COMMENTS OF THE STAFF OF THE CALIFORNIA PUBLIC UTILITIES COMMISSION

ON THE DRAFT 2015-2016 TRANSMISSION PLAN FOLLOWING THE FEBRUARY 18, 2016 STAKEHOLDER MEETING

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March 7, 2016

Introduction

The Staff of the California Public Utilities Commission ("CPUC Staff") appreciates this opportunity to provide comments on the Draft 2015-2016 Transmission Plan ("Draft Plan") posted February 1 and discussed at the February 18 stakeholder meeting. Our comments address the following topics.

- The CAISO should clarify key relationships and differences among varied reliability and local capacity requirements (LCR) study cases, as well as how these different cases jointly inform infrastructure recommendations.
- Where selection of substantial infrastructure investments is followed in short order by the need for follow-on investments or measures to maintain the projected benefits, causes of and ways to manage this situation should be examined.
- CPUC Staff commends the CAISO for assessing and canceling previously approved transmission projects no longer needed under declining load forecasts, and emphasizes the need to continue such review especially in light of continuing decline in load forecasts plus accelerated energy efficiency goals mandated by Senate Bill 350.
- The need for SDG&E area reliability projects should be assessed and where applicable reassessed considering declining load forecasts (consistent with the preceding topic) and the rationale for two particular projects should be clarified or revisited as described in CPUC Staff comments.
- Unrealistically early in-service dates for projects should be avoided, and the CAISO and project developers should identify such risks as early as possible, seeking advice from CPUC and others where necessary.
- The CAISO should further explain and discuss causes for and alternative solutions to overvoltage issues responsible for most of the proposed reliability-driven transmission investment in the draft plan.
- CPUC staff request that the CAISO clarify if the assumed delayed in-service date for the Vaca-Dixon/Lakeville 230 kV reconductoring has resulted in modeled reliability violations and in what year, and if Pittsburgh units scheduled to retire were modeled online to mitigate this or other reliability issues.

- CPUC staff appreciate the CAISO's initial informational 50% RPS study and its lessons for future studies, and identify selected areas where we look forward to continuing insights.
- CPUC staff look forward to further assessments of frequency response issues particularly under high renewables futures, and request additional clarity regarding renewable resource assumptions, interaction with flexible reserves requirements, under-provision by frequency response-capable resources, and frequency response from additional kinds of sources in the next 10-15 years.
- The bulk storage study adds useful data points to diverse studies of storage and other renewable integration measures, and requires fuller explanation of storage valuation based on market revenues as well as fuller examination of the impacts of alternative "net export" constraints on the value of and need for additional bulk storage.

1. The CAISO Should Clarify Key Relationships and Differences Among Varied Reliability and Local Capacity Requirements (LCR) Study Cases, as Well as How These Different Cases <u>Jointly</u> Inform Infrastructure Recommendations.

CPUC Staff appreciate and find very useful the CAISO's analysis and discussion of multiple interacting reliability risk drivers, uncertainties and solutions, particularly for the Los Angeles Basin and San Diego. In its assessment and recommendations the CAISO relies on numerous area-specific reliability studies representing multiple informative reliability impact snapshots (summer peak, off-peak with high renewables output, etc.) and also on Local Capacity Requirements (LCR) studies that provide somewhat different area-specific perspectives. These various study cases have important similarities but also important differences that can be consequential regarding whether and what kinds of reliability risks are identified.

CPUC Staff request that in its Transmission Plan and related activities and reports the CAISO place increased emphasis on clarifying and making more explicit

a. the relationships among the different reliability and LCR study cases and their load and resource (and any other key) assumptions,
b. the relationships between key assumptions in particular cases versus the reliability risks identified in those study cases that are attributable to those particular assumptions, and
c. how the entire set of diverse cases and study results is combined and interpreted jointly, to produce the CAISO's recommendations, especially recommendations regarding commitments to infrastructure investments.

For example, Tables 2.3-1 and 2.3-2 of the Draft Plan summarize the different system reliability impact snapshots studied for different parts of the grid, and Tables 4-7 through 4-10 of the Final Study Plan for the 2015-2016 Transmission Planning Process describes dispatch levels assumed for different kinds of renewable resources in different areas under different reliability study conditions. Which specific dispatch (and load) assumptions were used for all kinds of resources in which ***specific*** reliability study cases needs to be clarified and made explicit. This clarification needs also to be extended to include the contrasting load and dispatch assumptions for LCR studies, for the same grid areas.

