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# American Electric Power Service Corporation (AEPSC) Laredo Area Upgrade Project (26RPG004) – ERCOT Independent Review (EIR) Status Update

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Regional Planning Group (RPG) Meeting
November 3, 2026

# Introduction

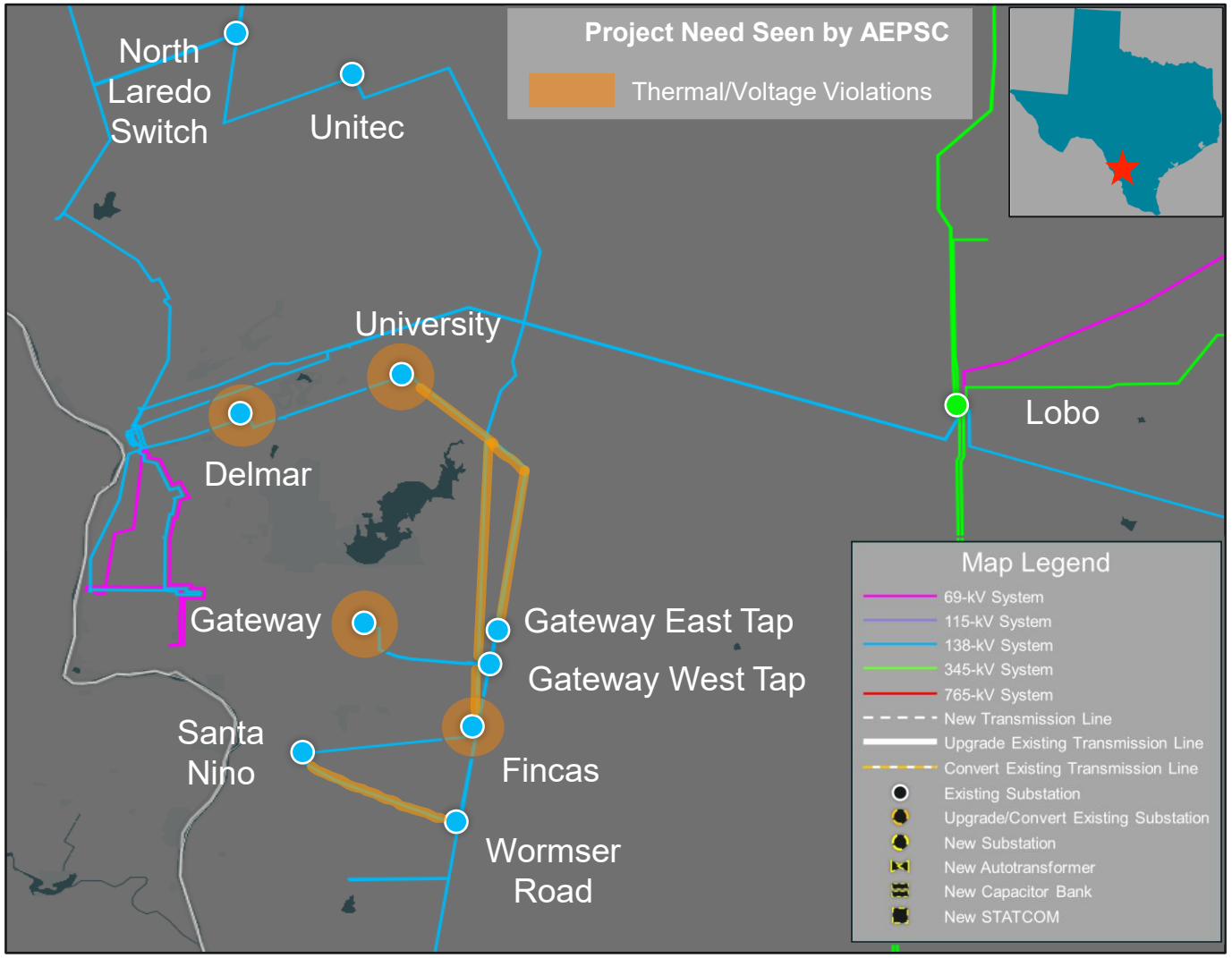
American Electric Power Service Corporation (AEPSC) submitted the Laredo Area Upgrade Plan Project (26RPG004) for Electric Reliability Council of Texas' (ERCOT) Regional Planning Group (RPG) review in February 2026

- This is a Tier 2 project with an estimated cost of approximately $178.0 million and will require a Certificate of Convenience and Necessity (CCN)
- Estimated in-service date (ISD) is September 2029
- Addresses the thermal overloads and voltage violations seen by AEPSC in the Webb County in the South Weather Zone

This project is currently under ERCOT Independent Review (EIR)

- AEPSC presented a project overview and ERCOT provided the EIR scope at the April 2026 RPG Meeting
- ERCOT provided EIR status updates in May 2026, June 2026, July 2026, Sep 2026, Oct 2026 RPG Meetings

# Recap: Study Area Map with Project Needs Seen by AEPSC



# Study Assumptions

## Study Region

- The project is located in the Webb County in the South Weather Zone and all transmission elements in counties those are electrically close were monitored

## Steady-State Base Case

- Final 2025 Regional Transmission Planning (RTP) 2030 summer peak load case, published on Market Information System (MIS) on December 22, 2025, was updated to construct the study base case

## Transmission Updates

- New transmission projects (listed in Appendix A), based on February 2026 Transmission Project and Information Tracking (TPIT) report and recently approved RPG project, was added to the base case

## Generation Updates

- New generation (listed in Appendix B) that met ERCOT Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) before the September 2029 (ISD) in the study area at the time of the study, but not already modeled in the RTP cases, was added to the case based on February 2026 Generator Interconnection Status (GIS) report published in MIS in March 2026
- All generation was dispatched consistent with the 2025 RTP methodology
- All recent retired/indefinitely mothballed units were reviewed and opened (turned off), if not already reflected in the 2025 RTP Final cases

## Load and Reserve Updates

- New Officer Letter Loads, confirmed by Attestation Letter from AEPSC, added in the study area approximately 490 MW
- The reserve will be kept consistent with the 2025 RTP

# Contingencies & Criteria

## Contingencies for Study Region

- NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Criteria
  - P0 (System Intact)
  - P1, P2-1, P7 (N-1 conditions)
  - P2-2, P2-3, P4, and P5 (Extra High Voltage (EHV) only)
  - P3: G-1+N-1 (G-1: list in Appendix C)
  - P6-2: X-1+N-1 (X-1: list in Appendix C)

## Criteria

- Monitor all 60-kV and above busses, transmission lines, and transformers in the study region (excluding generator step-up transformers)
- Thermal
  - Use Rate A for normal conditions
  - Use Rate B for emergency conditions
- Voltage
  - Voltages exceeding their pre-contingency and post-contingency limits
  - Voltage deviations exceeding 8% on non-radial load buses

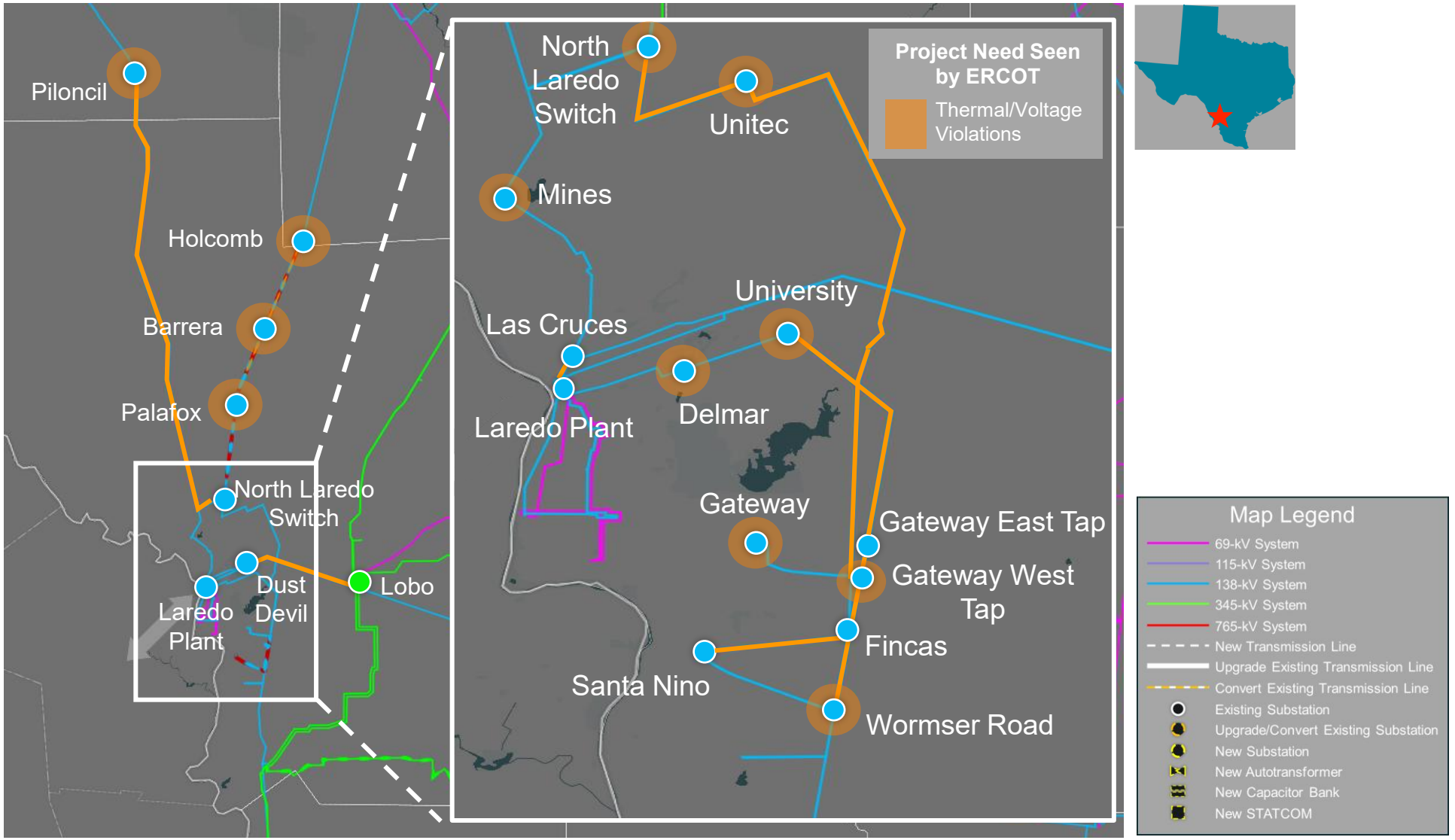
# Preliminary Results of Reliability Assessment – Base Case

