Longview Energy Exchange, LLC
8th BTA Workshop I
Docket No. E-00000B-13-0002

Transmission Plan and Feasibility Study

Presented by Mark Watson on behalf of

Jerry D. Smith
P&R Consulting LP

May 15, 2014
LEE Project Location
LEE Transmission / Plant Functional Framework

- LEE is a 2000 MW wholesale load 12 hrs/day
- Source of 24 GWHr daily pumping load undetermined – preferably renewables
- Plant owners, operators and off-takers undetermined
- Grid operations benefit from LEE Plant development irrespective of ownership
- LEE not interested in being a TO / TP
Longview Transmission Plan

Longview Energy Exchange plans to construct the following 500 kV transmission lines to interconnect its 2000 MW hydroelectric pumped storage project to the Arizona EHV grid by 2021:

- LEE to Peacock interconnecting with Mead to Perkins 500 kV (~50 mi.) and LEE to Yavapai interconnecting with the Navajo Transmission System (~40 mi.) or
- LEE to interconnect with a new Moenkopi to Eldorado line Switchyard (~30 mi.)
Potential Transmission Interconnections

Three preliminary transmission corridors are under consideration:

- A 500 kV line traversing northerly to interconnect with the existing Arizona Public Service owned and operated Eldorado-Moenkopi 500 kV line or a planned and sited new Dine Navajo Transmission Project 500 kV line from Moenkopi to Marketplace.

- A 500 kV line traversing westerly to interconnect with an existing Western Area Power Administration owned and operated 230 kV line from Prescott to Peacock to be upgraded to 500 kV.

- A 500 kV line traversing easterly to interconnect with two Navajo Southern Transmission 500 kV lines owned by participants of the Navajo Generating Plant and operated by Arizona Public Service.
Technical Studies Completed
Highlights of Technical Studies

● WECC 2023 Firmed Resource Study:
  Longview is effective and competitive with gas-fired Wyoming units and BC Hydro units in firming additional 12,000 GWh of renewables in WECC
  [link to study report]

● Longview Market Assessment: proprietary report
  Market is sufficiently robust to generate Longview revenue that yields a financially viable project IRR

● Longview Transmission Feasibility: [link to transmission feasibility]
  Planned Transmission Alternatives are financially viable with technically comparable performance
Transmission Feasibility Study

- Performed by Quanta Technologies
- Used WECC base cases:
  - 2018 HS / 2016 LS for Alt. 1 and 2
  - 2023 HS1a / 2022 LSp1s for Alt. 2 and 3
- Adjusted pre-project load by ± 2000 MW to account for LEE gen / load
- Power flow only
Market Scenarios Studied

Summary of Market Scenarios (MW) Load Adjustments

<table>
<thead>
<tr>
<th>Market Location</th>
<th>LEE Generation 2000 MW</th>
<th>LEE Pumping 2000 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Scenario</td>
<td>1* 2 3</td>
<td>1* 2 3</td>
</tr>
<tr>
<td>East¹</td>
<td>700 1,400 600</td>
<td>-720 -1,400 -600</td>
</tr>
<tr>
<td>West²</td>
<td>1,300 600 1,400</td>
<td>-1,270 -600 -1,400</td>
</tr>
<tr>
<td>Total</td>
<td>2,000 2,000 2,000</td>
<td>-1,990 -2,000 -2,000</td>
</tr>
</tbody>
</table>

¹ East includes Arizona, New Mexico (and Colorado in Scenarios 2 and 3)
² West includes IID, LADWP, Nevada, Southern California, SDG&E
* Load adjusted uniformly in East & West to balance LEE Generation/Pump Load
Potential Transmission Interconnections Studied

To: Existing Moenkopi – Eldorado 500 kV Line

Alt 2

To: ExistingNavajo Southern Transmission System (Yavapai)

Alt 3
Study Conclusions

- No significant performance difference between the pre-project and post-project cases

- Minor overload and voltage violations are present in both pre-project and post-project cases

- Utility mitigation of pre-project violations are expected to also resolve post-project violations
Study Conclusions (cont.)

- Alt 1 eliminated from consideration after Market Scenario 1 studied
  - poorest performing option
  - twice the capital cost
  - uncertainty of 500 kV transformation at Round Valley and Prescott substation sites
- Alt 2 and 3 are financially viable ($360M - $394M) with comparable performance
- Alt 3 slight performance advantage over Alt 2
Next Steps

- Transmission Interconnection Studies
- WECC Phased Planned Project Studies
- Environmental Evaluations of Potential Line Routes
- Certificate of Environmental Compatibility Application for Transmission Lines with the Arizona Power Plant and Transmission Line Siting Committee
Accessible Market Hubs -2020

1 WECC Path Reports – Paths 22, 23, 49, 50, and 51

8th BTA Workshop I - May 15, 2014