**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**

**In the Matter of:**

**Application for Certification**
**for the Carlsbad Energy Center Project**

**Docket No. 07-AFC-6**

**DOCKET**
**07-AFC-6**
DATE DEC 08 2011
RECD. DEC 08 2011

# Energy Commission and CAISO Staff Rebuttal Testimony

On November 29, 2011, the Carlsbad Committee issued a "Notice of Prehearing Conference, Evidentiary Hearing and Committee Conference; Ruling on Motions for Additional Time to File Testimony" that stipulated hearing dates and filing deadlines for the following set of topics (1) the impacts of the three new PPAs on the cumulative and alternatives analysis, (2) Conditions LAND-2 and LAND-3, and their environmental impacts, (3) Grid reliability issues raised by the CAISO, (4) the federal PSD permit, (5) recent land use LORS and amendments, and (6) evidence on whether it is appropriate to override unmitigated environmental impacts or noncompliance with state or local LORS.

Testimony and exhibits on the above-listed topics were filed by the City of Carlsbad and the Carlsbad Redevelopment Agency (City) on December 5, 2011, per Committee order. In response to the City, the Energy Commission Staff and staff from the California Independent System Operator (CAISO) hereby file Rebuttal Testimony, per Committee order, from the following: Michael Jaske (Alternatives), Mike Monasmith (Alternatives), William Walters (Cumulative Impacts and Alternatives), Robert Sparks (Alternatives and Grid Reliability).

December 8, 2011

RICHARD C. RATLIFF
Staff Counsel IV

# CARLSBAD ENERGY CENTER PROJECT (07-AFC-6)
# SUPPLEMENTAL EVIDENTIARY HEARING

## *ALTERNATIVES*

## TESTIMONY OF MICHAEL R. JASKE
## CALIFORNIA ENERGY COMMISSION

**Q1. Could you state your name and your position at the CEC?**

A1. My name is Michael R. Jaske. I am a senior policy analyst within the Electricity Supply Analysis Division of the California Energy Commission.

**Q2. What is your experience at the CEC?**

A2. I have been involved in electricity system planning for 34 years. I have been the CEC's chief demand forecaster, a policy analyst examining the implications of electric industry restructuring, a member of the CEC's strategic issues team, and most recent the lead technical staff for cooperative, inter-agency assessment of once-through cooling and air quality issues.

**Q3. What is the purpose of your testimony?**

A3. The purpose of my testimony is to address several issues related to the "no project alternative" and to the "PPA alternative projects" discussed in the City of Carlsbad's December 5, 2011, testimony of Joe Garuba and Robert Therkelsen.

**Q4. Do you generally disagree with the facts in Mr. Garuba's testimony?**

A4. Mr. Garuba, in his testimony at page 14, quotes witnesses of San Diego Gas & Electric in their testimony to the CPUC in the 2010 LTPP rulemaking, and evidently believes that closure of all Encina units by 12/31/2017 is fore-ordained. Although Encina's once-through cooling (OTC) compliance date is 12/31/2017, operators have the options of continued operation via compliance by performance measures, or unit shutdown. Further, it is clear from the language of the OTC policy itself, and the actions of the State Water Resources Control Board (SWRCB) on July 19, 2011 to extend the compliance dates for several generating units owned and operated by Los Angeles Department of Water and Power, that the SWRCB intends to be responsive to the reliability concerns of the energy agencies and the California Independent System Operator (ISO).[1] 12/31/2017 will not be a hard and fast date impervious to the assertions of the energy agencies (CEC, CPUC and ISO) speaking jointly.

[1] SWRCB, http://www.waterboards.ca.gov/board_info/agendas/2011/jul/071911_7.pdf

**Q5. Do you generally agree with the facts in Mr. Therkelsen's testimony regarding forecast data?**

A5. Yes, in introducing Exhibits 450 – 455 I believe he is correctly citing the principal information available from various forums.

