

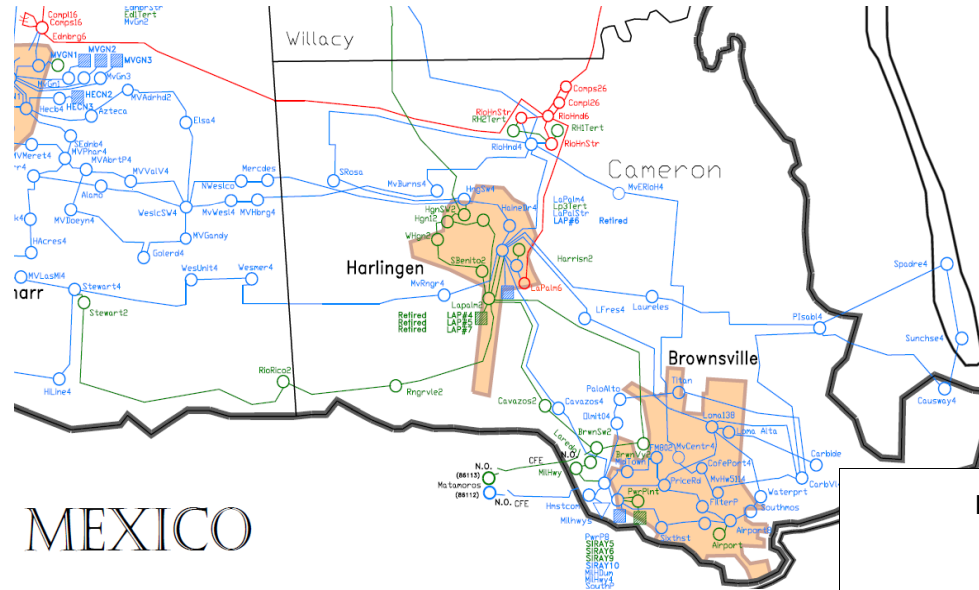


Cross Valley 345 kV Regional Planning Group (RPG) Project

Jeff Billo
Manager, Mid-Term Planning

Board of Directors Meeting
January 17, 2012

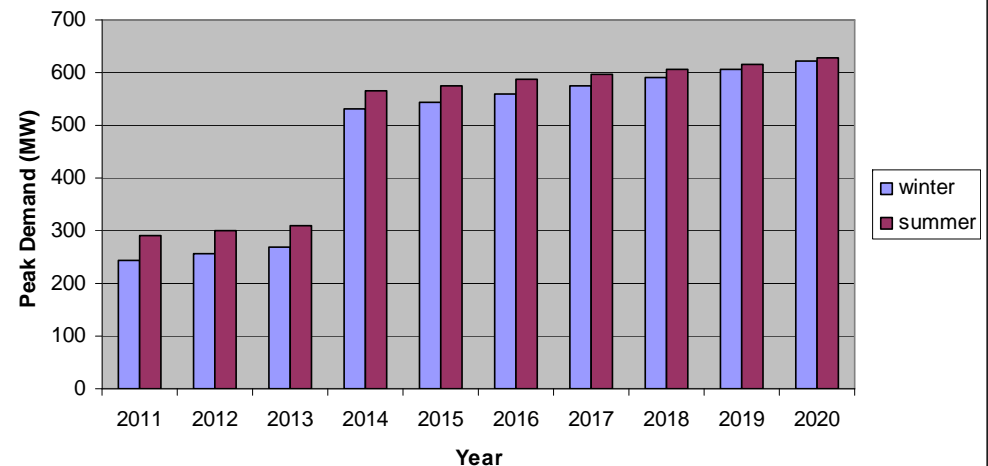
Cross Valley Project Background



Brownsville area is connected to ERCOT system via (4) 138 kV lines and is served by the Silas Ray plant (~120 MW)

Brownsville Public Utilities Board (BPUB) projected 250 MW of industrial load additions at the Port of Brownsville in 2014

