, with the implementation of the Conditions of Certification, the adverse visual impacts to **KOP-6** will be less than significant.

2. Visible Vapor Plumes

The project proposes use of an evaporative cooling tower. A formed plume above the cooling tower potentially could substantially degrade the existing visual character or quality of the project site and its vicinity. (Ex. 500, p. 4.12-20.)

A plume frequency threshold of 20 percent of seasonal (typically from November through April) daylight no rain/fog high visual contrast (i.e. "clear") hours is used to assess a potential plume appearance impact significance. If it is determined that the seasonal daylight clear hour plume frequency is greater than 20 percent, then plume dimensions are determined and a significance analysis is included in the Visual Resources section of the Staff Assessment for the proposed project. (Ex. 500, p. 4.12-20.)

Visible Plume Table 1
Predicted Hours with Cooling Tower Visible Plumes
Mojave/Lancaster 2002-2004 Meteorological Data

Case	Available (hr)	Plume (hr)	Percent
Daytime	12,117	2,086	17.2%
Seasonal Daytime	5,409	1,865	34.5%
Seasonal Daytime No Rain/No Fog	5,296	1,774	33.5%
Seasonal Daytime Clear	4,689	1,425	30.4%

*Seasonal conditions occur during November through April. (Ex. 500 p. 4.12-54.)

Since the plume frequencies for the BSEP remain over 20 percent of the seasonal daylight clear hours the corresponding plume dimensions were estimated. The plume dimensions are presented in **Visible Plume Table 2,** below.

Visible Plume Table 2
Predicted Cooling Tower Visible Plume Dimensions

	Cooling Tower Seasonal "Clear" Hours Plume Dimensions in Meters (feet)		
Percentile	**Length**	**Height**	**Width**
5%	63.6 (209)	142.7 (468)	37.5 (123)
10%	37.2 (122)	92.3 (303)	27.1 (89)
15%	30.2 (99)	57.4 (188)	24.3 (80)
20%	**26.1 (86)**	**33.9 (111)**	**23.5 (77)**
25%	20.9 (69)	26.4 (87)	22.2 (73)
30%	8.1 (27)	17.7 (58)	16.3 (53)

Results include the cooling tower stack height of 13.5 meters (44.3 feet), see **Visible Plume Table 1**.
(Ex. 500 p. 4.12-55.)

The evidence shows that the 20th percentile plume dimensions for the project's cooling tower plumes are predicted to visually appear subordinate when compared to other human-made and natural elements in the KOP viewsheds. Considering the evidence concerning the existing landscape and characteristics, the small size of the two BSEP boilers and their limited operation, we find the degree of visual change potentially introduced by publicly visibility plumes will be less than significant. (Ex. 500, p. 4.12-21.)

3. Project Linears

The BSEP will connect to the Los Angeles Department of Water and Power (LADWP) transmission system approximately 1.5 miles west-southwest of the project site. Two existing LADWP transmission lines, the Celilo-Sylmar 500 kV DC intertie line, and the Inyo-Barren Ridge 230 kV line are at this location. Both lines run within an approximate 250-foot wide, north-south LADWP right of way (ROW). (Ex. 500, p. 4.12-19.)

The proposed project's transmission line involves the installation of 36 steel/concrete monopoles, 79 feet and 110 feet in height, and a span length expected to average approximately 500 feet. New transmission poles will be of a neutral color and have a non-reflective surface. The insulators are to be made of a non-reflective and non-refractive material, and the conductors are to be non-specular (i.e., their surfaces will have a dulled finish so that they do not reflect sunlight). The evidence suggests that the degree of contrast introduced by the transmission poles is low. (Ex. 500, p. 4.12-19.)

The BSEP will either use tertiary treated recycled water from the Community of Rosamond's wastewater treatment facility located about 40 miles south of the

project site or tertiary treated recycled water from California City's wastewater treatment facility located about 6 miles southeast of the project site. In either case, pipeline construction equipment and excavated earth material will be stored along the pipeline ROW during construction. Pipelines are to be installed underground. (Ex. 500, p. 4.12-19.)

With the burying of pipelines and the restoration of ground surfaces, the linear routes will not create a change to the existing visual character or quality of the area. Condition of Certification **VIS-2** requires restoration of ground surfaces affected by temporary construction activities. We find that that there will be no significant adverse impacts to visual resources from BSEP linears. (Ex. 500, p. 4.12-20.)

4. Cumulative Impacts and Mitigation

The record shows two projects have were analyzed for cumulative impacts: the Pine Tree Wind Development Project, and the Los Angeles Department of Water and Power (LADWP) Barren Ridge-Castaic Transmission Project. The two proposed projects would not be in the view of the KOPs. The Pine Tree Wind Development Project is currently under construction and consists of 80 wind turbine generators located on approximately 8,000 acres in the mountains six miles west of the BSEP site. (Ex. 500, p. 4.12-25.)

The LADWP Barren Ridge-Castaic Transmission Project involves constructing a new 75 mile 230-kilovolt (kV) line from the Barren Ridge Switching Station north of Mojave to the Castaic Power Plant, upgrading the Owens-Rinaldi 230-kV line, and construction of a new electrical switching station at Haskell Canyon in Los Angeles County. The segment of the project closest to the BSEP is approximately two miles. The project is currently under environmental review which began in early 2008. (Ex. 500, p. 4.12-25.)

We find the visual effects of the BSEP in combination with past, present, and reasonably foreseeable projects in the area will not be cumulatively considerable because the projects are not in the same viewshed as the BSEP. Therefore, cumulative impacts will be less than significant.

5. LORS compliance

Kern County General Plan, Land Use, Open Space and Conservation Element, Chapter 1 – General Provisions, Section 1.10.7 Lighting and Glare.

This section requires light and glare from discretionary new development projects to be minimized in rural as well as urban areas and encourages the use of low-glare lighting to minimize nighttime glare effects on neighboring properties. Conditions of Certification **VIS-3** and **VIS-4** ensure compliance with this section. (Ex. 500 p. 4.12-26.)

Kern County Code Title 19 Zoning, Section 19.12.070 Yard and Setbacks. BSEP will comply with the county's yard requirements and setbacks. (Ex. 500 p. 4.12-27.)

Section 19.12.080, Height Limits. There is no height limit on nonresidential structures, except in areas of protected military airspace as specified in Section 19.08.160.B. The BSEP's tallest structures would be the four 110–foot tall transmission line steel poles. Condition of Certification **VIS-7** provides for military review of project structures and buildings exceeding 100 feet in height prior to the start of their construction. (Ex. 500 p. 4.12-27.)

Section 19.12.110, Signs. This section controls signage. Condition of Certification **VIS-5** ensures that publicly visible project signs will be installed in compliance with this section. (Ex. 500 p. 4.12-27.)

Section 19.12.120 Landscaping. Requires a plot plan showing the areas to be landscaped, the type of landscaping proposed and amount, and shall state the proposed method of irrigation. Condition of Certification **VIS-6** requires a comprehensive landscaping and irrigation plan be approved by the Director of the Kern County Planning Department in accordance with the requirements of Chapter 19.86 of the Zoning Ordinance. A minimum of 5 percent of the developed area shall be landscaped with xeriscape or drought tolerant plantings and continuously maintained in good condition. As an alternative, the project owner may contribute the equivalent cost of the landscaping to the Kern County Parks and Recreation district, school or other non-profit organization in Kern County. (Ex. 500 p. 4.12-28.)

6. Public Comment

Dawn Martin stated that she lives in Rancho Seco (about three-eighths of a mile north of the plant site). She observed that the **KOP-6** picture is taken from where visitors only would look down on the site "because no one that lives up there. So it's only for visitors and hikers. They would only be there to see it one time, and not go back through." She also observed that the **KOP-2** (Jawbone Station) is

for visitors only as well. She voiced concern that “both of those pictures do not include me. I live on the ground; I look straight across at this site.” Ms. Martin commented that it would have been “awfully nice to have a picture from the ground, from where I live, to see what it might look like in the future when it's built.” Ms. Martin notes “we know that sitting there watching cars go by, they reflect every once in awhile and it catches your eye, so light reflection is sometimes disturbing.” (3/22/10 RT 388:10-389:9.)

We agree that it would have been desirable for Ms. Martin’s house to be used as a KOP; however, we find that the simulations from **KOPs -1, -3** and **-5** provide a good idea of what she can expect to see after the BSEP is completed. The evidence indicates that the potential amount of spilled reflected rays from the parabolic trough solar collectors will be infrequent in the number of occurrences and short in duration so they will not represent a substantial new source of reflected light in the area. (Ex. 500, p. 4.12-23.)

Ms. Martin commented “I do believe we can live with it” and concluded her comments by saying, “we would love to see this project go forward.” (3/22/10 RT 388:25; 391:9-10.)

Michael Sellard, a resident of California City, commented that the BSEP “will actually improve the land and the local environment from the existing abandoned condition it's in today. You don't hear anybody objecting to this plant, and people around here speak their mind.” (3/22/10 RT 414:6-10.)

FINDINGS OF FACT

Based on the evidence of record, we find and conclude as follows:

1. Construction will occur over approximately 25 months.
2. The project’s temporary construction activities’ impact on visual resources will be mitigated to a less than significant impact with the effective implementation of Conditions of Certification **VIS-2** and **VIS-3**.
3. There are no federal, state, or local government designated scenic vistas in the northern Fremont Valley that the proposed project would substantially adversely affect.
4. BSEP’s new source of substantial light to nighttime views will be less than significant with the effective implementation of the Applicant’s specified mitigation measures and Condition of Certification **VIS-4**.

5. There is no identified scenic resource on the project site and there is no defined scenic resource identified in the vicinity of the project site that the proposed project would substantially damage.

6. The potential amount of spilled reflected rays from the parabolic trough solar collectors during normal operation will be so infrequent in the number of occurrences and so short in duration of time that they would not represent a substantial new source of glare in the area.

7. All BSEP equipment other than the solar arrays will have non-reflective surfaces and neutral colors such that the project structures will not be a source of substantial glare that could adversely affect daytime views

8. The project's potential impacts on visual resources were analyzed from six defined key observation points (KOP) at different locations surrounding the project site

9. BSEP will not result in a significant adverse visual impact from any of the KOPs.

10. The degree of visual change potentially introduced by publicly visibility plumes will be less than significant. The project owner will provide landscaping to screen some project features from view.

11. There will be no significant adverse impacts to visual resources from BSEP linears. No long-term visual impacts will occur as a result of the construction of the pipeline and transmission line.

12. The visual effects of the BSEP in combination with past, present, and reasonably foreseeable projects in the area are not in the same viewshed as the BSEP so they will not be cumulatively considerable will result in no significant cumulative impacts.

CONCLUSIONS OF LAW

1. Implementation of the following Conditions of Certification will result in the project causing no significant direct, indirect, or cumulative impacts to visual resources.

2. The project will comply with all applicable laws, ordinances, regulations and standards regarding project design, architecture, landscaping, signage, and other requirements related to Visual Resources.

CONDITIONS OF CERTIFICATION

Surface Treatment of Project Structures and Buildings

VIS-1 The project owner shall color and finish the surfaces of all project structures and buildings visible to the public to ensure that they: (1) minimize visual intrusion and contrast by blending with the landscape; (2) minimize glare; and (3) comply with local design policies and ordinances. The transmission line conductors and insulators shall be non-specular and non-reflective.

The project owner shall submit a surface treatment plan to the Compliance Project Manager (CPM) for review and approval. The surface treatment plan shall include:

A A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;

B A list of each major project structure and building (e.g., building, tank, and pipe; transmission line towers and/or poles; and fencing), specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;

C One set of color brochures or color chips showing each proposed color and finish;

D A specific schedule for completing the treatment; and

E A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not request vendor surface treatment of any buildings or structures during their manufacture, or perform final field treatment on any buildings or structures, until the project owner has received treatment plan approval by the CPM.

The project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and is ready for inspection; and shall submit one set of electronic color photographs from **KOPs 1, 3, 4,** and **5** showing the "as built" surface treated structures and buildings.

Verification: At least 45 days prior to applying vendor color(s) and finish(es) for structures or buildings to be surface treated during manufacture, the project owner shall submit the proposed treatment plan to the CPM.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for approval.

Within ninety (90) days after the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and is ready for inspection; and shall submit one set of electronic color photographs from **KOPs 1, 3, 4,** and **5** showing the "as built" surface treated structures and buildings.

The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a): the condition of the surfaces of all structures and buildings at the end of the reporting year; b) major maintenance activities that occurred during the reporting year; and c) the schedule of major maintenance activities for the next year.