**Q6. Is there information that you would add regarding the IEPR; and the generation supply circumstances of San Diego to present a more complete picture of the electricity demand and supply circumstances there?**

A6. I can think of four possible omissions:

First, I would note that there is no reference to discussion in the ISO's 2010-2011 Transmission Plan of interactions between capacity needs for local reliability in San Diego with capacity needs in Western LA Basin.[2] The ISO's transmission planning staff continues to pursue these interactions in various forums. For example, the ISO has published its draft 2011-2012 TPP documents for use at a stakeholder meeting that was conducted on December 8 regarding them. As I understand these preliminary results, the ISO finds a need for OTC capacity at the Encina location ranging from 231 to 531 MW depending upon the renewable development scenario <u>and</u> assuming that the SDG&E PPA projects go forward.[3] It is possible that some more definitive assessment of these kind of interactions could emerge in this time horizon. Robert Sparks would be well aware these analyses, and any such conclusions, in his role as a supervisor of transmission planning staff at the ISO.

Second, the ISO's 2013-2015 LCTA report, released December 2010, clearly calls for an Encina sub-area with about 20 MW of requirements.[4] The Poseidon desalination plant (Carlsbad Desalination Project), once constructed, will have about 30 MW of load obviously located at the current Encina plant area, and possibly contributing to an increase of these local sub-area requirements.[5] Thus it is possible that there is a need for 50 MW or so of sub-area capacity to satisfy local reliability needs. Since the ISO report confirms that there are no other generating facilities located within the Encina sub-area, one might speculate that not all of the Encina units could be retired until a replacement facility was built and/or a local transmission system upgrade was implemented to eliminate the sub-area.

Third, the serious analyses to determine the need for Encina and to identify various uncertainties that should be taken into account in determining need,

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[2] ISO, *2010-11 Draft Transmission Plan*, p. 278.
[3] ISO, *2011-12 Transmission Planning Process: Presentation materials for Stakeholder Meeting*, 12/8/2011, pp. 159-169 of pdf document.
[4] ISO, *2013-2015 Local Capacity Technical Analysis: Report and Study Results*, 12/30/2010, pp. 95-96.
[5] Poseiden Final EIR, December 2005, p. 4.11-17.

judging the likelihood of other resource additions, and thus leading to a joint energy agency recommendation about Encina's OTC compliance date, just got underway this past summer. The dates incorporated into the adopted OTC policy stem from a preliminary, judgment-based assessment and joint recommendation of the energy agencies to SWRCB.[6] It is expected that some or many of these dates could change as a result of substantive assessment of system and local reliability, renewable integration, and other developments within the electricity industry. As I mentioned above, stakeholders are expecting some ISO results at any moment, but those will not be the last word on San Diego area capacity requirements. Substantially more analyses will appear over the next six months or so. Finally, given the emerging understanding of the interactions among regions of Southern California once considered independent of one another, it is not impossible that all of the three PPA projects and Carlsbad are needed when all of these studies are completed, since it is possible that locations for repowers are even more constrained in West LA Basin and other areas that simply have no air credits at all.

Finally, it should be obvious that the nuclear shutdown initiative now circulating to collect sufficient valid signatures from registered voters could create a huge problem in Southern California,[7] and capacity located at the Encina site is much more likely to reduce the problems of a San Onofre shutdown than capacity located principally at Otay Mesa within a mile of the Mexico border.

**Q7. Why is the CPUC Division of Ratepayer Advocates (DRA) advocating rejection of the three PPA projects in the Power Procurement Tolling Agreement proceeding (PPTA) before that agency?**

A7: The three PPA projects are based on the 2006 CPUC LTPP, which DRA feels is dated. DRA is advocating rejection of the PPAs and issuance of a new RFO based on the current LTPP, so that it can re-appraise the various issues that contribute to the need for generation in San Diego, the timing for such need, and the potential for transmission projects as a partial alternative to generation.