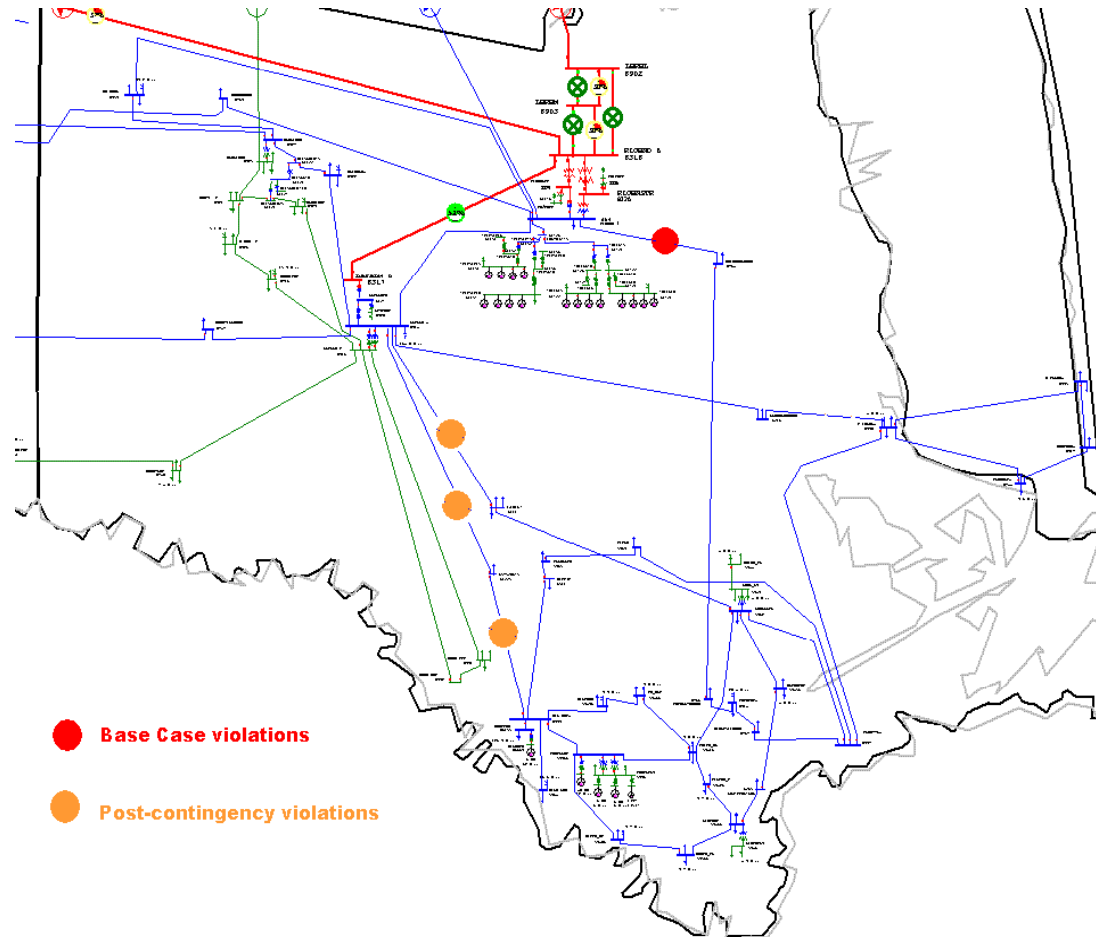
Projected Winter & Summer Peak Demand, Industrial Load Growth, BPUB



- **Sharyland Utilities (SU) and BPUB proposed Cross Valley 345 kV project to address normal load growth in East Valley, Port of Brownsville industrial load additions, and maintenance outage issues**
- **RPG participants could not come to consensus about appropriateness of including new 250 MW industrial load addition in the study case (modeled at Loma Alta 138 kV substation)**
- **ERCOT performed Independent Review of project**
 - **Analysis conducted with and without 250 MW load addition**
 - **Analysis focused on steady-state reliability needs in 2016**
 - **Long-term (2020) sensitivity analysis performed**

