

**Western Renewable Energy Zones
Comments Received on Zone Identification and
Technology Assessment Working Group Products
February 2 – March 2, 2009**

Affiliated Tribes of the Northwest Indians

Direlle R. Calica

The Affiliated Tribes of Northwest Indians (ATNI) submits these comments regarding the Western Governors' Association (WGA) Western Renewable Energy Zones (WREZ) draft documents and maps. ATNI participated with other interested tribes in developing these comments. 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.

As you know, several Northwest tribes are favorably located in areas diverse with natural resources, renewable energy resources, some transmission resources, and generate a large share of their tribal revenues from participation in the energy industry. Northwest tribes are developing and considering the development of large and small hydropower, wave and tidal, geothermal, wind, and biomass generation to help meet renewable portfolio standards. However, since most Northwest tribes appear to not be located within the identified WGA's Renewable Energy Zones we are greatly concerned that transmission plans and grid interconnection for tribes' renewable energy resources will not be a priority for their respective areas. We believe it is imperative that tribal energy resources are considered for overall renewable energy resource integration into the power grid along with increased interstate stakeholder participation.

We understand the focus at this phase in the WREZ process is principally on renewable energy resources for which there is quantified data. Specifically for wind, solar, conventional discovered geothermal energy resources, and some hydropower resources. Nonetheless, many Northwest tribes are well situated to provide distinguishable amounts of renewable energy from biomass resources and generation.

For many Northwest tribes biomass resources and generation are located in geographically constrained areas and could benefit greatly from consideration in the WREZ process, sooner rather than later. Northwest tribes are also considering the development of wave and tidal energy resources as well. Yet wave and tidal energy resources are not included here. We believe including biomass and wave and tidal resources in this process will only enhance the overall analysis and development of the final WREZ.

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 tribal lands to be reflected in the Western Governor's reports by honoring the wishes of Indian Tribes. If tribal lands are chosen for development by the Indian Tribe and these areas do have renewable resources then those areas should be included in Renewable Energy Zones. Furthermore, as sovereign nations with inherent governing authority over our land

and resources we have the capacity to form beneficial and effective partnerships with other stakeholders in the development of our energy resources. Indian tribes hold close the ability to identify renewable energy resources on tribal reservation lands and that our lands are identified as a Renewable Energy Zone. We encourage new transmission to be constructed so that we may develop these resources and create important economic development efforts and opportunities for our people.

In closing, ATNI appreciates the WGA's invitation to comment. Since many Northwest tribes 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.

Blackfeet Nation -- [PDF](#)

Canadian Geothermal Energy Association

Alison Thompson

CanGEA is pleased to provide information about the Qualified Resource Areas in Western Canada. In note 'c' of the QRA map legend, it is said that no data exists for undiscovered geothermal resources in British Columbia nor Alberta. In response, we would like to present our case for the re-evaluation of these geothermal power figures. The evidence we have collected substantiates an estimate of 3,000-5,000 MW of geothermal potential in Western Canada, which sharply contrasts the QRA estimate of 244 MW.

Further, several studies of British Columbia geothermal resources demonstrate larger geothermal power potential specific to the QRAs of BC_SW and BC_WC.

BC_SW is listed as having 16 MW of discovered potential and an unidentified amount of undiscovered potential. Our evidence suggests that the Meager Creek/Mount Cayley complex located in BC_SW has at least 1300 MW of total potential, which misrepresents the value of the resource by 2 orders of magnitude.

The presented figure for geothermal potential in the BC_WC QRA is 180 MW. The Mount Silverthorne Complex situated in the QRA has had 2000 MW of potential identified based on academic research. Again, an order of magnitude discrepancy is presented.

It is understood that for classification of Canadian resources, the study undertook an approach that is separate from the approach for US resources. However, we would like to point out under the US provision that 500 MW of clustered geothermal power constitutes a QRA, the Mt. Edziza region of Northwest British Columbia may qualify as a QRA.

A [map of identified Western Canadian geothermal sites](#) has been provided in the corresponding email along with a [catalog of hot springs locations in British Columbia](#). (Higher resolution copies can be provided upon request)

[Table 1.0 attached in the corresponding email presents a summary of our evidence.](#)

Main Sources:

- * BC Hydro: 2002 Green Energy Study : 16 potential sites. Estimate 1,550 MW from top 6 prospects.
- * [Globe Foundation](#): 2007 Endless Energy Project: 32 petajoules (approx.1,000 MW) from geothermal in B.C. by 2025
- * CanGEA/Dr. Mory Ghomshei: 3,000-5,000 MW in Western Canada, including Yukon Territory
- * Jessop, Alan: Geothermal Energy in Canada, Geoscience Canada, Vol. 25 No 1. 1998

We believe that according to your classification of “discovered” and “undiscovered” geothermal resources, the data we present would be characterized as “undiscovered” resources. As there is no “undiscovered” geothermal potential identified in the QRA documents, we maintain that it is important for the renewable energy stakeholders in your jurisdictions to recognize the full potential of geothermal power in Western North America, including accessible markets in Canada.

Attachments

Climate Change Leadership Institute (CCLI)

Robb Hirsch

It is very important for the long term implications and ultimate viability of Western state Renewable Energy Zones (WREZ) and Transmission Pathways that all parties involved in the preliminary identification and selection process apply farsighted integrated thinking for viable systematic deployment of these vital resources.

The official comments focus on the case of New Mexico to make the broader point that WREZ identification and the related Transmission pathway selection must consider the:

- (1) Strength and scale of a prospective Zones’ renewable sources; and also
- (2) Renewable diversification of the whole system;
- (3) Renewable strength + renewable variety + sensibility of projected pathways; all in order to proactively optimize
- (4) Best ways to effectively integrate renewables into existing and new transmission; and ultimately to actuate this
- (5) Vital leadership opportunity (i.e. proactively and intelligently devising a network of regional renewable power zones and transmission pathways to meet pressing domestic imperatives).

In the case of New Mexico, there is an indication from preliminary reporting that WGA is planning to adopt a large concentrated REZ in the central eastern portion of the state as the primary REZ for the state. While that area is a strong wind zone, including existing and other planned projects around the Aragonne Mesa and beyond, there should be a strategy of WREZ diversification in the state of New Mexico and throughout the whole western region for the purposes of transmission viability, system security and intelligent deployment.

North~Eastern New Mexico as a case study provides a golden opportunity for instituting a diversified Western Renewable Energy Zone (WREZ) along with commensurate and thoughtful transmission development pathways throughout Northern New Mexico to communities clamoring

for more clean energy and to Four Corners where bulk renewable power can reach major marketplaces.

(1) **Strength and Scope of Wind Energy in Northeastern New Mexico.** Northeastern New Mexico from Abbot/Gladstone area to Clayton (including interconnected portions of Colfax, Union and Harding counties) provides a major wind energy zone that is confirmed in the mapping by the National Renewable Energy Laboratory (NREL) and New Mexico Energy, Natural Resources and Minerals Department (ENRMD) as well as at least a decade of combined private sector and state research. Wind measuring system data demonstrates net capacity factors in the high 30's and better (along with a high daily peak load following capability). There are several utility scale wind projects in planning that individually would have the capacity to produce at least 100-500 Megawatts and collectively have a capacity far exceeding 2000 Megawatts of power: so North-Eastern New Mexico definitely has the renewable energy strength and scope to be a Qualified Resource Area (QRA) and become a Western Renewable Energy Zone (WREZ) with its wind power potential alone.

(2) **WREZ Portfolio Diversification for the Success of the Whole System**
According to Brian Parsons, Senior Project Leader for Grid Integration with the National Wind Technology Center and the National Renewable Energy Laboratory (NREL), there is wisdom in identifying geographically diverse wind and renewable energy projects in order for a prospective utility system power scheduling center to mitigate ramps and manage power flows in a most reliable and secure way. This points to the critical need for Western Governor's Association and all indentifying zone entities – with a number of renewably rich resource zones to choose from – to select multiple zones with geographic and renewable diversity per state. It is being shown in several emerging studies including stage I and II engineering research associated with the High Plains Express (HPX) and others, that having geographic variety within states and regions as a whole for uploading wind and other renewable energy resources provides opportunities for improving load following – advancing towards the long term goal of cost efficiently firming renewable energy resources. In the case of New Mexico, the central~eastern and north-eastern zones (among other possibilities) are each legitimately strong in zone wind resource (each with commercially viable NCF) and zone scope (each with GW+ of capacity) while at the same time being importantly unique in each of their wind regimes to help improve the system's over-all load following capability. For a Zone committee not to select a diversified portfolio of quality zones throughout states and regions would be irresponsible and short-sighted as far as the ultimate need to transmit and deploy the resources on a major commercial scale in the most seamless ways.

