

## Western Governors' Association

### Western Renewable Energy Zones Zone Identification and Technical Analysis (ZITA) Working Group July 25, 2008 10:00 – 11:30 MDT

## CALL SUMMARY

#### Decisions & Next Steps

- Linda will keep track of the Technical Committee's questions and concerns, and follow up with the Committee after the ZITA WG has discussed them.
- The ZITA WG leads will coordinate with the Environment and Lands WG leads to determine what additional environmental constraints and considerations are necessary.
- WGA staff will determine what information will be shared and what areas of land exclusions will be focused on by which WG. Ryan offered to participate on a call to determine those constraints.
- Linda will coordinate outreach efforts with the military and tribal interests in regards to land ownership.
- EXCLUSIONARY SOLAR CRITERIA:
  - National parks
  - Forested lands
  - Slope: 2% (working assumption, but will be revisited in the future to potentially include 5%)
  - Resource load: 6KW/m<sup>2</sup>/day
  - PV: 5% slope and no installation screen
- The WREZ process will not select a "technology winner," but identify the relative magnitude of energy potential in certain areas and their relative costs, and make associated value decisions.
- The group agreed that while there are other technologies available, no other solar technologies need to be discussed at this time.
- The final criteria must include a series of explanations and maps that detail why certain areas were excluded for a project.
- Next Call: Friday, August 1; 10:00 a.m. – 12:00 p.m.

#### Action Items

1. Linda to distribute to the Working Group the WREZ draft ground rules and premise assumptions, based on the 7/18/08 Technical Committee discussion.
2. Black & Veatch to supply a standard definition of forested lands.
3. Black & Veatch to develop a cost analysis proposal for proxy technologies and initiate this conversation on a subsequent ZITA WG call.

#### July 18 Technical Committee Call Update

- The Technical Committee reviewed the WREZ ground rules and overarching assumptions on how to portray the WREZ process.
- The Committee also reviewed each Working Group's Work Plans. Limited comments were received, but it was requested that certain items be added. The revised Work Plans will be synthesized and available soon.

- The Committee had high-level questions that will be addressed as work is completed (e.g. how to address military zones). **Linda will keep track of these questions and follow up with the Committee after the ZITA Working Group (WG) has discussed them.**
- The Committee also discussed the treatment of small hydro and biomass as resources, and expressed concern that not all viable resources will be considered. The ZITA calls will cover wind solar, and geothermal; then biomass and hydro.

### Concentrated Solar Power Discussion

- Ryan Pletka (Black & Veatch) introduced Larry Stoddard and Kevin Joyce (Black & Veatch), who will be providing analytical support for the WREZ project.
- Ryan presented the CA RETI resource studies, including lessons learned, similarities and differences with the WREZ process. The document distributed is an outline of key solar resource deliverables assumptions to help inform the WREZ recommendations. It was explained that, as solar is the largest renewable resource, very large zones with resource power uniformity could be drawn. Therefore, the CA process set limitations to the potential zones based on land availability and technical limitations, characterizing potential for proxy technologies, project size and solar projects that are already in the developing queue.
- **Ryan presented five land-base exclusions:**
  - **Environmental** (e.g. national parks, wilderness areas, endangered species, habitat, wildlife considerations). A separate task force in CA identifies lands that are considered off-limits for development by policy or law. Information on areas of no development is readily available, and development is sometimes possible on other lands. The first task here is to determine what information is available and what data gaps there are. Species, habitat and wildlife are within the Environment and Lands Working Group (E&L WG) scope - the ZITA WG will be looking to that group for guidance (on a basic level, it requires guidance as to which GIS layers to include). **The ZITA WG leads will coordinate with the E&L WG leads to determine what additional environmental constraints and considerations are necessary. WGA staff will determine what information will be shared and what areas of land exclusions will be focused on by which group. Ryan offered to participate on a call to determine those constraints. The group agreed that national parks are an exclusionary criterion.**
  - **Land use** (urban areas, active strip mines, airports, etc.). GIS information is available for developed land. There are three categories of exclusions in this category: environmental (e.g. Yosemite, Grand Canyon), unrestricted land (aside from environmental permits/no identified concerns with the land), and land in between those two constraints. There are two stages of analysis for these areas. First, analyzing the pre-identified projects; then, the proxy projects (optimal non-public development areas with high potential). Potential areas that are not public should also be identified to provide for flexibility. It was specified that the WREZ process should not be a land use discussion. It was suggested that, where applicable, conversations with the local governments be initiated to identify where their concerns might lie. The group discussed whether to exclude forested lands due to the cost of deforesting land and the lack of solar resources, and discussed whether this meant public or private lands. This process will not clear land. **Black and Veatch will supply a definition of forested lands. The group decided to exclude forested lands from consideration.**
  - **Land ownership** (e.g. private sector, farmers, mining, government ownership, tribal lands). No land is excluded based on ownership - it should be presumed that land is open for development. Outreach efforts will be required with the military and tribes to

determine developable lands. Some tribes are interested in renewable development, some are not. **Linda will coordinate outreach efforts with the military and tribal interests in regards to land ownership.**

