

**Western Renewable Energy Zones  
Comments Received on General & transmission Modeling Working Group Products  
February 2 – March 2, 2009**

**Blackfeet Nation** – [see PDF](#)

Willie Sharp

**Bonneville Power Administration**

Mary Johannis

The following comments are suggestions regarding the development of resource and transmission scenarios employing the WREZ model rather than specific comments on the work of the WREZ Generation and Transmission Modeling Working Group to date. Most of the issues highlighted in our comments were also discussed at the WGA-sponsored Western Interconnection Resources Planning Forum on February 24-25, 2009. Given the looking forward nature of these comments, they are probably more appropriately directed to the WREZ Technical Committee. However, this option for providing comments did not appear in the comment submittal instructions on the WGA-WREZ website.

BPA commends the efforts of all three working groups in the preliminary definition of areas of high quality renewable resources taking into account areas with known land use or environmental restrictions as well as on the development of a user-friendly model to estimate the delivered cost of power from renewable energy zones to load areas. As this work evolves into the development of specific resource scenarios for study in the WECC Transmission Expansion Policy Planning Committee (TEPPC) process, BPA would like to provide the following comments:

**Suggestions for Development of Resource Scenarios:**

For scenarios with significant quantities of variable, non-dispatchable renewable generation, such as wind or solar PV, BPA recommends that these scenarios add sufficient flexible resources to allow for integration of these intermittent resources into grid operations. The magnitude and location of flexible resources needed to provide regulation, load following and generation imbalance reserves will depend on the attributes of existing generation, assumptions regarding the quality of short-term wind forecasts, whether virtual control area consolidation is in place, liquidity and depth of bilateral ancillary services markets, the ability to perform intra-hour scheduling and/or the ability to perform dynamic scheduling between balancing authorities. The addition of generation to provide firming capacity may also be needed.

Another consideration in developing resource scenarios is the desirability for diverse resource portfolios in order to manage risk. Perhaps diversity of resources in order to minimize the risk that generation will not be available when needed to meet load, or that it will be prohibitively expensive, should be one consideration for developing resource portfolios. For example, given that wind generation is generally at a minimum in the summer, while solar generation is almost always at a maximum in the summer; it may be desirable to have a mix of wind and solar resources for areas with both types of resources. We would recommend that the characterization of the resources in each of the Qualifying Resource Areas or Renewable Energy Zones include some information on

generation shape and other attributes that would allow planners to assess diversity attributes when evaluating which resources might fit best into their resource portfolios.

Suggestions regarding the High Voltage Overlay Transmission Scenario: One of the scenarios that WREZ has requested TEPPC to study in 2009 is a transmission superhighway network to allow for future growth in recognition of the long life and limited availability of transmission corridors. BPA has the following general comments about the development of a transmission superhighway:

- 1) Transmission planning criteria often limit the amount of power that can be transmitted on a line to below its ultimate design capability if the parallel lines cannot withstand the increased flow resulting from the outage. This is particularly a problem when there is only one line of a higher voltage in parallel with a lower voltage system.
  - 2) The loss of a line carrying more than 3000 MW appears to be an upper bound on what the WECC system can withstand now.
  - 3) Much of the potential benefit of a 765+ kV AC overlay is lost if each line is transformer-terminated. This is due to the increased impedance, power losses, and cost of the transformers.
  - 4) There are issues with the WECC Path Rating Process that will need to be resolved in order to facilitate the construction of high voltage lines to a REZ. Many transmission developers, especially merchant and investor-owned utilities, are reluctant to build a major transmission project until they have certainty over their ultimate path rating. The present WECC Path Rating Process is geared toward sequential development of transmission projects in order to access specific generation projects. It prohibits the use of "fictitious" resources to obtain a path rating. Clarity will be needed whether the identification of conceptual renewables somewhere in a REZ constitutes the use of "fictitious" resources. Allocation issues will need to be dealt with when the total capability of multiple projects differs from the individual capability of each project in isolation.
- For all of the reasons stated above, the group should also study a high voltage overlay of double-circuit 500 kV lines and also +/- 500-kV DC lines.

## **BPA - Transmission Planning**

Anders Johnson

The following comments are with respect to the Load Centers and Transmission Segments Map:

- 1) A transmission segment should be added between Grand Coulee and John Day. This represents multiple parallel 500 kV lines that are a part of the North of John Day cutplane, and that include some of the most heavily loaded lines in BPA's system.
- 2) A transmission segment should also be added between Portland (Load Center D) and COB. This represents a parallel 500 kV line and 230 kV line along the I-5 corridor through Western Oregon.
- 3) The station along the Washington / Idaho border spelled "Hotwai" should be spelled "Hatwai".
- 4) Segment 37 (Summer Lake - Reno) should be represented as COB - Reno, and the diagram adjusted accordingly. This intertie consists of a 230 kV line from Malin (at COB) to Hilltop, and a 345 kV line from Hilltop to Reno.

## California Public Utilities Commission

Anne Gillette, Keith White, Larry Chaset

### OVERVIEW

The Staff of the California Public Utilities Commission (“CPUC Staff”) welcome the opportunity to comment on documents released by the Western Renewable Energy Zones (“WREZ”) project, representing efforts of the three working groups: Zone Identification and Technology Analysis (“ZITA”); Lands and Environment; and Generation and Transmission Modeling. In view of the focused efforts over the past few years to improve coordination of transmission planning throughout the Western Interconnection, the WREZ effort is a valuable and necessary complement to more geographically specialized renewable energy assessments for different parts of the west, such as the California Renewable Energy Transmission Initiative (“RETI”). The CPUC Staff recognizes the constructive progress represented by the material provided for comment, and we appreciate the Department of Energy’s support for this effort.

Our comments, set forth below, are brief and broad. In summary, we recognize that the WREZ analysis is, by necessity, very high level. However, we recommend that the report and the models be designed to accommodate more specific information where and when it is available, to ensure the highest quality outputs possible. We plan to participate more fully in the WREZ effort going forward, as work products are integrated into the REZ model and the model is tested and refined.

### DISCUSSION

#### Resource Areas

The process of screening renewable resource areas based on physical criteria (yielding Candidate Study Areas), land use restrictions (yielding Qualified Resource Areas), and wildlife criteria (yielding Renewable Energy Zones, not yet completed), appears to be reasonable, well-vetted, and in fact similar to the process used in California’s RETI process. Apparently, the WREZ process uses a more aggregated and conservative approach for deriving resource zones (discrete areas and their MW) as a basis for developing supply curves than does the RETI process. Given the WREZ project’s broad geographic scope and demanding analytic effort on a short schedule, as well as the need to justify any prospective costly long-distance transmission by high-probability, high quality resources, this is reasonable. However, it would be valuable and informative, and contribute to transparency, to clarify how this resource zone derivation compares to more detailed efforts that may be conducted or warranted in some areas, such as via the RETI effort.

It is also important to recognize that for assessing renewable resource options available to particular load centers, such as Los Angeles or Phoenix, it may be useful to augment the information coming out of the WREZ process with more detailed or finer-grained resource characterizations for some areas in the vicinity of the load centers in question. This could be facilitated both by structuring the WREZ model to flexibly allow for the incorporation of such additional information and by clarifying the relationship between the information presented in the WREZ process and these more detailed local resource characterizations.

An example of where it would be useful to make such differences in granularity more transparent is as follows. The WREZ’s Draft Preliminary Qualified Resource Area Renewable Energy Resource

Summary (table) includes about 18 GW of solar thermal resources and 6.5 GW of wind resources in 5 resource areas. In contrast, across 37 separate renewable energy areas (Competitive Renewable Energy Zones, or “CREZs” and “sub-CREZs”) in California, the RETI Phase 1B Final Report includes about 65 GW of solar thermal resources and about 16.5 GW of wind resources, comprised, respectively, of 326 and 134 GW specifically analyzed projects, over half of which are actually planned or proposed by developers, with the remainder being “proxy” projects. In addition, the same RETI report also includes 27.5 GW of distributed solar PV in 1375 20 MW-sized proxy projects, entailing greater siting flexibility than the central station solar thermal projects characterized by both the RETI and WREZ analyses. The CPUC is now engaged in an effort to refine, in particular, these estimates of the potential for distributed PV, within the context of its Long-Term Procurement Plan proceeding.

