

Pacific Gas and Electric Comments on the 2015-2016 Draft Study Plan and Stakeholder Meeting on February 23, 2015 and Economic Study Requests

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Comments

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to participate in the annual Transmission Planning Process (TPP) stakeholder process. PG&E submits these comments on the 2015-2016 Draft Study Plan and the topics discussed at the Stakeholder Meeting on February 23, 2015. PG&E commends the CAISO for their work thus far in the TPP and looks forward to continuing the collaborative process.

Renewable Generation Dispatch assumptions

Table 4-7 of the study plan includes typical renewable generation dispatch assumption at the time of the system peak. While this assumption is relevant for the Bulk Transmission System base case, renewable dispatch assumptions for the local area cases should be based on the time of the local area peak. Therefore, PG&E recommends using typical renewable dispatch corresponding to the time of the local area peak for the local area cases.

Load Increase Sensitivity Study for Fresno Area

PG&E is undertaking several large load interconnection studies in the Fresno area (e.g., Merced Irrigation District interconnection and the interconnection of the High Speed Rail). Due to the size and the location of these loads, there is a need to conduct a sensitivity study for PG&E's Fresno area to evaluate the reliability impact of the addition of these two large loads to the system. Therefore PG&E recommends addition of a sensitivity study for the Fresno area that incorporates the Merced Irrigation District and High Speed Rail load in the Fresno area cases. The sensitivity studies should be conducted for Summer Peak, Summer Partial Peak, and Summer Off Peak system conditions.

Over Generation Frequency Response Assessment

PG&E echoes its earlier comments on the 2014-2015 TPP and appreciates the CAISO's attention to the matter of over generation and efforts to identify next steps for further evaluation. As suggested in CAISO's stakeholder meetings during the 2014-2015 TPP, the 2014-2015 TPP study related to the Over Generation Frequency Response Assessment was based on an optimistic view of resource capabilities. A more conservative set of assumptions could lead to worse result. The changes in study assumptions could significantly impact the outcome of the study. PG&E appreciates and supports CAISO's continued focus on improving the modelling assumptions to further evaluate the impacts of over generation in the next TPP cycle. PG&E also encourages the CAISO to work closely with PG&E and other WECC entities to review and update the modelling assumptions and expand the analysis.

PG&E Local Area Generation Requirements

Minimum conventional generation requirements for large load centers may be needed to ensure the system has enough frequency response, voltage regulation, VAR support, inertia and other electrical attributes to assure a stable and reliable system. The periods of particular concern are the periods of high renewable penetration and high hydro production when the system is stressed by over-generation conditions and conventional resources may be not be economically dispatched. PG&E would like to recommend studies to evaluate any minimum conventional generation requirement for the large load centers e.g, the San Francisco Bay area.

High Voltage Sensitivity Study

PG&E recommends the CAISO incorporate a "High Voltage" Sensitivity study case to be included in the 2015-2016 TPP Study Plan. PG&E proposes that the High Voltage Sensitivity study be based on the light load base cases, which are intended to reflect system minimum load condition, with the goal of identifying and evaluating alternative solutions for mitigating High Voltage conditions in the PG&E area. The sensitivity case(s) should allow for varying of assumptions such as generation dispatch, load level, and path flows based on historical data. These cases should reflect the high voltages issues in the local area and identify the most efficient solution to high voltage conditions covering multiple locations within PG&E's service territory.

DR Modelling Assumptions

PG&E recognizes the need for Demand Response programs in reliability studies to be reliable. Per the 2015-2016 Draft Study Plan, only Demand Response programs that can be relied upon to mitigate "first contingencies" as defined in the 2012 LTPP Track 4 will be counted. The Draft Study Plan indicates that participation in the CAISO market in sufficiently less time than 30 minutes is the requirement to mitigate "first contingencies." However, other Demand Response programs that don't meet the same criteria are

still valuable. Demand Response programs that can provide day ahead and day of benefits provide some value and should be considered in the context of meeting needs for transmission planning.

Long-Term Local Capacity Requirement Assessment for LA Basin / San Diego Areas

PG&E supports the CAISO's continued in depth analysis of local reliability needs in the LA Basin/San Diego Areas. PG&E recognizes that the 2014-2015 TPP determined that the local capacity requirements in these areas are met with the existing system and approved projects given certain assumptions for AAEE and DR. However, it is prudent for the CAISO to continue to monitor and evaluate local reliability in both the LA Basin and San Diego in this and subsequent planning cycles to ensure that reliability needs for the grid can still be met as study assumptions and inputs may change in the future.

Oakland Area Study

PG&E supports the CAISO's intention as stated during the stakeholder meeting to perform a study examining the local reliability needs in the Oakland area. PG&E suggests that non-transmission alternatives be considered to meet potential needs in the area.

Economic Study Requests

PG&E requests two economic studies be included as part of the CAISO 2014/15 TPP.

Path 15 Study

PG&E requests that the CAISO conduct an economic assessment of Path 15 that (1) considers production costs and other costs utilizing PG&E's suggested study enhancements as described below, and (2) considers Path 15 upgrades to help minimize these costs. There are numerous alternative projects and combinations of minor upgrades that can potentially be designed to achieve a Path 15 rating increase in the range of 300-1000 MW.