ERCOT conducted steady-state load flow analysis for the study base case according to the NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Criteria to identify the project need

| Contingency Category | Thermal Overloads | Voltage Violations | Unsolved Power Flow |
|---|---|---|---|
| P0: N-0 | None | None | None |
| P1, P2-1, P7: N-1 | 7** | 9** | 1** |
| P2, P4, P5 | 1 | 0 | 0 |
| P3: (G-1+N-1)* | 10** | 20** | 6** |
| P6-2: (X-1+N-1)* | 8** | 13** | 2** |

* See Appendix C for the list of G-1 generators and X-1 transformers being tested
** Violations seen in the base case under N-1 events were also seen under (G-1+N-1) and (X-1+N-1) events

# Recap: Study Area Map with Project Needs Seen by ERCOT



# Status Update

## Studies performed since the October RPG meeting

- Cost Estimate and Feasibility Assessment to identify the Preferred Option
- Congestion Analysis of the Preferred Option
- Generation Addition Sensitivity Analysis of the Preferred Option
- Load Scaling Sensitivity Analysis of the Preferred Option

# Preliminary List of Options Considered for Evaluation

ERCOT is considering and evaluating the following options to resolve the reliability violation seen in the study area by ERCOT:

- Option 1 – AEPSC Proposed Project
- Option 1A – ERCOT Alternative Option
- Option 2 – AEPSC Alternative Option
- Option 3 – AEPSC Alternative Option
- Option 4 – ERCOT Alternative Option
- Option 5 – ERCOT Alternative Option
- Option 5A – ERCOT Alternative Option
- Option 6 – ERCOT Alternative Option
- Option 7 – ERCOT Alternative Option
- Option 8 – ERCOT Alternative Option
- Option 9 – ERCOT Alternative Option

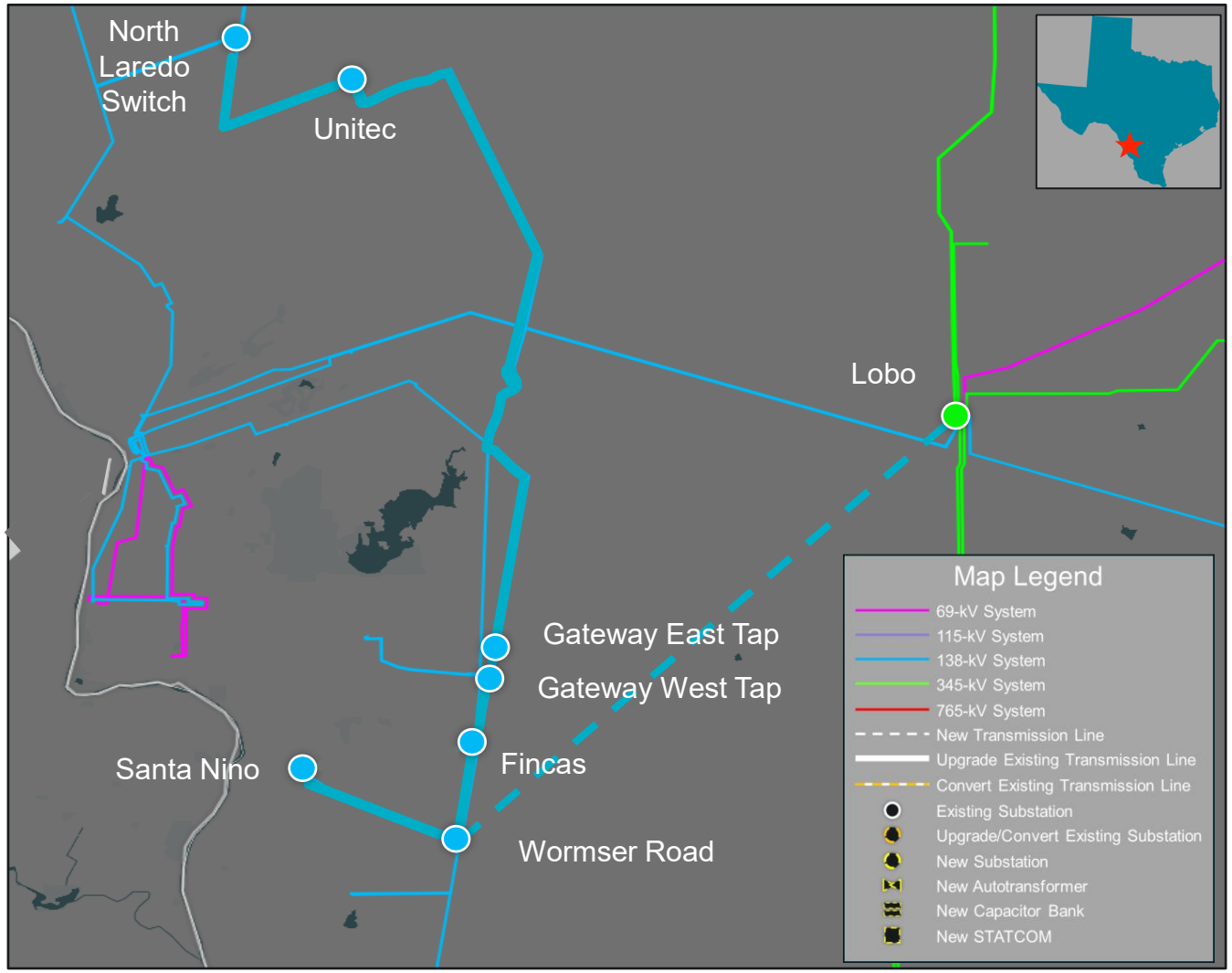
# Recap: Option 1 – AEPSC Proposed Option

## Option 1 Details

- Construct new Lobo to Wormser Road 138-kV single-circuit transmission line, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 14.5 miles
- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles
- Rebuild existing Fincas to Gateway West Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Upgrade seven (7) 138-kV and one (1) 345-kV substations as necessary to not limit any of the lines proposed for rebuild

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# Recap: Option 1 – AEPSC Proposed Option (Cont'd)