Surface Restoration

VIS-2 The project owner shall remove all evidence of temporary construction activities, and shall restore the ground surface to the original condition or better condition, including the replacement of any vegetation during construction where project development does not preclude it. The project owner shall submit to the CPM for approval a surface restoration plan, the proper implementation of which will satisfy these requirements. The project owner shall complete surface restoration within 60 days after the start of commercial operation.

Verification: At least 60 days prior to the start of commercial operation, the project owner shall submit the surface restoration plan to the CPM for approval.

If the CPM notifies the project owner that any revisions of the surface restoration plan are needed, within 30 days of receiving that notification the project owner shall submit to the CPM a plan with the specified revisions.

The project owner shall complete surface restoration within 60 days after the start of commercial operation. The project owner shall notify the CPM within seven days after completion of surface restoration that the restoration is ready for inspection.

Construction Activity Lighting

VIS-3 The project owner shall ensure that lighting on the construction site and the construction laydown area minimizes potential night lighting impacts, as follows:

A All lighting shall be of minimum necessary brightness consistent with worker safety and security;

B All fixed position lighting shall be shielded/hooded to direct light downward, and toward the area to be illuminated preventing direct illumination of the night sky and direct light trespass (direct light extending outside the boundaries of the project site, the laydown area, or the site of construction of ancillary facilities, including any security related boundaries);

C Wherever feasible and safe and not needed for security, lighting shall be kept off when not in use; and

D If the project owner receives a complaint about construction lighting, the project owner shall notify the CPM and shall use the complaint resolution form included in the General Conditions section of the Compliance Plan to record each lighting complaint and to document the resolution of that complaint. The project owner shall provide a copy of each complaint form to the CPM.

Verification: Within seven days after the first use of construction lighting, the project owner shall notify the CPM that the lighting is ready for inspection.

If the CPM notifies the project owner that modifications to the lighting are needed to minimize impacts, within 15 days of receiving that notification the project owner shall implement the necessary modifications and notify the CPM that the modifications have been completed.

Within 48 hours of receiving a lighting complaint, the project owner shall provide to the CPM; a) a report of the complaint, b) a proposal to resolve the complaint, and c) a schedule for implementation of the proposal. The project owner shall notify the CPM within 48 hours after completing implementation of the proposal. The project owner shall provide a copy of the completed complaint resolution form to the CPM in the next Monthly Compliance Report.

Permanent Exterior Lighting

VIS-4 To the extent feasible, consistent with safety and security considerations and commercial availability, the project owner shall design and install all permanent exterior lighting such that:

A light fixtures do not cause obtrusive spill light beyond the project site;

B lighting does not cause excessive reflected glare;

C direct lighting does not illuminate the nighttime sky; and

D illumination of the project and its immediate vicinity is minimized.

In addition, the project owner shall submit to the CPM for approval a lighting management plan that includes the following:

A lighting that incorporates “International Dark Sky Association” approved commercially available fixtures;

B lighting shall be directed downward or toward the area to be illuminated (hooded/shielded);

C lighting shall be the minimum necessary brightness consistent with operational safety and security;

D lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied; and

E a process for addressing and mitigating lighting related complaints.

Verification: At least 14 days prior to ordering any permanent exterior lighting, the project owner shall contact the CPM to determine the required documentation for the lighting management plan.

At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to the CPM for approval a lighting management plan. If the CPM determines that the lighting management plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for approval. The project owner shall not order any exterior lighting until receiving CPM approval of the lighting management plan.

Prior to commercial operation, the project owner shall notify the CPM that the lighting has been installed and is ready for inspection. If after inspection the CPM notifies the project owner that modifications to the lighting are needed, within 30 days of receiving notification the project owner shall implement the modifications and notify the CPM that the modifications have been completed and are ready for inspection.

Within 10 days of receiving a project-related lighting complaint, the project owner shall provide the CPM with a complaint resolution form report as specified in the Compliance General Conditions including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the CPM within 10 days after completing implementation of the proposal. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days of complaint resolution.

Publicly Visible Project-Related Signage

VIS-5 Any publicly visible project-related signage shall be the minimal signage visible to the public, and shall a) have unobtrusive colors and finishes that prevent excessive glare; and b) be consistent with the applicable design and development standards found in Chapter 19.84 *Signs* of the Kern

County Code. The design of any signs required by safety regulations shall conform to the criteria established by those regulations.

The project owner shall submit a sign plan for publicly visible signs for the project to the Director of the Kern County Planning Department for comment and to the CPM for approval. The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

Verification: At least 30 days prior to installing publicly visible signs, the project owner shall submit a sign plan for the project to the Director of the Kern County Department of Planning for comment and to the CPM for approval. The project owner shall provide a copy of the Director of the Kern County Planning Department comments to the CPM.

If the CPM determines that the sign plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for approval by the CPM before any signage visible to the public is installed.

The project owner shall inform the CPM that the publicly visible signs have been installed and provide the CPM with electronic color photographs of the installed signage.

Landscaping

VIS-6 The project owner shall provide a comprehensive landscaping and irrigation plan for the project site in accordance with the requirements of Chapter 19.86 of the Kern County Zoning Ordinance. Landscaping shall be installed or bonded prior to the start of commercial operation.

An alternative to providing a comprehensive landscaping and irrigation plan for the project site, the project owner may provide to the CPM a copy of the receipt demonstrating payment of equivalent cost of the landscaping to the Kern County Parks and Recreation District, a Kern County public school or other non-profit organization in the County of Kern prior to the start of commercial operation.

The project owner shall submit to the Director of the Kern County Planning Department for comment a comprehensive landscaping and irrigation plan, or shall discuss with the Director the alternative described above to a landscaping and irrigation plan.

The applicant shall allow the Director of the Kern County Planning Department up to 60 calendar days to review the comprehensive landscaping and irrigation plan and provide written comments to the project owner. The project owner shall provide a copy of the Director of the Kern County Planning Department's written comments on the

landscaping and irrigation plan or the alternative to the CPM for review and approval.

The project owner shall not implement the landscaping and irrigation plan or the alternative until the project owner receives approval from the CPM. Planting must be completed by the start of commercial operation, and the planting must occur during the optimal planting season.

Verification: Prior to commercial operation and at least 45 days prior to installing the landscaping, the project owner shall provide a copy of the landscaping and irrigation plan to the Director of the Kern County Planning Department for review.

The project owner shall provide to the CPM a copy of the transmittal letter submitted to the Director of the Kern County Planning Department requesting their review of the submitted landscaping and irrigation plan, or alternative.

The project owner shall notify the CPM within seven days after completing installation of the landscaping and irrigation that the landscaping and irrigation is ready for inspection.

In-lieu of the filing of a landscaping and irrigation plan, prior to the start of commercial operation, the property owner shall provide to the CPM a copy of the receipt demonstrating payment to the Kern County Parks and Recreation District, a Kern County public school or other non-profit organization in the County of Kern.

Military Review of Project Structures/Buildings Exceeding 100 Feet in Height

VIS-7 Prior to the start of construction or installation for any project related structure or building exceeding 100 feet in height, the project owner shall provide the military authority responsible for operations in the Fremont Valley flight area (shown on Figure 19.08.160, section 19.08.160 *HEIGHT OF STRUCTURES,* Kern County Zoning Ordinance) elevation drawings and a plot plan showing dimensions to review.

The project owner shall provide the military authority 60 calendar days to review drawings and the plot plan and provide a written determination to the project owner that the height of the project structure or building would not create a military mission hazard. The project owner shall provide a copy of the military authority's written determination to the CPM for approval.

The project owner shall not start construction on a project structure or building exceeding 100 feet in height until the project owner receives approval from the CPM.

Verification: Prior to the start of construction or installation for any project related structure or building exceeding 100 feet in height, the project owner shall provide to the CPM a copy of the military authority's written determination that the height of the project structure or building would not create a military mission hazard.

Appendix A: *Laws, Ordinances, Regulations, and Standards*

Appendix B: *Exhibit List*

Appendix C: *Proof of Service List*

APPENDICES

AIR QUALITY

Applicable LORS	Description
Federal	
40 Code of Federal Regulations (CFR) Part 52	Nonattainment New Source Review (NSR) requires a permit and requires Best Available Control Technology (BACT) and Offsets. Permitting and enforcement delegated to KCAPCD. Prevention of Significant Deterioration (PSD) requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The BSEP is a new source thus the PSD trigger levels are 250 tons per year for NOx, VOC, SOx, PM10, PM2.5 and CO.
40 CFR Part 60	New Source Performance Standards (NSPS), Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Establishes emission standards for compressions ignition internal combustion engines, including emergency fire water pump engines.
State	
Health and Safety Code (HSC) Section 40910-40930	Permitting of source needs to be consistent with Air Resource Board (ARB) approved Clean Air Plans.
HSC Section 41700	Restricts emissions that would cause nuisance or injury.
California Code of Regulations (CCR) Section 93115	Airborne Toxics Control Measure for Stationary Compression Ignition Engines. Limits the types of fuels allowed, established maximum emission rates, establishes recordkeeping requirements on stationary compression ignition engines, including emergency fire water pump engines.
Rule 201 - Permits Required	Establishes the requirement to obtain a Permit to Operate (PTO) for emission sources.
Rule 210.1 - New and Modified Stationary Source Review	Establishes the requirements that must be met to obtain a PTO, including the requirement to comply with Best Available Control Technology (BACT), provide emission offsets for emission increase above specified thresholds, provide a dispersion modeling analysis, an alternatives analysis, and a compliance certification (if applicable).

Applicable LORS	Description
Rule 401 - Visible Emissions	Limits visible emissions from emissions sources, including stationary source exhausts and fugitive dust emission sources.
Rule 402 - Fugitive Dust	Limits fugitive emissions from certain bulk storage, earthmoving, construction and demolition, and manmade conditions resulting in wind erosion.
Rule 404.1 - Particulate Matter Concentration	The rule limits particulate matter (PM) emissions to less than 0.1 grains per standard cubic foot of gas at standard conditions.
Rule 407 - Sulfur Compounds	Limits discharge into the atmosphere of sulfur compounds exceeding 0.2% by volume concentration calculated as SO2.
Rule 409 - Fuel Burning Equipment - Combustion Contaminants	Limits discharge into the atmosphere from fuel burning equipment combustion contaminants exceeding in concentration at the point of discharge, 0.1 grain per cubic foot of gas calculated to 12% of carbon dioxide (CO2) at standard conditions.
Rule 411 – Storage of Organic Liquids	Sets standards for storage of organic liquids with a true vapor pressure of 1.5 pounds per square inch or greater.
Rule 414.2 – Soil Decontamination	Sets requirements for the VOC emissions from the handling and decontamination activities of VOC contaminated soils.
Rule 419 - Nuisance	Restricts emissions that would cause nuisance or injury to people or property (identical to California Health and Safety Code 41700.
Rule 422 - New Source Performance Standards	Incorporates the Federal NSPS (40 CFR 60) rules by reference.
Rule 425.2 - Boilers, Steam Generators and Process Boilers (Oxides of Nitrogen)	This rule limits NOx emissions from boilers, steam generators, and process heaters to levels consistent with Reasonably Available Control Technology (RACT).
Rule 429.1 - Cooling Towers (Hexavalent Chromium)	Prohibits the use of hexavalent chromium-bearing compounds in cooling towers

ALTERNATIVES

California Environmental Quality Act (CEQA)

Energy Commission staff is required by agency regulations to examine the "feasibility of available site and facility alternatives to the Applicant's proposal which substantially lessen the significant adverse impacts of the proposal on the environment." (Cal. Code Regs., tit. 20, § 1765.)

The "Guidelines for Implementation of the California Environmental Quality Act," Title 14, California Code of Regulations, Section 15126.6(a), requires an evaluation of the comparative merits of "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project."

In addition, the analysis must address the No Project Alternative. (Cal. Code Regs., tit. 14, § 15126.6[e].) The analysis should identify and compare the impacts of the various alternatives, but analysis of alternatives need not be in as much detail as the analysis of the proposed project.

The range of alternatives is governed by the "rule of reason," which requires consideration only of those alternatives necessary to permit informed decision making and public participation. CEQA states that an environmental document does not have to consider an alternative if its effect cannot be reasonably ascertained and if its implementation is remote and speculative. (Cal. Code Regs., tit. 14, § 15126.6[f][3].) However, if the range of alternatives is defined too narrowly, the analysis may be inadequate. (*City of Santee v. County of San Diego* [4th District, 1989] 214 Cal. App. 3d 1438.)

