

**California Transmission Planning Group (CTPG)
Technical Study Team Response to
June 2, 2011, Comments of Clean Line and Centennial West on the
CTPG's Proposed 2011 Work Plan**

Comment:

Clean Line focuses exclusively on developing long-haul, high-voltage direct-current (“HVDC”) transmission lines to connect renewable resources to load. Clean Line believes California, in line with the State’s 33-percent by 2020 Renewable Portfolio Standard (“RPS”) goal, should pursue a broad range of opportunities to increase the share of renewable power in its overall generation portfolio. To do this in a manner that is efficient and cost-effective for utilities and their customers, California should take full advantage of low-cost imported renewable energy from other Western states. Clean Line’s Centennial West project will transport wind energy from the eastern New Mexico region to Southern California. The wind resource in eastern New Mexico is substantially stronger than many sites in California, leading to improved capacity factors and lower cost of energy. An additional benefit provided by New Mexico resources is geographic diversity. Increased geographic diversity will reduce the size and frequency of rapid upward or downward shifts in energy production, resulting in a lower cost to integrate large volumes of renewables.

CTPG Technical Study Team Response:

While the CTPG takes no position on what amount of out-of-state renewable energy development would be consistent with California’s policy goals, the CTPG agrees with Clean Line that the availability of low-cost renewable energy from other Western states, including New Mexico, is and will continue to be an important element of the renewable resource mix California load-serving entities will use to satisfy their respective obligations under the State’s 33-percent RPS requirement. The CTPG also agrees that -- assuming these renewable resources are included within, or otherwise dynamically scheduled into, California Balancing Authority (BA) areas – accessing these out-of-state renewable resources will likely provide diversity benefits to California BA areas that will make it easier to integrate large amounts of intermittent renewable resources.

Comment:

As embodied in its mission statement, the CTPG is committed to developing a California statewide transmission plan to meet the state’s RPS goal. To accomplish this and other carbon-reduction goals at lowest cost, Clean Line believes that the CTPG should include a broader range of transmission solutions. Clean Line wholeheartedly shares the concerns noted by President Peevey and Commissioner Florio in their April 29, 2011, letter to California ISO President and CEO Yakout Mansour:

[T]he 2011 [California ISO Conceptual Statewide Transmission Plan] relies almost entirely on generator interconnection process-driven transmission projects being pursued by the incumbent Investor Owned Utilities (IOUs), which are not subject to any sort of competitive process or, in fact, to the newly established criteria in the CAISO's tariff for approving "policy" (RPS) related transmission.

In contrast, the numerous projects submitted for consideration by independent transmission developers have all been rejected as unnecessary....The net result of this process appears to be a total reliance on IOU transmission development and a significant step back...[w]e are concerned this trend will have the effect of strongly discouraging continued efforts by independent transmission developers to pursue projects in California.

CTPG Technical Study Team Response:

The CTPG is a collaborative transmission planning organization comprised of transmission owners and BA operators within the State of California. While the California ISO is a participant in the activities of the CTPG, the CTPG does not speak for the California ISO and takes no position on the implications of CPUC Commissioners Peevey's and Florio's opinions.

Comment:

Clean Line suggests that the CTPG consider HVDC a prominent part of any state transmission plan, particularly given the abundance of high-quality wind and solar energy that can economically be transported to California *via* very cost-effective HVDC projects already in various stages of development. High-voltage direct-current lines can move more energy over longer distances with fewer losses than alternating-current lines, bypass congestion bottlenecks, enhance reliability by relocating variability, and minimize siting impacts by using smaller rights-of-way. The current plan focuses too narrowly on high and medium potential upgrades to existing lines rather than broadening its scope to include new projects, such as interstate HVDC lines, that also merit consideration.

CTPG Technical Study Team Response:

The CTPG Technical Study Team understands the potential benefits that high-voltage DC transmission additions can provide to the system. Where the technical analysis undertaken by the CTPG in connection with its 2011 study work identifies reliability criteria violations, the CTPG Technical Study Team will consider whether high-voltage DC transmission would be an effective means of mitigation.

In selecting the transmission infrastructure additions that will mitigate identified reliability criteria violations, the CTPG Technical Study Team does not intend to undertake any substantive environmental assessments, and does not expect to consider estimated project capital costs. At the same time, where economically viable renewable resource development potential is

concentrated in locations that are near existing transmission, it is prudent to consider infrastructure solutions such as constructing new substations that loop-in existing lines, reconductoring existing lines, and upgrading transmission facilities within existing corridors. These types of solutions tend to minimize adverse environmental impacts and generally entail relatively low capital costs. Many of the “high potential” and “medium potential” transmission upgrades listed by the CTPG in its Final Phase 3 Study Report have these characteristics. All else being equal, to the extent a high-voltage DC transmission line has similar characteristics, it is more likely than other infrastructure solutions lacking such characteristics to be selected by the CTPG Technical Study Team as effective mitigation for identified reliability criteria violations.

