

**COMMENTS OF THE STAFF OF THE CALIFORNIA  
PUBLIC UTILITIES COMMISSION**

**ON THE 2015-2016 TRANSMISSION PLANNING PROCESS PRELIMINARY  
RELIABILITY ASSESSMENT RESULTS  
FOLLOWING THE SEPTEMBER 21-22 STAKEHOLDER MEETING**

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**October 7, 2015**

**Introduction**

The Staff of the California Public Utilities Commission (“CPUC Staff”) appreciates this opportunity to provide comments on the California Independent System Operator’s (CAISO) 2015-16 Transmission Planning Process (“TPP”) preliminary reliability assessment results presented and discussed at the September 21-22, 2015 stakeholder meeting along with Participating Transmission Owners’ proposed solutions.

***1. The CAISO Should Demonstrate the Implications of Alternative Ways of Identifying Required Characteristics of Preferred and Storage Resources, and Should Clarify the Impact of Modeled PV Additions on High Voltages.***

The CPUC Staff seek clarification of the implications of identifying required characteristics of preferred resources (for mitigating reliability risks) on a general versus situation-specific basis. Early in the September 21-22 stakeholder meeting, it was noted that the CAISO is considering and apparently has received recommendations regarding this question. Situation-specific requirements may offer potential for more cost-effective (tailored) investment and procurement to address specific reliability risks, whereas general, more uniform requirements may offer signals to developers, buyers and regulators that are simpler, more universal and/or more stable over time. Thus, it would be valuable for the CAISO to demonstrate the implications of identifying such characteristics in a general versus situation-specific manner, which could inform planning and procurement. Furthermore, while there has been emphasis on the ability of preferred resources and storage to mitigate reliability risks in the Los Angeles Basin and San Diego areas, the desired characteristics for such resources to mitigate reliability risks in other parts of the CAISO-operated grid should also be examined, particularly where there is potential to avoid significant transmission investments.

CPUC Staff note that Table 4-6 in the 2015-2016 TPP Final Study Plan indicates assumed MW amounts of preferred resources plus storage in the Los Angeles Basin and San Diego areas that are lower than the minimum amounts authorized in the CPUC's Track 1 and 4 decisions, whereas there is considerable time for further procurement especially by the 10-year planning horizon. We request clarification regarding the amounts of such resources to be modeled as available to mitigate reliability issues, and recommend that for 10-year studies at least the minimum authorized amounts be assumed. We also look forward to CAISO's assessment of the role of two levels of existing "repurposed" demand response (DR) to mitigate identified reliability risks.

Lastly, we request clarification of the role of modeled PV resource additions, particularly distributed and behind-the-meter, in contributing to modeled high voltages.

***2. Infrastructure Needs Should Not be Triggered by Sensitivity Cases Having No Additional Achievable Energy Efficiency (AAEE).***

CPUC Staff recommend and request clarification that grid investments would not be triggered by study results for scenarios containing no AAEE. We would remind the CAISO that the CEC load forecast has a track record of trending higher than actual recorded load. So looking at a no AAEE case is a doubling of conservatism.

***3. The Relationship Between Regional and Interregional Transmission Project Evaluation Requires Clarification and Perhaps Refinement.***

A summary of the "interregional" (among the CAISO and other western transmission planning regions) transmission planning and project evaluation process developed pursuant to FERC Order 1000 was presented at the September 21 meeting. The summary indicated that west-wide stakeholder meetings will occur in approximately February of each year within a biennial interregional planning cycle, and that a window for transmission project submissions will close by March 31 of every even-numbered year. CPUC Staff request clarification of whether and how an "interregional" transmission project might be submitted and evaluated via the interregional process versus via the CAISO's regional (internal) planning process, or via both processes. For example, could a project be submitted simultaneously in both ways (regional and interregional), or could it be submitted via one route and, if not successful, be then submitted via the other route? The Delaney-Colorado River and Harry Allen-Eldorado projects recently

approved via the CAISO’s regional planning process would have qualified as “interregional” under the new interregional process. It appears that the relationship between regional and interregional project evaluations is not yet fully resolved or at least not yet fully explained, and clarification or refinement is needed.