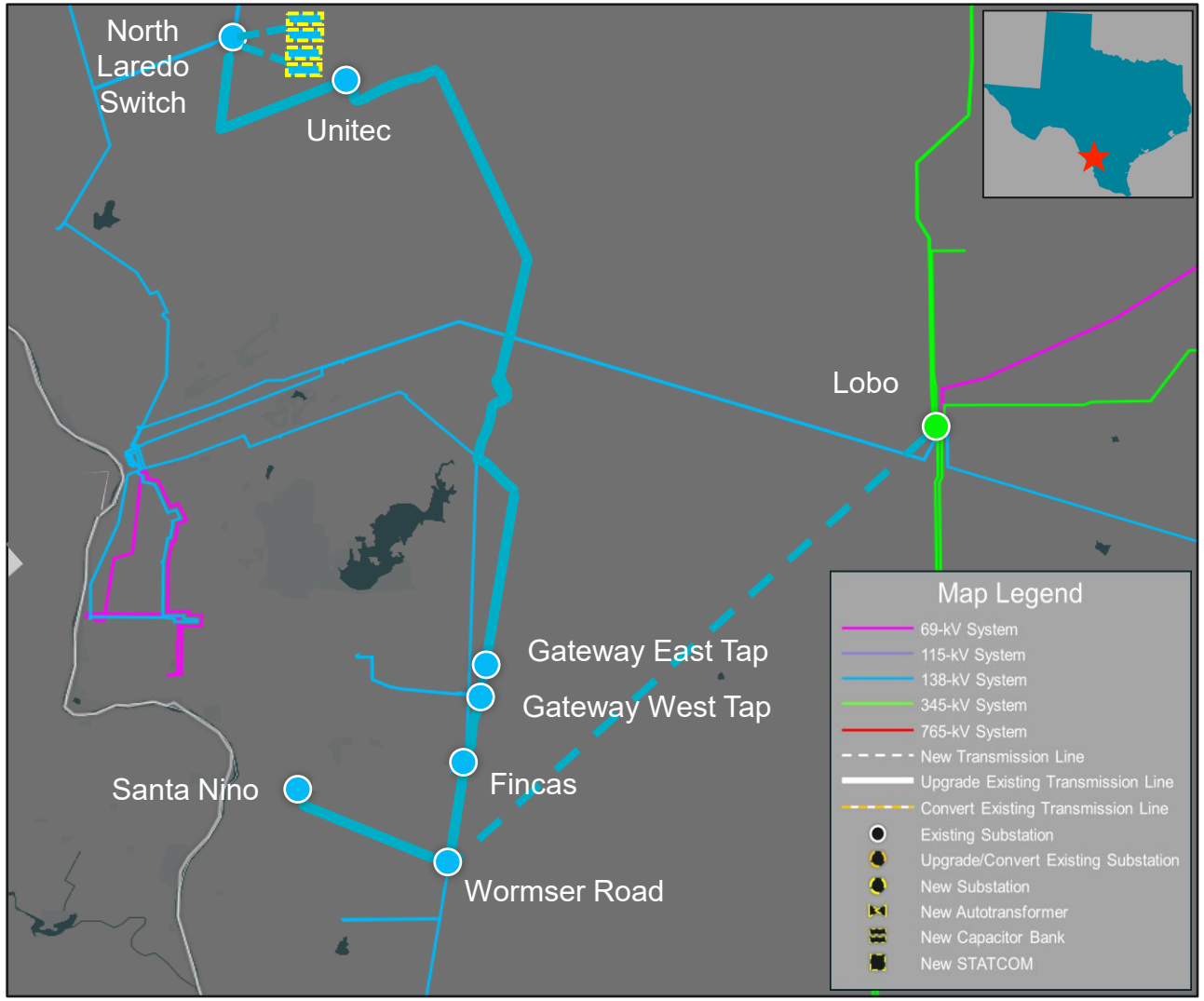


# Recap: Option 1A – ERCOT Alternate Option

## Option 1A Details

- Construct new Lobo to Wormser Road 138-kV single-circuit transmission line, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 14.5 miles
- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV double-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles per circuit
- Rebuild existing Wormser Road to Santo Nino 138-kV double-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles per circuit
- Rebuild existing Fincas to Santo Nino 138-kV double-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles per circuit
- Rebuild existing Fincas to Gateway West Tap 138-kV double-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles per circuit
- Construct two (2) new terminals at North Laredo Switch 138-kV side to install two (2) 200 MVAr Capacitor bank
- Upgrade seven (7) 138-kV and one (1) 345-kV substations as necessary to not limit any of the lines proposed for rebuild

# Recap: Option 1A – ERCOT Alternative Option (Cont'd)

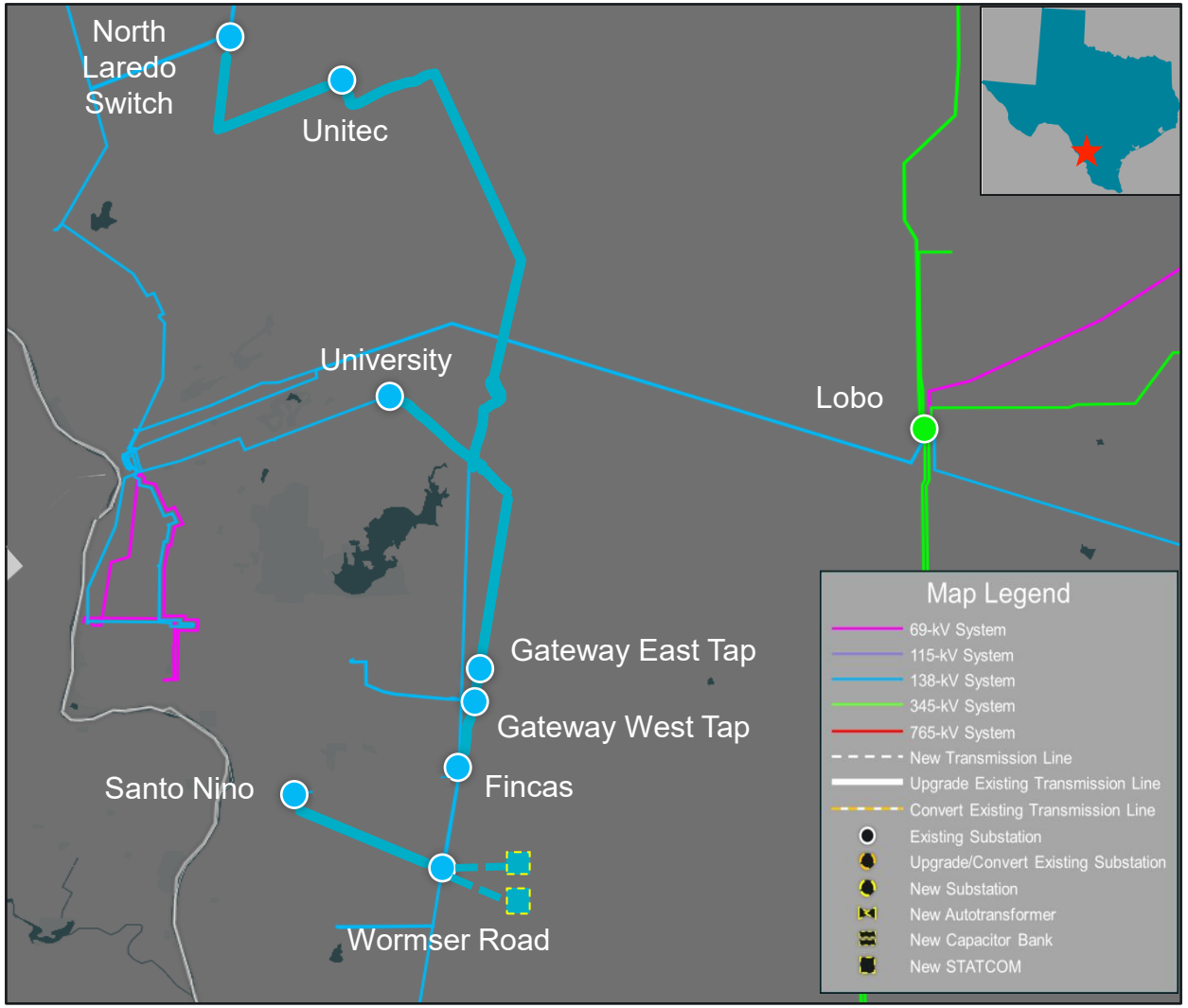


# Recap: Option 2 – AEPSC Alternative Option

## Option 2 Details

- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Gateway West Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Rebuild existing Gateway West Tap to University 138-kV single-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 6.91 miles
- Construct two (2) new terminals at Wormser Road 138-kV side to install two (2) +/- 150 MVAr STATCOMs
- Upgrade eight (8) 138-kV substations as necessary to not limit any of the lines proposed for rebuild

