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Keywords
Transmission, Nevada, RETAAC

ABSTRACT

After two years of a two phase effort by the Nevada Governor’s Renewable Energy Transmission Access Advisory Committee, (RETAAC), of which this author was the Chairman, the committee issued its final report in 2009 with the following summary: (i) the Environmental and Land Use Constraints study group concluded that “After evaluating available secondary data collected for this project and consulting with representatives from land management agencies, no fatal flaws were indentified for the proposed interconnections”; (ii) the Renewable Energy Zone Study Group concluded that the (REZ) matrix developed should serve as the basis for the analysis (of transmission requirements) by the Economic Feasibility Study Group; (iii) the Economic Feasibility Study Group concluded that certain transmission lines could charge economically acceptable fees for the use of the transmission lines and that these fees could recover the costs as listed above, if the transmission line usage were fully subscribed, and (iv) The Export Study Group concluded that a significant market exists in California and Arizona for Nevada’s renewable energy and transmission paths are feasible. Based on this report, the Public Utility Commission of Nevada (PUCN) added the REZ maps developed by the RETAAC to Chapter 704 of the NAC (Nevada Amended Code). In addition under Docket 09-07011 the PUCN held a series of workshops to draft regulations implementing the REZ plan. This paper will deal with these implementation regulations and their potential impact on the transmission access of the geothermal areas in Nevada.

Introduction

RETAAC Phase I

In May 2007 Nevada Governor Jim Gibbons stated that “renewable energy development is good for Nevada and good for the nation. Much of Nevada’s renewable energy resources are located away from the grid. In order for companies to locate in Nevada and develop our renewable energy resources, we need to ensure they have access to the transmission infrastructure that will allow them to bring their energy to the marketplace.”

The Governor also issued an Executive Order which created the RETAAC Phase I, with the mission to “propose recommendations for improved access to the grid system by which renewable energy industries can have market access in Nevada and neighboring states.”

The Committee was charged with the responsibility to:

1. Identify Commercially developable locations for renewable energy, ranking them based on size and viability and comparing them to Nevada’s needs and demand,
2. Assess existing and planned transmission access to these resource areas (later identified as Renewable Energy Zones or REZs), and
3. Make recommendations for additional transmission lines.

The RETAAC Phase I Committee consisted of the Chair plus 12 appointed members including 4 utility representatives, 5 renewable energy industry representatives and 3 government regulatory agency representatives. Many non-committee members of the environmental and renewable energy community contributed their time to the study of the issues and the preparation of the final report and maps.

The RETAAC performed its review and Nevada’s wind, solar, geothermal and biomass potential was examined using the best available databases and models. Available transmission access was compared to these Renewable Energy Zones areas of constraint were placed in overlay on the resulting maps. Three recommendations were then made by the Committee:

1. The Governor’s office should support the construction of transmission lines and collector systems to enable access for renewable energy development in each of the Renewable Energy Zones. (See Figure 1 and Table 1)
2. The Governor’s office should support the construction of a transmission line, (of sufficient capacity), to connect the state’s northern and southern electric grids to provide Nevada Power with their non solar renewable energy requirements from the abundant geothermal and wind resources in Northern Nevada and provide Sierra Pacific Power access to the abundant solar resources in Southern Nevada.

3. The Governor’s office should initiate Phase II of RETAAC to define the environmental and physical feasibility issues, costs and potential financing mechanisms associated with the recommended transmission routes.

**RETAAC Phase II**

In June 2008, Governor Jim Gibbons created a second phase of RETAAC to implement the Committee’s Phase I recommendations. The committee was charged with: (i) determining power potential for the renewable energy zones designated by the first phase; (ii) the review of environmental, land use and permitting constraints; (iii) the identification of potential construction corridors that could avoid these constraints, and (iv) the review of potential revenue needs for construction, among other duties.

The nineteen Phase II committee members, which included representation from key interest groups, were appointed by the Governor given the task of working together to recommend the mechanisms finance and construct the additional transmission lines to access the state’s vast renewable energy resources for the benefit of the citizens of Nevada. The Phase II Committee was comprised of five (5) utility executives, eight (8) regulatory agency representatives, four (4) government officials, one (1) environmental representative and two (2) industry executives.