***4. The CAISO Should Clearly State in Planning Standards and Elsewhere that Non-Wires Measures Including Preferred Resources May Substitute for “System Reinforcements” as Reliability Solutions, and Should Clarify the Time Horizon Over Which Controlled Load Shedding May be Allowed as a “Gap-Bridging” Measure Pending Long-Term Solutions.***

Early in the September 21, 2015 TPP meeting the CAISO summarized recent revisions to transmission planning standards, as applied in the TPP. Under the CAISO’s recently adopted revisions to its own Transmission Planning Standards, planned (“nonconsequential”) load shedding is not allowed as a long-term mitigation option in high density urban load areas,<sup>1</sup> under contingency categories P1 through P7 as recently defined by NERC. However, the CAISO’s Planning Standards also provide that controlled load shedding may be allowed in dense urban areas on short-term basis “to bridge the gap between real-time operations and the time when system reinforcements are built.”<sup>2</sup> The CAISO’s planning standards and application of those standards via studies should make it explicitly clear that non-wires measures including preferred resources may substitute for “system reinforcements” as acceptable solutions. We further request that the CAISO clarify the time horizon over which controlled load shedding may be considered as a “gap-bridging” measure.

***5. The CAISO Should Clarify How the Frequency Response Studies Will Inform the Frequency Response Initiative.***

The CAISO is pursuing an initiative on provision and compensation of frequency response. CPUC Staff request clarification of how the ongoing frequency response studies

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<sup>1</sup> As defined by the U.S. Census Bureau, such areas account for more than half of all CAISO area load.

<sup>2</sup> California ISO Transmission Planning Standards, page 7;  
[https://www.aiso.com/Documents/FinalISOPlanningStandards-April12015\\_v2.pdf](https://www.aiso.com/Documents/FinalISOPlanningStandards-April12015_v2.pdf)

mentioned in the September 21 TPP presentation will inform the frequency response initiative, including not only the need for frequency response but also the potential roles of different sources in providing that response. For example, if conventional sources are encouraged to provide primary frequency response such as via operational positioning and compensation, then how great is the residual need to obtain frequency response from nonconventional sources, under what scenarios? CPUC Staff would also like to learn if the frequency response studies will be presented at the November TPP meeting, or at a later time.

***6. PG&E's Proposal for Grid-Based Voltage Controls Should be Considered in the Context of Projected Trend in High Voltage Issues Across CAISO Study Cases plus Prospects for Increased Generator-Based Reactive Power Capability.***

To address high voltages being observed under low load conditions, PG&E is proposing to deploy multiple shunt reactors with an overall estimated cost of roughly \$200 million. It is unclear and should be reported how these high voltage issues are projected to increase or decrease under the different 5- and 10-year reliability study scenarios analyzed by the CAISO. Additionally, reactive power capability and voltage regulation by generators and storage could significantly increase in the future, as is being considered in the CAISO's present initiative on "Reactive Power Requirements and Financial Compensation." CPUC Staff request if and how the cost-effectiveness tradeoff between generator/storage-based reactive controls versus grid-based reactive controls such as proposed by PG&E<sup>3</sup> is being fully accounted for.

The preliminary reliability assessment identified one situation in northern California where need to mitigate a modeled reliability violation may arise due to qualifying facility (QF) retirement. Additionally, the Oakland area sensitivity study identified a potential need to mitigate reliability violations modeled to occur only if local generation not currently planned to retire should in fact retire. CPUC staff appreciates efforts now and in the future to proactively identify and communicate situations where existing resources, especially those having uncertain futures, are important for avoiding reliability risks and/or significant infrastructure investment.

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<sup>3</sup> Substantial grid-based reactive controls have recently been proposed and/or deployed by the other PTOs as well.

Lastly, preferred resources were not listed among mitigation options for some PG&E areas, and CPUC Staff request clarification whether preferred resources are being considered as applicable mitigation options for all areas or only for certain (which?) areas.

**7. For the SCE Area, the CAISO Should Provide Information Regarding the Effectiveness of Preferred Resources in Mitigating the Modeled Lugo-Victorville Overload, and Regarding the Effect of Alternative Hydro Assumptions on Big Creek Corridor Mitigation Needs.**

Preliminary reliability study results were stated to indicate that thermal overload on the Lugo-Victorville 500 kV line under an N-1-1 contingency (and under N-1 starting in 2025) under 1-in-10 year peak load conditions would not be adequately mitigated by the maximum amount of Los Angeles Basin preferred resources and storage assumed to be available per planning assumptions. CPUC Staff request that the CAISO report what level of preferred resources (e.g., assuming the same mix) would be required to mitigate this problem.