#### Generation Technology Assumptions

Assumptions regarding capital costs, capacity factors and other generating technology characteristics will be important drivers of the delivered \$/MWh costs that will be calculated by the REZ model. We understand that the assumptions presented by the ZITA work group have been vetted with stakeholders and are similar to those used in the RETI analyses. It is important that these assumptions not only be made accessible and transparent to (and readily adjustable by) REZ model users, but also that the key assumptions that drive \$/MWh costs and/or that vary significantly from alternative credible assumptions be identified, and that there be transparent disclosure of how such assumptions (such as capacity factors, perhaps some cost factors) vary among different resource zones.

Delivered MWh and the associated cost of energy production plus transmission do not represent the full value or cost of any particular source of renewable generation that could be purchased by a load serving entity in any particular location. This simple delivered \$/MWh metric provides a useful first cut basis for comparing different renewable energy options delivered to different load centers, and may satisfy the WREZ objective of promoting assessment, communication and collaboration among western consumer, generation and transmission interests regarding renewable energy and transmission development. However, a renewable resource’s market energy and capacity value, and the added cost for integrating that resource into the system, also depend on the resource’s output pattern and predictability (over multiple time frames). Also, the consequences for a given resource’s value and cost may vary depending on what load center is being served (and if the output is even being delivered to the purchaser’s load center at all).

It would accordingly be helpful for WREZ study products to reflect these more nuanced but important cost and value issues, if not by incorporating them into the REZ model itself (which may be beyond the scope of model design or intent), then by (1) providing such information in conjunction with the model, and by (2) providing a mechanism (within, or coupled with, the model) whereby a model user such as a load-serving entity can factor such “nuanced” information into the user’s use of the model for assessing renewable energy options.

#### Transmission Assumptions

Besides resource supply curves, transmission costs are a driver of computed \$/MWh renewable energy costs as delivered to a load center. We understand that transmission costs and other characteristics (e.g., MW or MVA ratings for different kV levels and conductor composition) are

generalized, to be applied to resource-load distances that reflect established corridors. Combined with the WREZ resource zone and generation cost characterizations, this generalized approach appears to be an appropriate starting point for the broad west-wide scope of the WREZ project, and appears to have been reasonably vetted. However, as the high value resource areas that will be the outputs of the WREZ effort become more clearly identified, provision should be made (and should be well-documented and publicized) for accommodating more localized or otherwise refined assumptions for particular transmission paths. If such localized or otherwise more detailed transmission characterizations are already available within the WREZ effort, they should be provided as an accompaniment to the REZ model. Furthermore, to the extent that the model will calculate incremental transmission costs and capacities that reflect the use of existing towers and corridors, the need for any teardowns or re-conductoring, new vs. existing right-of-way and similar practicalities, such assumptions and supporting information should be made generally available so that those stakeholders who plan to run the model themselves will have the flexibility to adjust the relevant input assumptions.

Transmission cost assumptions represent generalized conditions, and in important instances are stated to apply “outside of California.” However, actual costs, as well as the assumed costs appropriate for particular resource assessments, will vary greatly depending on such factors as terrain/slope, urbanization, vegetation, land management agency requirements (e.g., in national forests), and weather (wind, ice). Similarly, right-of-way costs will clearly be higher in densely populated or valuable agricultural areas than in sparsely inhabited areas. The transmission costs per mile provided in the documents we have reviewed appear to be lower than those being used for some planning purposes in California, even on flat, rural land. Accordingly, California (and nearby) transmission cost assumptions developed for the RETI studies may provide a useful complement to WREZ transmission assumptions. It would therefore be very helpful for the next release of the REZ model and accompanying documents to provide a transparent indication of regional and situation-specific variations in transmission cost elements, as well as reasonable ranges of variation and uncertainty for overall transmission costs. Not only would this help some model users assess the range or uncertainty for potential delivered renewable energy costs, but it would also provide a convenient opportunity for users to vary transmission cost factors to address particular circumstances, and thereby help avoid misleading or over-simplified use of the WREZ project’s hard work.

#### Participation Going Forward

We look forward to increased participation in the WREZ effort, especially in connection with the refinement and testing of the REZ model to incorporate WREZ information products and to provide flexibilities for utilizing these and other useful types and sources of information within, or as complements to, the model.

#### **CO Public Utilities Commissioner**

James K. Tarpey

Overall this WREZ project, and the resulting modeling tool, is an excellent first step. The few suggestions below are meant to improve its value and to not detract from the quality of the work done so far.

The model's potential as a screening tool, as well as its limits should be set forth explicitly. Also, in light of its limits as a screening tool, it would help to explain what subsequent steps a planner, or other user, would take (following use of the model) to investigate in more detail potential resources and transmission plans to connect them to the system.

As made clear at the meeting last week in San Diego, there is a need for increased amounts of annotation and clarification throughout the model so users better understand how the model works and what the values mean (i.e. define where bus bar cost is assigned, and leveled cost of energy). By providing this clarity, consistent interpretation of the results across all users will be improved.

To the extent it has not been done already, feedback should be received from load serving entities' system operators, resource developers, and equipment manufacturers using the model regarding the accuracy of the data in the model (e.g., capacity factors, seasonal output data, production characteristics such as time of day energy is produced by technology by area, etc.).

There are a number of functions that currently need to be performed manually. To the extent these can be automated, it would improve the usefulness of the model. As an example, one such function could be the addition of base-load generation through a separate sheet such that users can easily add base-load units to regulate their modeled renewable fleet.

I appreciate the opportunity to provide these comments and look forward to working on this most important issue in the future.

### **Diné Power Authority**

Steven C. Begay

The Dine' Power Authority (DPA) submits these comments regarding the Western Governors' Association (WGA) Western Renewable Energy Zones (WREZ) draft documents and maps. While we support the overall efforts by the WGA to seek extending the power grid into geographically constrained areas in order to reach valuable renewable resources, we ask that tribal sovereign and energy resource interests be given thorough consideration throughout the WREZ development process.

Navajo Nation Interests: DPA is an enterprise of the Navajo Nation and was created by the Navajo Tribal Council for the purpose of developing electric transmission and generation projects within the Navajo Nation. Our lands are diverse with natural resources, some transmission resources and located in an area rich with renewable wind and solar energy resources. Despite the abundance of renewable energy resources on our tribal lands, such as abundant solar resources, and wind resources in the central part of the reservation, the Navajo Nation appears to not be located within one of the WGA's Renewable Energy Zones. Consideration should be given to Navajo Nation decisions to develop its resources, and inclusion in at Renewable Energy Zone may be critical to appropriate development of transmission lines to support this development.

Tribal Renewable Energy: Our tribal government is working carefully to balance our inherent governing responsibilities to our people and our lands with that of our resource development, economic and infrastructure needs. As such, the Nation will carefully choose which lands are

appropriate for development. We support your efforts to ensure our renewable energy resources are appropriately identified and ultimately considered in terms of plans for renewable energy integration with the power grid. We encourage new transmission to be constructed so that our wind rich area may develop this resource and create important economic development efforts for our people.

**Tribal Transmission Project:** DPA is developing the Navajo Transmission Project, (“NTP”), one of the most important renewable energy related electrical transmission projects moving toward construction in the Southwestern US today. It is the largest electrical transmission project ever developed by an Indian Tribe. The NTP is a 469-mile long, high-voltage (500 kilovolt) electric transmission line and associated facilities routed from the Shiprock Substation west of Farmington, New Mexico across northern Arizona, then turning south to central Arizona, and west to the Marketplace Substation in southern Nevada near Boulder City. The NTP has three distinct segments, with approximately 251 miles on the Navajo reservation in Segments 1 and 2, and approximately 218 miles in Segment 3 crossing a patchwork of federal, state, tribal and private lands.

DPA has contracted with a private developer to build Segment 1, with an option on Segment 2. The renewable energy development potential adjacent to all three Segments, but particularly Segments 2 and 3, is under discussion with private firms, municipal and investor-owned utilities, and government agencies wishing to move wind energy generated in Colorado, Utah, Arizona and New Mexico to Southwestern load-centers. The majority of planning and permitting work for the NTP (over \$25 million) was funded by the Navajo Nation and various grants from the US Department of Energy.

