

**INTERIM GUIDANCE FOR DESERT
RENEWABLE ENERGY
PROJECT DEVELOPMENT**

DRAFT STAFF REPORT



California Energy
Commission



Department of
Fish and Game



Bureau of Land
Management



U.S. Fish and
Wildlife Service

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Introduction

Governor Arnold Schwarzenegger issued Executive Order S-14-08 on November 17, 2008 which requires that 33 percent of the electricity sold in California come from renewable energy resources by 2020. The Order also directs the California Natural Resources Agency (Resources Agency) to lead a joint collaboration between the California Energy Commission (Energy Commission) and Department of Fish and Game (DFG) to expedite the development of Renewable Portfolio Standard (RPS) eligible renewable energy resources. In November 2008, the Energy Commission, the Department of Fish and Game, the U. S. BLM and the U. S. Fish and Wildlife Service signed a Memorandum of Understanding formalizing the Renewable Energy Action Team (REAT) to address permitting issues associated with specific renewable energy projects. Federal participation is supported by the Secretary of the Interior, Ken Salazar's, Secretarial Order 3285 (March 2009) directing all Department of the Interior agencies and departments (which include the BLM and USFWS) to encourage the timely and responsible development of renewable energy, while protecting and enhancing the nation's water, wildlife and other natural resources. Currently, Governor Schwarzenegger and Secretary Salazar are developing a Memorandum of Understanding to confirm commitments to the development of renewable energy projects in California and to prepare Interim Developer Guidance to assist solar project developers design and site projects in an environmentally suitable manner.

The REAT agencies developed this guidance for use as a resource for other parties involved in the regulatory process and in close coordination with local county governments. The guidance provided by the REAT agencies is specifically designed to be flexible to accommodate federal, state and local concerns, and the recommended pre-filing actions may need to be adjusted to accommodate unique, site specific conditions.

This draft interim document is currently being reviewed by state and federal agencies and will be the subject of a workshop in Victorville, California, on October 13, 2009. At the workshop, this interim guidance document will be discussed and comments encouraged. Based on the agency review and public comments, the appropriate changes will be made. It will also be included as a chapter in the *Best Management Practices and Guidance Manual: Desert Renewable Energy Projects*. Both the guidance document and the best management practices manual will be discussed at the workshop. Additional opportunities to provide public input may be offered depending on the input received at the workshop on October 13.

The interim guidance does not duplicate or supersede the National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), Warren-Alquist

Energy Act, Federal Endangered Species Act (FESA), California Endangered Species Act (CESA) statutes or other legal requirements. This document does not alter lead agencies' obligations under NEPA, CEQA, or the Warren-Alquist Energy Act, nor does it mandate or limit the types of studies, mitigation, or alternatives that an agency may require. Because this document complements existing NEPA and CEQA guidance, implementing the activities and practices listed in this document will support efforts to comply with NEPA, CEQA and other federal, state, and local environmental, energy development and wildlife laws. Thus, implementation will facilitate the issuance of required permits for a project, providing a measure of regulatory certainty for desert renewable energy project developers. Desert renewable project developers who use the guidance described in this document will secure information for impact assessment and mitigation that would apply to NEPA, CEQA, the Warren-Alquist Energy Act, and other environmental and wildlife protection laws. Carrying out the activities applicable to their project will demonstrate a good faith effort to develop and operate their projects in a fashion consistent with the intent of federal, state and local laws. Following the recommended and applicable activities will support the efforts to implement a more efficient and expedient regulatory process.

Draft Interim Guidance for Desert Renewable Energy Project Developers

Ideally, for projects to be permitted consistent with the Executive and Secretarial orders, and the RPS guidelines, renewable energy developers are encouraged to complete the following critical actions before they file applications with BLM, the Energy Commission and other lead agencies. The recommended actions should assist the efficient and expedient processing of applications for renewable energy.

1. The renewable energy project is proposed to be located on land identified by REAT that is suitable for renewable energy development. Draft study areas will be identified by the REAT by December 2009.
2. The project will not use fresh ground water or surface water for power plant cooling.
3. The appropriate biological resource surveys have been completed using the proper protocols during the appropriate season.
4. A biological assessment (BA), if required for the project, has been accepted as complete by DFG, FWS and the appropriate lead agencies. The BA must include a complete project description, full description and assessment of project impacts and species affected, and agreed upon project impact mitigation measures.

5. The appropriate cultural resource surveys, assessments, and project impact mitigation measures have been completed following the proper protocols and standards.
6. Ensure that all BLM requirements and Resource Management Plans (RMPs) have been addressed and incorporated in the project design, for projects located on BLM managed lands. Projects should not trigger a change or amendment to a BLM RMP.
7. All the requirements of the local agency jurisdiction have been incorporated into the applications including but not limited to local zoning, general plan policies, land use, traffic, and height restrictions. The project will not be located on lands under a Williamson Act contract, require a zoning change, or General Plan amendment.
8. All of the requirements of the Department of Defense and nearby military installations have been addressed and incorporated into a project's design.
9. A transmission system interconnection study has been completed by the California Independent System Operator (CAISO) or other control area operator with measures identified and agreed upon that would eliminate any unacceptable degradation to the reliability of the transmission system beyond the first point of interconnection.
10. A power purchase agreement has been executed for the proposed project.
11. Include the preliminary Determination of Compliance with project applications to appropriate lead agencies, if a project will likely create air emissions during construction or operation.

