Lower Rio Grande Valley (LRGV) 345 kV Project Analysis

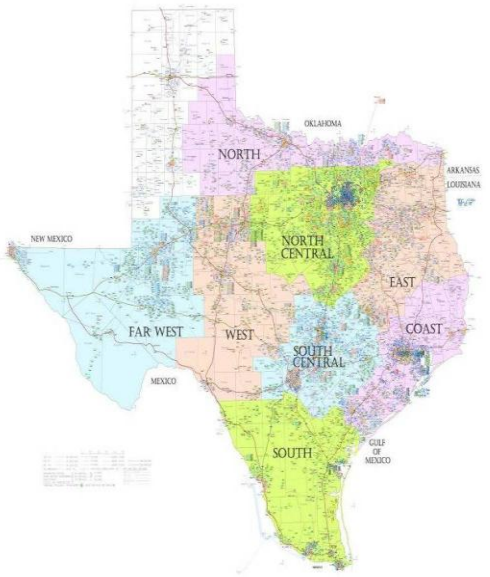
RPG Meeting

May 13, 2011

Lower Rio Grande Valley 345 kV Project

AEPSC Proposal

- Construct a new 148 mile, 345kV transmission line from Laredo Lobo to Rio Bravo to Del Sol, a new 345kV switching station on the west side of the LRGV, utilizing 2-954 ACSR conductor on double-circuit capable structures, and a 24 ohm 3600 amp series capacitor on the Lobo 345 kV circuit
- Construct a new 15 mile, 345kV transmission line from Del Sol to North Edinburg utilizing 2-954 ACSR conductor on double-circuit capable structures
- Construct a new 15 mile, 345kV transmission line from Del Sol to Frontera utilizing 2-954 ACSR conductor on double-circuit capable structures
- Estimated to cost approximately $380 million

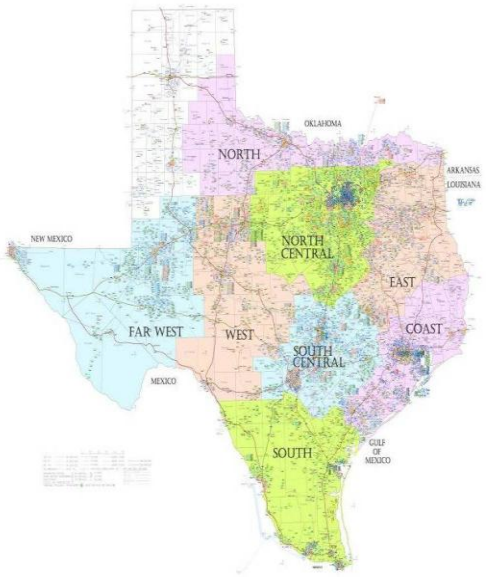


Study models & Criteria

- 2016 Summer Peak base case based on the latest (April 28, 2010) 2011 SSWG Data set B
- Two wind farms with recent signed generator interconnections added to the base case and dispatched @ 10% capacity:

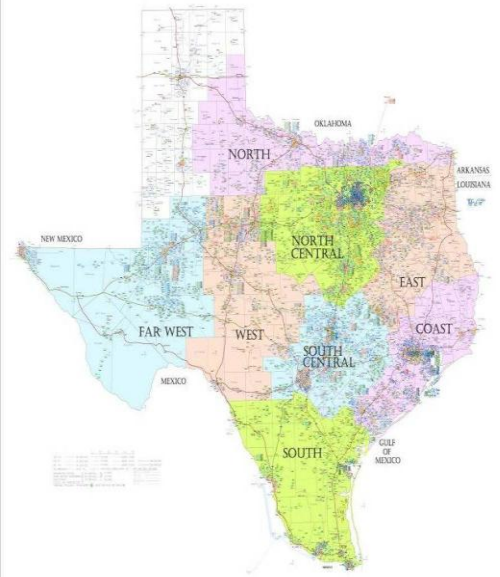
  Los Vientos 400 MW Wind in Cameron County

  Magic Valley 200 MW Wind in Willacy County
- Silas Ray unit 5 turned off
- Contingencies:
  - the loss of a transmission line, with the largest LRGV generation station out of service. (N-1 + G-1) for reliability criteria
  - the loss of a transmission line, with the prior outage (maintenance outage) of a transmission line (N-1-1) will be studied to determine the transfer capability but not used as a reliability criteria