The environmental impact process for the NTP was completed in 1996, leading to a Record of Decision from the Western Area Power Administration (WAPA) in 1997. Due to the magnitude and corresponding cost of the project, a variety of lengthy pre-construction permitting and development activities have taken place from 1997 to this date. Some of the more significant activities conducted to-date have included DPA obtaining authorization from the Arizona Corporation Commission for crossing non-tribal, state-regulated lands in Arizona; completing a biological assessment and biological opinion process with the US Fish and Wildlife Service to comply with federal Endangered Species Act requirements; obtaining rights of way across all Navajo lands from the Navajo Nation; and completing a comprehensive study with the Western Electricity Coordinating Council (“WECC”) and Arizona Public Service for an east-to-west power rating on Segment 1. Most recently, the project has received decisions from the US Bureau of Land Management (“BLM”) and the Bureau of Indian Affairs (“BIA”) for rights of way across their respective jurisdictions in Segments 1 and 2. As can be expected for any major infrastructure project covering this much territory, objections have been raised to these decisions. We expect that these concerns will be addressed so that this important infrastructure can begin to serve the electrical needs of this region and to allow the development of Navajo natural resources, including our renewable energy resources.

DPA requests that as the WGA continues its process to identify renewable energy zones, and supporting transmission, that the WGA considers projects like the NTP that have been in development prior to the WGA process and that will be used to support renewable energy

development. Any opportunities for special funding, financial benefits, permitting considerations, and other benefits resulting from the WGA process should also be applicable to projects like the NTP that have been in development for some time, but will be constructed to support renewable energy projects.

Support for Tribal Energy Development: Presently, many tribes across the nation are realizing benefits from federal policy support for increased tribal energy development. We would like to see this federal policy encouraging renewable energy development on Indian lands be reflected in the Western Governor's reports by honoring the wishes of Indian Tribes. Similar to other sovereigns, the ability to govern our lands, resources, and the needs of our people is both inherent and paramount. For these reason we seek assurance that DPA and Navajo Nation are included in any policy decisions impacting the Renewable Energy Zone located in common with our tribal reservation lands and that our lands are indentified as a Renewable Energy Zone.

In closing, we appreciate the WGA's invitation to comment. Since we see that tribal energy, renewable energy integration and transmission issues are in need of considerable immediate attention, we encourage WGA to continue communicating and inviting our participation in the WREZ process.

**Willie Gibson**  
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Has the "committee" on energy transmission thought about putting R&D money into Tesla's concept of far field electrical transmission?

In the 1980's there was success in near field transmission...a 75% transmission capture at 2 meters...and specialists at MIT, Cal Tech, etc. are computer modeling how to beam energy from space to earth, but many of Tesla's concepts seem much simpler...using existing space and matter on earth to transmit energy without direct wiring. Think of all of the problems you'd avoid without above ground lines.

Please think outside of the box.

**Horizonwind**  
Logan Winston

As a major stakeholder in any policy regarding wind energy, Horizon is an active participant in the development of local, state, regional, and national policies across the US. Regarding the Western Governors' Association (WGA) Western Renewable Energy Zone (WREZ) project, Horizon is actively developing projects across the western U.S. and supports the creation of a robust, fully interconnected western smart grid.

Comments

Pro - active, long - term, interconnection - wide transmission planning is critical to support the emergence of a new green energy economy. Our location - constrained renewable resources require this sort of coordinated planning effort to develop effective and efficient strategies to deliver green



power to the growing markets which demand them to fulfill state and federal Renewable Energy Standards and to address future carbon values. Horizon appreciates the opportunity to comment on the WREZ project.

Horizon believes the WREZ project will be a useful tool for bringing different utilities together to develop regional transmission plans that cross utility and state boundaries to access renewable resources. However, the documents produced by this effort can only provide a snapshot of the various policies, regulations, commodity prices, barriers to development, technologies, etc. that affect renewable energy and that are changing in real time. As such, it is important to highlight WREZ's purpose as a tool for conceptual regional transmission planning, and not for wind energy project planning. Areas identified as suitable, or unsuitable, in the final WREZ report for wind energy development may or may not be appropriate when assessing a particular project area, and the WREZ work products should emphasize that they not be used for decision - making in relation to individual wind energy projects. Furthermore, it should also be noted that the WREZ process will not identify all viable wind energy projects and that there are high quality, economically developable wind and other renewable energy resources that are located outside of the WREZ areas. For example, there are areas identified as exclusion and avoidance areas that are not necessarily precluded from development but do require more diligence, such as Wildlife Study Areas and Environmental Avoidance Areas.

#### Environment and Lands Comments

##### Application of wildlife data to WREZ

The WREZ project should incorporate wildlife data with great care and allow for continuing data updates as wildlife data will improve over time. Given this, adjustments of development within WREZs can avoid or mitigate newly discovered or defined wildlife conflicts. Lastly, final designation of WREZ should proceed on the basis of including areas where generalized wildlife concerns are asserted, or where some stakeholders raise "sensitivities" about wildlife, but where adequate a scientific basis for exclusions, or exclusions based on regulation or law, cannot be shown.

##### Specific Concerns regarding Initial Avoidance Areas and Exclusion Areas

We believe the following areas identified as Initial Avoidance Areas do not necessarily preclude wind development:

- Area of Critical Environmental Concern: ACEC's, instead of as currently listed, the Initial Avoidance Areas needs to conform to the language in BLM Instruction Memorandum No. 2009 - 043, which states:

Wind energy development is permitted in one National Conservation Area, the California Desert Conservation Area (CDCA), in accordance with the provisions of the California Desert Conservation Area Plan 1980.

All land use planning efforts initiated after the issuance of this IM will address wind resource potential, public concerns, and opportunities for wind energy development within the land use planning area consistent with the BLM Land Use Planning Handbook (appendix C). Field offices will incorporate wind energy resource development potential in these planning efforts to facilitate the processing of future wind energy applications.

All new, revised, or amended land use planning efforts will address and analyze ACEC land use restrictions individually, including restrictions to wind energy development. For future land use planning efforts, ACECs will not universally be excluded from wind energy site testing and monitoring or wind energy development but will be managed consistent with the management prescriptions for the individual ACEC. Existing land use plans and planning efforts may be amended as necessary, with appropriate level of NEPA analysis and decision, to address this change in wind energy and ACEC policy, consistent with the procedures of 43 CFR 1610.5.5. A site - specific land use plan amendment to address this change in policy may be addressed concurrently with the processing of a wind energy application. This revised policy will continue to provide protection of sensitive resource values in ACECs consistent with the management prescriptions for the individual ACEC.

We believe the following areas identified as Initial Avoidance Areas and Exclusion Areas do not necessarily preclude wind development:

1. BLM Avoidance Areas: BLM land use plans may identify right - of - way avoidance areas or exclusion areas under the BLM land use planning guidelines (see Appendix C of the BLM Land Use Planning Handbook H - 1601 - 1). Avoidance areas, as defined by the land use planning guidelines, do not preclude the issuance of rights - of - way for wind energy site testing and monitoring activities or wind energy development or preclude the issuance of permits, leases, or easements under Section 302 of the Federal Land Policy and Management Act (FLPMA). These uses in avoidance areas may be available with special stipulations or mitigation measures. For such authorizations, the area's environmental sensitivity and other feasible alternatives will be strongly considered.
2. Visual Resource Management (VRM) classes: VRM Class I and II, the Initial Avoidance Areas needs to be amended to conform to BLM Instruction Memorandum No. 2009 - 043, which states: The VRM management classes are not intended to be used to exclude or preclude land uses, including opportunities for development of wind energy in areas with high wind energy resource potential.
3. OHV Open Areas: OHV Open Access areas should not be excluded or avoided.
4. BLM Wilderness Study Areas (WSAs): Horizon suggests that WSAs be moved to the List of "Initial Avoidance" Areas to allow for the possible future evaluation of these areas. Currently, a WSA does not preclude an area from all development. Oil and gas development, for example, are currently allowed in a WSA. If national policy aligned renewable energy with other types of development as public lands priorities (such as oil and gas, mineral rights, and livestock grazing), then renewable energy could in the future be allowed in a WSA.

By moving the WSAs to the List of "Initial Avoidance" Areas, if a WSA was found to be a critical path option for WREZ, the WSA could be submitted to the BLM in support of making the policy change.

#### Zone Identification and Technical Analysis Comments

Additionally, developer activity should be heavily weighted when reviewing proposed Qualified Resource Areas. Developers have intimate knowledge of the regions they are working in and have a good sense of what barriers to development may and may not be surmountable.

As such, Horizon believes the following regions need to be reconsidered when finalizing the proposed Qualified Resource Areas:

- Northeast California: there is significant development activity.
- The resource areas in South and East Oregon need additional consideration and groundtruthing from industry and local BLM offices. In Baker County, Oregon, there is active, nearterm, and significant development taking place right now that are not reflected on the current map.

