

**Response of the California Transmission Planning Group
Study Team to**

**Comments from Bay Area Municipal Transmission Group
Regarding CTPG's Phase 2 Study Report and Phase 3 Study Plan**

Comment Received:

CTPG has indicated that in Phase 3, it will use the same “net short” estimate used in Phase 2 for all scenarios, i.e., 52,764 gigawatt-hours. Given the level of uncertainty tied to the calculation of net short, BAMx believes that CTPG needs to develop additional scenarios in the future that assume lower levels of “net short”. For example, the latest California Renewable Energy Transmission Initiative net short estimate, which assumes the latest “incremental efficiency” and “distributed generation” outlook, results in a lower net short of 36,926 gigawatt-hours. A lower net short could result from assuming additional imports of renewable generation that utilize existing transmission and/or assuming significant amounts of Tradable Renewable Energy Credits and/or more State-led incentive programs for energy efficiency, combined heat and power applications, distributed renewables, and private generation. However, BAMx recognizes the need for the Phase 3 studies to be consistent with the Phase 1 and 2 studies with respect to the net short calculation, leaving other assumptions for later studies.

CTPG Study Team Response:

CTPG agrees with BAMx that the Net Short assumptions have a level of uncertainty and that future studies on different Net Short values can add further refinements. This analysis will be a considered in future study phases.

Comment Received:

Please provide CTPG’s rationale for continuing to utilize the Generation Interconnection Queue Portfolio in the Phase 3 study. BAMx supports the CTPG’s decision to also run a “Best CREZ” portfolio in Phase 3 based upon the analyses of California Renewable Energy Transmission Initiative. In particular, BAMx supports the inclusion of Westlands and Solano as high-priority, low environmental impact CREZs for renewable development.

CTPG Study Team Response:

As outlined in the Phase 3 Study Plan, data from both the “Best CREZ” portfolio and the Generation Interconnection Queue portfolio will be utilized in the Phase 3 studies. As mentioned by BAMx, the inclusion of low environmental impact CREZs in the “Best CREZ” portfolio should be taken into account in determining which resources will be developed in meeting the State’s renewable portfolio goals by 2020.

For the same reason, in response to stakeholder input on the Phase 2 Study Plan, the CTPG included a commercial interest portfolio of renewable generation based on the generation interconnection queues of CTPG members. The selection criteria used for the California ISO queue resulted in the inclusion of projects in the following stages in their interconnection process. Those criteria were: (1) For Serial interconnection studies (LGIP and SGIP) – All renewable projects with all interconnection studies completed and that have either signed or are in process of signing their interconnection agreement; and, (2) all remaining renewable projects in the California ISO Transition Cluster (after posting of financial securities). The portfolio also added the proposed renewable generation projects and associated transmission for renewable energy projects considered to be the most advanced in their respective approval processes from the other CTPG planning entities (the Imperial Irrigation District, the Los Angeles Department of Water and Power, the Sacramento Municipal Utility District, the Transmission Agency of Northern California, and the Turlock Irrigation District). Based on these criteria, CTPG considers the Generation Interconnection Queue portfolio to contain renewable resources that have a reasonably high likelihood of being developed to meet the State’s renewable portfolio goals by 2020.

Comment Received:

CTPG has indicated that in Phase 3 it would continue to utilize the 70/30 in-state/out-of-state generation re-dispatch approach for most scenarios. So far, CTPG has not provided any justification to continue to use this assumption. BAMx is encouraged that CTPG has proposed to test the sensitivity of this assumption by utilizing an “out-of-state” re-dispatch method in Phase 3. BAMx believes that this method is more appropriate than using the in-state/out-of-state generation re-dispatch ratios. BAMx does not understand why CTPG infers that this scenario, which assumes a more competitive market for generation capacity across the WECC footprint, is declared less likely and treated only as a sensitivity scenario.

CTPG Study Team Response:

CTPG is not treating the “out-of-state” dispatch method in Phase 3 as a “sensitivity scenario” and has not “declared” that this scenario is “less likely” than any other scenarios. CTPG agrees that the relative likelihood of the various scenarios actually materializing between now and year 2020 is an important factor in deciding which set of identified transmission upgrades should be included in CTPG’s conceptual transmission plan.

Comment Received:

CTPG in section 6.2 of the Draft Phase 3 study plan states the following:

Phase 3 will investigate removing the in/out of state constraint for the fuel type method, permitting the decrement of fossil generation across WECC based on minimizing carbon footprint for electricity production. CTPG recognizes that minimizing the carbon footprint requires a WECC wide approach. For example, a national carbon tax would apply equally to all fossil generation plants in the United States. If the carbon tax was sufficiently high, coal fired generation would cost more than other types of fossil generation and imposing an in/out of state constraint on the amount of coal fired generation that is decremented in

response to the addition of renewable generation would not be coherent under a national carbon tax.

BAMX endorses CTPG's recognition of the above in its analysis. It appears that in Phase 3, CTPG will continue to follow the approach of decrementing generation based on fossil fuel type as a proxy for reduction by carbon footprint rather than using either emission rates or a carbon tax approach. While BAMx recognizes that the emission rates approach cannot be implemented in a short amount of time given the unavailability of such data, BAMx believes that the carbon tax approach can be realistically implemented by deploying an Optimal Power Flow (OPF) model with a WECC footprint. BAMx encourages this type of study in future efforts.