The CTPG Technical Study Team advises stakeholders that it expects to undertake technical studies in connection with the CTPG’s 2011 work that would identify reliability criteria violations on transmission facilities that are either within California or that connect California to the Pacific Northwest, northwestern Nevada, central Nevada, southern Nevada, central Utah, or western Arizona. Other than for these facilities, the CTPG Technical Study Team does not expect to undertake technical studies to identify reliability criteria violations that may be associated with the addition of renewable resources. The CTPG’s resources and expertise permit a thorough examination of reliability impacts within California and adjacent areas, but are not currently well-suited to examining reliability impacts outside of these areas.

Accordingly, the CTPG Technical Study Team recommends that the project sponsors for proposed interregional transmission projects that are intended to support the development of renewable resources in regions *outside* of the regions that are physically connected to the facilities described above (*e.g.*, in regions such as Wyoming, New Mexico, eastern Arizona, *etc.*) contact the subregional transmission planning groups that typically evaluate transmission in the area of the proposed interregional transmission project. For example, the Southwest Area Transmission (SWAT) study group typically evaluates proposed transmission projects in the New Mexico/Arizona area and would therefore be the logical planning group to examine the technical merits of the Centennial West project as this project relates to the system in the New Mexico/Arizona area. The CTPG Technical Study Team believes it is important that the sponsors of interregional transmission projects located within the footprint(s) of the pertinent subregional planning organization(s) demonstrate, through technical analysis conducted by those subregional transmission planning organizations, that any reliability criteria violations associated with the sponsor’s proposed project can be adequately mitigated.

Comment:

Clean Line also believes the CTPG should pursue an increasingly coordinated role with the Transmission Expansion Planning Policy Committee (“TEPPC”) of the Western Electricity Coordinating Council. Coordination with TEPPC would ensure planning from a regional perspective, including any seams that might exist between California and neighboring areas. Coordination with TEPPC would additionally facilitate reconciliation with Southwest Area

Transmission (“SWAT”) plans.¹ Furthermore, this coordination will facilitate the right mix of in-state and out-of-state resources needed to meet the RPS goal recognizing, as Governor Brown recently did, that the 33-percent threshold is merely a floor and not a ceiling.

CTPG Technical Study Team Response:

The CTPG agrees with Clean Line that coordination with the WECC TEPPC is an important aspect of the CTPG’s transmission-planning work. To this end, CTPG has already been officially recognized by the WECC as a subregional transmission planning organization. As Clean Line points out, TEPPC provides “a regional perspective.” An example of this regional perspective is provided in the February 2011 draft report entitled “*Transmission Expansion Planning Policy Committee, Interim Study Report, TEPPC 2010 Study Program, Report of Updated 2019 Studies.*” This report estimates the economic benefits of 20 proposed interregional transmission projects, including the Centennial West project between Guadalupe, New Mexico, and Mira Loma, California.² TEPPC’s study results are summarized on Table 5 of the report. These results indicate that the cost-effectiveness of interregional transmission projects is highly dependent on the extent to which renewable development outside the state of California is contingent on the construction of new interregional transmission. While TEPPC’s study results cannot be considered conclusive, they suggest that where such renewable development can be accommodated by the existing transmission system, it would usually not be cost-effective, absent other benefits, to build the proposed inter-regional transmission projects.³

Comment:

Clean Line appreciates that the CTPG evaluated the “West of the River Stress” scenario in the 2010 study and considered renewable imports, and we recommend that this analysis be repeated with a new base case for the 2011 study that includes the 2010 additions. This scenario reflects the renewable resource availability of the southwestern region of WECC.

As mentioned in our previous letter on the Revised Phase 4 Study Plan, the proposed Competitive Renewable Energy Zones (“CREZ”) are a step in the right direction. Including only permitted projects in the “discounted core,” however, is an unnecessarily restrictive measure.

CTPG Technical Study Team Response:

The CTPG Technical Study Team is unclear as to what “2010 additions” are being referenced. Clean Line is requested to explain whether the “2010 additions” is meant to refer to transmission

¹ SWAT is one of eight identified Subregional Planning Groups in the WECC region.

² This report is available at the following link:

http://www.wecc.biz/committees/BOD/TEPPC/TAS/SWG/Shared%20Documents/2010%20Study%20Cycle/Study%20Results%20Report/2019%20Study%20Report/2019%20Draft%20Study%20Report_clean_26May.docx.

³ See the last column on Table 5. Only one of the proposed interregional transmission projects evaluated by TEPPC results in reduced costs compared to the alternative of using the existing inter-regional transmission system to accommodate the assumed relocation of 12,000 gWh of renewable energy development from California to other states.

facilities which have been placed in service during year 2010, new renewable resources which have begun commercial operation during year 2010, or something else.

