

**COMMENTS OF THE STAFF OF THE
CALIFORNIA PUBLIC UTILITIES COMMISSION
ON THE CALIFORNIA TRANSMISSION PLANNING GROUP'S TRANSMISSION PLANNING STUDIES
FOLLOWING THE JANUARY 20, 2010 STAKEHOLDER MEETING**

January 25, 2010

Introduction

Following the January 20, 2010 stakeholder meeting, the Staff of the California Public Utilities Commission (CPUC Staff) appreciates this opportunity to comment on the status and plans for the California Transmission Planning Group's (CTPG's) transmission planning studies. We understand that at this point stakeholder comments can impact the final Phase 1 report and the plan for Phase 2 studies, which are scheduled for completion on February 15 and 9, respectively.¹

Our comments address the following topics.

1. **Alternative Renewable Generation Assumptions**
2. **Clarifying the Generation Assumptions Underlying Power Flow Cases**
3. **Alternative Re-dispatch Assumptions**
4. **Focus Less on Contingencies and Transient Conditions, and More on Robust Assessment of Resource and Operational Uncertainties**
5. **Need for Production Simulation?**
6. **Need to Include High-Level Assessment of Routing Considerations**

Additionally, please provide the "embedded file" RETI_Net_Short_09-09-23.xls identified on page 18 of the November 22 Draft Study Plan., which the CTPG reply to CPUC staff's December 29, 2009 comments indicated was "attached" and also posted on the CTPG web site, but so far has not been located.

¹ according to slide 63 of the January 20 presentation

Topic 1. Alternative Renewable Generation Assumptions

Many stakeholders have requested, and the CTPG has expressed willingness to study, alternative renewable generation deployment scenarios beyond the single scenario described and studied to date. It is essential that the Phase 2 studies incorporate additional renewables deployment scenarios, and we understand that efforts to provide such scenarios are underway. This will facilitate identification and credible demonstration of which transmission investments are robustly needed over a range of possible futures. We understand that the CTPG has expressed reluctance to study higher levels of distributed renewable generation than what is already incorporated in the Phase 1 study's load and generation (including customer PV) assumptions, due in part to technical modeling challenges. Nevertheless, it would be possible, instructive and desirable to analyze transmission implications of a renewables deployment scenario reflecting higher levels of distributed renewables that reduce the need to develop central station renewables largely distant from load centers. We recognize that detailed electrical and low voltage network implications of these distributed renewables would ultimately require further assessment.

The renewables deployment scenario studied by the CTPG in Phase 1² has been characterized both in documents (the Draft Phase 1 Study Report and the January 20 presentation) and also in response to stakeholder comments as being based on LSE recommendations reflecting mainly actual procurement, development, and interconnection queue activity. For both understanding this deployment scenario and also for contrasting it with other deployment scenarios, please indicate for each renewables location (region/CREZ) identified on pages 24 and 25 of the Draft Phase 1 Study Report, how much of the listed "installed capacity" either has a signed interconnection agreement, or else meets all three of the following conditions:

1. It is in the CAISO's serial group or transition cluster (or, for interconnection outside of the CAISO area, has progressed beyond the first stage of interconnection studies), and
2. has begun environmental permitting (filed for Application for Certification (AFC) with CEC, Conditional Use Permit with city/county or, only if neither of the previous permits apply, has an ongoing Right-of-Way (ROW) application with federal land agency), and

² As summarized on slides 14, 16 and 17 in the January 20 presentation, and on pages 24-26 of the January 13 Draft Phase 1 Study Report.

3. has a Power Purchase Agreement (PPA) approved or pending approval by the CPUC (in the case of investor-owned utilities) or by a Publicly-Owned Utility; or a similar level of contractual certainty in the case of utility-owned generation.

This information is valuable because it reflects what portion of a renewable generation portfolio has a substantial degree of certainty. When combined with assessment of a range of possibilities regarding more *uncertain* portions of alternative portfolios, this helps identify low regrets or robustly needed transmission expansion facilities, as opposed to those facilities that may or may not be needed, depending on future developments.

To maximize the relevance and usefulness of CTPG's work, it is important that renewable generation buildout assumptions used in CTPG studies be transparent and also be consistent and/or readily comparable with assumptions being used in other planning and permitting processes, such as the Long-Term Procurement Planning process that the CPUC oversees for California's investor-owned utilities. To that end, the CPUC is participating actively in the effort by a subgroup of the RETI Stakeholder Steering Committee (SSC) to develop scenarios that reflect RETI's analysis and that also attempt a "rough cut" at the 33% RPS generation development scenarios the CPUC is developing in the 2010 LTPP.

Topic 2. Clarifying the Generation Assumptions Underlying Power Flow Cases

CTPG studies have been and presumably will be using and modifying WECC power flow cases. In order for stakeholders to understand the implications of CTPG study results and particularly their relevance to broader resource planning and energy policy issues and uncertainties, it is essential to understand what actual generation portfolios are represented in these power flow cases, including additions, retirements, initial (base case) levels of operation, and assumed changes in operation (re-dispatch) when adding renewable generation. Information of the types presented in Tables 8, 9, 10 and 21 of the Draft Phase 1 Study Report, illustrating re-dispatch and showing flows on major paths pre- and post-renewables additions, is inadequate for this purpose. The CTPG has agreed that it is important to report clearly which generators are being backed down. It is also important to report clearly what generators are assumed to be *operating* and at what levels, before and after renewables additions. The CTPG indicated that

this information is available in power flow cases developed by CTPG members and will be provided upon written request by parties that have signed nondisclosure agreements with WECC.