**Q8: Can you predict the outcome of these CPUC proceedings as they relate to the CECP?**

A8: No, not with any confidence. The issue of San Diego's need for new capacity is complex, with many moving pieces. Moreover, it may be affected by issues external to San Diego, such as the need for new generation to shut down aging OTC facilities in the LA Basin, where there are very limited air quality offset credits available.

**Q9. Does that complete your rebuttal testimony?**

A9. Yes.

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[6] CEC, http://www.energy.ca.gov/2009publications/CEC-200-2009-013/CEC-200-2009-013-SD.PDF. Appendix B, July 2009.
[7] California Legislative Analyst, http://www.lao.ca.gov/ballot/2011/110644.pdf, 11/3/2011.

# CARLSBAD ENERGY CENTER PROJECT (07-AFC-6)
# SUPPLEMENTAL EVIDENTIARY HEARING

## *ALTERNATIVES*

## TESTIMONY OF MIKE MONASMITH
## CALIFORNIA ENERGY COMMISSION

**Q1. Could you state your name and your position at the CEC?**

A1. My name is Mike Monasmith. I am a senior project manager within the Siting, Transmission and Environmental Protection Division of the California Energy Commission.

**Q2. What is your experience at the CEC?**

A2. I have been with the Energy Commission for 8 years; four years as the Associate Public Adviser, and four years as a project manager in the siting division.

**Q3. What is your experience with the CECP?**

A3. I have been the Project Manager for the Carlsbad Energy Center Project proceeding since November of 2007. Over the past four years, I have participated in dozens of public workshops and hearings for this proceeding, many of them within the city of Carlsbad. I have contributed in the production of thousands of pages of testimony, briefs, status reports, staff analyses, notices and submissions. I was also one of the Staff witnesses for the Alternatives analysis in the Final Staff Assessment.

**Q4. Have you read the City of Carlsbad's December 5, 2011 testimony, including that of Municipal Property Manager Joe Garuba?**

A4. Yes I have read Mr. Garuba's testimony.

**Q5. What is your assessment of Mr. Garuba's testimony?**

A5. I disagree with the conclusions of his testimony, but also with several of the facts from which he draws those conclusions.

**Q6. Why do you disagree with the conclusions of Mr. Garuba's testimony?**

A6. In general, I disagree with Mr. Garuba's testimony because he draws numerous conclusions that misinterpret or ignore the extensive FSA analyses provided by Energy Commission staff as sworn testimony. Moreover, his

conclusions and determinations about non-CECP project impacts (i.e. those of Pio Pico and Quail Brush) are somewhat speculative given that those proposed projects are still in the early phase of discovery in the Energy Commission's 12-month licensing process. Mr. Garuba's statements about the non-CECP projects to some degree understate their potential environmental impacts.

**Q7. Could you provide some examples of where Mr. Garuba's testimony misinterprets Energy Commission staff testimony?**

A7. Yes. Mr. Garuba's testimony attempts to compare the "PPA projects" with CECP in terms of the satisfaction of project objectives in the tables at pages 16 through 21 of his testimony. In this comparison he tends to minimize environmental issues that result from the PPA projects, while simultaneously inflating or inventing corresponding impacts from the CECP. This creates a misleading comparison. On page 16, Mr. Garuba states that the CECP only "partially" retires the existing once-through-cooling (OTC) facilities, while he indicates each of the other proposed projects would fully do so. In fact, as indicated in the rebuttal testimony of Mike Jaske accompanying my statement, generation at the Carlsbad site would appear to be necessary in order to shut down all of the OTC facilities; moreover, given the massive electricity needs of the Carlsbad Desalination Project, significant generation may very well required at this site even if *all* of the PPA projects are licensed and built, which, absent approved AFC's, financed projects, and CPUC-certified PPAs, is still speculative.

Another example is Mr. Garuba's continual reference to the fact that CECP has not been selected by the local utility for a PPA, suggesting that this therefore fails to meet a significant project objective. This ignores the possibility that CECP may in the future be selected for a PPA in a future RFO process. If it is, it would satisfy project objectives related to this issue. If CECP does not ultimately receive a PPA, then the issue is moot, as it would not be built.