(3) **Renewable Strength + Renewable Variety + Sensibility of Projected Pathways**
The reason why the North~Eastern New Mexico Renewable Energy Zone (NENMREZ) in this case is being so strongly recommended for inclusion in the preliminary determination of Western Renewable Energy Zones in New Mexico is not only because of a) the merits of the wind resource, b) Giga Watt scale of potential projects there and c) the system merits of WREZ geographic diversity, d) very minimal federal lands or environmental exclusion areas to contend with but also because e) there is an impressive diversity of renewable resources there as well as f) a sensible deployment potential. Northeastern New Mexico (Colfax, Harding, Union) not only has excellent wind resources, according to NREL measurements there are also excellent Solar Resources as well as Biomass Resources – and in both the solar (indicated at 8.5 kWh/m²/day) and biomass cases

these are some of the best resources of their kind in the state. This area may in fact offer the best cross section of renewable resources of any proposed WREZ in the region. Furthermore, there is infrastructure in place including right-of-ways and existing transmission as well as planned and conceptual transmission upgrades and development plans to eventually efficiently deliver these renewable resources to in-state and (sizable) out of state marketplaces.

Upgrading the existing Tri-State G & T 115kV east west line to Taos 115TSGT/345PNM Substation is the most direct, straightforward and sensible way to take bulk renewable power to local markets and on to Four Corners, a key gateway to major load centers west. Some argue that upgrading the 115kv line to 345kV or greater would be challenging because of local resistance to the right-of-way expansion that would be required. This would be true and appropriate resistance if the upgrade/right-of-way expansion were for conventional fossil-fuel power resources. But in this case it would be for a bulk renewable power smart grid that in the short term would need to be firmed by the most economically efficient resources but in the long term (with RPS increases, carbon taxes, cap and trade and carbon sequestration in place) could be firmed by hybridization of wind, solar, turbine peaking units powered by bio-fuels (from Union County and further western selective Rocky Mountain forest trimming to prevent wildfires) as well as Geothermal power which are all on this prospective Northern New Mexico Renewable Pathway (NNMRP) to Local Markets and Four Corners Gateway Markets. So in both short and longer term horizons, residents along this Pathway including in Taos would have the very literal opportunity of having renewable energy electrons flowing into their homes, businesses and communities at a rate that dwarfs virtually non-existent or minimal renewable electron flows to date.

Another issue is whether Tri-State G & T and PNM would cooperate in this Northern New Mexico Renewable Pathway. Engineering wise this modernized and upgraded grid could significantly help improve the reliability of, and ease very real constraints on, the existing systems. Economic development, energy policy and environmental stewardship wise, there is a national priority at stake in developing intelligent new energy grids with bulk renewable capabilities. In addition, there has been a suggestion that the coal plants in Four Corners may need to be decommissioned because of their antiquity (and costliness if sequestration and carbon taxes were factored in) and in that scenario this new renewable energy zone and transmission pathway could help fill the gap. Parties in this case including FERC, Western Governor's Association, WEC, New Mexico's Public Regulation Commission (PRC) and Renewable Energy Transmission Authority (RETA) among many other public-private partnerships will need to work together with local utilities to provide integrated and cost-effective solutions factoring in local, regional and national priorities.

From the proposed North-Eastern New Mexico Renewable Energy Zone, there are multiple alternatives beyond this most direct pathway through Taos including extending/upgrading power from Tri-State's new 230kV from Harding County to PNM's Guadalupe NM sub-station and on through interested northern New Mexico markets to Four Corners and beyond. The High Plains Express (HPX) presents conceptualized pathways from Wyoming and Colorado that would directly connect with this proposed North-Eastern NM REZ at one or two strategic points (including Gladstone substation) and continue south and west to markets in New Mexico, Arizona and even California. There are also options to deliver power from this proposed REZ into Texas or Colorado. Having all these kinds of options is very important to efficacy of utility scale renewable energy zoning.

(4) Best Ways to Effectively Integrate Renewables into New/Existing System

One of the key points of all these comments is to emphasize the importance of real-time grid integration dynamics in the identification of Renewable Energy Zones. Without this explicit and proactive consideration in the selection of new western REZs and transmission pathways it becomes an exercise in abstraction rather than a prelude to viable deployment of our renewable energy resources – and viable deployment is what we ultimately need. The fact is that the public not only needs prime renewable energy areas but prime renewable energy areas with realistic transmission opportunities existing, planned and conceptualized that make sense in the overall system planning. And the facts are that in the case of the proposed North-Eastern New Mexico Renewable Energy Zone (NNMREZ) there are prime renewable energy resources at scale and very promising and sensible transmission pathways to bring the power to market.

(5) Actuating this Vital Leadership Opportunity

The Western Governors Association (WGA) has a remarkable opportunity here to proactively and wisely devise a network of regional renewable power zones and transmission pathways to help meet some of our most pressing domestic and global imperatives. Taking a step beyond the leadership of the Texas REZ system, the WGA and all other key decision-makers involved here can establish a prototype of clean electrical power resources, distributed power projects and intelligent power delivery systems that rises above parochial interests and advances the Nation's long term interests. Our pressing national interests, among others, include fostering a) economic recovery, innovation and job creation, b) clean energy, energy independence and climate stewardship and c) the restoration of America's long term competitiveness and leadership in the world. All of these interests would be advanced by establishing the North-Eastern New Mexico Renewable Energy Zone (NENMREZ) and Northern New Mexico Renewable Pathway (NNMRP) and replicating this strongly diversified, geographically distributed and intelligently designed bulk clean energy ~ transmission model throughout the region of western states. As far as our current disintegrated system of utilities, grids and unclean sources of electrical power goes, there have been no drivers besides state by state Renewable Portfolio Standards (RPS) and the specter of some form of carbon tax and sequestration standards to help push the transformation of our electrical energy system beyond the narrow and provincial interests that rule the day. The Western Governors Association can provide vital leadership, along with the new Administration, in developing and driving far-sighted, integrated solutions to addressing vital economic, energy and environmental needs.

Figure 1. Below is a map of New Mexico showing wind resources. What is added is a delineation of the proposed North-Eastern New Mexico Renewable Energy Zone (NENMREZ) in blue and proposed Northern New Mexico Renewable Pathways (NNMRP) in yellow which are overlapping existing transmission paths (The High Plains Express is not shown here but is proposed to come directly through this proposed NENMREZ with two 345kv or 500kv lines). Also shown are approximate Solar, Biomass and Geothermal Hotspots as indicated on NREL renewable resource mapping).

Attachment – Map

Columbia Gorge Bi-State Renewable Energy Zone

Paul Pearce, Chair

The Columbia Gorge Bi-State Renewable Energy Zone (CGBREZ) appreciated the opportunity to meet with Technical Committee member, Will Lutgen, on December 4, 2008 to discuss WREZ's proposed criteria and working definition of renewable energy zones. We appreciate this outreach effort: there are strong parallels between WREZ's intentions and our own success in creating a bi-state renewable energy zone in the Columbia River Gorge.

There are two items we request WREZ consider in refining the Technical Committee's draft criteria:

- * CGBREZ has already been established as a renewable energy zone in Washington and Oregon. We request that WREZ include and recognize us as such.
- * Pumped storage hydro should be included as an eligible renewable resource.

As we noted during the meeting, we request that WREZ consider our regional initiative in developing its criteria and terminology. In particular, we are concerned that the adoption of current criteria - focused upon resource production at the utility scale - might unintentionally thwart our efforts, since under WREZ's current draft criteria our existing renewable energy zone, which was formally established in 2008 through public adoption of individual resolutions of five counties in Washington and Oregon, may not qualify as a renewable energy zone.

As a solution, we ask that WREZ consider a further refinement in its terminology, specifically to allow for two different types of renewable energy zones: "resource zones," which would follow the draft criteria you are currently considering, and "economic zones," which would recognize our efforts, and also allow for the creation of comparable zones.

In establishing the Columbia Gorge Bi-State Renewable Energy Zone, we took into consideration a variety of factors, all linked by the regional economy. These include the renewable energy resource itself (wind, solar, hydro, geothermal, biofuels and biomass), financial investment in those resources by renewable energy industry, existing transportation networks (roads, rail, river and air), high-speed telecommunications networks, education and workforce training capacity, public utilities, resident workforce, transmission capacity, industrial lands base, quality of life, and the potential of connecting all these components into a networked system that would generate family-wage employment in rural, traditionally depressed economy. This called for a cross-jurisdiction, inter-agency, bi-state collaborative approach.

We also request that the Technical Committee include pumped storage hydro power as a renewable energy resource. Pumped hydro storage further enhances the ability to utilize renewable resources in the marketplace as it stores energy in the form of water which can be released during periods of high electrical demand. This renewable resource therefore has the ability to help firm and increase potential for wind and other non dispatchable renewables.

Thank you for allowing the Columbia Gorge Bi-State Renewable Energy Zone to provide input on the process of defining renewable energy zones and resources. We hope you will consider these proposals, and incorporate them in your plans by delineating renewable energy zones into either of two forms - "resource" or "economic" and including pumped hydro storage as a renewable

resource. We would be happy to work with you and provide additional information to assist in your decision.

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.

EverPower

Meghan Pedden

The Zone Identification and Technical Analysis Work Group has identified areas of quality, high density wind development in the high desert areas of eastern Oregon and eastern Washington as Renewable Energy Zones. These established areas of wind development are clearly important to consider in evaluating the investment necessary for large-scale transmission projects; however, the Work Group should also consider areas where wind development is relatively new but growing, including those in the forested regions of western Oregon and western Washington. These west-side areas have great potential for development, offer a quality wind resource, and suffer from constrained transmission; therefore, the wind industry and the western states would benefit from the designation of west-side areas as Renewable Energy Zones.

