Response of the California Transmission Planning Group
Technical Steering Committee Study Team

To Comments on the
2010 California Transmission Planning Group (CTPG) Revised Draft Study Plan for 2020: Phase 3

This document has been prepared in response to a comment document and attachment received from Ron Dickerson, Sierra Club California Energy Climate Committee, dated August 17, 2010.

Comment 1: Overall Net Short for renewables is too high.

The CTPG report (p. 16-17) states the 2020 net short for renewables is 52,764 giga-watt-hours/year. However, based on an analysis of all agency documents released to date that we are aware of, we believe this is an overestimate. A conservative number for the 2020 net short should be 47,018 GWh (see line labeled 18 and column labeled "Sierra Club Mid DG" in the attached spreadsheet tab labeled "RETI Net Short Calc"). But we believe a better target (based on the above listed premises and priorities) would be 40,322 GWh (see column labeled "Sierra Club High DG" and discussed below in point 4). The attached spreadsheet has a detailed explanation of how we arrived at these numbers. We welcome comments and improvements in our Net Short Calculator.

CTPG Study Team Response:

The determination of the California Statewide "net short" is an undertaken that is being addressed by several forums, most predominantly the California Public Utilities Commission (CPUC) and the Renewable Energy Transmission Initiative (RETI).

In an effort to coordinate CTPG's planning process with work already completed and/or underway by RETI, the "net short" estimates in the CTPG Phase 3 report were developed by RETI for their Phase 2 and Phase 3 scenarios (see website at: http://www.energy.ca.gov/2010publications/RETI-1000-2010-002/RETI-1000-2010-002-F.PDF). Any future changes to California's net short would need to be addressed in future CTPG activities. For the Phase 3 Report, and the future 2010 Statewide Transmission Plan, CTPG intends to continue to utilize the net short that has been developed by RETI and is similar to the net short calculation of the CPUC. The Sierra Club is encouraged to work with RETI to update the net short estimate.

Comment 2: Net Short needing transmission is too high

*The note under the chart on the CTPG report p. 17 says, "*For purposes of developing a conceptual transmission plan that addresses uncertainties in the location of renewable resource development, RETI Phase 2A planned for renewable resource additions equal to approximately 1.6 times the RETI Phase 2A net short." This proposed 60% over-build on transmission is unnecessary and unwise because 1) it wastes ratepayer dollars and other resources and 2) generation should primarily be co-located where transmission capacity is available. Thus we request this 60% overbuild factor be removed from the final version of the CTPG Phase 3 report, and any calculations of transmission need be adjusted appropriately.*

In addition, we have examined the latest transmission tables from the CPUC Long Term Procurement Planning and present them in the attached spreadsheet tab labeled "Transmission." Based on this

information, and using the conservative number for the 2020 net short of 47,018 GWh, we get (in line labeled 27 and the column labeled "Sierra Club Mid DG") a Renewable Sales Needing Transmission (or Adjusted Transmission Net Short) of -11,728 GWh. In other words, California has an overall ***excess transmission capacity of 11,728 GWh*** *beyond what is actually needed to achieve the 33% RPS. If California goes for the "High DG" approach discussed below, overall excess transmission capacity is shown in the adjacent cell as 48,236 GWh. We request that these numbers be considered in the final version of the CTPG Phase 3 report.*

Further substantiation of the current overall excess transmission capacity is found by comparing the rapid growth in transmission with the slower growth in loads. For example, transmission investments by California IOUs from 1999 to 2009 (from FERC Form 1) have increased by 84% while the IOU energy loads (from the CEC adopted 2009 IEPR) have increased by only 9%. This means that transmission investments have increased 69% more than have loads, leading to the potential excess capacity noted above. These transmission investments have also added dramatically to ratepayer bills and increased IOU profits.

CTPG Study Team Response:

The reference in your comment to a 1.6 times overbuild was made in the RETI Phase 2A Report, RETI designed a transmission system "need" to address a 1.6 time net short. CTPG has not used a similar approach. In fact the "high potential" transmission upgrades identified in the CTPG Phase 3 Report would not, under the assumptions of CTPG's Phase 1, Phase 2 and Phase 3 work, be sufficient to mitigate all identified reliability criteria violations at the full 33 percent RPS level.

