CAISO 2016/17 Transmission Planning 11/16/16 Meeting: Stakeholder Comments

Submitted by	Company	Date Submitted
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LS Power appreciates the opportunity to provide comments on the CAISO 2016/17 Transmission Planning Study. Following comments are related to the Economic Studies Section of the presentation. These comments are based on modelling work that LS Power has conducted using the latest WECC TEPPC 2026 model, Version 1.5. In addition to these comments, LS Power requests CAISO staff to release the Economic Study model as soon as it gets finalized, so the stakeholders have an opportunity to review assumptions prior to the release of Draft Transmission Plan in January 2017.

(1) COI path baseline flows are low:

The baseline COI flows in the 2026 TEPPC common case model are low in the North to South direction, as compared to historical flow patterns. While LS Power understands that these flows are for a future year, our review of the TEPPC model shows that the following areas should be investigated and modelling changes made, as appropriate, to correct the baseline flows before any congestion analysis is done:

(a) **Load assumptions**:

The overall peak load modelled for California is low. This includes CAISO IOUs as well as Non-CAISO entities including LADWP, BANC and IID. CAISO load in the 2026 model is 7% below the load in the 2025 CAISO TP case. Within CAISO, the PG&E load is 14% below the load in the 2025 case, and the SCE load is 2.4% below the 2025 case. Outside of CAISO, LADWP, BANC, and IID loads are also lower as compared to the 2025 case. See Table 1 below.

Table 1: Comparison of loads modelled in WECC TEPPC 2026 case vs CAISO 2025 case

Total Load (GWh)	*Type*	*ISO-2025*	*TEPPC 2026 v1.5*	*Changes*
CA_CISO	Region	238,546	221,069	-7%
CA_LDWP	Region	31,341	28,304	-10%
CA_BANC	Region	19,728	17,388	-12%
CA_IID	Region	4,687	4,528	-3%

Lower loads in California will lead to lower imports for California, which will mask any intertie congestion issues. We understand that CAISO performs modelling enhancements to the TEPPC case

and believe these adjustments will likely include adjustment of loads to the CAISO Region, but adjustment to other Non CAISO Utilities in California is equally important and should be addressed.

(b) Generation assumptions:

A few units within the Northern California Hydro Generation group have duplicate models, which mean the dispatch level for this generation is higher than it should be. As an example, Thermalito_2A, Thermalito_3A, Thermalito_4A units are in the model in addition to Thermalito_2, Thermalito_3, and Thermalito_4. Higher dispatch of Northern California Hydro artificially reduces COI North to South flows. Dispatch assumptions for Northern California Hydro generation should be carefully reviewed.

(c) Hurdle & Wheeling rates:

The use of hurdle rates in the WECC TEPPC 2026 model should be carefully reviewed. Hurdle rates have a huge impact on how much energy can flow between two Balancing Authorities, therefore inaccurate assumption of hurdle rates can have major impacts on path flows. Our review of the Hurdle rates used in the WECC TEPPC 2026 model shows that the following areas should be investigated:

(i) Hurdle rates for energy imports into California from Pacific Northwest need to be reviewed. The model does appear to apply a $15/MWhr hurdle rate for all energy transfers flowing into California from Pacific Northwest. Our understanding is that this is equivalent to the CO2 emission adder charge, for AB32. Since most of the energy that gets imported into California from Pacific Northwest is “hydro”, the use of this charge should not apply to hydro imports into California.

(ii) Wheeling rates on firm transmission capacity should not be used. As discussed at the TEPPC 2026 modelling meeting held last year[1], wheeling rates should be only be used to cover non-firm transactions. In the TEPPC database, wheeling rates are applied as flat rates on all transfers resulting in double dipping. Firm transactions are associated with rights that have sunk costs and should not be charged wheeling rates. Most WECC paths, including COI/PACI/COTP are fully committed, which means there is very little if any non-firm transmission transaction. Applying wheeling rates artificially reduces the flow on transmission paths and masks congestion issues, as may be the case with no congestion on COI path for CAISO’s previous year TPP studies.

(2) COI vs PACI/COTP modelling:

In the last few transmission cycles CAISO has been studying COI congestion by modeling the three 500 kV lines that comprise the COI path with a Total Transfer Capacity (TTC) of 4800 MW (and de-rated as driven by operating nomogram). Two of these 500 kV lines are owned by CAISO IOUs and operated by CAISO. This path is known as the Pacific AC Intertie (PACI), with a TTC of approximately 3200 MW. The third line, also known as the COTP line, is owned by members of

[1] https://www.wecc.biz/Administrative/DWG%20Meeting%20Notes_Wheeling%20Rates_112415.docx.

