

2013-14 Transmission Planning Process Stakeholder Meeting

Preliminary Reliability Study Results and Proposed Methodology for Consideration of Non-Conventional Alternatives

Submitted by	Company	Date Submitted
Garry Chinn, Garry.Chinn@sce.com Karen Shea, Karen.Shea@sce.com Anna Ching, Anna.Ching@sce.com	Southern California Edison	October 10, 2013

Executive Summary

SCE is pleased to provide these comments on the CAISO's 2013/14 TPP stakeholder process with a focus on the CAISO's September 18 and September 25/26 stakeholder meetings.

SCE is encouraged to see the commitment to addressing preferred resources in transmission planning expressed in the CAISO's white paper on non-conventional alternatives. This is an important issue to SCE – we are currently in the midst of procuring up to 800 MW of preferred resources and energy storage to meet the CAISO's identified local reliability needs, as directed by the California Public Utilities Commission (CPUC) and have recently proposed a Preferred Resources Living Pilot to address (among other objectives) local reliability needs associated with the San Onofre Nuclear Generating Station (SONGS) retirement. SCE found the clarifications made by the CAISO during the stakeholder call on September 18 and additional presentation on September 25 helpful. Nevertheless, as described in our comments herein, there are a number of areas where SCE does not clearly understand how the CAISO's proposed methods can be used to inform our procurement initiatives, and we are interested in developing additional clarity. We anticipate receiving offers from third-party preferred resource suppliers in the western Los Angeles Basin area, and we are seeking to understand the necessary preferred resource attributes in these areas so that we can evaluate these preferred resources offerings and develop a portfolio that meets the CAISO's identified needs.

SCE does not have any comments on the CAISO's SCE Area Preliminary Reliability Assessment Results presentation on September 25. In addition, SCE appreciates the opportunity to present its projects to stakeholders on September 26.

Section I address SCE's comments on the CAISO's ongoing economic transmission assessments. Section II includes SCE's comments on the CAISO's non-conventional alternative white paper and stakeholder discussion.

SCE looks forward to working with the CAISO during the 2013/14 CAISO TPP and is available for clarification or to answer questions on these comments.

I. SCE's Comments on the CAISO's Economic Planning Studies Development of Simulation Model Presentation

SCE appreciates the CAISO stakeholder process and opportunity to exchange information and comments on the CAISO's approach for its economic study assessments, which was discussed at the CAISO's September 25 stakeholder meeting.

The comments provided below focus on the CAISO's continuation of the Delany Colorado River study.

A. Comments Related to CAISO Assumption/Approach regarding Incremental Capacity

Results from the recently completed Path 46 and Path 49 rating re-study should be incorporated CAISO's Delany Colorado River Study

Pursuant to WECC procedures, path rating studies for Path 46 and 49 was recently completed for the Devers-Colorado River project.¹ The results revealed an interaction that should be incorporated into the CAISO's study of the economic benefits of the Delaney-Colorado River project. In summary, if the CAISO includes generation at Colorado River and Red Bluff, that will lower the operating limit of Path 49. Additionally, there are concerns from a reliability perspective – that is under certain conditions there is a nomogram relation when power is injected at Red Bluff and Colorado River – some power goes west bound and some power goes east bound back to Palo Verde around other lines – when this occurs under certain contingency conditions, Path 49 must be reduced to about 5000 MWs. This is a new understanding of the system and efforts in a peer review group have identified these limits and communication will be made to WECC. SCE believes these results may have a material impact on the CAISO's congestion and economic study for Delany-Colorado River. Additional details regarding this recent study are provided below:

1. The Delany Colorado River economic study assumptions do not include the Victorville-Lugo nomogram - this nomogram relation was identified in the recent WECC path re-studies for Path 46 and Path 49. These study results were presented to the CAISO and SCE operations for resolution. Modeling this nomogram may have an impact on study results.
2. The assumptions do not mention impact of DCR on WECC path ratings nor include nomogram relation between output of generation connected to Red Bluff and CR and Path 49 - this nomogram relation was identified in the recent WECC path re-studies for Path 49 in which Path 49 flows would have to be reduced to 5,240 MW when there was 4,000 MW of generation connected to Red Bluff and CR. Adding the DCR line may actually reduce the Path 49 flow limit further by lowering the impedance path east out of Red Bluff and CR. Some neighboring utilities expressed strong concerns over negative impacts of generation

¹ The title of the reports are, "Devers-Colorado River (DCR) Path 49 Re Definition and Rating Re-Study" and "Devers-Colorado River Path 46 Re Definition and Rating Re-Study".

connections on WECC path operational limits. Modeling this nomogram may have impact on study results.

