Comments of Pacific Gas and Electric Company on the 2013-2014 Transmission Planning Process Unified Planning Assumptions and Study Plan

Submitted by	Company	Date Submitted
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Comments

Pacific Gas and Electric Company (PG&E) values the opportunity to participate in the annual Transmission Planning Process. PG&E submits these comments on the 2013-2014 TPP Draft Study Plan dated February 22, 2013. Our comments are not necessarily in order of importance; rather, they have been organized by section of the draft study plan for convenience to the CAISO and other stakeholders.

We look forward to continued participation in the process, and appreciate the significant work that the CAISO staff put into developing this study plan.

Public Policy Objectives (Sections 3, 4, 4.2)

PG&E believes that the CAISO's draft study plan criteria and objectives should be broadened to take a more comprehensive look at the capability of the transmission system to meet public policy and renewable resource integration objectives by making a number of minor modifications to the plan language. PG&E has attached our suggested changes addressing this objective in Appendix A, Sections 3, 4, and 4.2.

OTC Generation (Section 4.1.9, page 17)

The CAISO has proposed in Table 4-3 that Pittsburg 5 and 6 be modeled on-line for 2013-2017 and for 2018 and beyond. Pittsburg 7 is proposed to be modeled off-line for 2018 and beyond. PG&E recommends that Pittsburg 5, 6 and 7 all be modeled as on-line for 2013-2017 and then off-line for 2018. In determining when "new" generation is considered in the base case of studies, the CAISO had generally considered generation that is under construction or has received regulatory approval to be modeled as on-line. Because the current proposed plans for Pittsburg 5 and 6 have not met this threshold, PG&E believes that all three Pittsburg units should be modeled as off-line at the end of 2017.

Demand Forecast (Section 4.1.11, page 18)

PG&E supports the CAISO proposal to incorporate incremental uncommitted energy savings. Reducing demand commensurate with the CEC's Low-Savings identified in the *Energy Efficiency Adjustments for a Managed Forecast: Estimates of Incremental Uncommitted Energy Savings Relative to the California Energy Demand Forecast 2012-2022*, dated September 14, 2012 is appropriate for the 2013-2014 TPP studies.

Local Area Studies (Suggested location: 4.1.20, page 28)

PG&E believes that a number of unique and critical long term transmission concerns are developing in focused areas of PG&E's service territory that are not currently being fully evaluated using normal study criteria. These issues are as follows:

- **Kern Area Load**

  The Kern area is experiencing an increase in load interconnection requests on the outlying boundaries primarily served by long mostly radial 70 kV transmission lines. In order to address reliability issues identified in the 2012-2013 TPP, in addition to potential local transmission limitations caused by new load interconnections, PG&E requests that the CAISO complete a detailed study of the Kern area to include forecasted load interconnections.

- **Humboldt Area Generation & Extreme Events**

  As a part of the Reliability Assessment study, defined in Section 4.1 of the Study Plan, PG&E recommends the CAISO include an analysis of the transmission supply issues and reliability impacts to the Humboldt area under extreme events.

PG&E asks that the CAISO consider adding additional language to the study plan to capture the evaluation of these localized concerns as part of the Reliability Assessment. Recommended language is contained in Appendix A as Section 4.1.20.

RPS Study Methodology (Section 4.2.1, page 29)

As part of its proposed methodology the CAISO states that it will "establish renewable portfolios to be studied that are aligned closely with the portfolios developed by CPUC and used by the ISO in its renewable integration studies." PG&E requests that the CAISO communicate to stakeholders early in the process if and when the CAISO's RPS portfolios deviate from the portfolios developed by the CPUC.

PG&E requests that the CAISO provide to stakeholders the dispatch level to be considered for different renewable technologies.

PG&E also requests the CAISO provide details on its methodology as to how it will assign the Distributed Generation portion of its RPS portfolios to specific buses for use in its power flow studies.

Local Capacity Requirement (Section 4.3, page 31)

PG&E suggests that the load forecast used for the local capacity studies also include the effects of incremental uncommitted energy savings. These incremental uncommitted energy savings should

be consistent with the CEC Low-Savings level identified in the demand forecast outlined in the *Energy Efficiency Adjustments for a Managed Forecast: Estimates of Incremental Uncommitted Energy Savings Relative to the California Energy Demand Forecast 2012-2022*, dated September 14, 2012.

Economic Planning Study (Section 4.4, page 32)

In 2012, CAISO markets experienced substantial congestion due to the projected thermal loading on the Table Mountain 500/230 kV transformer following a Table Mountain South (TMS) Double Line Outage (DLO) contingency, which was modeled in the CAISO market as binding element 6110_TM_BNK_FLO_TMS_DLO_NG. PG&E requests that the CAISO complete an Economic Planning Study to evaluate the congestion associated with the above mentioned binding element.