To implement the goals of Phase II, Study Groups were formed with the following results:

1. Environmental and Land Use Constraints – The E&L Study Group, which was tasked with providing information on these issues for prioritizing and analyzing the feasibility of constructing the proposed transmission lines to the renewable energy zones, found that: *After evaluating available secondary data collected for this project and consulting with representatives from land management agencies, no fatal flaws were indentified for the proposed interconnections.* (Figure 2 is the revised map of the REZs and the recommended transmission line additions)

2. Renewable Energy Zone Prioritizations – The REZ Prioritization Study Group was tasked with developing a method of prioritizing the zones defined in RETAAC Phase I, and the transmission links that serve these zones, and presenting these recommendations for RETAAC Phase II. *The methodology developed resulted in a matrix which employed four evaluation criteria: (i) renewable energy potential; (ii) cost of transmission construction; (iii) transmission environmental impact, and (iv) other system benefits from transmission. This matrix served as the basis for the analysis by the Economic Feasibility Study Group.* (See Table 2 for the summary of the economic analysis).

3. Economic Feasibility - The Economic Feasibility Study Group was tasked with answering the critical questions including: (i) how much does a transmission line developer need to charge for the use of the transmission line to recover the construction costs and operating and maintenance expenses including a sufficient return on the investment; (ii) how much are the resource developers willing to pay for the use of the transmission line, and (iii) are the renewable resource providers still competitive after recovering the

**Figure 1.** Figure 1- RETAAC Phase I REZs and Transmission Interconnect Map.

**Table 1.** Recommended RETAAC Phase I Transmission Links.

<table>
<thead>
<tr>
<th>Line#</th>
<th>Zone(s) Covered</th>
<th>Starting Point Zone</th>
<th>Ending Point City (substation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wind 8, Geothermal 2</td>
<td>Geothermal 2, Wind 8</td>
<td>Alturas, CA (Hilltop)</td>
</tr>
<tr>
<td>2</td>
<td>Wind 8, Geothermal 2</td>
<td>Geothermal 2, Wind 8</td>
<td>Lovelock, NV (Daytime)</td>
</tr>
<tr>
<td>3</td>
<td>Wind 7</td>
<td>Wind 7</td>
<td>Doyle, CA (ft. sage)</td>
</tr>
<tr>
<td>4</td>
<td>Wind 6, Biomass 1</td>
<td>Wind 6, Biomass 1</td>
<td>Wadsworth, NV (Frank)</td>
</tr>
<tr>
<td>5</td>
<td>Geothermal 1</td>
<td>Geothermal 1</td>
<td>Carson City, NV (Blackhawk)</td>
</tr>
<tr>
<td>6</td>
<td>Geothermal 1</td>
<td>Geothermal 1</td>
<td>Lovelock, NV (Daytime)</td>
</tr>
<tr>
<td>7</td>
<td>Geothermal 1</td>
<td>Geothermal 1</td>
<td>Yerington, NV (ft. Churchill)</td>
</tr>
<tr>
<td>8</td>
<td>Geothermal 1, Wind 12, Solar 1</td>
<td>Yerington (ft. Churchill)</td>
<td>Las Vegas, NV (Northwest)</td>
</tr>
<tr>
<td>9</td>
<td>Wind 2, Wind 3, Biomass 3</td>
<td>Wind 3</td>
<td>Ely, NV (Robinson Summit)</td>
</tr>
<tr>
<td>10</td>
<td>Solar 3, Wind 2, Biomass 3</td>
<td>Solar 3</td>
<td>Ely, NV (Robinson Summit)</td>
</tr>
<tr>
<td>11</td>
<td>Solar 4, Geothermal 5</td>
<td>Solar 4, Geothermal 5</td>
<td>Ely, NV (Robinson Summit)</td>
</tr>
<tr>
<td>12</td>
<td>Wind 1, Geothermal 6</td>
<td>Wind 1, Geothermal 6</td>
<td>Ely, NV (Robinson Summit)</td>
</tr>
<tr>
<td>13</td>
<td>Wind 5</td>
<td>Wind 5</td>
<td>Cortez, NV (Cortez)</td>
</tr>
</tbody>
</table>
cost of delivering their energy to load centers. The results of this analysis indicated that certain transmission lines could charge economically acceptable fees for the use of the transmission lines and that these fees could recover the costs as listed above, if the transmission line usage were fully subscribed. (See Table 2)

4. Transmission for Export – The Export Study Group was tasked with identifying existing transmission and proposed transmission projects that could export energy from Nevada renewable resources to adjacent states. This task assumed that such export would in essence be in addition to the needs of Nevada load serving utilities and would also result in economic benefit to the citizens of the state. The results of this task indicates that a significant market exists in California and Arizona for Nevada’s renewable energy and transmission paths are feasible.