3. Assumptions do not mention WECC Path 49 rating increase or impact due to DCR. Raising the Path 49 and Path 46 ratings due to the addition of DCR would only occur with all generation connected to Red Bluff and CR modeled off line.

SCE notes that at some point, the CAISO would also need to perform path-rating studies as part of the WECC path rating process to consider the impact of the Delaney-Colorado River project, and it will likely aggravate the situation described above.

Additional comments regarding incremental capacity on Path 46

- SCE recommends that the CAISO include the impact of SCIT in its additional analysis.
- As an observation, it is SCE's understanding that the CAISO study on Path 46 is an increase in capacity during summer conditions, which is not consistent with WECC Path rating study protocols. SCE has undertaken to rerate the Path 46 using the WECC protocols. Given the State of California's preferred loading order, which includes renewable resources and distributed generation, there may be impacts on transmission facilities, including the benefits of importing energy from outside the CAISO.
- If it hasn't already done so, SCE suggests that the CAISO coordinate with the other owners of Path 46 before the CAISO submits its recommendations to the CAISO Board.
- The CAISO indicated that it used a penalty price for imports that may not meet California emission standards. SCE notes that the emissions penalty increases over time and that may not be reflected given the CAISO takes benefits from 2022 and escalates them over time. SCE would appreciate clarification of its use of a penalty price for imports in the CAISO restudy.

B. SCE recommends that the CAISO study the impact of potential future resource scenarios, including a scenario of up to 50% renewables

One of the overarching recommendations from the SCE team is for the CAISO to incorporate, or consider in its methodology on economic assessments, possible RPS scenarios and impacts on the grid. It is possible the current RPS standard may be increased at some point, and currently Legislation has been proposed for a 40% Renewable Portfolio Standard².

It is critical that the CAISO incorporate future operational states in its studies of economic transmission, and must be considered in the Delaney Colorado River restudy effort. SCE suggests that it is important to understand the results of modeling higher levels of renewable resources in the CAISO grid because under those conditions the CAISO could be exporting significant amounts of power which

² State Assemblyman V. Manuel Pérez has proposed AB 177 which would require the state's utilities to get 51 percent of their electricity from renewable energy by 2030. (ClimateWire, Jan. 15).

would reduce the capacity or energy benefits associated with a proposed Delaney-Colorado River project. SCE suggests that one method of incorporating the expected conditions is to reduce the amount of capacity and energy benefits significantly by 2030, possibly to almost zero. If the CAISO restudy only assumes that the capacity and energy benefits of 2022 continue indefinitely in the future, or actually escalate, such an assumption could overstate the economic benefits of the project, particularly under higher renewable resource scenarios.

Lastly, a 7% NPV interest rate is not indicative of what would be used by an investor-owned utility, or potentially other project sponsors, that might win the bid to pursue such a project.

Other Comments

- SCE has suggests that the CAISO use the CEC numbers for the capacity valuation rather than the WECC numbers.
- As discussed above, continuing the benefits beyond 2030 at the same level would be extremely optimistic. Also, SCE suggests at least understanding the economics of decreasing the benefits from 2023 to 2030 and in 2031 the benefits could be zero.
- SCE would appreciate seeing the detailed analysis on the CAISO balancing authority showing it is short on capacity to meet the Planning Reserve Margin (PRM) needs. One of the assumptions CAISO is using is that there is need for RA capacity, and SCE would appreciate the opportunity to review the basis for this assumption.

C. Economic Benefits Calculated in Production Simulation

Costs for Delaney Colorado River Project

One of the key follow up questions is what are the cost assumptions being used by the CAISO in the effort to permit, license, and construct, by 2018 to 2020, the Delaney Colorado River project? The SCE team did not have a chance to ask this during the stakeholder meeting and would appreciate understanding the costs of the proposed project that are being used for the cost benefit analysis.

D. Alternatives

SCE recommends that the CAISO restudy include alternatives to DCR that may be more efficient and effective. For example, the previous study indicated benefits of DCR involved Path 26. Wouldn't upgrading Path 26 be more cost effective?