Many developers are in the process of exploring and developing the wind resources west of the Cascade Range in Oregon and Washington. EverPower alone has the potential to develop 1,000 MW of wind in these west-side areas, and in southwest Washington, various developers have the potential to develop over 500 MW of wind. However, transmission constraints on the BPA system in southwest Washington will likely restrict new development to just 50 MW. Similarly, in Coos and Curry County, Oregon, available transmission could restrict development to 100 MW, even though several hundred megawatts are potentially developable. Although these west-side areas are not yet areas of high density wind development, they offer a high quality wind resource that peaks in the winter and therefore does not compete with hydroelectric resources. Additionally, these resources are generally closer to the load centers. Considering these qualities and the amount of development already under consideration, west-side resources are likely to be important areas of development in the near future, but development of these west-side areas will be hindered by the current lack of transmission capacity.

Without transmission upgrades in both new and established areas of wind development, it will be difficult for the wind industry to continue to grow to meet the renewable energy needs of the western states. Transmission access for new development areas, such as those on the west-side, is as important as transmission access to established, high density areas, and EverPower hopes the Work Group will consider designation of new areas of wind development as Renewable Energy Zones.

First Solar

Robert Jenkins

Comments on the Solar Photovoltaic Assumptions

The current WGA WREZ Supply Curve Technology Assumptions include single axis tracking crystalline technology as the basis for the PV supply costs. First Solar respectfully requests that the WGA assumptions be modified to include thin film PV as a solar photovoltaic technology and that such technology be used either in addition to or as the representative photovoltaic technology.

The WGA WREZ initiative is designed to identify reliable information for use by decision-makers who support the cost-effective and environmentally sensitive development of renewable energy in specified zones. As such, First Solar believes that thin film PV should be either used in addition to,

or as the representative PV technology as it is rapidly becoming the technology of choice for large PV systems due primarily to its lower installed costs.

A recent report by the German government indicates that over 60 percent of the 2007 free-field market in Germany used thin film technology. A recent Solar Buzz report indicates slightly lower numbers and that of the large PV projects installed in Germany in 2007, over 40 percent used thin film technology and well over 90 percent of the thin film projects used First Solar technology. This same report indicates production growth rates of over 120 percent for thin film modules, while crystalline silicon experienced growth rates of 50 percent during 2007.

First Solar began commercial operation of its initial manufacturing line in late 2004. From 2004 through today, manufacturing capacity has grown 2,500 percent to more than 500 MW in 2008. First Solar's annual production capacity will double in 2009 to more than 1 GW, the equivalent of an average-sized nuclear power plant. These escalating volumes have been accompanied by a rapid reduction in manufacturing costs. From 2004 through today, First Solar's manufacturing costs have declined two-thirds from over \$3 per watt to less than \$1 per watt. First Solar is confident that further significant cost reductions are possible based on the yet untapped potential of its technology and manufacturing process.

A presentation by Lazard Frères & Co. in January 2008 indicates expected levelized cost of energy of \$90 per MWh for First Solar thin film technology based on total project cost of \$2.75 per watt and fixed O&M of \$25 per kw-yr, representing a significant difference between the assumptions for PV in the WREZ Supply Curve Technology Assumptions.

Other indications that the cost assumptions in the WREZ Supply Curve Technology Assumptions are overstated for PV technology include:

- Southern California Edison's (SCE) proposal to install 250 MW of distributed 1-2 MW PV projects in California at an estimated installed cost of \$3.50 per watt dc (2008\$). SCE has indicated that program cost parameters were based on confidential market surveys.
- CPUC approval of the Southern California Edison contract with FSE Blythe Solar 1 for a 7.5-21 MW project. As no supplemental energy payments (SEPs) were requested, it is reasonable to assume the contract is for power delivered at or below the California market price referent (MPR).
- California Renewable Energy Transmission Initiative (RETI) Phase 1B report includes a "Reduced Solar Photovoltaic Costs (Thin Film)" sensitivity where the capital cost assumption for solar PV was reduced to \$3.70 per watt. The report indicates that the impact of such lower solar PV costs on the economic ranking of the RETI CREZs is dramatic.

Based on this information, First Solar respectfully requests that the capital and operation costs for utility-scale thin film photovoltaics be modified to reflect the above information.

City of Fort Collins Natural Areas Program

Daylan Figgs

This letter is in response to the request for comments on the draft documents and maps developed by the Western Renewable Energy Zones Project. More specifically, comments are directed to the proposed Qualified Resource Areas.

The City of Fort Collins Natural Areas Program (FCNA) owns approximately 20,000 acres of land in northern Larimer County that is part of a conservation effort called the Laramie Foothills Mountains to Plains Project. More specifically, the Project is partnership of public and private conservation organizations and private landowners whose goal is to conserve, through conservation easements and fee title, a connection between the mountains and plains. To date the partnership has conserved an essentially contiguous area extending 22 miles across, from the native grasslands along I-25 to the foothills and lower reaches of Roosevelt National Forest. A portion of the Laramie Foothills project area is located within the Southern Wyoming Qualified Resource Area (see Map 1).

Properties owned by the FCNA within this region include Soapstone Prairie Natural Area, Round Butte Ranch, and Bernard Ranch. Additionally, conservation easements are held on Wire Draw Ranch and Roberts Ranch as shown on the attached map. Funds used to purchase fee title and conservation easements are generated through a dedicated City of Fort Collins sales tax and a Larimer County sales tax. In addition, Great Outdoors Colorado has participated in the purchase of these properties and conservation easements.

Properties are managed to not only conserve an important connection between the mountains and plains, but also to provide habitat for many species in need of conservation. Recent inventory efforts have revealed many species of plants and animals listed as state threatened or of special concern along with several rare plant communities (see Attachment 1). Efforts to conserve cultural resources also are a major effort of the partners. The Lindenmeier Archaeological Site, a National Historic Landmark is found within this landscape along with hundreds of known cultural sites dating from pre Folsom to modern day ranching.

In addition to properties held in fee title, FCNA has placed conservation easements on portions of Soapstone Prairie Natural Area (known as the Roman Ranch; see Map 2), Round Butte Ranch, and Bernard Ranch and holds conservation easements on Roberts Ranch, Wire Draw Ranch, and Red Mountain Open Space. Each of the conservation easements specifically prohibits wind generation facilities unless they are associated with an allowable structure on the property.

We recognize the important role that wind and solar power production has in the region's energy future, but hope that production or transportation facilities in the Laramie Foothills Mountains to Plains can be sited to minimize impacts and maximize protection of biological and scenic resources. We also recognize that given the purpose behind our conservation efforts in the Laramie Foothills and the millions of dollars spent to conserve one of the few remaining undeveloped Front Range connections between the mountains and plains in Colorado, large scale wind and solar energy facilities on or near our properties are not always compatible with our conservation mission. We ask that you consider the efforts of the Laramie Foothills Mountains to Plains Project and the conservation values found within this unique landscape when finalizing your planning effort.

attachments

Frio Ridge Energy Development Association

Paul Stout

In reviewing the proposed WREZ's, we noticed that much of Eastern New Mexico is not included. We are one of 15 landowner associations representing 1.5 million acres with class 5 level wind. As we interpret the map, central New Mexico is the closest zone. We in the counties of Curry, Quay, Harding, and Union have a great deal to offer in terms of wind and solar potential. We would ask that the Western Governors Association relook at Eastern New Mexico, as we need to develop transmission capability most urgently. There are many companies interested in this region that have sufficient capital resources. We need to have the roadblocks cleared and a fasttrack procedure in place so they may act more quickly. Thank you for any assistance you could provide.

Horizonwind

Logan Winston

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.

Brendan Hughes
self

In southern California there are several previously disturbed areas where renewables could be developed on a large scale. First, however, rooftop solar should be fully utilized in any renewable

energy scheme, along with energy conservation and efficiency. Several previously disturbed areas in southern California are:

East of Barstow, between Interstates 15 and 40; in the vicinity of Palo Verde; along the margins of the Imperial Valley; in the Antelope Valley north of Lancaster; in the vicinity of Lucerne Valley; and in certain areas of the Coachella Valley.

All of these areas are previously disturbed, unused agricultural land. Much of this either has no water to service it any longer or its soil is too alkaline to be productive. These areas will have a much smoother permitting process due to lack of opposition, and we will be able to avoid the issue of the fact that undisturbed desert is a significant carbon sequestration medium.

Irrigation & Electrical Districts Association of Arizona

Robert S. Lynch

In reviewing these documents, I was struck by a few things that I feel are worth mentioning.

In the Environment and Lands Work Group, there were no assessments of potential conflicts with wildlife on Indian lands. Given the large number of Indian reservations and their strategic location in the Southwest, I found this unusual. The task of the Environment and Lands Work Group is to identify these conflicts within “Qualified Resource Areas”. Should I assume from that that this study is avoiding Indian reservations all together in terms of possible location of transmission lines for renewable energy?

