COMMENTS OF THE STAFF OF THE

CALIFORNIA PUBLIC UTILITIES COMMISSION

ON THE CALIFORNIA TRANSMISSION PLANNING GROUP'S DRAFT STUDY PLAN DATED NOVEMBER 2, 2009 AND PRESENTED IN A CONFERENCE CALL ON DECEMBER 17

December 29, 2009

Introduction

The Staff of the California Public Utilities Commission (CPUC Staff) appreciates this opportunity to comment on the California Transmission Planning Group's (CTPG's) Draft Study Plan dated November 2, 2009, which was presented during a December 17 conference call. While we understand that this is the beginning of a new process that will need to be refined, it is essential to rapidly incorporate increased transparency and disclosure, with greater opportunity for stakeholder input and vetting. This reflects not only the urgency of California's transmission planning needs, but also the expectation that products of this CTPG process will soon move into forums addressing the potentially contested approval and permitting of major transmission projects. *Insufficient vetting, support or consistency with information and priorities regarding resources and siting will only lead to problems in these subsequent steps.* Such steps include the CAISO's open Order 890 compliant planning process and the CPUC's permitting process, both of which are significantly informed by long term procurement plan (LTPP) priorities and by the Renewable Energy Transmission Initiative (RETI). Subsequent steps presumably also include other approval and permitting processes, which entail legal requirements for environmental siting, and well as the intent, stated on the CTPG website, to use open, Order 890 compliant planning processes (see http://www.ctpg.us/public/index.php).

We hope that the needed transparency and responsiveness to input, including consistency with resource priorities and information, will develop in the next few months. In particular, we look forward to discussing with the CTPG possibilities for aligning the CTPG's modeled renewable generation development scenarios with those developed in the LTPP process, incorporating information from Publicly-Owned Utilities as appropriate. The main further points discussed below are as follows:

1. Intended Use of the "Plan" to be Produced Should be Clarified

2. Assumed Renewables Additions and Their Rationale Should be Clarified

3. It is Essential to Consider Multiple Resource Scenarios

4. The *Actual Resources* that are Included (and Backed Down) in Power Flow Cases Should be Transparent and Vetted

5. Assumed Measures (Including Transmission) to Address Local Reliability Should be Clearly Identified

6. Limitations of "Snapshot" Power Flow Studies for Long Term Planning Should be Addressed

Topic 1. Intended Use of the "Plan" to be Produced Should be Clarified

We understand that the present studies represent the first step in a new process, and that the nature of the "plan" to be produced may not yet be precisely known and may evolve. Nevertheless, if there is to be constructive stakeholder involvement and support, and if the product of this process is to have value going forward, it is essential to more fully define the *intended use* of the plan to be produced. For example, is it intended that the various elements in this plan will be made more detailed electrically and geographically, in subsequent processes and venues, to develop concrete projects for which approval, permitting and development would then be sought? Or, is it intended that the plan will represent a point of departure, such that subsequent processes and venues may ultimately transform its elements into something significantly different? Is it intended that the plan will be robust across a range of resource and other scenarios that might develop? (How) will it be determined which parts of the plan have such robustness? Will parts of the plan be needed or cost effective only under certain future developments that are currently uncertain, such that these elements would not be fully pursued until key conditions are met? If so, is the plan intended to contain more elements, and to accommodate a wider range of renewable resources, than would actually be needed to meet RPS and other goals, such that if parts of the plan turn out to not be needed or desirable to pursue, other parts of the plan will still provide a sufficient framework for meeting goals?

In any event, in order for stakeholders to assess if the CTPG process is moving in the right direction, and to constructively contribute to that process, we need to have better understanding and agreement regarding the objective of the process, and particularly regarding

the intended use of its product "plan(s)". Engagement with stakeholders in the next few months will be essential in this regard.

Topic 2. Assumed Renewables Additions and Their Rationale Should be Clarified

For purposes of stakeholder understanding, vetting and ultimately support, renewable resource assumptions should be clearly identified, and should be consistent with and clearly related to resource planning priorities as well as to information developed in the broadly supported RETI process. We have the following specific requests for clarification.

a. Please provide the "embedded file" RETI_Net_Short_09-09-23.xls identified on page 18 of the November 22 Draft Study Plan.

b. Please identify the MW, GWh and locations (e.g., by CREZ) of "under construction" renewable generation and "miscellaneous renewable resource additions" broken out on slide 11 of the December 17 presentation.

c. In the table presented on slides 15 and 16, please break down the resources by technology (e.g., solar PV) within each location.

d. Please explain the differences between renewable resource MW shown on the slide 13 map, versus what is shown on slides 15 and 16.

