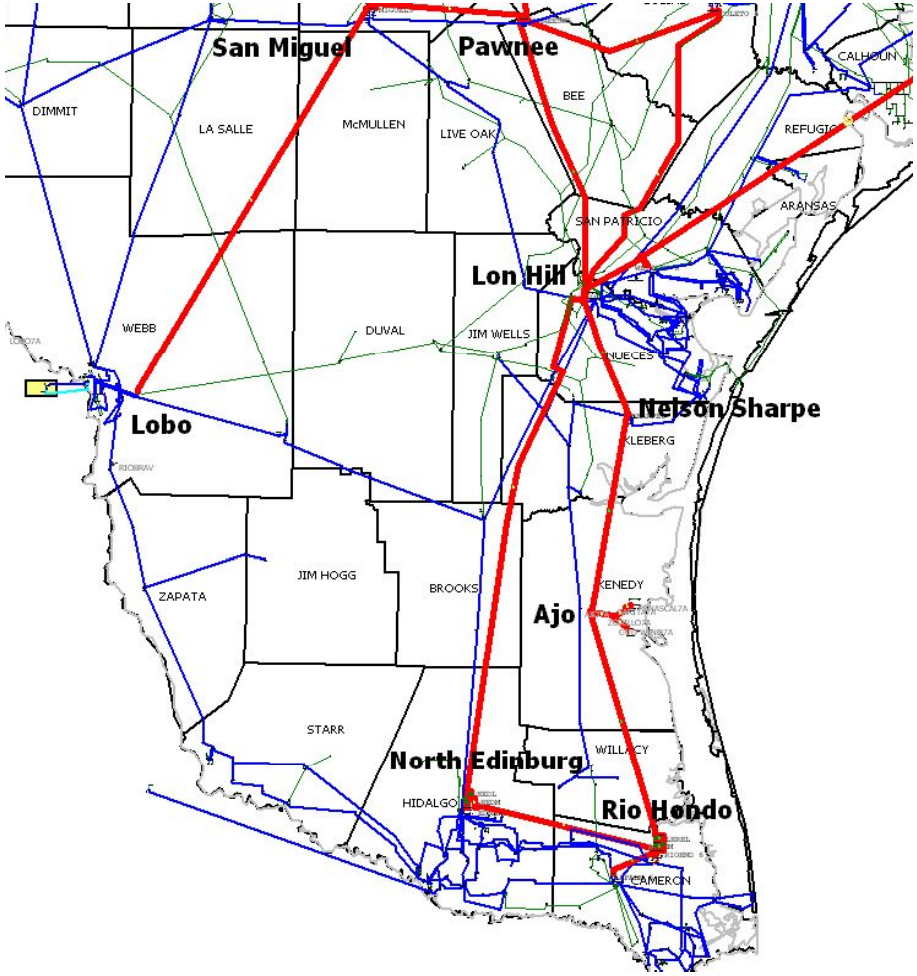
Laredo to Lower Rio Grande Valley Regional Planning Group Project

Jeff Billo
Manager, Mid-Term Planning

Board of Directors Meeting
September 20, 2011

LRGV Import Background



- **The Lower Rio Grande Valley (LRGV) is currently served by:**
  - (2) 345 kV lines,
  - (3) 138 kV lines,
  - approximately 1700 MW natural gas generation, and
  - 150 MW DC tie to Mexico
- **On February 3, 2011 the LRGV experienced load levels greatly exceeding the previous planning forecast for 2011, highlighting the need for additional transmission infrastructure to serve the area**