As noted above, the WECC TEPPC has conducted an economic assessment of proposed interregional transmission projects in which 12,000 gWh of renewable energy was assumed to be relocated from California to other states. One of the scenarios evaluated in the study relocated this 12,000 gWh to the New Mexico-Colorado area. Another scenario relocated this 12,000 gWh to the Arizona-Southern Nevada area. The CTPG's "West-of-River Stress" scenario assumed 20,230 gWh of new renewable resource development in the southern Nevada-Arizona-New Mexico areas (of this amount 1761 gWh are from the CPUC's "discounted core") and 32,534 gWh in other areas of the WECC including California (of this amount 19,146 gWh are from the CPUC's "discounted core"). Clean Line states that "including only permitted projects in the "discounted core,...is an unnecessarily restrictive," but does not indicate how the discounted core should be revised and what the resulting renewable resource development portfolio would look like in terms of locations, quantities and renewable technologies. These clarifications would be useful in evaluating and responding to Clean Line's comment.

Comment:

There are several projects in the WECC path-rating process and other queues that are not included in the CTPG study. Looking at additional data sets, including the WECC Scenario Planning Steering Group (10-year study) and Sub-regional Coordination Group regions and projects (*e.g.*, foundational and potential lists), will help create a more diverse portfolio. One of the strengths of western regional transmission planning has always been the ability to set aside parochial interests and recognize the multitude of resource options that exist throughout the west. Transmission is the vehicle that allows the use of these diverse resources to serve demand wherever it resides.

CTPG Technical Study Team Response:

The CTPG was formed with the goal of setting aside parochial interests. The CTPG's charter contemplates that the CTPG will seek transmission solutions that support California's policy objectives without regard to transmission ownership or Balancing Authority control. As noted above, the CTPG considers renewable resource development potential outside the state of California. The "West-of-River Stress" scenario, for example, assumed a large amount of renewable generation in the desert Southwest, apparently more than any of the scenarios evaluated by TEPPC in the above-referenced report.

The CTPG has determined that for its 2011 study work, proposed transmission projects that have received approvals from California Balancing Authorities will be included in the CTPG's pre-renewable power flow base cases. Thus, proposed transmission projects included in TEPPC's list of "foundational" and "potential" transmission upgrades that have received approval from affected California Balancing Authorities, will be modeled in the CTPG's power flow cases.

Comment:

Finally, Clean Line urges the CTPG to consider a wide range of generation scenarios. In addition to the Once-Through-Cooling scenarios, the array of scenarios should include very low carbon emissions requirements, displacement of potentially inefficient “Must Run” units (where possible), as well as infrastructure requirements for integration of imported renewable resources.

CTPG Technical Study Team Response:

The CTPG appreciates Clean Line’s suggestion that the CTPG consider a “wide range of generation scenarios.” There are, however, both practical and policy reasons that argue in favor of a narrower range of scenarios. The CTPG has decided that its 2011 study approach will focus time and resources on developing the assumptions for a limited number of reasonably likely study scenarios, which means fewer resources will be needed to carry out the subsequent power flow and dynamic stability analysis. In addition, the CTPG is sympathetic to the view that decision-making becomes more difficult as the number of scenarios grows. For example, the transmission upgrades that would support the development of a large amount of renewable resources in the Pacific Northwest would likely be significantly different than the transmission upgrades that would support the development of a large amount of renewable resources in the desert Southwest. From a decision-making standpoint, it would be preferable to determine which of these two development scenarios is more likely and develop a scenario around the more probable outcome.

With respect to Clean Line’s suggestion to develop a “very low carbon emissions” scenario, CTPG notes that it has already studied such a scenario. See section 7.5 of CTPG’s final Phase 3 study report which documents the result of a scenario in which coal-fired generation, rather than gas-fired generation, is decremented as renewable resources are added.

With respect to Clean Line’s suggestion to develop scenarios in which “‘Must Run’ units” are displaced, the CTPG Technical Study Team is unclear how Clean Line would propose to replace the functions that must-run generation provides (*e.g.*, preserving local reliability, such as voltage stability in certain load pockets, thermal requirements for cogeneration applications, *etc.*).

As to Clean Line’s suggestion that the CTPG should develop scenarios that consider the “infrastructure requirements for integration of imported renewable resources,” the CTPG has decided that its 2011 study work will not consider what, if any, transmission infrastructure would support the generation resources and other technologies that may be useful for integrating intermittent renewable resources. The CTPG notes that the California ISO continues to investigate integration requirements for renewable resources. A presentation describing the results of the California ISO’s latest work on integrating intermittent renewable resources at the 33% RPS level is available on the California ISO website at <http://www.caiso.com/2b73/2b73796015b90.pdf>.