- **Slope.** The third page of the document that Ryan distributed shows CA data for 1% and 3% slopes. Ryan indicated that slope analyses are data intensive, but higher than 2% slope will not affect the general analysis. Considerable land in the Southwest would be excluded because of slopes unreasonable for development. Two percent is a conservative constraint, while power technologies can sustain up to 5% slope. The slope factor affects resource intensity because of shading and blocking and inconsistent heliostat height. Although higher slopes will affect the supply curve, it is not significantly more expensive to develop on higher slopes, as some technologies can sustain levels of higher slope. Proximity to transmission will have a much larger affect on cost than the slope. The lower the slope screen, the better chance of finding prime areas, but the higher the slope screen, the more likely the development will be close to transmission. Transmission could overload with a 1-2% slope – it is ideal to stay below 5MW generation on a substation. It was indicated that the slope screen chosen is not necessarily the final slope screen. Further screens, sensitivity analyses and price effects of large slopes could be considered in the future. Solar developers on the call did not object to 2%. **The group agreed that 2% is the working assumption, but will be revisited in the future to potentially include 5%.**
- **Resource.** What resource level should be considered as reasonable for development? Depending on the topography, civil land preparation can be cost-prohibitive. WREZ requires concentrated solar cut-off points, since the analysis is geographically spread out. In the industry, there is little interest in contracts for less than 6kw/m<sup>2</sup>/day. Solar developers indicated that this is reasonable. **The group agreed to 6KW/m<sup>2</sup>/day.**

#### **Further Discussion Points**

- The group discussed PV technologies. Although CSP and PV technologies are distinguishable (costs, technologies, proximities to transmission lines), the resource exclusions are the same. Flat plates on PV can take advantage of more resources than CSP. PV can be placed almost anywhere, but for utility-scale development, PV is not suitable for all areas as the magnitude of potential is so large. For a proxy technology proposal, it is recommended to use a single axis tracking crystalline for PV technology. PV development can occur on up to 5% slope of land. **The proposed slope screen for PV is 5% slope. There will be no installation screen for PV.**
- Ryan indicated that there still needs to be a conversation about modeling CSP. A proxy technology to turn data into capacity needs to be developed, which requires assumptions on how the technology will use each resource. The most commercially approvable technology should be used to ensure that the project is likely to be developed. **Ryan will develop a cost analysis proposal about proxy technologies and initiate this conversation on a subsequent call.**
- The group discussed the anticipated range of costs associated with the full variety of technologies. The ZITA WG will supply cost data to the Modeling WG. **The WREZ process will not select a “technology winner,” but identify the relative magnitude of energy potential in certain areas and their relative costs, and make associated value decisions.**
- The group discussed how to treat agricultural land (sunny, flat, already disturbed, and water-accessible; but can be a political issue). Agricultural lands will be screened out later, if needed.
- The group discussed urban areas filter. While proximity to urban areas is good for transmission, projects should not be too close to urban areas since it is land-intensive.

- The group discussed water availability, and will need to be able to differentiate what the most cost effective resources are. Different levels of water are needed depending on the technology chosen. Water tends to be secondary to the quality of installation. Black & Veatch can review water availability and whether water rights are assignable.
- **The group agreed that while there are other technologies available, no other solar technologies need to be discussed at this time.**
- **The final criteria must include a series of explanations and maps that detail why certain areas were excluded for a project.**

#### Administrative Items

- Technology discussions rotate on the ZITA WG calls.
- Geothermal will be discussed on the next call.
- **Next Call: Friday, August 1; 10:00 a.m. – 12:00 p.m.**

#### Participants

Steve Arenson	OSD Sustainability Office
???Steven Bonham	BC Transmission Corporation
Craig Cox	Interwest Energy Alliance
Linda Davis	Western Governors' Association
Steve Ellenbecker	Wyoming Governor's Office
Mitchell Garnet	ESRI
Arthur Haubenstock	BrightSource Energy
Joe Henry	SunEdison
Eric John	SkyFuel
Kevin Joyce	Black & Veatch
Mark Lausten	DOE Solar Program, SENTECH
Ron Lehr	AWEA
Bob Lighton	SES
Christy Morris	State of Nevada, Division of Minerals
Amanda Ormond	Ormond Group LLC
Ryan Pletka	Black & Veatch
Howard Schwartz	WA State CTED Energy Policy
Elaine Sison-Lebrilla	Sacramento Municipal Utility District
Larry Stoddard	Black & Veatch
Liza Szot	New Mexico RETA
Cyrus Tashakkori	E.ON Climate & Renewables North America Inc.
Perry Thomson	USTAR Southern Utah TOIP
Lee Wallach	Solel, Inc.
Madeleine West	Western Governors' Association
Morgan Poncelet	Kearns & West (Recorder)