# Recap: Option 2 – AEPSC Alternative Option (Cont'd)



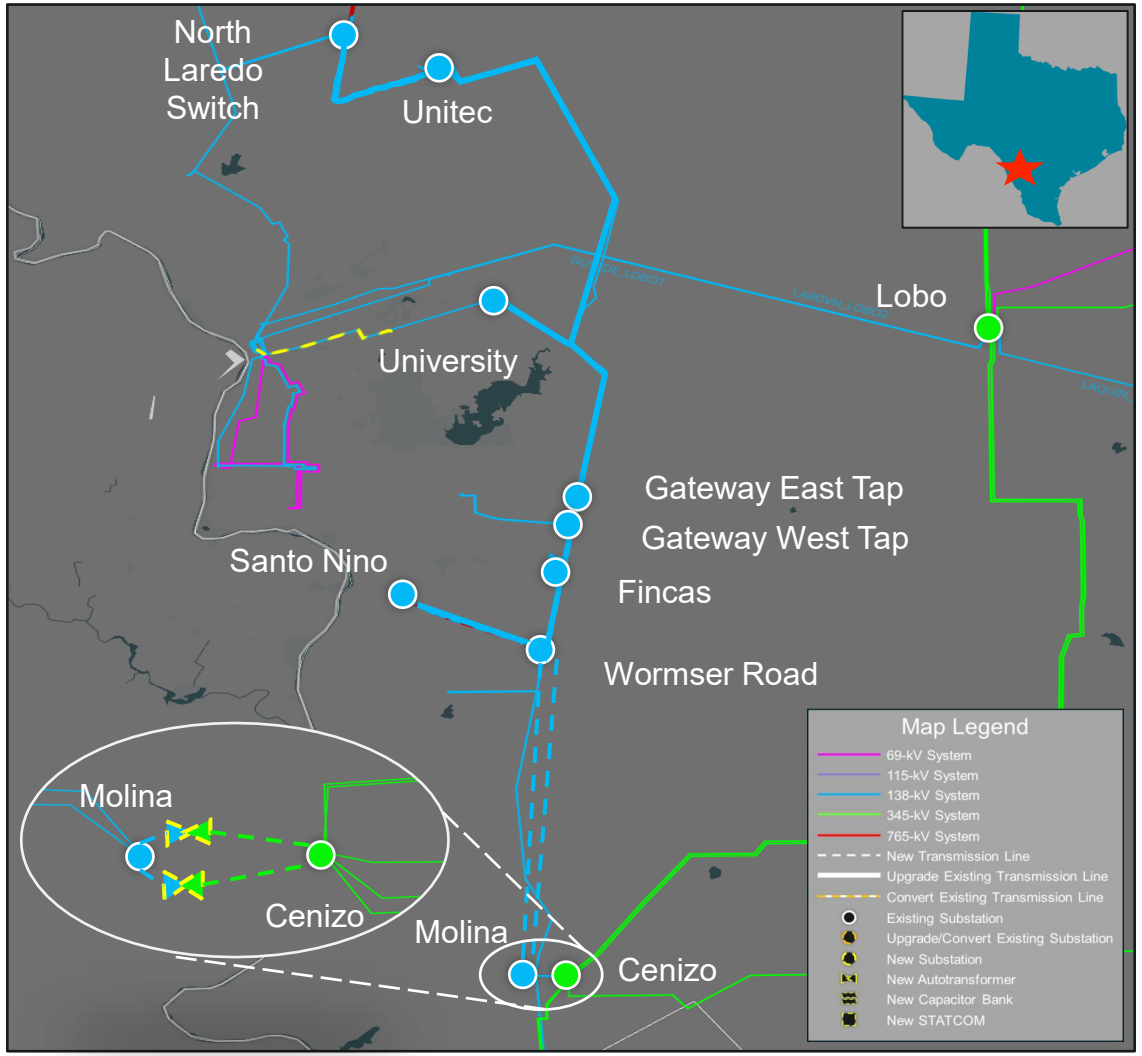
# Recap: Option 3 – AEPSC Alternative Option

## Option 3 Details

- Construct two (2) new 345/138-kV auto-transformers with normal and emergency ratings of at least 675 MVA at Molina 138-kV expanded substation with its 346-kV termination at Cenizo 345-kV expanded substation through two new 345-kV double-circuit short transmission line, approximately 0.1 miles
- Construct new Molina to Wormser Road 138-kV double-circuit transmission line on double circuit structure with both circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 9.5 miles per circuit
- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles
- Rebuild existing Fincas to Gateway West Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Rebuild existing Gateway West Tap to University 138-kV single-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 6.91 miles
- Upgrade nine (9) 138-kV and one (1) 345-kV substations as necessary to not limit any of the lines proposed for rebuild

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# Recap: Option 3 – AEPSC Alternative Option (Cont'd)



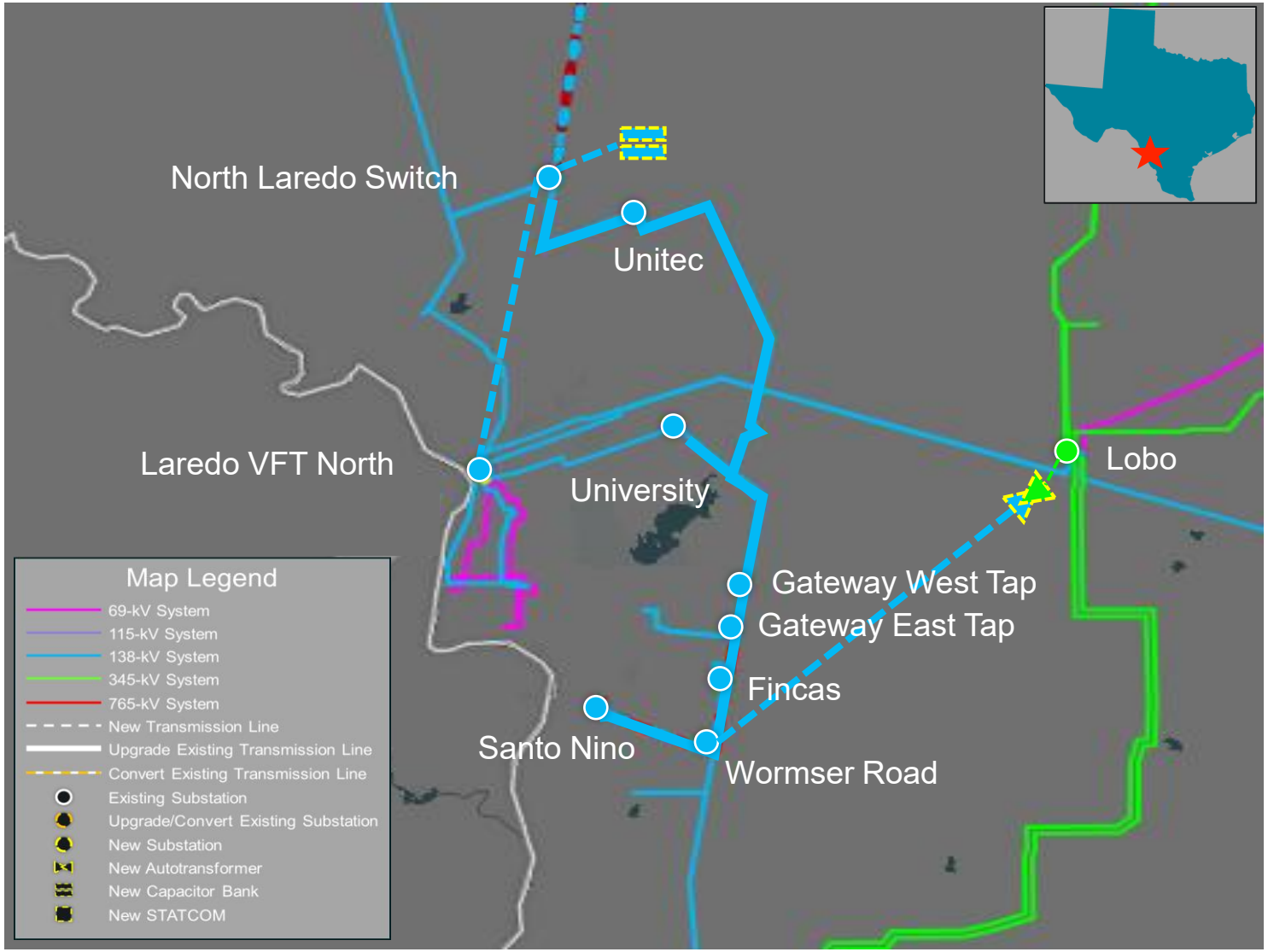
# Recap: Option 4 – ERCOT Alternative Option

## Option 4 Details

- Construct one (1) new 345/138-kV auto-transformer with normal and emergency ratings of at least 717 MVA at Lobo substation
- Construct new Lobo to Wormser Road 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 15 miles
- Construct one (1) new terminal at North Laredo Switch 138-kV side to install one (1) 200 MVAr capacitor bank
- Construct new Laredo Vft North to North Laredo Switch 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 8.46 miles
- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles
- Rebuild existing Fincas to Gateway West Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Rebuild existing Gateway West Tap to University 138-kV single-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 6.91 miles
- Upgrade nine (9) 138-kV and one (1) 345-kV substations as necessary to not limit any of the lines being rebuilt

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# Recap: Option 4 – ERCOT Alternative Option (Cont'd)

