# CAISO 2018/19 TPP Study Plan: Stakeholder Comments

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LS Power appreciates the opportunity to provide comments on the CAISO 2018/19 Draft Study Plan.

LS Power is hereby submitting an economic study request to CAISO for the 2018/19 Transmission Plan. The request is to study scheduling based congestion (such as recorded in CAISO Department of Market Monitoring reports) in addition to flow based congestion, on CAISO's intertie interfaces with the Pacific Northwest, namely the California Oregon Intertie (COI), Pacific AC Intertie (PACI) and Nevada-Oregon Border (NOB). In addition to this request, LS Power is also hereby submitting its Southwest Intertie Project North (SWIP-North) as an Economic project that would improve transfer capabilities between the Pacific Northwest and California.

PACI, NOB & COI Congestion:

For the past three planning cycles, LS Power has registered its concern that CAISO's economic studies performed for the Transmission Planning Process (TPP) consistently fail to capture the tens to hundreds of million $'s in annual congestion costs along the PACI and NOB interfaces, and therefore consistently fails to identify economic benefits related to transmission solutions submitted in the annual TPP process. Since 2011, actual PACI and NOB congestion per CAISO DMM reports has been in the range of $50 mm to $145 mm per year. This contrasts with the less than $1mm of annual congestion predicted in CAISO planning studies for the COI path[1]. It is estimated that the SWIP-North project, which LS Power has submitted in the past three TPP cycles, reduces COI flows by ~300 MW or more and based on CAISO's analysis, reduces congestion hours on COI by 39%. Given that insignificant congestion gets quantified in CAISO studies, the economic savings offered by projects such as SWIP-North continue to be lost as do the benefits of increasing capacity between California and the Pacific Northwest. Resolving the discrepancy between real world congestion vs the congestion predicted through studies is even more important now given the February 15, 2018 letter[2] from CEC and CPUC requesting that the CAISO do a special sensitivity study

[1] California Oregon Intertie (COI) comprises of three transmission lines that have a combined flow limit of 4800 MW N-S. CAISO TPP studies enforce this flow limit and capture any congestion on this path. In the Day Ahead scheduling world, congestion is witnessed across the Pacific AC Intertie (PACI) and Nevada-Oregon Border (NOB) scheduling interfaces. PACI is a subset of COI and has a scheduling limit of 3200 MW which represents scheduling rights of CAISO member entities on COI path. NOB is the scheduling interface for Pacific DC Intertie. It is rated at 3220 MW N-S and the transmission capacity is allocated between CAISO member entities and LADWP.

[2] http://www.caiso.com/Documents/CPUCandCECLettertoISO-Feb152018.pdf

in its current 2018/19 TPP that looks at increasing the transfer of low-carbon supplies to California from the Pacific Northwest. As CAISO performs this special sensitivity study it should consider SWIP-North transmission project as a solution that can not only improve transfer capability between BPA and CAISO along the existing COI corridor by ~300 MW, but can also provide a new diverse transmission path with an additional 1000 MW transfer capability into/from California through a 500 kV AC transmission line from Midpoint 500 kV substation to Eldorado 500 kV substation. The efforts on this study will be well served if CAISO first correctly captures the economic congestion that takes place on PACI, NOB interfaces today and looks for options to alleviate this. Benefits of projects such as SWIP-North, that not only help improve transfer capability but also provide reliability and future policy benefits, can only be correctly quantified if this congestion is accurately modelled in the study.

Modelling recommendations to correctly quantify PACI & NOB congestion:

In order to understand the discrepancies between congestion quantified by CAISO planning studies and real world congestion as shown in CAISO DMM reports, last year LS Power contracted with The Brattle Group (Brattle) to conduct an economic study to capture PACI & NOB congestion. Brattle's findings[3] were submitted to CAISO as part of comments filed by LS Power in Oct 2017 for 2017/18 TPP. A brief summary of Brattle work is outlined below. We request CAISO staff to implement Brattle's recommendations to improve its economic study models for 2018/19 TPP. These modeling enhancements are a necessary first step to evaluate any potential increase in intertie capacity between California and the Pacific Northwest.