Comment 3: Approached to Peak Loads Calculations Need to be Revised to Consider Costs

We recognize that the overall transmission excess capacity referred to above does not include peak loads. However, the CTPG approach needs to be drastically revised. We note that the Draft (pages 39-44) proposes the building of transmission to handle the coincidence of one-in-ten and two-in-ten year peaks. This issue has been carefully analyzed by Jaleh Firooz and published in the peer-reviewed journal Natural Gas and Electricity, July 2010 (DOI: 10.1002/gas.10107), attached for your reference.

In this paper, Firooz calculates, "The combined probability of a G-1/N-1 overlapping outage occurring during any one of these peak hours would be .0005 x .00228 = .000001, in any given year"(p. 14), which are ". . . conditions that, for all practical purposes, will never happen, and even if it did the WECC would permit the use of controlled load drop as mitigation."(p. 13)

Firooz also says, "It is conceivable that in every case it would be more economical to build less costly facilities (e.g., looping in existing lines), redispatch generation precontingency, cross-trip generation for critical contingencies, or even drop load on a controlled basis (for very low probability events, e.g., high-load/double-contingency scenarios) than to spend billions of dollars building new lines."(p. 13)

We request the final CTPG Phase 3 report compare the costs of meeting peak needs by building transmission compared to the alternatives. In addition to the alternatives suggested above by Firooz, we request CTPG include storage and smart grid facilities. This analysis should include using the storage capacity of electric cars, potential for concentrating solar generators to store heat overnight, night-time cooling and ice storage for commercial air conditioning, etc. If these alternatives are not included, it will appear that CTPG is proposing only the most costly approaches, which will have huge impacts on ratepayers.

We also note this analysis is required by State Law, CAL. PUC. CODE § 345.5, which is quoted in the Appendix for easy reference.

CTPG Study Team Response:

At this time, CTPG has not conducted the cost/benefit analysis necessary to determine which of these transmission upgrades provide the greatest benefit (relative to other wires- and non-wires alternatives) for consumers. CTPG may or may not undertake this analysis in the future, sponsors of any identified transmission upgrades will undertake such analysis in order to obtain the necessary regulatory approvals to develop and construct transmission projects. As noted previously, the CTPG Phase 3 Study Plan, as was the case with the Phase 1 and 2 Study Plans that preceded it, contemplates that the relevant results of the CTPG studies will be considered, in good faith and given appropriate weight, within the subsequent, independent planning processes of each of the CTPG Members. Those planning processes are expected to consider, among other issues not considered within the CTPG studies, issues such as the relative efficiency and cost-effectiveness of specific transmission or non-wire alternative projects in meeting the system needs identified in the CTPG studies.

Comment 4: The report needs to include distributed generation (DG) and localized resources.

Sierra Club California has done a detailed analysis of the opportunities and rationale for a high DG approach (such as that proposed in the ReDEC report by Black and Veatch in December 2009). In addition, the CPUC LTPP proceeding included a workshop in which the E3 and Black and Veatch studies were presented. They noted that DG has a number of advantages, especially the avoided transmission costs. Sierra Club summarizes the main advantages of Distributed Generation as:

- Often more cost effective than remote renewables when transmission costs are considered.
- Capable of contributing significantly to California's renewable energy requirements.
- Less environmental impacts and opposition.
- Able to be implemented much more rapidly than major new transmission lines, which can take up to ten years to permit and build.
- Creating local jobs in inner cities where they are urgently needed.

CTPG Study Team Response:

CTPG's Phase 1, Phase 2 and Phase 3 studies are based on forecast loads that incorporate the California Energy Commission's (CEC's) projection of non-renewable distributed generation impacts that was adopted in the 2009 Integrated Energy Policy Report (IEPR). In addition CTPG has used RETI's assumptions regarding projected renewable distributed generation impacts. These impacts are based on (i) RETI's expectation that the amount of rooftop solar photovoltaic capacity installed in connection with the California Solar Initiative (CSI) will exceed the CEC's adopted forecast, (ii) RETI's assumption that certain small utilities serving load in California will meet their share of California's 33% RPS goal with renewable distributed generation, and (iii) SCE's CPUC-approved solar photovoltaic initiative. The Sierra Club is encouraged to work with the CEC and RETI to update projections of distributed generation additions, both renewable and non-renewable.

Comment 5: The report needs useable maps and tables of all proposed transmission lines.