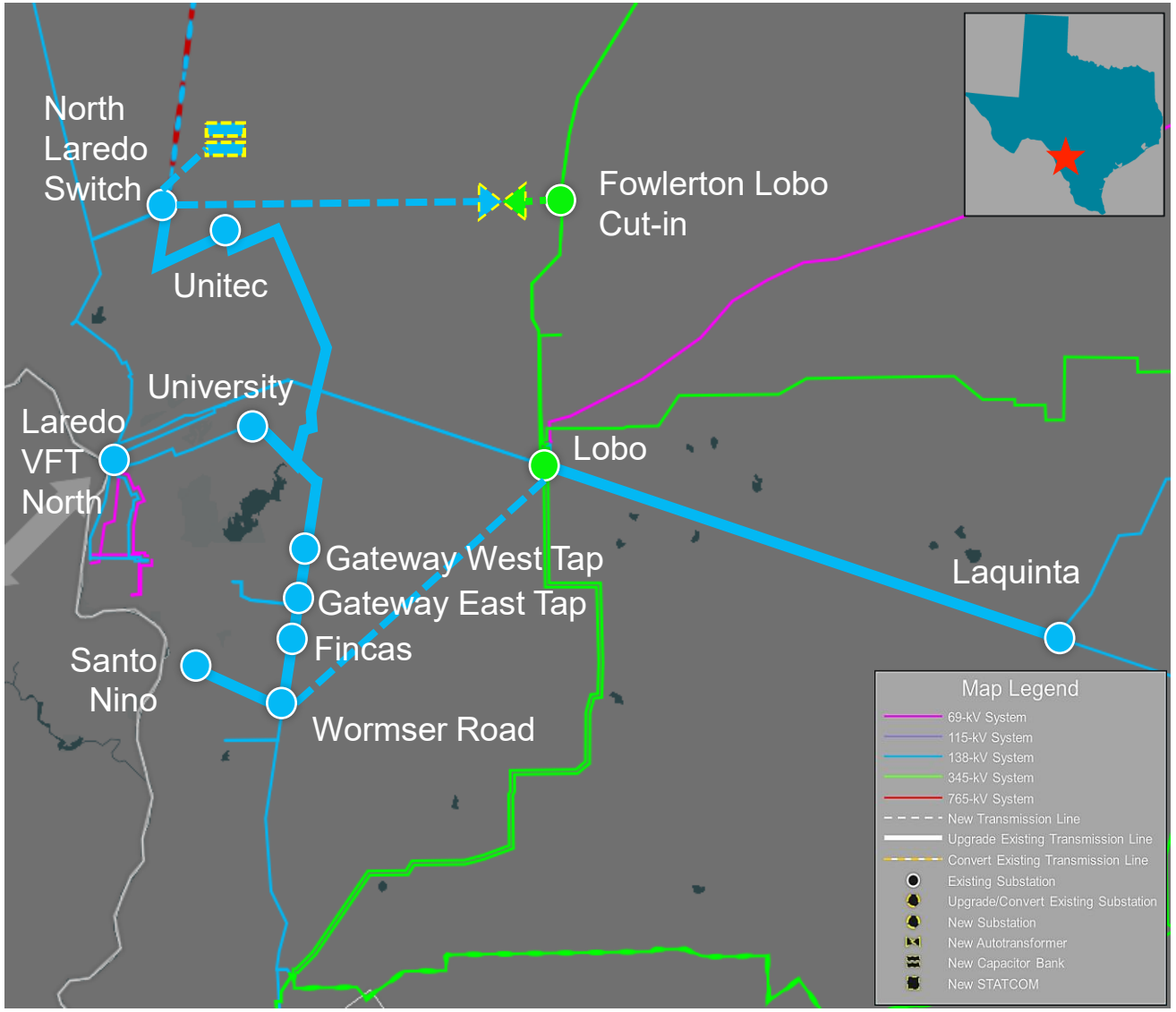


# Option 5 – ERCOT Alternative Option

## Option 5 Details

- Construct a new substation, cutting into the existing Fowlerton to Lobo 345-kV single-circuit transmission line
- Construct one (1) new 345/138-kV auto-transformer with normal and emergency ratings of at least 675 MVA with its 345-kV termination at Fowlerton Lobo Cut-in 345-kV substation
- Construct new Fowlerton Lobo Cut-in to North Laredo Switch 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 635 MVA, for approximately 16 miles
- Construct new Lobo to Wormser Road 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 15 miles
- Construct one (1) new terminal at North Laredo Switch 138-kV side to install one (1) 138-kV 200 MVAr capacitor bank
- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles
- Rebuild existing Fincas to Gateway West Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Rebuild existing Gateway West Tap to University 138-kV single-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 6.91 miles
- Rebuild existing Lobo to Laquinta 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 238 MVA to at least 717 MVA, for approximately 18.89 miles
- Upgrade nine (9) 138-kV and two (2) 345-kV substations as necessary to not limit any of the lines being rebuilt

# Option 5 – ERCOT Alternative Option (Cont'd)



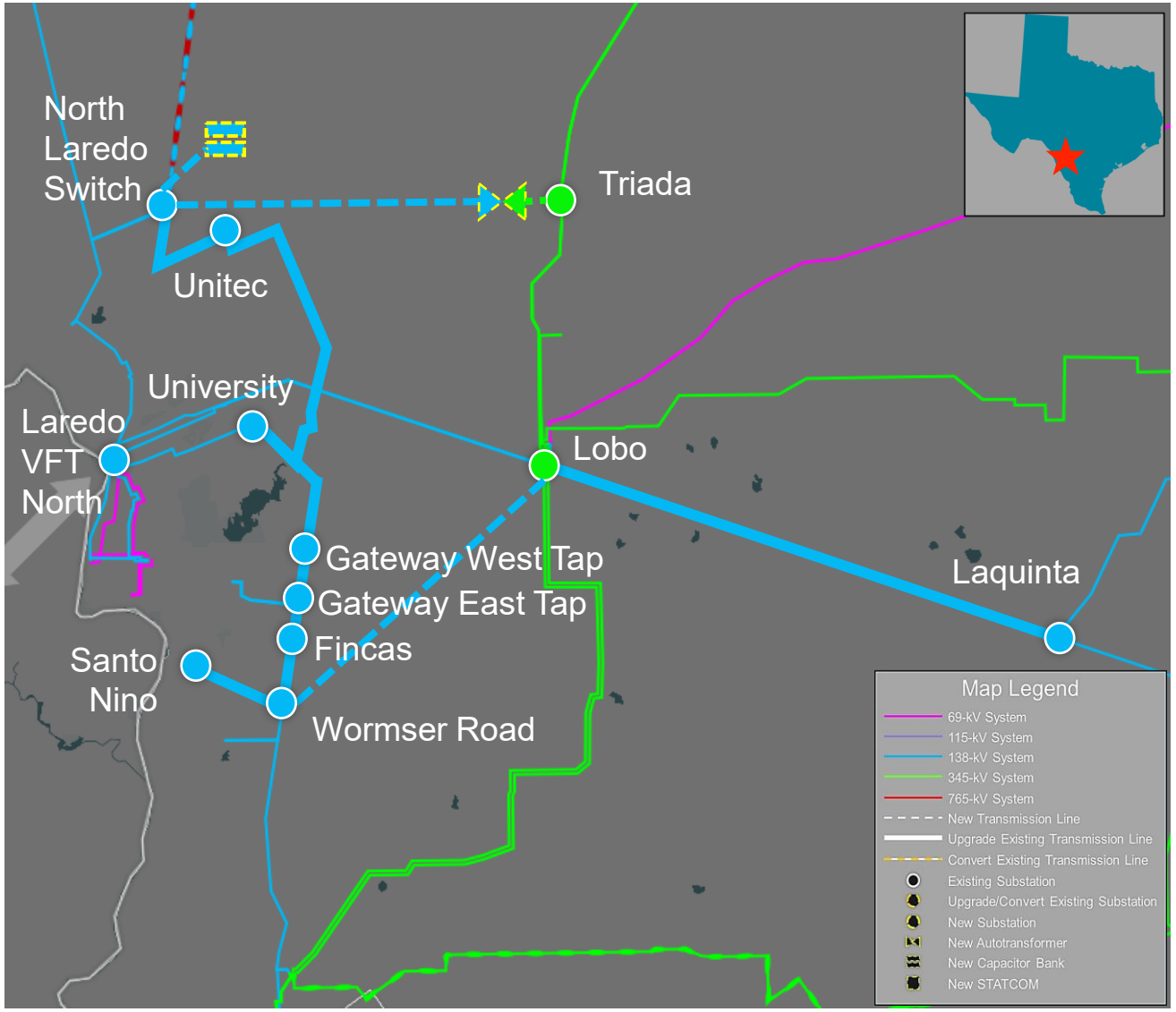
# Option 5A – ERCOT Alternative Option

## Option 5A Details

- Construct one (1) new 345/138-kV auto-transformer with normal and emergency ratings of at least 675 MVA with its 345-kV termination at existing Triada 345-kV substation
- Construct new Triada to North Laredo Switch 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 29.6 miles
- Construct new Lobo to Wormser Road 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 15 miles
- Construct one (1) new terminal at North Laredo Switch 138-kV side to install two (2) 138-kV 69 MVAr capacitor banks
- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles
- Rebuild existing Fincas to Gateway West Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Rebuild existing Gateway West Tap to University 138-kV single-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 6.91 miles
- Rebuild existing Lobo to Laquinta 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 238 MVA to at least 717 MVA, for approximately 18.89 miles
- Upgrade nine (9) 138-kV and two (2) 345-kV substations as necessary to not limit any of the lines being rebuilt