CTPG Study Team Response:

CTPG appreciates BAMx's support of the unconstrained in/out of state re-dispatch scenario. CTPG looks forward to performing more complex studies such as Optimal Power Flow in the future. An Optimal Power Flow is typically a generation dispatch algorithm to achieve the lowest cost of generation within the interconnected WECC electric system. An Optimal Power Flow program requires generator operating parameters (e.g., start-up times, ramp rates, minimum output levels, must-run requirements) and fuel conversion efficiencies; projected fuel costs (which can include a carbon tax adder); generation additions; generation retirements; forecast electric loads; and transmission additions. Based on generating unit operating capabilities, fuel conversion efficiencies and projected fuel costs, the program dispatches controllable generation to meet load recognizing applicable transmission constraints (e.g., line ratings) and other grid operating restrictions (e.g., import nomograms). Generation additions included in the Optimal Power Flow program would, in part, be governed by California's 33-percent renewable goal as well as the renewable mandates adopted in other areas of the WECC. WECC's Transmission Expansion Planning Policy Committee is engaged in an ongoing effort to collect the data necessary to populate Optimal Power Flow programs and conducts analyses using the Optimal Power Flow program based on a study program developed by WECC members.

Comment Received:

CTPG has done a commendable job in analyzing multiple scenarios in its work to date. BAMx believes CTPG needs to provide access to the power flow cases to allow stakeholders to better understand the results of their studies to date and in the future. BAMx therefore requests that CTPG provide all the power flow cases used to develop the thirteen scenarios modeled in the Phase 2 study.

CTPG Study Team Response:

Power flow cases used in CTPG's analyses will be provided to requesting stakeholders pursuant to the process set forth below:

1. The requesting stakeholder should submit a request for power flow cases used in CTPG's analysis to Gary DeShazo of the California Independent System Operator ("ISO") at

GDeShazo@caiso.com. The requesting stakeholder should submit the request along with the following information:

- a. The specific power flow cases requested;
 - b. The stakeholder's contact information (name, phone number, e-mail address);
 - c. The applicable, fully executed non-disclosure agreement with the Western Electricity Coordinating Council qualifying the requesting stakeholder to receive WECC-developed power flow cases;¹
 - d. The applicable, fully executed non-disclosure agreement with the ISO qualifying the requesting stakeholder to receive ISO-developed power flow cases;²
 - e. The applicable, fully executed non-disclosure agreement with the California ISO qualifying the requesting stakeholder to receive ISO-developed power flow cases that contain information related to the interconnection of new generators under the ISO's Large Generator Interconnection Process (LGIP) and/or ISO's Small Generator Interconnection Process (SGIP);³ and/or,
 - f. The applicable, fully executed non-disclosure agreement with the Imperial Irrigation District (IID) qualifying the requesting stakeholder to receive the "detailed" IID system representation.⁴
2. The California ISO will review the request and determine whether all applicable non-disclosure agreements are in place.
 3. If all applicable non-disclosure agreements are not in place, the California ISO will so inform the requesting party.
 4. If all applicable non-disclosure agreements are in place, the California ISO will forward the request to the CTPG member that performed the requested power flow study and indicate that all applicable non-disclosure are in place.
 5. Upon approval of the California ISO as indicated above, the CTPG member that developed the requested power flow cases will provide the requesting stakeholder with the requested power flow cases.

Comment Received:

In Section 2.2 of the Phase 3 Study Plan, the CTPG states the following:

Cases A, B, and F include those transmission additions that are in the WECC 2019 Heavy Summer seed case as well as certain transmission elements that will allow for the interconnection of new renewable resources. Cases A, B, and F assume that major upgrades are built including Midpoint-Devers-Valley, Tehachapi Segments 1-11, the Barren Ridge/Haskell Canyon/Rinaldi upgrades, and upgrades in the Owens Valley.

¹ Contact Kent Bolton at the WECC: Kent@WECC.biz or phone: 801-582-0353.

² Contact Gary DeShazo at the CAISO: GDeShazo@caiso.com or phone: 916-608-5880.

³ Contact Gary DeShazo at the CAISO: GDeShazo@caiso.com or phone: 916-608-5880.

⁴ Contact Steve Keene at the IID: sjkeene@iid.com or phone: 760-339-9550.

Please describe the status for those upgrades described as without Key Regulatory Approvals and Environmental Permits that are added in all scenarios. Please explain why it is a reasonable assumption to include these upgrades in all scenarios and what effect the lack of construction of these upgrades would have on CTPG's results.

CTPG Study Team Response:

Transmission elements included in the study cases without key regulatory approvals and environmental permits are listed below with an update on their status.

Upgrades without Key Regulatory Approvals and Environmental Permits	Status
New Colorado River ("Midpoint") 500-kV substation looping in existing 500-kV Palo Verde-Devers #1 line. 500-kV Colorado River-Devers #2 line	CAISO has granted conditional approval. CPUC has issued a conditional CPCN and has performed the environmental review required by the California Environmental Quality Act (CEQA).
500-kV Devers-Valley #2 line	The BLM has not yet issued the necessary authorizations under the National Environmental Protection Act (NEPA).
Expand Barren Ridge 230-kV substation. Upgrade existing 230-kV Owens Gorge-Rinaldi line from Barren Ridge to Haskell Canyon with double circuit 230-kV towers. Add Barren Ridge-Haskell Canyon #2 line on open side of towers	The project is under CEQA/NEPA environmental study process with the draft EIR/EIS expected by fall 2010
Upgrade existing 230-kV Owens Gorge-Rinaldi line from Haskell Canyon to Rinaldi	
Add 230-kV Castaic-Haskell Canyon #2 line on open side of towers	
Loop existing 230-kV Coachella Valley-Devers line into Mirage substation creating 230 kV Mirage-Devers #2 line.	Approved by CPUC.
Reconductor 230-kV Mirage-Devers #2 line from 393 MVA to 494 MVA.	Approved by CPUC.