

**COMMENTS OF THE STAFF OF THE CALIFORNIA PUBLIC UTILITIES COMMISSION REGARDING THE  
DRAFT 2019-2020 TRANSMISSION PLANNING PROCESS REPORT FOLLOWING THE FEBRUARY 7, 2020  
STAKEHOLDER MEETING**

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**February 21, 2020**

The Staff of the California Public Utilities Commission (“CPUC Staff”) appreciates this opportunity to provide comments on the DRAFT 2019-2020 Transmission Planning Process (TPP) Report and Study Updates discussed at the California Independent System Operator Corporation’s (CAISO) February 7, 2020 stakeholder meeting.

**Overview**

This is the first TPP assessment that utilized a 60 percent RPS portfolio base case with a greenhouse gas (GHG) reduction target of 42 million metric tons (MMT) by 2030. The CAISO also assessed two sensitivities that track a more aggressive 32 MMT target with a 71 percent RPS portfolio. One of these sensitivity studies utilized only existing transmission available to interconnect out-of-state (OOS) resources and the other allowed new transmission build to interconnect up to 4,250 MW of New Mexico and Wyoming wind.

Notably, the CAISO did not identify any policy-driven transmission upgrades in the base case or sensitivity assessments, though the need for Remedial Action Schemes (RASs) and congestion management was evident in several zones.

The CAISO’s analysis does assume significant reliance on curtailment in several zones that were identified with curtailment levels above 20% of renewable output, depending upon the assumed export limits for those zones. CPUC Staff recognizes these zonal export limits provide valuable information on the level of system-level renewable curtailments and are not intended to reflect hard transmission constraints. Nonetheless, in future studies the CAISO might consider a more refined analysis of what amount of power is truly exportable in order to better inform stakeholders regarding the possible levels of renewable curtailments.

CPUC Staff also recognizes the curtailment alternative is generally lower cost than many of the more expensive renewable integration options. A RESOLVE sensitivity analysis conducted in the last IRP cycle assumed a “zero curtailment” scenario and the results revealed extremely high costs and near-impossible procurement needs for battery storage resources.<sup>1</sup>

CPUC Staff observes that for the near-term at least, curtailment of solar PV is a lower-cost integration solution than new capital investments in other new resources. CPUC Staff commends the CAISO for highlighting this option within this TPP and encourages deeper analysis in the next TPP cycle.

Overall, the draft 2019-2020 transmission plan includes a modest increase in the number of new reliability-based projects. Seven of these transmission projects are in the Pacific Gas & Electric Company (PG&E) service territory. One project is in Southern California Edison Company (SCE) service territory and one project is on the Valley Electric Association (VEA)/Gridliance West, LLC (GLW) system. The estimated

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<sup>1</sup> (See Appendix B, page 199 in this Proposed System Reference Plan [here](#)).

total cost of these projects is \$141.7 million. The cost of each of the nine projects identified is under \$50 million and thus were able to be approved directly by CAISO management.

CPUC Staff recognizes this TPP did not include assessment of the need for specific out-of-state transmission lines, nor did it reassess previously submitted interregional transmission projects. CPUC Staff looks forward to continued collaboration with the CAISO to enhance the analysis of the transmission infrastructure required to accommodate future out-of-state resource procurement.

CPUC Staff also looks forward to continued collaboration with the CAISO in the next TPP to develop clear, transparent busbar mapping methodologies for energy storage as well as hybrid resources.

### **Comments on Modeling Cases**

- CPUC Staff has noticed two model cases that may result in reliability issues, as these appear to not have any tangible mitigation solutions.
  - **Loss of the Control East or West Bus (P2) Causing High Voltage at Inyo.**

According to Appendix C of the TPP, loss of the Control East or West Bus causes high voltages at the Inyo 115kV bus. High voltages were deduced in the 2021, 2024, and 2029 summer peak cases, 2024 spring off-peak case and 2021 summer peak sensitivity case. Post-contingency voltages at the Inyo 115kV bus ranged from 1.1012 PU to 1.1204 PU. Post-contingency voltages above 1.1 PU are considered criteria violations. There are no ISO-approved projects or potential mitigation solutions. The CAISO discusses the above reliability problem in the TPP Reliability Assessment (Appendix B). The CAISO states:

*“The Inyo 115 kV bus voltage was observed above 1.052 p.u. following a Category P2 following an outage of the Control West Bus or the Control East Bus in the 2021, 2024 and 2029 summer peak scenarios as well as the 2024 spring off-peak scenario. SCE is working with the ISO to complete further analysis.”*

The CAISO’s solution in Appendix C is to “work with SCE on further analysis.” The CPUC Staff encourages this analysis and suggests the CAISO identify the timeframe and steps will be taken to ensure reliability in this area.