e. Has there been interest in, and is there any intention to study, substantial out-of-state renewables from other locations besides those locations shown in the table on slides 15 and 16, such as Arizona, New Mexico or Wyoming? What about Baja, where substantial resource development and interconnection appears likely? Also, what is assumed about state policy regarding the extent to which out-of-state renewable generation must be physically delivered to California in real time, and how does this affect inclusion of out-of-state renewable generation and its associated transmission, in the studies?

f. How much distributed renewable generation is included in the mix presently being studied (such as presented on slides 15 and 16)? Have CTPG members or others expressed interest in studying substantial levels of distributed renewable generation, and what analytic problems does this present?

g. Have the CTPG study team, CTPG members or others provided information for, or expressed interest in, multiple (alternative) renewable generation cases for study, rather than a single case? What sort of cases have been proposed, and are being considered?

RETI has for the past two years undertaken a rigorous and painstaking process to build consensus among diverse stakeholders. Use of RETI's Competitive Renewable Energy Zone (CREZ) naming conventions does not itself constitute reliance on RETI's results. The clear goal of RETI was to identify *and rank* CREZs, but the CTPG has not made clear how RETI's comparative evaluation of CREZ factored into development of the modeled generation scenario. For example, the rationale for this scenario relying heavily on Pisgah and hardly at all on Kramer, when RETI identified more than twice as much developable capacity in Kramer (see table B-1 of the RETI Phase 2A Report) and rated Kramer better than Pisgah economically (although not environmentally) requires explanation.

Also, it would be very useful to compare and contrast the CTPG-developed renewable generation scenario (or, hopefully, scenarios) designed to achieve a 33% RPS with other detailed renewable generation cases that have been developed and assessed for similarly achieving a 33% RPS, such as cases developed for the CPUC's *33% RPS Implementation Analysis* (June, 2009, and currently being updated) and for the CAISO's *2020 Renewable Transmission Conceptual Plan Based on Inputs from the RETI Process* (September, 2009). Going further, it would also be valuable to compare the *transmission* implications of these different cases in a clear and accessible manner, identifying the commonalities. Such an approach is certainly more appropriate than the comparison (on Slides 15 and 16) with renewable generation modeled for RETI's conceptual plan, for which RETI stakeholders decided not to take any CREZ "off the table," and instead developed a plan accommodating approximately 40% of the developable energy of most CREZs. CPUC Staff believes that for practical transmission studies going forward it is most appropriate to use full or at least highly built out capacities of selected CREZ identified and ranked by RETI as described in Tables B1 and B-2 of the RETI Phase 2A report, rather than based on the above 40% "success rate" assumption. This is because accessing some resources from many CREZs may be less economically efficient and more environmentally harmful and controversial than more heavily tapping into fewer highly-ranked CREZ. Such a focused approach is consistent with, and in fact requires, assessing *several* generation development scenarios, as discussed next.

Topic 3. It is Essential to Consider Multiple Renewable Resource Scenarios

While it is important that renewable resource assumptions be transparently explained and be consistent with resource priorities, it is also true that today major uncertainties remain regarding renewable resources' development and transmission needs. Therefore, to be prudent, informative and robust, planning studies must consider multiple contrasting but realistic resource scenarios, such as (but not necessarily limited to) the "reference" (high central station solar penetration), "high out of state" and "high distributed generation" cases developed (and being updated) for the CPUC's 33% RPS Implementation Study, which are also being used in the CAISO's 33% RPS integration study.

Assessing multiple contrasting renewable resource cases makes it possible to look proactively out into the future without assuming unreasonable or premature infrastructure commitments that "work" for some futures but not others. It is foreseeable that a multi-scenario approach would result in (would in fact be necessary for) identifying infrastructure investments that are robustly needed across a sufficiently wide range of realistic futures, such that we can have confidence that they will not be regretted or stranded, and have the best chance of being supported and approved. It is also foreseeable that besides identifying "no regrets" investments, this approach will identify some major infrastructure investments whose value depends on future uncertainties that have not yet been resolved. By studying a range of resource scenarios it is possible to clarify the conditions needing to be met for these latter investments to be justified, and to integrate such "conditional" investments into the larger plan rather than waiting to address them on a more ad hoc basis in the future.

Besides recommending that the CTPG assess multiple resource scenarios, CPUC staff wishes to understand whether the CTPG plans to include only "robustly needed" transmission elements in plan(s) to be produced, which requires assessing multiple resource scenarios. Or, on the other hand, does the CTPG intend to also include "conditionally needed" transmission elements?