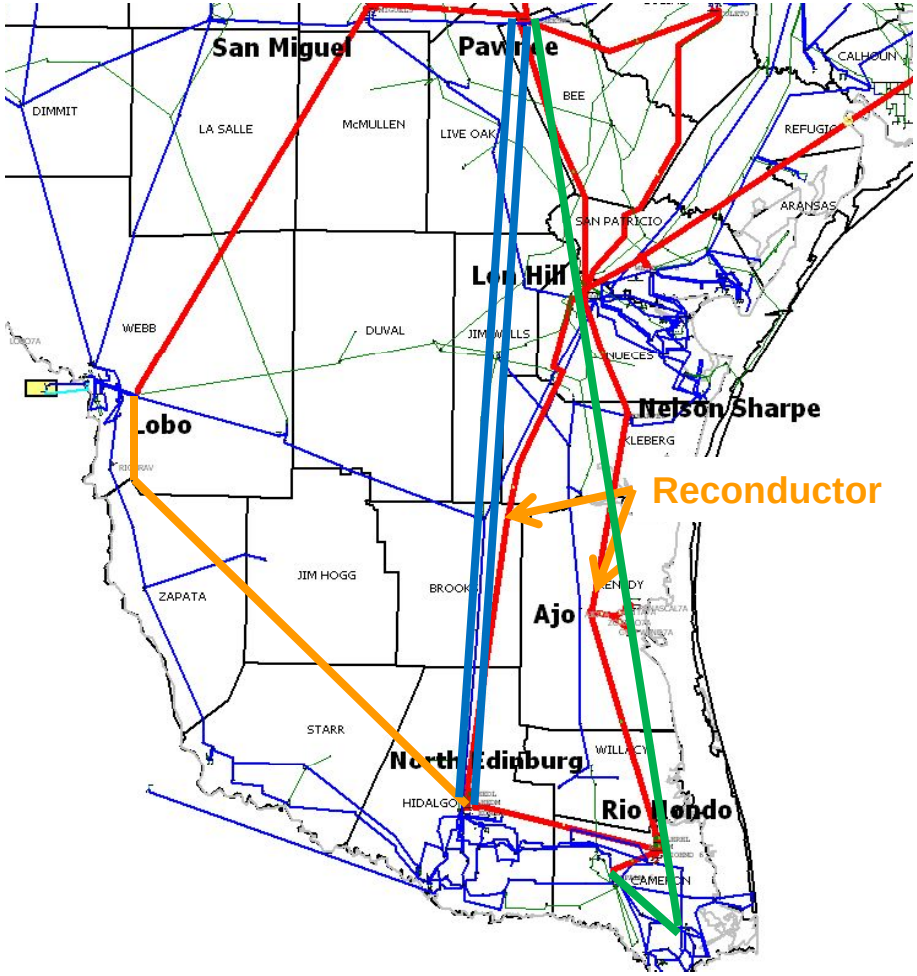
RPG Review

- **AEPSC proposed initial project in March, following February event (project had been in planning discussions well before)**
- **ERCOT and AEPSC studies showed ERCOT planning criteria would be exceeded in 2016 without system upgrades**
- **RPG Comment Period was held during April (and a second comment period was held on the final options in August)**
  - RPG participants submitted alternative transmission solutions and ERCOT identified additional alternatives
  - Several commenters discussed the potential for generation solutions; ERCOT does not have the authority to implement generation additions but does have planning criteria obligations
- **AEPSC modified its proposal to enable the project to meet 2016 requirements**
- **Status reports on the ERCOT Independent Review were discussed at each monthly RPG meeting**
- **TAC voted unanimously to endorse ERCOT recommendation**

Independent Review Study Approach

- **Evaluated 2016 summer peak SSWG case and 2020 summer peak case from the ERCOT/ DOE long-term study**
  - Modified cases to use latest load forecasts from AEPSC
  - Removed 250 MW load addition in Brownsville (Brownsville needs are being analyzed in separate RPG review)
  - Set nearby wind output at 10% of capacity (based on 2010 historical data, 10th percentile output of coastal wind plants)
- **Performed AC contingency analysis and steady-state voltage stability analysis**
  - With largest unit (combined cycle in LRGV) out of service per ERCOT planning criteria
- **Focused analysis on 2016 reliability; also evaluated 2020 reliability and N-1-1 (maintenance outage) scenarios**
- **Nine distinct alternatives were evaluated and narrowed to three final alternatives**