#### Generation, Transmission and Modeling Comments

Lastly, Horizon would like to know more about the potential interaction and collaboration between the Department of Energy's recently - released West - Wide Energy Corridors (WWEC) PEIS and the WREZ effort to ensure their alignment.

#### **Invenergy Wind Development LLC**

Karyn Coppinger

The WREZ transmission work group should include in their work an evaluation of balancing and firming within and adjacent to each REZ so as to understand balancing service costs to be required by a given control area. It may be prudent to merge smaller control areas so as to apply balancing across broader area to reduce costs (obtain less expensive service due to more resources available).

In the west, a substantial proportion of potential REZ are served by Western Area Power Administration (Western). Western's time lines for processing interconnect requests to meet wholesale market needs is considerably longer and riskier than on non-Western lines. Working with Western presents risk to Independent Power Producers in terms of both timing and the certainty that a renewable project can meet its contractual power delivery time lines in a competitive market. It would be beneficial to the renewable energy development process if one of the results of the REZ study was to implement policies that stream-line Western procedures so that developers can utilize their transmission lines that intersect REZ.

Studies have shown that new transmission or transmission upgrades are warranted throughout the west. Many developers have already identified areas where renewable project development is desirable (see for example the applications for Site Testing and Monitoring on the BLM's LR2000 website). Using Wyoming as an example, developers have staked out potential projects across much of the southern half of the state. The WREZ study should consider the areas that developers are actively developing, first, because these are likely the areas where the best projects could be built (i.e., the developers are picking the best sites), and because in many of these locations, the primary obstacle to bringing a project to commercial operation is lack of transmission. We encourage DOE to use the WREZ results be used to not only identify REZ and transmission needs, but also corridors (e.g., from the recent EIS), and define the next steps, including defined scopes of work, time lines, and funding sources, to connect each REZ to the western grid. If areas that are currently being developed do not fall within a REZ, what does that mean for the potential for transmission planning in the non-REZ areas?

There are a number of large merchant and public utility transmission lines proposed throughout the west, specifically to tap the region's renewable energy resources. Transmission companies have identified high potential renewable energy development areas and are actively marketing their lines

to renewable energy developers. Will the DOE should consider these proposed new lines in the WREZ study? What is the potential for collaborative work/funding to expedite their completion and achieve near-term in-service dates?

### **LS Power**

Lawrence Willick

On the Transmission Segments map, there should be a segment between the Midpoint substation and the Load Center "I" representing Las Vegas. The Southwest Intertie Project ("SWIP") is an existing BLM corridor, approximately 510 miles line, which has an existing right-of-way for a single-circuit 500 kV transmission line (but no existing transmission line). Also, several applications have been submitted to the BLM for additional transmission projects within the SWIP corridor, including one from Gonder to "I", one from Montana (either Colstrip or "Q") to "I" and several from Wyoming to "I". Including the segment from Midpoint to "I" will allow for modeling of these other projects.

### **Montana Department of Environmental Quality**

Jeff Blend

The Montana DEQ would like to present some general examples of costs of new transmission lines currently proposed to be constructed in Montana.

The Final Environmental Impact Statement for the Montana Alberta Tie Ltd. (MATL) 230-kV Transmission Line, (VOLUME 1, September 2008, United States Department of Energy State of Montana and Department of Environmental Quality) can be found at [http://www.deq.mt.gov/MFS/MATL/MATL\\_FEIS/Volume1MATL-FEIS\(Sept%202008\).pdf](http://www.deq.mt.gov/MFS/MATL/MATL_FEIS/Volume1MATL-FEIS(Sept%202008).pdf) . On page S-55 of that document are given the estimated costs for the selected alternative within the Montana portion of that line. For 129.9 miles of transmission line within Montana (56 miles monopoles, 74 miles H-frames), the estimated total construction cost with mitigating measures was \$44,769,832. Likely the cost is higher with recent increases in price. That does not include the financing costs of building the line, the operation and maintenance, nor the purchase of right-of-ways, etc., property taxes, nor annual payments.

The entire MATL line would include another 73 miles in Canada. All capital costs for the entire 203 mile long line were estimated by the project owners in 2007 at \$144 million (including the line, substations, a phase shifting transformer, and development costs. Operating and Maintenance costs plus property taxes were estimated at just over \$4 million annually (Letter from Bob Williams of MATL to Montana DEQ dated August 10, 2007).

A second transmission line being proposed in Montana and Idaho is called the Mountain State Transmission Intertie or MSTI for short. The estimated total construction costs from this 400 to 430 mile 500 kV line are just over \$1 billion dollars total (MSTI Application, Appendix A-1). The application also examined costs of alternative structure designs and voltage levels. The portion of the application that provides information on the costs of various alternatives can viewed at [http://deq.mt.gov/MFS/MSTI/VOLUME\\_IVA/Chapter%2010.pdf](http://deq.mt.gov/MFS/MSTI/VOLUME_IVA/Chapter%2010.pdf)

**Barbara Nersesian**  
Self

Nowhere has this been addressed. Why not discuss putting the Power Lines underground? Other countries do this. It certainly would satisfy a lot of problems due to weather conditions and also the environment groups

**NRDC**  
Johanna Wald

NRDC submits these additional comments that pertain to issues not discussed in a separate, joint letter submitted by The Wilderness Society, Western Resource Advocates, and other organizations. The first section of the letter relates directly to content of the WREZ; the second section of the letter contains an offer to integrate NRDC's land and resource mapping project for the remainder of the WREZ process.

NRDC appreciates and commends the hard work of the many participants who have moved the Western Renewable Energy Zones project forward. The Governors deserve recognition and respect for their interest in sharply increasing the West's renewable energy production in accordance with the 2006 Clean and Diversified Energy Project report and the associated Governors' policy resolution. The West abounds with renewable energy potential and can lead the nation and potentially the world in bringing renewable energy to market.

## SECTION 1 – The WREZ Process and Comments

### General Comments

We are providing several general comments that do not fit within the single categories that WGA has offered for public response.

Market-based, market-tested analysis. Although the general purpose of the WREX process is to identify renewable energy zones for future development, the process is criticized by a number of observers who point out that wind resources now under option or in development (for instance in New Mexico) fall outside the WREZ-identified zones. Looking for large amounts of wind, solar or geothermal energy far distant from load centers might not be as useful as looking for numerous smaller pockets of such resources closer to market. Some of the parameters of the WREZ process seem to prefer longer-distance, larger-yield generation and transmission. This may set a precedent for federal decisionmaking that will overlook important, available, sufficient, affordable, lower-impact resources that might deserve as much renewable development/transmission streamlining and financial preference as the large, distant resources identified in WREZ. We are hopeful that the process will move forward in stages that are better tested for actual market and development conditions.

Climate and efficiency. Besides the relevant commitments to transmission review and development, in 2006 the CDEAC and the WGA also committed to policies that will slow, stop, and reverse greenhouse gas emissions trends in the region. The WGA climate resolution (06-03)

recognizes the impact of climate change on the West, calls for the Western Governors to cooperate in projects that help reduce emissions, and states that the development of clean energy and energy efficiency will be economically beneficial for the West. (Although the CDEAC mostly focused on clean energy and energy efficiency, and did not treat climate change as a goal, it recommended coal policies that suggested specific strategies to support near-zero emission advanced coal development.) Seven western governors have also committed to the Western Climate Initiative, which, like state-level efforts in many western states, could seriously limit carbon emissions and encourage energy efficiency reducing transmission demand.

These efficiency and climate commitments could be better contained in the general supply-side approach of the WREZ (although notably and commendably the January 28 WREZ TEPPC study request does include a variety of climate and efficiency options). The focus on “environment and lands” issues appears to have been on exclusion areas and initial avoidance areas. These are very important and should be accompanied by a robust dialogue on other critical environmental issues, such as carbon emissions and efficiency – both of which could dramatically affect the number, size and type of needed transmission improvements in the West. Additionally the WREZ process should consider climate and efficiency options as integral to achieving the right overall balance of renewable energy development in the WECC.