A project developer's failure to address and resolve readily known and predictable issues associated with a project before applications are filed will likely require additional time for the permitting agency to process the application. To assist the agencies in facilitating the permitting process, project developers should identify and address readily known and predictable issues. They should propose appropriate project design features and mitigation as part of an AFC to the Energy Commission, an application with another appropriate lead agency (such as the State Lands Commission [SLC] or local government), and a ROW application to BLM. If any items applicable to a project are not completed or the project is changed or modified after applications are filed, significant delays in the processing of an application are likely and would hinder the ability of the Energy Commission, BLM, DFG, FWS, and possibly other agencies, to process permits in a timely manner. Thus, early identification of impacts/mitigation

measures and continuous coordination with appropriate regulatory agencies is advised to reduce permitting/approval timeframes.

The following guidance is offered for project developers and regulatory agencies to consider when developing a project, preparing and reviewing an application. They do not supplant the Energy Commission's filing requirements, the filing requirements of the BLM and possibly other lead agencies, and requirements to initiate state and federal Endangered Species Act (ESA) consultation with DFG and FWS.

The individual activities are numbered to facilitate review and discussion. The numbering sequence does not indicate the priority or importance of any particular activity.

General Pre-Application Activity Guidance

Early coordination with and responsiveness to the appropriate permitting agencies and stakeholders during project development can significantly reduce permitting/decision-making timeframes. Initiation of a regulatory process for a desert renewable energy project begins by meeting with federal, state, and local agency staff that regulate activities effecting environmental, community, and military resources. Meetings are generally most productive if the project scope is defined well enough to address the following issues:

- determine the permits and approvals needed for construction and operation of proposed renewable energy projects;
- agency decision-making history of similar projects or important precedents;
- identification of major stakeholder groups;
- types of issues likely to be raised by agencies and stakeholders;
- sequencing of permit applications and scheduling environmental review and decision-making processes.

Although the following guidance suggests when to initiate meetings, it is recommended discussions with federal, state, and local regulatory agencies be ongoing to provide updates on changes in project design and agency procedures, reach agreement on studies/surveys needed and maintain a realistic permitting schedule. Project developers should:

- 1) Identify the appropriate lead agencies for the proposed project. For example, the Energy Commission, BLM, SLC or a local government may be the lead agency or

- 2) Initiate discussions with the transmission-owning utility with which the proposed project will interconnect at least 24 months prior to filing applications with the lead agencies.
- 3) Initiate discussions with the CAISO or other applicable transmission control agency at least 18 months before filing an application with the Energy Commission, BLM or other lead agencies.
- 4) Initiate pre-filing meetings with the Energy Commission at least 12 months before filing an AFC.
- 5) Initiate meetings with BLM at least 12 months before filing an application for ROW with BLM.
- 6) Initiate pre-filing meetings with other lead agencies, as appropriate, at least 12 months before filing an application.
- 7) Initiate discussions with FWS and DFG at least 12 months before filing power plant applications with the Energy Commission and BLM; include BLM and Energy Commission in the discussions.
- 8) Initiate meetings with applicable and appropriate local government offices, for example city and county departments of environmental health and/or protection, fire departments, building or planning departments 12 months in advance of filing applications with the lead agencies.
- 9) If appropriate, meet with the Governor's Office of Planning and Research for information on the Military Land Use Compatibility Analyst, the State Clearinghouse, and/or CEQA Guidelines.
- 10) Initiate discussions with the U.S. Army Corps of Engineers (ACOE) at least 12 months in advance of filing applications with lead agencies to determine permitting requirements.
- 11) Initiate meetings with the Department of Defense (DOD) and/or the appropriate or nearby military installation at least 12 months in advance of filing lead agency applications. Include a letter from the DOD with the applications stating the project would not conflict with military operations.

- 12) Initiate meetings with the State Office of Historic Preservation at least 12 months prior to filing an application to initiate consultation on potential cultural resource issues.
- 13) Initiate meetings and consult with the applicable Regional Water Quality Control Board (RWQCB) at least six months prior to filing an application to determine which project activities would be regulated and require permits from the regional water board.
- 14) Initiate meetings with the State Department of Environmental Health & Environmental Protection (Cal-EPA) and Federal Emergency Management Agency (FEMA) to determine their applicable permitting requirements. Schedule the meetings six months prior to submitting applications to lead agencies.
- 15) Meet with interested community and environmental groups at least six months prior to filing applications with the appropriate lead agencies to involve the leaders of the community at the early stages of project planning and development to inform them of the project and its potential benefits and impacts. Obtain stakeholder input and begin identifying issues. This will be an ongoing process over time and is likely to result in a series of meetings. Activities to consider include:
 - a) consulting the community on the location of the energy facility to incorporate community values into design, as feasible and appropriate;
 - b) conducting educational presentations at public meetings that include information on facility design and operation and how projects can fit in with the community;
 - c) making commitments to hire workers from the community for construction and operation personnel;
 - d) building financial assistance to community projects into the project's business plan to help gain community support.

When developing applications for appropriate lead agencies, list the organizations and groups consulted, summarize their comments and concerns, and describe what has been done to address these concerns.

Technical Disciplines

Project developers should conduct the following activities to address environmental resource related issues that generally arise during agency review of permit applications for proposed construction and operation of renewable energy projects. It is likely that

all measures may not be applicable to any single proposed facility. The proposed facility technology, location, and design, in addition to applicable agencies and their requirements will determine the appropriate activities for a particular project. Following these resource topics are activities recommended for specific renewable energy technologies.