The CTPG Phase 3 Study Report inexplicably fails to include maps. It is almost impossible to correlate the tables of transmission alternatives in the Study Report with the maps included in the "CTPG_August_4_Stakeholder_Presentation_Draft" posted on the CTPG website.

We note that RETI just posted on August 17 the cartography that is the result of RETI steering/working groups' transmission segment environmental ranking efforts that occurred on June 1, June 10, and August 6, 2010.
http://www.energy.ca.gov/reti/steering/workgroups/technical/ctpg_segments/ca_crez_conceptual_transmission_segments_phase_2b_ctpg.pdf

CTPG needs to clarify the precise relationship between the transmission segments identified by RETI cartography and the CTPG identified transmission segments. The report should identify exactly where the proposed transmission lines do and do not correspond to the RETI cartography.

We request that CTPG immediately post on their website a link to the RETI maps and documents. We also request that the comment period be extended at least a week following this posting to allow informed comments to be submitted by all stakeholders.

CTPG Study Team Response:

As transmission studies are based not on exact cartography but on point to point power flows, CTPG has not assessed the cartography of grid configuration changes or proposed stakeholder alternatives. A comparison of the transmission additions included in the RETI Phase 2A conceptual transmission plan and those identified in CTPG's Phase 1 work can be found in the 2010 Phase 1 CTPG 2020 Study Report. (p. 38) CTPG's final Phase 3 study report will include a map that shows the "high potential" and "medium potential" transmission upgrades in rough geographic proximity to their probable locations.

Comment 6: The proposed routes are not feasible and must be revised and re-analyzed

Some of the routes for high and medium potential transmission upgrades are not realistic. For example, the 500 kV Midway-Gregg DCTL route would go through the middle of Fresno and many other communities in the Central Valley. Clearly, this route would very expensive and likely never be permitted or built. This example raises substantial doubts about the feasibility of all the proposed routes.

Therefore, the next draft of the Phase 3 report must present the exact routes, along with their cost and feasibility analysis. Then these new precisely defined routes must be reanalyzed by the environmental experts and their environmental scores be recalculated and considered by CTPG.

CTPG Study Team Response:

The goal of the Phase 3 Study was to build on the work completed in Phases 1 and 2 and reflect stakeholder input by incorporating additional planning assumptions and scenarios that were developed in the Phase 3 study plan process. Based on the study results, a list of "high potential" and "medium potential" transmission elements was developed. It is now up to the individual CTPG members (i.e. the proposed project developers) to further assess and refine these high and medium potential projects through their respective stakeholder processes.

CTPG has done no routing of any of the transmission needs identified in the Phase 3 Report. As mentioned above any and all specific transmission needs will be sponsored by a CTPG Member or market participant; it is their responsibility to determine routing and address line siting and feasibility, environmental analysis and project costs. This level of detailed analysis is outside of the scope of CTPG and our Phase 3 Study Report.

Comment 7: The report needs to state costs, capacities and uses of all proposed transmission lines.

It is impossible to provide informed comments on the proposed alternatives without at least some indication as to the potential project costs per annual GWh of renewable energy transmitted. It is also important to provide a breakdown of the annual GWh quantities of fossil fuel and renewable energy expected to be transmitted on each new line.

CTPG Study Team Response:

CTPG's work to date has not included any assessment of transmission cost data as this is outside the scope of CTPG efforts at this time.

CTPG's power flow analysis identifies flows on all existing and planned transmission elements for the system conditions assumed in the studies. However, on a network, there is no unambiguous way to separately track renewable megawatts and fossil-fueled megawatts across any specific transmission line segment.

Comment 8: The report needs updated information for the environmental concern ratings for each segment

The CTPG Phase 3 Study Report (p. 21) uses outdated environmental and economic scores from "RETI Phase 2A Final Report, pg. 2-39." The May 19, 2010 RETI Phase 2B Final Report (p. 21) provides the updated chart. Does this mean that all of the environmental and economic scores used in the CTPG report used outdated information from the Phase 2A RETI report instead of Phase 2B? The report must use the most updated information.

The CTPG report references on pages 3 and 115 that the environmental concern factors for each segment were based on reviews by "RETI subject matter experts." We need to review the details of the input data considered and how those ratings were determined for each line so we can provide substantive comments on them. We also request publishing the names and contact information of the experts that made those determinations, so stakeholders can follow-up with them for any needed clarification.