Brattle used CAISO's production cost simulation model from 2016/17 TPP and converted this from CAISO's native GridView format for use in the Power System Optimizer (PSO), another commercially available production cost simulation software. PSO was used because it has the capability to simulate contract-path transactions and congestion on scheduling constraints. After benchmarking the PSO case with native CAISO case, Brattle incorporated the following enhancements to the PSO model:

(a) added Intertie scheduling constraints to create a more accurate representation of WECC-wide scheduling and congestion
(b) updated hurdle rates to better reflect the trading frictions that exist in bilateral scheduling, using assumptions from the SB350 study.
(c) included a case with preliminary assumptions about existing contract paths and reduced hurdle rates for hydro resources from BC Hydro's system to reflect the reality that PowerEx likely has long-term transmission reservations to reach the CAISO's Malin and NOB scheduling points and faces very low $CO_2$ costs for at least a portion of its hydro imports into California

As a result of these enhancements, the simulated flows on the Malin and NOB paths increased and were noted to be comparable to historical flows in some periods of similar net load and hydro conditions. The simulated 2026 power flows were lower than historical flows during the daytime hours due to the incremental solar generation that is projected to be online by 2026. However, the predicted flows and associated congestion on intertie scheduling constraints, such as Malin and

[3] LS Power comments (including Brattle findings) filed under 2017/18 TPP can be found at:
http://www.caiso.com/Documents/LSPComments_2017-2018PreliminaryReliabilityResults.pdf

NOB, remained high during the evening and night hours when solar generation is offline suggesting that solar buildout in California doesn't significantly reduce PACI/NOB congestion.

Key Findings & Recommendations:

(1) The study concluded that implementing select modelling enhancements that reflect contract path scheduling and intertie scheduling constraints significantly improves the realism of simulated congestion of these paths, partially resolving the large discrepancy between recorded historical congestion and congestion predicted by TPP studies
(2) The study also showed that the increasing magnitude of California's installed solar capacity is not a major driver in terms of reducing intertie congestion on paths such as Malin and NOB since this congestion typically occurs during periods of no/low solar output in California.
(3) The Brattle study makes specific recommendations on additional modelling enhancements that should be considered to simulate realistic levels of congestion on Malin and NOB

Economic Study Request:

LS Power hereby submits SWIP-North as an economic project and requests CAISO to study this in the 2018/19 planning cycle. SWIP-North is comprised of a 500 kV transmission line from Midpoint substation to Robinson Summit substation. Additional details of SWIP-North are included in the submission of SWIP-North as an Interregional Transmission Project in March 2016 under the 2016/17 TPP. This project will be submitted again in March 2018 under the 2018/19 TPP. After SWIP-North is built, LS Power's affiliate will attain approximately 1000 MW of new[4] transmission capacity that will become available on the existing 500 kV transmission line that connects Robinson Summit to Harry Allen substation ("ON Line"), as per the Transmission Use and Capacity Exchange Agreement ("TUA") among LS Power affiliates and NV Energy, which is further described below. LS Power hereby proposes this new additional ~1000 MW capacity to be dedicated for CAISO use. In addition, the new 500 kV line from Harry Allen to Eldorado was approved by CAISO to be in-service by 2020. Upon completion of the Harry Allen to Eldorado project, Harry Allen will be a CAISO delivery point. Hence, if SWIP-North was selected by CAISO, CAISO will have access to a complete 500 kV path from Midpoint to Eldorado, approximately 575 miles.

Pursuant to the TUA with NV Energy, once SWIP-North is built there would be an exchange of capacity between LS Power affiliates and NV Energy. Upon completion of SWIP-North, NV Energy would get a share of the capacity between Midpoint and Robinson Summit and LS Power's Great Basin affiliate would get a share of capacity between Robinson Summit and Harry Allen, without either party having to pay any amount to the other. As a result of this capacity exchange, LS Power's affiliate would have bidirectional transmission capacity on the entire path from Midpoint to Harry Allen, estimated at approximately 1000 MW. Therefore, LS Power's economic study request is that CAISO study the benefits of approximately 1000 MW of bidirectional transmission capacity between Midpoint and Harry Allen, which would be available to the CAISO market upon completion of construction of SWIP-North.

[4] The Robinson Summit to Harry Allen 500 kV line is currently limited to ~975 MW of transmission capacity. Building SWIP North will increase transmission capacity of this line by ~1000 MW, which will be available to LS Power's affiliate and can be dedicated for CAISO use.

In addition to the economic benefits that CAISO calculates from Energy Savings and Congestion reduction, CAISO should also estimate Capacity Benefits from the incremental import capability that SWIP-North will provide.

LS Power thanks CAISO for the opportunity to provide these comments and looks forward to working with CAISO staff as it conducts economic study and the special sensitivity study to improve transfers to/from Pacific Northwest into California.