**Q8. Are there other things you believe are misleading in Mr. Garuba's comparative charts?**

A8. Yes. Mr. Garuba assigns significant environmental harm to CECP in several areas where the FSA, and even the Presiding Member's Proposed Decision, have found that no significant impact can be ascribed to CECP. Such conclusions, at pages 17-20 of his testimony, include his assessment of CECP impacts to Air Quality, Water Resources, Visual Resources and Worker Safety. Although Mr. Garuba notes correctly at page 19 that the CECP will require a PSD permit ("EPA review"), he does not mention the fact that this will likely be true for each of the PPA projects as well. Finally, Mr. Garuba's statement at p. 19 in his table regarding Biological Resources that "CECP is required to amend the project once EPS retires" is simply incorrect (FSA Condition of Certification, BIO-9 calls for wildlife agency consultation, not necessarily an amendment). A similar incorrect statement occurs on page 20, under Water Resources, where he again says an amendment will be required when EPS retires (Response to Comment section of FSA provided for the possibility of amendment, but no condition of

certification recommended such a requirement). Other references to the FSA are likewise incorrect.

Similarly, Mr. Garuba's testimony misstates both the Staff position and the PMPD Decision by indicating that the Energy Commission would "dictate the [Coastal Rail Trail's] location, thereby precluding its development. The facts are much different. Energy Commission staff conditions of certification (which are effectively endorsed by their inclusion in the Committee's PMPD) merely disallows the routing of the CRT within the CECP site because its placement there would compromise power plant security, as well as pose unsafe conditions for pedestrians and bicyclists should an emergency necessitate fire and emergency equipment usage in this same area (east of the rail road tracks and western boundary of the CECP). Testimony at hearing indicated that alternative routes were feasible that would avoid such public safety issues.

**Q9. Does Mr. Garuba's testimony underestimate the impacts of the PPA projects?**

A9. Yes, in some ways it does. The Staff's analyses of the environmental impacts of these projects is in its early phase, so the final decision about impacts and the ability to mitigate them is still in the future. On a preliminary basis, the projects would appear (like the CECP) to have no significant impacts that cannot be mitigated. Mr. Garuba correctly acknowledges that Pio Pico and Quail Bush will require significant new transmission infrastructure. However, he downplays the importance of the use by these projects of imported potable water, which staff typically treats as a significant impact, and specifically highlighted in the Pio Pico Issues Identification Report as an area of concern.

**Q10. Does that complete your rebuttal testimony?**

A10. Yes.

# CARLSBAD ENERGY CENTER PROJECT (07-AFC-6)
# SUPPLEMENTAL EVIDENTIARY HEARING

## TESTIMONY OF WILLIAM WALTERS
## CALIFORNIA ENERGY COMMISSION

**Q1. Could you state your name and your position?**

A1. My name is William Walters. I am a Senior Associate with Aspen Environmental Group and work under contract with the California Energy Commission's Siting, Transmission, and Environmental Protection Division.

**Q2. What is the purpose of your testimony?**

A2. The purpose of my testimony is to address an issue related to the "PPA alternative projects" discussed in the City of Carlsbad's December 5, 2011, testimony of Joe Garuba; two issues related to PSD GHG BACT determination, including implications regarding GHG BACT in the December 6, 2011, testimony of Matthew D. Zinn and an issue related to the PSD permit discussion in the Power of Vision's December 5, 2011, testimony of Julie Baker and Arnold Roe, PhD; and issues raised with the cumulative project analysis.