Transmission Authority of Northern California (TANC) and operated by Balancing Authority of Northern California (BANC). This line has a TTC of approximately 1600 MW. A significant portion of this TTC is reserved for native use by TANC members and the rest becomes available for use by third parties and TANC members for market transactions with other entities, including CAISO. The way production cost simulations are run do not accurately capture these details. In the TEPPC case there is no hurdle rate for energy to flow out of Malin HUB to CAISO or BANC system. For energy to flow from BANC to CAISO there is a $2.53/MWhr hurdle rate. What this means is that in the production cost simulation a portion of the energy flowing to CAISO from Malin and Captain Jack actually flows through the COTP into CAISO. In reality the portion of energy that is reserved for TANC use should not be available to flow into CAISO through COTP. This reality should be modelled in the production cost simulation runs, perhaps by adjusting hurdle rates, as appropriate to mimic this. Further the PACI and COTP paths should be separately enforced in the production cost simulation runs. The congestion that occurs appears to be mainly associated with scheduling limits and perhaps this could be simulated in the production cost runs by use of phase shifter to limit the flows on the COTP line. If modelled correctly, congestion on the PACI interface will likely match with historical PACI congestion that has been noted by CAISO's DMM for the last several years.

(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 Transmission Owners 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 CAISO is currently investigating this and intends to model these de-rates in economic studies. In support of our recommendation, we present the following data from CAISO OASIS for 2015. The chart below shows that the PACI path, which has a full rating of 3200 MW, was limited to between 1600 and 2000 MW for almost 50% of the time during 2015. Also shown on this chart is the congestion on this path. Most of the congestion, as expected, occurs when the Path gets de-rated.

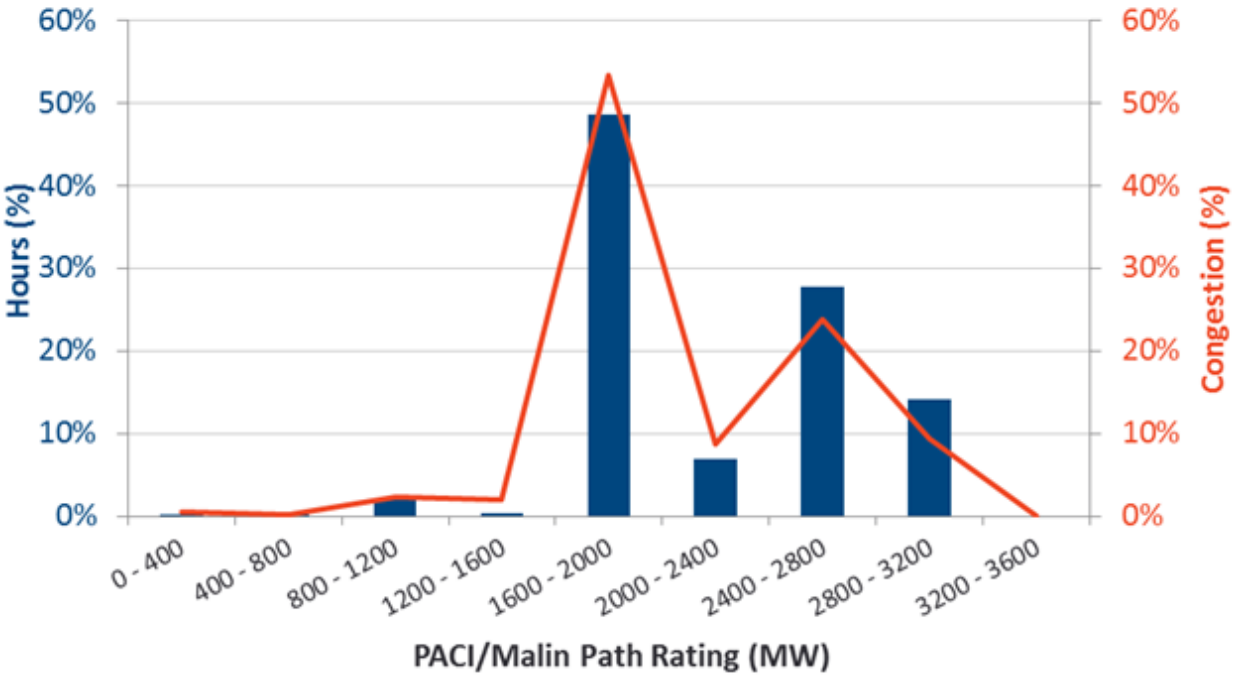

Fig 1: PACI congestion and ATC limits

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