In the Resource Criteria document approved by the Technical Committee in October 2008, Western United States existing hydropower is not going to be included for purposes of establishing Renewable Energy Zones (REZ). Hydropower will be included in one of these zones if the zone independently is drawn in such a fashion as to include that resource. The implications of this distinction are not developed but should be. The interconnection between existing hydropower and the identification of these new REZ is a matter of great concern to existing contractors for these hydropower resources.

Some additional explanation needs to be made to clarify the intent of the following sentence:

Hydro resource maps will be overlaid onto REZ maps identified using wind, solar, and geothermal data to determine the level of hydro resource capacity within an REZ.

Since existing hydropower is already being delivered under long-term contracts in most cases to identified areas, it is unclear whether it will be included in this analysis or the hydro resources you are discussing are only the potential hydro resources you have identified by category (incremental hydropower, new hydropower at existing non-power dams, irrigation power and new hydropower at existing diversions or other impoundments). I would note in passing that the chart on page 10 of your Technical Criteria document only shows 3 of the 4 categories for some reason under U.S. hydro resources.

Let me close with a comment that we support the broad category of hydropower resources that you are discussing and encourage you to continue to analyze both existing and new hydropower resources in the West for cost effective enhancements of this vital resource.

Arlene Lopez

self

I saw in the newspaper the rendering of a solar power plant at Gila Bend. Why not build structures for the solar panels that are elevated instead of flat on the ground? (Examples: Pyramid, plateau, etc.) There is plenty of space going up and you would destroy less desert area. Also the panels would be above ground and less likely for wildlife to tamper with them.

Robert E. Lyon

self

We are all for having a major solar project in Arizona as long as it is cost effective. Our suggestion is to put it on State lands and set up the arrangement so the State schools will get yearly payments in perpetuity from the sale of electricity. Instead of a one time sale. That would be a win-win situation for everyone.

Marine Corps Installations West (MCIWEST)

Patrick Christman

Qualified Resource Areas:

The United States Marine Corps and Marine Corps Installations West fully support the development of renewable energy and the development of transmission infrastructure which supports and distributes both the electricity generated from these renewables as well as from non renewable generators to meet the regions ever increasing energy demands.

Marine Corps Installations West would like to request that the Western Governors Association consider the potential impacts to all military operations both on and off of DoD controlled land and airspace and to incorporate these 'potential impacts to military operations' as one of the siting criteria during the development of the Western Renewable Energy Zones (WREZ).

The continued uninterrupted access to current and future land, sea, and air maneuver space to include low level military aviation training routes, special use airspace, and ground maneuver corridors both on and off of DoD controlled land and airspace is essential to the Marine Corps mission in the Western United States.

While the history of our military range goes back as far as WWI, most were established to support WWII. They were established in remote Western areas to protect public safety as well as military training. Two major developments have occurred since the majority of our bases and ranges were established: urban development has brought population pressures to our once remote bases and ranges, and five rounds of Base Realignment and Closure (BRAC) have reduced the number of bases and ranges in the name of efficiencies and have concentrated our military training in the Western Region. Approximately 67% of military used airspace is in the Western Region, and

approximately 80% of our live fire ranges are located in southern California, Arizona, and Nevada. 100% of the Marine Corps large aviation exercises occur in the Western Region. As a result, our western training complex has become irreplaceable.

The Marine Corps has worked closely as part of the Department of Defense with the Department of Energy and the other federal agencies on the planning and site designation of energy corridors under the Energy Policy Act of 2005 West Wide Energy Corridor Programmatic Environmental Statement initiative and again with the State of California as it plans and develops its' Renewable Energy Transmission Initiative (RETI). The coordination on these two initiatives have ensured the Marine Corps' current and future access to land, sea, and air maneuver space has been acknowledged and protected by identifying and placing requirements on future planned projects to consider low level military aviation training routes, special use airspace, and ground maneuver corridors in the planning areas. Through close and ongoing planning the proposed locations for these sitings with the DOE and the State of California, both have taken into consideration the effects of the energy initiatives on military operations. These actions have greatly assisted in the uninterrupted access that is absolutely essential and critical for our forces to receive, maintain and conduct the realistic military training, research, testing and development that is required in the Western United States has been preserved.

Montana Department of Environmental Quality

Jeff Blend

A transmission line that is proposed to be built in Montana that is defined as a 'facility' (generally greater than 69 kV and 10 miles long) must apply for a Certificate of Compliance under the Montana Major Facility Siting Act (MFSA). A person may not commence to construct a facility in the state without first applying for and obtaining a certificate of compliance issued with respect to the facility by the department. Commence to construct includes any clearing or excavation as well as the start of eminent domain proceedings. In order to obtain a certificate of compliance, the project sponsor must submit an application containing the information required by the Administrative Rules of Montana and in Circular MFSA-2 and the Department of Environmental Quality must make the findings specified in Montana's Major Facility Siting Act (75-20-301 and 302, MCA). Circular MFSA-2 can be found at

<http://www.deq.mt.gov/MFS/LawRules/Circular2.pdf> . Links to the Major Facility Siting Act, Circular 2 and Administrative Rules of Montana pertaining to transmission line siting can be found at the Montana MFSA home page at <http://www.deq.mt.gov/MFS/>

Circular MFSA-2 describes the application requirements pertaining to the alternative siting study, baseline study, and impact assessment of linear facilities (including transmission lines). Circular MFSA-2 contains a list of avoidance areas for transmission lines along with the preferred location criteria. The avoidance areas under Circular MFSA-2 are not the same as the 'exclusion areas' identified under WREZ. Also, the preferred location criteria under the Montana MFSA are different from the way in which WREZ selected its Qualified Resource Areas and the way in which WREZ is suggesting transmission line upgrades (and their respective costs). Therefore, some of the transmission lines that would be needed to connect Qualified Resource Areas to loads identified through the WREZ process may not meet the criteria established under Montana's MFSA.

The list of avoidance areas for transmission lines along with the preferred location criteria in Circular MFSA-2 are as follows (<http://www.deq.mt.gov/MFS/LawRules/Circular2.pdf>):

SECTION 3.1, PREFERRED LOCATION CRITERIA

- (1) for electric transmission lines:
 - (a) where there is the greatest potential for general local acceptance of the facility;
 - (b) where they utilize or parallel existing utility and/or transportation corridors;
 - (c) to allow for selection of a location in nonresidential areas;
 - (d) on rangeland rather than cropland and on non-irrigated or flood irrigated land rather than mechanically irrigated land;
 - (e) in logged areas rather than undisturbed forest, in timbered areas;
 - (f) in geologically stable areas with non-erosive soils in flat or gently rolling terrain;
 - (g) in roaded areas where existing roads can be used for access to the facility during construction and maintenance;
 - (h) so that structures need not be located on a floodplain;
 - (i) where the facility will create the least visual impact;
 - (j) a safe distance from residences and other areas of human concentration;
 - (k) in accordance with applicable local, state, or federal management plans when public lands are crossed.

SECTION 3.2 DELINEATION OF THE STUDY AREA

- (d) For identification of study areas the following areas are to be avoided. If (i) or (ii) are crossed, the management agency or congress must approve it beforehand. If (iii) through (xi) are crossed, mitigating measures need to be identified.
 - (i) national wilderness areas;
 - (ii) national primitive areas;
 - (iii) national wildlife refuges and ranges;
 - (iv) state wildlife management areas and wildlife habitat protection areas;
 - (v) national parks and monuments;
 - (vi) state parks;
 - (vii) national recreation areas;
 - (viii) corridors of rivers in the national wild and scenic rivers system and rivers eligible for inclusion in the system;
 - (ix) roadless areas of 5,000 acres or greater in size, managed by federal or state agencies to retain their roadless character;
 - (x) rugged topography defined as areas with slopes greater than 30 percent; and
 - (xi) specially managed buffer areas surrounding national wilderness areas and national primitive areas.

SECTION 3.4 ENVIRONMENTAL INFORMATION FOR OVERVIEW SURVEY

When selecting alternative alignments the following areas are to be avoided. If they cannot be avoided, then mitigating measures must be identified.