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# Option 5A – ERCOT Alternative Option (Cont'd)



# Option 6 – ERCOT Alternative Option

## Option 6 Details

- Construct one (1) new 345/138-kV auto-transformer with normal and emergency ratings of at least 675 MVA with its 345-kV termination at existing Triada 345-kV substation
- Construct new Triada to North Laredo Switch 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 29.6 miles
- Construct new Lobo to Wormser Road 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 15 miles
- Construct one (1) new terminal at North Laredo Switch 138-kV side to install three (3) 138-kV 69 MVAr capacitor banks
- Construct new Randado to Bruni Sub 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 77 MVA, for approximately 25.17 miles
- Construct one (1) new 345/138-kV auto-transformer with normal and emergency ratings of at least 675 MVA with its 345-kV termination at Rapido 345-kV substation
- Construct new Rapido to Lopeno 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 239 MVA, for approximately 7 miles

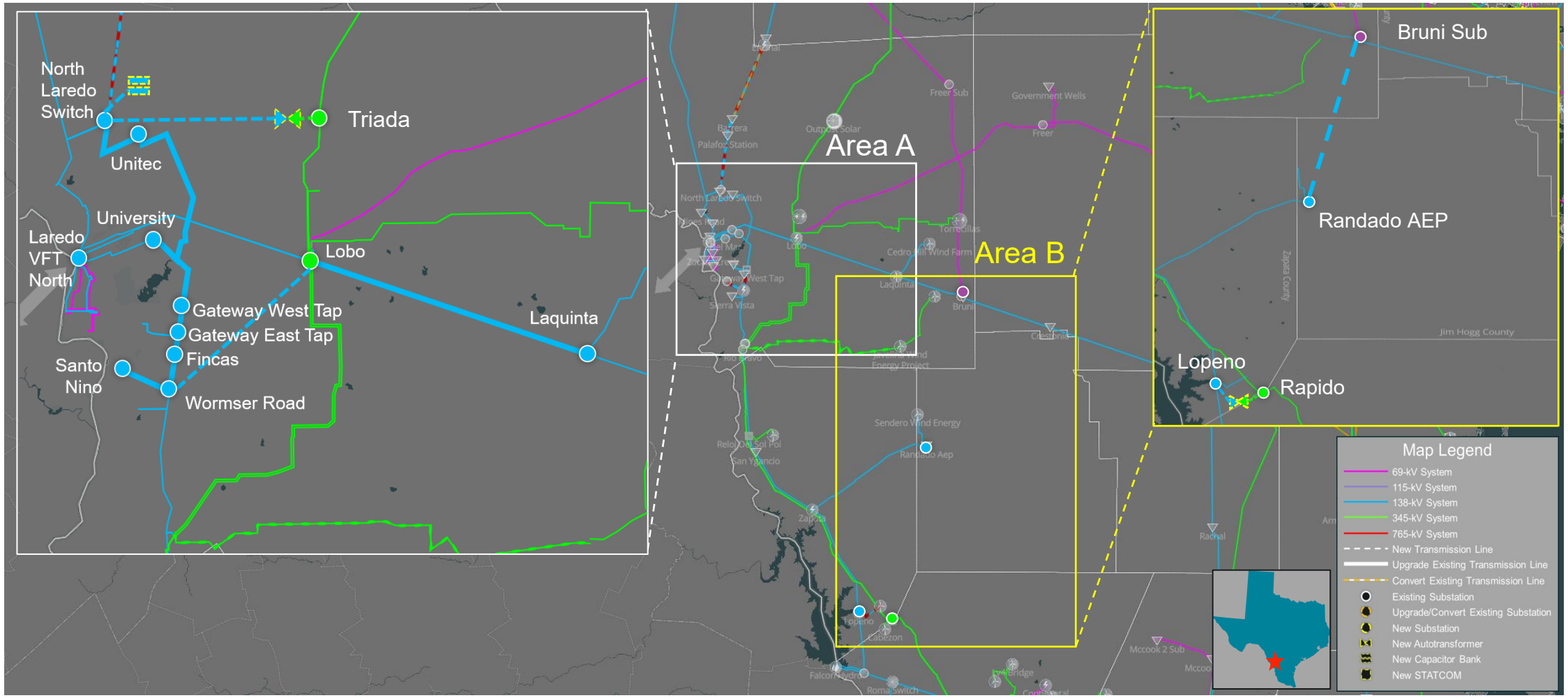
# Option 6 – ERCOT Alternative Option (Cont'd)

## Option 6 Details

- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles
- Rebuild existing Fincas to Gateway East Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Rebuild existing Gateway East Tap to University 138-kV single-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 6.91 miles
- Rebuild existing Lobo to Laquinta 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 238 MVA to at least 717 MVA, for approximately 18.89 miles
- Upgrade twelve (12) 138-kV, three (3) 345-kV and one (1) 69-kV substations as necessary to not limit any of the lines being rebuilt

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# Option 6 – ERCOT Alternative Option (Cont'd)



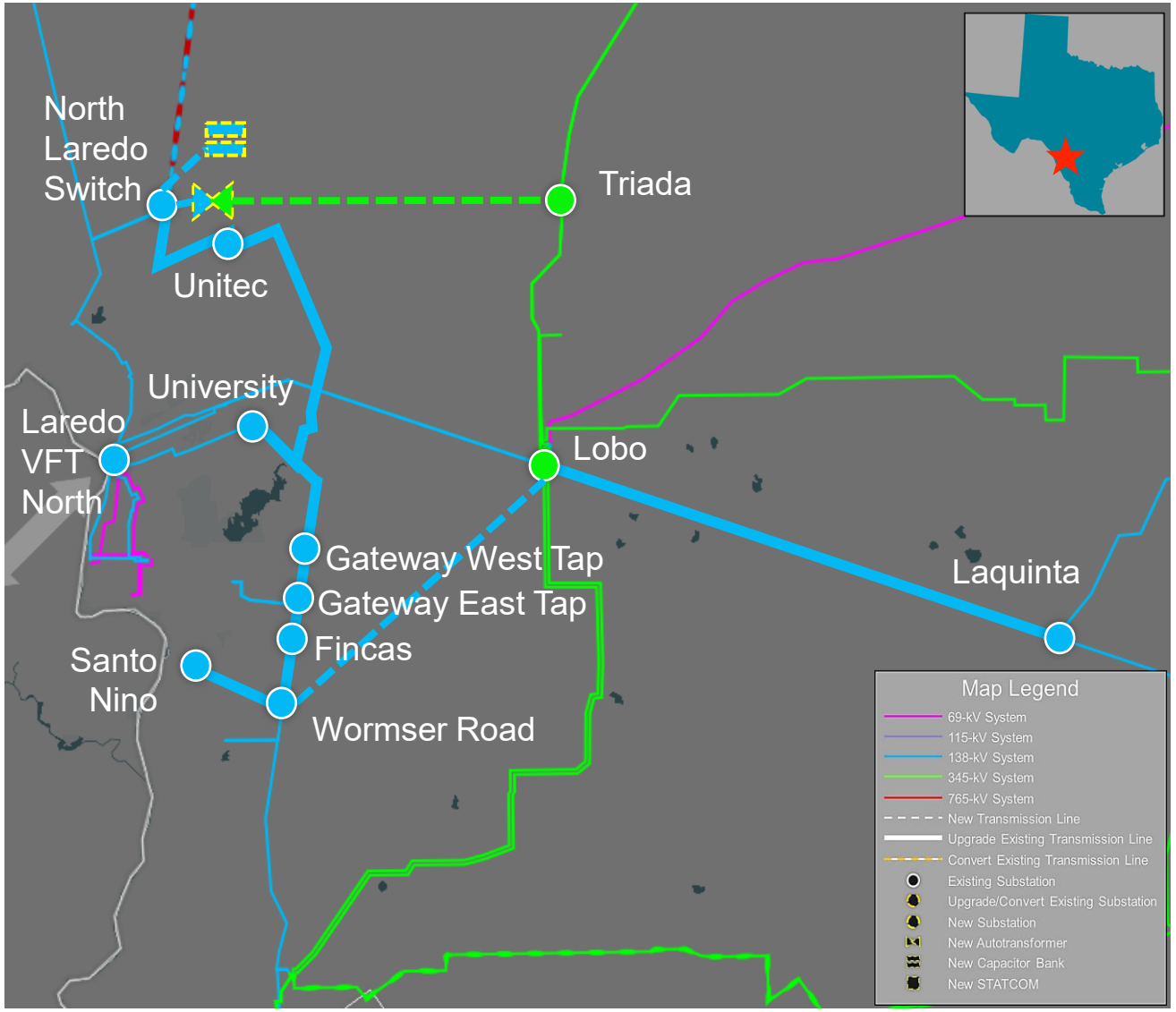
# Option 7 – ERCOT Alternative Option

## Option 7 Details

- Construct one (1) new 345/138-kV auto-transformer with normal and emergency ratings of at least 675 MVA with its 138-kV termination at existing North Laredo Switch 138-kV substation
- Construct new Triada to North Laredo Switch 345-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 2987 MVA, for approximately 29.6 miles
- Construct new Lobo to Wormser Road 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 15 miles
- Construct one (1) new terminal at North Laredo Switch 138-kV side to install two (2) 138-kV 69 MVAr capacitor banks
- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles
- Rebuild existing Fincas to Gateway West Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Rebuild existing Gateway West Tap to University 138-kV single-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 6.91 miles
- Rebuild existing Lobo to Laquinta 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 238 MVA to at least 717 MVA, for approximately 18.89 miles
- Upgrade nine (9) 138-kV and two (2) 345-kV substations as necessary to not limit any of the lines being rebuilt