BIOLOGICAL RESOURCES

Applicable LORS	Description
Federal	
Federal Endangered Species Act (Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.)	Designates and provides for protection of threatened and endangered plant and animal species and their critical habitat. “Take” of a federally-listed species is prohibited without an incidental take permit, which may be obtained through Section 7 consultation (between federal agencies) or a Section 10 Habitat Conservation Plan.
Migratory Bird Treaty (Title 16, United States Code, sections 703 through 711)	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird) as designated in the Migratory Bird Treaty Act unless permitted by regulation (e.g., duck hunting).
Bald and Golden Eagle Protection Act (Title 16, United States Code section 668)	Provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the act.
State	
California Endangered Species Act of 1984 (Fish and Game Code, sections 2050 through 2098)	Protects California’s rare, threatened, and endangered species. “Take” of a state-listed species is prohibited without an Incidental Take Permit.
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals of California that are declared rare, threatened, or endangered.

Fully Protected Species (Fish and Game Code, sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also California Code of Regulations, Title 14, section 670.7).
Nest or Eggs (Fish and Game Code section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.
Migratory Birds (Fish and Game Code section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds.
Significant Natural Areas (Fish and Game Code section 1930 et seq.)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.
California Environmental Quality Act (CEQA), CEQA Guidelines section 15380	CEQA defines rare species more broadly than the definitions for species listed under the state and federal Endangered Species Acts. Under section 15830, species not protected through state or federal listing but nonetheless demonstrable as "endangered" or "rare" under CEQA should also receive consideration in environmental analyses. Included in this category are many plants considered rare by the California Native Plant Society (CNPS) and some animals on the CDFG's Special Animals List.
Streambed Alteration Agreement (Fish and Game Code sections 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFG in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.

Water Quality Control Plan for the Lahontan Region (Basin Plan)	The Basin Plan establishes water quality objectives that protect the beneficial uses of surface water and groundwater in the Region. The Basin Plan describes implementation plans and other control measures designed to ensure compliance with statewide plans and policies and provide comprehensive water quality planning. Beneficial uses for minor surface water bodies of the Koehn Hydrologic Area include wildlife habitat.
California Native Plant Protection Act of 1977 (Fish and Game Code section 1900 et seq.)	Designates state rare, threatened, and endangered plants.
California Desert Native Plants Act of 1981 (Food and Agricultural Code section 80001 et seq. and California Fish and Game Code sections 1925-1926)	Protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.
Local	
Kern County General Plan Land Use, Open Space, and Conservation Element (Kern County 2007)	Directs the county to work closely with state and federal agencies to assure that discretionary projects avoid or minimize impacts to fish, wildlife, and botanical resources.

CULTURAL RESOURCES

Applicable LORS	Description
State	
Public Resources Code 5097.98 (b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.
California Health and Safety Code, Section 7050.5	This code makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Kern County General Plan, 2007 Land Use, Open Space, and Conservation Element: Policy 25 and Implementation Measures K–L, N–O	1.10.3: Archaeological, Paleontological, Cultural, and Historical Preservation Policy 25: The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors. Implementation Measure K: Coordinate with the California State University, Bakersfield's Archaeology Inventory Center. Implementation Measure L: The County shall address archaeological and historical resources for discretionary projects in accordance with the California Environmental Quality Act (CEQA). Implementation Measure N: The County shall develop a list of Native American organizations and individuals who desire to be notified of proposed discretionary projects. This notification will be accomplished through the established procedures for discretionary projects and CEQA documents. Implementation Measure O: On a project-specific basis, the County Planning Department shall evaluate the necessity for the involvement of a qualified Native American monitor for grading or other construction activities on discretionary projects that are subject to a CEQA document.

FACILITY DESIGN

Applicable LORS	Description
Federal	Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards
State	2007 California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
Local	Kern County General Plan Kern County Zoning Ordinance
General	American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME) American Welding Society (AWS) American Society for Testing and Materials (ASTM)

GEOLOGY AND PALEONTOLOGY

Applicable LORS	Description
Federal	The proposed BSEP is not located on federal land. There are no federal LORS for geologic hazards and resources for this site.
State	
California Building Code (CBC), 2007	The CBC (2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control).
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), section 2621–2630	Mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. Portions of the site and proposed ancillary facilities are located within designated Alquist-Priolo Fault Zones. The proposed site layout places occupied structures outside of the 50-foot setback zone.
The Seismic Hazards Mapping Act, PRC Section 2690–2699	Areas are identified that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches.
PRC, Chapter 1.7, sections 5097.5 and 30244	Regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.
Warren-Alquist Act, PRC, sections 25527 and 25550.5(i)	The Warren-Alquist Act requires the Energy Commission to “give the greatest consideration to the need for protecting areas of critical environmental concern, including, but not limited to, unique and irreplaceable scientific, scenic, and educational wildlife habitats; unique historical, archaeological, and cultural sites…” With respect to paleontological resources, the Energy Commission relies on guidelines from the Society for Vertebrate Paleontology, indicated below.
California Environmental Quality Act (CEQA), PRC sections 15000 et seq., Appendix G	Mandates that public and private entities identify the potential impacts on the environment during proposed activities. Appendix G outlines the requirements for compliance with CEQA and provides a definition of significant impacts on a fossil site.

Applicable LORS	Description
Society for Vertebrate Paleontology (SVP), 1995	The "Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures" is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.
Local	
Kern County Grading Code, (Ord. 17.28.040, 2008)	Kern County grading permit is required for earth moving activities in excess of 50 cubic yards.
Kern County Floodplain Management Ordinance, (Ord. 17.48.140, 2008)	A Kern County development permit is required prior to construction or development within an area of special flood hazards, areas of flood related erosion hazards, or areas of potential mudslides.

HAZARDOUS MATERIALS MANAGEMENT

Applicable LORS	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42 USC 7401 et seq. as amended)	Establishes a nationwide emergency planning and response program, and imposes reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials.
The CAA Section on Risk Management Plans (42 USC §112(r)	Requires states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.
40 CFR Part 68	Risk Management Program Guidance for Propane Storage Facilities provides guidance on RMP's
49 CFR 172.800	Requires that the suppliers of hazardous materials prepare and implement security plans in accordance with U.S. Department of Transportation (DOT) regulations.
49 CFR Part 1572, Subparts A and B	Requires that suppliers of hazardous materials ensure that their hazardous material drivers comply with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
Title 49, Code of Federal Regulations, Parts 100 – 185	Federal Hazardous Materials Regulations including coverage of propane usage
Title 49, Code of Federal Regulations, Part 190	Outlines gas pipeline safety program procedures.
6 CFR Part 27	The CFATS (Chemical Facility Anti-Terrorism Standard) regulation of the U.S. Department of Homeland Security (DHS)

	that requires facilities that use or store certain hazardous materials to submit information to the DHS so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (Cal-ARP) requires the preparation of a Risk Management Plan (RMP) and Off-site Consequence Analysis (OCA) and submittal to the local Certified Unified Program Authority (CUPA) for approval.
Title 8, California Code of Regulations, Section 5189	Requires facility owners to develop and implement effective safety management plans to ensure that large quantities of hazardous materials are handled safely. While these requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.
California Health and Safety Code, Sections 13240 – 13243.6	California Propane Storage and Handling Safety Act adopts regulations setting for safety standards for siting and construction of fixed propane storage systems, fire safety compliance requirements, and training requirements
California Health and Safety Code, Section 41700	Requires that "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
Title 24, California Code of Regulations,	2007 California Building Code
LOCAL	
Uniform Fire Code, Kern County Code Section 17.32.010	Adopts the Uniform Fire Code, 2000 Edition, into Kern County regulations.

LAND USE

Applicable LORS	Description
Federal	None
State California Government Code Sections 65352, 65940, and 65944	Requires evaluation of compatibility with military activities for any land use proposal located near a military installation or airspace.
Local	
<u>Kern County</u>	
General Plan (2007) Land Use, Open Space, and Conservation Element	Relevant resource designations include areas with existing uses or potential uses for intensive agriculture or resource management. The resource management has a goal to encourage alternative sources of energy, such as wind and solar.
Energy Element Chapter 5.4.5 – Solar Energy Development	This section has a singular goal of encouraging safe and orderly commercial solar development. Relevant policies are: encourage domestic and commercial solar energy uses to conserve fossil fuel; attempt to identify and remove disincentives to domestic and commercial solar energy development; and permit solar energy development in the desert and valley planning regions that have been previously disturbed, and does not pose significant environmental, public health, and safety hazards. The County is committed to working with state and federal agencies and interest groups to establish consistent policies for solar energy development.
Military Readiness Element Airport Land Use Compatibility Plan Policy 1.7c	This element will consider the impact of new growth on military readiness activities. This includes activities within the R-2508 Special Use Airspace Complex which overlies the project site. Prior to the approval of a proposal involving any type of land use development…specific findings shall be made that such development is compatible with the training and operational missions of the military aviation installations. Incompatible land uses that result in significant impacts to the military mission of Department of Defense installations or to the Joint Service Restricted R-2508 Complex that cannot be mitigated, shall not be considered consistent with this plan.
Ordinance Code (2005)	Ordinance codes dealing with exclusive agriculture and limited agriculture lands allow for solar energy electrical generators, commercial or domestic, exceeding five kilowatts.

NOISE AND VIBRATION

Applicable LORS	Description
Federal	
OSHA: 29 U.S.C. § 651 et seq.	Protects workers from the effects of occupational noise exposure. Under the Occupational Safety and Health Act of 1970 (29 USC § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure (29 CFR § 1910.95). These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.The only guidance available for evaluation of power plant vibration is guidelines published by the Federal Transit Administration (FTA) for assessing the impacts of groundborne vibration associated with construction of rail projects. These guidelines have been applied by other jurisdictions to assess groundborne vibration of other types of projects. The FTA-recommended vibration standards are expressed in terms of the "vibration level," which is calculated from the peak particle velocity measured from groundborne vibration. The FTA measure of the threshold of perception is 65 VdB, (VdB is the common measure of vibration energy) which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

Applicable LORS	Description
State	
Cal/OSHA: Cal. Code Regs., tit. 8, §§ 5095–5099	California Government Code section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its General Plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.
Local	
Kern County General Plan Noise Element Policies (5)(a) and (5)(b)	Two policies enunciated in this noise element (Kern County 2007) impact the construction and operation of a project such as Beacon. Policy (5)(a) prohibits new noise-sensitive land uses in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels in outdoor activity areas to 65 dBA L_{dn} or less. Policy (5)(b) prohibits new noise-sensitive land uses in noise impacted areas unless effective mitigation measures are incorporated into the project design to reduce interior noise levels within living spaces or other noise sensitive interior spaces to 45 dBA L_{dn} or less. It should be noted that there are no current noise ordinances in Kern County.

POWER PLANT EFFICIENCY

No federal, state, local, or county laws, ordinances, regulations and standards (LORS) apply to the efficiency of this project.

POWER PLANT RELIABILITY

No federal, state, local, or county laws, ordinances, regulations and standards (LORS) pertain to the reliability of this project.

PUBLIC HEALTH

Applicable LORS	Description
Federal	
Clean Air Act section 112 (42 U.S. Code section 7412)	Requires new sources which emit more than 10 tons per year of any specified hazardous air pollutant (HAP) or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology (MACT).
State	
California Health and Safety Code sections 39650 et seq.	These sections mandate the California Air Resources Board (CARB) and the Department of Health Services to establish safe exposure limits for toxic air pollutants and identify pertinent best available control technologies (BACT). They also require that the new source review rule for each air pollution control district include regulations that require new or modified procedures for controlling the emission of toxic air contaminants.
Title 17 California Code of regulations (CCR), Section 93115, Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines	Establishes emission limits and operating limits on stationary compression ignition engines, including emergency fire pump engines
California Health and Safety Code section 41700	This section states that “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
Local	
Kern County Air Pollution Control District (KCAPCD) Rule 210.9.	Requires safe exposure limits for Toxic Air Pollutants (TACs), use of best available control technology, new source review (NSR), and implements the state’s Airborne Toxic Measure (ACTM) for Stationary Compression Ignition Engines including emergency fire pump engines as required by Title 17 CCR.

SOCIOECONOMICS

Applicable LORS	Description
House Resolution (HR)1424, Emergency Economic Stabilization Act of 2008	Extends for eight years the 30 percent federal investment tax credit for both residential and commercial installations. Applies to property placed in service after December 31, 2008.
California Education Code, Section 17620	Authorizes the governing board of any school district to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code Sections 65995–65997	Authorizes school districts to levy fees against development projects according to *Education Code* 17620. Conversely, public agencies at the state and local level may not impose fees, charges, or other financial requirements to offset the cost for school facilities except for those fees established according to *Education Code* 17620.
California Revenue and Taxation Code Section 70-74.7	Currently, property taxes are not assessed on solar components. That law will be in effect until January 1, 2010 (2008-2009 property tax lien) unless extended by the Legislature.