Path 26 Study

The 2014-2015 TPP showed that Path 26 would experience 297 hours of congestion in 2019 and 242 hours of congestion in 2024 based on the assumptions in the production simulations. PG&E proposes that a study be undertaken in the 2015-2016 TPP to re-estimate the congestions levels on Path 26 and other costs utilizing PG&E's suggested study enhancements as described below.

To the extent Path 26 is congested in this study, PG&E suggests consideration of a Midway-Vincent 500 kV line, a Midway-Vincent 230 kV line, Big Creek-Helms interconnection or other alternatives as indicated by production simulations and power flow studies.

Potential Enhancements to the Economic Study Methodology

PG&E would like to propose the study enhancements described below to be considered as a method to more accurately assess potential congestion and economic project benefits.

Gridview Model Validation and Calibration

PG&E encourages the CAISO to further validate and calibrate the Gridview model to address key questions being asked in the study cycle. For example, Gridview has a system constraint option for hydro that allows banking of curtailment and re-allocation of hydro energy in next days/ hours. The modelling of hydro using proportional load following and hydro-thermal co-optimization already accounts for the anticipated flexibility and therefore may be over-stated. Allowing the model to bank curtailment suggests perfect foresight and may significantly mask an over-generation problem.

It is imperative that we gain a strong understanding of production cost model simulation and interaction between economic dispatch and system constraints (e.g. Transmission limits, reserve constraints, violations, energy not served). PG&E encourages the CAISO to develop for the model an over-generation back-down protocol (wind/solar curtailment, spill hydro, dump power and energy not served) and define “hard” constraints such as transmission transfer limits and reserve requirements. In addition, PG&E encourages an investigation addressing the Duck Curve in the following aspects: (1) trade-off between managing belly (over-generation) and the evening ramp (energy not served) and (2) trade-off between meeting flexibility reserve requirement vs. curtailment of wind/solar. The end goal is to better understand and to interpret simulation results to identify and get insights into system stress.

50% RPS Sensitivity Study

PG&E supports the inclusion of a special sensitivity study to assess the potential impacts of a 50% renewable energy goal. This type of study can provide valuable information about the potential transmission impacts of further renewables penetration and the associated transmission needs to help inform California’s procurement practices in the future. However, PG&E emphasizes that the stated intent of this study is to be used for informational purposes only; the purpose is not to support a justification for policy-driven transmission upgrades in this cycle. Furthermore, PG&E would request that the CAISO to be clear when communicating the study results that any transmission cost estimates developed through this study do not necessarily capture all of the costs that may be associated with a 50% renewable goal. And there is potential for these results to change significantly as future studies and assumptions are refined.

The value of this informational-only special study (Special Study) is highly dependent on the inputs and assumptions that are used. PG&E strongly agrees the CAISO should not assume that all generation in the portfolio is fully deliverable, and that the Special Study should instead focus on estimating the amount of congestion-related curtailment and what transmission could cost effectively reduce renewables curtailment. This methodology will examine the potential congestion-related curtailment and can provide more information about congestion than the standard deliverability assessment. Because the CPUC is providing a portfolio with the simplified assumption that all projects will be Energy Only (EO), the standard deliverability study would not be appropriate in this context.

PG&E commends the CAISO for their work with the CPUC on developing functionality in the RPS Calculator to consider development of both EO and Full Capacity Deliverability Status (FCDS) renewable energy projects. The CAISO should work closely with the CPUC to ensure that the portfolio provided by the RPS calculator is realistic and properly considers the economic tradeoff between energy-only and FCDS projects. PG&E supports this improvement, and notes that the RPS Calculator output is highly dependent on this enhancement as well as other assumptions in the calculator. It would provide valuable information if different sensitivity portfolios for the higher renewable penetration could be considered. If this is not feasible in the 2015-2016 TPP Study timeline, the Special Study could be performed with the energy-only portfolio provided by the Calculator, with the Special Study used to identify useful future sensitivity runs that could be run in the 2016-2017 TPP cycle. For example, a portfolio that includes substantial wind generation development in Northern California would lead to substantially different impacts than solar development in the Southern California. The results could mean very different things for flows on the bulk power system, in particular Path 15 and Path 26. Consideration of the current CAISO interconnection queue can help inform potential considerations and sensitivities.

An important distinction should be made in this special study between curtailment from over-generation and curtailment from congestion. As described in E3's "Investigating a Higher Renewables Portfolio Standard in California" report, a higher penetration of renewables has been shown to potentially increase the amount of curtailment due to system over-generation. Therefore, localized transmission congestion may be a secondary effect when compared with system over-generation curtailment for some resources. The CAISO should seek to separately identify the amount of marginal congestion that occurs where there is not a system over-generation condition. It will be important to consider the impact of both of these types of curtailment and also to avoid double-counting curtailment.

Additionally, PG&E encourages the CAISO to assess transmission system reliability/stability impacts associated with higher renewables penetration. With the expected retirement of large amounts of OTC units and large build out of inverter type resources, especially in Southern California, there is uncertainty as to the system frequency response and transient stability capability and if it will be sufficient enough for local and system-wide reliability. Transmission system enhancements (e.g. synchronous condensers) and potential resource or operating practices should also be considered along with their potential costs.