PUBLIC

# Option 7 – ERCOT Alternative Option (Cont'd)

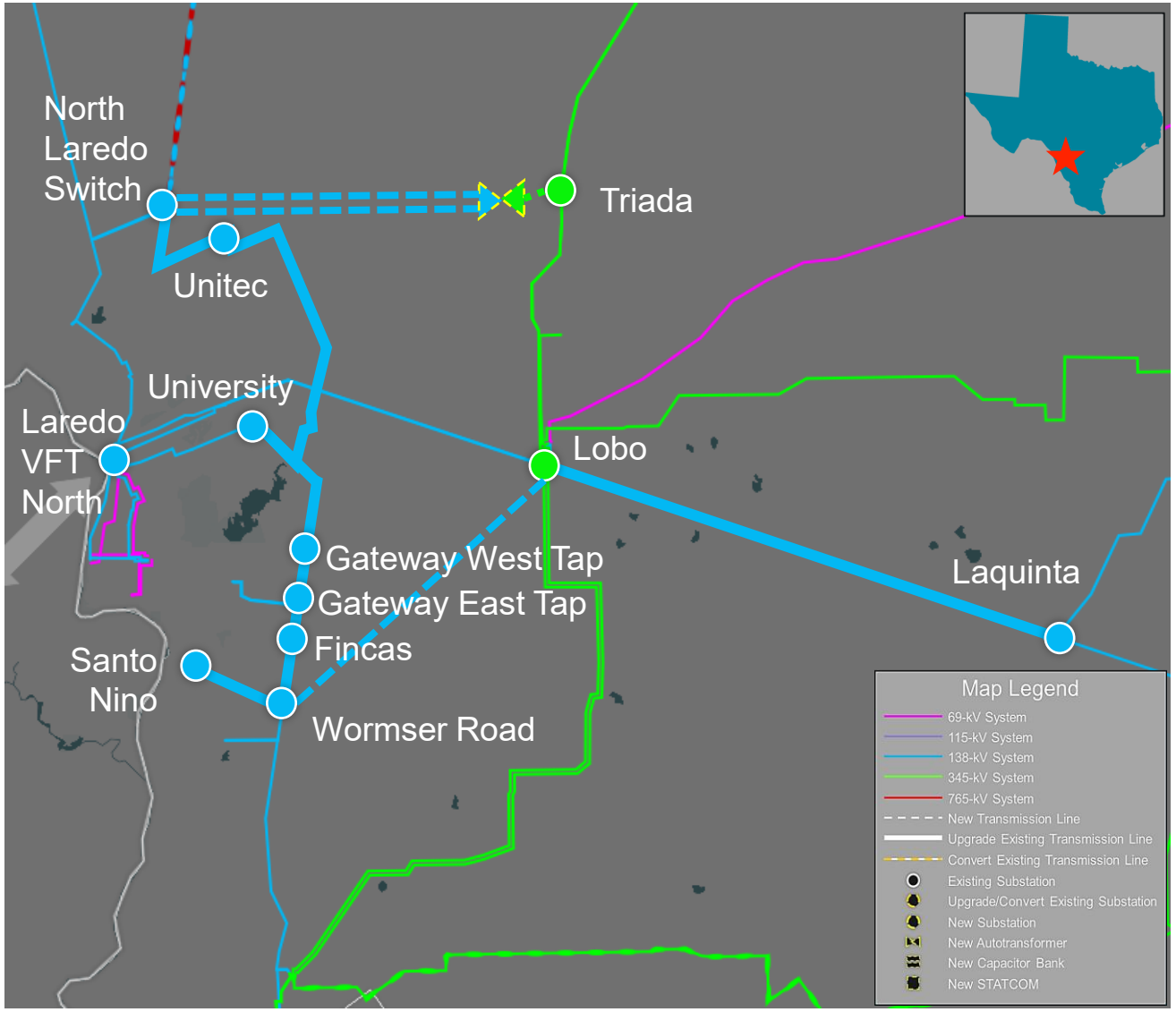


# Option 8 – ERCOT Alternative Option

## Option 8 Details

- Construct two (2) new 345/138-kV auto-transformer with normal and emergency ratings of at least 675 MVA with its 345-kV termination at existing Triada 345-kV substation
- Construct two new Triada to North Laredo Switch 138-kV single-circuit transmission lines on two separate single circuit structures, which will require new ROWs and need CCNs, with normal and emergency ratings of at least 717 MVA, for approximately 29.6 miles
- Construct new Lobo to Wormser Road 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 15 miles
- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles
- Rebuild existing Fincas to Gateway West Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Rebuild existing Gateway West Tap to University 138-kV single-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 6.91 miles
- Rebuild existing Lobo to Laquinta 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 238 MVA to at least 717 MVA, for approximately 18.89 miles
- Upgrade nine (9) 138-kV and two (2) 345-kV substations as necessary to not limit any of the lines being rebuilt