Nuclear and Once Through Cooling (Section 4.6, pages 32-33)

Based on our understanding, the CEC requested the DCPP absence studies that CAISO performed in the 2012-2013 TPP cycle. Because the CAISO's Nuclear Absence Studies performed in the 2012-2013 TPP cycle addressed the CEC's request, additional studies for DCPP are unnecessary in the 2013-2014 Transmission Planning Process. We therefore request that the CAISO exclude any studies related to DCPP from the 2013-2014 Transmission Planning Process.

In addition, because the objective of the 2012-2013 CAISO nuclear generation backup plan was to evaluate potential transmission reliability concerns in the absence of DCPP, PG&E requests that the CAISO remove the reference to the "utilities' relicensing assessments" as an objective of the study. Studies required to support DCPP relicensing efforts are outside the scope of CAISO studies.

A complete redline of our suggested changes to Section 4.6 are provided in Appendix A.

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Appendix A: PG&E's Redline of Recommended Changes

3. Public Policy Objectives and the Conceptual Statewide Transmission Plan

With FERC's approval of the ISO's revised TPP in December 2010, two important new elements were incorporated into phase 1 of the TPP. These two new elements – the specification of public policy objectives for transmission planning, and the development of a conceptual statewide plan as an input for consideration in developing the ISO's comprehensive transmission plan – are discussed in this section.

3.1 Public Policy Objectives

The revised TPP created a category of transmission additions and upgrades to enable the ISO to plan for and approve new transmission needed to support state or federal public policy requirements and directives. The impetus for the "policy-driven" category was the recognition that California's renewable energy goal would drive the development of substantial amounts of new renewable supply resources over the next decade, which in turn would drive the majority of new transmission needed in the same time frame. It was also recognized that new transmission needed to support the state's renewable energy goal would most likely not meet the criteria for the two predominant transmission categories of reliability and economic projects.

Evaluating the need for policy-driven transmission elements begins in Phase 1 with the ISO's specification, in the context of the unified planning assumptions and study plan, of the public policy objectives it proposes to adopt for transmission planning purposes in the current cycle. For the 2013-2014 planning cycle, the overarching public policy objective is the state's mandate for 33% renewable energy by 2020. For purposes of the TPP study process, this high-level objective is comprised of two sub-objectives: first, to support the integration and delivery of 33% renewable energy over the course of all hours of the year, and second, to support Resource Adequacy (RA) deliverability status for the renewable resources inside and outside the ISO balancing authority area that are needed to achieve the 33% energy goal. Either of these sub-objectives could lead to the identification and approval of policy-driven transmission elements in the ISO's 2013-2014 comprehensive transmission plan.

3.1.1 Achieving 33% renewable energy on an annual basis

The state's mandate for 33% renewable energy by 2020 refers to the share of total electricity consumed by California consumers over the course of a year that is provided by renewable resources. In the context of the transmission planning studies, the question to be investigated is whether a specified portfolio of renewable supply resources, in conjunction with the conventional resource fleet expected to be operating, will deliver a mix of energy over all 8760 hours of the year that is at least 33% supplied by the renewable portfolio on an annual basis. Through the studies the ISO performs to address this question, the ISO could identify policy- driven transmission additions or upgrades that are necessary ~~in order to achieve~~and/or provide cost savings as California achieves the 33% renewable share of annual consumption by 2020.

3.1.2 Supporting RA deliverability status ~~for~~ and integration of needed renewable resources ~~outside the ISO balancing authority area~~

Deliverability for the purpose of a resource providing RA capacity is a distinct requirement and is integral to achieving the 33% RPS policy goal. Resources that are connected directly to the ISO grid can establish deliverability through the ISO's annual process to determine Net Qualifying Capacity (NQC) for each resource for the upcoming RA compliance year (i.e., calendar year). A new resource seeking to interconnect to the ISO grid can elect Full Capacity deliverability status in its interconnection request, and this election triggers a study process to identify any network upgrades needed for deliverability and ultimately leads to the construction of the needed network upgrades by the relevant PTO whose system needs to be upgraded.