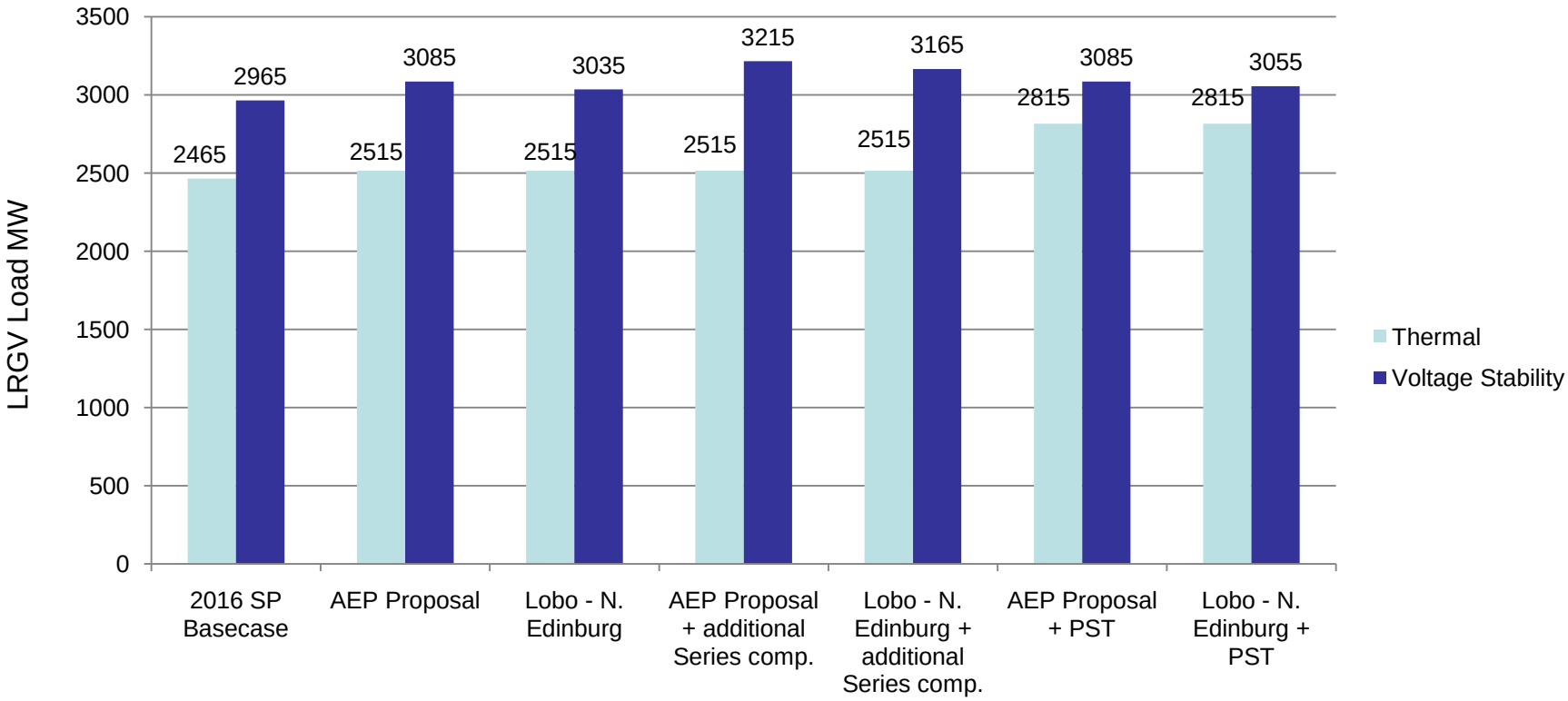


Project Options under study

- **Option 1** - AEP proposal
- **Option 2** – Construct approximately 125 mile, 345kV transmission line from Laredo Lobo to North Edinburg, utilizing 2-954 ACSR conductor on double-circuit capable structures
- **Option 3** – Option 1 with additional 24 ohm 3600 amp series capacitor on the Lobo 345 kV circuit
- **Option 4** – Option 2 with additional 24 ohm 3600 amp series capacitor on the Lobo 345 kV circuit
- **Option 5** - Option 1 with 800 MVA 345 kV, ± 30º Phase shifting transformer @ Lobo
- **Option 6** – Option 2 with 800 MVA 345 kV, ± 30º Phase shifting transformer @ Lobo

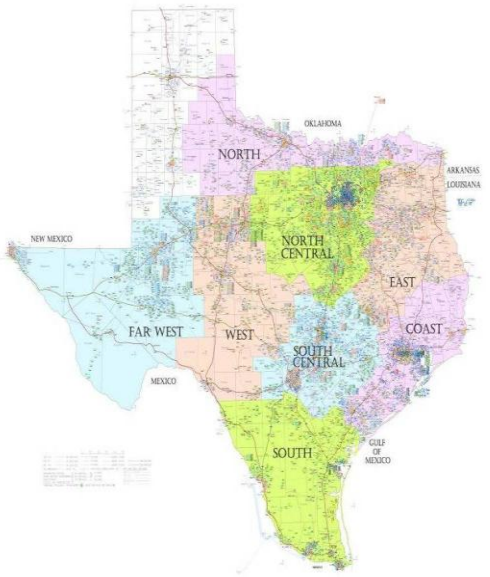


Preliminary Results for N-1 + G-1



Other Potential Study Options ?

- Potential HVDC or HVDC Light into the LRGV with additional 138 kV upgrades
- Alternative 345 kV (or higher voltage level) path to the LRGV
- Study the combined AEP Proposal + Sharyland/BPUB Cross Valley Proposal



Questions?