SOIL AND WATER RESOURCES

Applicable LORS	Description
Federal	
Clean Water Act (33 U.S.C. Section 1251 et seq.)	The Clean Water Act (33 USC § 1257 et seq.) requires states to set standards to protect water quality, which includes regulation of storm water and wastewater discharges during construction and operation of a facility. California established its regulations to comply with the Clean Water Act under the Porter-Cologne Water Quality Control Act of 1967.The Clean Water Act also establishes protection of navigable waters through Section 401. Section 401 certification through the Army Corps of Engineers and Regional Water Quality Control Board (RWQCB) is required if there are potential impacts to surface waters of the State and/or Waters of the United States, such as perennial and ephemeral drainages, streams, washes, ponds, pools, and wetlands. Section 401 requires impacts to these waters to be quantified and mitigated.
Resource Conservation and Recovery Act	The Resource Conservation Recovery Act (RCRA) of 1976 (40 CFR Part 260 et seq.) seeks to prevent surface and groundwater contamination, sets guidelines for determining hazardous wastes, and identifies proper methods for handling and disposing of those wastes.
Title 44 of the Code of Federal Regulations (44 CFR) Part 65	44 CFR contains the basic policies and procedures of the Federal Emergency Management Agency (FEMA) for adoption of rules. Part 65 - Identification and mapping of special hazard areas requires development in areas identified as a FEMA Special Flood Hazard Area to meet the requirements of Title 44 of the Federal Code of Regulations (44CFR)
State	
California Constitution, Article X, Section 2	This section requires that the water resources of the State be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use or unreasonable method of use of water is prohibited.
The Porter-Cologne Water Quality Control Act 1967, Water Code Sec 13000 et seq.	Requires the State Water Resources Control Board (SWRCB) and the nine RWQCBs to adopt water quality criteria to protect state waters. Those regulations require that the RWQCBs issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.

Applicable LORS	Description
California Water Code (CWC) Section 13146	Requires that state offices, departments and boards in carrying out activities, which affect water quality, shall comply with state policy for water quality control unless otherwise directed or authorized by statute, in which case they shall indicate to the SW RCB in writing their authority for not complying with such policy.
California Water Code Section 13551	Requires the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.
Recycling Act of 1991 (Water Code 13575 et. seq)	States that retail water suppliers, recycled water producers, and wholesalers should promote the substitution of recycled water for potable and imported water in order to maximize the appropriate cost-effective use of recycled water.
SWRCB Water Quality Order 99-08	The SWRCB regulates storm water discharges associated with construction projects affecting areas greater than or equal to 1 acre to protect state waters. Under Order 99-08, the SWRCB has issued a National Pollutant Discharge Elimination System (NPDES) General Permit for storm water discharges associated with construction activity for which applicants can qualify if they meet the criteria and upon preparing and implementing an acceptable SWPPP and notifying the SWRCB with a Notice of Intent.
California Code of Regulations, Title 22, Division 4, Chapter 15	This Chapter specifies Primary and Secondary Drinking Water Standards in terms of Maximum Contaminant Levels (MCLs). These MCLs include total dissolved solids (TDS) ranging from a recommended level of 500 milligrams per liter (mg/l), an upper level of 1,000 mg/l and a short term level of 1,500 mg/l. Other water quality MCLs are also specified, in addition to MCLS specified for heavy metals and chemical compounds.
Cal. Code Regs, Title 23, Division 3, Chapter 15	This Chapter requires the Regional Board to issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.

Applicable LORS	Description
California Code of Regulations, Title 23, Division 3, Chapter 30	This Chapter requires the submission of analytical test results and other monitoring information electronically over the internet to the SWRCB's Geotracker data base.
California Water Code Section 13260	Requires filing with the appropriate Regional Board a report of waste discharge that could affect the water quality of the state, unless the requirement is waived pursuant to Water Code section 13269.
The California Safe Drinking Water and Toxic Enforcement Act	The California Health & Safety Code Section 25249.5 et seq. prohibits actions contaminating drinking water with chemicals known to cause cancer or possessing reproductive toxicity. The RWQCB administers the requirements of the Act.
Local	
Kern County Ordinance Code, Title 4, Chapter 14.08 – Water Supply Systems	Regulates permitting, siting, construction and destruction of groundwater wells.
Kern County Environmental Health Services Department, Chapter II, Section 602, Sewage Disposal by Individual Soil Absorption Systems	Regulates construction of on-site sewage disposal systems.
Kern County Uniform Plumbing Code, Chapter 17	Regulates installation and requires inspection for locating disposal/leach fields and seepage pits.
Kern County Division Four, Standards for Drainage	Provides standards for drainage of waters generated by storms, springs, or other sources that should be mitigated so as to provide reasonable levels of protection for life and property, and the maintenance of necessary access to property or passage of the traveling public on the public highways.
Kern County Code Of Building Regulations Chapter 17.48	Regulates development of projects in special flood hazard areas. These regulations are designed to comply with the

Floodplain Management	National Flood Insurance Program regulations.
State	
State Water Resources Control Board (SWRCB) Resolution No. 09-11	State Water Resources Control Board Resolution 09-11 encourages and promotes use of recycled water to replace the use of potable water for non-potable purposes. The policy supports the sustainable use of surface water and groundwater and encourages the use of recycled water where this water is not being put to other beneficial uses. The policy provides for a streamlined permitting process for recycled water use with local Regional Water Quality Control Boards.
SWRCB Resolution No. 75-58	The principal policy of the SWRCB that addresses the specific siting of energy facilities is the Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (adopted by the Board on June 19, 1976, by Resolution 75-58). This policy states that use of fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound.
2003 Integrated Energy Policy Report (IEPR)	In this report, consistent with SWRCB Policy 75-58 and the Warren-Alquist Act, the Energy Commission adopted a policy stating the Commission will approve the use of fresh water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.”

TRAFFIC AND TRANSPORTATION

Applicable LORS	Description
Federal	
Title 14, Code of Federal Regulations (CFR) Chapter 1, Part 77	Includes standards for determining obstructions in navigable airspace. Sets forth requirements for notice to the Federal Aviation Administration of certain proposed construction or alteration. Also, provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace.
Title 49, Subtitle B	Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles that operate on public highways.
State	
California Vehicle Code, Division 2, Chapter. 2.5; Div. 6, Chap. 7; Div. 13, Chap. 5; Div. 14.1, Chap. 1 & 2; Div. 14.8; Div. 15 California Streets and Highway Code, Division 1 & 2, Chapter 3 & Chapter 5.5 California Government Code, Sec.65352, 65940, and 65944 California Public Utilities Commission General Order 75, Section 7.1	Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials. Includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits. Requires evaluation of compatibility with military activities for any land use proposal located near a military installation or airspace. Pursuant to Public Utilities Code Section 7537, the Commission has the authority to determine the necessity for any private at-grade crossing and the place, manner, and conditions under which the at-grade crossing shall be constructed and maintained, and to fix and assess the cost and expense thereof.
Local	
Kern County General Plan Circulation Element, Sec. 2.3.2	Establishes level of service (LOS) D or better as minimum acceptable standard on County roadways, and a LOS C on

Applicable LORS	Description
& 2.3.3	State or Federal Highways.
Kern County Circulation Element	Addresses long-term planning goals and procedures for transportation infrastructure system quality: standards and procedures for air transportation: and transportation safety in Kern County.
Kern County Circulation Element-Cont.	Kern County must assure protection of road right-of-way for efficient management of circulation. Goals 3: Protecting corridors for future transportation facilities is most important transportation planning activity in any high growth area. Goal 4: To reserve right–of- way to meet future road needs that result from development allowed by land use plans.

TRANSMISSION LINE SAFETY AND NUISANCE

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR),"Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, " Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, Section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
Kern County General Plan, Noise Element	References the County's Ordinance Code for noise limits.
Hazardous and Nuisance Shocks	
State	
CPUC GO-95, "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
Title 8, California Code of Regulations (CCR) Section 2700 et seq. "High Voltage Safety Orders"	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.

Applicable LORS	Description
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
GO-131-D, CPUC "Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California"	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR Sections 1250-1258, "Fire Prevention Standards for Electric Utilities"	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

TRANSMISSION SYSTEM ENGINEERING

Applicable LORS	Description
The North American Electric Reliability Corporation (NERC)	North American Reliability Council (NERC) Reliability Standards for the Bulk Electric Systems of North America provide national policies, standards, principles and guidelines to assure the adequacy and security of the electric transmission system. The NERC Reliability Standards provide for system performance levels under normal and contingency conditions. With regard to power flow and stability simulations, while these Reliability Standards are similar to NERC/WECC Standards, certain aspects of the NERC/WECC Standards are either more stringent or more specific than the NERC Standards for Transmission System Contingency Performance. The NERC Reliability Standards apply not only to interconnected system operation but also to individual service areas (NERC 2006).
Western Electricity Coordinating Council's (WECC)	The Western Electricity Coordinating Council (WECC) Planning Standards are merged with the North American Electric Reliability Council (NERC) Planning Standards and provide the system performance standards used in assessing the reliability of the interconnected system. These standards require the continuity of service to loads as the first priority and preservation of interconnected operation as a secondary priority. Certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards alone. These standards provide planning for electric systems so as to withstand the more probable forced and maintenance outage system contingencies at projected customer demand and anticipated electricity transfer levels, while continuing to operate reliably within equipment and electric system thermal, voltage and stability limits. These standards include the reliability criteria for system adequacy and security, system modeling data requirements, system protection and control, and system restoration. Analysis of the WECC system is based to a large degree on Section I.A of the standards, "NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table" and on Section I.D, "NERC and WECC Standards for Voltage Support and Reactive Power". These standards require that the results of power flow and stability simulations verify defined performance

	levels. Performance levels are defined by specifying the allowable variations in thermal loading, voltage and frequency, and loss of load that may occur on systems during various disturbances. Performance levels range from no significant adverse effects inside and outside a system area during a minor disturbance (loss of load or a single transmission element out of service) to a level that seeks to prevent system cascading and the subsequent blackout of islanded areas during a major disturbance (such as loss of multiple 500 kV lines along a common right of way, and/or multiple generators). While controlled loss of generation or load or system separation is permitted in certain circumstances, their uncontrolled loss is not permitted (WECC 2006).
California Public Utilities Commission (CPUC) General Order 95 (GO-95*), Rules for Overhead Electric Line Construction*	Specifies uniform requirements for the construction of overhead electric lines. Compliance with this order ensures both reliable service and a safe working environment for those working in the construction, maintenance, operation, or use of overhead electric lines, and for the safety of the general public.
CPUC General Order 128 (GO-128), *Rules for Underground Electric Line Construction*	Establishes uniform requirements for the construction of underground electric lines. Compliance with this order also ensures both reliable service and a safe working environment for those working in the construction, maintenance, operation, or use of underground electric lines, and for the safety of the general public.
National Electric Safety Code 1999	Provides electrical, mechanical, civil, and structural requirements for overhead electric line construction and operation.
California Independent System Operator (CAISO)	California ISO Planning Standards also provide standards, and guidelines to assure the adequacy, security and reliability in the planning of the California ISO transmission grid facilities. The California ISO Grid Planning Standards incorporate the NERC/WECC and NERC Reliability Planning Standards. With regard to power flow and stability simulations, these Planning Standards are similar to the NERC/WECC or NERC Reliability Planning Standards for Transmission System Contingency

	Performance. However, the California ISO Standards also provide some additional requirements that are not found in the WECC/NERC or NERC Standards. The California ISO Standards apply to all participating transmission owners interconnecting to the California ISO controlled grid. They also apply when there are any impacts to the California ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the California ISO (California ISO 2002a). California ISO/FERC Electric Tariff provides guidelines for construction of all transmission additions/upgrades (projects) within the California ISO controlled grid. The California ISO determines the “Need” for the proposed project where it will promote economic efficiency or maintain system reliability. The California ISO also determines the Cost Responsibility of the proposed project and provides an Operational Review of all facilities that are to be connected to the California ISO grid (California ISO 2007a).

