

**California Transmission Planning Group (CTPG)
Technical Study Team's Response to
October 7, 2010 Comments by the Geothermal Energy Association (GEA) on
CTPG's draft Phase 4 Study Plan**

GEA Comment:

Although GEA did not file comments on the Phase 3 Study Report, we were quite concerned that the CTPG was continuing to pay insufficient attention to the commercial potential of a variety of in-state and out-of-state renewable energy resources for your Renewable Portfolio Standard analysis. In particular, the CTPG methodology for verifying commercial interest for certain “competitive renewable energy zones” (CREZs) established through California’s Renewable Energy Transmission Initiative (RETI) did not include a broad enough range -- nor a sufficiently robust analysis -- of other in-state CREZ’s and out-of-state renewable energy resource areas. In many cases, this meant that economically competitive transmission projects to access geothermal energy resources were left out of your “high potential” equations.

CTPG Technical Study Team Response:

In connection with the CTPG’s Phase 4 work, the CTPG Technical Study Team is canvassing planning entities throughout the WECC—including those in Nevada—to obtain information concerning renewable resource development activities and planned transmission projects outside the state of California. The CTPG Technical Study Team understands that the GEA is concerned about the way the CTPG assesses “commercial interest” within CREZs. It would be helpful if GEA would provide a suggestion as to how the CTPG should establish what range of “other in-state CREZs and out-of-state renewable energy resource areas” is “broad enough” for purposes of “verifying commercial interest.” Similarly, it would be helpful if GEA could explain what conditions would need to be satisfied in order that the CTPG’s verification of commercial interest is considered by GEA to be “sufficiently robust.”

GEA Comment:

GEA is certainly one of the stakeholders who have noted in our comments that “there are other viable high commercial interest CREZs in-state and out-of-state which, if appropriately considered, would provide for diversity in renewable resource locations and technology.” We commend the CTPG for acknowledging this study gap in your Phase 4 Study Plan. GEA will work closely with the CTPG during the Phase 4 process to provide all available information to answer the question of where additional power flow studies are necessary, and whether the current list of “high potential” and “medium potential” transmission projects should be revised based on showings of “additional high commercial interest” in California CREZs and other out of state renewable resource development areas.

CTPG Technical Study Team Response:

As noted in the CTPG’s response to GEA’s previous comment, the CTPG Technical Study Team is canvassing planning entities throughout the WECC—including those in Nevada—to obtain information concerning renewable resource development activities and planned transmission projects outside the state of California. The CTPG recognizes that a diversity of renewable resource locations can provide benefits. Geographic diversity of renewable resources *within* a given control area can provide hourly

intra-balancing authority area scheduling benefits by averaging intra-hour deviations at different generator locations within the source balancing authority area and thereby reducing the balancing requirements for the source balancing authority to maintain its fixed hourly schedules with other balancing authority areas. Geographic diversity of renewable resources *across* multiple balancing authority areas can provide intra-hour benefits by netting intra-hour deviations across a wider geographic reach.¹

The CTPG Technical Study Team requests that GEA provide its views as to how a “diversity” in renewable “technology” is beneficial and how these benefits could be quantified in a way that would assist planning entities in making better decisions as to where renewable resources are likely to develop and the transmission upgrades that would be associated with such development.

GEA Comment:

As Terra-Gen stated in their comment letter, “Additional consideration of Nevada and other out-of-state development offers an opportunity to meet the RPS in a more cost-effective and operationally superior manner, take advantage of synergies between high-potential out-of-state and California area development, and also address other grid-wide issues.” GEA serves on the stakeholder steering committee of RETI, and serves as a member of the Scenario Planning Steering Group (SPSG) appointed by the Western Electricity Coordinating Council (WECC) in 2010. The more we participate in WECC-wide efforts such as the Regional Transmission Expansion Project, the more it becomes clear that California must not treat its RPS-related transmission planning needs in isolation from what is now happening throughout the western states.

CTPG Technical Study Team Response:

The CTPG Technical Study Team agrees with the GEA that it is important to find “cost-effective” solutions for meeting California’s Renewable Portfolio Standard (RPS) goals and that these solutions may involve operational considerations and other grid-wide issues as well as renewable development both within and outside the state of California. To date, however, the CTPG has not undertaken any economic comparisons of different wires- and non-wires alternatives for meeting California’s RPS goal. It is expected that such comparisons would be undertaken in the proceedings that must be initiated in order to secure the necessary regulatory approvals to build new transmission.