Beyond this, those reliability and LCR study case-specific identified reliability risks (e.g., standards violations) that alone or in combination with results of other study cases drive identification of needs - - should be explicitly attributed (linked) to the ***specific underlying case-specific load or resource assumptions*** responsible for producing the identified risks. Furthermore, the CAISO should explain and help stakeholders understand how the results of these different, contrasting cases are balanced and interpreted ***jointly (in the aggregate)*** to produce ultimate recommendations including but not limited to infrastructure needs. For example, specific updated wind and solar resource output assumptions used for LCR studies apparently contributed to modeled violations in the West Los Angeles (LA) Basin LCR studies, contrasting somewhat with results of reliability studies for this area.

The kinds of clarification requested above should help ***inform*** consideration and discussion of study methodology questions and refinements that may need to be considered and discussed due in part to growing importance of variable renewable generation as well as various kinds of preferred and behind-the-meter resources having nonconventional operating patterns and constraints. For example:

i. How is identification of which system scenarios are most useful for reliability and LCR studies influenced by growing penetration of variable generation and preferred resources, especially within load centers?

ii. Based on what criteria would the “peak” hour for such studies be moved later in the day under increasing PV penetration?

iii. If NQC values are assigned for front-of-the-meter resources in LCR studies, should something analogous be done for all behind-the-meter resources?

iv. On the other hand, should the use of NQC in LCR studies be reassessed and how?

v. Which changes in the above modeling conventions are likely to significantly impact results, including identification of needs?

The above discussion and CPUC Staff requests under this topic 1 are also relevant to the CPUC's role in permitting transmission projects and overseeing CEQA analyses. In these CPUC-administered processes, a project must have one or more clearly defined objectives, and if significant environmental impacts are found, alternative ways to meet those objectives must be adequately analyzed.

The objective of reliability-driven transmission projects is presumably to maintain electrical service to specified load areas while avoiding excessive risk of transmission overloads or other reliability violations, under prudently selected stress scenarios, such as study cases selected for reliability and LCR studies. Thus, perhaps for transmission planning and also for CEQA analysis the objective of reliability-driven transmission projects is basically to perform acceptably under specific studies cases, or perhaps a more appropriate characterization of the objective is to perform acceptably across a variety of study cases when interpreted (and appropriately emphasized or discounted) ***jointly***.

Thus, how the project objective is defined in terms of performance under one or many scenarios, and if/how multiple scenario-specific performances are combined, weighted or discounted - - has bearing on how the project objective should be defined for CEQA purposes and therefore on what appropriate alternatives may need to be studied. Clarification of interrelationships among, and overall interpretation of, multiple varied reliability and LCR study cases as requested by CPUC Staff above, should provide helpful guidance in making these decisions. Additionally, some consequential reliability and LCR study assumptions may change over time (as discussed in topic 2 below), such as between time of project approval by the CAISO and some later date such as either a later CAISO Transmission Plan or permitting and CEQA analysis overseen by the CPUC. This creates additional planning challenges for all, and managing those challenges is facilitated by better understanding of the issues raised above, in CPUC Staff's comment topic 1.

2. *Where Selection of Substantial Infrastructure Investments is Followed in Short Order by the Need for Follow-On Investments or Measures to Maintain the Projected Benefits, Causes of and Ways to Manage This Situation Should be Examined.*

Transmission planning especially in complex circumstances can experience the "whack-a-mole" effect, where adding infrastructure at one location to address a problem can be followed in short order by problems that consequently pop up (like moles) elsewhere. The Los Angeles (LA) Basin and San Diego electrical areas may be prone to this condition, which affects planning for both transmission and resources. The CAISO should help the CPUC and other stakeholders better understand the drivers, implications and solutions for such situations.

Most recently, circumstances surrounding the Mesa loop-in project and its role regarding local reliability and capacity needs illustrate this kind of situation. This project approved in the 2013-2014 Transmission Plan would loop a new 500 kV line[1] as well as two additional 230 kV lines into a Mesa substation that would be entirely rebuilt, thus bringing high voltage/high capacity import transmission deeper (electrically) into the LA Basin load center. As approved, the Mesa loop-in project had an in-service date of December 31, 2020, an estimated cost of $464 million to $614 million, and an estimated electrical benefit of reducing West LA Basin local capacity needs by 300 to 640 MW.[2] Page 128 of the 2013-2014 Transmission Plan states that "*This analysis supports the view that the Mesa Loop-in project along with the additional local capacity additions effectively alleviates the loading concerns identified in the Metro area because of the retirement of SONGS and OTC generation."* The Mesa loop-in project is currently before the CPUC for a permit to construct (proceeding A.15-03-003).

