

WREZ Study Request to WECC/TEPPC 2009 Work Plan

(Draft 01-05-09)

The Western Governors' Association's Western Renewable Energy Zone (WREZ) project submits this study request to the Western Electricity Coordinating Council's (WECC) Transmission Expansion Planning Policy Committee (TEPPC) for modeling and analysis in its 2009 work plan. The WREZ project makes this request as part of its mandate to identify conceptual transmission plans for developable renewable resource zones across the Western Interconnection. WREZ is interested in understanding three core issues:

- The transmission needed across the Western Interconnection to deliver power from preferred Renewable Energy Zones (REZs) to loads in a 10-year study period;
- The transmission needed across the Western Interconnection to deliver power from preferred REZs to loads in a long-term time horizon (e.g., 20 years) assuming renewable energy rises to 33 percent of total generation; and
- The economics and technical feasibility of building a very high voltage overlay in the Western Interconnection to move high levels of renewable generation from preferred REZs.

The WREZ project requests that each core issue would be evaluated with sensitivity analysis. The analysis should incorporate both capital and variable costs of producing and delivering power to load in order to be of value for stakeholders interested in the relative impact of the various cases on electricity costs. The WREZ project will assist WECC in defining inputs such as preferred REZs and assumed changes in technology costs.

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- 1) **Resource Case 1: Near-Term Analysis of RPS Requirements.** This case would model a resource mix reviewed by LSE resource planners that meets existing renewable portfolio standards (RPS) ten-years in the future. This case would serve as a reference case for other scenarios. Sensitivity analysis would be performed on: a) energy efficiency, and b) natural gas prices.
- 2) **Resource Case 2: Near-Term Analysis with Carbon Constraints.** The resource mix would increase the renewable penetration level to 25% of energy as part of a policy to reduce greenhouse gas (GHG) emissions. This renewable penetration would complement the Western Wind and Solar Integration Study being conducted by the National Renewable Energy Laboratory. Target reductions of carbon dioxide (CO₂) emissions in the power sector would be consistent with proposals by the Western Climate Initiative (25% to 40%) or

higher targets proposed under federal legislation. Sensitivity analysis of the carbon constrained resource mix would be performed on: a) energy efficiency, and b) carbon prices.

- 3) **Resource Case 3: Long-Term Analysis.** Model a resource mix reviewed by LSE planners that assumes a 33% renewables penetration level and a 50% reduction of CO2 emission in the the Western Interconnection 20-years in the future. Sensitivity analysis would be performed on: a) energy efficiency; b) carbon prices; c) natural gas prices; and d) changes in technology
- 4) **Expansion Case 1:** Transmission expansion needed to alleviate congestion in Resource Case 1.
- 5) **Expansion Case 2:** Transmission expansion needed to alleviate congestion in Resource Case 2.
- 6) **Expansion Case 3:** Transmission expansion needed to alleviate congestion in Resource Case 3.
- 7) **Expansion Case 4: Western Transmission Superhighway Network.** Model a transmission superhighway overlay that would be used to test the economics of the transmission assumptions under the resource mix and sensitivity analysis specified in Resource Case 3. The high voltage overlay would reflect the general location of the currently-proposed mega transmission projects with some adjustments as necessary.

WREZ Study Request and the WECC Criteria

The WREZ study request meets WECC's criteria for accepting study requests:

- a) *What portion of the interconnected system will be considered by the study?*
 - The WREZ study request covers the entire Western Interconnection.
- b) *Does the request raise fundamental design issues of interest to multiple parties?*
 - Yes. The request is made by the WREZ project that includes representatives of Western Governors and Premiers, PUCs, utilities, environmental NGOs, generation developers, and transmission developers throughout the interconnection.
- c) *Does the request raise policy issues of national, regional or state interest; for example, access to renewable power, and location of both conventional and renewable resources?*
 - Yes. The issues to be raised in the study request address state/provincial interests, interconnection-wide interests, and national interests.
- d) *Can the objectives of the study be met by other studies by clustering or combination?*
 - The WREZ request can provide the foundation for WECC to evaluate additional anticipated study requests.

- e) *Will the study provide information of broad value to customers, regulators, transmission providers, etc.?*
- Yes. The study results will be valuable to LSEs when evaluating resource options, to PUCs when considering integrated resource plans and LSE procurement plans, to transmission developers, to state and federal agencies charged with designating transmission corridors and permitting proposed transmission, to NGOs and the public when developing positions on important issues, and to state and provincial policy makers.
- f) *Can similar requests for studies or scenarios be represented generically if the projects are generally electrically equivalent?*
- Yes. The WREZ request is not asking for review of specific proposed projects.
- g) *Can requests be aggregated into energy or load aggregation zones with generic transmission expansion between?*
- Yes. The WREZ project will provide specific aggregated generation information from Renewable Energy Zones.
- h) *Does the study request require the use of production cost simulation or can it be better addressed through technical studies such as power flow and stability analysis?*
- The study request will require the use of production cost simulations.