- (b) state or federal waterfowl production areas;

- (c) national natural landmarks, natural areas, research natural areas, areas of critical environmental concern, special interest areas, research botanical areas, outstanding natural areas designated by the national park service, the USDA forest service, the bureau of land management, or the state of Montana;
- (d) designated critical habitat for state or federally listed threatened or endangered species;
- (e) habitats occupied at least seasonally by resident state or federally listed threatened and endangered species;
- (f) national historic landmarks, and national register historic districts and sites;
- (g) national register historic districts and sites nominated to or designated by SHPO (state historic preservation office);
- (h) municipal watersheds;
- (i) streams and rivers listed in Montana department of fish, wildlife and parks river database as being class I or II streams or rivers;
- (j) streams listed by the department pursuant to 75-5-702, MCA, that are not attaining designated beneficial uses of water;
- (k) highly erodible soils and areas with severe reclamation constraints, defined as soils developed on Cretaceous shales, intrusives and certain lacustrine deposits;
- (l) areas where the presence of the facility would be incompatible with published visual management plans or regulations designed to protect viewsheds adopted by federal, state, or local governments;
- (m) the winter distribution of elk, deer, moose, pronghorn, mountain goat and bighorn sheep and areas where they concentrate during severe winters, as identified by the Montana department of fish, wildlife and parks, the bureau of land management, and the USDA forest service;
- (n) major elk summer security areas which are any forested areas greater than 1/2 mile in minimum radius, more than 1/2 mile from an existing road, and identified through consultation with the Montana department of fish, wildlife and parks, the bureau of land management, and the USDA forest service as elk summer range;
- (o) habitats occupied at least seasonally by mountain sheep and mountain goats as identified through consultation with the Montana department of fish, wildlife and parks;
- (p) sage grouse and sharp-tailed grouse breeding areas, the winter distribution of sage grouse and sharp-tailed grouse, and areas where they concentrate during severe winters as designated by the Montana department of fish, wildlife and parks;
- (q) areas with high waterfowl population densities including prime waterfowl habitat that have been identified through consultation with the Montana department of fish, wildlife and parks and other areas identified by the Montana department of fish, wildlife and parks or US fish and wildlife service as waterfowl concentration areas or low-level feeding flight paths;
- (r) any undeveloped land or water areas that contain known natural features of unusual scientific, educational or recreational significance;
- (s) areas with geologic units or formations that show a high probability of including significant paleontological resources;
- (t) sites that have or may have religious or heritage significance and value to Indians;
- (u) standing water bodies, including any lake, wetland, marsh or reservoir; and intermittent water bodies and internally drained basins that reach a surface area of 20 acres or more at least one year out of ten;
- (v) surface supplies of potable water.

New Mexico Independent Power Producers

Mark A. Davidson

First of all, we wish to thank the WGA for its openness and willingness to seek comments from interested parties on these issues of extreme importance to the identification of qualified renewable resource zones and markets, and to the adequacy of transmission in the West. This study is key to the Western grid benefiting our nation's economic recovery.

As a newly constituted trade organization of independent power producers in New Mexico, we see the delineation of resource zones and markets, along with the enhancement of transmission facilities, as vital to bringing cost-effective renewable resources from their point of generation to the load centers. Adequate transmission has historically been, and remains, a bottleneck to the development of renewable resources in the West. As the WGA is aware, some of the best wind and solar resource sites in the world exist in the Western U.S. In order to take advantage of these resources, adequate transmission is an absolute necessity. Therefore, examination of renewable resource zones near trading hubs and currently transmission-constrained areas is particularly important.

Since NMIPP's focus is on renewable energy projects in New Mexico, we are concerned that the initial proposal of the WREZ project appears to ignore the wind and solar energy resources east/northeast of the Four Corners hub, shown as qualified resource areas on each of the attached Exhibits A, B and C:

Ex. A-Wind Energy Resource Atlas

Ex. B-Summer Case

Ex. C-Annual Average Wind Power

Please also note that all three of the new zones nominated herein by NMIPP are also in the very top rated U.S. Average Daily Solar Radiation zone as well. The markets for each of the three nominated zones are also the same: the front range cities from Albuquerque, New Mexico north to Ft. Collins, Colorado, as well as the Four Corners market hub itself, from which renewable energy can be distributed throughout the Western grid.

Four Corners should be seen as a significant "node" in the transmission grid to access electricity markets in the West. The excellent wind and solar resources relatively near the Four Corners hub have great importance to the Western grid. The omission from the WREZ study of the three New Mexico resource zones marked on the attached exhibits is a significant oversight. This area contains Classes 4 and 6 wind resources, which cannot be utilized in the absence of adequate transmission facilities. In addition, the wind resources are in an area with world class solar resources, which would also be advantaged by improved transmission capability in this area. NMIPP urges the WGA to include these qualified resource zones in your ongoing WREZ work.

NMIPP observes that WGA is at the forefront of the improvement of transmission facilities in the Western U.S. As a consequence, WGA will greatly influence the flow of economic stimulus funding into the area and will have a significant impact on how new transmission facilities get funded and constructed. NMIPP believes that WGA, WAPA, the states and the federal government

have a chance to make a positive step toward energy independence through the development of renewable energy resources in the West. This can only happen if adequate transmission facilities are available to accommodate the renewable resources which, in turn, will improve the economy in those areas where the resources and transmission facilities are constructed and reduce our Country's dependence on conventional generation resources.

New Mexico Transmission and Energy Coalition

Kelly de la Torre

On behalf of the New Mexico Transmission and Energy Coalition (NMTEC), the law firm of Beatty & Wozniak, P.C. hereby respectfully submits the following comments on the Western Governor's Association designation of the Qualified Resource Areas (QRA's) for New Mexico. Although NMTEC commends the actions taken under the WREZ project to date, NMTEC also believes it is important to bring to your attention our concern that the WGA process failed to recognize economically justified productive renewable energy zones in New Mexico that depend on regional collaboration for development.

Given the purpose and of the WREZ project, key areas of New Mexico were omitted. The WREZ project is designed to designate zones of high quality and developable energy resources with the purpose being to expedite development and delivery of clean and renewable energy to load centers. Often, load centers are one or more states away from the energy generated. The goal is to identify Renewable Energy Zones that are large enough and contain sufficient resources to warrant the investment that will be required for large-scale transmission projects. NMTEC encourages the WREZ project committee members to consider three additional zones for New Mexico denoted NM-REZ #1, NM-REZ #2 and NM-REZ #4 in Exhibit 1, attached.

Technical Analysis Did Not Consider Coordination Of QRA's To Address Intermittency

To prevent challenges to the transmission grid that arise from sudden drops in renewable energy generation, the QRA designation process should coordinate complementary resource zones. A high potential wind zone could be bolstered by coordination with additional high potential wind zones that reach their peak at successive intervals. This information could be used in Phase two of the WREZ project to design transmission corridors to accommodate energy generated in these zones in order to provide firming capability by consideration of diverse resource areas.

The criteria for designation of the QRA's does not include coordination with other renewable zones. Rather, the process looked to the "highest quality resources" that meet the following criteria: minimum and maximum size criteria (no greater than 100 miles and at least 1500 MW), developable, without deference to proposed projects, and areas that complement state REZ efforts. Rather than considering these zones as having potential independent of other zones, high potential renewable zones can be selected to coordinate resources with other zones and this aspect of QRA's was overlooked.

It should be noted that NMTEC is aware that the WREZ project is developing a screening tool that will enable a user to model the delivery cost from the area where power is generated to the desired load serving entity. The tool will further enable a user to plug in additional firming resources.

However, this capability is not the same as identifying complementary resource zones up-front and using these diverse resource zones to design a network of transmission lines that could be firmed by taking advantage of the intermittency and the diversity of resource areas.

New Mexico's Resources Far Exceed Its In-State Load Service Needs

The stated purpose of the WREZ analysis is to identify areas that: (1) are large enough and concentrated enough to justify an EHV transmission line; and (2) for development will require regional coordination. Moreover, one objective of the WREZ project is to request that the target load serving entities (LSE's) look at the delivered price from each designated QRA and prioritize the QRA's in order to develop a baseline from which to start designing transmission corridors.

New Mexico has at least three zones that were not designated by the WREZ process and that meet these criteria. As shown in the attached map labeled as Exhibit 1: the first (denoted NM-REZ #1) is located in the north east corner of the state covering portions of Union, Harding and Colfax counties; the second (denoted NM-REZ #2) is located just west of this zone covering portions of Colfax, Mora, San Miquel, Santa Fe, Bernalillo, Taos and Rio Arriba counties; and the third (denoted NM-REZ #4) covers a significant portion of Quay county, and portions of Curry, Roosevelt, Debaca, Guadalupe, and San Miguel counties.

New Mexico's resources far exceed its needs and New Mexico is therefore poised to export energy to serve load centers out of state. New Mexico's in-state load is 4600 MW. New Mexico's load growth forecast is between 2.5 to 5% for a ten year period. Electric Integrated Resource Plan for the Period 2008-2027, Public Service Company of New Mexico, 21-27 (2008). New Mexico's wind potential is 124,000 MW of nameplate capacity at 40% C.F. Wind Powers America, American Wind Energy Association, 1999 (quoting An Assessment of the Available Windy Land Area and Wind Energy Potential in the Contiguous United States, Pacific Northwest Laboratory, 1991). The WREZ process states that resources outside the proposed zones will be identified in this study, but they will not be considered in the supply curve analysis as they are developable as in-state resources and do not depend on regional collaboration. Given its load growth forecast and renewable potential, New Mexico needs to identify sufficient export markets to accommodate energy generated by the zones not included in the WREZ designation. This will require interstate collaboration provided for under the WREZ process.

Additional Zones for New Mexico Are Economically Justified

New Mexico is uniquely situated to take its energy either east or west and the designation of zones should reflect this. As shown in Exhibit 2, NM-REZ #1 and NM-REZ #4 encompass areas having good wind potential. These zones exist along the east side of NM within the Southwest Power Pool. Zones labeled NM-REZ #1 and NM-REZ #4 therefore already have defined markets and are thus economically justified in the short term. These zones can further be used to serve energy loads in the west and will require interstate collaboration for commercial delivery.

