

TANC COMMENTS
ON THE CAISO'S 2018-2019 TRANSMISSION PLANNING PROCESS
OCTOBER 5, 2018

The Transmission Agency of Northern California (TANC) appreciates this opportunity to provide comments on the California Independent System Operator's (CAISO) 2018-2019 Transmission Plan September 20-21, 2018 stakeholder meetings to discuss preliminary reliability issues and mitigations. TANC's primary focus is for the protection of and the maximization of the transfer capability on the California-Oregon Intertie (COI) or Path 66. TANC's comments and concerns focus on one central tenant, that the COI represents a valuable and important part of the grid for allowing access to economic, clean, reliable and flexible energy that helps maintain grid reliability and meet state clean energy goals. To this end, transmission planning which would seek to maintain, enhance and potentially increase the transfer capacity of the COI is desirable, while actions or inactions which would limit the transfer capabilities are detrimental both to TANC, the CAISO markets, and the overall western interconnected grid. Therefore, TANC comments on five issues:

- 1) TANC supports, from a technical perspective, the proposed upgrade to implement a new Remedial Action Scheme (RAS) that will automate the bypassing of the series capacitors on the Round Mountain -Table Mountain 500 kV lines #1 and #2
- 2) TANC supports, from a technical perspective, the proposed voltage support upgrades to the Northern and Central California 500 kV Transmission System to control high voltages.
- 3) TANC supports, from a technical perspective, upgrading the Round Mt - Cottonwood 230-kV Lines to mitigate the P6 and P7 overloads resulting on the adjacent Round Mt -Cottonwood 230-kV Lines in the peak load cases.
- 4) TANC suggests changing the proposed mitigation for the Cascade -Oregon Trail 60-kV line P0, P3, P6, and P7 overloads to adjusting the Weed Phase Shifter rather than reducing COI.
- 5) TANC supports the CAISO Day-Ahead Congestion study.

- 1) TANC supports the proposed voltage support upgrades to the Northern and Central California 500 kV Transmission System to control high voltages.**

TANC fully supports the proposal to implement a new RAS on the Round Mountain -Table Mountain 500 kV lines #1 and #2 that will automate the bypassing of the line's series capacitors. As early as the 2011 TPP cycle, this RAS has been identified as an effective option to mitigation the overload resulting on one of the Round Mountain -Table Mountain 500 kV lines following an outage of the other Round Mountain -Table Mountain 500 kV line. Additionally, the Round Mountain -Table Mountain 500-kV limitation has become

one of the most severe limitations to COI since the most recent operational changes were made in April 2018. This proposed project would improve the COI transfer capability in the near-term and long-term planning horizons. While TANC fully supports the technical benefits of this proposal, we currently do not have sufficient information to support the proposed economic costs of this proposal.

2) TANC supports the proposed voltage support upgrades to the Northern and Central California 500 kV Transmission System to control high voltages.

TANC supports the proposed voltage support upgrades to mitigate the high voltages on the 500 kV transmission system in Northern and Central California. The CAISO has identified similar high voltage issues in previous PG&E Bulk studies for several TPP cycles now. Additionally, PG&E has shown that the high voltage issues are not just a forecast condition, but a condition that has occurred in real-time over the past year at Round Mountain and Table Mountain. While TANC fully supports the technical benefits of this proposal, we look forward to seeing additional information regarding proposed economic costs of this proposal.

3) TANC supports upgrading the Round Mt -Cottonwood 230-kV Lines to mitigate the P6 and P7 overloads resulting on the adjacent Round Mt -Cottonwood 230-kV Lines in the five-year and ten-year peak load cases.

The CAISO preliminary study results for the PG&E bulk system identified several P6 overloads on the remaining Round Mt -Cottonwood 230-kV Lines when the one of the three Round Mt -Cottonwood 230-kV Lines was offline in the five-year and ten-year peak load cases. In addition, the study identified a P7 overload on the Round Mt -Cottonwood 230-kV #3 Line in all peak load cases by as much as 124% following the outage of the Table Mountain -Tesla 500-kV Line and Table Mountain -Vaca Dixon 500-kV Line. The results indicate a trend that the thermal impacts on that the Round Mt -Cottonwood 230-kV Lines increase from each preceding planning year.

The thermal limitations of the Round Mt -Cottonwood 230-kV Lines have limited COI north-to-south transfer capability in the past and as indicated in the preliminary studies, it can be expected that these limitations will worsen in the long-term horizon unless the lines are upgraded. While TANC fully supports the technical benefits of this proposal, we currently do not have sufficient information regarding the costs of this proposal.

4) TANC suggests changing the proposed mitigation for the Cascade -Oregon Trail 60-kV line P0, P3, P6, and P7 overloads to adjusting the Weed Phase Shifter rather than reducing COI.

The CAISO preliminary study results for the PG&E bulk system identified P0, P3, P6, and P7 thermal overloads on the Cascade -Oregon Trail 60-kV line for the near-term and long-term summer peak load studies. The proposed mitigation for these overloads is to limit COI within the seasonal Nomogram. TANC believes that limiting COI is not an effective solution because the overload is primarily driven by the transfers across the Weed Phase Shifter. As such, it would be a much more effective mitigation option to adjust the Weed 115-kV Phase Shifter (reducing flows by 5 to 10 MW) to mitigate the Cascade -Oregon Trail 60-kV line overload.

5) TANC supports the CAISO COI Day-Ahead Congestion study.

TANC is pleased that the CAISO has indicated it will be undertaking an investigation into the potential transmission issues that may be the cause of approximately \$50 million of day-ahead congestion per year at the Malin Intertie. TANC has highlighted through many CAISO transmission planning cycles that the economic studies have failed to correctly model the actual level of congestion at COI. The CASIO has responded variously that the congestion is the result of market issues as opposed to limitations on the grid and/or that the CAISO conservatively models a full capacity grid. These limitations have meant that there was no real avenue to determine if any transmission improvements could lead to lower congestion costs for California ratepayers. The CAISO noted at the stakeholder meeting that it is still attempting to determine the shape of this study. TANC recommends that the CAISO conduct an economic study with recent historic capacity profiles in its 2023 model as at least one sensitivity. This will allow the CAISO to assess how much of the congestion is due to the market and how much is due to physical limitations upon the COI. Chart 1 below shows the COI transfer from 2017. We believe that it is critical to utilize actual experienced COI transfer capabilities, rather than path rating or seasonal nomogram values.

Table 1

Year	Congestion Costs (\$million)	Number of congested hours	Average COI Capacity when less than 4,800 MW	Number of hours COI Capacity less than 4,800 MW
2012	\$84.66	3,682	3,377	7,619
2013	\$33.59	1,827	3,640	6,813
2014	\$90.54	2,424	3,614	6,013
2015	\$37.68	2,303	4,176	5,365
2016	\$51.14	2,791	3,987	5,677
2017	\$60.70	2,449	3,532	6,593
Average	\$59.71	2,579	3,720	6,347

CHART 1