Air Quality

- 1) Determine the applicable air quality management district.
- 2) Determine if the facility site is within a federal and/or state nonattainment ambient air quality standard area for any criteria air pollutant.
- 3) Gather ambient air quality data early in the exploration phase and the planning phases of well field and power plant design. Use standard and well established procedures for assessing air quality impacts. Gather meteorological data or establish a meteorological station (to collect at least one year of data) using siting and operational criteria for these stations.
- 4) Document background or baseline air quality conditions. Site-specific monitoring provides the most definitive baseline data. Collect or monitor routine and periodic samples over the course of at least one year.
- 5) Document physical parameters of emission sources and of local topography and nearby structures.
- 6) If cooling towers are proposed, use U.S. Environmental Protection Agency (USEPA) approved computer model(s) to calculate cooling tower plume dimensions and plume drift (dissolved chemicals – salts, toxic compounds, and biocides – in large water droplets) for meteorological conditions and cooling tower characteristics.
- 7) Use the air dispersion models (e.g., AERMOD or SCREEN) to predict atmospheric impacts from emissions sources and fugitive dust. Run models using on-site or representative meteorological data representing at least one year of data. Use models to assess and reduce predicted impacts to sensitive receptors (e.g., minor changes to stack dimensions, orientation, discharge point locations, and alternative well pad and power plant sites). Publish results in an executive summary and in tables that compare results with regulatory thresholds.
- 8) Obtain emissions inventory data from existing facilities with similar technology to the proposed project.

- 9) Include in project designs locations of source-testing sampling monitors.
- 10) Consider prevailing wind directions and the nearest sensitive receptors when planning the configuration of the power plant facility and location of cooling towers.
- 11) For emissions of criteria pollutants in non-attainment areas and depending on attainment status, provide a detailed list of the offsets/mitigation that could be purchased/secured to offset/mitigate the emissions so there are no net emission increases attributed to facility operations. Include emissions associated with mirror washing at solar power plants, fuel transport and preparation, delivery of consumables, and other operations associated with the operation of the project.
- 12) Include the proposed project application for a local air quality management district determination of compliance or authority to construct with applications to the lead agencies. Ideally, for more timely review of applications include the draft determination of compliance.
- 13) For new emission sources to be located on Federal land, 40 CFR Ch.1 Subpart B states that “[n]o department agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit or approve any activity that does not conform to an applicable implementation plan.” Include direct and indirect emissions from new emission sources when demonstrating conformity with the applicable implementation plan. Since the timeline to obtain a finding of conformity can take over a year, the applicant should include the conformity finding from the appropriate federal land manager with the AFC.

Biological Resources

There are a number of special-status biological resources that exist in the desert and require consideration early in the site selection and evaluation process. It is important to discuss the project and potentially affected plant and animal species and habitats with agencies and local governments early in the project planning and development process to consider specific protocols that may require a year (or more) study prior to the start of the formal regulatory process.

- 1) Meet with FWS, DFG and the appropriate lead agencies to identify potential issues, species that could be impacted, including special-status species and unique plant assemblages that could occur in the project area (including those areas that could be directly and indirectly impacted by the project), protocol survey procedures, mitigation measures and expectations, desert tortoise

translocation, burrowing owl translocation, and the contents of a BA. Refer to *Best Management Practices & Guidance Manual: Desert Renewable Energy Projects* Appendix D for field survey guidance. Consider the survey guidance for any renewable energy project addressed in this document. Regarding mitigation of impacts to listed species, project developers should discuss with FWS and DFG approaches for developing a more comprehensive conservation strategy than merely acquiring and managing land.

- 2) Meet with applicable local governments to determine whether the site contains locally protected trees and shrubs.
- 3) Design and site the project to avoid or minimize impacts to sensitive and unique habitats and wildlife species (e.g., locate energy generation facilities, roads, transmission lines and ancillary facilities in the least environmentally sensitive areas; i.e., away from riparian habitats, streams, wetlands, vernal pools, drainages, critical wildlife habitats, wildlife conservation, management, other protected areas, or unique plant assemblages). For example:
 - a) Design transmission line poles, access roads, pulling sites and storage and parking areas to avoid special-status species or unique plant assemblages adjacent to linear facilities.
 - b) Design facilities to discourage their use as perching or nesting substrates by birds.
 - c) Design facility lighting to prevent side casting of light towards wildlife habitat.
 - d) Avoid using or degrading high value or large intact habitat areas, such as Joshua tree woodlands and/or as identified in state wildlife action plans.
 - e) Avoid severing movement and connectivity corridors and daily movement areas and consider existing conservation investments such as protected areas and lands held in trust for conservation purposes.
 - f) Locate facilities in an area that does not disrupt sand transport processes nor removes some or all of a sand source relative to nearby sand dune systems harboring listed or otherwise sensitive species. Projects should not armor sand sources for nearby dune systems.
- 4) Submit survey protocols to FWS, DFG and appropriate lead agencies for review, comment, and approval. Surveys and inventories of special-status species should follow protocols recognized by FWD, DFG and appropriate lead agencies. Also,

to ensure the quality of the protocol surveys, the names and qualifications of the surveyors should be provided to FWS, DFG and the lead agencies for review two weeks prior to initiating surveys.

- 5) Complete all biological resource surveys according to the approved survey protocols during the appropriate season and provide a FWS-approved BA and approval letters in applications to the appropriate lead agencies. The approved BA must include a complete description of the project, thorough discussion of the species and habitats, identification of the biological resource impacts, and all recommended mitigation measures to avoid and address expected impacts.
- 6) Meet all requirements and conditions of existing Natural Community Conservation Plans (NCCPs) /Habitat Conservation Plans (HCPs) if a project is to be located within an area covered by the conservation plans (such as the Coachella Valley area of Riverside County).
- 7) Complete all wetlands delineations for waters of the state and US and provide verification in the AFC that the wetlands delineations are acceptable to the appropriate state (DFG) and federal (ACOE) regulatory agencies.
- 8) Provide, in the applications to lead agencies, a draft plan of how the hydrologic functions and biological resource values will be achieved if any creek, wash, or other waters will be rerouted as part of the project.
- 9) In applications to appropriate lead agencies, provide copies of the completed and, when applicable, DFG-approved application(s) for an Incidental Take Permit and Streambed Alteration Agreement, if DFG has indicated one or both will be required.
- 10) Include a draft common raven (*Corvus corax*) management plan for the project site in applications to appropriate lead agencies, provide verification that agency consultation occurred during development of the draft raven management plan, and acknowledge concurrence with it for offsite raven management. The FWS will likely require that the project-specific plan be consistent with the most current FWS-approved guidelines and uses adaptive management strategies. The plan should be implemented for the life of the project and include management strategies to control and limit common raven abundance through implementation of construction and operation practices that avoid creating favorable conditions for common ravens (feeding, watering, nesting, roosting, and perching) and provide regular common raven nest removal from project structures.