For resources outside the ISO, however, there is no way under the current rules for the resource to obtain RA deliverability status. Rather, in conjunction with the annual NQC process the ISO assesses the Maximum Import Capability (MIC) at each intertie, and then conducts a multi-step process whereby load-serving entities inside the ISO can utilize shares of the MIC to procure external capacity to meet their RA requirements. Moreover, the determination of the intertie MIC values is based not on an assessment of maximum physical import capability in each area, but only on historic energy schedules under high-load system conditions. This approach has resulted in extremely small RA capacity values for certain interties. As a result, areas outside the ISO that are rich in renewable energy potential and have been included in the ISO's 33% supply portfolios, have raised concerns that they will be unable to develop their projects if they are unable to offer RA capacity to their potential LSE buyers. Similarly, transmission path RA limitations internal to the CAISO Grid (e.g. Path 15 or Path 26) can constrain the amount of RA a renewable energy developer of the buyer from offering or using renewable energy for either RA or LCR credit. The ISO therefore will include, in this TPP cycle, the policy objective of expanding RA import capability in those areas within and outside the ISO BAA where (a) renewable resources are needed in the 33% RPS base case portfolio[1] to meet the state's 33% RPS target, and (b) the RA import capability under the current MIC rules is not sufficient to enable these resources to provide RA capacity.

This particular sub-objective requires a different study approach than that required for the previous sub-objective. The fundamental concept behind RA is that the ISO should be able to utilize all the designated RA capacity simultaneously to provide energy and reserve capacity when needed to meet peak system demand. Pursuant to this concept, the assessment of deliverability focuses on the simultaneous operation of available internal RA capacity and import of external RA energy by designated RA capacity during system peak hours. Because this type of study is different than the studies needed for the previous sub-objective, the RA deliverability assessment could result in the ISO identifying different needed policy-driven transmission elements.

The capability of the transmission system to support integration of needed renewable resources may also be explored. For example, regulation units in Northern California may be needed to supply system ramping capacity when Southern California renewable energy sources are quickly ramping up or down.

Further, a strong backbone transmission system within California can allow loads in Northern California to be served during periods of over-generation in Southern California. When solar and wind output are high, sufficient transfer capability on Path 15 and Path 26 can avoid curtailments of renewable resources and support system-wide load-resource balance. To evaluate the capability of California's 500kV backbone transmission system, CAISO may establish policy cases based on operating conditions and a range of flows on Path 15 and Path 26.

4. Technical Studies

In this planning cycle, the following technical studies will be conducted by the ISO in a public stakeholder process:

- Reliability Assessment to identify needed reliability projects
- If needed, special cases may be developed that are based on the results of other studies. For example, if the LTPP finds that there are operational issues with specific cases, the CAISO may make use of these cases, assumptions or models to comply with the CAISO's primary objectives stated above in this TPP cycle.
- 33% by 2020 renewable resource analysis to identify needed policy-driven elements
- Economic Planning Study to identify needed economically-driven ~~elements~~projects
- Long-term Congestion Revenue Rights to identify needed upgrades
- Local Capacity Requirements
- Nuclear and Once Through Cooling update (see section 4.1.11)

4.1.20 Local Area Studies

As an extension of the Reliability Assessment Study Areas defined in section 4.1.1, the following Local Area Studies will be completed to determine the transmission upgrade needs and additions in accordance with the same Reliability Standards and Criteria as detailed in section 4.1.3. This analysis will utilize the same assumptions and tools covered in 4.1, however assumptions for the local study areas may be enhanced to cover critical system conditions within the area of study.

Kern Area

The Kern area is experiencing an increase in load interconnection requests on the outlying boundaries primarily served by long mostly radial 70 kV transmission lines. This local area study will address reliability issues identified in the 2012-2013 TPP, in addition to potential local transmission limitations caused by new load interconnections. The study will focus on modeling forecasted load interconnections and contractual requirements in the Kern area to determine local reliability issues.

Humboldt Area

Energy supply to the Humboldt area is provided by both internal generation and 60 kV and 115 kV transmission lines. This local area study will analyze supply limitations to the Humboldt area following critical system outages or extreme events, to include both generation and transmission outages.

4.2 Policy Driven 33% RPS Transmission Plan Analysis

4.2.1 Study methodology

The goal of the 33% renewable resource analysis is to identify the transmission needed to ~~meet~~ support the integration and delivery of the 33% renewable resource target in the study year which, for this cycle, is 2023.