The CTPG Technical Study Team agrees with the GEA that meeting California’s RPS goals will involve renewable resource development and transmission expansion outside the state of California. The CTPG’s Phase 1, Phase 2 and Phase 3 studies all assumed some portion of California’s renewable requirements would be met with renewable development outside the state of California. The CTPG’s Phase 4 work is largely focused on further exploration of out-of-state renewable resource development potential. Finally, the CTPG Technical Study Team believes GEA’s representation on the WECC RTEP SPSG, coupled with GEA’s continued interest in the CTPG’s transmission planning activities, should help to ensure that California does not treat its RPS-related transmission needs “in isolation from what is now happening throughout the western states.”

¹ Realizing these benefits requires the use of dynamic scheduling so that a single balancing authority area can net the real-time incremental and decremental deviations from several different balancing authority areas and supply the balancing services necessary to manage the resulting net deviation (and thereby maintain the integrity of fixed hourly inter-balancing authority area schedules).

GEA Comment:

Detailed updates of Nevada North geothermal and other out-of-state import assumptions

The CTPG should follow through with an investigation of the NV Energy generation interconnection queue and perform similar investigations of other neighboring Balancing Authority Area queues. GEA has been concerned that an over-reliance on data just from interconnection queue's will likely severely underestimate and/or miss a large amount of generation under development for delivery to California. The CTPG should work with surrounding out-of-state Balancing Authority Areas to identify the most viable projects. GEA supports Terra-Gen Power's recommendation that the CTPG should look to Transmission Service Requests with identified export points under consideration and/or are advanced in siting and permitting activities as measures of commercial interest and viability.

CTPG Technical Study Team Response:

The CTPG Technical Study Team requests that GEA provide a listing of the generation it believes is "under development for delivery to California." This listing should indicate where each generator is located, each generator's technology, and the installed capacity of each generator. In addition, it would be helpful if GEA could explain what it considers to be "generation under development." For example, does GEA consider "generation under development" to include only those generators that have received all required permits and have actually initiated construction activities?

GEA Comment:

Potential synergies between out-of-state and in-state development

Rather than look at the various "high-potential" CREZs identified in Phase 3 in isolation, the Phase 4 Plan should consider the possible joint economies of developing related out-of-state and California CREZ's. As Terra-Gen Power points out, "Giving higher priority to transmission upgrades that could serve generation in multiple CREZs would also lower the risk that any such upgrades would be 'stranded' and/or underutilized."

One example is the relationship between the considerable solar and wind resources identified in the Owens Valley CREZ and the geothermal generation under development in northern Nevada. If transmission development for both areas is considered together, the incremental cost for transmission to accommodate Nevada geothermal generation would be likely be considerably reduced by significant Owens Valley development, and vice versa. Another example of the synergy opportunity is linking the economic and environmental benefits of in-state transmission system upgrades to access California's Imperial Valley CREZ's with interstate transmission proposals such as the North Gila-Imperial Valley #2 Line.

CTPG Technical Study Team Response:

As discussed in the CTPG's response to an previous comment by GEA, the CTPG Technical Study Team agrees with the GEA that it is important to find cost-effective solutions for meeting California's Renewable Portfolio Standard (RPS) goals and that these solutions may involve operational considerations and other grid-wide issues as well as renewable development both within and outside the state of California (e.g., the "joint-economies" referenced in GEA's comment). To date, however, the CTPG has not undertaken

any economic comparisons of different wires- and non-wires alternatives for meeting California's RPS goal. It is expected that such comparisons would be undertaken in the proceedings that must be initiated in order to secure the necessary regulatory approvals to build new transmission.

GEA references the "synergy opportunity" that is associated with "the considerable solar and wind resources identified in the Owens Valley CREZ and the geothermal generation under development in northern Nevada" and with the "in-state transmission system upgrades to access California's Imperial Valley CREZ's with interstate transmission proposals such as the North Gila-Imperial Valley #2 Line." The CTPG Technical Study Team understands GEA's point to simply be that higher use of transmission facilities – all things being equal – means more efficient use of existing transmission as well as a lower per-unit cost (both economic and environmental) for new transmission. If GEA intended something else, the CTPG Technical Study Team would appreciate receiving this information and further clarification.