For the Big Creek Corridor, transmission overloads were modeled by both CAISO and SCE to occur under 1-in-5 summer peak loads, for a sensitivity study that limited Big Creek hydro generation to reflect observed low production under recent extreme drought conditions. SCE's proposed solution is to install four Thyristor Controlled Series Capacitors (TCSC) with an estimated cost of \$113 million, which were modeled to reduce by 324 MW the amount of required local (including Big Creek) generation. Local distributed energy resources (DER) would have approximately full (MW-per-MW) effectiveness and could delay the need for larger transmission investments if combined with TCSC. SCE's studies were stated to assume 250 MW of Big Creek hydro generation, and CPUC Staff request information on how much the TCSC investment and/or other needed mitigation measures would be reduced

1. if assuming 343 MW of Big Creek hydro generation, representing the lowest (by far) average level observed over summer peak hours period in recent years;<sup>4</sup> and
2. if assuming whatever higher level (above 343 MW) of Big Creek hydro generation might reasonably (under drought conditions) be achievable for the *very highest load*

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<sup>4</sup> This refers to the different years of annual Big Creek hydroelectric generation as shown in SCE's September 22 presentation.

hours for a 1-in-5 year stress case, i.e., not on an average basis for all summer peak hours.

**8. *Cost Estimates and Other Information Including Analytic Basis for In-Service Dates and Preferred Resource Assumptions Should be Provided for SDG&E-Proposed Reliability Solutions.***

Reliable cost estimates should be provided for SDG&E-proposed solutions (transmission investments) particularly if being considered by the CAISO for inclusion in the Transmission Plan. The analytic basis of stated “Need” or “In-Service” dates for these solutions should be identified. Differences between the SDG&E and CAISO reliability study cases in terms of loads, resources, and the scenarios and contingencies studied should be identified, since there appear to be differences in assessment of needs.

SDG&E and/or CAISO should provide a reliable cost estimate for the SDG&E-proposed Valley-Inland transmission project, and CPUC Staff request clarification if a previous estimate of \$1.6 to \$4 billion<sup>5</sup> reflecting designs ranging from overhead alternating current (AC) to full underground direct current (DC) is still applicable. Given that a presentation prepared for the CAISO’s Imperial County Transmission Consultation based on a report prepared for the California Energy Commission identifies this project in an overhead AC configuration as among the most challenging to site among various LA Basin-San Diego bulk transmission expansion possibilities,<sup>6</sup> is the lower cost AC overhead alternative considered to be realistic in terms of siting and permitting? CPUC Staff also call attention to the fact that the CAISO via the TPP and elsewhere, and the CPUC via the LTPP proceeding and elsewhere, continue to assess wires vs. conventional resources vs. preferred resources (and storage) local reliability options, considering time horizons over which decisions may be needed.

CPUC Staff understand that the CAISO will analyze various mitigation options for reliability standard violations identified in preliminary reliability assessment results for the

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<sup>5</sup> This estimate is included on page 15 (“Group II: New Transmission Lines Strengthening LA Basin and San Diego Connection”) of the following presentation for an “Imperial County Transmission Consultation” stakeholder meeting in July of 2014: [http://www.caiso.com/Documents/Presentation-ImperialCountyTransmissionConsulatation\\_Jul14\\_2014.pdf](http://www.caiso.com/Documents/Presentation-ImperialCountyTransmissionConsulatation_Jul14_2014.pdf)

<sup>6</sup> See page 40 of the presentation referenced in footnote 5. Also, a range of alternatives is discussed in Section 2.6.4.2 of the 2014-2015 CAISO Transmission Plan.

SDG&E area. We request clarification if that analysis will include the minimum CPUC-authorized (under Tracks 1 and 4) 200 MW of preferred and storage resources in this area that was reflected in study assumptions for the 2014-2015 TPP,<sup>7</sup> since Table 4-6 of the 2015-16 TPP Study Plan indicates only 107 MW of such resources. It is also unclear and should be disclosed what amounts and types of preferred resources were included in SDG&E's studies upon which proposed reliability transmission projects were based.

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<sup>7</sup> The assumptions are summarized in Tables 2.6-2 and 3.2-3 of the 2014-2015 CAISO Transmission Plan.