Further, as shown in Exhibit 2, the area encompassed by NM-REZ #2 is identified as having good to superb wind potential. This zone is geographically located to serve energy markets in the west. Given its position in relation to Four Corners, this zone is uniquely positioned to coordinate with

other resource zones in the region in order to provide firming capability to a backbone network of transmission lines for the region. To be developed however, NM-REZ #2 will require interstate coordination and should therefore be included in the QRA designations.

Conclusion

The WREZ project supporting documents explain that “the purpose of the candidate study area is to focus the WREZ analysis on those parts of the Western Interconnection with renewable energy resources that are large enough and concentrated enough to economically justify an extra-high voltage (EHV) transmission line and will likely cross state boundaries and require regional coordination. The WREZ project does not supersede or negate state collaboration on commercial delivery of renewable energy.” Resource Criteria Approved by WREZ Technical Committee at its October 2008 Meeting, page 14. NMTEC encourages the WGA and the WREZ Committee members to further designate NM-REZ #1, NM-REZ #2 and NM-REZ #4 as QRA’s. New Mexico is uniquely situated to take its energy either east or west, NM has zones that have been designated as high potential by NREL and that were omitted from this process, New Mexico’s potential for resource generation far exceeds its needs in-state and New Mexico is geographically positioned to provide baseload firming capability in coordination with QRA’s in other regions.

NorthWestern Energy

John Leland

I understand the need to summarize data for this model because of the volume of data and appreciate the difficulty in doing so. It is good that you developed a methodology to do so. From the resource planners meeting in San Diego I learned that to be considered as a REZ the wind had to be Class 3 or better. This requirement is also reflected in the methodology document. I also learned at the conference that for Montana and Wyoming the wind resources the criteria was increased to be Class 5 or better. Assuming this is true, I’m concerned about this lack of comparability between REZs. More troubling is the fact that some will consider this data and may fail to understand that much more wind is available in Montana and Wyoming than is suggested by the REZ map. Please consider correcting this lack of comparable treatment of how REZ are developed.

Northwest Tribal Energy Group

Direlle R. Calica, Esq.

The Northwest Tribal Energy Group (NWTEG) submits these comments regarding the Western Governors’ Association (WGA) Western Renewable Energy Zones (WREZ) draft documents and maps. NWTEG participated with other interested tribes in developing these comments. 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.

As you know, several Northwest tribes are favorably located in areas diverse with natural resources, renewable energy resources, some transmission resources, and generate a large share of

their tribal revenues from participation in the energy industry. Northwest tribes are developing and considering the development of large and small hydropower, wave and tidal, geothermal, wind, and biomass generation to help meet renewable portfolio standards. However, since most Northwest tribes appear to not be located within the identified WGA's Renewable Energy Zones we are greatly concerned that transmission plans and grid interconnection for tribes' renewable energy resources will not be a priority for their respective areas. We believe it is imperative that tribal energy resources are considered for overall renewable energy resource integration into the power grid along with increased interstate stakeholder participation.

We understand the focus at this phase in the WREZ process is principally on renewable energy resources for which there is quantified data. Specifically for wind, solar, conventional discovered geothermal energy resources, and some hydropower resources. Nonetheless, many Northwest tribes are well situated to provide distinguishable amounts of renewable energy from biomass resources and generation.

For many Northwest tribes biomass resources and generation are located in geographically constrained areas and could benefit greatly from consideration in the WREZ process, sooner rather than later. Northwest tribes are also considering the development of wave and tidal energy resources as well. Yet wave and tidal energy resources are not included here. We believe including biomass and wave and tidal resources in this process will only enhance the overall analysis and development of the final WREZ.

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 tribal lands to be reflected in the Western Governor's reports by honoring the wishes of Indian Tribes. If tribal lands are chosen for development by the Indian Tribe and these areas do have renewable resources then those areas should be included in Renewable Energy Zones. Furthermore, as sovereign nations with inherent governing authority over our land and resources we have the capacity to form beneficial and effective partnerships with other stakeholders in the development of our energy resources. Indian tribes hold close the ability to identify renewable energy resources on tribal reservation lands and that our lands are identified as a Renewable Energy Zone. We encourage new transmission to be constructed so that we may develop these resources and create important economic development efforts and opportunities for our people.

In closing, NWTEG appreciates the WGA's invitation to comment. Since many Northwest tribes 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.

Submitted 2nd

The Affiliated Tribes of Northwest Indians (ATNI) submits these comments regarding the Western Governors' Association (WGA) Western Renewable Energy Zones (WREZ) draft documents and maps. ATNI participated with other interested tribes in developing these comments. 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.

As you know, several Northwest tribes are favorably located in areas diverse with natural resources, renewable energy resources, some transmission resources, and generate a large share of their tribal revenues from participation in the energy industry. Northwest tribes are developing and considering the development of large and small hydropower, wave and tidal, geothermal, wind, and biomass generation to help meet renewable portfolio standards. However, since most Northwest tribes appear to not be located within the identified WGA's Renewable Energy Zones we are greatly concerned that transmission plans and grid interconnection for tribes' renewable energy resources will not be a priority for their respective areas. We believe it is imperative that tribal energy resources are considered for overall renewable energy resource integration into the power grid along with increased interstate stakeholder participation.

We understand the focus at this phase in the WREZ process is principally on renewable energy resources for which there is quantified data. Specifically for wind, solar, conventional discovered geothermal energy resources, and some hydropower resources. Nonetheless, many Northwest tribes are well situated to provide distinguishable amounts of renewable energy from biomass resources and generation.

For many Northwest tribes biomass resources and generation are located in geographically constrained areas and could benefit greatly from consideration in the WREZ process, sooner rather than later. Northwest tribes are also considering the development of wave and tidal energy resources as well. Yet wave and tidal energy resources are not included here. We believe including biomass and wave and tidal resources in this process will only enhance the overall analysis and development of the final WREZ.

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 tribal lands to be reflected in the Western Governor's reports by honoring the wishes of Indian Tribes. If tribal lands are chosen for development by the Indian Tribe and these areas do have renewable resources then those areas should be included in Renewable Energy Zones. Furthermore, as sovereign nations with inherent governing authority over our land and resources we have the capacity to form beneficial and effective partnerships with other stakeholders in the development of our energy resources. Indian tribes hold close the ability to identify renewable energy resources on tribal reservation lands and that our lands are identified as a Renewable Energy Zone. We encourage new transmission to be constructed so that we may develop these resources and create important economic development efforts and opportunities for our people.

In closing, ATNI appreciates the WGA's invitation to comment. Since many Northwest tribes 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.

Ocean Renewable Energy Group
Chris Campbell

We are disturbed by the absence of wave, tidal or in-stream resources in the planning exercise. A September presentation By Doug Larson and associated discussion led me to believe that these undeveloped resources would be addressed to the extent that they had been mapped.

There has been work done by BC Hydro, Epri and others -

http://www.oreg.ca/energy_resource.html

Given the WREZ timeframe, we believe that ocean energy will be a viable component of the renewable mix from California to Alaska. The implications for your project are serious because coastal generation from wave resources significantly changes the Oregon and BC transmission requirements. For BC, this will be reinforced by tidal. The Queen Charlotte Islands and Vancouver Island are likely to become power producers, not end of the line problems. If floating offshore wind makes a breakthrough, the entire regional coast is likely to be involved.

If the WREZ project continues without including these opportunities it must provide an analysis and discussion of the potential for emerging energy opportunities to disrupt the plans.

Technology Assumptions:

Carbon Trust and others are forecasting that wave and tidal energy can be cost competitive with other renewables within the timeframe of WREZ. Even some pilot projects might fall within the window of some of the marginal electricity costs you are considering.

To ignore this rapidly emerging sector is a mistake, given the resource opportunity and emerging interests by governments and utilities in the region.

Pima County
Terry Finefrock

I am interested in participating in those tasks that would determine the solar technology, sizes, siting and actual construction and commissioning of the solar electric generating facilities. Can you please clarify within which one of these, if any, would the siting, design & construction of solar electric generating facilities be done?

I previously provided to you a plan to generate 4-6GW of solar electric parabolic trough w/thermal storage in 250MW standard sizes that would reduce construction costs and facilitate siting of a facility, or facilities, in a modular manner to optimize use of existing transmission capacity and minimize environmental impacts/concerns.

Is there any discussion regarding that proposal?

PNM

Doug Campbell

The QRA proposed do not seem to abide by the criteria for their creation. For example the QRA Renewable Resource Summary Table of Feb 2, 2009 indicates no QRA should be no greater than 100 miles in radius (31,416 sq miles), yet it appears that many areas were arbitrarily split to avoid such a threshold but substantially abut other QRA effectively making them one QRA. This moves the resulting zones away from the intended goal of identifying the “best of the best” of the renewable resource zones.