Topic 4. The Actual Resources that are Included (and Backed Down) in Power Flow Cases Should be Transparent and Vetted

For studies and the consequent "plan(s)" to be transparent and also consistent in relation to energy resource priorities, it is important to clearly identify what *in-state resources and their levels of operation are reflected in the power flow cases, including assumed retirements and additions (including any OTC units), as well as the assumed power injection levels relative to these resources' full capacity - - including summaries by area and by resource type.* Is it likely that some of the assumed future generation in the WECC base case would never actually exist at all, if there were instead to be large amounts of renewable generation additions? While out-of-state resources reflected in the power flow cases are less strongly consequential and less amenable to identification, it is important to clarify what the power flow cases represent regarding additions of renewable generation WECC-wide. For example, would substantial renewable additions outside of California, not yet reflected in the power flow cases, be likely to cause substantial back-down of out-of-state fossil generation by 2020, apart from any such back-down attributed to California's renewable generation?

For the above noted reasons of transparency and consistency with resource priorities, it is important to clearly report which generators are being backed down in what amounts and locations, to accommodate renewable generation additions in each study case. This information may also be useful in conjunction with results of emerging studies regarding amounts and characteristics of flexible fossil and hydro (also storage and demand-side) resources needed to reliability integrate variable renewable generation, since "back-down" will ultimately need to be consistent with integration needs.

Finally, back-down of fossil generation, and limitations on ability to back down, may lead to over-generation situations, which are related to local reliability situations (see below). Is it intended that the CTPG studies will identify or study over-generation situations, and how would this influence identification of transmission additions needed?

Topic 5. Assumed Measures (Including Transmission) to Address Local Reliability Should be Clearly Identified

Page 16 of the Draft Study Plan discusses how back-down of fossil generation in amounts sufficient to accommodate assumed renewable generation additions may run into constraints regarding how much generation is required to remain on-line in certain local areas to maintain reliability, and how amounts of acceptable back-down in these areas may be increased by "transmission reinforcements, in-area generation or additional demand response." It will be critical for transparency and consistency with broader resource planning to identify where, to what extent and under what conditions such measures to preserve local reliability are assumed in the studies. This includes, for example, identifying which assumed transmission additions serve the purpose of maintaining local area reliability despite changing generation patterns, as opposed to directly accommodating renewable generation itself. Furthermore, it is unclear how well a limited number of snapshot power flow cases would capture or illuminate the economic and renewable energy delivery dimensions of these local reliability situations. For example, how often would demand response or local generation be utilized, how often could congestion occur or be alleviated at what costs, and how much over-generation is encountered? Please explain if and how assessing these local area issues in the context of planning for renewable generation may ultimately require an economic-operational study over 8760 hours or other prolonged intervals of sequential system operation (see Topic 6. below), either in the planned CTPG studies or else as follow-on studies starting from where the CTPG studies leave off.

Topic 6. Limitations of "Snapshot" Power Flow Studies for Long Term Planning Should be Addressed

The December 17 presentation indicates that three "snapshot" (representing a moment in time or a brief contingency response) peak power flow cases A, B and C will be studied (slide 8) starting from the WECC 2019 heavy summer base case. The presentation also indicates that the studies will include sensitivities/variations on these peak cases, as well as additional cases such as winter and/or spring conditions with lower loads. It was stated that wind, solar, biomass and geothermal would be assumed to output at, respectively, 20%, 80%, 100% and 100% of nameplate capacity in the peak cases, and that at least one off-peak case would involve wind plant output at 100% of nameplate.

It is foreseeable that there will be conditions and hours for which the overall pattern of renewable generation places greater and/or substantially different stresses on the system than under the power flow cases referred to above, due to widely varying renewable generation patterns (including solar at 100%, wind plus solar greater than 20% and 80% respectively, wind greater than 20% during some high load hours), and/or due to varying overall system operations reflecting the response of future flexible generation to renewable output variations. How many, and what kind of, different power flow "snapshots" will be studied to assess an adequate range of situations, while striving to support annual energy output patterns from renewable generation?

Is it in fact ultimately necessary to conduct production simulations or other dynamic (over time) assessment of 8760-hour or other integrated, sequential system operations, in order to capture the range of renewable energy deliverability challenges under different conditions? Is it intended that such production simulation or other dynamic assessments would be conducted in a later phase of CTPG studies? Or, is it intended that such studies would be conducted via separate planning processes or venues to assess and refine the transmission plan produced by the CTPG process? How does this affect the intended use of the CTPG-produced plan as discussed in Topic 1. above?

Additionally, each of the different power flow cases and sensitivities studied might reveal different "needed" transmission upgrades to maintain reliability while accommodating the output of renewable resources. Is it intended that the final CTPG "plan" produced would contain the total transmission additions necessary to fully maintain reliability and accommodate renewable output, under *all* studied cases, sensitivities and contingencies? (How) will this be done in an optimized overall manner, as opposed to just cumulatively adding the different transmission elements needed under the individual study cases and variations?

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