Subsequently in the 2014-2015 Transmission Plan, 230 kV upgrades downstream from the Mesa substation were approved. Now, Section 2.6 (Southern California Bulk Transmission System Assessment) of the draft 2015-2016 Transmission Plan describes a potential need for additional local capacity or transmission upgrades "*due to contingency loading concerns on the south of Mesa 230 kV lines*."[3] This is stated as being identified in the long-term local capacity

[1] The line is associated with the Tehachapi renewable transmission project.

[2] The LCR benefit is shown in Table 2.6-5 of the 2013-1014 Transmission Plan.

[3] CAISO draft 2015-2016 Transmission Plan, page 104.

assessment, and Appendix D of the Draft Plan identifies a driver of this overloading as being a 2000 MW increase in modeled renewable generation output north of Mesa attributed to increased NQC levels for the given amount of capacity.[4] Possible operational, local resource and transmission investment solutions are identified,[5] indicating some preference for the latter. Additionally, sensitivity LCR studies showed that the presence (vs. absence) of the Mesa loop-in project in the mid-term (2021) decreased estimated West LA Basin local capacity requirements by only about 110 MW.[6]

CPUC Staff and other stakeholders would benefit from a fuller assessment of causes and solutions for apparent "whack-a-mole" situations like this. Such understanding is important for various CPUC responsibilities. For example:

a. Were follow-on effects investments or measures apparent, and would they have deserved inclusion in the original assessment?

b. Were follow-on investments or measures apparent only under ***changed information and forecasts*** regarding real-world conditions (loads, resources, transmission), and to what extent would it be appropriate to proactively examine such alternative conditions (e.g., sensitivity scenarios assuming higher flows into a substation)?

c. To what extent does identification of follow-on investments or measures result from contrasting and/or updated modeling approaches (e.g., reliability versus LCR studies, new NQC values)? Would this indicate a need to better harmonize different analytic methodologies and their assumptions, or to refine and make more transparent the process for jointly interpreting the results of multiple study cases, to inform decisions?

[4] Draft 2015-2016 Transmission Plan, Appendix D, pages 1 and 28

[5] Ibid, page 105, with additional detail in Appendix D

[6] CAISO draft 2015-2016 Transmission Plan, comparing Tables 3.1-15 and 3.1-24.

3. CPUC Staff Commends the CAISO for Assessing and Canceling Previously Approved Transmission Projects No Longer Needed Under Declining Load Forecasts, and Emphasizes the Need to Continue Such Review Especially in Light of Continuing Decline in Load Forecasts Plus Accelerated Energy Efficiency Goals Mandated by Senate Bill 350.

CPUC Staff appreciate the CAISO's productive effort to analyze the current need for a number of previously approved PG&E-area transmission projects, resulting in a determination that 13 of these projects are no longer justified and should be canceled, even if assuming zero additional energy efficiency or "AAEE". Such assessments should be made periodically, *for all load areas*, especially in a time of great energy system change. We reiterate that the CAISO should list the major reasons for each cancellation. The CAISO in discussion at the February 18 stakeholder meeting indicated that lower load forecasts played a major role. We point out that load forecasts are continuing to decline.[7]

This prudent reassessment approach also has some relevance for *initial* approval of projects in each planning cycle. Absent compelling reasons, projects should not be approved earlier than needed to provide prudent lead times such as for permitting and construction. Even then, long lead time projects should be reevaluated based on updated information as was done in the present planning cycle. Lastly, implications of declining load forecasts are heightened by anticipated growth of distributed energy resources as well as accelerated energy efficiency measures to meet Senate Bill 350 goals.

4. The Need for SDG&E Area Reliability Projects Should be Assessed and Where Applicable Reassessed Considering Declining Load Forecasts (Consistent with Topic 3 Above) and the Rationale for Two Particular Projects Should be Clarified or Revisited as Described Below.

Recent CAISO transmission Plans have included considerable reliability-driven transmission additions in the San Diego area, relative to that area's share of overall CAISO area load. The need for such projects should be assessed and where appropriate reassessed based on latest planning information including the recent and anticipated trend in declining load forecasts. This is discussed at more length under topic 3 above.