VISUAL RESOURCES

Applicable LORS	Description
Federal	
Transportation Equity Act for the 21st Century of 1998, and Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2005.	The project site does not involve federal managed lands, nor a recognized National Scenic Byway or All-American Road within its vicinity.
State	
California Streets and Highways Code, Sections 260 through 263 – Scenic Highways	Ensures the protection of highway corridors that reflect the State's natural scenic beauty.
Local	
Kern County General Plan, adopted March 13, 2007	
Land Use, Open Space, and Conservation Element (adopted April 15, 1982) Chapter 1 - General Provisions - Section 1.10.7 Light and Glare Chapter 2 – Circulation Element - Section 2.3.9 Scenic Route Corridors Chapter 5 – Energy Element - Section 5.4.5 Solar Energy Development - Section 5.4.7 Transmission Lines	Light and glare from discretionary new development projects are to be minimized in rural as well as urban areas. Encourages the use of low-glare lighting to minimize nighttime glare effects on neighboring properties. A scenic route must be officially set as a Scenic Route by the Kern County Board of Supervisors, or the State of California. Encourages solar energy development in the desert and valley planning regions previously disturbed that does not pose significant environmental, public health and safety hazards. Discourages the siting of above-ground transmission lines in visually sensitive areas.

Kern County Code *Title 19 Zoning*	
Chapter 19.12 - Exclusive Agriculture - Section 19.12.070 – Yard and Setbacks - Section 19.12.080 – Height Limits - Section 19.12.110 – Signs - Section 19.12.120 – Landscaping	Provides yard and setback requirements. There is no height limit on nonresidential structures, except in areas of protected military airspace. Identifies permitted signs. No landscaping is required in the Exclusive Agriculture district, except where the proposed use is subject to a plot plan review.

WASTE MANAGEMENT

Applicable LORS	Description
Federal	
RCRA, Subtitle C and D, 42 USC § 6901 to 6992k, and Section 6.12.2.1	Establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation and delegation to states, enforcement provisions and responsibilities, as well as research, training, and grant funding provisions. RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing: • Generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • Waste labeling practices and use of appropriate containers; • Use of a manifest when transporting wastes; • Submission of periodic reports to the United States Environmental Protection Agency (USEPA) or other authorized agency; and • Corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills. RCRA is administered at the federal level by USEPA and its ten regional offices. The Pacific Southwest regional office (Region 9) implements USEPA programs in California, Nevada, Arizona, and Hawaii.
40 CFR 260, *et seq.*	Contains regulations promulgated by the EPA to implement the requirements of RCRA as described above. Characteristics of hazardous waste are described in terms of ignitability, corrosively, reactivity, and toxicity, and specific types of waste are listed.
Federal CWA, 33	Controls discharge of wastewater to the surface waters of the

USC § 1251 *et seq.*	U.S.
Title 40 CFR Section 112	This establishes procedures, methods, equipment, and other requirements to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines, or into or upon the waters of the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974. Subpart B - The Spill Prevention, Control and Countermeasures (SPCC) Plan includes procedures, methods, and equipment at the facility to prevent discharges of petroleum from reaching navigable waters.
State	
Public Resources Code § 40000 *et seq.,* California Integrated Waste Management Act of 1989	Provides an integrated statewide system of solid waste management by coordinating state and local efforts in source reduction, recycling, and land disposal safety. Counties are required to submit Integrated Waste Management Plans to the state.
Title 14, California Code of Regulations (CCR), Division 7, 17200, et seq.	These regulations further implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions.
Porter- Cologne Water Quality Control Act of 1998, Water Code § 13000 *et seq.*	Controls discharge of wastewater to surface waters and groundwaters of California.
Title 22, (CCR), Division 4.5. Environmental Health Standards	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers;

for the Management of Hazardous Waste	prepare manifests before transporting the waste off site; and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters. The standards addressed by Title 22, CCR include: • Identification and Listing of Hazardous Waste (Chapter 11, §66261.1, et seq.). • Standards Applicable to Generator of Hazardous Waste (Chapter 12, §66262.10, et seq.). • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §66263.10, et seq.). • Standards for Universal Waste Management (Chapter 23, §66273.1, et seq.). • Standards for the Management of Used Oil (Chapter 29, §66279.1, et seq.). The Title 22 regulations are established and enforced at the state level by DTSC. Some generator and waste treatment standards are also enforced at the local level by CUPAs.
Title 22, (CCR) § 66262.34	Regulates accumulation periods for hazardous waste generators. Typically, hazardous waste cannot be stored onsite for more than 90 days.
Title 23, (CCR) Division 3, Chapter 30	This Chapter requires the submission of analytical test results and other monitoring information electronically over the internet to the State Water resources Control Board's Geotracker data base.
Title 22, CCR, Section §66260.20(f), Chapter 10, Article 3, Classification of a Waste as Hazardous or Nonhazardous.	If a person wishes to classify and manage as nonhazardous a waste which would otherwise be a non-RCRA hazardous waste because it has mitigating physical or chemical characteristics which render it insignificant as a hazard to human health and safety, livestock and wildlife, that person shall apply to the Department of Toxic Substances Control (DTSC) for its approval to classify and manage the waste as nonhazardous.
California Health and Safety Code (HSC) § 25100 *et seq.* (Hazardous	Creates the framework under which hazardous wastes must be managed in California. It mandates the DTSC under the California Environmental Protection Agency (CalEPA), to develop and publish a list of hazardous and extremely hazardous wastes

Waste Control Act of 1972, as amended)	and to develop and adopt criteria and guidelines for the identification of such wastes. It also requires hazardous waste generators to file notification statements with Cal EPA and create a manifest system to be used when transporting such wastes.
Title 27, CCR, §15100 et seq. (Unified Hazardous Waste and Hazardous Materials Management Regulatory Program)	Consolidates, coordinates, and makes consistent portions of the following six existing programs: • Hazardous Waste Generators and Hazardous Waste Onsite Treatment; • Underground Storage Tanks; • Hazardous Material Release Response Plans and Inventories; • California Accidental Release Prevention Program; • Aboveground Storage Tanks (spill control and countermeasure plan only); • Uniform Fire Code Hazardous Material Management Plans and Inventories; The statute requires all counties to apply to the CalEPA Secretary for the certification of a local unified program agency.
Title 14, CCR, §17200 et seq. (Minimum Standards for Solid Waste Handling and Disposal)	Sets forth minimum standards for solid waste handling and disposal, guidelines to ensure conformance of solid waste facilities with county solid waste management plans and the California Integrated Waste Management Board, as well as enforcement and administration provisions.
Title 23, CCR, Chapter 15	The regulation in this chapter establishes waste and site classification and waste management requirements for waste treatment storage, or disposal in landfills, surface impoundments, waste piles and land treatment facilities.
Local	
Health and Safety: Kern County Ordinance, Title 8	Establish requirements for the use, generation, storage, and disposal of hazardous materials and wastes within Kern County.

WORKER SAFETY AND FIRE PROTECTION

Applicable LORS	Description
Federal	
29 U.S. Code sections 651 et seq (Occupational Safety and Health Act of 1970)	This Act mandates safety requirements in the workplace, with the purpose of "[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources" (29 USC § 651).
29 CFR sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California's plan for enforcement of its own safety and health requirements, in lieu of most of the federal requirements found in 29 CFR §1910.1 to 1910.1500.
State	
8 CCR all applicable sections (Cal/OSHA regulations)	Requires that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during the construction, commissioning, and operation of power plants, as well as safety around electrical components, fire safety, and hazardous materials usage, storage, and handling.
24 CCR section 3, et seq.	Incorporates the current edition of the International Building Code.
Health and Safety Code sections 25500 to 25541	Requires a Hazardous Materials Business plan detailing emergency response plans for hazardous materials emergencies at a facility.

Applicable LORS	Description
Local (or locally enforced)	
2007 Edition of California Fire Code and all applicable NFPA standards (24 CCR Part 9)	NFPA standards are incorporated into the California State Fire Code. The fire code contains general provisions for fire safety, including road and building access, water supplies, fire protection and life safety systems, fire-resistive construction, storage of combustible materials, exits and emergency escapes, and fire alarm systems.
Title 24, California Code of Regulations (24 CCR § 3, et seq.)	The California Building Code is comprised of 11 parts containing building design and construction requirements as they relate to fire, life, and structural safety. It incorporates current editions of the International Building Code, including the electrical, mechanical, energy, and fire codes applicable to the project.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE BEACON SOLAR ENERGY PROJECT BY BEACON SOLAR, LLC	**DOCKET NO. 08-AFC-2**