QRA of wind resources using each state’s minimum wind power classes results in an apples and oranges approach to assessing desirable renewable power resources. If the later phases of the project are to be successful, a transparent picture of the value of the West’s higher quality resources must be presented to the public stakeholders and the target audiences, otherwise there will be continued misunderstanding of the merits of state-centric development of large areas of renewable energy resources that ultimately may not be the most economical and efficient to develop. Certainly every state has their own “best” resource that may be advantageous or economical to develop for local load service but the WREZ should properly focus on the West’s highest quality resources and use state scale resources only for comparison. A disclosure of the comparative MW per unit area of the various QRA would be a useful criteria for further refinement and discussion of the QRA.

Develop-ability Discounts

Develop-ability Discounts are problematic and are not well explained and justified. The resulting available resources thus appear to not be well founded. Please expand greatly the background discussions of the justification for the 3.5% and 25% discounts for solar and wind areas. The application of these factors will have significant implications for the work of the Generation and Transmission Group and must be well founded and explained.

Power Company of Wyoming

David F. Smith

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).

Raser Technologies

Layne Ashton

Raser Technologies, Inc. is a Utah-based developer of geothermal power generating facilities. Raser recently completed construction and is in the start-up phase of a 10 MW geothermal power plant located in Beaver County, Utah. Raser has an additional seven geothermal projects in various stages of development in Utah, New Mexico, Oregon and Nevada.

At this time Raser is taking this opportunity to participate in the Open Public Comment period on the WREZ Initiative draft documents, and to express its dismay at the fact that geothermal has been omitted for consideration in the determination of Qualified Resource Areas. Recent activities by Raser, other geothermal developers, the Geothermal Energy Association and the Geothermal Resources Council have demonstrated that there are numerous geothermal “high quality resource areas” that should be taken into consideration in the WREZ Initiative reports.

Of particular note, Raser would like to direct the WREZ Initiative’s attention to the findings of the recently completed Utah Renewable Energy Zones Task Force (UREZ) Phase I Report: renewable Energy Zone Resource Identification. This report can be found on the Utah Geological Survey’s website at www.geology.utah.gov. The UREZ Report has identified that Utah’s higher quality geothermal resources lie within a 50 mile wide corridor in the southwestern Utah desert in an area that is also identified to have the greatest promise of wind and solar power generating potential. UREZ estimates the potential for electric generation from identified geothermal systems in Utah is approximately 754 MW. In light of this information, the WREZ Initiative would be remiss if it does not take into consideration of the UREZ findings.

Raser would also like to bring to the WREZ Initiative’s attention the Geothermal Energy Association’s recently published U.S. Geothermal Power Production and Development Update, which can be found at www.gea-energy.org (“GEA Document”). The GEA Document should be used by the WREZ Initiative as a resource for mapping those areas currently under development.

For its part Raser is offering its services to assist the Western Renewable Energy Zone Initiative Work Groups better understand geothermal resources in within the western United States.

Steve Schrock

1. Western Colorado is my home as well as the service area for the institution I represent Colorado Northwestern Community College. My remarks are my own however, and not meant to represent those of CNCC.
2. My concerns mainly focused on the establishment of QRAs and how it was decided to include certain alternative energy sectors and exclude others. Why for instance, was hydro power, bio mass, geo thermal and natural gas apparently excluded from consideration in the QRA development?
3. My concerns also were addressed to the exclusion of the entire geographic area of western Colorado as a QRA. The notion that a major geographic area of Colorado with many traditional and existing alternative energy sources was excluded is mysterious, confusing and bothersome. We have utility scale hydro alternative energy projects currently in operation. We have an abundance of natural gas that both T. Boone Pickens and President Obama agree can be the bridge alternative energy source to the future. We have great potential for geo thermal and bio mass energy development. Why did this exclusion happen?
4. The outcome of this WGA/WREZ process has the potential for creating geographic areas within states that, in terms of public policy and financing, are either “haves”, or “have not’s”. This determination can have serious implications for future economic development and job creation in areas of the States. How will this document be used to establish public policy and financing?
5. Finally, it is unclear to me what agency or representative of Colorado State government is the lead for Colorado’s involvement in this WGA/WREZ process. How will the final document developed by this process be interpreted and distributed, and by whom, within Colorado?
6. Perhaps all these concerns would have been addressed in a thorough reading of the document but the one I received was an attachment, via email, that originated from another state in the WGA. I didn’t have time to read the full text or attachments. This leads me to my final concern. How was this public review and comment process publicized in Colorado?

Southern California Edison

Dana Cabbell

The QRA's appear similar to what the California RETI group has developed. One comment for the next phase when the WREZs are developed is to prioritize the WREZs. This could aid in developing transmission to the "most cost effective" resources first, then work on the rest as needed.

Shell WindEnergy Inc

Krista Johnson

Shell WindEnergy Inc. is involved in eleven wind-generating facilities across the US and Europe with approximately 1100 MW of gross capacity in operation. Within the WGA footprint, Shell has four existing wind-generating facilities in operation and several proposed large-scale projects in

various stages of development. As a developer of large-scale wind generating facilities, Shell is keenly interested in harnessing the potential of robust renewable resources in location-constrained regions.

On the US side, Shell is supportive of the WREZ Zone Identification and Technical Analysis (ZITA) screening processes and results to date, in particular with regards to Qualified Resource Areas (QRA) identified in Wyoming, New Mexico, and Idaho. Furthermore, Shell is willing to aid in further analysis by sharing site-specific information on the QRA's in these states where available, subject to confidentiality.

On the Canada side, Shell has concerns regarding the Alberta resource assessment which is based primarily on projects currently in Alberta's interconnection queue. The omission of a complete provincial assessment may result in underestimation of the resource potential in Alberta which will subsequently lead to incomplete conceptual transmission planning.

Shell has a strong interest in the advancement of the WREZ Project and wishes to participate in discussions regarding future phases and implementation.

Southern Ute Alternative Energy

Rebecca Kauffman

After being a part time participant to the process, I am very please with how things evolved in the end product. The approach was logical and validated through discussion and agreement. This was especially difficult given the disparity of the data sets and varying degrees of resources, economics and population centers across states.

Two additions would make it better. The yet to come environmental input to the QRAs and for the Transmission piece would help bring the environment to the forefront. The transmission lines are already creating controversy and having the environmental piece in from the start would help the process.

The second addition is to combine the Transmission Map with the QRAs to get a better sense of the overall picture.

Technology Assumptions:

Well done after much conversation.

David Suzuki Foundation; B.C. Spaces for Nature; ForestEthics; West Coast Environmental Law; Yellowstone to Yukon Conservation Initiative

We represent five environmental organizations in British Columbia (B.C.) monitoring the Western Renewable Energy Zone (WREZ) Initiative of the Western Governors' Association (WGA).

We recognize that for all of the large gains that can be achieved through the maximization of energy efficiency and conservation efforts, there will be a need for more clean/renewable energy

generation in B.C. and elsewhere. However, we are very concerned about the manner in which the development of new renewable energy generation has been occurring in recent years within B.C.

We believe the development of new power generation in B.C. needs to be managed through a rigorous, science-based and publicly-transparent strategic assessment of where new power generation plants should - and should not - be located. While we do not view the WREZ Initiative as an sufficient substitute for a rigorous, comprehensive, and transparent strategic energy resource development process by the government of B.C., we do believe that the methodology set out in the WREZ Charter and Workplan sets out a robust and effective framework to identify and assess potential low-impact renewable energy resource areas in B.C.

Our major concern with the preliminary assessment and findings of the WREZ Zone Identification and Technical Analysis Work Group (ZITA), is that the WREZ methodology was not applied for the B.C. part of the project. The actual analysis done - which we examine in depth in the technical appendix attached to this letter - weakens the prospects for effective planning in B.C. and undermines the overall credibility of the WREZ process. We strongly urge WREZ to re-do the B.C. energy renewable energy assessment in accordance with the WREZ methodology used for the U.S.

Attach: [Review of WREZ's analysis of renewable energy resources in British Columbia](#), and the results shown on the [Draft Preliminary Qualified Resource Areas Map](#).

Trout Unlimited
Bradley Powell

QRA Map Notes and Legend

Exclusions – In addition to the exclusions listed, lands that are important to sensitive fish, wildlife, water and air resources should be excluded from the QRAs. The draft notes that wildlife sensitivity areas are not excluded from QRA boundaries and will be taken into account by the WREZ process in April, 2009. However there is no indication of what criteria are used to identify wildlife sensitivity areas, if/when there will be public comment, what the goal of identifying wildlife sensitivity areas is, and how the process for identifying wildlife sensitivity areas may affect important fish, wildlife, water and air resources.

- These wildlife sensitivity areas should be identified *before* QRAs are designated.
- Wildlife sensitivity areas should provide for the protection of important fish, wildlife, water and air resources.
- Development of renewable energy resources should be precluded from wildlife sensitivity areas.
- The process for identifying wildlife sensitivity areas should incorporate the work done by the Western Governor's Association Wildlife Corridors Initiative Oil and Gas Working Group and Wildlife Habitat Councils with the intent of protecting important fish, wildlife, water and air resources.

QRA Size Criteria – The draft notes that “[a]reas must meet minimum and maximum size criteria” but then fails to quantify the minimum and maximum size criteria. However, numerous small projects can have a similar cumulative impact as few large projects.