~~In the last planning cycle, the ISO performed the 33% renewable resource analysis for 2022.~~ To perform ~~that~~ this study, a comprehensive planning methodology ~~was developed~~ will be used that includes~~d~~ the following key steps ~~and that will be used~~ in this planning cycle:

1) Establish renewable portfolios to be studied that are aligned closely with the portfolios developed by CPUC and used by the ISO in its 2013 renewable integration studies. In accordance with tariff Section 24.4.6.6, the renewable portfolios will reflect such considerations as environmental impact, commercial interest and available transmission capacity, among other criteria. ~~Multiple portfolios have previously been developed, but may need to be updated.~~
2) Conduct production simulation for each of the developed portfolios using the ISO unified economic assessment database with renewable portfolios modeled. The production simulation results are used to facilitate the development of power flow scenarios for the power flow and stability assessments.
3) If needed, rely on the renewable resources integration analysis to assess the impact on facilities as described above in Section 4. Because production simulation models are designed to utilize normative assumptions regarding load, hydro conditions, thermal resource outages, and other variables in order to produce reasonable, mid-range estimates of resource dispatch and prevailing power flows, analysis that relies on such models is generally suitable for long term economics but not to identify many operating issues in the near-term or longer-term. These operating issues occur during extreme events such as very high output of wind, solar and hydro resources combined with very low load conditions
~~3)~~4) Conduct comprehensive power flow and stability assessments including
   - Contingency analysis using regular power flow (GE PSLF)
   - Voltage stability assessment using governor power flow (post-transient)
   - Transient stability using GE PSLF
   - Deliverability assessment
   - Utilization assessment based on production simulation
5) Include the results of studies conducted as described in section 3.1.2 above
~~4)~~6) Categorize any identified transmission upgrade or addition elements based on the tariff Section 24.4.6.6 requirements.

~~In the 2013-2014 planning cycle, similar methodology will be used to identify the transmission need to meet 33% RPS in 2023.~~

The CPUC and CEC provided the ISO with the RPS portfolios to be used in the 2013-2014 transmission planning process on February 8, 2013. The RPS portfolio submission letter is located on the ISO website at the following link:

http://www.caiso.com/Documents/2013-2014RenewablePortfoliosTransmittalLetter.pdf

4.2.2 Study scope

The study scope of the 33% renewable resource analysis in this planning cycle includes the following items:

- Develop ISO 2023 power flow base case starting from 2023 reliability base cases to model different load conditions based on the study methodology and assumptions.
- Establish portfolios to be studied.
- Review 33% renewable transmission plan assumptions (status of projects not approved should be assessed for likelihood of moving ahead).
- Model those portfolios in production, power flow, and stability models
- Run production model and use results to guide flow and dispatch assumptions in power flow model
- Analyze stressed power flow models identified in the stochastic analysis for peak, off-peak and other scenarios if needed. These should capture conditions for the CAISO's controlled grid and the entire Western Interconnection that show stressed patterns including cases possibly in different seasons. The peak load scenario uses CEC 1-in-5 coincident peak load.
- Update 33% RPS transmission plan based on findings.
- Several sensitivity cases may be created to evaluate different scenarios as part of the comprehensive plan analysis

4.6 ~~Nuclear and~~ Once Through Cooling

As part of the 2012-2013 transmission planning cycle, two studies related to the nuclear generation backup plan were performed. One addressed the extended outage scenario of the nuclear generation in the intermediate time frame. The other considered the reliability concerns and potential mitigation options in the long term. The mid-term study is considered contingency planning for future unplanned long-term outages. The study addressed a request from the CEC 2011 IEPR. The study also incorporates once-through cooling policy implications for generating units that have compliance schedules. ~~The long-term study was undertaken as part of the utilities' relicensing assessments~~. The ISO will update and refine these studies and mitigation plans in the 2013-2014 transmission planning cycle.

Approximately 30% of California's in-state generation capacity (gas and nuclear power) uses coastal and estuarine water for once through cooling. On May 4, 2010, the State Water Resources Control Board adopted a statewide policy on the use of coastal and estuarine waters for power plant cooling. The policy established uniform, technology-based standards to implement federal Clean Water Act section 316(b), which require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. The policy was approved by the Office of Administrative Law on September 27, 2010 and became effective on October 1, 2010. The policy required the owner or operator of an existing non-nuclear fossil fuel power plant using once-through cooling to submit an implementation plan to the SWRCB. The implementation plans specified an alternative that would achieve compliance by a date specified for each facility identified in the policy.

The ISO anticipates that the SWRCB policy will cause the majority of gas-fired generating units using once through cooling to come offline in order to retrofit or repower using alternative cooling technologies, or retire. ~~The policy may also have an impact on the relicensing of units at San Onofre Nuclear Generating Station or Diablo Canyon Power Plant. The update and refinement of the nuclear studies will incorporate once-through cooling policy implications~~.

The ISO is considering deferring the ~~nuclear and~~ once through cooling update to be completed in the mid-November 2013 through May 2014 period, so that that the update can be performed using the CEC's 2013 IEPR forecast including the most up to date information on uncommitted energy efficiency. This would enable those results to be more comfortably relied upon in the 2014 LTPP proceedings. If the ISO proceeds on this path, those studies would become separate from the ISO's 2013-2014 transmission plan and be released as a separate study.