5. Feasibility Criteria - The Feasibility Criteria Study Group, which consisted of representatives of: (i) publically owned and investor owned utilities; (ii) representatives of the Public Utility Commission of Nevada; (iii) the committee chairman, and (iv) the Governor’s Energy Advisor, were tasked with drafting the recommendations for the RETAAC approval. The recommendations as below were accepted by the full RETAAC.

### RETAAC Phase II Recommendations

Based on the results of the RETAAC Study Groups, the mechanisms to finance and construct the additional transmission lines as recommended by RETAAC were summarized as follows in the July 2009 RETAAC Phase II final report:

1. Renewable energy access to the Nevada transmission grid is facilitated by providing the state with a robust and reliable statewide transmission system, which serves all load customers from all available and potential generation sources. This is the surest way to promote the access to the grid by renewable energy resources.

2. The tax exempt bond financing mechanism, under consideration by the Governor’s office, and other such mechanisms, should be encouraged to develop a financing program which can substantially reduce the cost of constructing new transmission lines and facilities and thus enhance their economic feasibility. However, no matter what the driving technical, regulatory, or siting issues are, establishing a mechanism to repay the investment is critical to any plan on moving forward with the construction of these transmission lines and facilities.

3. The PUC, as the primary utility regulatory agency in Nevada, to the extent it is legally mandated, should employ flexibility to encourage renewable energy new renewable...
transmission construction, for in state use and export to adjacent states by:

- Considering the impacts of the local and statewide economic development as an element in the planning and approval of new transmission,
- Encouraging flexibility in financing of new transmission construction, and
- Considering the requirements of the state’s utilities to meet Nevada’s RPS mandate when evaluating proposed new transmission construction projects.

4. New renewable transmission should be designed and constructed by entities who have the financial capacity, the expertise, the understanding of the Nevada local and regional issues as well as the experience to design, permit, construct and integrate these facilities into the existing grid.

5. The State should create a functional entity, which will serve as a “one stop shop” to assist potential transmission providers in working with local, state and federal agencies in overcoming the permitting and siting constraints and barriers so as to expedite the construction of the required new transmission lines and facilities.

**Follow up to RETAAC**

In July 2009 the Public Utility Commission of Nevada opened a Rulemaking Docket, designated as 09-07011, to develop a regulation to renewable energy zones, including transmission plans, renewable developer commitments and other related utility matters in accordance with Assembly Bill 387.

In addition NV Energy has requested approval to construct the On Line to tie the Nevada North and South grids together. This was a key RETAAC recommendation!

In August 2009 the Commission held a pre-hearing conference at which some 12 to 13 interested parties participated. A workshop was held and a regulation adopted in late January 2010 as follows:

A REGULATION relating to energy; designating renewable energy zones; and providing other matters relating hereto.

**Section 1.** Chapter 704 of NAC is hereby amended by adding thereto a new section to read as follows:

1. The Commission designates as renewable energy zones those zones identified in the following map (see Figure 2)

2. A person may petition the Commission to request a revision in the designated Renewable Energy Zones,

3. As used in this section “renewable energy zones” has the meaning ascribed to it in NRS 704.741

Thus the RETAAC identified REZs became part of the Nevada legal structure.

Following a series of workshops and comments by interested parties a Proposed Regulation was drafted in early April 2010 and as of June was still under comment by the parties which include: (a) the PUCN staff; (b) the Bureau of Consumer Protection; (c) NV Energy; (d) Southern Nevada Water Authority; (e) Newmont Mining; (f) Barrick Goldstrick Mines; (g) Great Basin Transmission; (h) Terra-gen Power; (i) Large Scale Solar Association; (j) First Solar; (k) Sierra Club, and (l) Western Resource Advocates.

The highlights of the proposed regulations which are still under discussion are:

1. The load serving utilities which file a 3 year resource plan are to be required to submit an action plan for serving the REZs including studies, permitting, acquisition of rights of way, construction and plans for transmission expansion.

2. Developer financial commitments have been defined.

3. Utility supply plans must detail renewable energy zone transmission plans,

4. Utility plans will have to update REZ capacity and all impacts related to building new transmission to access renewable energy.

5. Utilities will also be required to file 20 year action plans

**Conclusions**

The conceptual purpose for RETAAC was to provide the basis for the load serving utilities with RPS requirements to be able to plan and build as rate based facilities the transmission systems required to access the Renewable Energy Zones. This would represent a change from the current regulatory paradigm which requires that there be minimal if any risk to the ratepayers that there will be a stranded asset – is paid for by ratepayers but under or not utilized.

Nevada is attempting to carefully implement this plan but we are not there yet.