If there is no more timely and convenient way to obtain the information, CPUC staff may pursue the course suggested above, expecting that this will provide not only Base Case generation assumptions, but also changed generation and other assumptions (e.g., regarding intertie flows) used to represent re-dispatch. However, we also wish to explore the possibility of obtaining more aggregated and accessible information, such as (for example) aggregate CT and (separately) CCCT operating levels in the CAISO and non-CAISO portions of the LA Basin, initially and after re-dispatch.

Topic 3. Alternative Re-dispatch Assumptions

For several power flow cases using the single renewables buildout scenario examined to date, re-dispatch to accommodate the renewable generation was described as being based on a 70:30 split regarding in-state vs. out-of-state fossil re-dispatch, with fossil generation decremented incrementally in blocks, with each block representing a different heat rate level and with blocks having higher heat rates being decremented first. It is unclear if this is realistic in terms of either in-state/out-of-state split, order of re-dispatch, or geographic/topological distribution of re-dispatch. In-state versus out-of-state re-dispatch could be strongly influenced by assumed location of the new renewables as well as by whether other states substantially expand their own renewables procurement and consequently need to do their own re-dispatch. In-state re-dispatch could be influenced by local area reliability requirements as well as the need to maintain certain levels of flexible generation. Re-dispatch of storage hydro may also be an option in some hours. These and other implications or alternatives for re-dispatch would be more clear if the assumed generation mix and its operating levels was more clear, as discussed under Topic 2 above.

Going forward, the CTPG studies should definitely examine alternative possibilities regarding re-dispatch of non-renewable generation, limited renewables curtailment, and use of DR - - where these would alleviate potential congestion and reduce the need for transmission additions. Key questions involve how often such measures would be needed, what would be their economic tradeoffs, and how they would impact energy delivery from renewable generation.

Unfortunately, power flow studies alone cannot answer these questions, although generation and load assumptions in such studies could be varied to shed some light, which CPUC staff recommends (for example, specifically examining the ability of strategic re-dispatch and DR to reduce congestion, transmission additions, or renewable generation curtailment.)

Topic 4. Focus Less on Contingencies and Transient Conditions, and More on Robust Assessment of Resource and Operational Uncertainties

Following the December 17 stakeholder call, BAMx commented that the CTPG study “should involve many scenarios of resource development ... based upon meeting normal Category A (all facilities in service) cases ... for each scenario and then develop expected project cost estimates for each scenario based upon per-unit costs for only Case C [average year conditions] at this time...and provide insights as a first step before running any multiple contingency/Post-Transient Voltage stability analyses.” CPUC staff believes that these recommendations deserve consideration, especially when combined with more refined and transparent re-dispatch assumptions that are actually designed to reduce congestion and accommodate renewable generation. Renewables deployments in- and out-of-state, fossil generation turnover and system operational flexibilities all strongly influence what transmission additions would be needed for reliability and also for economic and renewables delivery purposes. These factors should be meaningfully addressed before focusing deeply on contingencies and transient response, recognizing that the latter are ultimately important for planning transmission projects.

The above-described tradeoff of focus calls attention to the question previously raised by CPUC staff regarding the intended nature and use of the product of the CTPG studies. If what is intended is a conceptual plan that is robust over a range of important uncertainties and that serves as the basis for more detailed planning by individual transmission planning authorities, owners and operators, then greater focus on resource and operational issues appears to be necessary. While “batch” mode contingency analysis tools may expedite the running of power flow simulations, they do not avoid the need for dividing study resources among competing priorities in order to develop and vet inputs; to assess, interpret and communicate results; and to consult among CTPG members and stakeholders.

Topic 5. Need for Production Simulation?

Continuing from the above comments, key questions not yet answered or even addressed include:

- How realistic and effective is the assumed re-dispatch?
- What would be the effectiveness in reducing transmission investment of a re-dispatch (or DR utilization) more explicitly optimized to relieve congestion and allow delivery of renewable generation?
- For a given combination of renewable generation and transmission expansion, how often would reliability violations occur, and is it credible that re-dispatch, controlled generation dropping or DR could address this?
- What would be the 8760-hour deliverability of renewable generation under any particular generation and transmission buildout? If renewable generation were to be curtailed under certain conditions to reduce needed transmission upgrades, what is the tradeoff of avoided transmission versus lost renewable energy?

These and other questions cannot be addressed by power flow studies alone, raising the question of whether the study plan should include strategically selected production simulations. CPUC staff believes that such production simulations either should complement the CTPG study itself or else should be conducted shortly after the CTPG study product is handed off to other planning venues for refinement. However, even without production simulations, it should be possible to run appropriate power flow studies (with selected generation and load inputs) combined with appropriate complementary analyses (such as regarding renewable generation output profiles and minimum amounts of flexible generation needed online) in order to clarify some of the questions raised above.

Topic 6. Need to Include High-Level Assessment of Routing Considerations

We strongly encourage the CTPG to include in the final study report, and in upcoming study iterations, high-level assessments of the routing implications of any transmission plan. While we recognize the desire to maintain a clean divide between electrical planning and

routing, this divide is somewhat artificial. Early drafts of RETI's conceptual plan benefited greatly from informal review by environmental groups, resulting in material changes to the plan's electrical configuration.

To this end, we recommend that CTPG consult with the RETI Environmental Working Group, which already has assessments of each of the transmission line segments included in the RETI Phase 2A Conceptual Plan. Where the CTPG has identified substantial transmission segments not yet identified and assessed by RETI, we believe that the CTPG will find the Environmental Working Group ready and willing to provide feedback, if not "official" RETI scores, for those segments. We believe that such early feedback from knowledgeable stakeholders – even if very informal – is critical to the development of transmission projects that can be planned, permitted and built in a timely manner.

Contacts:

Keith White, kwh@cpuc.ca.gov
Anne Gillette, aeg@cpuc.ca.gov