II. SCE's Comments on the CAISO's Proposed Methodology for Consideration of Non-Conventional Alternatives

SCE is pleased by the publication of CAISO's white paper, entitled *Consideration of alternatives to transmission or conventional generation to address local needs in the transmission planning process* ("White Paper")³. SCE is encouraged by the CAISO's goal to consider preferred resources as non-conventional solutions to meet local area needs and by the CAISO's development of the proposed methodology. However, SCE has a few concerns that need to be addressed in the implementation of the CAISO's proposed methodology (see specific comments below).

Based on SCE's understanding of the proposed methodology, the CAISO would follow a three-step methodology. The first step is for the CAISO to specify performance characteristics and develop a catalog of generic technology-neutral resource types and options that would provide these characteristics. One example of a single "generic resource" could be a two-hour product, with a 20-minute response time that is available for 10 calls per month. Once this catalog of generic resources is established, the second step is for the CAISO to determine an effective mix of these generic resources to meet the performance characteristics needed for a local area. To do this, the CAISO will need to specify the performance characteristics and the amounts of each characteristic required to meet the identified needs, then develop an initial preferred volume and mix of generic resource types from the catalog to provide the performance characteristics and, finally, perform an analysis to test the mix of resources to validate that it will meet the identified reliability needs in the local area. The third step in the CAISO methodology is to monitor the development of the non-conventional solution(s) by continually assessing the progress of the selected non-conventional alternative against the timing of the need.

A. In order to properly evaluate, select and procure preferred resources, the CAISO should establish LCR attributes for preferred resources.

SCE will procure a significant portfolio of energy efficiency, demand response, distributed generation, and energy storage (collectively referred to as "preferred resources") over the next few years to meet local capacity requirements ("LCR") in the western LA Basin area. SCE is currently engaged in a solicitation for up to 1800 MW of generation resources in the western LA Basin, including between 200 and 800 MW of preferred resources and energy storage. SCE has requested that the CPUC increase this procurement authority by 500 MW (all technologies including preferred resources and energy storage eligible). In addition, SCE has announced plans to pursue a Preferred Resources Living Pilot in a portion of the western LA Basin.

Unlike conventional generation resources that are typically available for dispatch during most times of the year, preferred resources may have significant limitations in

³ CAISO Consideration of alternatives to transmission or conventional generation to address local needs in the transmission planning process White Paper, published September 4, 2013: <http://www.caiso.com/Documents/Paper-Non-ConventionalAlternatives-2013-2014TransmissionPlanningProcess.pdf>

when they are available and may have stringent use limitations (number of times they can be operated or restrictions on the duration of performance). Given these limits, it is important to understand when LCR needs are likely to occur (by season and time of day); the duration of these needs when they occur, and how much of a particular type of generic resource can be utilized.

While the framework contained in the white paper is an excellent start, SCE is not clear how the final product developed by the CAISO can be effectively used in procurement decisions. In particular, SCE needs to understand the limits of particular attributes within an overall portfolio, the relationship between peak and off peak season needs, and quantity limits that apply to the generic resources. For example, suppose SCE is considering procuring a 600 MW portfolio containing a variety of preferred resources – including 400MW from an air conditioner cycling (“A/C Cycling”) program that is available only during the summer and 200 MW from rooftop solar. While the A/C Cycling program may be a valuable resource in the summer, this program is unlikely to make a contribution in the winter. If there are LCR needs greater than can be supplied by the 200 MW of rooftop solar in the winter, the portion of the portfolio associated with A/C cycling may need to be de-rated. Similarly, if LCR needs occur during evening or nighttime conditions then the solar portion of the portfolio may need to be de-rated. As another example, if LCR needs occur over a relatively long springtime mid-day and evening period with some air conditioning load, then it may be possible to rely on the solar and A/C cycling resources sequentially to supply 200 MW of LCR needs. Given the lower overall load in springtime conditions, it is possible that this could be sufficient to meet LCR needs at that time.