A raven management plan should be developed in coordination with the FWS, DFG and the appropriate lead agencies. The goal of the plan should be to ensure that the project does not attract common ravens. The plan should specify:

- a) passive design strategies (including the use of repellent devices to discourage nesting, perching, and roosting on project facilities,, including transmission poles and towers);
 - b) a refuse management system;
 - c) a monitoring program;
 - d) reporting requirements; and
 - e) adaptive management options that would be applied if needed, including the removal of all common raven nests.
- 10) Use of evaporation ponds should be avoided where the water would be considered toxic to birds and other wildlife. If evaporation ponds are anticipated for wastewater disposal, include a complete description of the ponds and justify the need for them in applications to lead agencies. A complete evaporation pond description should include the pond acreage, depth, slope of the pond sides, and capacity of each pond. Also describe how often water is likely to stand in the pond(s) and all proposed pond design features to be implemented to discourage their use by birds and other wildlife. Identify the projected water quality and toxicity of the evaporation pond and its potential to harm or impact any form of wildlife. Describe what would be considered a threat and potential strategies to be employed if it is determined that the ponds do pose a threat to wildlife.
- 11) If evaporation ponds are included in the project design, discuss and analyze alternatives (environmental and economic alternatives) to the evaporation ponds including using modern and cost effective zero liquid discharge (ZLD) technologies.
- 12) Consult with FWS and DFG to determine the need for and/or feasibility of conducting desert tortoise translocation to lessen or mitigate project impacts, if desert tortoises are observed within the proposed project area. Development and implementation of a translocation plan may require, but not be limited to: additional surveys of potential recipient sites; disease testing and health assessments of translocated and resident tortoises; monitoring protocols; and consideration of climatic conditions at the time of translocation. Because of the potential magnitude of the impacts to desert tortoises from proposed renewable

energy projects, FWS and DFG must evaluate translocation efforts on a project by project basis in the context of cumulative effects.

- 13) After completion of special status plant surveys, include a draft plant mitigation plan (as applicable) in applications to appropriate lead agencies that contains scientifically supportable recommendations on how impacts to special status plant species would be mitigated.
- 14) If wildlife species, such as the burrowing owl, will need to be translocated prior to project construction, develop a draft translocation plan and provide the draft plan in applications to appropriate lead agencies. The draft plan must be developed in consultation with DFG and FWS. Request an outline or copy of a previously approved plan from FWS to use as an example.
- 15) Provide a draft habitat compensation plan, when deemed appropriate by the fish and wildlife agencies, which describes the acquisition schedule relative to expected project groundbreaking, endowment funding strategy and amount so that adequate funds will be available to fund the management of the compensation lands in perpetuity. Identify the location and suggested amount of compensation habitat and the rationale for the suggested habitat compensation location(s).
- 16) Include a complete description of the proposed funding mechanism to address facility closure and habitat restoration in applications to appropriate lead agencies. The funding strategy should guarantee that sufficient financial resources will be available to cover all the costs of project removal and the successful restoration of the project site habitat.

Cultural and Historical Resources

The following guidance is recommended for development of Cultural Resources Monitoring and Mitigation Plans (CRMMPs) and Programmatic Agreements (PAs) under Section 106 of the National Historic Preservation Act (16 USC 470f) and for comprehensive impact assessments by lead agencies.

- 1) Consult with the federal or state land management agency with permitting authority for their project early in the planning process to identify issues regarding the proposed development as related to the potential presence of cultural properties. The land management agency will provide the project developer with specific instruction on agency policies for compliance with the various laws and regulations governing cultural resources management, including consultations with regulatory agencies and Native American Tribes.

- 2) Determine the presence or absence of archeological sites and historic sites in the area of potential effect (APE). A records and literature search for archeological and historical sites will be conducted through the land management agency, the regional Archeological Information Centers (e.g. San Bernardino County Museum or the Archaeological Research Unit at the University of California, Riverside) as well as local museums and libraries. Depending on the extent and reliability of existing information, an archaeological survey may be required. Archeological sites and historic properties present in the APE will need to be evaluated as to their significance or for their eligibility for listing in the National Register of Historic Places. The land management agency will: provide guidance to the project developer on the evaluation process; determine the eligibility of the property or site for National Register listing; and consult or request the project developer consult with the California State Historic Preservation Officer and/or the Advisory Council on Historic Preservation. Additionally, the land management agency will provide the project developer with guidance for consultations with the Native American Tribes.
- 3) If eligible cultural resources are present within the APE, the project developer should develop a Cultural Resources Mitigation Plan (CRMP). The CRMP will include the proposed processes by which the significant cultural resources will be preserved for the future. This may include avoiding the cultural resources and placing the sites or properties into a conservation easement. Other mitigation options include additional investigations including detailed recordation, mapping, and excavation, if warranted. Construction monitoring by a qualified archeologist may also be deemed an appropriate mitigation requirement. A report of all findings, methodologies, results, and interpretations will be prepared for all mitigation efforts. The CRMP should include but not be limited to:
 - a) establishment of a data recovery program;
 - b) establishment of a monitoring program;
 - c) identification of measures to prevent potential looting/vandalism or ground disturbing impacts;
 - d) a cultural resources training program to be presented to all workers
 - e) a public outreach program;
 - f) provisions for curation of any archeological or historical materials recovered as a result of the project in a federally recognized repository.