- Thorough analysis of the environmental impacts of development should consider the impacts from all past, current and foreseeable developments regardless of size.
- Small-scale renewable projects should be included because many hydropower, geothermal and biomass projects occur on a scale smaller than traditional energy resource development.

Note b – The draft mentions that “[w]hen undiscovered geothermal potential is believed to exist in a QRA, it will be noted even though it will not be quantified.” However, the draft does not indicate how a QRA may change through the discovery of new geothermal potential. Geothermal energy development can have significant impacts on important fish, wildlife, water and air resources.

- When new geothermal potential is discovered, the potential direct and cumulative impacts of its development on important fish, wildlife, water and air resources should be thoroughly considered before the potential can be developed.

It is unclear how a QRA designation will affect the development of renewable resources and the protection of important fish, wildlife, water and air resources. Additionally, it is unclear how identification of “exclusion” areas and “initial avoidance” areas in the Environment and Lands documents will affect development.

- The affects of these designations (QRA, exclusion, and initial avoidance) on renewable energy development and the protection of important fish, wildlife, water and air resources need to be made explicit.

U.S. Fish and Wildlife Service

Gary Frazer

The U.S. Fish and Wildlife Service (Service) has reviewed the Western Governor’s Association’s Renewable Energy Zones Draft Documents and Maps Open for Public Comment and would like to submit the following comments.

The Service has responsibility and authority for protecting fish and wildlife resources pursuant to and in accordance with the following statutes, as amended: (1) Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.); (2) Endangered Species Act of 1973, (16 U.S.C. §§ 1531-1544); (3) Migratory Bird Treaty Act, (16 U.S.C. §§ 703-712); (4) Bald and Golden Eagle Protection Act, (16 U.S.C. § 668); (5) the Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. §§1251-1387); (6) National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. §§ 668dd-668ee); and other applicable Executive Orders, regulations and policies. In addition the Service has special expertise relating to interjurisdictional fishes, threatened and endangered species, migratory birds, wetlands ecology, and desert habitats.

The Service has been an active participant with the Western Governor’s Association Renewable Energy Zones (WREZ) project and finds it complimentary to our mission to “...protect, conserve, and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people,” in the pursuit of energy independence.

Based on our review, we understand that the WREZ portfolio of renewable energy does not include hydrokinetic energy development. However, during the past four years, the Service has seen a dramatic increase in preliminary permits issued by the Federal Energy Regulatory Commission for

the sole purpose of developing hydrokinetic energy in streams and estuaries. Accordingly, the Service recommends that the Western Governor's Association include new hydrokinetic energy development in its renewable energy portfolio.

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.

Western Forestry Leadership Coalition

Jay Jensen

The Western Forestry Leadership Coalition (WFLC) appreciates the opportunity to comment on the draft documents for the Renewable Energy Zones. Our Coalition represents the seven western Regional Foresters and three western Research Station Directors, and the Forest Products Laboratory Director of the US Forest Service, and the combined interests of seventeen State Foresters in the Western United States and six Territorial Foresters in the Pacific Islands. The focus of our review was to provide additional insights into how bioenergy from forests may contribute or influence the work of your teams. Additional feedback on issues outside of the biomass resource may come from any of our members in separate comments.

Specifically we reviewed the following documents:

- Resource Criteria Approved by the WREZ Technical Committee
- Qualified Resource Areas - Renewable Energy Resources Summary Table
- Technology Assumptions for Supply Curve Analysis
- WREZ Draft Preliminary QRA Map

We recognize that the three primary "Qualified Resources" wind, solar and geothermal have geographic limitations and are frequently isolated from transmission. However, biomass resources associated with hazardous fuels reduction and other forest management activities also are geographically specific and must be used close to the source. The cost of transportation and handling of these forestry resources requires a large number of distributed uses, and therefore is generally limited to areas near forests. Almost by definition the areas that can support development of solar and wind resources are not forested. Geothermal resources may or may not be near forested areas. So we requested our membership to consider if there were significant areas of forest biomass resources that were also isolated, or plans in the works to expand bioenergy production at existing facilities that were faced with lack of transmission.

Most forest residues that are near an existing forest products processing facility would most likely be used at that facility to generate combined heat and power with the potential to provide excess

power to the grid. So the issue is more one of ability for the existing transmission to accommodate expansion to include these facilities. We are also aware of interest by small community cooperative power providers to co-fire or have expanded stand alone biomass power. We encourage further exploration and inclusion of these points in the final report.

While the statement made in the Resource Criteria document (page 2) is technically correct, it does not tell the whole story about the biomass resource.

“Biomass feedstocks can be transported to a power plant site. As a result, project locations depend much less on the location of the feedstock resources than other technologies assessed in WREZ. As a result of this siting flexibility, biomass projects will be added to REZs created for other location-dependent resources.”

It will be important for your team to remain familiar with and consider your recently released report Western Governors’ Association Strategic Assessment of Bioenergy Development in the West because it suggests locations where efficiently scaled biofuels plants can economically be sited based on realistic economic assumptions. If these locations coincide with the WREZ areas, it will increase the likelihood that some will have sufficiently abundant biomass with short hauling distances. Market and other resource considerations will determine if the identified biomass resources is used in power, heat or biofuels and/or a combinations of these. Appendix B of this report provides the locations where plants would likely be located by states.

This report and other analyses have shown that there is a large amount of forest biomass in the western states that has a high cost to remove and transport because of the lack of nearby markets and /or higher value material to help cover the cost. We encourage the WREZ project to consider smaller scale, more efficient (CHP), development of distributed power so that more resources can be utilized with the least cost. Local use and local benefit of renewable energy is one of the major ways biomass can be part of the West’s future energy portfolio.

We understand that a primary goal of the WREZ project is to identify areas in the west to expedite the development and delivery of clean and renewable energy to where it is needed. Wind, solar and geothermal are the renewables you have chosen to focus on for good reason. We also understand that you are not readily available to delineate zone boundaries specific to biomass at this time. Considering the project’s primary purpose, we ask you create a space in your final report so the case can be adequately stated how woody bioenergy can play a significant role in meeting the west’s energy needs. Building upon prior WGA reports as mentioned earlier may be a simple place to start. We stand ready to assist as needed.

Western Forestry Leadership Coalition -- State Forestry Organizations

Marcia Patton-Mallory

In addition to general comments provided separately by the Western Forestry Leadership Coalition we are sharing some state specific information from individual State Forestry Organizations. We encourage the WREZ project to reach out within individual states to become aware of specific information similar to what is compiled by example from Oregon on the biomass resource potential for bioenergy.

Oregon has extensive information on biomass supply assessments and also information on Oregon's interest in smaller distributed biomass power, combined heat and power, and direct heat (no transmission required).

Attached are the following:

The first two attachments, produced by the Oregon Forest Resources Institute (OFRI). They articulate where the ["available" forest biomass](#) is located in Oregon, with OFRI's estimate of Oregon's biomass supply. The OFRI study just looked at eastern Oregon and Southwest Oregon with the emphasis for this information focused on reduction of high and extreme fire danger from excessive fuel loadings. The [very rough biomass estimate](#) for western Oregon comes from using FIA plot data and 2006 harvest levels. As OFRI indicates the GIS files of the OFRI information is available from the consulting firm of Mason, Bruce and Girard.

The last attachment is a summary from a work plan for one subgroup of the Oregon Forest Biomass Work Group and their efforts to expand opportunities related to thermal heat. We include this to show there is interest in Oregon to expand use of pellets and hog fuel for thermal heat applications. The Oregon Department of Forestry is also working to understand the statewide boiler database in Oregon to identify likely candidates for replacement boilers (old oil boilers) where woody biomass might be utilized for thermal heat. Also as part of the Oregon Forest Biomass Work Group, the Oregon Department of Energy (ODOE) has provided key insight into combined heat and power projects that are completed, underway, or emerging in Oregon. Many in Oregon are working to promote smaller scale renewable energy projects. The Governor/ Oregon Department of Energy has a bill in the current legislative session (HB 2180) that would create the Oregon Renewable Energy Grant Account, with funds to be eligible to encourage facilities of less than ten megawatts. In addition Oregon pass substantial legislation in the 2007 session (RPS, RFS, incentives) to promote growth of renewable energy in the state.

Attachments

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 OS LI 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?

UBC-CERM3

John Meech

I have examined the WREZ Map of RE in British Columbia especially with reference to Geothermal Energy Resources. I see only 7 sites shown on the map and none are identified by name - only by sector.

It is pretty clear which one is Mount Meager, but for the life of me, I cannot determine which sites the other six points represent. B.C. has the potential for 3,000+ MW of power generation from Geothermal Energy with sites ranging from Harrison Hot Springs in the south to Hoodoo Mountain in the Stikine. The Wrangel Mountains extending into Yukon are also significant sites that have been explored and for which data exists. I think your data for BC is biased considerably away from Geothermal and more towards Wind as a key alternative renewable. Certainly hydro (both large-scale and small-scale) will be major contributors to the grid but geothermal has the potential to provide a significant "green" and clean energy source for North America.

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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?