[7] The load forecasts in the California Energy Commission's 2015 Integrated Energy Policy Report (IEPR) are lower than the energy forecasts that informed 2015 planning activity, including the CAISO's Transmission Planning Process giving rise to the 2015-2016 Transmission Plan.

Based on a power flow analysis using a 2018 summer peak case provided by SDG&E, a review was conducted for the CPUC of certain, but not all, projects that have been identified for this area. In light of this review, the CAISO is requested to clarify or revisit the rationale for two of the SDG&E area projects included in the Draft Plan.

The first project involves reconductoring of the Silvergate-Urban 69 kV line. Review conducted for the CPUC indicates that adding a second Silvergate-Urban line and installing a small series reactor on the existing Silvergate-Urban 69 kV line would solve additional problems in the Silvergate/Urban/Station B area that are not otherwise mitigated in the Draft Plan. The first of the two additional problems involves overlapping outages of the Station B – Urban line and the Silvergate – Urban line causing all of the Urban load to be shed. The second problem involves overlapping outages of either of the two Silvergate – Station B lines and the Silvergate – Urban line causing the remaining Silvergate – Station B line to have a significant overload.

The CPUC requests that the CAISO describe why, as stated on page 141 of the Draft Plan, it is "not feasible" to add a second Urban – Silvergate 69 kV line. If such a line is feasible, it would solve the problem stated in the Draft Plan, as well as both of the additional problems described in the above paragraph. A comment box on page 143 of the Draft Plan indicates that the CAISO is investigating this matter further, with findings to be discussed at the February 18 stakeholder meeting. However, it does not appear that such findings have been released to date.

Another project in the Draft Plan consists of a Mesa Heights loop-in plus reconductoring, to mitigate overloads under a P6 contingency. Part of the analysis conducted for the CPUC indicates that the reconductoring alone without loop-in would provide sufficient mitigation. The CAISO should explain why the loop-in is justified and if reconductoring alone is insufficient, what would be the cost savings from using a tap rather than a loop-in.

5. Unrealistically Early In-Service Dates for Projects Should be Avoided, and the CAISO and Project Developers Should Identify Such Risks as Early as Possible, Seeking Advice from CPUC and Others Where Necessary.

Contrasting with the reassessment of previously approved projects noted in items 3 and 4 above, the CAISO needs to review project in-service dates based on up-to-date information on permitting and planning lead times. Especially where substantial permitting and siting requirements are foreseeable, the CAISO should make every effort to establish realistic in-service dates. In cases where permitting and siting requirements evolve in such a way as to

impact in-service dates, the CAISO should work with project developers to reassess expected online dates as part of the transmission planning cycle.

A recent example is the reactive controls project competitively awarded to NextEra Energy Transmission (NEET) West, which is seeking to build a static VAR compensator (SVC) station near the existing Suncrest substation. The project is currently in permitting review at the CPUC, but meeting the specified in-service date of June 2017 may be infeasible given a realistic permitting timeline. Other large projects to watch for online date feasibility include Sycamore – Penasquitos as well as the Martin substation project. The CAISO should have a process to monitor these dates in light of emerging information.

For planning efficiency and for system reliability it is important to avoid planned in-service dates that are unrealistic under foreseeable timelines. To help avoid such situations, CPUC Staff can provide informal advice regarding reasonable permitting timelines. However, it is essential that the CAISO and transmission developers assess the realism of planned in-service dates taking into account potential for significant siting/permitting requirements, (a) to establish realistic in-service dates, and/or (b) to consult on those projects where timeline feasibility may be questionable. CPUC Staff may sometimes be able to identify timeline issues by monitoring public planning information from the CAISO. In general, however, timeline issues are identified in the most timely and efficient manner if called to the CPUC's attention early in the process.

6. The CAISO Should Further Explain and Discuss Causes for and Alternative Solutions to Overvoltage Issues Responsible for Most of the Proposed Reliability-Driven Transmission Investment in the Draft Plan.

Most of the estimated investment cost for reliability-driven transmission upgrades in the Draft Plan comes from reactive controls at a number of PG&E substations, to address overvoltage issues. Those issues have been described as increasing over time in both modeling results and in real-world monitoring. CAISO staff indicated that an important driver of this development is the changing generation mix and particularly the growth of renewable generation.