Three Project Alternatives for Final Consideration



Option 1R: $525 million

- Lobo-Rio Bravo-N. Edinburg 163 mile single circuit 345 kV line with 50% series compensation
- Energized reconductor of Lon Hill-N. Edinburg and Lon Hill-Rio Hondo 345 kV lines
- Reconfigure N. Edinburg and Rio Hondo series capacitors

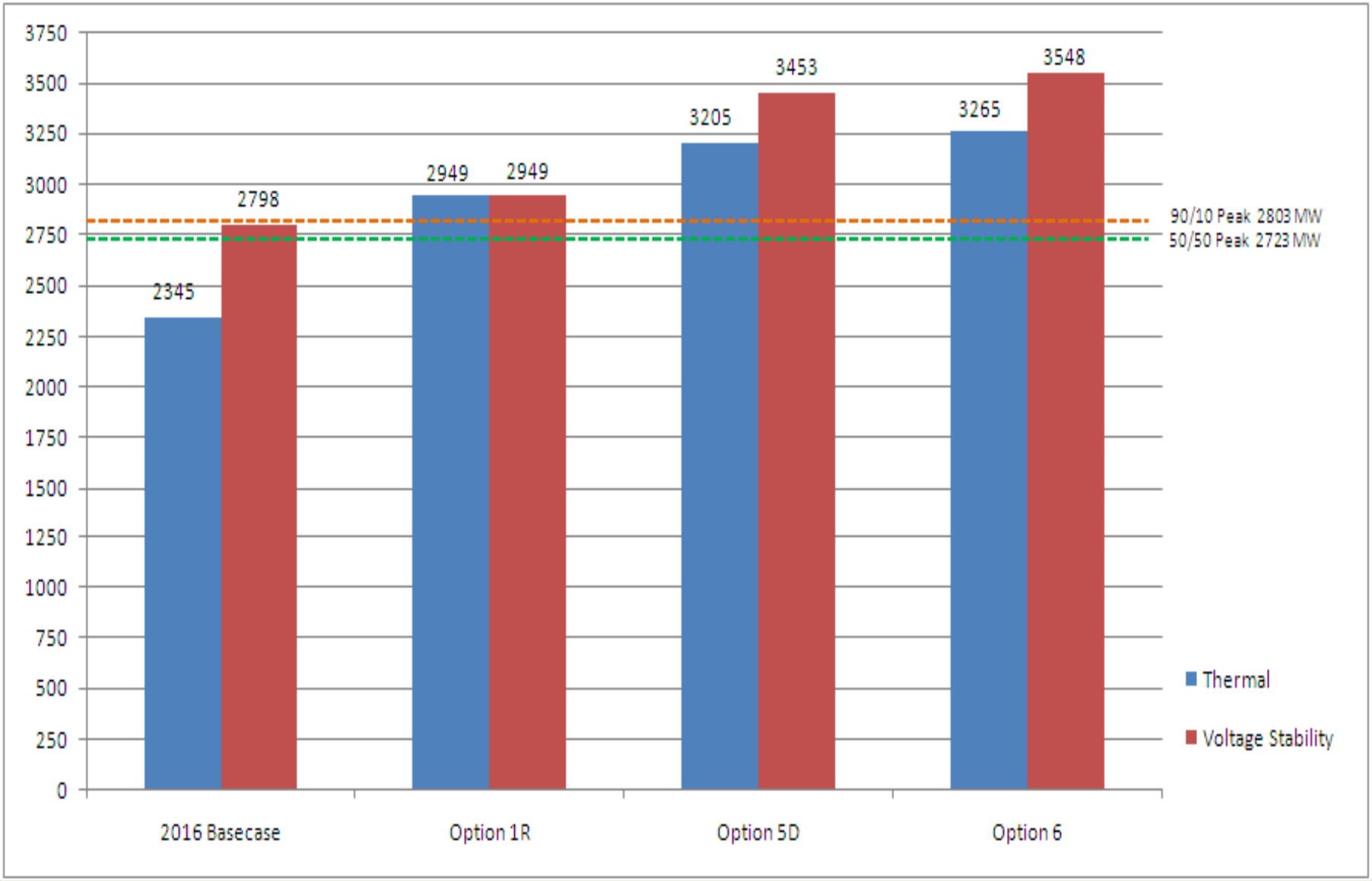
Option 5D: $508 million

- Pawnee-N. Edinburg 200 mile double circuit 345 kV line with 50% series compensation on each circuit