- **Loss of the Lugo 500/230kV Transformers (p6) Causing Transient Stability Criteria Violations**

According to Appendix C of the TPP, loss of the Lugo 500/230kV Transformers causes one or more generating units to become unstable in the 2024 summer peak, 2029 summer peak, and a 2024 sensitivity cases. The CAISO also modeled the same outage with a RAS. The RAS is referred to as the “HDPP RAS,” so it is assumed the RAS trips one or more units at the High Desert Power Plant. Even when the HDPP RAS is modeled, the loss of the Lugo 500/230kV Transformers causes a WECC transient stability criteria violations in the 2024 summer peak and 2024 sensitivity cases.

The CAISO discusses the above reliability problem in the 2019-2020 TPP Reliability Assessment (Appendix B). The CAISO states:

*“The North of Lugo area stability assessment identified bus voltages that didn’t meet WECC criteria following a Category P6 outage with a RAS scheme. The list of stability contingencies simulated for the NOL area along with the simulation results are documented in Appendix C.”*

*“WECC criteria not met (P6)”*

*“For the loss of the two Lugo 500/230 kV transformer banks, loss of the two Kramer-Inyokern-Randsburg 115 kV lines, loss of the two Kramer-Victor 230 kV lines, or loss of the two Control-Inyokern 115 kV lines the system failed to recover to 80% of pre-contingency voltages and voltages dipped over 20% for longer than 2 seconds following the clearing of the three-phase line-to-ground fault. The recommendation is to rely on existing RAS, and generation redispatch (Note 1) after the first contingency.”*

The CAISO did not perform transient stability studies with a 2021 case in the 2019-2020 TPP. As a consequence, the 2019-2020 TPP doesn’t provide any information regarding this reliability issue in the near term. To determine if the reliability issue is present in the near term, Appendix C of the 2018-2019 TPP was reviewed. The 2018-2019 TPP indicated the loss of the Lugo 500/230kV Transformers causes one or more generating units to become unstable in a 2020 summer peak case. When the HDPP RAS is modeled, the outage still results in WECC criteria violations.

CPUC Staff recommends that the CAISO model the case for 2021 (to ensure near term reliability is met) and develop mitigation strategies in the event that the reliability criteria is violated.

### **Comment on Analysis of Storage Options**

- Per discussion with CAISO staff during the stakeholder presentation on the economic assessment of the Draft 2019-2020 Transmission Plan on February 7, 2020, it was revealed that energy storage was not considered as an alternative to address congestion in the identified PG&E congestion areas in Fresno, California. These congestion areas include: (1) Fresno Avenal Area – Gates to Tulare Lake 70 kV Line, (2) Huron to Calflax 70 kV Line and (3) Oro Loma to El Nido 115 kV Line.<sup>2</sup> The reported congestion in these areas “occurs mainly in the hours when solar generation output is high, especially in the months when the summer rating of the line is applied.”<sup>3</sup>

CPUC Staff encourages additional analysis to determine whether the pairing of energy storage with the solar installations in the identified Fresno area would address the reported congestion and provide any additional benefits. More generally, CPUC Staff encourages the CAISO in future TPP economic studies to incorporate assumptions on energy storage such as the assumed lifecycle, costs and the potential for dual use/multiple revenue streams.

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<sup>2</sup> CAISO, Economic Assessment Draft 2019-2020 Transmission Plan, 2019-2020 Transmission Planning Process Stakeholder Meeting February 7, 2020, slides 20-26.

<sup>3</sup> CAISO, Economic Assessment Draft 2019-2020 Transmission Plan, 2019-2020 Transmission Planning Process Stakeholder Meeting February 7, 2020, slides 20,22 and24.