Electricity Transmission

In applications to appropriate lead agencies, provide a copy of the electric transmission interconnection study and the approval by the CAISO or the appropriate control agency. This study should be approved by the CAISO or the appropriate control area agency prior to filing of the lead agency application. The interconnection study should include an identification of the transmission impacts beyond the first point of interconnection and acceptable measures to mitigate/alleviate impacts to the system. When more than one alternative mitigation measure is identified, the applications should indicate the measure selected by the project developer. For each selected mitigation measure an environmental analysis sufficient to meet the CEQA requirements for indirect project impacts should be provided.

Hazardous Materials, Pesticides and Waste Management

- 1) Project developers should conduct an Environmental Site Assessment to evaluate whether there are any environmental contamination concerns at the site, and if so ensure they are adequately characterized. If remediation is needed, the developer should ensure they have coordinated remediation with the appropriate regulatory agency and demonstrated the site has been cleaned up in accordance with the agreed upon plan.
- 2) Where a site may be contaminated or classified as a “brownfield” site, consult with state and local agencies (Department of Toxic Substance Control, RWQCB, or designated local agencies) that would regulate remediation and development activities. Ensure that any necessary remediation will be conducted in accordance with an approved remedial action plan.
- 3) Design project facilities and operations to minimize spills to lessen frequency and intensity of accidents.

Land Use/ Agriculture

- 1) Provide proof of project site control or ownership (legal documentation).
- 2) Consider use of degraded lands, to the extent feasible, for development of renewable energy facilities.
- 3) Design the project to comply with all applicable federal, state and local laws, ordinances, regulations and standards including the Subdivision Map Act, California Land Conservation Act, and local permitting requirements.

- 4) On privately-owned lands, assess the impacts of the proposed project on agriculture, farmland, and grazing operations through use of the California Agricultural Land Evaluation and Site Assessment (LESA) model. Develop feasible measures to reduce the significance of impacts. Project developers should avoid when possible, the conversion of Prime Farmland, Unique Farmland or farmland of Statewide Importance, or lands under a current Williamson Act contract.
- 5) A project on agriculture land under a Williamson Act contract will significantly delay the siting process as the contract must be terminated by the land owner and the county following prescribed steps and lengthy time frames. Projects, including transmission lines to the first point of interconnection with the existing electric transmission system, on Williamson Act land cannot be processed in an expedient manner.
- 6) Meet with local agencies and elected officials before filing permit or approval applications to ensure that the project is to be located on land zoned appropriately with no zoning, land use, or height restrictions. Include a statement from the local agency and the governing body that they have reviewed the proposed project and that it would be consistent with General Plan, zoning ordinances, and height restrictions. If a conditional use permit is required by the local agency, include a copy of the conditional use permit application with applications to lead agencies. Processing of applications for projects requiring land use designation changes will likely be delayed.
- 7) Consult the Office of Planning and Research mapping tool to identify whether their proposed project is located in the vicinity of military bases and military airspace. This mapping tool will help developers comply with legislation that requires the military to be notified of certain development applications and general plan actions. This mapping tool is available on the internet at <http://sample1.casil.ucdavis.edu/Calmap8/>.
- 8) If the BLM Resource Management Plan must be amended, include a completed BLM application.
- 9) Provide U.S. Census Bureau data to determine whether the facility would be located within a two-mile radius of a minority population or a population where fifty percent or more of the residents have an income below the poverty level.

- 10) Ensure the proposed facility site contains adequate area for construction laydown and staging, parking for construction and operation worker vehicles and site traffic circulation aisles).

Noise and Vibration

- 1) Consider locating facilities more than 0.5 mile from sensitive noise receptors, including quiet recreation, churches, medical care facilities, schools, child care facilities, parks, residences, wildlife/wilderness areas.
- 2) Take measurements to assess the existing background noise levels at a given site and compare them with the anticipated noise levels associated with the proposed project.
- 3) Prepare a noise monitoring and mitigation plan. The project should be designed to a) minimize noise impacts to sensitive noise receptors and limit increases to less than significant levels (no more than a five to 10 dBA increase above ambient levels) and b) not exceed local noise standards. Generally in the event project-related noise would cause a potentially significant impact, the developers should mitigate those impacts to the extent feasible. Consider acquiring lands to serve as buffers around the proposed facilities.

Paleontological Resources

- 1) Retain the services of a paleontological resources specialist with training and background that conforms with the minimum qualifications for a vertebrate paleontologist as described in *Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontologic Resources: Standard Procedures*, Society of Vertebrate Paleontology (SVP), 1995
<http://www.vertpaleo.org/society/polstateconfomimpactmigig.cfm>.
- 2) The project developer's qualified paleontological resources specialist should determine whether paleontological resources would likely be disturbed in a project area on the basis of the sedimentary context of the area and a records search for past paleontological finds in the area. The preliminary review may suggest areas of high known potential for containing resources. If the preliminary review is inconclusive a surface survey is recommended to determine the fossiliferous potential and extent of the pertinent sedimentary units within the project site. If the site contains areas of high potential for significant

paleontological resources prepare a mitigation program that addresses the following steps:

- a) a preliminary survey (if not conducted earlier) and surface salvage prior to construction,
 - b) monitoring and salvage during excavation,
 - c) specimen preparation,
 - d) identification, cataloging, curation and storage, and
 - e) a final report of the findings and their significance.
- 3) Choose a site that avoids areas of special scientific value.