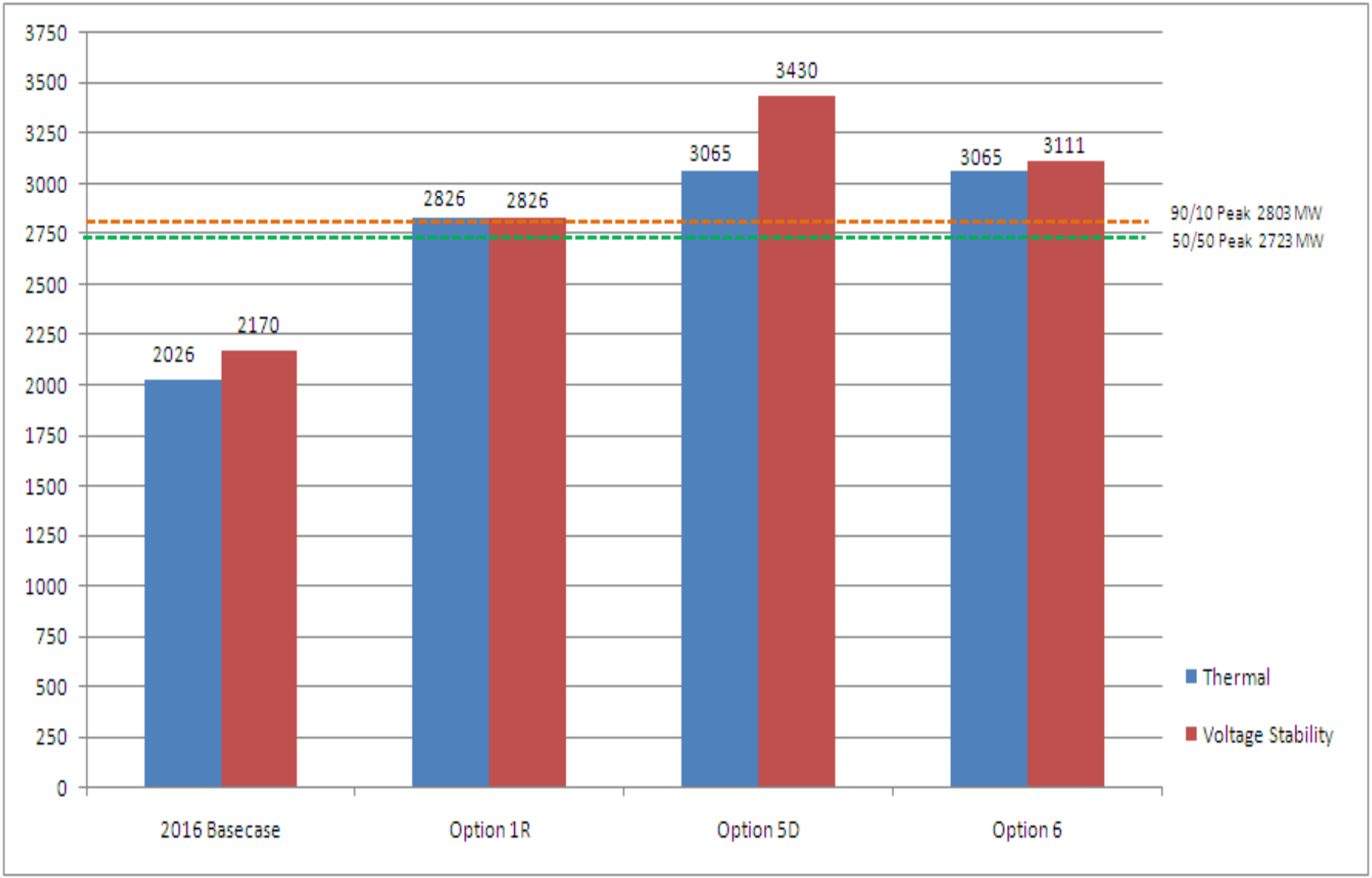
Option 6: $659 million

- Pawnee-Loma Alta 220 mile 1000 MW classic HVDC
- Loma Alta 345 kV bus with (2) 345/138 kV autotransformers