FINAL EXHIBIT LIST

APPLICANT'S EXHIBITS

EXHIBIT 1 AFC Section 1.0: Executive Summary, dated 3/13/2008; Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 2 AFC Section 2.0: Project Description, Duane McCloud, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 3 AFC Section 3.0: Closure; Duane McCloud, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 4 AFC Section 4.0: Alternatives; Kenny Stein, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 5 AFC Section 5.1: General Environmental Information Kenny Stein, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 6 AFC Section 5.2: Air Quality, Sara Head, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 7 AFC Section 5.3: Biological Resources, Lyndon Quon, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 8 AFC Section 5.4: Cultural Resources, Rebecca Apple, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 9 AFC Section 5.5: Geologic Hazards and Resources - Mike Flack, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 10 AFC Section 5.6: Hazardous Materials Handling; Russ Kingsley, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 11 AFC Section 5.7: Land Use - Jerry McLees, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 12 AFC Section 5.8: Noise -Duane McCloud, dated 3/13/2008. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 13 AFC Section 5.9: Paleontological Resources - Cara Corsetti, SWCA. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 14 AFC Section 5.10: Public Health; Greg Wolffe. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 15 AFC Section 5.11: Socioeconomics - Addie Olazabal. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 16 AFC Section 5.12: Soils - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 17 AFC Section 5.13: Traffic and Transportation - John Wilson, Wilson Eng. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 18 AFC Section 5.14: Transmission Line Safety & Nuisance Duane McCloud/Steve Richards. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 19 AFC Section 5.15: Visual Resources- Merlyn Paulson / Brian Stormwind. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 20 AFC Section 5.16: Waste Management; Mike Arvidson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 21 AFC Section 5.17: Water Resources - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 22 AFC Section 5.18: Worker Safety Mike Arvidson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 23 AFC Appendix A: Surrounding Properties Assessor's Parcel Nos. /Property Owners - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 24 AFC Appendix B.1: Preliminary Geotechnical Constraints Evaluation - Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 25 AFC Appendix B.2: Preliminary Geotechnical Investigation Report Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 26 AFC Appendix C.1: Civil Engineering Design Criteria - Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 27 AFC Appendix C.2: Mechanical Engineering Design Criteria Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 28 AFC Appendix C.3: Control Engineering Design Criteria Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 29 AFC Appendix C.4: Geologic and Foundation Design Criteria Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 30 AFC Appendix C.5: Structural Engineering Design Criteria Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 31 AFC Appendix C.6: Electrical Engineering Design Criteria Steve Richards. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 32 AFC Appendix D: Therminol VP1 Heat Transfer Fluid MSDS Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 33 AFC Appendix E: Air Quality Supporting Documentation Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 34 AFC Appendix E.4 Air Quality Modeling Files CD - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 35 AFC Appendix F: Biological Resources Supporting Documentation Lyndon Quon. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 36 AFC Appendix F: Biological Resources Supporting Documentation, Attachment E, Mojave Desert Tortoise and Mohave Ground Squirrel Habitat Assessment Reports - Alice Karl/Philip Leitner. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 37 AFC Appendix G.1: Archaeological Report - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 38 AFC Appendix G.2: Built Structures Report - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 39 AFC Appendix H: Paleontological Resources Technical Report Cara Corsetti, SWCA. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 40 AFC Appendix I: Phase I Site Assessments - Jim Fickerson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 41 AFC Appendix J: Water Resources Supporting Documentation Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 42 AFC Appendix J.3.d: Raw Data and Aquifer Test Analysis (CD only) Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 43 AFC Appendix K.1: Water Agencies Correspondence - Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 44 AFC Appendix K.2: Los Angeles Department of Water & Power Correspondence - Scott Busa. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 45 AFC Appendix K.3: Southern California Gas Company Correspondence - Scott Busa. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 46 AFC Appendix K.4: Kern County Agencies Correspondence Jerry McLees. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 47 AFC Appendix K.5: Department of Defense Correspondence Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 48 AFC Appendix K.6: Department of Toxic Substances Control Correspondence- Mike Arvidson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 49 AFC Appendix L: Drainage Plans - Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 50 Application For FDOC - Sara Head/Russ Kingsley. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 51 Dated 4/8/2008; Data Adequacy Supplement, Air Quality - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 52 Dated 4/8/2008; Data Adequacy Supplement, Biological Resources Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 53 Dated 4/8/2008; Data Adequacy Supplement, Cultural Resources - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 54 Dated 4/8/2008; Data Adequacy Supplement, Geological Hazards - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 55 Dated 4/8/2008; Data Adequacy Supplement, Land Use - Jerry McLees. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 56 Dated 4/8/2008; Data Adequacy Supplement, Socioeconomics - Addie Olazabal. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 57 Dated 5/1/2008; Correspondence with Kern County Planning Department - Kenny Stein/Jerry McLees. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 58 Dated 6/11/2008; Slide Presentation From Informational Hearing - Scott Busa. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 59 Dated 7/2/2008; Summary of Pre-Application Field Meeting for Streambed Alteration Agreement - Kenny Stein/Jim Prine. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 60 Dated 7/16/2008; Responses to CEC Data Requests 1-3 & 7-12; Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 61 Dated 7/16/2008; Responses to CEC Data Requests, Attachment DR-10 - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 62 Dated 7/16/2008; Responses to CEC Data Requests 13-16 & 18-25 Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 63 Dated 7/16/2008; Responses to CEC Data Requests 17 & 43-44 Jennifer Guigliano/Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 64 Dated 7/16/2008; Responses to CEC Data Requests 26-35, with attachments, Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 65 Dated 7/16/2008; Responses to CEC Data Requests 36-42 -Addie Olazabal. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 66 Dated 7/16/2008; Responses to CEC Data Requests 45-49, with Attachment DR-47. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 67 Dated 7/16/2008, Responses to CEC Data Requests 50-53; Duane McCloud/Steve Richards. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 68 Dated 7/16/2008, Responses to CEC Data Requests 54-57, with Attachment DR-56 Phase I ESA for Natural Gas Pipeline Route - Jim Fickerson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 69 Dated 7/16/2008, Responses to CEC Data Requests 58-70 Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 70 Dated 7/16/2008, Responses to CEC Data Requests, Attachment DR-63 Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 71 Dated 7/19/2008, Streambed Alteration Agreement Jennifer Guigliano/Jim Prine. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 72 Dated 8/18/2008, Supplemental Responses to CEC Data Requests 4, 5, 6, & 12, & Attachment DR-5 - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 73 Dated 8/18/2008, Supplemental Responses to CEC Data Requests 17, 18 & 20, with Attachment DR-17 Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 74 Dated 8/18/2008; Supplemental Response to Data Requests 30, 32, 34 & 35, with Attachment DR-34 and DR-35 - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 75 Dated 8/18/2008; Supplemental Responses to CEC Data Requests 44 & 45, with Attachments DR-44 and DR-45 - Jennifer Guigliano / Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 76 Dated 9/2/2008; Supplemental Responses to CEC Data Requests 50-53, with Attachment DR-50 (SIS) Duane McCloud/Steve Richards. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 77 Dated 9/19/2008; Responses to Questions From Rancho Seco Residents, Set One - Meg Russell. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 78 Dated 10/13/2008; Revised Response to Data Request 14 - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 79 Dated 10/13/2008; Responses to CEC Data Requests 71-78 - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 80 Dated 10/13/2008; Responses to CEC Data Requests 79-80 - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 81 Dated 10/13/2008; Responses to CEC Data Requests 81-92 - Addie Olazabal. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 82 Dated 10/13/2008; Responses to CEC Data Requests 93-95 - Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 83 Dated 10/13/2008; Responses to CEC Data Requests 96-127, with Figures and Tables - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 84 Dated 10/13/2008; Data Requests 113, Attachment DR-113, MODFLOW files - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 85 Dated 10/23/2008; Supplemental Response to Data Requests 30, 32 & 34, with Attachment DR-32: Evaluation of Cultural Resources - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 86 Dated 10/23/2008; Supplemental Responses to CEC Data Requests 101-103, 106-109, 112, 114-115, 117-123, with Tables and Figures - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 87 Dated 10/29/2008; Botanical and Wildlife Special Status Species Spring Survey Report - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 88 Dated 10/29/2008; Response to CDFG letter on BSEP Streambed Alteration Notification - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 89 Dated 11/24/2008; Email from Kenny to Eric on Alternative Layouts - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 90 Dated 11/26/2008; Supplemental Workshop Responses to Data Requests 14, 17 & 20 - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 91 Dated 11/26/2008; **Confidential** Supplemental Workshop Response to Data Request 34: Geomorph Maps and Cover Memorandum - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 92 Dated 12/1/2008; Application for Incidental Take of Threatened or Endangered Species, Section 2081 of CESA - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 93 Dated 12/5/2008; Responses to Questions From Rancho Seco Residents, Set Two - Meg Russell. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 94 Dated 12/9/2008; Supplemental Workshop Responses to CEC Data Requests 96, 101, 112, 114, 118, & 121, with attachments - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 95 Dated 12/12/2008; Email from Kenny to Eric on Auxiliary Loads - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 96 Dated 12/12/2008; Email from Sara to Will Walters on Waste Loadout - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 97 Dated 12/15/2008, Beacon Waste Stream Quantities - Revised Table 5.16-6 - Janine Forrest. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 98 Dated 12/22/2008, Email from K. Stein Regarding Cut/Fill For Evaporation Ponds - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 99 Dated 1/6/2009, Construction Greenhouse Gas Emissions Calculations - Sara Head / Howard Balentine. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 100 Dated 1/13/2009, Beacon Dry Cooling Evaluation - Jared Foster/Gary Pratt. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 101 Dated 1/13/2009, Email from K. Stein Regarding Control Temperature for HTF Freeze Pro - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 102 Dated 1/16/2009, Email Response to CEC Request Regarding High TDS Water - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 103 Withdrawn.

EXHIBIT 104 Dated 1/21/2009, Geoarchaeological Trenching Plan - Craig Young, Far Western. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 105 Dated 1/23/2009, Email Correspondence Regarding Visible Plumes - Brian Stormwind. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 106 Dated 1/31/2009, Summary of Conference Call With Lahontan - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 107 Dated 2/6/2009, Preliminary Results Beacon Solar Project Geoarchaeology (Supplemental Response to Data Request 34) - Craig Young, Far Western. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 108 Dated 2/10/2009, Response to RWQCB Comments on draft ROWD Application - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 109 Dated 2/23/2009, Email Response to E. Solorio Regarding Sources of Groundwater Data, With Updated J.4 database - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 110 Dated Application for Low Effects HCP - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 111 Dated 3/4/2009, Boundary Survey Sheets - Jerry McLees. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 112 Dated 3/26/2009, Email Response to Request for Clarification on Resource Evaluations From M. McGuirt. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 113 Dated 4/8/2009 PPSA Comments, Section IIA: Air Quality - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 114 Dated 4/8/2009, PPSA Comments, Section IIB: Biological Resources - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 115 Dated 4/8/2009 PPSA Comments, Section IIC: Cultural Resources - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 116 Dated 4/8/2009 PPSA Comments, Section IID: Hazardous Materials Management - Russ Kingsley. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 117 Dated 4/8/2009 PPSA Comments, Section IIE: Noise and Vibration - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 118 Dated 4/8/2009; PPSA Comments, Section IIF: Traffic and Transportation - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 119 Dated 4/8/2009, PPSA Comments, Section IIG: Visual Resources - Merlyn Paulson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 120 Dated 4/8/2009, PPSA Comments, Section IIIA: Soil and Water Resources - Mike Flack / Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 121 Dated 4/8/2009, PPSA Comments, Section IIIB: Alternatives - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 122 Dated 4/21/2009, Kern County resolutions approving LU applications - Jerry McLees. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 123 Dated 5/1/2009, Landform Structure and Archaeological Sensitivity in the Beacon Solar Energy Project Area - Craig Young, Far Western. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 124 Dated 5/1/2009, PSA Comments, Introduction - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 125 Dated 5/1/2009, PSA Comments, Executive Summary - Scott Busa. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 126 Dated 5/1/2009, PSA Comments, Project Description - Scott Busa. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 127 Dated 5/1/2009, PSA Comments, Alternatives - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 128 Dated 5/1/2009, PSA Comments, Air Quality - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 129 Dated 5/1/2009, PSA Comments, Biological Resources - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 130 Dated 5/1/2009, PSA Comments, Attachment BIO-1: Desert Tortoise Removal Plan, April 2009 - Alice Karl. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 131 Dated 5/1/2009, PSA Comments, Attachment BIO-2: Burrowing Owl Relocation Area Management Plan - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 132 Dated 5/1/2009, PSA Comments, Cultural Resources Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 133 Dated 5/1/2009, PSA Comments, Attachment CUL-1: Comments and Amendments to Cultural Resources Conclusions - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 134 Dated 5/1/2009 PSA Comments, Attachment CUL-2: Proposed Cultural Resources Mitigation - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 135 Dated 5/1/2009 PSA Comments, Hazardous Materials Management - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 136 Dated 5/1/2009, PSA Comments, Land Use - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 137 Dated 5/1/2009 PSA Comments, Noise - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 138 Dated 5/1/2009 PSA Comments, Public Health - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 139 Dated 5/1/2009, PSA Comments, Attachment Public Health-1: Health Risk Assessment - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 140 Dated 5/1/2009, PSA Comments, Soil and Water - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 141 Dated 5/1/2009, PSA Comments, Attachment Soil and Water-1: Draft Water Mitigation and Offset Plan - Mike Flack/Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 142 Dated 5/1/2009 PSA Comments, Attachment Soil and Water-2: Revised Table 112W - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 143 Dated 5/1/2009 PSA Comments, Traffic and Transportation - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 144 Dated 5/1/2009, PSA Comments, Visual Resources - Merlyn Paulson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 145 Dated 5/1/2009, PSA Comments, Waste Management - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 146 Dated 5/1/2009 PSA Comments, Worker Safety and Fire Protection - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 147 Dated 5/1/2009, PSA Comments, Engineering Assessment - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 148 Dated 5/1/2009, PSA Comments, Geology and Paleontology - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 149 Dated 5/1/2009 PSA Comments, General Conditions - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 150 Dated 5/13/2009 Materials from CLOMR Meeting - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 151 Dated 6/1/2009 Common Raven Monitoring, Management & Control Plan - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 152 Dated 6/1/2009, Rerouted Wash Electronic Support Files - Jennifer Guigliano/Gerard Dalziel/Serkan Mahmutoglu. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 153 Dated 6/3/2009 Comments on CEC Groundwater Sampling Program - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 154 Dated 6/19/2009, PDR, Section 1.0: Intro & Section 5.0: Conclusions - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 155 Dated 6/19/2009 PDR, Section 2.1: Staff Suggested Changes - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 156 Dated 6/19/2009 PDR Section 2.1.1: Diversion Channel Redesign - Jennifer Guigliano/Serkan Mahmutoglu. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 157 Dated 6/19/2009 PDR Section 2.1.2: Water Treatment & Discharge Facilities - Scott Stern/Dan Sampson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 158 Dated 6/19/2009 PDR Section 2.1.3: Stormwater Retention and Erosion Control - Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 159 Dated 6/19/2009 PDR Section 2.1.5: SCE Distribution Lines - Scott Busa. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 160 Dated 6/19/2009, PDR Section 2.1.6: Land Treatment Unit - Janine Forrest. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 161 Dated 6/19/2009 PDR Section 2.1.7: Site Layout Adjustments - Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 162 Dated 6/19/2009 PDR Section 2.1.8: Telecommunications System - Scott Busa. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 163 Dated 6/19/2009 PDR Section 2.1.9: Solar Field Maintenance Vehicles Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 164 Dated 6/19/2009 PDR Section 2.1.10: Visual Impacts Reduction - Merlyn Paulson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 165 Dated 6/19/2009 PDR Section 2.2: Beacon Proposed Project Refinements - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 166 Dated 6/19/2009 PDR Section 3.1: Koehn Lake Alternative - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 167 Dated 6/19/2009 PDR Section 3.1.1: Water Treatment Facilities for Configuration 2 - Scott Stern/Dan Sampson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 168 Dated 6/19/2009 PDR Section 3.1.2: Evaporation Pond Size for Configuration 2 - Janine Forrest. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 169 Dated 6/19/2009 - PDR Section 3.2: Rosamond Waste Water Alternative - Scott Busa. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 170 Dated 6/19/2009 PDR Section 4.1.1: Air Quality - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 171 Dated 6/19/2009 PDR Section 4.1.2: Biological Resources - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 172 Dated 6/19/2009 PDR Section 4.1.4: Hazardous Materials Management - Russ Kingsley. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 173 Dated 6/19/2009 PDR Section 4.1.6: Traffic and Transportation - Duane McCloud. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 174 Dated 6/19/2009 PDR Section 4.1.7: Visual Resources - Merlyn Paulson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 175 Dated 6/19/2009 PDR Section 4.1.8: Waste Management - Jared Foster/Janine Forrest. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 176 Dated 6/19/2009 PDR Section 4.2.1: Air Quality and Public Health Impacts - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 177 Dated 6/19/2009 PDR Section 4.2.1.2: Public Health Analysis for Propane - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 178 Dated 6/19/2009 PDR Section 4.2.2: Biological Resources - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 179 Dated 6/19/2009 PDR Section 4.2.3: Hazardous Materials Management - Jared Foster / Howard Balentine. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 180 Dated 6/19/2009 PDR Section 4.2.4: Traffic and Transportation - Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 181 Dated 6/19/2009 PDR Section 4.2.5: Visual Resources - Merlyn Paulson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 182 Dated 6/19/2009 PDR Section 4.2.6.1: Waste from Additional HTF Expansion Tanks - Russ Kingsley. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 183 Dated 6/19/2009 PDR Section 4.2.7: Other Environmental Topic Areas - Mike Arvidson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 184 Dated 6/19/2009 PDR Section 4.3.1: Air Quality - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 185 Dated 6/19/2009 PDR Section 4.3.5: Soil and Water Resources - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 186 Dated 6/19/2009 PDR Section 4.3.6: Traffic and Transportation - Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 187 Dated 6/19/2009 PDR Section 4.3.7: Waste Management - Jared Foster/Janine Forrest. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 188 Dated 6/19/2009 PDR Figure 1: Water Balance With On-Site Groundwater - Scott Stern/Dan Sampson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 189 Dated 6/19/2009 PDR Figure 2: Water Balance With High TDS Water - Scott Stern/Dan Sampson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 190 Dated 6/19/2009 PDR Figure 3: Revised Site Layout Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 191 Dated 6/19/2009 PDR Figure 5: Revised Power Block Equipment Layout (with Propane) - Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 192 Dated 6/19/2009 PDR Figure 6: Revised Key One Line Diagram - Duane McCloud/Steve Richards. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 193 Dated 6/19/2009 PDR Figure 7: Water Supply Wells Located in the Koehn Sub-Basin - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 194 Dated 6/19/2009 PDR Attach. 1a, Draft Memorandum for Hydrologic & Hydraulic Analysis of Rerouted Channel for Beacon Solar Energy, June 2009 - Gerard Dalziel. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 195 Dated 6/19/2009 PDR Attachment 1b: ReRouted Wash Mitigation Plan - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 196 Dated 6/19/2009 PDR Attachment 2: Evaporation Pond Calculations - Jared Foster/Janine Forrest. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 197 Dated 6/19/2009 PDR Attachment 3: Storm Water Management-Conceptual Retention and Grading Study - Bob Anders. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 198 Dated 6/19/2009 PDR Attachment 4a: Burrowing Owl Survey Report for Emergency Access Road - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 199 Dated 6/19/2009 PDR Attachment 4b: Desert Tortoise Survey Report for Emergency Access Road - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 200 Dated 6/19/2009 PDR Attachment 4c: Cultural Resources Survey Report for Emergency Access Road - Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 201 Dated 6/19/2009 PDR Attachment 4d: Paleontological Resources Survey Report for Emergency Access Road - Cara Corsetti, SWCA. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 202 Dated 6/19/2009 PDR Attachment 5: Groundwater Mitigation Plan - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 203 Dated 6/19/2009 PDR Attachment 6: Amendment to Report of Waste Discharge Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 204 Dated 6/19/2009 PDR Attachment 7a: Construction Emissions Related to Emergency Access Road - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 205 Dated 6/19/2009 PDR Attachment 7b: Operational Emissions Related to Propane Deliveries and Use - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 206 Dated 6/19/2009 PDR Attachment 7c: Boiler Manufacturer's Specifications - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 207 Dated 6/19/2009 PDR Attachment 7d: Additional Air Quality Impact Analyses - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 208 Dated 6/19/2009 PDR Attachment 8: Phase I Environmental Site Assessment for Additional Transmission Line Parcel - Jim Fickerson. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 209 Dated 6/22/2009 Air Modeling Files Related to Project Design Refinements - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 210 Dated 6/29/2009 Email from J. Guigliano re rerouted wash electronic support files - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 211 Dated 7/2/2009 Revised Application for FDOC - Sara Head/Russ Kingsley. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 212 Withdrawn.

