

REVISED
TANC COMMENTS
ON THE CAISO'S 2014-2015 DRAFT TRANSMISSION PLAN

The Transmission Agency of Northern California (TANC) appreciates this opportunity to provide comments on the California Independent System Operator's (CAISO) 2014-2015 Draft Transmission Plan. In these comments, TANC will re-iterate our concerns that the California-Oregon Intertie (COI) and/or full system are being modelled in a manner that does not reflect historic performance nor is it what TANC believes a realistic future expectations in that the CAISO modelling drastically underestimates flows and congestion on Path 66. Additionally, TANC is concerned with the CAISO's reliance on seasonal nomograms to mitigate identified reliability issues.

Reliance on the Seasonal Nomogram on the COI to Mitigate Reliability Issues

TANC's primary concern regarding CAISO's studies is the negative impacts due to the loss of the remedial actions previously contracted for by Pacific Gas & Electric (PG&E) with the California Department of Water Resources (CDWR) would have on the ability to import power over the COI of which the California-Oregon Transmission Project (COTP) is a major component.

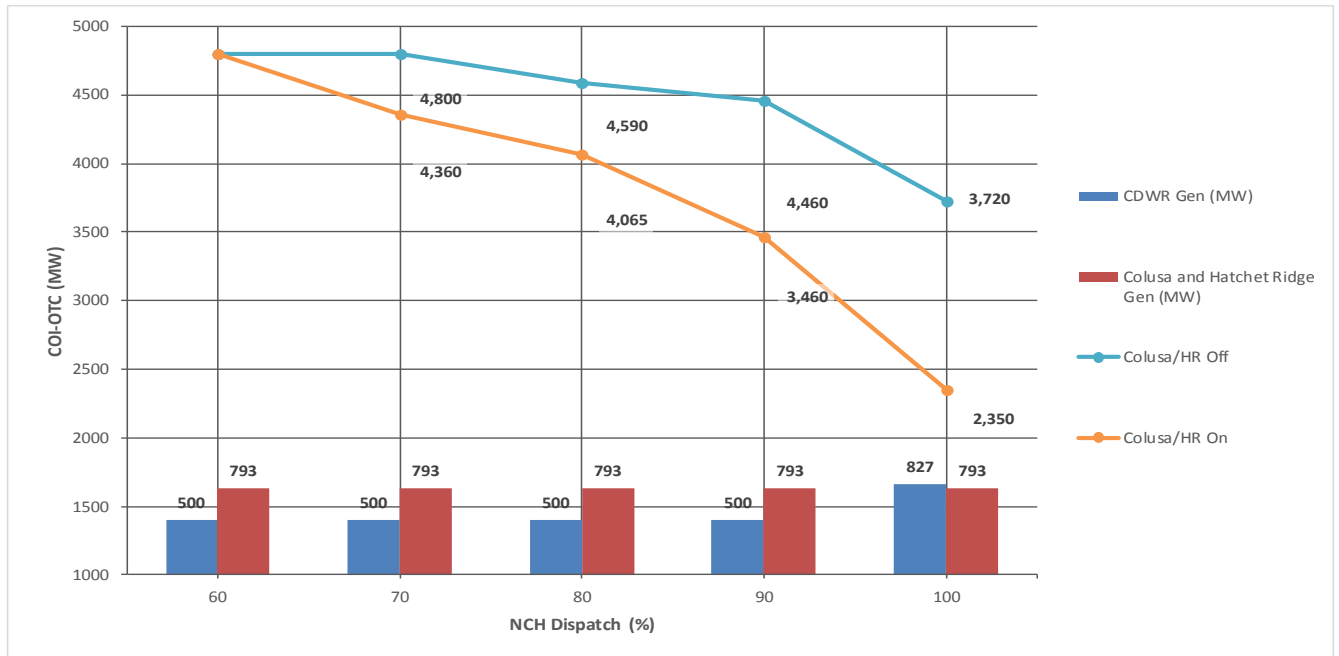
Specifically, the TPP reliability studies noted a number of issues due to Category B and Category C outages of Pacific AC Intertie (PACI) 500-kV lines if the CDWR generation at Hyatt and Thermalito and the CDWR pump loads are not tripped via remedial action scheme (RAS). The CAISO can no longer trip such generation since CDWR's participation in the PG&E RAS stopped on December 31, 2014 with the termination of the Comprehensive Agreement. Table 1 summarizes information derived from the CAISO reliability study results on the critical outages, the facilities impacted by each outage, and the potential mitigation solutions identified by the CAISO. As shown in Table 1:

- A total of six facility overloads were noted in the CAISO studies for which the only "potential" solution *identified by the CAISO* was to reduce COI transfers.
- Five other facility overloads were noted in the CAISO studies for which one of the potential solutions was to reduce COI transfers.