Several of the highest-profile long-distance transmission proposals in the West, put forward by syndicates of LSE’s and labeled as projects enabling renewable energy transmission, include significant amounts of conventional coal backup. Other proposals do not. The WREZ process should recognize that expanding the development and use of renewable energy is a needed step, but one that must, over time, be accompanied by efforts to reduce high-emitting generation. This is fundamental. Transmission proposals that enable a significant increase in conventional coal generation, through new capacity builds and increased dispatch of existing units, can increase the carbon impact of power production for decades to come. This could also further expand the scope of future investments needed to access the renewable sources that will meet carbon reduction goals as the amount of low carbon power needed to meet abatement goals grows and as the increased emissions from new conventional coal put upward pressure on carbon market prices moving forward.

The study cases presented by WREZ to TEPPC in January 1[1] distill some of the WREZ managers’ expectations regarding the WREZ process. The requests generally refer to higher efficiency and carbon-constrained options. They also mention different levels of carbon pricing. However, price may not be the only constraint. Washington and California have adopted greenhouse gas performance standards affecting the carbon content of new energy acquisitions and transmission. Similar policy at the state and federal level could likewise prevent wider distribution of conventional coal energy. The WREZ process models different potential carbon prices, but does not appear to consider an option such as a greenhouse gas performance standard that would disallow sales and contracts for high-emitting resources. (Notably a greenhouse gas performance standard does not attempt to eliminate transmission of electrons produced by high-emitting generation; instead it affects the allocation of transmission capacity by sales.) Additionally, the WREZ process would benefit from a thorough discussion of the economics and issues related to backing significant new regional renewable energy transmission with coal vs. gas or geothermal. We realize that carbon constraints may be coming in some form or another; the analysis suggested

to TEPPC seems to indicate this; the WREZ process should also indicate different ways that this might be achieved. In summary the WREZ process should not be about bringing new renewables to market unless it does so in a way that achieves long-term carbon emissions reduction goals.

Merchant vs. utility transmission proposals. Consideration of non-LSE, merchant generation and transmission concepts, shown as a real-world possibility by specific proposals that have entered into permitting, seems to be lacking. Several merchant wind transmission projects in various stages of development in the southwest could result in significant delivery of low-emitting resources, relatively quickly and affordably, without high-emitting resources. In contrast, larger long-line proposals put forward by the LSE's are generally associated with significant amounts of conventional coal generation and transmission. (An example: the June 2008 High Plains Express phase I feasibility study of High Plains Express found that the preferred generation blend would include about 25% coal generation, which could amount to several thousand megawatts in due time. Shorter lines crossing fewer states, such as SunZia, could carry similar amounts of wind at full buildout, without the conventional coal. Yet because SunZia is effectively a merchant line, the basic assumptions underlying its market-based appearance on the western transmission scene appear to be relatively understudied in the WREZ process). The WREZ January 28 TEPPC study request says:

A key long-run objective is to avoid the prospect of building multiple lower capacity transmission lines across multiple right-of-ways to carry power that could be delivered by a higher capacity transmission line on a single right-of-way.

As applied to regional transmission demand, this is inaccurate. A single new right-of-way can connect one state to another. A second new right-of-way can later connect a third state's renewable energy to the previous two. In other words, sequenced and staged development of multiple lower-capacity lines and multiple rights-of-way could actually present the most economic, the fastest, and the lowest-impact transmission development scenario. (And eventually, these smaller lines connect to become "a higher capacity transmission line on a single right-of-way.") This is not to endorse the status quo situation in transmission planning but instead to suggest that smaller, sequential development, oriented to demand, might prove sensible. A serious regional, interconnection-wide planning effort involving all stakeholders and considering multiple issues, not just economic cost and size of resource, would be a good idea. It would be valuable for the WREZ to consider phasing of demands and transmission growth to include these shorter, merchant-initiated transmission projects rather than focusing so heavily on large regional lines from the beginning.

#### Zone Identification and Technical Analysis (ZITA)

The tasks assigned to the ZITA [1) "areas in the West with the best and most concentrated renewable energy resources" and 2) technology-specific information to determine costs of renewable resources from identified areas] underplay several important issues. First, cost of moving renewables can be lowered by inclusion of high-emitting resources in some cases. In fact, inclusion of high-emitting resources may be the only way to justify moving renewables over long distances rather than choosing renewables nearer load centers that don't have high-emitting resources as backup. Second, the distance that these concentrated resources may lie away from load centers is significant. Developing the resources themselves may be affordable at a distance,

but the transmission distance may be significantly longer. The ZITA goals aren't clear about whether the ZITA is looking at the costs of renewables where they may be consumed, or at the site of development.

At WREZ/ZITA/Step2.pdf, "(t)he underlying assumption...is that higher-class wind and solar are more economical to develop and will be developed first." This is true as far as it goes, but depends on the function of distance, the costs of transmission, and a variety of factors in siting, environmental impact, efficiency and renewable portfolio-type screens at the load centers, carbon costs or prohibitions for associated conventional resource generations and transmission, and community acceptance.

Under Task 1, the ZITA work group identified renewables zones "that are large enough and contain sufficient resources to warrant the investment that will be required for large-scale transmission projects." The term "large-scale" isn't defined for readers who weren't involved in ZITA – this could mean large DC lines, lines over 500 kv, etc. This sort of screen prefers giant renewables centers regardless of distance from load, whereas sequential access by smaller lines to closer, smaller renewables zones could actually bring renewables to markets faster and less controversially. The Western Climate Initiative states within the WGA – which comprise most of the region's electricity consumption – are committed to significant energy efficiency programs. If these programs succeed, the load growth in these centers will be minimal. Renewables will play an important part in reducing dependence on high-emitting conventional coal in these states, and will be needed as plug-in vehicle transportation penetrates western markets. But it would be unreasonable to assume that this means western markets will demand hundreds of thousands of megawatts of energy from the "best and most concentrated renewable energy resources" in the West, which also happen to be the most distant from large southwestern and West Coast markets. This is especially true when existing feasibility analyses for specific transmission project proposals already in play indicate that the economics of these large regional transmission lines accessing these "best and most concentrated" renewable resources are backed by conventional coal in the preferred economic scenarios.

Much of the resource in these "best and most concentrated" areas of wind energy may be accessed only with severe limitations. The Montana Nature Conservancy recently issued a study indicating that almost 8 million acres, or about 40%, of the state's bountiful wind energy is available in places that are critically important to 30 species of Montana wildlife. Although the Environment and Lands work group has indicated some exclusion areas, it certainly has not been able to identify these local wildlife habitat conflicts in detail. Avoiding national parks or Wilderness areas is obvious as development in these zones would be illegal. Making the call on wildlife and habitat conflicts and recreational issues is far more difficult (as noted, the maps "do not include information on wildlife sensitivity"). Further, since accessing these "best and most concentrated" resources requires much longer-distance and potentially higher-voltage transmission, there are likely to be more transmission land and wildlife impacts. And because the proponents of specific projects from these "best and most concentrated" areas have already indicated that the economics of transmission development into these zones prefer at least 25% conventional coal transmission, the impacts of extended conventional coal generation should also be considered as corollary impacts of identifying the zones of the "best and most concentrated" renewable energy potential in the region.



Thus the ZITA group's findings may indicate huge resource potential in some areas that simply are too far away from markets, that would require too much conventional coal transmission as part of their economic justification, and that carry primary and secondary generation and transmission impacts that will not be identified in the WREZ process, despite the good work of the Environment and Land group. We appreciate that there will be an opportunity to comment on the narrowing of QRA's to REZ's in late spring.

### Generation and Transmission Modeling (GTM)

This area was very difficult to understand. The Powerpoint presentations provide little context, no general descriptions, discussion or conclusions. There is little linkage to on-the-ground implications of the modeling – where is renewable energy needed? What are the most significant and/or expensive transmission congestion points, bottlenecks, and opportunities? From some of the content in this section, it appears that the eventual product will include this kind of information, but reviewing it now is difficult.

The WREZ segments list was unexplained. Distances are not provided. Yellow highlighting was not explained. Size of corridors is not defined. ([http://www.westgov.org/wga/initiatives/wrez/gtm/documents/WREZ\\_SEGMENTS\\_112208.xls](http://www.westgov.org/wga/initiatives/wrez/gtm/documents/WREZ_SEGMENTS_112208.xls)) Similarly the powerpoint on the modeling tool was difficult to understand and would have benefited from some basic explanation and notes (some questions: What are the numerals 1,2,3 and 4 meant to depict on slides 8-9 of GTM Methodology? What are the generation profiles on slide 10?)