- Loma Alta-La Palma 14 mile 345 kV line

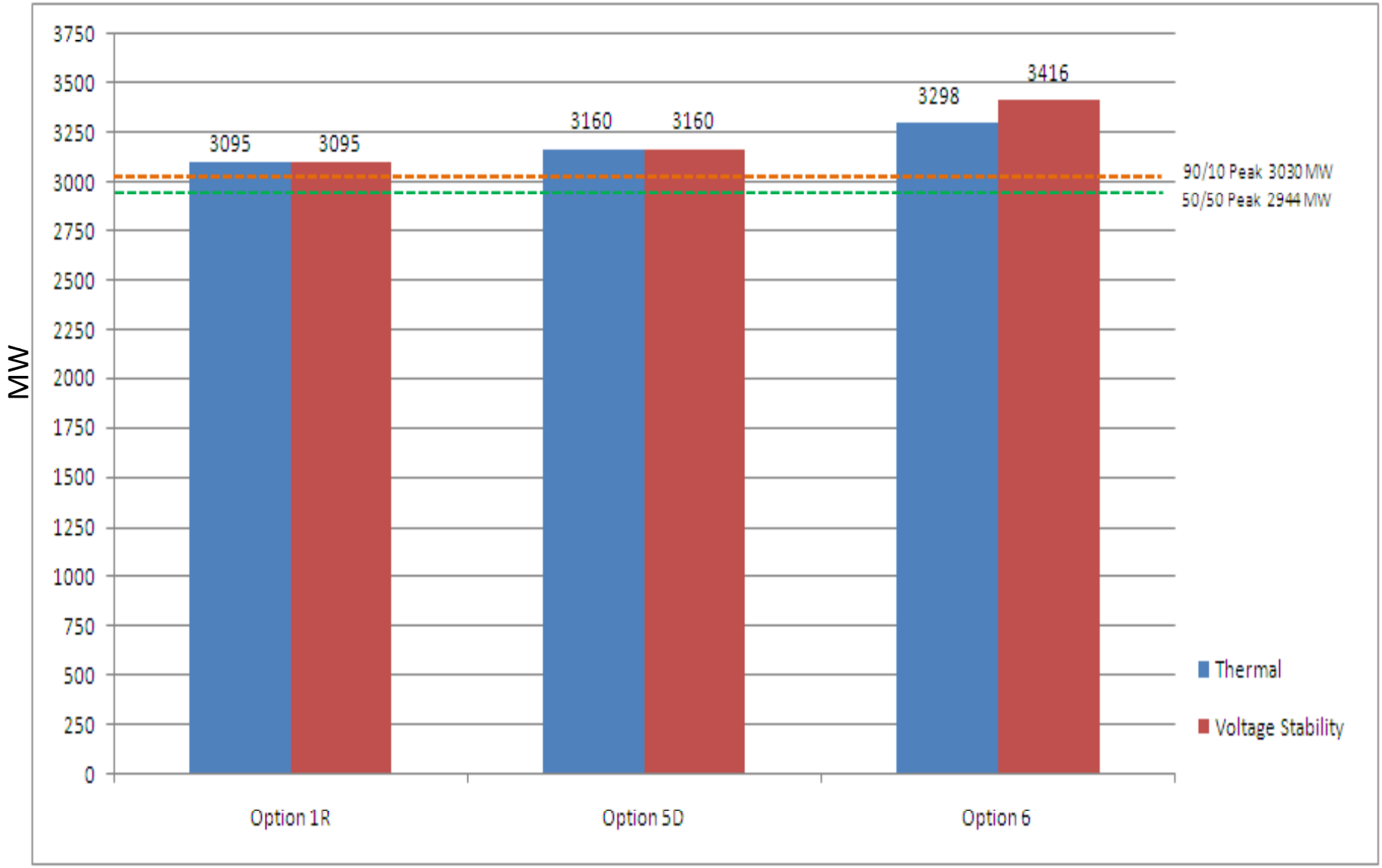
2016 LRGV Load Serving Capability Results (G-1 + N-1)