To aid proactive and cost-effective planning and investment, the CAISO should identify and discuss with stakeholders the specific types and locations of resource developments most responsible for this growing overvoltage problem, including prospects for exacerbation as we pursue 50% renewable energy penetration. Is periodic as-needed investment in reactive controls

the best long-term solution, or should we plan other solutions? For example, could future overvoltage issues be addressed with appropriate reactive controls on asynchronous resources as being pursued by the CAISO and also in the CPUC's Rule 21 distribution-level interconnection reforms, or might overvoltage problems be significantly reduced by pursuing appropriate types and locations of renewable and preferred resources?

7. CPUC Staff Request that the CAISO Clarify if the Assumed Delayed In-Service Date for the Vaca-Dixon/Lakeville 230 kV Reconductoring Has Resulted in Modeled Reliability Violations and in What Year, and if Pittsburgh Units Scheduled to Retire Were Modeled Online to Mitigate This or Other Reliability Issues.

Permitting for the Vaca-Dixon/Lakeville reconductoring project is currently delayed and uncertain, and it appears that reliability studies for the 2015-2016 Transmission Plan have pushed the assumed in-service date back to 2019. CPUC Staff request that the CAISO explain if this later assumed in-service date has produced modeled reliability violations, and whether continued operation of Pittsburgh generating units otherwise assumed to retire at the end of 2017 was modeled as a mitigation for (a) such reliability violations, or for (b) any other modeled reliability violations. In addition, CPUC Staff request, especially in light of declining load forecasts since the project was approved, that the CAISO identify in which year modeled overloads first occur (if at all) that would trigger the Vaca-Dixon/Lakeville reconductoring. Finally, the CAISO should clarify if reliability modeling for 2015-2016 Transmission Plan assumed identical 450 MVA emergency ratings (under N-1 conditions) for both the Vaca-Dixon/Lakeville and Vaca-Dixon/Tulucay 230 kV lines , or whether other assumptions were used and what they were.

8. CPUC Staff Appreciate the CAISO's Initial Informational 50% RPS Study and Its Lessons for Future Studies, and Identify Selected Areas Where We Look Forward to Continuing Insights.

CPUC Staff appreciate the CAISO's initial informational study of implications and feasibility of pursuing the legislatively established 50% renewable energy goal. The CAISO examined the implications of two portfolios of energy-only renewable resource additions going-forward, where "energy only" delivery trades off reduced investment and environmental costs for transmission versus increased potential for renewable generation curtailment and possibly

more complex operational reliability measures. We look forward to adjustment of assumptions in the CPUC's RPS calculator based on this initial study, as well as refinements and insights from future studies of this type. Some areas where we look forward to further insights from future studies include

- Benefits (e.g., reduced curtailments) and needs (e.g., for reliability) for different levels of transmission upgrades, all of which should nevertheless be much less than what would be needed for full capacity deliverability.

- Clarification of how conditions expected or assumed at the distribution level impact feasibility, costs and preferences for pursing the 50% RPS goal - - considering expansion of distributed energy resources (DER) , potential for DER reactive controls and ability to curtail, storage penetration, and general DER responsiveness to broader system (not just local host) needs.

- Further insights into the important but still uncertain role of *ability to export* surplus renewable generation in affecting costs and feasibility of different high renewables futures - - including impacts on transmission needs and reliability issues such as examined via the CAISO's power flow studies.

- Further insights into the extent to which potential problems revealed in power flow studies resolve themselves via reasonable fine tuning of assumptions regarding how/where post-33% renewable additions will be deployed - - as opposed to still leaving the need for significant curtailments, operational solutions, or transmission upgrades.

9. CPUC Staff Look Forward to Further Assessments of Frequency Response Issues Particularly Under High Renewables Futures, and Request Additional Clarity Regarding Renewable Resource Assumptions, Interaction with Flexible Reserves Requirements, Under-provision by Frequency Response-Capable Resources, and Frequency Response from Additional Kinds of Sources in the Next 10-15 Years.

CPUC Staff understand that the CAISO's latest frequency response study reported in the Draft Plan indicates that the CAISO would have sufficient primary frequency response capability under a 2025 spring off-peak case even for sensitivities having higher renewables output or reduced headroom, but would not have sufficient frequency response capability under a 50% renewables case. The CAISO should clearly describe how frequency response capability requirements were modeled in economic studies for the 2015-2016 TPP, whether as commitment constraints or otherwise - - even if this approach is to be supplanted in 2016.