Safety, Health and Nuisances

- 1) Contact the local fire protection district or if necessary, California Department of Forestry and Fire Protection (CALFIRE, Office of the State Fire Marshall) to locate the proposed project site relative to fire hazard severity zones. Determine whether the site would be located in a fire hazard severity zone within State Responsibility Areas, a Local Agency Very High Fire Hazard Severity Zone or a Wildland-Urban Interface Fire Area. Address related local agency fire protection building standards.
- 2) Establish setbacks or consider acquiring buffer lands to separate nearby residences and occupied buildings from the proposed facility to minimize impacts from sun reflection, low-frequency sound, or electromagnetic fields (EMF), construction and operation noise, air pollution and facility related hazards and wastes.
- 3) Design the project to reduce electromagnetic interference (EMI) (e.g., impacts to radar, microwave, television, and radio transmissions) and comply with Federal Communications Commission (FCC) regulations. Signal strength studies should be conducted when proposed locations have the potential to affect FCC licensed transmissions. Potential or real interference with public safety communication systems (e.g., radio traffic related to emergency activities) or the amateur radio bands should be reduced to nil.

Soils, Drainage, Erosion, Stormwater, Flooding

- 1) Conduct soil surveys to identify soil types and the typical silt content of soils in many locations.
- 2) Use soil samples for chemical analysis of the less than 400 mesh size fractions (<38 microns) to approximate the chemical make-up of the suspendable fraction of road dust and soil. (This measurement indicates whether toxic metals can be transported with this fugitive dust.)
- 3) Use computer-model predictions of fugitive dust to evaluate various control scenarios (for example, watering, soil stabilizers, vehicle speed limits).
- 4) Provide a complete site grading plan, and drainage, erosion, and sediment control plan with applications to applicable lead agencies. Avoid locating facilities on steep slopes, in alluvial fans and other areas prone to landslides or flash floods, or with numerous gullies or washes as much as possible.
- 5) Submit a draft Notice of Intent (NOI) and a draft Storm Water Pollution Prevention Plan (SWPPP) to the State Water Resources Control Board (SWRCB) or RWQCB for advance review. Ensure the SWPPP is prepared by a qualified SWPPP Developer. If the proposed project will be subject to the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Construction Permit), ensure the plan addresses the latest SWRCB requirements and is submitted to the SWRCB. As the state's storm water program develops the RWQCBs may issue general permits or individual permits containing more specific permit provisions. Consider addressing the following topics in the draft SWPPP:
 - a) vicinity map;
 - b) site delineation including location of watercourses and other critical drainage/erosion areas relative to proposed project construction, laydown and landscape, transmission and pipeline corridor areas;
 - c) drainage map and measures;
 - d) clearing and grading plans, including material to be excavated and used for fill;

- e) best management practices plan and description of erosion and sediment control practices.
- 6) Evaluate flood zoning and determine whether the site is located within a Flood Hazard Zone and/or the development would result in flood plain modifications. If the project will modify the flood plain, submit an application to FEMA or county requesting map revisions. Include the completed application with applications to appropriate lead agencies.
- 7) Provide a completed permit application to the appropriate local jurisdiction for a drainage and flood control permit with applications to appropriate lead agencies.
- 8) Consult with the appropriate RWQCB for any Clean Water Act (CWA) Section 401 Water Quality Certifications necessary for wetlands impacts and CWA Section 404 dredge and fill permits.

Traffic and Transportation

Roads

- 1) Minimize the number and length of access, internal, service and maintenance roads; use existing roads when feasible. To the extent possible, avoid use of traffic routes that cross BLM-designated Open Routes of Travel.
- 2) Provide for safe ingress and egress to/from the proposed project site. Identify road design requirements for any proposed private and state roads, and related road improvements (such as highway widening and installation of stacking lanes), in coordination with applicable local and state transportation agencies.
- 3) If new roads are necessary prepare a road siting plan and consult standards contained in *BLM 9113 Manual* (<http://www.oilandgasbmps.org/docs/GEN96-9113.pdf>) and/or state and local requirements. The plans should include design and construction protocols to ensure roads will meet the appropriate standard and be no larger than necessary to accommodate their intended functions (e.g., traffic volume and weight of vehicles). Access roads should be located to avoid or minimize impacts to washes and stream crossings, follow natural contours and minimize side-hill cuts. Roads internal to a project site should be designed to minimize ground disturbance. Excessive grades on roads, road embankments, ditches, and drainages should be avoided, especially in areas with erodible soils.

- 4) Prepare a traffic management plan to ensure that hazards would be eliminated or minimized from the increased truck traffic and that traffic flow would not be adversely impacted. *BLM 9113 Manual* and the *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (revised 2007) provide standards for development on federal lands. For portions of plans addressing state and local roads use applicable state and local guidance and standards. Issues such as location of school bus routes, stops, and schedule should be identified and addressed in the traffic management plan. The plan should consider: 1) proximity (within 1,500 feet) to congested roads, hazardous road design features, 2) siting exits/entrances with clear views (at least 200 feet in either direction) of access roads, 3) whether construction/operation related traffic will lower the level of service on public streets within a one mile radius of the facility site. State whether access roads need to be built or existing roads are most appropriate for transporting building materials and heavy-duty equipment. To address identified road hazards, incorporate measures such as informational signs, flaggers when equipment may result in blocked throughways, and traffic cones to identify any necessary changes in temporary lane configuration.
- 5) If railroad crossings need improvements to provide for safe crossing, consult with the appropriate railroad and the California Public Utilities Commission (CPUC) for permitting requirements.

