COMMENTS OF THE STAFF OF THE CALIFORNIA PUBLIC UTILITIES COMMISSION REGARDING THE 2018-2019 TRANSMISSION PLANNING PROCESS DRAFT STUDY PLAN FOLLOWING THE FEBRUARY 28, 2018 STAKEHOLDER MEETING

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March 14, 2018

The Staff of the California Public Utilities Commission ("CPUC Staff") appreciates this opportunity to provide comments on the 2018-2019 Transmission Planning Process Draft Study Plan discussed at the California Independent System Operator Corporation's (CAISO) February 28, 2018 stakeholder meeting. Our comments address the following topics:

1. CPUC Staff appreciates the CAISO's continued effort to reevaluate previously approved projects and cancel or down-scope projects when appropriate. CPUC staff requests that the CAISO monitor project cost increases to the extent possible. CPUC staff suggest two potential thresholds that can be implemented to trigger project cost reevaluation.

2. The CAISO is undertaking a review of the existing local capacity areas in the 2018-2019 planning cycle. CPUC Staff requests that stakeholders be provided the opportunity to participate in the determination of which areas are prioritized.

3. CPUC Staff would like to highlight that the CAISO's approach of only counting capacity from demand response programs with a response time of 30 minutes or less, as described in the Draft 18-19 Study Plan, does not correspond with current CPUC resource adequacy policy.

4. CPUC Staff commends the CAISO on identifying innovative solutions to transmission needs and local capacity requirements in the 2017-2018 TPP. CPUC Staff strives to better understand what new technologies the CAISO plans to investigate or consider in the 2018-2019 Transmission Planning Process.

5. CPUC Staff looks forward to collaborating with the CAISO on the sensitivity case requested by CEC Chair Weisenmiller and CPUC President Picker per their letter regarding increased capabilities for transfer of low carbon electricity between the Pacific Northwest and California.

1. ***CPUC Staff appreciates the CAISO's continued effort to reevaluate previously approved projects and cancel or down-scope projects when appropriate. CPUC staff requests that the CAISO monitor project cost increases to the extent possible. CPUC staff suggest two potential thresholds that can be implemented to trigger project cost reevaluation.***

CPUC Staff appreciates the CAISO's continued effort to reevaluate previously-approved projects and cancel or down-scope projects when appropriate. The 2017-2018 Draft TPP demonstrated that transmission project estimates can increase significantly overtime, often doubling in cost before construction.

CPUC Staff support a request a stakeholder made during the February 28, 2018 stakeholder meeting for the CAISO to monitor project cost increases to the extent possible. It may be prudent for CAISO to put in place a threshold that triggers reevaluation. Following are two options for CAISO's consideration.

One option is for the CAISO to reevaluate a transmission project's costs if the project has not yet completed the CEQA process, yet the cost estimate of that project has increased by $50 million or by 50 percent since its initial estimated cost at approval. At least ten projects were identified in the 2017-18 TPP cycle fitting the above threshold[1], and often significantly surpassing it. Reevaluation of these projects and revision of each projects scope saved ratepayers an estimated $1.7 billion.

A second option is for the CAISO to reevaluate a transmission project's costs if the project has not yet completed the CEQA process and the cost estimate of the project has increased to at least 10 percent above the cost of previously identified alternatives that met reliability requirements.

2. ***The CAISO is undertaking a review of the existing local capacity areas in the 2018-2019 planning cycle. CPUC Staff requests that stakeholders be provided the opportunity to participate in the determination of which areas are prioritized.***

[1] Referring to projects found in the "Previously-Approved Projects with Revised Scope" PowerPoint presentation presented at the February 8, 2018, stakeholder meeting.

As indicated on slide 44 of the presentation presented at the February 28, 2018 stakeholder meeting, the ISO is undertaking a review of the existing local capacity areas in the 2018-2019 planning cycle with the objective of identifying potential transmission upgrades that would economically lower gas fired generation capacity requirements. CAISO will assess only half of the areas this cycle. CPUC Staff requests that stakeholders be involved in the determination of which areas are to be reviewed this TPP cycle.

3. ***CPUC Staff would like to highlight that the CAISO's approach of only counting capacity from demand response programs with a response time of 30 minutes or less, as described in the Draft 18-19 Study Plan, does not correspond with current CPUC resource adequacy policy.***

According to the Draft 2018-2019 Study Plan only capacity from demand response (DR) programs that can be relied upon to mitigate "first contingencies" (30 minutes or less response time), as described in the 2012 LTPP Track 4 planning assumptions, are counted. This is not in alignment with CPUC resource adequacy policy.