For future frequency response studies or for further insights into studies recently conducted, the CPUC Staff request additional information as follows.

- To provide context relative to other studies such as for a 50% RPS or CAISO expansion, the CAISO should identify the overall renewables composition in the 2025 study cases, the 50% renewables case, and in studies going forward - - both within and outside of California, particularly relative to recent RPS portfolios being studied in California and included in the latest TEPPC Common Case.

- For the current studies and going forward, the CAISO should provide greater quantitative insight into how commitment of resources to meet frequency response needs interacts with flexible reserves commitment to manage load/wind/solar variations and uncertainties. For example, are the flexible reserves (for load/wind/solar variability) versus frequency response needs fully additive, overlapping, or somewhere in-between?

- In describing the frequency response study the CAISO notes that modeled frequency response appears to exceed what has been obtained in practice. Further, the CAISO's frequency response initiative has considered possible need for measures to increase or motivate frequency response performance from resources currently capable of providing frequency response. This all suggests that some resources technically able to provide frequency response may not be reliably providing it. The CAISO should clarify if this is a reason for modeled frequency response exceeding observed performance, and how both modeling and market reforms will address this situation.

- The CAISO's recent study indicated inadequate frequency response under a 50% RPS scenario, and the CAISO should examine and discuss with stakeholders (a) the potential for additional sources of primary frequency response not modeled in recent studies especially looking out 10-15 years, and (b) how the CAISO plans to model and assess such additional sources of frequency response. Additional sources might include, for example, thermal and hydro generation not presently assumed or modeled to provide primary frequency response, storage, demand response, other preferred resources, and frequency response obligation contracts with other BAs such as from Northwest hydro systems.

10. The Bulk Storage Study Adds Useful Data Points to Diverse Studies Of Storage and Other Renewable Integration Measures, and Requires Fuller Explanation of Storage Valuation Based on Market Revenues as Well as Fuller Examination of the Impacts of Alternative "Net Export" Constraints on the Value of and Need for Additional Bulk Storage.

The CAISO's bulk (pumped) storage study adds to accumulating information and data points regarding the effectiveness of storage in managing the physical and economic challenges

of integrating high levels of variable renewable generation in pursuit of energy policy goals. CPUC Staff request that as the CAISO develops final reporting for this study and plans for any future extensions, the following information be provided.

First, page 18 of February 18 presentation slides on the bulk storage study depicts the value versus revenue requirements (for capital recovery) of a hypothetical pumped storage project, showing "net revenue" (a measure of value) of $194 million and $170 million with solar-heavy and wind-heavy resource additions respectively, calibrated to achieve a 40% RPS. These net revenues are stated to be based on energy, reserves and load following revenues, minus costs of energy and operation. Based on other tables in the presentation, these net revenues substantially exceed cost-based bulk storage benefits if calculated as the reported reduction in WECC production costs plus the reported reduction in wind/solar overbuild costs to offset curtailments. The CAISO should provide more complete information on the numerical values and computational rationale for the *different components of the revenues-based valuation of bulk storage*, e.g., the energy, reserves, and load-following revenues versus offsetting energy and operating costs.

Second, the CAISO should examine and report the value of added bulk storage under a range of assumptions regarding the magnitude of *net exports* that could be achieved to facilitate integration of the added in-state renewable generation. Ability to export surplus energy has in numerous studies been shown to be a key driver of the cost of developing and integrating high levels of variable (especially solar) renewable resources in California, thus affecting the attractiveness and feasibility of different kinds of portfolios of renewable resources.

Variations in the presently uncertain ability to export energy under unprecedented physical and market conditions in the future are typically examined by applying different constraints or caps on the amount of hourly net exports allowed in the modeling. For example, the CAISO's SB350-mandated BA expansion study is examining 2000 MW, 5000 MW and 8000 MW (hourly) net export limits under a "BAU" case, and the CAISO's special 50% RPS informational study reported within the Draft Plan is examining net export limits of zero, 2000 MW, 8000 MW and unlimited (the latter presumably enforcing only physical constraints). The effects of a *comparable (ideally, identical*) range of net exports should be examined and reported

for the bulk storage study. Beyond providing more robust information on the potential value of bulk storage additions, this would make results and insights more useful by placing them within the context of a broader range of studies that include consideration of different net export levels.

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