EXHIBIT 213 Dated 7/17/2009 Application for Lot Line Adjustment - Jerry McLees. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 214 Dated 7/20/2009 Response to Air Quality Questions From Workshop - Sara Head. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 215 Dated 7/20/2009 Response to Request Regarding BSEP Subsurface Investigations Rebecca Apple. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 216 Dated 7/20/2009 Response to Request for Predictive Sensitivity Groundwater Analysis - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 217 Dated 7/20/2009 Response to Rerouted Wash Information Request - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 218 Dated 7/26/2009 Emails from Jenn re FLO2D Models, Models on CD - Jennifer Guigliano/Serkan Mahmutoglu. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 219 Dated 8/1/2009 Email Regarding Red Rock – Poppy Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 220 Dated 8/1/2009 Habitat Conservation Plan - Jennifer Guigliano. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 221 Dated 8/11/2009 Email to CEC Regarding Results of Offsite Well Sampling - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 222 Dated 8/18/2009 Email to CEC With Resubmittal of Revised Metals Results for Offsite Sampling - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 223 Dated 8/24/2009 Response to Letter From John Musick - Scott Busa. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 224 Dated 8/30/2009 Arciero Well Data (from J. Musick) - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 225 Dated 9/11/2009 Email Regarding Updated Construction Water Impacts Assessment - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 226 Dated 12/2/1997 LADWP's Draft Initial Study/Proposed Negative Declaration SAMDA Water Exploration, Fremont Valley Ranch Water Management Project - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 227 Dated 4/1/2009 Stetson Groundwater Report (CA City) - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 228 Dated 5/1/2009 PSA Comments, Attachment Worker Safety-1: Letter From Kern County Fire Dept. - Jared Foster. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 229 Dated 6/21/2009 CEC Well Canvas - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 230 Dated 7/1/2009 CEC Well Canvas Photos - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 231 Dated 7/2/2009 DWR Well Data - Mike Flack. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 232 Dated 8/1/2009 KCAPCD Revised FDOC - Sara Head/Russ Kingsley. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 233 Dated 9/4/2009 Email From BLM Regarding Visual Impacts - Kenny Stein. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 234 Declaration of Addie Olazabal: Socioeconomics. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 235 Declaration of Alice Karl: Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 236 Declaration of Bob Anders: Geoarchaeology. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 237 Declaration of Bob Anders: Hydrology & Hydraulics. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 238 Declaration of Bob Anders: Soils. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 239 Declaration of Bob Anders: Facility Design. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 240 Declaration of Brian Stormwind: Visual. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 241 Declaration of Cara Corsetti: Paleo. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 242 Declaration of D. Craig Young: Cultural. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 243 Declaration of Dan Sampson: Water. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 244 Declaration of Dan Sampson: Facility Design. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 245 Declaration of Dan Sampson: Alternatives. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 246 Declaration of Duane McCloud: Project Description. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 247 Declaration of Duane McCloud: Air Quality. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 248 Declaration of Duane McCloud: Hazardous Materials. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 249 Declaration of Duane McCloud: Land Use. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 250 Declaration of Duane McCloud: Noise. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 251 Declaration of Duane McCloud: Soils. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 252 Declaration of Duane McCloud: Traffic & Transportation. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 253 Declaration of Duane McCloud: Waste Management. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 254 Declaration of Duane McCloud: Worker Safety. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 255 Declaration of Duane McCloud: Transmission Line. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 256 Declaration of Duane McCloud: Facility Design. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 257 Declaration of Gerard Dalziel: Hydrology & Hydraulics. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 258 Declaration of Gary Pratt: Alternatives. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 259 Declaration of Glen King: Air Quality. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 260 Declaration of Greg Wolffe: Public Health. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 261 Declaration of Howard Balentine: Air Quality. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 262 Declaration of Howard Balentine: Hazardous Materials. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 263 Declaration of Janine Forest: Waste Management. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 264 Declaration of Janine Forest: Facility Design. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 265 Declaration of Janine Forest: Alternatives. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 266 Declaration of Jared Foster: Hazardous Materials. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 267 Declaration of Jared Foster: Traffic & Transportation. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 268 Declaration of Jared Foster: Waste Management. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 269 Declaration of Jared Foster: Worker Safety. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 270 Declaration of Jared Foster: Facility Design. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 271 Declaration of Jared Foster: Alternatives. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 272 Declaration of Jennifer Guigliano: Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 273 Declaration of Jennifer Guigliano: Hyrdology & Hydraulics. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 274 Declaration of Jennifer Guigliano: Water. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 275 Declaration of Jerry McLees: Land Use. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 276 Declaration of Jim Fickerson: Waste Management. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 277 Declaration of Jim Prine: Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 278 Declaration of John Wilson: Traffic & Transportation. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 279 Declaration of Kenneth Stein: Executive Summary. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 280 Declaration of Kenneth Stein: Project Description. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 281 Declaration of Kenneth Stein: Air Quality. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 282 Declaration of Kenneth Stein: Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 283 Declaration of Kenneth Stein: Land Use. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 284 Declaration of Kenneth Stein: Paleontology. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 285 Declaration of Kenneth Stein: Visual Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 286 Declaration of Kenneth Stein: Facility Design. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 287 Declaration of Kenneth Stein: Alternatives. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 288 Declaration of Lyndon Quon: Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 289 Declaration of Meg Russell: Executive Summary. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 290 Declaration of Merlyn Paulson: Visual Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 291 Declaration of Mike Arvidson: Waste Management. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 292 Declaration of Mike Arvidson: Worker Safety. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 293 Declaration of Mike Flack: Geology. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 294 Declaration of Mike Flack: Soils. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 295 Declaration of Mike Flack: Water (1) Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 296 Declaration of Mike Flack: Water (2) Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 297 Declaration of Mike Flack: Alternatives (1) Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 298 Declaration of Mike Flack: Alternatives (2) Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 299 Declaration of Philip Leitner: Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 300 Declaration of Rebecca Apple: Cultural Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 301 Declaration of Russ Kinglsey: Air Quality (1) Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 302 Declaration of Russ Kinglsey: Air Quality (2) Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 303 Declaration of Russ Kingsley: Hazardous Materials. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 304 Declaration of Russ Kingsley: Waste Management. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 305 Declaration of Sara Head: Air Quality (1) Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 306 Declaration of Sara Head: Air Quality (2) Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 307 Declaration of Sara Head: Public Health. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 308 Declaration of Sara Head: Alternatives. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 309 Declaration of Scott Busa: Executive Summary. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 310 Declaration of Scott Busa: Project Description. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 311 Declaration of Scott Busa: Facility Design. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 312 Declaration of Scott Busa: Land Use. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 313 Declaration of Scott Busa: Transmission Line. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 314 Declaration of Scott Busa: Alternatives. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 315 Declaration of Scott Stern: Water. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 316 Declaration of Scott Stern: Facility Design. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 317 Declaration of Scott Stern: Alternatives. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 318 Declaration of Serkan Mahmutoglu: Hydrology & Hydraulics. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 319 Declaration of Steve Richards: Facility Design. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 320 Declaration of Steve Richards: Transmission Line. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 321 11/2009; 60 percent Hydrologic and Hydraulic Analysis of Rerouted Channel H&H; Jennifer Guigliano/Gerard Dalziel/Serkan Mahmutoglu. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 322 3/9/2010; Rebuttal Testimony of Kenneth Stein on Overriding Considerations. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 323 3/9/2010; Declaration of Jody Salamacha-Hollier.- Visual. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 324 3/9/2010; Rebuttal Testimony of Merlyn Paulson on Visual Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 325 3/9/2010; Rebuttal Testimony of Jennifer Guigliano on Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 326 3/9/2010; Rebuttal Testimony of Alice Karl on Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 327 3/9/2010; Rebuttal Testimony of Philip Leitner on Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 328 3/9/2010; Rebuttal Testimony of Kenneth Stein on Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 329 3/9/2010; Rebuttal Testimony of Rebecca Apple on Cultural Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 330 3/9/2010; Rebuttal Testimony of Kenneth Stein on Cultural Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 331 3/9/2010; Rebuttal Testimony of Duane McCloud on Cultural Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 332 3/9/2010; Rebuttal Testimony of Duane McCloud on Waste Management. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 333 3/9/2010; Rebuttal Testimony of Michael Flack on Waste Management. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 334 3/9/2010;Rebuttal Testimony of Duane McCloud on Transmission System Engineering. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 335 3/9/2010; Rebuttal Testimony of Michael Flack on Water Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 336 3/9/2010; Rebuttal Testimony of Scott Busa on Water Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 337 Proposed Conditions of Certification for Soil and Water Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 338 Proposed Conditions of Certification for Biological Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 339 Proposed Conditions of Certification for Cultural Resources. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 340 Declaration of Michael Bevins (May 28, 2010). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 341 Declaration of Michael Bevins Regarding California City Wastewater Treatment Facility Expansion (May 3, 2010). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 342 Declaration of Jennifer Guigliano (sponsoring biological assessment for Mendiburu Road segment). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 343 Declaration of Scott Busa (sponsoring letter responding to Kern County regarding the impact fee). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 344 California City General Plan 1993-2012. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 345 California City Draft General Plan 2009-2028. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 346 Sanitary Sewer System Master Plan for California City (September 2002) (attached to Reply Brief). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 347 Memorandum of Understanding Between the California Water Quality Control Board (Lahontan Region) and the City of California City Regarding Septic Tank Guidelines (March 1989). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 348 California City Wastewater Treatment Facility Site Map (attached to Reply Brief). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 349 California City Wastewater Treatment Plant Expansion Initial Study and Negative Declaration (January 1993). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 350 California City Wastewater Treatment Plant Expansion Conditional Use Permit Application, Initial Study, and Negative Declaration (April 2000). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 351 Request for Proposals from California City for the Wastewater Treatment Facility Expansion Project. Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 352 AECOM Biological Resource Assessment for Mendiburu Road Water Pipeline (May 2010). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 353 AECOM California City WWTP Upgrade and Recycled Water Pipeline Cumulative Impacts Summary for the Beacon Solar Energy Project (May 28, 2010). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 354 Comment Regarding the California City and Rosamond Community Services District Wastewater Treatment Facility Expansions (from December 1, 2009 Status Conference Transcript). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 355 Rosamond Community Services District Recycled Water Facilities Plan Final Report (July 2008). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 356 Kern County General Plan (selected sections pertaining to Public Facilities and Services). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 357 Letter from Beacon Solar, LLC to Kern County Regarding Beacon Solar Energy Project – Offer of Voluntary Contribution to Kern County (June 1, 2010). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 358 Kern County Regional Blueprint (December 2008). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 359 [Reserved]