The CAISO can model a response time for local DR that is less than 30 minutes. However, CPUC staff would like to clarify that the standard of a minimum response time of 30 minutes does not reflect CPUC resource adequacy (RA) policy[2] which does not place a response time requirement on local RA resource. The CPUC Resource Adequacy proceeding will ultimately determine what types of DR programs can count for local RA and meet local capacity needs.

4. ***CPUC Staff commends the CAISO on identifying innovative solutions to transmission needs and local capacity requirements in the 2017-2018 TPP. CPUC Staff strives to better understand what new technologies the CAISO plans to investigate or consider in the 2018-2019 Transmission Planning Process.***

CPUC Staff is frequently receiving new information on technologies, such as superconductor AC power cables, which may potentially be utilized to meet reliability needs or local capacity requirements at a lower cost than other alternatives. Has the CAISO investigated this

[2] Refer to Section 7.1 of D16-04-045, "Track 1 Decision Adopting Local And Flexible Capacity Obligations For 2017, And Further Refining The Resource Adequacy Program." Date of Issuance 6/27/2016.

technology or other newer technologies? If so, is there one centralized location where stakeholders can access information about the innovative technologies that the CAISO is considering?

Additionally, at the November 16, 2017 stakeholder meeting during which the 2017-2018 TPP reliability assessment results were presented, the CAISO introduced a proposal to add Phasor Measurement Units (PMUs) to all CAISO interties. CPUC Staff included in its comments a request for the CAISO to provide additional information on how installation costs were estimated, as well as information on the estimated benefits of the PMU installations. The CAISO did not provide any additional information during the February 8, 2018 stakeholder meeting during which the 2017-2018 Draft TPP was presented. Instead CAISO stated that more information would be provided during the 2018-2019 TPP cycle. CPUC Staff did not see any mention of PMUs in the 2018-2019 TPP Study Plan. When will the CAISO provide additional information regarding its original proposal to add PMUs to all CAISO interties?

5. ***CPUC Staff looks forward to collaborating with the CAISO on the sensitivity case requested by CEC Chair Weisenmiller and CPUC President Picker per their letter regarding increased capabilities for transfer of low carbon electricity between the Pacific Northwest and California.***

CEC Chair, Robert Weisenmiller, and CPUC President, Michael Picker, sent a letter to the CAISO regarding a "Request for Sensitivity Case in the California Independent System Operator 2018-2019 Transmission Planning Process – Increased Capabilities for Transfers of Low Carbon Electricity between the Pacific Northwest and California." Specifically, this letter requested a specific sensitivity case be included in the 2018- 2019 California ISO transmission planning process (TPP). For additional detail, please refer to the attached letter.

CPUC Staff believes that this work will require collaboration with CPUC staff working on integrated resource planning, and staff working on resource adequacy. CPUC staff looks forward to collaborating with the CAISO on this effort.

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February 15, 2018

Mr. Steve Berberich
President and Chief Executive Officer
California Independent System Operator
P.O. Box 639014
Folsom, CA 95763

Transmitted electronically

Re: Request for Sensitivity Case in the California Independent System Operator 2018-2019 Transmission Planning Process – Increased Capabilities for Transfers of Low Carbon Electricity between the Pacific Northwest and California.

Dear Mr. Berberich:

California Governor Edmund G. Brown, Jr. has directed me, Chair Robert B. Weisenmiller, to develop a plan that would allow for the shut down of the Aliso Canyon Natural Gas Storage facility (Aliso Canyon) in ten years, which I conveyed to President Michael Picker, California Public Utilities Commission (CPUC) and cosigner of this letter, in a letter dated July 19, 2017. Implementing a plan and accomplishing the timely phase-out, while maintaining system reliability (gas and electric), will require a concerted effort on the part of the utilities, Energy Commission, CPUC, and California Independent System Operator (California ISO). The CPUC has already opened up an Order Instituting Rulemaking (OIR) looking at the medium term closure of the Aliso Canyon. In January 2018, the California Center for Science and Technology (CCST) released their legislatively directed report detailing their review of critical parameters including necessity for storage, health and environment risks and changing impacts of California climate policy.[1]

Phasing out Aliso Canyon usage and potential impacts on the gas-fired generation fleet need to be considered from the perspective of reliability of electricity supply to southern California more generally and the Los Angeles Basin in particular, as well as the role those resources play in providing adequate system capacity and flexibility overall. Study efforts have begun both under the CPUC's OIR as well as the California ISO's own study processes. However, we are seeking your support in providing focus on one area in particular: transmission.

