

**Generation and Transmission Modeling Work Group**  
*Responses to [Public Comments](#) - February 2 to March 2, 2009*

**Transmission Segments**

The Transmission Segments subgroup of the Generation and Transmission Modeling Work Group developed a high-level representation of the existing transmission grid. The grid was represented by a network of segments that roughly follow the rights-of-way of major transmission lines across the West. This initial representation was purposely limited to about 100 segments to keep the input assumptions to the WREZ Transmission Model to a manageable level.

Some comments identified specific alternative segments to better represent the existing rights-of-way. These recommendations will be forwarded to the Transmission Segments subgroup for consideration in revising and improving the WREZ Transmission Model.

Some comments asked about adding new segments to represent proposed transmission projects, and about the need for new segments to connect specific renewable energy zones to the grid. The Transmission Segments subgroup anticipated the need to add new segments that fill in gaps to the existing grid and correlate to proposed transmission projects and will be adding some segments to the model. In addition, the model user can change the default transmission distances to reflect their expectations regarding future transmission additions.

**Transmission Characteristics**

The Transmission Characteristics subgroup of the Generation and Transmission Modeling Work Group adopted a series of assumptions regarding technology and cost characteristics of transmission lines. These assumptions addressed the transmission line capabilities and capital costs, rights-of-way costs, substation capital costs, operation and maintenance costs, and transmission losses.

One commenter inquired whether alternative transmission technologies such as DC lines were considered. DC lines were included in the batch of transmission technologies.

Another commenter observed that the rights-of-way widths assumed for different voltage levels are narrower than what is required to facilitate a commercial transaction. Additionally, there was concern that some higher voltage lines may need to be built with separate towers than on a single tower with double circuit lines. This comment will be forwarded to the Transmission Characteristics subgroup for consideration.

A third commenter provided specific cost estimates for proposed projects that are public information from Environmental Impact Statements. These costs should be cross checked by the Transmission Characteristics subgroup for comparison to the cost assumptions used in the WREZ Transmission Model.

A fourth commenter suggested that provision should be made for accommodating more localized or otherwise refined assumptions for particular transmission paths. The primary purpose of the WREZ model is to evaluate long-distance transmission options, not localized assumptions. However, the model does allow changes to input to accommodate cost impacts of local factors.

### **Study Request to WECC**

The WREZ project submitted a study request to the Western Electricity Coordinating Council to undertake four distinct scenarios in its annual interconnection-wide transmission planning effort.

One commenter made multiple recommendations on features of the WREZ scenarios modeled by WECC. (1) Scenarios with high levels of variable generation renewables should have sufficient quantities of flexible generation to allow for integration into grid operations. (2) Resource selection in these scenarios should include diversity of resources, such as wind and solar, to better manage risk. (3) The scenario calling for modeling an extra high voltage transmission overlay should consider technological issues associated with building upon the existing system and the limitations of the WECC Path Rating Process. These issues are being raised in the WECC transmission planning process.

Another commenter asked for clarification as to the timing for reports on conceptual transmission plans that come out of WECC's transmission planning process. Modeling results may be completed by next fall but the final report from WECC will not be released until the first quarter of 2010.

Comments also raised questions about renewable development in conjunction with broader climate change goals. The WREZ study request frames some of the aggressive renewable development scenarios in line with announced carbon reduction targets being discussed in regional and federal proposals.

### **RETI**

Multiple comments were received calling for the WREZ project to look to California's Renewable Energy Transmission Initiative (RETI) project to build transparent and complementary assumptions in the transmission and resource analysis. The contractor developing the WREZ Transmission Model has worked on the RETI project. These observations apply to the RETI and other state projects developing renewable energy zones.

### **Other**

Comments suggested the need to evaluate balancing, firming and storage options. The WREZ Transmission Model will allow the user to input "custom" resources, such as

compressed air storage. These “custom” resources can be added at the REZ end of a transmission path.

One comment suggested that distributed generation needs to be considered. The WREZ Transmission Model has the capability to allow the user to input local generation options and compare those options with the cost of generation from REZs.

Commenters asked about actions to streamline transmission development processes and the interaction of the WREZ project with the designated corridors across federal lands under Section 368 of the Energy Policy Act of 2005. These are topics for Phase 4 of the WREZ project.

One comment suggested overlaying the transmission segments used in the model with the QRAs. This will be done.

One comment recommended that the value of the WREZ Transmission Model in the transmission planning process should be explained. This will be done in follow-up actions to the February 24-25 meeting where the model was introduced to resource planners. The WREZ Transmission Model is also being introduced in the WECC transmission planning work, and training on the model is available to all parties, including utilities, PUCs and sub-regional planning groups.

One commenter found the presentation of the transmission assumptions confusing. Multiple webinars on the WREZ Transmission Model are being held to provide more detailed explanations about the operation and inputs to the model. For information on the model, get new releases, participate in future webinars, or find user guides, go to the webpage on the WREZ model at <http://www.westgov.org/wga/initiatives/wrez/gtm/model.htm>.

One commenter recommended that the WREZ Transmission Model account for energy and capacity values and the cost of integrating renewable generation. These features are incorporated into the model. The user is able to adjust these factors. It needs to be emphasized that the WREZ Transmission Model is a screening tool to enable the user to make general comparisons of the cost of power from different REZs. To do this, the model assumes that the power will be carried by new lines. In reality, the existing transmission system may be able to accommodate the delivery of some power, but this requires a level of analysis beyond the WREZ project.