**Q3. Please explain the issue regarding Mr. Garuba's testimony?**

A3. Mr. Garuba, in his testimony at page 13, provides for comparison a list of heat rates for the CECP and the PPA alternative projects. However, the comparison provides an apples and oranges comparison due to inconsistent units of measure and operating assumptions. Specifically, the heat rate value provided for CECP is based on the Higher Heating Value (HHV) of natural gas, while two of the PPA alternative project heating rate values (Pio Pico and Escondido) are based on the Lower Heating Value (LHV). This introduces over ten percent error, in the detriment to CECP, in the heat rate comparison[1].

Additionally, there are apparent inconsistencies between whether gross or net heat rate values were cited, and for the Escondido project the cited heat rate is for a marine propulsion engine, where the theoretical LHV value for a LM6000 Sprint Aeroderivative electrical power generating turbine would be approximately 200 Btu/kWh higher than what was listed. While it is very difficult to determine truly comparable operating heat rate values considering actual operating

[1] If Mr. Garuba had looked 11 pages further in the same CECP AFC, on Figure 2.2-5 he would have found a nominal LHV heat rate for CECP of 7,165 Btu/kWh that is more appropriate to compare to the LHV nominal heat rates presented for the Pio Pico and Escondido PPA projects.

condition variable and comparisons of the design related inefficiencies for all of these projects, it appears that no attempt was made to present an accurate or reasonable comparison of the projects heat rates in the testimony of Mr. Garuba.

**Q4. What would you suggest that the Committee rely on for comparing the efficiencies of CECP versus the PPA alternative projects?**

A4. I would suggest the committee refer to the GHG emission rate comparison provided on page 10 of Energy Commission Staff's Supplemental Testimony provided on August 12th, 2011. The comparison provided in that table was prepared so that units of measure matched, as well as, providing a consistent basis of each project's requested permitted operating basis or proxy project's permitted operating basis. The GHG emission rate, since all four projects are fired on natural gas, is directly relatable in terms of the differences in efficiencies between the four projects. In summary, the CECP as a combined cycle gas turbine generator project is more efficient that the PPA alternative projects that include one IC engine generator project and two simple cycle gas turbine generator projects.

**Q5. Please explain the issue regarding Power of Vision's testimony?**

A5. Power of Vision suggests that USEPA could consider reasonably carbon capture and sequestration (CCS) as Best Available Control Technology (BACT) for the control of greenhouse gas emissions for the CECP. BACT is a case-by-case decision that takes into account technical feasibility, cost, and other energy, environmental, and economic impacts. It is clear that CCS is not currently a cost effective technology for a natural gas fired combined cycle power plant. To illustrate this point CCS has not been seriously considered as BACT for any combined cycle gas turbine projects permitted by USEPA. Additionally, USEPA has prepared several white papers on available and emerging technologies for reducing greenhouse gases from a number of emission sources. To date these white papers have not included combined cycle gas turbine power plant projects, but have addressed industrial, commercial, and institutional boilers. This white paper provides a very limited two paragraph discussion regarding CCS but provides no case for its serious consideration as a cost effective technology; however, this paper does suggest that the use of combined heat and power technologies such as combined cycle gas turbines be considered as potential BACT to reduce GHG emissions.

**Q6. How does USEPA conduct its GHG BACT analysis, and how would that relate to expected findings for the CECP project?**

A6. As noted above the BACT analysis is case by case analysis. Many factors are considered in this analysis, including the purpose and operation of the new emissions source. In this case CECP is proposed as a rapid response mid-merit electrical generating project that would not operate as a base load or load

following high capacity factor facility. Direct comparisons made to other such base load permitted facilities, as is the case in Mr. Matthew D. Zinn's testimony (p. 4,5 and attached Exhibit 458), are not the best comparison to CECP. CECP as proposed would operate in a manner that is between that of a peaking power plant and a base load power plant and has a GHG efficiency that is between that of a simple cycle gas turbine peaker and the most efficient base load combined cycle power plant[2]. Other concerns that would need to be addressed in the Top-Down BACT analysis are cost and other environmental impacts. Requiring a more efficient system would include the need to include larger steam turbines, larger dry cooling units, etc. that could substantially increase costs. Additionally, a more efficient unit would have a lower stack temperature that would increase near-field air pollutant concentration impacts. Considering all of these factors we assume CECP as permitted would meet BACT for GHG.