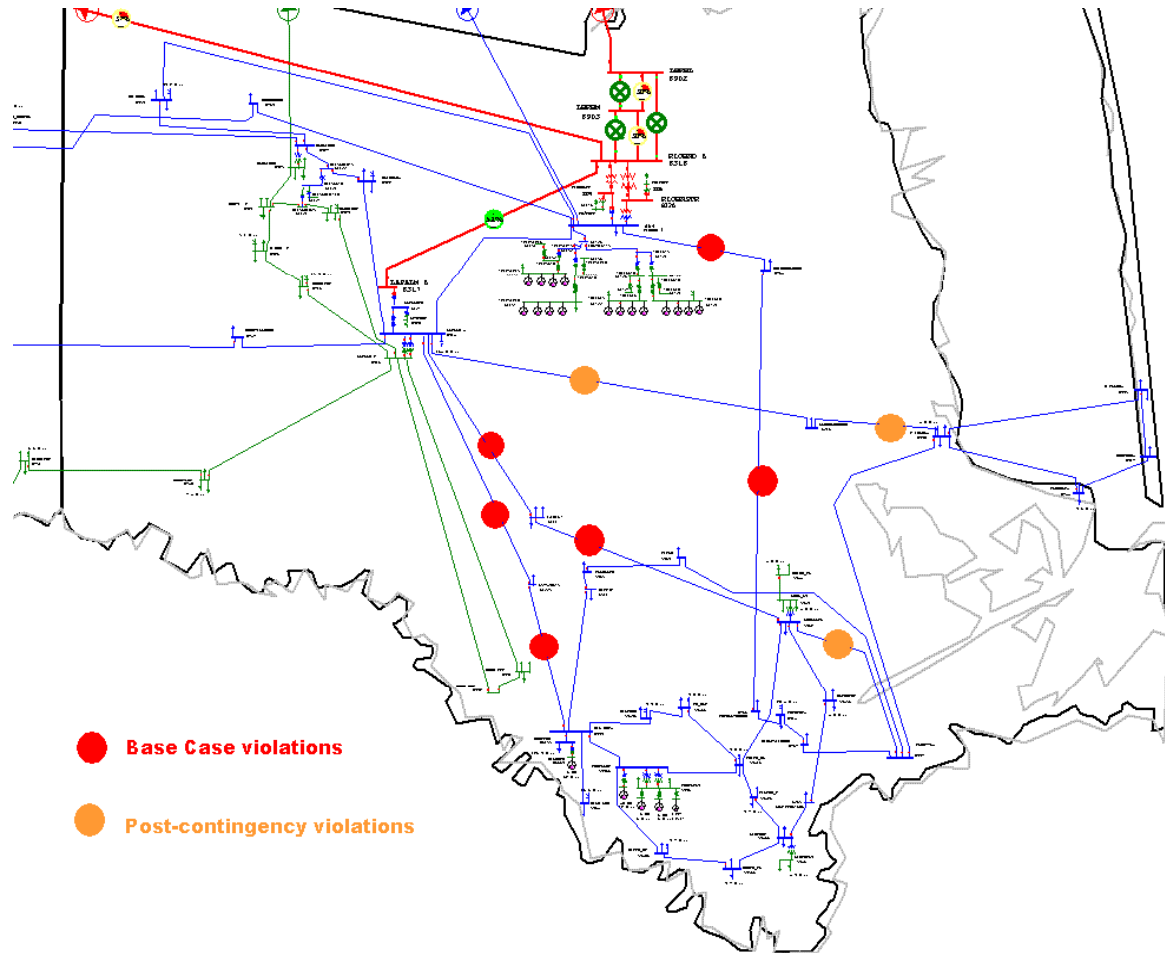
Independent Review Reliability Analysis

- **Without 250 MW load additions there was one N-0 thermal violation and multiple N-1 violations for 2016:**



Independent Review Reliability Analysis

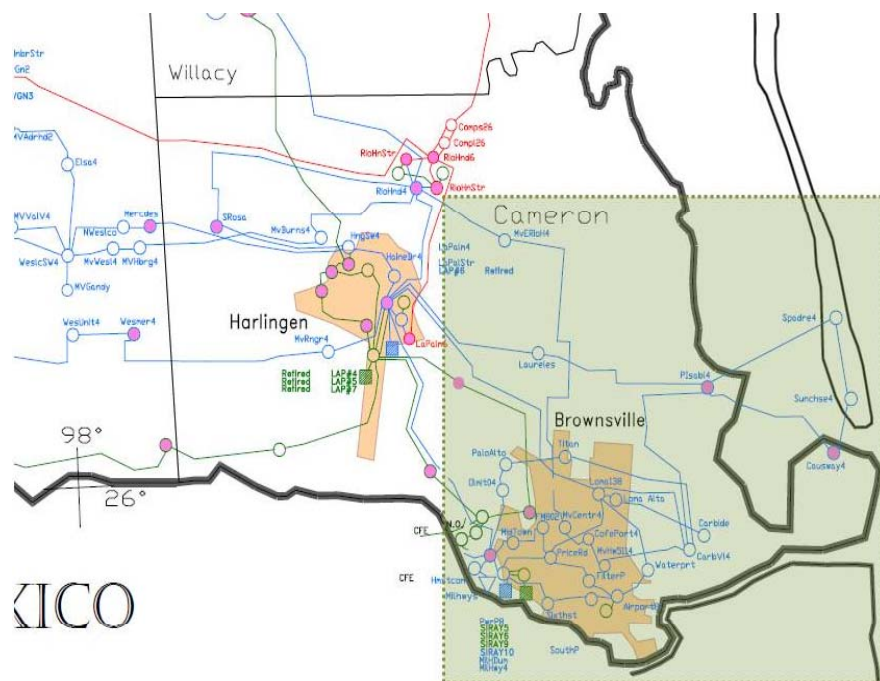
- **With 250 MW load additions there were multiple N-0 and N-1 thermal violations for 2016:**



