



February 28, 2019

California ISO
Attn: regionaltransmission@caiso.com
250 Outcropping Way
Folsom, CA 95630

Re: Tenaska Comments on the CAISO Draft 2018-2019 Transmission Plan dated February 4, 2019

Dear CAISO TPP Team,

Tenaska appreciates the opportunity to provide comments on the California Independent System Operator's (CAISO) Draft 2018-2019 Transmission Plan (Draft Plan) dated February 4, 2019. In addition to following the CAISO's Transmission Planning Process (TPP), Tenaska has been monitoring the CAISO's Storage as a Transmission Asset (SATA) Initiative. As a consequence, Tenaska submitted two SATA projects in the CAISO TPP Request Window on October 15th, 2018 including the following:

- Delta Reliability Energy Storage (DRES) - A proposed ~ 72 MW (net) x 4 hour discharge (288 MWh) energy storage project utilizing a Battery Energy Storage System (BESS) to mitigate reliability, congestion and LCR issues. The Project is proposed as a SATA, with a planned interconnection to the Delta Switchyard at 230 kV. Alternatively, a connection to the CC-Delta 230 kV line in the near vicinity of Delta Switchyard can be considered.
- Sycamore Reliability Energy Storage (SRES) – A proposed 350-600 MW energy storage project utilizing a BESS to mitigate reliability concerns. The Project is proposed as a SATA, with a planned interconnection to the Sycamore substation at 230 kV.

In the conceptual development of these projects, Tenaska attempted to conform the two projects to the CAISO TPP and SATA requirements that were evolving in 2018. After significant effort, Tenaska developed projects which we believe would meet the SATA requirements set forth by the CAISO, which include but are not limited to, the following:

1. Address known CAISO reliability issues,
2. Provide a cost effective and environmentally preferable alternative to expensive transmission upgrades or other expensive methods to maintain reliability; and
3. Greenfield project interconnecting at 230kV to qualify for the competitive process

While the Tenaska projects met these criteria, Tenaska does not agree with the reasoning used by CAISO to recommend not advancing these projects in the Draft Plan, and CAISO may not have considered all relevant information. For these reasons, we request that CAISO reevaluate its recommendation in light of the following comments regarding both projects.

DELTA RELIABILITY ENERGY STORAGE (DRES) COMMENTS

The CAISO response to the DRES project in the Draft Plan is delineated below:

“Tenaska, Inc. proposed the Delta Reliability Energy Storage targeting thermal overload on the Tesla-Delta Switch Yard 230 kV Line identified as a constraint for Contra Costa LCR Sub-area. In the 2018-2019



transmission planning process the Contra Costa LCR Sub-area was not selected to assess alternatives to reduce or eliminate the requirement for gas-fired generation to address the LCR requirement. As such, the ISO will not evaluate the proposed Delta Reliability.”

Tenaska requests that the CAISO reconsider its recommendation based on the following:

1. DRES was proposed primarily to address a current reliability problem which is the loss of Telsa-Kelso 230kV Line overloading the Tesla-Delta Switch Yard 230kV Line (not just as an LCR alternative as described in the CAISO recommendation);
2. Tenaska’s Request Window Submission for DRES indicated the project was a “Reliability Transmission Project,” and should have been evaluated accordingly;
3. DRES is significantly more effective than any existing generation option in the CAISO Control Area at addressing the reliability problem delineated in justification point 1 above;
4. DRES qualifies as a Preferred Resource. Right now, the CAISO is relying on and supporting gas fired generation to mitigate overloads on the Tesla-Delta Switch Yard 230kV Line in lieu of Preferred Resources.

For these reasons, Tenaska requests the CAISO to reconsider and to perform a full evaluation of DRES in the Draft Plan.

SYCAMORE RELIABILITY ENERGY STORAGE (SRES) COMMENTS

The CAISO reliability related response to the DRES project in the Draft Plan is delineated below:

“Tenaska, Inc. proposed this project as a reliability need to eliminate the P6 thermal overload concerns on the Suncrest-Sycamore 230 kV lines, Suncrest 500/230 kV transformers. The Project is also proposed as an economic-driven project to reduce the LCR requirement for the San Diego sub-area. The proposed scope is to build a 350 MW/175~350 MWh battery energy storage system (BESS) and interconnect it to the SDG&E Sycamore substation. The project has an estimated cost of \$108-178 million and an expected in-service date of December 2021. The ISO has not identified a reliability need for this project. As discussed above, the P6 thermal overloads identified in SWPL and SRPL can be eliminated by the operational measures. For this reasons, the project was not found to be needed for reliability.”

The CAISO comment above references additional justifications in “Suncrest-Sycamore 230 kV Transmission project” section of the Draft Plan as provide below:

“The P6 thermal overloads identified on the Suncrest–Sycamore 230 kV corridor can be eliminated by the existing RASs including newly implemented TL23054/TL23055 RAS and along with operation actions, such as adjustment of the IV phase shifting transformers, system reconfiguration, and generation redispatch in the baseline scenarios. Further assessment concluded that the preferred resources and the operation actions are adequate to mitigate the overload concerns identified in the sensitivity scenarios.”

The 2018-2019 TPP Reliability Assessment results recognized the P6 outage of the ECO-Miguel 500 kV line plus a Sycamore–Suncrest 230 kV line as a reliability issue. For a P6 outage, NERC allows for a system adjustment between the first and second outage. Based on the CAISO statement above, operators will make tap setting changes on the IV phase shifters, system reconfiguration and generation dispatch changes. All these adjustment will likely need to be made very quickly.



Unfortunately, this is appearing analogous to the 2011 Southwest blackout on September 8th, 2011. If Tenaska recalls correctly, SDG&E and the CAISO didn't have very many options available to use as a system adjustment following the first outage. As a result, IID's transformers started overloading and tripping. The outage of the second element can happen in a couple minutes as it did on September 8th.

Tenaska believes the CAISO's solution to the ECO-Miguel 500 kV line plus a Sycamore–Suncrest 230 kV line outage is overly optimistic and that a project like SRES should be considered as a more robust path to reliability. Based on the large number of projects proposed in the current TPP, there is substantial agreement by market participants and the transmission owner that real projects are the right course of action to address this reliability constraint.

If CAISO maintains that no projects are needed, then Tenaska believes a next step should be for CAISO to perform a transparent reliability study that quantifies in greater detail CAISO's proposed solution for this key outage. The study should include the following:

1. Identification of the generation tripped with the existing RAS (including aggregate maximum generation capacity);
2. Identification of the generation and/or load tripped by the new TL23054/TL23055 RAS;
3. Coordination with the multiple existing CFE RAS schemes that protect their system from large power diversions from Imperial Valley into Mexico;
4. Delineation of the generation dispatch changes required (automatic versus manual operator changes) and how long they take;
5. Description of the IV phase shifter phase angle changes and final angle (automatic versus manual operator changes);
6. Definition of the other system reconfiguration changes (automatic versus manual operator changes) and how long they take; and
7. A capacity accounting of how much generation is tripped offline by all Remedial Action Schemes and operator actions in the ISO Control Area and in CFE.

In addition, Tenaska requests the results of the study above be contrasted against the reliability study of the SRES project, IV phase shifter phase angle changes and the existing RAS. In addition to address the reliability benefits and impacts, each study should attempt to quantify the likelihood of a successful outcome given all the automatic and manual moving parts.

Thank you for this opportunity to provide comments.

Sincerely,

Tim Hemig

A handwritten signature in blue ink, appearing to read "Tim Hemig".

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