EXHIBIT 360 United States Department of Agriculture, Rural Utilities Service, Report Regarding Sewer Infrastructure Improvement Project For The City of California City, California New Sewer Backbone Lines Construction (April 2006). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 361 [Reserved]

EXHIBIT 362 [Reserved]

EXHIBIT 363 Letter from Beacon Solar, LLC to Kern County Regarding Mitigation for Impacts to Public Services from the Beacon Solar Energy Project (April 23, 2010). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 364 Kern County Status Report on CEQA Mitigation Methodology (April 27, 2010). Sponsored by Applicant and received into evidence on March 22, 2010.

EXHIBIT 365 Kern County Capital Improvement Plan, dated September 7, 2007.. Sponsored by Applicant and received into evidence on March 22, 2010.

ENERGY COMMISSION STAFF'S EXHIBITS

EXHIBIT 500 Final Staff Assessment for the Beacon Project, dated October 22, 2009. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 501 Post January 11, 2010, Workshop Supplemental Soil and Water Conditions of Certification, with supplemental Appendix I and J. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 502 Post January 11, 2010, Workshop Supplemental Biological Resources Conditions of Certification. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 503 Post January 11, 2010, Workshop Supplemental Cultural Resources Conditions of Certification. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 504 Supplemental Statement and Declaration by Geoffrey Lesh regarding HTF fluid leak prevention. Attached as **Exhibit B.** Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 505 Statement and Declaration by Deputy Director Terry O'Brien regarding overriding considerations for Visual Resources. Attached as **Exhibit C.** Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 506 Proposal from California City and the Rosamond Community Services District, docketed material submitted regarding the proposed cost and alignment of the different recycled water options. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 507 Declaration of Dennis LaMoreaux; Ex. A, Ex. B. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 508 Declaration of Michael Bevins. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 509 Declaration of Matthew S. Layton SUPPLEMENTAL TESTIMONY. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 510 Declaration of Susan D. Sanders SUPPLEMENTAL TESTIMONY. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 511 Declaration of Kathleen Forrest - SUPPLEMENTAL TESTIMONY. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 512 Declaration of Shaelyn Strattan SUPPLEMENTAL TESTIMONY. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 513 Declaration of Erin Bright - SUPPLEMENTAL TESTIMONY. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 514 Declaration of Dal Hunter. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 515 Declaration of Casey Weaver (5/25/10) - SUPPLEMENTAL TESTIMONY. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 516 Declaration of David Flores - SUPPLEMENTAL TESTIMONY. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 517 Declaration of Mark R. Hamblin - SUPPLEMENTAL TESTIMONY. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 518 Declaration of Casey Weaver (5/28/10) SUPPLEMENTAL TESTIMONY. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 519 RCSD WWTP Conversion to Additional Tertiary Treatment Capacity. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 520 AERIAL PHOTO OF CAL CITY WWTF. Sponsored by Staff; and received into evidence on March 22, 2010.

EXHIBIT 521 Declaration of Geoff Lesh; Declaration of Rick Tyler; SUPPLEMENTAL TESTIMONY. Exhibits A, B, C, & D. Sponsored by Staff; and received into evidence on March 22, 2010.

CURE EXHIBITS

EXHIBIT 600 Dated 11/12/2009 Testimony of Scott Cashen on Biological Resources. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 601 Dated 11/11/2009 Declaration of Scott Cashen - Biological Resources. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 602 Dated 11/12/2009 Exhibit 1: Resume of Scott Cashen - Biological Resources. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 603 2003 Exhibit 2: California Department of Fish and Game. Mohave ground squirrel survey guidelines. Biological Resources - Scott Cashen. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 604 1993 Exhibit 3: Gustafson JR, State of California, Department of Fish and Game. A status review of the Mohave ground squirrel. Biological Resources - Scott Cashen. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 605 Dated 5/21/2008 Exhibit 4: Conference Call Agenda for May 21, 2008, BSEP CEC Proceeding 08-AFC-2. Biological Resources - Scott Cashen. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 606 Dated 02/2008 Exhibit 5: AFC, Bio Tech Report: Figure 11 Biological Resources - Scott Cashen. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 607 Dated 1993 Exhibit 6: The California Burrowing Owl Consortium. Burrowing Owl Survey Protocol and Mitigation Guidelines Biological Resources - Scott Cashen. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 608 1995 Exhibit 7: State of California, Department of Fish and Game. Staff Report on Burrowing Owl Mitigation Biological Resources - Scott Cashen. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 609 Exhibit 8: AFC, Figure BR 78-1 Biological Resources - Scott Cashen. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 610 Dated 07/17/2009 Exhibit 9: Applicant's "Response to Select CURE Comments at CEC's Request" Biological Resources - Scott Cashen. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 611 Dated 06/19/2008 Exhibit 10: Memorandum from the California Department of Fish and Game to California Energy Commission, Subject: Beacon Solar Energy Project Application for Certification Biological Resources - Scott Cashen. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 612 Dated 11/12/2009Testimony of Matt Hagemann on Soil Resources and Waste Management Soil Resources and Waste Management. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 613 Dated 11/12/2009 Declaration of Matt Hagemann Soil Resources and Waste Management. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 614 Dated 11/12/2009 Attachment 1: Resume of Matt Hagemann Soil Resources and Waste Management. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 615 Dated 1987-2008 Attachment 2: Spill Reports – SEGS III – VII Soil Resources and Waste Management - Matt Hagemann. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 616 Dated 11/12/2009 Testimony of David Marcus on Transmission Engineering and Water Resources and Alternatives. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 617 Dated 11/10/2009 Declaration of David Marcus Water Resources, Alternatives and Transmission Engineering. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 618 Dated 08/2009 Exhibit 1: Resume of David Marcus Water Resources, Alternatives, and Transmission Engineering David Marcus. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 619 Dated 2009 Exhibit 2: LADWP Barren Ridge Renewable Transmission Project Transmission Engineering - David Marcus. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 620 Exhibit 3: Projection Engineering Statement of Qualifications Transmission Engineering - David Marcus. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 621 Exhibit 4: NRG SCE Filing Transmission Engineering David Marcus. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 622 Dated 11/11/2009 Exhibit 5: CEC List of Siting Cases Transmission Engineering David Marcus. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 623 Dated 02/01/2008 Exhibit 6: WorleyParsons: FPLE – Beacon Solar Energy Project Dry Cooling Evaluation Water Resources and Alternatives - David Marcus. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 624 Dated 06/2009 Exhibit 7: CPUC 33 percent Renewables Portfolio Standard Implementation Analysis Preliminary Results Water Resources and Alternatives - David Marcus. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 625 Rebuttal Testimony of Matt Hagemann on Hazardous Materials and Waste Management, dated 3/8/10. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 626 3/8/10 Declaration of Matt Hagemann on Hazardous Materials and Waste Management. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 627 2/23/09 Attachment 1: Hazardous Materials Business Plan, dated February 23, 2009, Luz Solar Partners, III-VII. Hazardous Materials and Waste Management. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 628 5/16/09 Attachment 2: Material Safety Data Sheet for Therminol VP-1, dated May 16, 2009 on Hazardous Materials and Waste Management. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 629 11/1/05 Attachment 3: Letter from FPL Energy to RWQCB re: SEGS III HTF spill, October 21, 2005. Hazardous Materials and Waste Management. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 630 10/25/05 Attachment 4: Notice of Violation, Issued by San Bernardino County Fire Department to FPL Energy; Hazardous Materials and Waste Management. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 631 1/30/06; 6/10/08 Attachment 5: Recyclable Materials Reports, FPL Energy to San Bernardino County Fire Department, 2004-2005 and 2006-2007; Hazardous Materials and Waste Management. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 632 Rebuttal Testimony of Michael A. Bias on Biological Resources Biological Resources. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 633 3/8/10 Declaration of Michael A. Bias; Biological Resources. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 634 3/8/10 Adopted Declaration of Michael Bias; Biological Resources Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 635 3/8/10 Exhibit 1: Resume of Michael A. Bias; Biological Resources. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 636 10/22/09 BESP FSA Soil and Water Resources and Alternatives; David Marcus. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 637 10/22/09 BESP FSA Alternatives **Confidentia**l Appendix C; David Marcus. Sponsored by Intervenor CURE; identified for the record, not received as evidence.

EXHIBIT 638 Electronic mail from Sudath Edirisuriya to the CEC Docket Unit regarding the Barren Ridge-Rinaldi 230 kV line, and an email received from Ly Le, LADWP Transmission Studies. Sponsored by Intervenor CURE, received into evidence on March 22, 2010.

EXHIBIT 639 Request for Environmental Impact Analysis on the Rosamond Tertiary Water Pipeline, dated August 21, 2009, signed by Keith Dyas. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 640 May 13, 2010 - Adams Broadwell Joseph & Cardozo Public Record Act Requests to California City and Rosamond. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 641 May 2010 - California City and Rosamond Responses to Public Records Act Requests. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 642 March – May 2010; Abengoa Notices of 30-Day Public Comment Periods. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 643 2010 - Kern County Planning Department Notices of Preparation of Draft EIRs for Solar Projects. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 644 March 8, 2010 - Kern County Notice of Preparation of a Draft EIR for Ridge Rider Solar Park. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 645 March 8, 2010 - Kern County Notice of Preparation of a Draft EIR for Cal City Solar and Barren Ridge Solar. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 646 May 28, 2010 - Map of Solar Projects Near Beacon Project Site and Declaration of Matt Hagemann. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 647 October 6, 1999 - Rosamond Letter to State Clearinghouse Regarding Negative Declaration for Wastewater Treatment Plan Expansion. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 648 May 2010 - California Department of Fish and Game Documents in Response to Records Request – California City. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 649 January 9, 2006 - Letter from W.E. Loudermilk, California Department of Fish and Game, to William Way, Jr., California City Regarding Species in California City. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 650 December 5, 2006 - California City Notice of Intent and Availability of a Negative Declaration for Zone Change 174, General Plan Amendment 06-02 and Tentative Tract Map 6632. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

EXHIBIT 651 November 4, 2005 - Biological Resource Assess, APN 212-010-28, California City. Sponsored by Intervenor CURE and received into evidence on March 22, 2010.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
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APPLICATION FOR CERTIFICATION
For the *BEACON SOLAR ENERGY PROJECT*

Docket No. 08-AFC-2

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DECLARATION OF SERVICE

I, _____, declare that on _____, 2010, I served and filed copies of the attached _____, dated _____, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [http://www.energy.ca.gov/sitingcases/beacon/index.html].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

____ sent electronically to all email addresses on the Proof of Service list;

_____ by personal delivery;

____ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

____ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (*preferred method*);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-2
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

_____
Name of Declarant