Reliability Analysis: N-1-1

- **Multiple N-1-1 (Category C) contingency overloads**

- Highest post-contingency overload is 167.2% of emergency rating (12 lines loaded >120%) - without 250 MW load additions



~175 MW would need to be shed following the first contingency

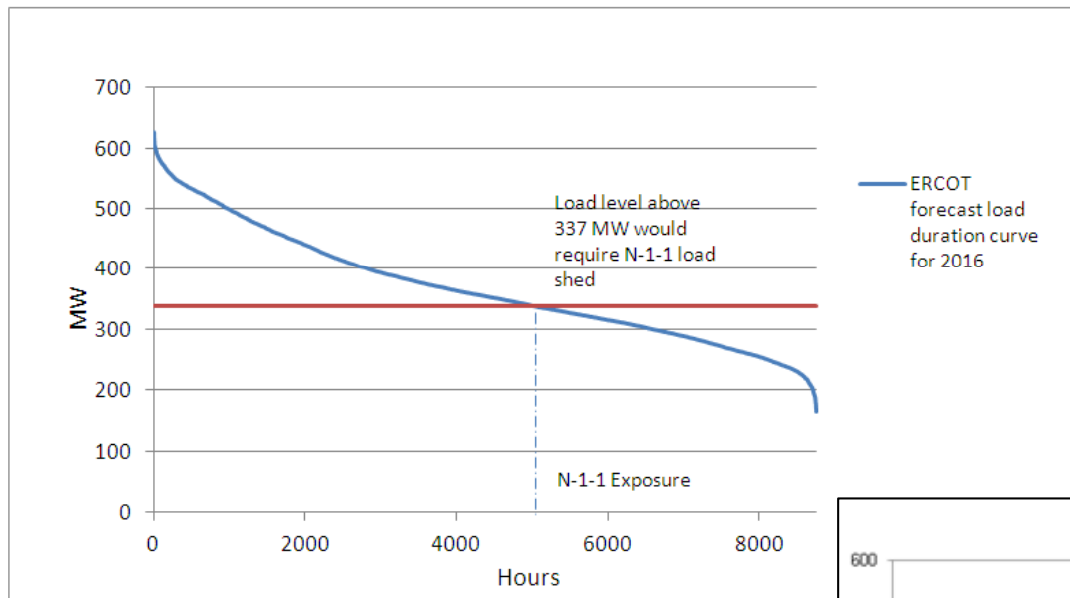
Additional ~190 MW would need to be shed following the second contingency

80% (290 MW) of the 365 MW total load shed needed for N-1-1 would be in the shaded area

2016 peak in this shaded area is 627 MW

- ❖ Load shed allowed under NERC and ERCOT planning criteria for Category C contingency events, but exposure and extent of load shed is not practical or desirable