2016 LRGV N-1-1 Load Serving Capability Results



2020 LRGV Load Serving Capability Results (G-1 + N-1)



ERCOT Independent Review Results

	Option 1R	Option 5D	Option 6
Project cost in 2016	$ 525 million	$ 508 million	$ 659 million
2016 load serving capability (MW)	2949	3205	3265
2016 N-1-1 (Maintenance outages) load serving capability	2826	3065	3065
Additional system upgrades needed in 2016	Raymondville-Harlingen Switch 69 kV (18.1 miles)	Lon Hill-Smith-Edroy 69 kV (11.6 miles) and Raymondville-Harlingen Switch 69 kV (18.1 miles)	Lon Hill-Smith-Edroy-Mathis 69 kV (25.4 miles) and Loma Alta-South Carbide 138 kV (1.1 miles)
2020 load serving capability (MW)	3095	3160	3298
Potential Project cost in 2020 (including infrastructure improvements for Laredo and Brownsville)	$627 million	$600 million	$709 million
Geographical diversity of the new line	Excellent	Good	Good
Total new ROW required (2016/2020)	~163/~202 miles	~200/~244 miles	~234/~264 miles
Rehabilitation of existing Lon Hill-Rio Hondo and Lon Hill-North Edinburg 345 kV lines	Yes	No	No
Infrastructure Improvement in the area of new generation interconnection projects	Good	None	Fair
Projected in-service date (estimation provider)	2016 (AEPSC)	2017 (AEPSC)	2016 (Sharyland)

Conclusions

- **ERCOT is requesting that the ERCOT BOD endorse the following improvements associated with Option 1R:**
  - Construct a new 163 mile, single circuit 345 kV line from Lobo to Rio Bravo to North Edinburg, utilizing 2-954 ACSR conductor on double-circuit capable structures, and (2) approximately 24 ohm 3600 amp series capacitors on the Lobo 345 kV circuit (no additional substation equipment would be installed at Rio Bravo at this time but may be added in the future as needed to support the Laredo area needs)
  - Energized reconductor the existing Lon Hill-Nelson Sharpe-Ajo-Rio Hondo 345 kV line to 1988/2426 MVA normal/emergency rating to achieve increased rating before peak of 2016
  - Energized reconductor the existing Lon Hill-North Edinburg 345 kV line to 1988/2426 MVA normal/emergency rating to achieve increased rating before peak of 2016
  - Reconfiguration of the North Edinburg and Rio Hondo series capacitors such that the MVA rating is at least 2000 MVA and the compensation level is 25% of each respective circuit
- **Estimated Capital Cost = $525M**
- **ERCOT is also asking that the BOD deem the project critical to reliability in accordance with PUCT Substantive Rule 25.101 (b)(3)(D)**

PUCT Substantive Rule 25.101 (b)(3)(D)

- ***Projects deemed critical to reliability. Applications for transmission lines which have been formally designated by a PURA §39.151 organization as critical to the reliability of the system shall be considered by the commission on an expedited basis. The commission shall render a decision approving or denying an application for a certificate under this subparagraph within 180 days of the date of filing a complete application for such a certificate unless good cause is shown for extending that period.***

- **Designation needed to ensure that project construction can be completed prior to summer peak 2016**

Questions?