### SECTION 2 – Mapping and information support

The Western United States hold significant sources of renewable energy which the states and the nation need to develop in order to solve global warming. The West too is home to unique and sensitive resources – remarkable wilderness and stunning landscapes, diverse wildlife, fragile ecosystems and irreplaceable cultural resources. Development and delivery of renewable power must be done in a way that does the least damage to these resources and must acknowledge that not all places, particularly on the public lands, are appropriate for these activities. And, of course, development must take place in a responsible manner.

The Western Governors' Association (WGA) Western Renewable Energy Zones (WREZ) initiative is a very important process for facilitating responsible renewable energy and transmission development, and we support the goals of this initiative. NRDC is pleased to have the opportunity to provide input into the WREZ process and to help ensure that its final products are as helpful as possible in protecting lands, wildlife, and other resources while facilitating renewable energy development.

For some time, NRDC has been in the process of developing a Google Earth map for use by government agencies, citizens, utilities, generators, transmission proponents, and others in identifying places where renewable energy and transmission development is not appropriate.

While we have not yet made this map public, our website will be launched later this month and the WGA can access our map at the following link:

[http://www2.nrdc.org/googleearth/ConsSolRenewUSWest\\_GE\\_NRDC/Conservation\\_Solutions\\_for\\_Renewables\\_US\\_West\\_NRDC.kml](http://www2.nrdc.org/googleearth/ConsSolRenewUSWest_GE_NRDC/Conservation_Solutions_for_Renewables_US_West_NRDC.kml)

In addition, we will supply you with our original, raw GIS data for your use in April.

Our map consists of geographic data compiled for 19 types of sensitive areas across 13 western states. Our data have been merged into three categories of land: where energy development is prohibited, restricted or should be avoided. These categories are summarized immediately below. We hasten to add that our map is not meant to suggest that excluded areas or lands are good candidates for siting energy and transmission projects. NRDC has only identified the most well-known sensitive lands and additional information, especially from state fish and game departments, will be needed to identify all inappropriate lands as well as those that are appropriate. Knowing where the most sensitive lands are is the first step towards ensuring that the new developments – both generation and transmission – that we need to meet the climate challenge are built in the right places and in the right ways.

#### Category I. Energy Development Prohibited by Law or Policy on these Federal Lands

- \* Units of the National Park System – The National Park System includes, in addition to national parks, national monuments and national preserves managed by the National Park Service as well as national recreation areas and national historic parks. These units of the system have been designated by Congress to conserve outstanding resources – both natural and historic – of importance to the nation. The Park Service’s management of these units must preserve the values for which each was designated from degradation for the enjoyment of present and future generations.

- \* National Wildlife Refuges – The U.S. Fish and Wildlife Service (FWS) manages the National Wildlife Refuge System. The system includes National Wildlife Refuges and Wildlife Management Areas. These areas were established to maintain the biological integrity, diversity, and environmental health of the refuge system and to facilitate compatible wildlife-dependent recreation and only uses which are compatible with those purposes are allowed.

- \* Designated Wilderness Areas – All of our major federal land systems – national parks, wildlife refuges, national forests and lands managed by the Bureau of Land Management (BLM), an agency in the Interior Department – include lands designated by Congress as Wilderness Areas. Part of the National Wilderness Preservation System, these areas have no roads and the “hand of man” is not visible within their borders. Their values of solitude, natural quiet and “wildness” as well as their scenic values and the opportunities they provide for non-motorized recreation are all intended to be preserved forever. In general, roads, motorized vehicles and machines, including power tools, are prohibited.

- \* Inventoried Roadless Areas – These areas were identified by the U.S. Forest Service to preserve the remaining roadless areas on our National Forests and the ecological services and social values that are associated with those areas. In general, road construction and logging are prohibited.

- \* Wilderness Study Areas (WSAs) – Designated by the BLM, these areas qualify for congressional designation as Wilderness Areas. (See “Designated Wilderness Areas” above.) Their values of solitude, natural quiet, and “wildness” as well as their non-motorized recreation opportunities and scenery must be preserved until Congress determines otherwise. As in Wilderness Areas, roads, vehicles and machines, including power tools, are generally prohibited.

\* BLM National Conservation Areas – These areas were designated by Congress to protect and preserve the unique, sensitive and/or important natural and historic resources of each, such as scenery, habitat for significant numbers of endemic plant and animal species and/or archeological values. They include California’s King Range National Conservation Area, Nevada’s Red Rock Canyon National Conservation Area, and New Mexico’s El Malpais National Conservation Area.

\* BLM National Monuments – While most national monuments are managed by the National Park Service, some are found on BLM lands. At least one is found on Forest Service lands. Established by presidents to protect unique, sensitive and/or important natural and historic resources, such as scenery, habitat for significant numbers of endemic plant and animal species and archeological values, the management of these areas is governed by the presidential proclamations which designated them and which generally direct that their special resources be preserved. Examples include the Giant Sequoia National Monument in California’s Sequoia National Forest and Arizona’s Ironwood Forest National Monument on BLM-managed land in Arizona.

\* National historic and scenic trails – These areas are designated by Congress and are included in the National Trails System. National scenic trails are long-distance (over 100 miles each), while national historic trails commemorate major, nationally significant routes of historic (and pre-historic) travel in the US. Both must provide for significant outdoor recreation.

\* National wild, scenic and recreational rivers – Designated by Congress, these are free flowing streams that are mostly inaccessible, scenic and primitive, and that possess “outstandingly remarkable values” such as scenery, recreational resources, fish and wildlife, and historic values.

\* USFS national recreation areas – Here NRDC includes National Recreation Areas other than those managed by the National Park Service.

Category II. Energy Development Restricted by Applicable Land Use and Other Plans for Federal Lands

\* BLM Areas of Critical Environmental Concern (ACECs)– These areas have been designated by BLM to protect and prevent irreparable damage to “important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards” pursuant to statutory authority given the agency in 1976. Designation typically takes place during the land use planning process for a larger BLM-administered area and involves environmental review and public participation. In California, the BLM has designated 145 ACECs on the 15.2 million acres it administers in that state.

\* Designated critical habitats for federally listed endangered and threatened species – Species are placed on the federal list by the FWS following its determination that they are either in danger of extinction throughout all or a portion of their ranges (“endangered”) or likely to become endangered in the foreseeable future (“threatened”) according to specific congressional and regulatory criteria including impacts to habitat, overuse by humans, and disease or predation. Generally, Congress intended for critical habitat to be proposed at the same time as the listing of a species was proposed and to be designated at the time of listing, if its critical habitat was determinable and prudent; if not determinable at the time of listing, the FWS can propose and designate critical habitat at a later date. A proposed designation involves review and comment by the public, state and local governments and others. Areas can be excluded from final designation as critical habitat, which is defined as the area “essential to the conservation of the species,” for economic and other reasons, if the exclusion will not jeopardize the continued existence of the species.

Category III: Energy Development Should be Avoided in these Federal and Non-Federal Lands

\* Proposed wilderness lands – numerous areas on federal lands have been identified as suitable for congressional designation as Wilderness Areas by citizens as well as by land management agencies. Many of these proposals have been forwarded to Congress and are awaiting passage, such as America’s Red Rock Wilderness Act, which would designate more than 9.5 million acres of public lands in southern Utah as wilderness. Still others have not yet had the opportunity to be considered by Congress. Because these special places meet the criteria for wilderness protection, development on these lands should be avoided to the maximum extent possible.

\* State parks – State parks are diverse and important assets for state residents and residents of other parts of the nation and the world. Most states protect these areas, including by state laws that prohibit commercial exploitation of their resources.

\* State Wilderness Areas – Numerous states have officially designated their own wilderness areas in recognition of the importance of such areas and the need for their permanent protection. Typically, the state definitions of “wilderness” are similar to the congressional definition.

\* State wildlife areas and ecological reserves – States like California have established areas managed by their fish and game departments for protection of their wildlife values. In general, energy development is not allowed on these lands. (Our map currently includes only such lands in California but NRDC will add such information for other states as we acquire the data).

As noted above, identification of areas which are not appropriate for development is the first step toward identifying areas that are appropriate. The latter include those that have already been disturbed or degraded and that are close to existing transmission and load centers. Focusing on such areas will minimize controversy and attendant delay, and thus facilitate responsible production and delivery of renewable energy.

1[1] NOTE: The WREZ/WGA TEPPC request preceded completion of the WREZ process, and preceded even the completion of the public comment period. In this sense, because of TEPPC’s annual cycle, the WREZ study request may have jumped the gun. NRDC requests that concerns about climate and efficiency issues and effects on modeling would be considered as the TEPPC study process is refined through this calendar year.