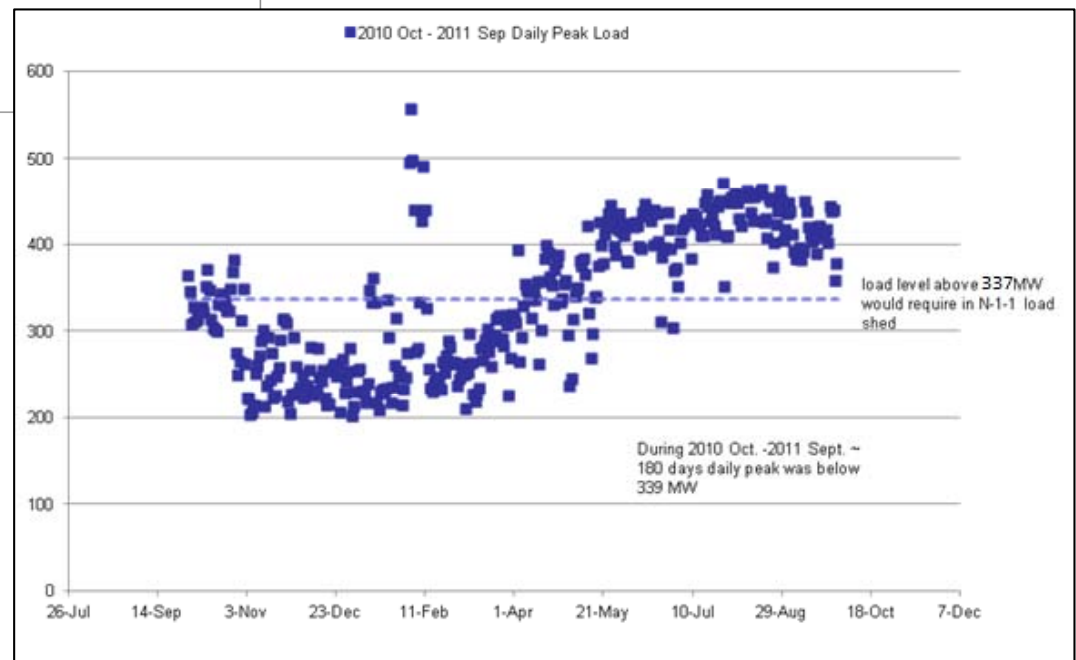
N-1-1 Load Shed Exposure



2016 load duration curve for Brownsville area showing N-1-1 load shed threshold

2010-11 actual daily peaks for Brownsville area

Cross Valley 345 kV line needed to reduce N-1-1 load shed risk



Long Term Considerations

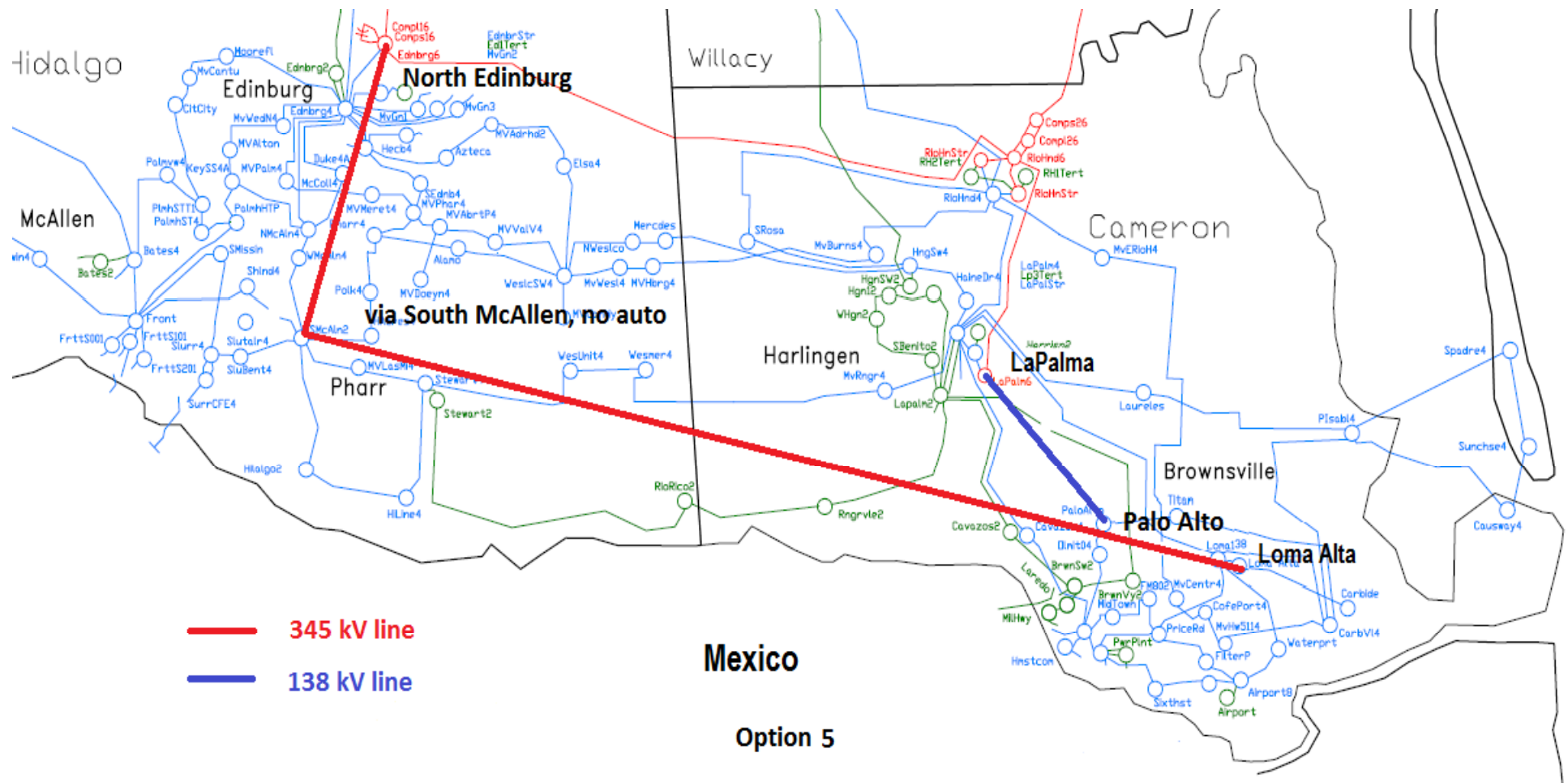
- **2020 ERCOT Long Term Study Department of Energy case analyzed to determine long-term reliability needs in Valley**
- **Results showed multiple west Valley 138 kV line overloads or near overloads under G-1 + N-1 conditions**
- **A North Edinburg to South McAllen 345 kV line would solve most of these constraints**
 - **Resolves ~ \$95M worth of 138 kV line upgrades**
- **Conclusion:**
 - **Any Cross Valley 345 kV line should be routed in proximity to South McAllen to account for long term needs in the west Valley area**