As it was identified in the CCST study, expanded transmission capability is an important option available to us. Clearly, increasing the transfer of low-carbon supplies to and from the Northwest

1 California Council on Science and Technology, *Long-Term Viability of Underground Natural Gas Storage in California*, January 2018, http://ccst.us/projects/natural_gas_storage/publications.php. Topics reviewed were: 1) What risks do California's underground gas storage facilities pose to health, safety, environment and infrastructure? 2) Does California need underground gas storage to provide for energy reliability through 2020? 3) How will implementation of California's climate policies change the need for underground gas storage in the future?

can be one of the multiple puzzle pieces that we must examine to build a cumulative phase out strategy. Toward this end, we are requesting a specific sensitivity case be included in the 2018-2019 California ISO transmission planning process (TPP). It is time-critical that we act now to evaluate key options to increase transfer ratings of the AC and DC Intertie and assess what role these systems can play in displacing generation whose reliability is tied to Aliso Canyon. The insights gained from the sensitivity can be used to inform a broader assessment of Aliso Canyon Phase-Out options that would include, additional energy efficiency, demand response, storage, as well as overall transmission project additions if any emerge in this TPP.

A synopsis of the primary elements of the sensitivity we are requesting "Increased Capabilities for Transfers of Carbon-Free Electricity between the Pacific Northwest and California" is provided later in this letter; in short, it would include considerations such as:

- Increasing the current dynamic transfer capability limits from 400 MW to some substantially higher credible level supported by engineering analyses;
- Automating of manual controls for essential Bonneville Power Administration (BPA) facilities, primarily in support of sub-hourly scheduling of the Pacific DC Intertie;
- Potentially increasing the capacity rating of the Pacific AC and DC Interties, as well as consideration of intra-California paths that could otherwise be limiting;
- Assigning some resource adequacy (RA) value to hydro generation imports that could be shaped through unused storage capacity potentially available in the Northwest.

California & Northwest Diversity Opportunities – Traditional and Emerging
The rationale for pursuing this sensitivity is the hope it can illuminate potential benefits (and costs) of building on the long history of exchange between the Pacific Northwest and California entities. This has become even more urgent with the potential phase-out of Aliso Canyon looming large, and the apparently increasing reliance on these paths. As observed over this past summer, the loadings on the Pacific AC and DC Interties have increased in part to meet demand for some Aliso Canyon-dependent replacement generation.

Moreover, rapidly evolving markets and generation resource availability only increase the benefits as highlighted by:

- ✓ Emerging initiatives to enhance the Energy Imbalance Market and potential day-ahead market opportunities;
- ✓ Continuing and increasing goals for reducing the greenhouse gas (GHG) emission footprint;
- ✓ Increasing need for and value of flexible system with ramping generation for reliability;
- ✓ Changing dynamics of surplus renewable sales during certain hours and periods of the year;
- ✓ Pursuing use of low-cost generation resources (new construction or existing system diversity).

Goals that California and the Pacific Northwest – BPA in particular - have in common that can be served by a policy evaluation include:

- ✓ Making best use of existing infrastructure and corridors;
- ✓ Evaluating opportunities to enhance transfer capability on Pacific AC and DC Interties;

- ✓ Assessing potential for optimizing the British Columbia Hydro and BPA hydro systems to allow storage of BPA surplus non-firm energy in British Columbia facilities and thus create preferred timing and shaping of market products.

Synopsis: Primary Elements of the Increased Capabilities Sensitivity Case
Elliot Mainzer, Administrator of BPA, has indicated his support for a team effort to illuminate these potential capability increases. Details of the sensitivity case will need to be developed through staff-to-staff discussions, but four elements of primary interest now under discussion with BPA are summarized as follows:

Increasing dynamic transfer capability limits beyond 400 MW. Conduct engineering analyses to determine an upper limit on dynamic transfer capability from the BPA system. Reflect BPA Reliability Action Scheme (RAS) automation efforts and the relationships to voltage variability and stability concerns within both the BPA system and the broader Northwest grid.

