TransCanyon LLC's Comments

CAISO 2017-2018 Transmission Planning Process

Submitted by	Company	Date Submitted
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TransCanyon, LLC ("TransCanyon") appreciates the opportunity to submit comments on the CAISO's 2017-2018 Transmission Plan ("Plan"). TransCanyon's comments will focus on two broad areas: (1) economic analysis of transmission congestion along transmission paths; and (2) evaluation of transmission solutions that may be needed to achieve the 50% Renewable Portfolio Standard by 2030.

Economic Analysis:

Recent Transmission Planning Process ("TPP") cycles have included economic analysis of transmission congestion on transmission paths between major regions of the CAISO, and from CAISO to neighboring Balancing Areas. To the extent that the CAISO has not already made this specific evaluation, TransCanyon recommends that the CAISO also evaluate areas with Local Capacity Resource ("LCR") requirements to determine the extent of transmission congestion. This evaluation should Include: (1) the cost of the LCR capacity contracts; and, (2) the cost of utilizing potentially higher cost generation running inside the LCR area instead of importing less expensive energy from outside the load area. TransCanyon recommends that the CAISO includes studies of the cost of congestion into the LCR requirement load areas, especially in areas with significant LCR requirements with high ratios of LCR requirements compared to the area's Net Qualifying Capacity ("NQC") such as:

Area	2026 LCR Requirement from 2017 TPP	NQC	LCR/NQC
South Bay – Moss Landing	2427	1828 (1)	1.33
Wilson (Fresno)	1474	1739	0.85
LA Basin	7234	7795	0.93
San Diego/Imperial Valley	4649	4840	0.96

(1) TPP Report indicated that it was not clear what NQC was for this area and that follow up was necessary.

Ongoing evaluation of transmission that might be needed to accommodate 50% RPS:

During the 2016-2017 TPP, the CAISO performed a 50% Special Study which considered the deliverability of out of state resources; Specifically 2272 MW of wind resources in New Mexico and 2000 MW of wind resources in Wyoming. TransCanyon suggests that the CAISO consider modifying certain assumptions and perform additional analysis to consider other issues as follows:

Out of State Wind Resource Exceedance Assumptions: The CAISO assumed a 50% exceedance value for the wind when assessing the deliverability of these resources both in terms of the out of state transmission system's ability to deliver the resources to the CAISO boundary and the in-state CAISO transmission system's ability to deliver the resources from the CAISO boundary to the load centers within the CAISO. This resulted in an assessment of the ability of the transmission system to deliver approximately 40% of the maximum capacity of these resources. Because of the lack of geographical diversity of these resources (the Wyoming wind and the New Mexico wind are delivered into different boundaries into the CAISO with different constraints limiting the deliverability), TransCanyon is concerned that this assumption could result in significant curtailment of the wind resources. TransCanyon believes an assumption of 70% exceedance would be more appropriate, which is what we understand the CAISO uses in its cluster and deliverability analysis of groups of resources with similar output profiles.

Assumptions for Planned Out of State Transmission: The CAISO used the Transmission Expansion Planning Policy Committee ("TEPPC") common case model for transmission outside CAISO. The TEPPC common case model included the most recent Northern Tier Transmission Group ("NTTG") Transmission Plan, including Gateway South and most of the segments of Gateway West. Although NTTG has included these future transmission projects in its Regional Plan, to the best of TransCanyon's understanding, no transmission owners or developers have committed to building these facilities. In fact, the latest draft update of PacifiCorp's Integrated Resource Plan ("IRP") does not include any of the Gateway segments in its Preferred Portfolio. TransCanyon urges to CAISO to perform sensitivity analysis to determine if and to what extent, the deliverability of the Wyoming wind is dependent on the modeled Gateway Projects.

Assumption for Transmission Access on Out of State Transmission**:** The production cost model ("PCM") does not take into account that currently wind resources need long term firm transmission rights to get to the CAISO boundary in order to execute Power Purchase Agreements ("PPAs") with California Load Serving Entities ("LSEs") - a requirement for project financing. TransCanyon believes it would very difficult to change the contractual nature of these PPAs and financing terms to allow for unlimited curtailment resulting from lack of long term firm transmission rights. TransCanyon encourages the CAISO to further examine the availability of long term firm transmission from the New Mexico wind areas to the CAISO boundary, and from the Wyoming wind areas to the CAISO boundary (assuming that no future Gateway Projects are built).

CONCLUSION

TransCanyon thanks the CAISO for the opportunity to provide these comments, and looks forward to further discussions on these issues.

About TransCanyon

TransCanyon is an independent developer of electric transmission infrastructure for the western United States. It is a joint venture between Berkshire Hathaway Energy's subsidiary, BHE U.S. Transmission, and Pinnacle West Capital Corporation's (NYSE: PNW) subsidiary, Bright Canyon Energy.