GEA Comment:

Comparing the relative economic, operational, and scheduling features of different renewable-energy technologies

There are many factors impacting the relative economics and comparison of integration aspects for different types of renewable energy generation. Much of the analysis that is needed to really understand how we should best integrate a large amount (*i.e.*, thirty-three percent (33%) or more) of new renewable energy into the different Balancing Authority Areas is just getting now getting underway. Again, the Department of Energy funding to initiate the WECC Regional Transmission Expansion Project is really the first time the operational and reliability criteria for the grid are being tested with renewable energy development scenarios and study cases.

A lot of time and thought has gone into studying how to successfully integrate variable or intermittent renewable energy resources such as wind and solar power into the grid. GEA agrees with Terra-Gen Power that the CTPG needs to first look at the *integration benefits of expanding access to baseload power resources such as geothermal*. Key economic and system reliability benefits that the CTPG needs to consider include: calculating the economic benefit to transmission financing from accessing high load factor technologies that provide lower per-MWh transmission costs; lessened integration requirements for baseload resources; and avoided costs for scheduling issues across Balancing Authority Areas by including up-front, renewable baseload resources to help manage variability, create static scheduling practices and assist in future dynamic transfer scheduling systems.

CTPG Technical Study Team Response:

While renewable integration requirements are an important aspect of meeting California's renewable goals, the CTPG Technical Study Team does not believe it is necessary that the CTPG "first look" at the "integration benefits" associated with increased transmission access to baseload generating resources. As GEA notes, renewable integration requirements are being addressed by the WECC Regional Transmission Expansion Project. In addition, the California ISO, in conjunction with the California Public Utilities Commission, is currently engaged in detailed analyses of the renewable integration requirements of twenty percent (20%) and thirty-three percent (33%) Renewable Portfolio Standard goals and some of

the results are now available with more coming shortly.² The CTPG Technical Study Team believes its Phase 4 work can proceed in advance of definitive findings as to renewable integration requirements.

GEA states that “the CTPG needs to consider...the economic benefit to transmission financing from accessing high load factor technologies...” As noted in the CTPG’s response to a previous GEA comment, the CTPG Technical Study Team understands GEA’s point to simply be that higher use of new transmission facilities – all things being equal – means more a lower per-unit cost for that transmission. The CTPG Technical Study Team agrees with the basic point, however, the scope of the CTPG’s work, so far, does not include consideration of any “economic benefit” of new transmission relative to other wires- and non-wires alternatives. As the CTPG has previously stated, it is expected that such economic benefit comparisons would be undertaken in the proceedings that must be initiated in order to secure the necessary regulatory approvals to build new transmission.

GEA Comment:

Regional transmission issues in northern California and northern Nevada

The proposed Phase 4 Study Plan recognizes the importance of including a more thorough analysis of transmission options for Northern California and Northern Nevada. A good example of the transmission planning options that CTPG needs to consider was presented at the October 7 RETI Stakeholder Steering Committee by the Sierra Subregional Planning Group.

The scenario that assumes California will meet its RPS through a preponderance of renewable energy development in Southern California needs to be complemented with other scenarios that include potential system benefits from transmission proposals such as those proposed by Terra-Gen tying Owens Valley and Nevada generation into the Fresno area, and the Nevada-California DC line proposal of Great Basin Energy Development, LLC.

CTPG Technical Study Team Response:

As part of its Phase 4 work, the CTPG Technical Study Team is already collecting information regarding renewable development plans and transmission expansion plans, from planning entities across the WECC, including those with interests in the northern Nevada area. The Sierra Subregional Planning Group is one of those entities and the CTPG will consider their input. Depending on what the CTPG Technical Study Team finds from its Phase 4 work, the transmission proposals proposed by stakeholders, including Terra-Gen Power and Great Basin Energy Development, may be effective in mitigating CTPG-identified reliability criteria violations.

² Given the ongoing renewable integration analysis being conducted by the California ISO and for the California PUC, GEA’s comment that the WECC Regional Transmission Expansion Project “is really the first time operational and reliability criteria for the grid are being tested with renewable energy development scenarios and study cases” does not seem accurate.