CTPG Study Team Response:

RETI performed all the environmental scoring of the various transmission line segments identified by the CTPG in the Phase 1, 2 and 3 Study Reports. CTPG provided RETI with a list of the transmission line segments to be evaluated along with key factors such as planned line voltage, expected line length, and whether the transmission line segment would be a new line or would involve the reconductoring or reconstruction of an existing line. The RETI environmental scoring process then identified the level of potential conflict with known environmental resources along the length of a proposed line segment and the expected complexity of mitigating those conflicts. Additional details are available in the CTPG technical

study team's response to the comments of PDS Consulting on CTPG's second draft Phase 3 study report. CTPG's response to PDS Consulting will be posted on the CTPG website.

The "subject matter experts" were those identified and participating in RETI. For the specific identification of those experts please contact the RETI coordinator (Rich Ferguson) at *rich@ceert.org*.

Comment 9: State and Regional Transmission Planning forums leave California's diverse interests insufficiently represented.

We note that membership in California's various transmission planning forums (including the CTPG) are not reflective of the State's diverse population and interests. The CTPG should include the broad range of stakeholders and interests and encourage their direct and equal participation in the CTPG planning forum. Moreover, a more inclusive, open and transparent process would produce a report of greater value for informing policy makers and data utilization in subsequent prescriptive processes.

CTPG Study Team Response:

The CTPG was formed by utilities in California that are transmission owners with an obligation to serve and transmission operators, and these parties have the technical capability to perform detailed transmission planning. The purpose of CTPG is for those utilities with the fiduciary responsibilities for transmission planning to work together in a coordinated manner to identify a California statewide transmission plan.

CTPG has maintained an open and transparent process and throughout the each of its 3 Phases and will continue to do so. CTPG has sought to be responsive to stakeholders and other entities with roles in the planning and implementation of transmission development. The Phase 3 Study was designed to build on the work completed in Phase 1 and 2 studies and reflects stakeholder input by incorporating additional planning assumptions and scenarios that were developed on the Phase 3 study plan process. CTPG is currently developing plans for its 2011 transmission studies and expects to provide opportunities for interested stakeholders to provide input that CTPG will consider as it finalizes those plans and initiates its study work.

Comment 10: The CTPG report should include non-wired alternative analyses to be credible and useful.

Because of the CAISO advisory member role in RETI and CTPG transmission planning forums and the CAISO intent to utilize the CTPG findings, it is necessary to conduct comparative cost/benefit of alternatives to transmission to produce "least regrets" analyses. We urge the CTPG to consider and assist the CAISO in providing the requisite analyses. To date we note that the CTPG examination of alternatives has been limited to alternative transmission solutions and therefore inadequate, and does not best serve the public's interest. We believe it is reasonable to request that the CTPG and/or CAISO immediately provide clarification as to how and when non-wired alternative analyses will be provided--consistent with State Law, CAL. PUC. CODE § 345.5, which is quoted below for easy reference.

In addition, the CTPG analyses fail to comply with CAISO tariff requirements for these alternative analyses, which are quoted in the Appendix.

CTPG Study Team Response:

See CTPG's response to *Comment 3*.

Comment 11: The ratepayers will be faced with huge rate increases if these proposed lines are constructed.

The RETI report estimates a cost of over $15 billion if all the proposed lines are built. However, this estimate could be as much as 50% too low. For example, a recent extensive report by Jaleh Firooz[1] has analyzed the RETI estimates for several lines and found the actual permit cost estimates to be up to 100% higher.

For example, The Nevada Hydro Company's application at the CPUC for a CPCN for the Talega-Escondido/Valley-Serrano project included a cost estimate of about $353 million. The RETI Phase 2A conceptual transmission plan estimated the same facilities at $162 million, low by more than a factor of two. Comparing the cost caps included in CPUC decisions with RETI's Phase 2A estimates reveals similar discrepancies:

Tehachapi Segments 4-11 ($1.785 billion vs. $0.962 billion) and Colorado River-Devers- Valley #2 ($536.6 million vs. $490.75 million).

The huge increases in rates needed to pay for these lines will hurt California businesses and consumers.

CTPG Study Team Response:

See CTPG's response to *Comment 7*.