B. SCE will be submitting scenarios in the CAISO request window by October 15th

The CAISO invited stakeholders to submit project proposals before the request window closes on October 15th. As noted in the previous section, SCE is not clear what information will be produced because of the CAISO’s analysis of project proposals. Nevertheless, SCE plans to provide information to the CAISO as requested. In the LTPP, SCE has modeled a Preferred Resources scenario that SCE would like the CAISO to review, so SCE will be submitting this scenario, which contains information at the substation level. SCE may also be submitting additional scenarios to the CAISO to “bookend” portfolios heavy on particular preferred resource technologies to allow the CAISO to consider the limits that particular preferred resources may have. SCE will appreciate receiving feedback from the CAISO’s on the effectiveness of these scenarios. SCE requests the CAISO consider how best to present its study findings in a way the clearly identified the attributes that an actual portfolio of resources should have.

C. Monitoring programs should include procedures to ensure that the preferred resources and energy storage will adequately perform under real-time network conditions.

SCE agrees with the importance of a program to monitor the development of preferred resources in light of the timing of LCR need. Since preferred resources are expected to have a shorter delivery cycle than transmission or conventional generation options, it is not clear to SCE how such a monitoring program can effectively assure reliability. In the LTPP, SCE has proposed certain contingency initiatives that can “backstop” problems with the delivery of preferred resources. Ultimately, if a preferred resource fails to act when called up to meet an N-1-1 contingency and backstop initiatives are unsuccessful, the CAISO may need to operate a Special Protection Scheme (“SPS”) or Remedial Action Scheme (“RAS”) to drop load at the target substations. SCE encourages further development of the sequencing of this process.

Tracking the cumulative effects of preferred resources and energy storage may require additional metering and advanced telecommunications. The CAISO has indicated that the focus for the use of non-conventional alternatives will be on post-contingency events (N-1-1). Therefore, the CAISO will need to vet the technologies by assessing their use in “real-time” network conditions to measure their effectiveness.

One potential issue is that the CAISO will need to determine how to account and reconcile for real-time load differences (especially increases in loads) at certain substations due to T&D load rolling⁴. This may influence the necessary resource amounts at some of the selected target substations, so there may be a need for real-time metering of substation loads to measure the impact. On the customer-side, secure telecommunication may be needed to meter the demand reduction response in real-time to test the contracted resource amounts.

As part of our Preferred Resource Living Pilot, SCE is beginning to assess measurement requirements associated with the successful utilization of preferred resources. SCE recommends that the CAISO consider such requirements in its non-conventional alternatives investigation and contribute to SCE’s efforts to develop measurement requirements in the Pilot.

D. SCE’s comments for CAISO consideration on Reliability issues

In order to prevent grid reliability issues stemming from N-1 leading to N-1-1 conditions, and to avoid dropping load in the metropolitan area, SCE presents the factors below for CAISO consideration to incorporate in its reliability analysis. This will ensure that DG, DR, generation, and transmission solutions will be implemented at effective locations for maintaining the grid reliability. These suggestions include:

⁴ Note: “Load Rolling” is transferring load from one circuit to another circuit in the distribution network during customer power outage conditions.

- a. NERC/WECC Standards require mitigation for complying with the performance requirements for TPL-1, TPL-2, and TPL-3. SCE recommends that the tariff(s) and product description(s) for preferred resources include descriptions of the triggers that would result in calls for activation to prevent reliability standards violations. This will minimize the frequent calls and allow more efficient use of such measures.
- b. The brochure should include information on the different critical contingencies, the corresponding effectiveness factors for the different substations in the Western LA Basin and the South Orange County/SDG&E sub-areas and LCR requirements identified by the CAISO for the different sub-areas to get some idea on the effectiveness of the non-conventional resources. For example, the most critical contingencies identified by the CAISO for the LA Basin includes a) N-3 of Mira Loma AA-Bank plus two Chino-Mira Loma 230 kV lines, b) Pardee-Eagle Rock 230 plus two Pardee-Sylmar 230 kV lines, etc. This would be useful reference for evaluating the values and benefits from non-conventional resources that may be proposed and considered in the procurement RFOs for the different programs.
- c. More granularity will be required to consider the shifts in peak demands for the various local areas as the distributed generation becomes more pronounced.

In conclusion, while SCE is encouraged by the CAISO's White Paper on non-conventional alternatives, SCE does not clearly understand how the CAISO's proposed methods can be used to inform our procurement initiatives; thus, SCE is interested in developing additional clarity. Given that SCE is in the midst of procuring up to 800MW of preferred resources and energy storage, the CAISO process and methodology is extremely important to SCE. SCE looks forward to working closely with the CAISO during the 2013/14 CAISO TPP.