**Cathy O’Leary-Carey**  
self

If the WREZ Generation & Transmission project is anything like the Powerlink with its transmission towers marching across San Diego County, I am opposed to it and urge you to focus on less invasive ways to meet new energy needs.

I propose you concentrate on local generation of power within municipalities using photovoltaic for example for a sustainable future.

**PNM**  
Doug Campbell

The schedule for this work should be clarified. In particular there appears to be a Fall 2009 Phase 2 conceptual transmission planning report that will be produced, yet the requested WECC report is due to be produced in the first quarter of 2010. What is the relationship between the two products? Consider combining them into one report. The website indicates a model to allow the comparison

of distributed versus REZ energy will be developed. This will be a useful product of the initiative. Please indicate the time frame for this product.

**Power Company of Wyoming**

David F. Smith

**ATTACHMENT**

The Power Company of Wyoming LLC, as an independent renewable project developer, applauds the WGA's and DOE's WREZ efforts and appreciates the opportunity to provide comments on the WREZ Draft Documents. Our comments are:

1. The 'Wyoming West' QRA encompasses active project development activity by the Power Company of Wyoming (PCW) in the area directly south of Rawlins, WY. An Environmental Impact Statement is being prepared by the BLM in accordance with the National Environmental Protection Act. PCW can independently confirm the Wind Classes identified by NREL for the project site with the use of data from on site met towers. Attached is a section of the QRA with PCW's Sierra Madre and Chokecherry project sites superimposed on them. The southern border of the Chokecherry project site includes Class 5 and above average winds and we suggest this area be included within the QRA and subsequently within a WREZ.
2. The Transmission and Generation Modeling Group's reliance on the existing transmission infrastructure and generation stations as the basis for connection points to new QRAs, should not limit nor economically disadvantage a QRA or WREZ. New transmission infrastructure to WREZ's should not be limited to the present transmission topography. Leadership in this area has been demonstrated by PacifiCorp and TransWest Express in creating new (primarily renewable) generation hubs in south central Wyoming.
3. We appreciate the use to date and encourage the continued use of disclaimers on data used and disseminated as part of the WREZ process. This data is appropriate for its intended use of identifying WREZ's for the stated purpose of developing long term transmission plans to access the best renewable resources within the region. Without proper disclaimers, it is possible the data could be used inappropriately (e.g. within specific permitting processes that assess the environmental impact of proposed projects).

**Red Butte Energy/Magnum Energy**

Robert Webster

**ATTACHMENTS**[Secretary Chu -- Compressed Air Energy Storage 2-23-09.pdf](#)[SITLA - Green Power - 2-20-09.pdf](#)[Electric Power Research Institute - Compressed Air Energy Storage Overview - November 2008.pdf](#)

Thank you for this opportunity to submit comments on the draft Generation & Transmission Modeling work that has been recently completed by the WREZ Work Group. I have been a member of the group and participated in the modeling design. My work for much of the last 25 years has been involved in natural gas and electric development and the resultant integration in the West. One of my areas of interest for many years has been Compressed Air Energy Storage (CAES) and the value that it can have in bringing reliability, efficiency and relative ease in integration large volumes of renewable energy resources. CAES essentially acts as a utility scale

"shock absorber" that can use renewable energy to compress air that is stored in the ground in large caverns, brought back to the surface when power is needed and then converted into a fully shaped and reliable electric resource. Very similar systems have been in reliable operation in both the US and in Europe for over 15 years.

I have included three attachments to my comments. The first is a very recent press release based on comments made by U.S. Energy Secretary Steven Chu urging heavy investment in CAES and other utility scale energy storage. He stressed the importance of power storage to balance energy supply and demand as renewable resources become a rapidly increasing percentage of America's energy mix ... because the sun doesn't always shine or the wind blow when consumers want power. The second attachment, is a recent Salt Lake Tribune article that announces a new partnership in that the State of Utah has leased the development rights to a large salt body, where air caverns will be constructed in a very strategic location, for a CAES project that is under development in close proximity to planned wind and solar resources. Proceeds from the lease will go to the State Institutional Trust Lands Administration in support of the State's school system. The third attachment, is a presentation prepared by the Electric Power Research Institute describing the CAES process, benefits and proven equipment that is standard today.

I urge the Western Governors to fully evaluate the benefits of CAES as a part of its important initiative to provide for 20% renewable energy by 2020.

#### **SCE**

Dana Cabbell

The Transmission Input Assumptions shown on the WREZ Transmission Characteristics slide appear to be reasonable for this effort. Once Phase 2 is initiated, the following two points should be considered:

1. Plan for any coordination between California Renewable Energy Transmission Initiative (RETI) and WGA's WREZ on transmission plans being developed by each entity (RETI report for Phase 1 B on identifying the Competitive Renewable Energy Zones - CREZs locations and their MW & GWh sizes is available on WEB).
2. As far as RETI Transmission plans are concerned, these are all being planned to bring the renewable power in-bound to California load centers with no transmission being looked into Export to other states. RETI and WREZ need to share data and coordinate their transmission plans to make it useful for all western states.

**Shoshone & Arapaho Tribes – [see PDF](#)**  
**Orville St. Clair**

**Snohomish County Public Utility District**  
**Steve Klein**

Snohomish County Public Utility District ("PUD) appreciates the opportunity to comment on the joint initiative of the Western Governor's Association and the Department Of Energy, known as Western Renewable Energy Zones ("WREZ"). The PUD is a publicly owned electric and water

utility that serves over 330,000 electric customers in the Puget Sound area of Washington State. The PUD and its customers have a long history of supporting conservation in our communities and are committed to the health of our environment. We have taken actions consistent with that commitment including purchasing renewable power, developing innovative tidal technologies, and exploring geothermal opportunities. In 2009, 8% of the PUD's energy supply will come from wind and 5.5% will come from biomass sources.

The PUD appreciates and supports the goal of encouraging the addition of new transmission infrastructure to maintain reliability and support a more diverse resource portfolio. We are guided by the following principles:

- We support investment in regional electric infrastructure to maintain reliability and to deliver renewable and other new sources of generation to customers.
- We oppose preferential access to transmission lines based on generation technology.
- We believe transmission investments must be planned wisely to ensure achievement of maximum environmental and reliability benefits for dollars spent. We support planning processes that consider multiple alternatives as well as impacts on utility operations.
- We believe existing regional transmission planning organizations can provide the forums needed for planning and developing new high voltage lines and we oppose creation of duplicative organizations or planning processes.
- We believe the costs of new transmission lines should be borne by those who benefit.
- We oppose cost allocation schemes that would charge load-serving entities that do not require or use new transmission lines.
- We oppose any proposal that would reduce the authority of municipalities and public utility boards to set rates on behalf of their utilities.

The PLD is becoming increasingly concerned about the growing number of transmission expansion forums addressing similar issues and, given limited resources, the inability of electric utilities to participate in these many efforts. It is important that discussions include participation by electric industry staff with the technical expertise to evaluate options from an economic and engineering perspective. We encourage WREZ to join existing regional and sub-regional planning organizations, such as WECC's Transmission Expansion Planning Policy Committee and ColumbiaGrid, where transmission policy and planning proposals are vetted.

### **Southern Ute Growth Fund**

Rebecca Kauffman

The work of the Transmission Group is very useful on the modeling front. Given that the Transmission Group is probably not able to complete some of their work until the other two groups provide input for the transmission piece, perhaps much of this is still to come.

IN my opinion, the transmission piece would be a lot stronger if the environmental pieces were included with this initial piece of work. When maps are published, it tends to set a mark (legitimately or not). Given the sensitivity of the subject, including the environment and wildlife pieces would have set a more neutral baseline.



Combining the transmission and resource zone maps would have been useful and provided a more comprehensive picture of the WREZ effort.

Given time and enormity of the task, the work completed is impressive.

### **SouthWestern Power Group (SWPG)**

David Getts

For your information, SWPG is participating in the Zone Identification and Technology Assessment (ZITA) work group and applauds the efforts of the WGA, the WGA staff and the many parties that are collaborating to help identify and quantify renewable energy generation and transmission opportunities in the West through the WREZ project.

SWPG is also the project developer and one of 5 parties that are funding the development of the SunZia Southwest Transmission project (SunZia), a proposed 460-mile, double circuit 500kV renewable transmission line. SunZia is a merchant transmission project that seeks to bring renewable energy to market by electrically interconnecting central New Mexico with southern New Mexico, southern Arizona and the metro-Phoenix area. SunZia primary customers are wind, solar and geothermal energy generation projects that are interested in obtaining firm or conditional firm transmission service.

