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Dr. Keith Casey
Vice President, Market & Infrastructure Development
California ISO
250 Outcropping Way
Folsom, CA 95630

Subject: CAISO Interregional Transmission Project Evaluation

Dear Dr. Casey:

LS Power has reviewed CAISO's Interregional Transmission Project Evaluation and 50% RPS Out-of-State Portfolio Assessment Study Plan dated June 8, 2017 (the "Study Plan"). While the Study Plan clearly states that it is "strictly for informational purposes" and it will not directly serve as "policy direction" or for "procurement/build decisions," it is nevertheless a very important step in evaluating potential transmission scenarios given California's current and pending carbon reduction and renewable resource policies and associated portfolio requirements. In fact, the results should inform policy decisions to be considered for procurement in coming Transmission Planning Processes ("TPP"), even as early as the 2018-19 TPP. Therefore, it is important that this informational study be based on carefully considered assumptions and inputs to obtain meaningful results for agencies such as the CPUC to couple with important work such as the RETI 2.0 study.

Achieving such robust assumptions and the intended objectives requires review and input from stakeholders consistent with CAISO's normal custom for such evaluations. In that context, LS Power offers herein some important improvements to the Study Plan that will assist in achieving meaningful results for the CPUC and CAISO.

(1) Study Assumptions

- a. Transmission Assumptions – The Study Plan recognizes that PacifiCorp is planning new wind resources in Wyoming to meet its resource planning needs and the intent is to include these new resources in one of the study scenarios. However, this study scenario as presented in the Study Plan does not include the new transmission additions that PacifiCorp is planning to accommodate its new wind resources. LS Power believes it would be appropriate to include in this study scenario the corresponding Gateway segments that will be required for delivering PacifiCorp's planned Wyoming wind. At a minimum this should

include the 140 miles of new 500 kV line from Aeolus to Bridger consistent with PacifiCorp's 2017 Integrated Resource Plan ("IRP")¹.

- b. Generation Assumptions -
 - i. PacifiCorp recently announced an RFP for Wyoming Wind with a capacity of up to 1,270 MW², an increase over the 1,100 MW published in their 2017 IRP. Therefore the Study Plan should use 1,270 MW rather than 1,100 MW.
 - ii. Publically announced coal retirements should be included in the Study Plan. PacifiCorp's 2017 IRP includes a detailed schedule of coal retirements in their system³. In addition, other regional coal retirements have been announced that have been identified and summarized by WestConnect and NTTG. LS Power recommends CAISO request input from those planning regions on coal retirements, recognizing that WestConnect and NTTG's planning horizons do not yet extend to 2030, so limiting the retirements to those in their planning horizon may not be sufficient for a comprehensive and consistent study.
- (2) Firm Available Transfer Capacity (ATC) - Relying on published ATC values may result in incomplete and inaccurate conclusions, particularly in relation to planning transmission for new intermittent wind resources. Other means for assessing the adequate transmission availability for an intermittent and typically non-peak correlated resource may be necessary to ensure transmission needs are not overstated. Load flow modelling using cases representing more than just the summer peak and observing relevant paths will be helpful in determining actual flows expected and transmission availability for the study period out to 2030.
- (3) Power Flow Base Cases – CAISO should make available to stakeholders the power flow base cases it plans to use for these studies.
- (4) Comparative Assessment of ITPs:
LS Power recommends the following enhancements to the ITP comparative assessment.
- a. A Pacific AC Intertie (PACI) congestion evaluation should be performed separate from the traditional Production Cost Modelling. As shown in the last several TPP cycles, production cost modelling work performed by CAISO in the TPP does not capture any congestion on CAISO's PACI interface whereas CAISO DMM reports⁴ for last several years show significant congestion on this path. Unless this

¹ PacifiCorp 2017 IRP, Volume 1, Chapter 1, Table 1.4 - 2017 IRP Action Plan, Action Item 2a, p. 17:

https://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2017_IRP/2017_IRP_Volumel_IRP_Final.pdf

² <http://www.pacificorp.com/sup/rfps/2017-rfp.html>

³ PacifiCorp 2017 IRP, Volume 1, Chapter 8, Preferred Portfolio, pp. 237-238:

https://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2017_IRP/2017_IRP_Volumel_IRP_Final.pdf

⁴ CAISO 2016 DMM report, Section 8.2, Page 178 shows \$51mm PACI congestion:

<http://www.caiso.com/Documents/2016AnnualReportonMarketIssuesandPerformance.pdf>

congestion is correctly quantified and accounted for, the value of ITPs will not be known. In order to capture this congestion, CAISO should supplement the analysis using a CAISO-only sub-model (with inerties), similar to what is used for CAISO Day Ahead scheduling, rather than the full network WECC-wide model to more accurately quantify production cost savings. We recommend that CAISO make it a high priority to correctly quantify this congestion and not only use this for ITP evaluation but also for the Economic Studies under Regional Transmission Planning work. As noted in the 2016-17 Regional Transmission Plan⁵ CAISO concluded that “further analysis in 2017-18 planning cycle will be necessary to more fully explore the benefits of alleviating observed congestion” and that “further consideration of suggested changes to CAISO economic modelling” will be undertaken. We support this and believe that the time to undertake these enhancements, with the goal of reducing this congestion for the benefit of consumers, is now .

- b. A valuable assessment metric for ITP comparison would be to identify for each project the total capital cost investment per total megawatts of capacity available to CAISO.
 - c. The Study Plan should evaluate the potential EIM benefits generated by each of the ITPs and include those benefits in the comparative evaluation. As recently theorized in CAISO’s new Consolidated EIM Initiatives, third party transmission facilities located between EIM BAA’s may bring enhanced benefits to those EIM BAA’s including CAISO ratepayers.
- (5) Correct Modelling of ITPs and Associated Scheduling Rights
- a. SWIP North should be analyzed with 2,000 MW of transmission capacity from Midpoint to Robinson Summit (1,000 MW of which can be dedicated to CAISO) along with 1,000 MW of transmission capacity between Robinson Summit to Harry Allen which can be dedicated to CAISO at no additional cost beyond the construction of the Midpoint to Robinson segment.
 - b. Evaluation of other ITPs (other than SWIP North) must recognize the current limitation on available capacity from Robinson Summit to Harry Allen (the One Nevada Transmission Line). Current available capacity is near zero. The additional 1,000 MW of capacity is contingent on completion of SWIP North and is exclusively dedicated to SWIP North.

LS Power appreciates the opportunity to offer this feedback on this initial Study Plan, and we respectfully request a followup meeting with CAISO to further discuss these comments.

⁵ CAISO 2016-17 Board Approved Plan, Section 4.8 http://www.aiso.com/Documents/Board-Approved_2016-2017TransmissionPlan.pdf

Sincerely,

A handwritten signature in blue ink, appearing to read 'JTK' with a stylized flourish below the letters.

John T. King
Executive Vice President
LS Power Development, LLC

Cc: Neil Millar, CAISO
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