**Q7: Did the Staff include the PPA project in its cumulative impact list when it did its FSA analysis?**

A7: No. Those projects were unknown of at the time Staff did that analysis.

**Q8: Is that why Staff requested, at the June 30 hearing, that the decision be put over so that additional cumulative impact analysis, among other things, could be performed for the PPA projects for air quality impacts?**

A8: Yes. Because the PPA projects are not proximate to CECP, Staff determined that the cumulative analysis for the PPAs involved only air quality cumulative impacts. Those impacts are considered in Staff's August 2011 supplemental testimony. The PPA projects will not result in a significant cumulative air quality impact, whether they are alternative or additive to CECP, because such impacts are required to be addressed by the air district's rules and attainment plans. The air district's programs were discussed in the summary of projections analysis in the FSA for air quality. In sum, this programmatic approach would require emission restrictions and offset mitigation for the PPA projects similar to that required for CECP, depending on potential emissions.

**Q9. Does that complete your rebuttal testimony?**

A9. Yes.

[2] As noted in the USEPA *PSD and Title V Permitting Guidance for Greenhouse Gases*, p. 26 ""BACT should generally not be applied to regulate the applicant's purpose or objective for the proposed facility."

# Before the State of California Energy Commission
# Carlsbad Energy Center Project

## Docket No. 07-AFC-06

## Prepared Rebuttal Testimony of Robert Sparks
## California Independent System Operator Corporation

The testimony of Joe Garuba submitted on behalf of the City of Carlsbad refers to alternatives to the Carlsbad Energy Center project. These alternatives are the Escondido Energy Center, Pio Pico Energy Center and Quail Brush. Together these projects represent approximately 445 MW of generation. The ISO is aware that SDG&E is seeking approval from the CPUC of power purchase agreements with these generation projects. Therefore, as part of the ISO's 2011/12 Transmission Planning assessment, the ISO studied a scenario with generation capacity at the Encina Power Station completely retired and with these three projects modeled as replacement generation resources to meet the local capacity needs in the area. The results of these studies are posted on the ISO's Web site and also attached to this testimony: http://www.caiso.com/Documents/Presentation%20-%2020112012%20Transmission%20Planning%20ProcessDec8_2011.pdf

The presentation on Policy Driven Planning Deliverability Assessment Results – SDG&E Area includes the results of this analysis beginning on slide 8 "Results of OTC Sensitivity Analysis". Although there are many transmission impacts identified by the retirement of Encina, the major finding of that analysis is that replacing generation capacity at the Encina Power Station with these three proposed projects is expected to

trigger major transmission upgrades. The Miguel to Bay Blvd 230 kV transmission line identified in the presentation as overloaded would need to be upgraded by replacing the existing electrical wire or conductor with a larger conductor. The transmission line towers, however, are not expected to be able to accommodate a larger conductor, so all the towers in this line would need to be torn down and replaced with towers that can accommodate a larger conductor size. This would be similar to building an entirely new transmission line in terms of construction activity.

# Policy Driven Planning Deliverability Assessment Results – SDG&E Area

*Luba Kravchuk*
*Regional Transmission Engineer*

*2011/2012 Transmission Planning Process Stakeholder Meeting*
*Policy-Driven & Economic Study Preliminary Results*

December 8, 2011

# Overview of renewable zones that impact San Diego area

| Renewable Zone | Base Portfolio MW |
|---|---|
| Imperial – IID | 1,289 |
| Imperial – SDG&E | 404 |
| San Diego South | 699 |
| SDG&E DG | 104 |
| Arizona | 290 |
| **Total** | **2,786** |