Aviation

- 1) Meet with the local Airport Land Use Commission. In applications to appropriate lead agencies, provide a copy of a letter stating that the proposed project is compatible with the Airport Land Use Compatibility Plan. The following locations and design features may contribute to a decision that the facility is incompatible with operations of a nearby airport:
 - a) Siting the facility within 20,000 feet (3.8 miles) of a runway that is at least 3,200 feet in actual length, or 5,000 feet from a heliport.
 - b) Locating any portion of a facility within a designated airport safety zone, airport influence area or airport referral area.
 - c) Introducing a thermal plume, visible plume, glare, or electrical interference into navigable airspace on or near an airport.

- d) Proposing a structure that will exceed 200 feet in height above ground level.
- 2) Consult with the Federal Aviation Administration (FAA) to inform the Administration of the heights of the project structures and avoid conflicts with aviation. Design the project to comply with FAA regulations, including lighting regulations, and to avoid potential safety issues associated with proximity to airports or landing strips.
- 3) Complete FAA Form 7460, provide to FAA and include a copy in applications to appropriate lead agencies.
- 4) Consult with representatives from the appropriate military installation for projects to be located adjacent to or near DOD military installations or under aircraft low fly zones. Design the project to address military concerns.

Visual Resources

- 1) Consult with appropriate lead agencies for selection of key observation points and appropriate methodologies for analyzing visual effects of the proposed project. Consult with BLM on completion of Visual Resources Management designations, for projects to be located on BLM lands. Include the designations, where applicable, and visual resource analyses in applications to the appropriate lead agencies.
- 2) Consider the visual impacts of the proposed facilities and transmission lines, from all relevant viewing angles when selecting building sites and locations. Consider visual impacts from proposed cooling system frequent water vapor plumes if cooling towers are proposed.
- 3) Consider the landscape character when designing placement of facilities.
- 4) Prepare a Site Design and Lighting Plan. Site design elements should be integrated with the surrounding landscape. Elements to address include minimizing the profile of the ancillary structures, burying cables, prohibition of commercial symbols, and non-glare, non-reflective lighting. Regarding lighting, efforts should be made to minimize the need for and amount of lighting on ancillary structures. Project developers should design and commit to install all permanent exterior lighting such that (a) light fixtures do not cause spill light beyond the project site; (b) lighting does not cause reflected glare; (c) direct lighting does not illuminate the nighttime sky; (d) illumination of the project and

its immediate vicinity is minimized; (e) lighting complies with local policies and ordinances; and (f) use lighting that meets International Dark Sky Association standards when feasible.

Water Supply and Quality

- 1) Design biomass-fueled, solar and geothermal power plants to use air-cooled technology or recycled/impaired water (no fresh groundwater or surface water) for cooling. If recycled water is proposed, provide a “will serve” letter from the water supplier and an approved agreement, a “will serve” letter and approved agreement to return the wastewater stream, and/or provide a plan for a zero liquid discharge (ZLD) system. If the water supply or waste water treatment services are to be supplied by a special district and the proposed project is to be located outside the service boundaries of the district, the Local Agency Formation Commission (LAFCo) will need to approve the annexation of the project to the district, or approve an “out of service area” contract to provide the services requested. If the supplier of water is a private water company, similar approvals will be required from the CPUC. Any proposed fresh groundwater or surface water use for cooling or any other purpose including mirror washing would: a) require detailed analysis and b) would likely delay the permitting process.
- 2) For any planned use of water, identify the water sources, legal entitlements, water rights, adequacy of capacity to serve project demands while maintaining aquatic and riparian resources, quantity of water used for project construction and operational needs, and water discharges, including but not limited to construction, systems testing, process and cooling needs, and washing of mirrors.
- 3) Developers should also identify wastewater treatment and pre-treatment measures and new or expanded facilities, if any, to be included as part of the facility’s NPDES.
- 4) Where use of recycled water is proposed, submit permit applications to the California Department of Public Health and RWQCB. Include the applications with applications to appropriate lead agencies.

- 5) If use of groundwater is proposed for industrial purposes other than power plant cooling, ensure a comprehensive analysis of the groundwater basin is provided and the following potential significant impacts are thoroughly evaluated.

Address, as applicable, uses that would:

- a) exacerbate or create overdraft conditions,
- b) cause drawdown in adjacent wells,
- c) cause changes in water quality and effects other beneficial use,
- d) affect groundwater basins in adjacent areas and states, and/or
- e) affect other environmental resources such as springs providing water for plants and animals.

Include adequate mitigation for potential impacts and analyze alternative water sources and technologies.

- 6) Where a groundwater well is proposed to be drilled or used, submit an application to the appropriate local jurisdiction for a permit. Include the application with applications to appropriate lead agencies and provide the following information:

- a) The legal description (township, range, section, and quarter section) of each proposed well to be used for the project, the anticipated pumped capacity of each well in gallons per minute, and the total withdrawal in acre-ft/year. The peak pumping rates anticipated during the project should be included. The location of the planned wells should be located on a suitable map within the area under application.
- b) The aquifer, the hydrogeologic characteristics of the aquifer, and the targeted production zone of the aquifer for all wells.
- c) Any known surface water resources (springs or streams) that may be affected by the proposed pumping, due to a hydraulic connection between surface and ground water.
- d) The potential cone of depression that might be caused by the proposed pumping. This could be done by use of an analytical model (for example, a well field simulation program such as THWELLS or by use of a numerical model such as MODFLOW). Also, identify the predicted extent and magnitude (in feet of water level drawdown) of the cone of depression after