Automating manual controls on key BPA infrastructure. Assume that within a five-year horizon BPA (at Celilo) and operators at Sylmar deploy necessary upgrades to the automatic generation control and Energy Management Systems (EMS) operating at the converter stations to facilitate intra-hour scheduling on the Pacific DC Intertie and perform sensitivity analyses to assess the impacts to Northwest hydro energy transfer capability from a reliability and ramping perspective to support the goal of closing Aliso Canyon.

Increasing rated capacity of AC Intertie and Pacific DC Intertie. Explore the costs and benefits of potential increases to AC and DC intertie capacity with the Pacific Northwest, considering a range of options as well as assessing downstream impacts to transmission within California.

Assigning some RA value to firm zero-carbon imports or transfers. Develop a bounding case that assumes maximal utilization of existing infrastructure investments supporting Energy Imbalance Market operations of participating entities in the Northwest, as well as the integration of synchro-phasor data into control room operations. This case will inform further study and explore the maximum annual expected Northwest hydro import capability of the California ISO grid to estimate an upper bound on avoided GHG emissions assuming that RA/RPS counting criteria are not limiting.

These elements are designed in part to support the California ISO pursuit of 15 minute scheduling with BPA, and to affirm that although seasonal swaps can be an accounting hurdle, they could ultimately reduce coal in Northwest in the winter, reduce California solar curtailment during the day, and help with peak during the spring and winter when there is excess hydroelectricity from the Northwest.

Concluding Thoughts
Elliot Mainzer has indicated his support for this effort to illuminate these potential capability increases. Toward this end, he has offered his staff's assistance to provide inputs that could be a useful complement to California activities under the TPP.

There clearly is appreciable technical team talent across the Energy Commission, the CPUC, BPA, and California ISO. In close cooperation with the transmission system owners, we should be well positioned to ensure thoughtful development of the sensitivity parameters. The Energy

Commission urges that our staffs continue delineating the concept and underlying assumptions in a timely way for this sensitivity to be included in, and implemented through, the Unified Planning and Assumptions Study Plan. We have asked Al Alvarado, (916) 654-4749, al.alvarado@energy.ca.gov, to lead this effort for the Energy Commission staff. We have had initial productive discussions with your staff.

The sensitivity is directly responsive to California's statutory directives for carbon reduction and is consistent with the Energy Commission's *2017 Integrated Energy Policy Report* (*2017 IEPR*)[i] and the CPUC's Reliability Base Case submittal. We are ready to continue this engagement to reach consensus in a timeframe consistent with your overall TPP schedule.

Sincerely,

Michael Picker
President
California Public Utilities Commission

Robert B. Weisenmiller
Chair
California Energy Commission

i In the *2017 IEPR* scheduled for adoption in February, the Energy Commission has emphasized the importance of regional coordination, efficient use of the existing grid and phasing out of the Aliso Canyon natural gas storage facility*. 2017 Integrated Energy Policy Report.* California Energy Commission. Publication Number: CEC-100-2017-001-CMF.

Regional Coordination (Chapter 3): "California has targeted increased regional coordination as one of its strategies for achieving the state's renewable energy and GHG reduction goals. The benefits of increased regional coordination, to both California's utility customers and those of the entire Western Interconnection, include more efficient use and integration of renewable energy (including hydro in the Pacific Northwest), reduced carbon emissions, more efficient use of the transmission grid, reduced costs, and enhanced reliability."

Efficient Use of Existing Transmission Grid (Chapter 5): "California's renewable energy and GHG reduction goals have driven development of significant amounts of utility-scale renewables in the last decade. Unlike most conventional generation, utility-scale renewable energy projects are often far from load centers and, without transmission upgrades, may trigger congestion on the transmission grid."

"Energy Reliability" Executive Summary: "California must also consider the long-term role of natural gas as California continues ratcheting down its greenhouse gas emissions. In a letter from Energy Commission Chair Robert B. Weisenmiller to CPUC President Michael Picker dated July 19, 2017, the Chair wrote, "With the state's climate target in mind, Governor Brown has asked me to plan for the permanent closure of the Aliso Canyon natural gas storage facility, and I urge the CPUC to do the same."

"Zero-Greenhouse Gas Emission Solutions" Executive Summary: "Expanding the use and integration of distributed energy resources is a high priority for California to provide customers low-greenhouse gas opportunities, especially in the Southern California areas affected by the closure of the San Onofre Nuclear Generation Station in 2012 and the massive leakage of methane at the Aliso Canyon natural gas storage facility in 2016."