# Violations caused by Imperial Zone

| Overloaded Facility | Contingency | Flow | Undeliverable Zone | MW Not Deliverable Without Upgrades | Mitigation |
|---|---|---|---|---|---|
| Miguel Tap-Bay Boulevard 230 kV | Base Case | 102% | Imperial-SDG&E, Imperial-IID | 190 MW | Reconfigure TL23041 and TL23042 at Miguel Substation to create two Otay Mesa-Miguel 230 kV lines (C1C2 PhII pending LGIA)<br><br>Other alternatives:<br>- Install phase shifter on Imperial Valley-La Rosita 230 kV line to limit loop flow through CFE system;<br>- Install reactor on Otay Mesa-Tijuana 230 kV line;<br>- Reconductor the overloaded line |

# Violations caused by San Diego generation

| Overloaded Facility | Contingency | Flow | Undeliverable Zone | MW Not Deliverable Without Upgrades | Mitigation |
|---|---|---|---|---|---|
| Division-Sampson 69 kV | Silvergate-Bay Boulevard 230 kV | 105% | San Diego: existing-Border, Otay, Otay Mesa<br><br>DGs-Imperial Beach, Otay, Paradise, San Ysidro, Jamacha | 70 MW | Reconfigure TL23041 and TL23042 at Miguel Substation to create two Otay Mesa-Miguel 230 kV lines (C1C2 PhII pending LGIA)<br><br>Other alternatives:<br>- Reconductor overloaded line;<br>- Revise existing Border SPS to trip Border and Otay generation for the outage of Silvergate-Bay Boulevard 230 kV line |

# Violations caused by San Diego generation

| Overloaded Facility | Contingency | Flow | Undeliverable Zone | MW Not Deliverable Without Upgrades | Mitigation |
|---|---|---|---|---|---|
| Montgomery Tap-Sweetwater 69 kV | Silvergate-Bay Boulevard 230 kV | 129% | San Diego: existing-Border, Otay, Otay Mesa<br><br>DGs-Imperial Beach, Otay, San Ysidro | 422 MW | Reconfigure TL23041 and TL23042 at Miguel Substation to create two Otay Mesa-Miguel 230 kV lines (C1C2 PhII pending LGIA) |

# Violations caused by San Diego generation

| Overloaded Facility | Contingency | Flow | Undeliverable Zone | MW Not Deliverable Without Upgrades | Mitigation |
|---|---|---|---|---|---|
| Sweetwater-Sweetwater Tap 69 kV | Silvergate-Bay Boulevard 230 kV | 136% | San Diego: existing-Border, Otay, Otay Mesa<br><br>DGs-Imperial Beach, Otay, San Ysidro | 472 MW | Reconfigure TL23041 and TL23042 at Miguel Substation to create two Otay Mesa-Miguel 230 kV lines (C1C2 PhII pending LGIA) |
| Poway-Rancho Carmel 69 kV | Artesian-Sycamore 69 kV and Bernardo-Sycamore 69 kV | 117% | DG-Poway, Warren Canyon, Pomerado-Poway | 0 MW | Reconductor line |
| Bernardo-Rancho Carmel | Artesian-Sycamore 69 kV and Bernardo-Sycamore 69 kV | 102% | DG-Poway, Warren Canyon, Pomerado-Poway | 0 MW | Reconductor line |

# Sensitivity Study – OTC retirement

- Assumed that Encina units 1-5 and GT are retired (964 MW total)
- Added the following projects:
  - 300 MW at Otay Mesa substation
  - 100 MW at Mission-Miguel 230 kV line
  - Reconfigure TL23041 and TL23042 at Miguel Substation to create two Otay Mesa-Miguel 230 kV lines
  - Modify existing Otay Mesa SPS to include generation tripping for N-1 outages of Otay Mesa-Miguel 230 kV lines

