

## CAISO 2016/17 Transmission Planning Meeting: Stakeholder Comments

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LS Power appreciates the opportunity to provide comments on the CAISO 2016/17 Transmission Planning Study. Following are comments related to the Economic Studies, Reliability Studies, 50% RPS Special Study, and Bulk Energy Storage Study.

### Economic Studies:

Consistent with the comments we have made in past, CAISO's Economic Studies have been significantly under-estimating the congestion on California Oregon Intertie (COI) path, and we offer the following suggestions for CAISO staff to implement for this year's study:

- (1) COI path flows: The 2026 TEPPC common case model should be adjusted, as needed, so it reflects baseline flow patterns on the COI path that are consistent with actual flows documented and expected on the path. This includes reviewing generation capacity assumptions for BC Hydro, reviewing generation assumptions for Northern California Hydro and reviewing the impacts of Diablo going offline.
- (2) Hurdle rate assumptions: Hurdle rates for transfers across the COI path should be carefully scrutinized. It is suspected that the way hurdle rates are currently modeled results in artificial flow limits on the COI path.
  - (a) Generators that sell energy to CAISO LSEs under long term contracts via existing transmission rights should be modelled free of any hurdle rates.
  - (b) COI path should be modelled as two separate parallel paths – one that goes to CAISO LSEs, which should have very little to no hurdle rate, and a second path to non CAISO entities, such as TANC members which should have very high hurdle rates. Absent this modelling detail, COI congestion is artificially masked as the model will incorrectly predict energy flows on each of the three COI lines.
- (3) COI de-rates: The COI path very frequently gets de-rated due to maintenance work. It is our understanding that a relay maintenance and replacement program has been underway for a number of years. This causes PTOs to schedule outages of the transmission segments on the COI path and transmission segments adjacent to the COI path boundary. Every time a transmission segment is taken out of service, it causes de-rates on the COI path. COI de-rates lead to congestion in CAISO's Day Ahead and Real Time markets. We understand that this relay maintenance and replacement program will continue for the next several years and that the program has a 10-year

replacement cycle, meaning every 10 years or so relays may need to be maintained and/or replaced. This is more frequent than typical transmission outages and hence CAISO should further research this. If these COI de-rates are expected to be a normal operating practice then these should be accounted for in the Economic Planning studies. We understand that CAISO does incorporate transmission outages in economic studies, but these outages do not correctly capture the impact of COI de-rates referenced above since these assume all lines in service as the baseline scenario.

In addition, LS Power supports CAISO performing the special economic study on the 50% RPS scenario in this year's planning cycle. As discussed at the stakeholder meeting, we would recommend CAISO conduct both sensitivities for the 50% scenario, including the one with out of state renewables. We recommend that CAISO should also perform a study with the CPUC 43.3% RPS portfolio, similar to what will be done by CAISO under the Bulk Energy Storage study. This scenario should provide insights into any congestion issues for the intermediate RPS target case for 2026, and since this falls within the 10-year planning cycle, this would give CAISO a look into any potential solutions that may be needed prior to 2030.

### **The interplay of Bulk System Reliability Studies and Economic Studies:**

CAISO's Transmission Planning studies for the Bulk System, similar to several previous cycles, have shown reliability concerns due to Category B and Category C contingencies on major 500 kV lines in the Pacific AC Intertie (PACI) transmission interface in Northern California. CAISO's proposed mitigation for these issues is to reduce the COI flow and stay within the operating nomograms. While reducing COI flows may address the reliability issue, it will likely create congestion on the COI interface. Reducing COI flows for reliability reasons means artificially reducing the COI path transfer limit, which will disallow the flow of economic energy from Pacific Northwest to California and increase costs to ratepayers. On the Economic Study side, since congestion on COI has not been captured in CAISO's previous study cycles, the true cost of maintaining reliability (by reduction in COI limits) is also not being captured. We would once again reiterate the importance of correctly modelling COI flow limits for the Economic studies so congestion on this path is accurately accounted for, including the impact of any reliability solutions that are implemented. For instance, if an economic transmission solution also helps improve reliability, then overall benefits of this solution should be accounted for. As an example, LS Power's SWIP North transmission project helps relieve 300 to 400 MW of North to South flows on COI, Path 26 and Path 15. This not only helps in reducing congestion but at the same time also helps address some of the reliability issues identified in CAISO's 2016-17 TPP reliability analysis for Bulk Studies. LS Power had previously submitted findings of a power flow analysis<sup>1</sup> it had conducted which shows that SWIP North project helps address reliability issues. LS Power recommends that reliability and economic planning solutions should be implemented in a coordinated fashion to result in an optimized solution for both issues.

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<sup>1</sup> LS Power's analysis was submitted in CAISO's 2014-15 TPP cycle. See Item (2) under comments filed at this link: <http://www.caiso.com/Documents/LSPComments2014-2015TPPStakeholderMeetingPreliminaryReliabilityResultsPTOProposedSolution.pdf>

### **Interregional Transmission Project Review & 50% RPS Special Study:**

LS Power supports CAISO's review of proposed Interregional Transmission Projects (ITPs) using the 50% RPS Special Study in this planning cycle. . Rather than simply evaluating a proposed ITP to see if it is more efficient and/or cost effective as compared to a Regional solution, the analysis should quantify all benefits from the proposed ITP including economic, public policy and reliability. These benefits should be evaluated not just for the 50% RPS with out of state renewables scenario but also perhaps an intermediate 43.3% RPS target for Year 2026 which would be the tenth year under this year's planning cycle.

As CAISO further develops its study plan for these studies, we recommend CAISO to share this information with the stakeholders and seek feedback. As with any planning study, study assumptions including transmission, generation, load, season assumptions are key inputs and stakeholder should have an opportunity to comment on these before CAISO kicks off its study efforts.

### **Bulk Energy Storage Study**

LS Power supports CAISO performing a study to analyze the benefits of Bulk Energy Storage in addressing over supply & renewable curtailment, CO2 emission reduction and preventing renewable overbuild. With reference to this study, we have the following recommendations.

- (1) CAISO should reconsider how it defines a bulk energy storage project. As currently proposed by CAISO, a large scale pump hydro project with duration of 8 hours and above is considered Bulk Energy Storage. Can projects with duration of 4 hours help address the same needs? These projects may operate at 50% of nameplate capacity for 8 hours, or cycle twice in a day, but if these can address the need CAISO sees, then these should be looked at under this study.
- (2) Another recommendation is that instead of modelling a large scale 600 MW Bulk Energy Storage project in one location on CAISO grid, CAISO should look into modelling 100 MW, 4 hour duration projects spread out in several locations within CAISO footprint. Some key locations to consider would be high concentration renewable zones such as Imperial Valley, East of Devers. Also, some locations in load pockets both within NP15 and SP15 would be good locations to study the benefits of storage. Running these additional scenarios should provide better understanding of the range of benefits storage can offer and also help understand the congestion relief and peak reduction benefits.
- (3) Lastly, we would recommend that CAISO also make modelling enhancements as suggested to correctly capture COI congestion for this study.

LS Power thanks CAISO staff for the opportunity to provide these comments.