#### **Specific Comments:**

1. The Transmission Characteristics document (titled Preliminary Transmission Input Assumptions) includes right-of-way (ROW) widths associated with different voltage levels of transmission line projects. Since ROW costs can have a significant impact on the overall cost of a given transmission line, we believe these ROW widths should be representative of what actually is required to facilitate a commercial transaction. In general they appear narrower than what we think is realistically required. Particularly when an applicant is seeking ROW with state and federal agencies, the ROW width may have to be wider than the minimum desired by the applicant. In addition, at higher voltage levels it may not be possible to maintain phase separation on a single set of towers for double circuits and thus require two independent lines and towers. For example, we do not believe a single set of towers can accommodate a 500kV double circuit.

2. The Initial Avoidance List does not include Designated Critical Habitat areas. We believe these should be included as one of the many limitations on developing generation resources.

### **Washington State University Extension Energy Program**

Sheila Riggs

The Western Governors Association WREZ study principally focuses on wind energy in our state to the exclusion of other distributed renewable energy resources including solar, low to medium temperature geothermal, biopower CHP, waste heat to power, and other distributed generation technologies. Locating power generation next to the load reduces transmission needs. Other states such as Connecticut have used Distributed Generation/Combined Heat and Power to great advantage to reduce the need for new transmission. Major transmission lines through WA and OR

to CA could disrupt our lower power costs by drawing us into the CA priced market.

**WY Office of State Lands and Investments**

Susan Child

OSLI staff has reviewed the documents made available via the WGA website and offer the following comments. If you have any questions or need additional information or clarification, please contact Butch Parks, Commercial Property Manager for OSLI at 777-5762 and/or Jim Arnold, Assistant Director Real Estate & Farm Loan Division at 777-6639.

- 1) The costs portrayed under the Wind Assumptions for operations and maintenance appears significantly higher than what has been presumed by this office (\$3-5 per Mwatt-Hr versus \$18-25 per Mwatt-Hr). This may be because we have not considered all the costs. We would be interested in how these numbers were derived.
- 2) There was no Exclusion or Initial Avoidance discussion for sage grouse areas in Wyoming consistent with the Governor's Executive Order
- 3) Why would the QRA for Wyoming not consider wind classes below 5? Class 3 and 4 winds are currently being developed and available in the SW portion of the state that are closer to the anticipated load centers than higher class winds in the eastern part of the state.
- 4) It does not appear that population densities were considered in the analysis. Would it be prudent to do so given potential public responses to wind development?
- 5) Existing transmission lines are listed. Have proposed projects, that are likely to be developed, been considered?
- 6) After all other filters and exclusions have been applied, the remaining wind resource potentials are discounted to 25 percent. How is the value for Wyoming in the QRA summary determined? (Should be  $127,000 \text{ MW} \times .25 = 31,750$  versus the 24,973 reported).
- 7) Should the 25 percent discount be applied to states with lower population densities as well as those with much higher population densities?
- 8) In order to improve the existing grid system, have alternative technologies, such as DC transmission, been considered? Would this be a good opportunity to evaluate alternative technologies versus those presently in use to effect an improvement of the transmission system versus status quo technology?

## **Renewable Energy Systems**

Carey Kling, et.al.

Renewable Energy Systems (RES) Americas Inc. appreciates this opportunity to provide the Western Governor's Association (WGA) with comments on the Western Renewable Energy Zone (WREZ) Project. RES Americas has been a leading wind energy company in the US since 1999 and developed and/or constructed 25-30% of the wind energy MWs to the U.S. grid in 2007 and 2008. In total, RES Americas has developed and/or constructed 3,500 megawatts (MW) of renewable energy in the U.S.. RES Americas is actively pursuing wind and solar projects within the WREZ Project area. The following are our comments and questions:

### **General WREZ Project Process**

1. RES commends WGA efforts to openly seek input from a variety of stakeholder groups. Meetings and tele-conferences have been well noticed and organized. However, many attendees (particularly renewable industry participants) are only allowed to observe the conference calls and are unable to provide input. Therefore, stakeholder representation is inequitable. Additional members of industry should be invited as "representatives" rather than just "observers."
2. Comments and responses to comments should be posted to the WGA WREZ web page to facilitate the open process.
3. How will the WGA insure consistency with state initiatives (such as California's RETI process)? How will deviations be managed so as not to undermine state initiatives?
4. On one of the conference calls that RES Americas was 'observing', there was a discussion on mitigation. Mitigation should not be a part of the WREZ Project and should be addressed on a project-by-project basis under existing regulatory processes.
5. It would be very helpful for WGA to post a list of terms and definitions on the WREZ Project web page to insure a consistent understanding of terms being used by WREZ Project participants and stakeholders,.

### **Data Gathering and Modeling**

6. RES Americas commends the breadth and depth of data gathering to identify and map areas of environmental importance. This is a huge task! However, it is important that all data used be transparent (where did it come from, how was it processed, etc.). It would be great if all maps, reports and other documents had a link to the metadata files for the data. What is the process for screening the quality of environmental data being used? A quality assurance/quality control process should be established and fully described on the WREZ Project web page.
7. Data being used to identify QRAs has the potential to be viewed by some (state and federal regulatory agencies, non-governmental organizations, NIMBY groups, etc.) as having a higher level of accuracy than is possible on large scale maps. To avoid this disclaimers, footnotes, and other warnings should be added to all products created by the WREZ Project stating that individual sites have their own unique environmental characteristics that may not be apparent at the scale or resolution used on WREZ maps. There should be a clear explanation that the data used to identify QRAs is not intended to be a constraints analysis for individual sites. Additionally it should be noted that renewable energy development outside of designated areas may be appropriate and

environmentally acceptable even if they appear to be in less preferable areas on WREZ maps.

8. WGA should provide a disclaimer stating that the QRA designations/conclusions are based on a model. Models by definition have inherent errors and are only as good as the weakest data source. WGA should include a disclaimer similar to the disclaimer contained on much of NREL's publications and maps to avoid confusion and misuse of the model results.

#### **Exclusion and Initial Avoid List**

9. The word 'Exclusion Areas' should be strictly limited to those areas that are legally regulated to not permit energy development. It would be more appropriate to use "less preferable" rather than "initial avoid list" when describing areas that are outside of the QRAs but not legally off limits.
10. The "initial avoidance list" includes Bureau of Land Management (BLM) Areas of Critical Environmental Concern (ACEC) for wind and solar development. Regarding ACECs, the WREZ Project should refer to BLM Instruction Memorandum No. 2009-043, which states, "Wind energy development is permitted in one National Conservation Area, the California Desert Conservation Area (CDCA), in accordance with the provisions of the California Desert Conservation Area Plan 1980."
11. Regarding the inclusion of 'Visual Resource Management Class I and II' in the initial avoid list should conform to BLM Instruction Memorandum No. 2009-043, which states, "The VRM management classes are not intended to be used to exclude or preclude land uses, including opportunities for development of wind energy in areas with high wind energy resource potential... The VRM management class designations must be carefully considered in areas with high wind energy resource potential (wind power class 5 and above)." Please provide documentation and regulation stating that BLM Visual Management Class I and II areas are excluded from renewable energy development. Only Class I appears to be an avoidance area.
12. The inclusion of BLM RMP designated lands which have development constraints such as 'OHV open areas' and 'Special Recreation Management Areas' should not be included in the initial avoid list as development of renewable energy may occur in these areas. And their initial avoidance could eliminate significant portions of some states where current renewable energy projects are being developed.

#### **Generation and Transmission**

13. It is RES Americas' understanding that the American Recovery and Reinvestment Act of 2009 that was signed by President Obama on February 17, 2009, included provisions for additional transmission. Will the funding designated in the act of Congress be used for any of the transmission lines be identified in this process?
14. Does the WREZ Project analysis supplement state-by-state assessments to provide a picture of potentially lower cost renewable energy generation alternatives? If so, how do the results compare?
15. How is the WREZ Project process determining the appropriate amount of transmission to build? What assumptions in generation capacity are being modeled?

16. How does the WREZ Project process compare to the Competitive Renewable Energy Zones process completed by Texas Public Utility Commission?
17. How will capacity on the new transmission lines be allocated between renewable energy and other generation types?