# Results of OTC sensitivity study

| Overloaded Facility | Contingency | Flow | Undeliverable Zone | MW Not Deliverable Without Upgrades | Mitigation |
|---|---|---|---|---|---|
| Miguel-Bay Boulevard 230 kV | Base Case | 114% | Imperial-SDG&E, Imperial-IID, San Diego South<br><br>San Diego: existing-Otay Mesa, Imperial Valley<br><br>DGs-Proctor Valley, Tele Canyon | 1126 MW | Reconductor line<br><br>Other alternatives:<br>- Install phase shifter on Imperial Valley-La Rosita 230 kV line to change direction of loop flow through CFE system (flow must be west-to-east) |

# Results of OTC sensitivity study

| Overloaded Facility | Contingency | Flow | Undeliverable Zone | MW Not Deliverable Without Upgrades | Mitigation |
|---|---|---|---|---|---|
| Old Town-Penasquitos 230 kV | Base Case | 101% | Imperial-SDG&E,<br>Imperial-IID,<br>San Diego South<br><br>Otay Mesa | 30 MW | Reconductor line<br><br>Other alternatives:<br>- Install phase shifter on Imperial Valley-La Rosita 230 kV line to limit loop flow through CFE system |

# Results of OTC sensitivity study

| Overloaded Facility | Contingency | Flow | Undeliverable Zone | MW Not Deliverable Without Upgrades | Mitigation |
|---|---|---|---|---|---|
| Chicarita-Sycamore 138 kV | Encina 230/138 kV | 117% | DGs-Santee, Carlton Hills | 0 MW | Reconductor line |
| Pomerado-Poway 69 kV | Escondido-Pen 230 kV 1 and 2 | 102% | DG-Pomerado | 0 MW | Revise scope of previously approved transmission project to reconductor line (approved reconductor to 174 MVA, need at least 180 MVA) |
| Poway-Rancho Carmel 69 kV | Artesian-Sycamore 69 kV and Bernardo-Sycamore 69 kV | 118% | DG-Poway, Warren Canyon, Pomerado-Poway | 0 MW | Reconductor line |
| Bernardo-Rancho Carmel | Artesian-Sycamore 69 kV and Bernardo-Sycamore 69 kV | 103% | DG-Poway, Warren Canyon, Pomerado-Poway | 0 MW | Reconductor line |

# Results of OTC sensitivity study

| Overloaded Facility | Contingency | Flow | Undeliverable Zone | MW Not Deliverable Without Upgrades | Mitigation |
|---|---|---|---|---|---|
| Silvergate-Old Town 230 kV | Mission-Old Town 230 kV and Silvergate-Old Town-Mission 230 kV | 110% | Imperial-SDG&E, Imperial-IID, San Diego South<br><br>Otay Mesa | 638 MW | Reconductor line<br><br>Other alternatives:<br>- Install SPS to trip generation |
| Doublet Tap-Friars 138 kV | Old Town-Penasquitos 230 kV | 122% | Imperial-SDG&E, Imperial-IID, San Diego South<br><br>San Diego: existing-Border, Otay, Otay Mesa;<br><br>DGs-Imperial Beach, Otay, San Ysidro, Jamacha | 638 MW | Reconductor line<br><br>Other alternatives:<br>- Install SPS to trip generation |

**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 *CARLSBAD ENERGY CENTER PROJECT***

**Docket No. 07-AFC-6**
***PROOF OF SERVICE***
**(Revised 9/19/2011)**

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## DECLARATION OF SERVICE

I, Mike Battles, declare that on, December 8, 2011, I served and filed copies of the attached CEC Staff Rebuttal Testimony, dated December 8, 2011. The original document, filed with the Docket Unit or the Chief Counsel, as required by the applicable regulation, 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/carlsbad/ index.html].

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*OR, if filing a Petition for Reconsideration of Decision or Order pursuant to Title 20, § 1720:*

____ Served by delivering on this date one electronic copy by e-mail, and an original paper copy to the Chief Counsel at the following address, either personally, or for mailing with the U.S. Postal Service with first class postage thereon fully prepaid:

California Energy Commission
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I declare under penalty of perjury under the laws of the State of California 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.

Originally Signed by
Mike Battles