- 10, 20 and 50 years of operation. Discuss the maximum drawdown expected during the life of the project.
- e) Alternative ways to meet water requirements for the project that would reduce the fresh water requirements. For example, use of dry cooling technology, or use of several concentration cycles for cooling water.
 - f) Plans for monitoring ground water conditions during the life of the project, such as the use of nearby wells to monitor water levels.
- 7) If use of surface water is proposed for industrial purposes, ensure a comprehensive analysis of the supply is provided and the following potential significant impacts are evaluated and issues are addressed:
- a) potential impacts to other users or adjacent states,
 - b) potential use that impacts water quality,
 - c) potential use that impacts other water resources,
 - d) potential use that impacts environmental resources, including protected wildlife and fishes,
 - e) reliability of the water supply proposed for project use, and
 - f) alternative water sources and technologies.
- 8) Where use of surface water is proposed for industrial purposes, provide a “will serve” and an approved water service agreement with applications to appropriate lead agencies. This may include approvals needed from LAFCo or the CPUC, as discussed above.
- 9) Design the project using ZLD technologies so that there is no offsite wastewater discharge.
- 10) Where it can be demonstrated to be infeasible to use ZLD technologies and deep well injection of wastewater disposal is proposed, submit an application to the USEPA. Include the completed application(s) with applications to appropriate lead agencies. Proposing deep-well injection is likely to delay permitting of the proposed project.
- 11) Where it can be demonstrated to be infeasible to use ZLD technologies and evaporation ponds are proposed for wastewater disposal, submit an application to the RWQCB. Include the completed application with applications to

- 12) Where an on-site septic treatment system is proposed, submit a permit application to the appropriate local jurisdiction and include the application with applications to appropriate lead agencies.

Wind Energy Power Plant Guidance

In addition to considering the recommended activities above, project developers should refer to the volunteer *California Guidelines for Reducing Impacts to Birds and Bats From Wind Energy Development* (California Guidelines) (California Energy Commission and California Department of Fish and Game 2007). The executive summary is provided in *Best Management Practices & Guidance Manual: Desert Renewable Energy Projects*, Appendix E. The California Guidelines lead the developer through the steps addressing bird and bat impacts, and issues of concern with wind energy developments.

The California Guidelines are a science-based collaboration between the Energy Commission and DFG and provide information to help reduce impacts to birds and bats from new development or repowering of wind energy projects in California. They address the following topics:

Chapter 1: Preliminary Site Screening

Chapter 2: CEQA, Wildlife Protection Laws, and the Permitting Process

Chapter 3: Pre-Permitting Assessment

Chapter 4: Assessing Impacts and Selecting Measures for Mitigation

Chapter 5: Operations Monitoring and Reporting

The FWS has developed interim voluntary guidance intended to assist the wind energy industry in avoiding or minimizing impacts to wildlife and their habitats. The current guidance is available at

<http://www.fws.gov/habitatconservation/Service%20Interim%20Guidelines.pdf>. The guidance is expected to be revised in 2010.

Geothermal Energy Power Plants

The activities listed in earlier sections of this chapter (with the exception of the Wind Energy Power Plant Guidance section directly above) are generally applicable to geothermal energy power plants. In addition, permit applications should be submitted

and items specific to geothermal power plant technology should be considered and carried out prior to submitting applications to appropriate lead agencies.

- 1) Include the permit application to the Department of Conservation Division of Oil, Gas and Geothermal Resources (DOGGR) for the geothermal test, production, and injection wells in applications to lead agencies.
- 2) Include a permit application to the local agency for the steam supply pipelines connecting the geothermal wells to the power plant facility in applications to lead agencies.
- 3) For binary plants, use USEPA developed protocols to estimate fugitive emissions of volatile organic compounds from valves and flanges.
- 4) Consider purchasing buffer areas, rights-of-way, and/or negotiating with public agencies to install road gates to address community, public access, noise, air quality and other issues/concerns.
- 5) Site geothermal wells and power plants downwind of population centers.
- 6) Site and locate drilling pads on the corners of agricultural fields and route pipelines along farm roads to minimize removal of agricultural land from production.

Biomass Facilities

In general, the pre-application guidance listed above (excluding those in the wind and geothermal energy power plant sections) are applicable to applications for biomass facilities. The following guidance is specific to biomass projects and recommended in conjunction with the activities listed above. For municipal solid waste (MSW) to energy power plants and bio fuel refineries (biorefineries), feedstock storage is important to the overall feasibility of the biomass enterprise. Storage may be on the same site as the feedstock source, but in other cases, the necessary volumes can only be achieved by combining the feedstock from a number of relatively close sources at an optimal location.

MSW to Energy Power Plants

- 1) Biomass power plants should be located ideally within 25 miles of feedstock sources.
- 2) Consider use of combined heat and power (CHP, or cogeneration) facilities, if feasible. CHP facilities can achieve thermal efficiencies of 70 to 90 percent

because they capture the energy of otherwise wasted heat, compared with 32 to 55 percent for conventional thermal power plants.

- 3) To conserve water resources, propose use of a closed circuit dry cooling system (e.g., air cooled condenser). If use of dry cooling is infeasible, closed-cycle or recirculating cooling water systems (e.g., natural or forced draft cooling tower) may be considered by regulatory agencies.
- 4) Design the facility to discourage use by birds and other wildlife

Biorefineries

- 1) Design the biorefinery with flexibility to handle multiple feedstocks.
- 2) Locate the biorefinery in close proximity to primary feedstock(s). Try to locate a proposed project within a 25 to 50 mile radius of facilities that will provide two to three times the fuel needed for a project to ensure a sufficient and sustainable fuel supply, and to minimize environmental impacts from transportation. Fuels with low moisture content are preferred over fuels with high moisture content.
- 3) Whenever possible, locate the biorefinery near efficient transportation to markets (such as rail).