TABLE 1	
SUMMARY OF CAISO 2014-2015 TPP RELIABILITY STUDY RESULTS	
80% HYDRO/NO CDWR RAS	
Critical Outages and Impacted Facilities	Potential Mitigation Solutions
Outage of One Round Mt-Table Mt Line	
Other Round Mt-Table Mt 500-kV Line	Bypass series capacitors in the line or reduce COI transfers
Malin-Round Mountain DLO	
Captain Jack-Olinda 500-kV Line	Reduce COI transfers
Round Mountain 500/230-kV Transformer	Reduce COI transfers
Round Mountain-Table Mountain DLO	
Captain Jack-Olinda 500-kV Line	Reduce COI transfers
Olinda-Tracy 500-kV Line	Reduce COI transfers
Delevan-Cortina 230-kV Line	Reduce COI transfers and determine if additional mitigation is required
Table Mountain-South DLO	
Olinda-Tracy 500-kV Line	Reduce COI transfers
Delevan-Cortina 230-kV Line	Reduce COI transfers and determine if additional mitigation is required
Round Mt-Cottonwood #3 230-kV Line	Upgrade the line or reduce COI transfers
Round Mt-Cottonwood #2 230-kV Line	Upgrade the line or reduce COI transfers
Tesla-Vaca Dixon/Table Mountain-Tesla DLO	
Vaca Dixon-Parkway 230-kV line	Reduce COI transfers

In Appendix B of the draft 2014-2015 Transmission Plan, the CAISO presented information on estimated COI flow limits for various combinations of Northern California hydro generation, CDWR generation, Colusa generation, and Hatchet Ridge generation for the Table Mountain-South DLO and no CDWR RAS. Figure 1 is a nomogram based on the information in Appendix B and depicting the flow limits on the COI at the 60%, 70%, 80%, 90%, and 100% Northern California hydro levels for the summer of 2016 if the CDWR generation at Hyatt and Thermalito was limited to 500 MW (at all but the 100% hydro point); the generation at the Colusa project (690 MW) and the Hatchet Ridge project (103 MW) was off-line (top line) and was on-line (bottom line); and COI flows were limited to mitigate the impacts of an outage of the Table Mountain-Tesla and Table Mountain-Tesla 500-kV lines.

Figure 1
2016 - CDWR Generation Limited to 500 MW for Hydro Study Points Less than 100%



With respect to the information presented in Figure 1:

- The COI flows without the Colusa and Hatchet Ridge projects on line were limited as shown to mitigate flows on the Round Mountain-Cottonwood #3 230-kV line or the Eight Mile Lodi 230-kV line. It is noted that the COI limits in the above nomogram are lower than those in the 2014 summer operating nomogram (which included use of the CDWR RAS) as follows:
 - 110 MW at the 80% hydro level
 - 240 MW at the 90% hydro level
 - 955 MW at the 100% hydro level

- The COI flows with the Colusa and Hatchet Ridge projects on line were limited as shown to mitigate flows on the Delevan-Cortina 230-kV line. As shown in Figure 1 the COI limits with these two projects on-line are lower than the limits with the two projects off-line as follows:
 - 440 MW at the 70% level
 - 525 MW at the 80% level
 - 1,000 MW at the 90% level
 - 1,370 MW at the 100% level

On page 54 the Transmission Plan states, “The ISO will continue to explore in future planning cycles if there is an economic-driven alternative to reducing COI flows according to the seasonal nomogram.” TANC welcomes and highly encourages such studies and notes that the CAISO is recommending reconductoring of the Eight Mile-Lodi line as an “economic project.” However, TANC is concerned whether the issue will be studied within the current Economic Studies construct since the study plan for the 2015-16 Transmission Plan makes no mention of studying economic alternatives to the use of seasonal nomograms to meet reliability concerns. TANC would appreciate greater detail on the CAISO’s plans to study economic options in future transmission cycles.

Economic Studies

TANC wishes to re-emphasize the departure that the CAISO economic studies have taken from the operational realities in relation to the COI. The CAISO economic studies continue to show a surprisingly low level of congestion for the COI, just two hours in 2019 amounting to just \$3,000 of congestion costs. By 2024, the CAISO models no congestion at all. This is counter to the over \$343 million of congestion on the path in 2009 - 2014. For 2015, there has been over \$18 million of congestion costs on the COI with congestion occurring over 57% of the time, in the first two months.

	Congestion Costs ISO COI (\$mil)	# of Hours¹	% of Hours²
2009	49.9	438	5%
2010	41.2	964	11%
2011	49.5	1,139	13%
2012	84.9	3,689	42%
2013	34.1	1,844	21%
2014	90.5	2,424	28%
Through Feb, 2015	18.3	816	57.6%
Total	368.4	11,314	20.9%

¹The # of Hours is the percentage of Hours times 8760 or 8784 for a leap year, except for 2015 which is the actual hours.

²The % of Hours is the maximum of the % of hours indicated for COTP CAISO and PACI in the indicated sources.

Sources: For 2009, 2010 and 2011, "2011 Annual Report on Market Issues and Performance", CAISO Department of Market Monitoring, p. 133. For 2012 and 2013 "2013 Annual Report on Market Issues & Performance", p. 180. 2014 and 2015 is from the CAISO OASIS website, <http://oasis.caiso.com>.

In November TANC requested that the Final Plan explain how the CAISO reconciles its modeled congestion on the COI (and other paths) with the historical congestion. Unfortunately, no such discussion has been included in the Draft Transmission Plan. Congestion on the COI has cost California hundreds of millions of dollars and yet there is no discussion of this impact within the transmission planning process.

TANC encourages the CAISO to perform sensitivity analyses for COI imports based upon historical system operations and the transfer limit reductions that occur on the COI when various facilities are out of service.