Study Conclusions

- **A Cross Valley 345 kV line, routed in proximity to the South McAllen substation, is needed even without 250 MW load addition in Brownsville**
- **Multiple alternatives studied**
 - “Option 5” determined to be best alternative:
 - Construct a new La Palma-Palo Alto 138 kV line (~12 miles) on new ROW with a rating of at least 215 MVA
 - Construct a new North Edinburg-Loma Alta 345 kV line (double circuit capable with one circuit in place) routed in proximity to the existing South McAllen Substation (~106.5 miles) on new ROW
 - Construct a new 345kV bus at the Loma Alta station with one 345/138kV autotransformer

Cost estimate = \$274.7M

Option 5



Port of Brownsville Industrial Load Additions

- **RPG did not come to consensus about appropriateness of including the 250 MW industrial load additions in the study case**
 - BPUB and Brownsville Economic Development Council (BEDC) indicated that load modeled is representative of previous industrial customer projects that have chosen to locate elsewhere due to lack of electric infrastructure in area
 - Has occurred multiple times according to BEDC
 - Texas Industrial Energy Consumers commented that it would be inappropriate to plan transmission facilities for the addition of “speculative future loads”
- **TDSPs have responsibility for providing forecasts of discrete load addition assumptions in ERCOT planning models**
 - ERCOT performs system-wide forecasts
 - ERCOT has not historically judged the validity of specific load additions
- **250 MW load addition in Port of Brownsville assumed in ERCOT’s recommendation**
- **A lower cost option (\$234.8M) was identified for the study case that did NOT include the 250 MW load addition**
 - However, this option would not sustain as much long-term load growth in the Brownsville area without additional transmission upgrades
 - This option was not supported by any stakeholder during extensive TAC discussion

TAC Discussion and Recommendation

- **TAC voted to support Option 5 (28 For / 2 Against)**
 - Directed ROS to “review the planning process relative to validating load forecasting inputs of discrete load additions and determine whether process improvements need to be made.”

Endorsement

- **ERCOT requests that the ERCOT BOD endorse the following improvements associated with Option 5:**
 - Construct a new La Palma-Palo Alto 138 kV line (~12 miles) on new ROW with a rating of at least 215 MVA
 - Construct a new North Edinburg-Loma Alta 345 kV line (double circuit capable with one circuit in place) routed in proximity to the existing South McAllen Substation (~106.5 miles) on new ROW
 - Construct a new 345kV bus at the Loma Alta station with one 345/138kV autotransformer

Cost estimate = \$274.7M

- **ERCOT also asks that the BOD deem the North Edinburg-Loma Alta 345 kV line critical to reliability in accordance with PUCT Substantive Rule 25.101 (b)(3)(D)**
 - In order to expedite the construction of the line to reduce the N-1-1 reliability risk

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.***

Questions?