# Option 8 – ERCOT Alternative Option (Cont'd)

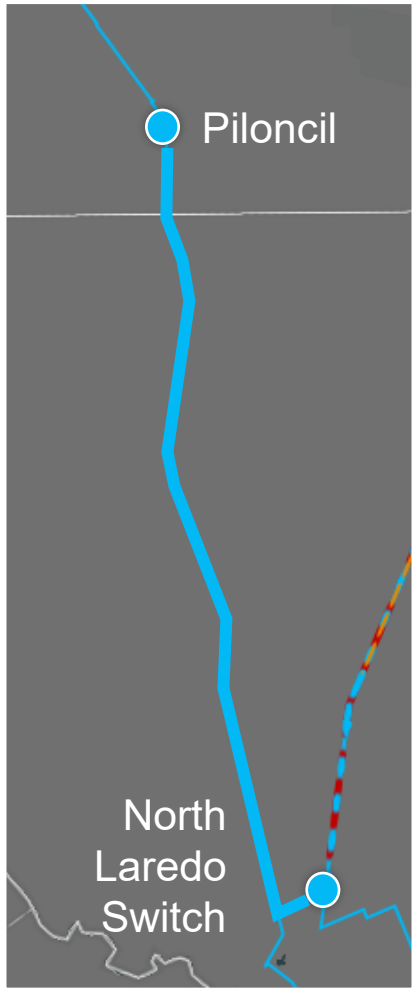


# Option 9 – ERCOT Alternative Option

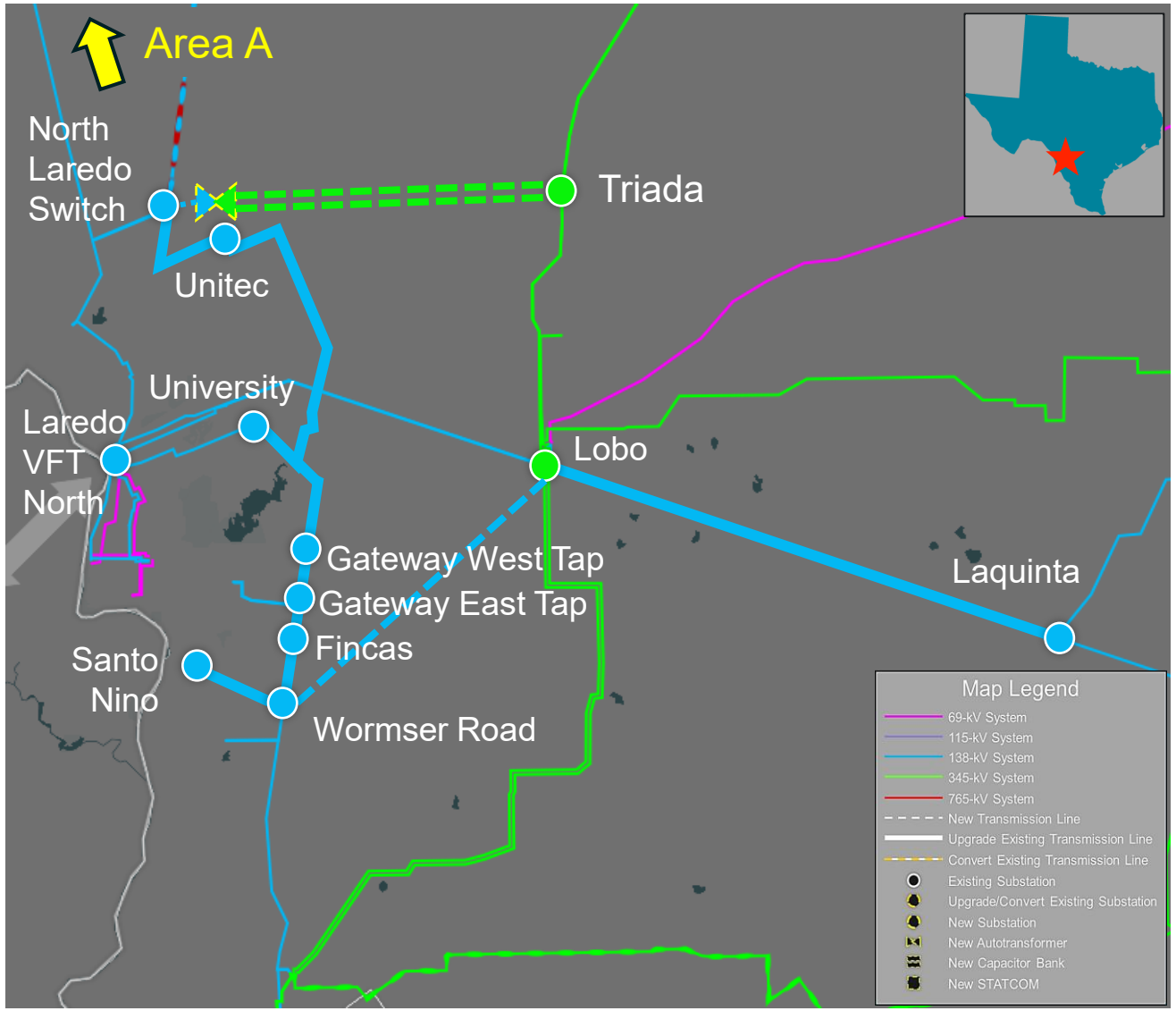
## Option 9 Details

- Construct two (2) new 345/138-kV auto-transformer with normal and emergency ratings of at least 675 MVA with its 138-kV termination at existing North Laredo Switch 138-kV substation
- Construct two new Triada to North Laredo Switch 345-kV single-circuit transmission lines on two separate single circuit structures, which will require new ROWs and need CCNs, with normal and emergency ratings of at least 2987 MVA, for approximately 29.6 miles
- Construct new Lobo to Wormser Road 138-kV single-circuit transmission line on double circuit structure with one circuit in place, which will require new ROW and need CCN, with normal and emergency ratings of at least 717 MVA, for approximately 15 miles
- Rebuild existing North Laredo Switch to Unitec to Gateway East Tap 138-kV transmission lines on existing ROW, increase the existing normal and emergency ratings of at least 208 MVA to at least 717 MVA, for approximately 14.5 miles on single-circuit, and 5.3 miles per circuit on double-circuit structures
- Rebuild existing Gateway East Tap to Wormser Road 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 3.4 miles
- Rebuild existing Wormser Road to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 478 MVA, for approximately 3.3 miles
- Rebuild existing Fincas to Santo Nino 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 241 MVA to at least 717 MVA, for approximately 5.7 miles
- Rebuild existing Fincas to Gateway West Tap 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 1.4 miles
- Rebuild existing Gateway West Tap to University 138-kV single-circuit transmission line on existing ROW, increase the existing normal and emergency ratings of at least 215 MVA to at least 717 MVA, for approximately 6.91 miles
- Rebuild existing Lobo to Laquinta 138-kV single-circuit transmission line on double circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 238 MVA to at least 717 MVA, for approximately 18.89 miles
- Rebuild existing North Laredo Switch to Piloncillo 138-kV single-circuit transmission line on single circuit structure and existing ROW, increase the existing normal and emergency ratings of at least 121 MVA to at least 250 MVA, for approximately 42.13 miles
- Upgrade ten (10) 138-kV and two (2) 345-kV substations as necessary to not limit any of the lines being rebuilt

# Option 9 – ERCOT Alternative Option (Cont'd)




Area A



# Recap: Preliminary Results of Reliability Assessment – Options

ERCOT conducted steady-state load flow analysis for the all the option cases according to the NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Criteria to evaluate the proposed project and alternatives options

| Option | N-1 | | (G-1+N-1)* | | (X-1+N-1)* | | Unsolved Power Flow |
|---|---|---|---|---|---|---|---|
| | Thermal Violations | Voltage Violations | Thermal Violations | Voltage Violations | Thermal Violations | Voltage Violations | |
| 1 | None | 4 | 5 | 5 | 2 | 4 | None |
| 1A | None | None | None | None | 2 | None | None |
| 2 | 2 | 5 | 2 | 3 | 3 | 4 | 2 |
| 3 | None | 4 | 3 | 4 | None | 4 | None |
| 4 | None | None | None | None | None | None | None |
| 5 | None | None | None | None | None | None | None |
| 5A | None | None | None | None | None | None | None |
| 6 | None | None | None | None | None | None | None |
| 7 | None | None | None | None | None | None | None |
| 8 | None | None | None | None | None | None | None |
| 9 | None | None | None | None | None | None | None |

* See Appendix C for the list of generators and transformers being tested for (G-1+N-1) and (X-1+N-1) analyses, respectively

**Key Takeaway: Option 5A, Option 6, Option 7, Option 8, Option 9 are observed with no reliability violations and will be primarily short-listed for further evaluation**

# Recap: Results of Reliability Assessment – Short Listed Options

ERCOT conducted steady-state load flow analysis for the all the short-listed option cases according to the NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Criteria while considering a few modification listed below:

- New 345/138 kV autotransformer has normal/emergency ratings 675 MVA
- Triada to North Laredo Switch transmission line length is 29.6 Miles, Revising the R,X,B values used
- New 345-kV transmission lines has normal/emergency ratings at least 2987 MVA

| Option | N-1 | | (G-1+N-1)* | | (X-1+N-1)* | | Unsolved Power Flow |
|---|---|---|---|---|---|---|---|
| | Thermal Violations | Voltage Violations | Thermal Violations | Voltage Violations | Thermal Violations | Voltage Violations | |
| 5A | None | None | None | None | None | None | None |
| 6 | None | None | None | None | None | None | None |
| 7 | None | None | None | None | None | None | None |
| 9 | None | None | None | None | None | None | None |

* See Appendix C for the list of generators and transformers being tested for (G-1+N-1) and (X-1+N-1) analyses, respectively

**Key Takeaway: The short-listed options exhibited no new violations considering few modifications**

# Recap: Preliminary Results of Maintenance Outage Evaluation – Base Case and Short-Listed Options

ERCOT conducted planned maintenance outage analyses on the short-listed Options to identify the violations relevant

- Load levels in South and South Central Weather Zones were scaled down based on the historical non-summer peak data to 90.4% and 85.9%, respectively, in order to mimic the non-summer peak load condition
- Based on the review of system topology of the study area, ERCOT tested N-2 contingency combinations, and then tested all applicable contingency violations with system adjustments (N-1-1)

| Option # | Thermal Violations | Voltage Violation | Unsolved Power Flow |
|---|---|---|---|
| Base Case | **Yes** | **Yes** | **Yes** |
| 1A | **Yes** | **Yes** | **Yes** |
| 5A | None | None | None |
| 6 | None | None | None |
| 7 | None | None | None |
| 8 | **Yes** | None | None |
| 9 | None | None | None |

* Option 4 and Option 5 are not tested due to its applicability concern raised by AEP

**Key Takeaway: No thermal or voltage violations were observed in the N-1-1 analyses for Option 5A, Option 6, Option 7, and Option 9**

# Recap: Results of Maintenance Outage Evaluation – Short-Listed Options

ERCOT conducted planned maintenance outage analyses on the short-listed options again under the below conditions:

- New 345/138 kV autotransformer has normal/emergency ratings 675 MVA
- Triada to North Laredo Switch transmission line length is 29.6 Miles, Revising the R,X,B values used
- New 345-kV transmission lines has normal/emergency ratings at least 2987 MVA
- Load levels in South and South Central Weather Zones were scaled down to 90.4% and 85.9%, respectively, to mimic the non-summer peak load condition
- Based on the review of system topology of the study area, ERCOT tested N-2 contingency combinations, and then tested all applicable contingency violations with system adjustments (N-1-1)

| Option # | Thermal Violations | Voltage Violation | Unsolved Power Flow |
|---|---|---|---|
| 5A | None | None | None |
| 6 | None | None | None |
| 7 | None | None | None |
| 9 | None | None | None |

**Key Takeaway: No thermal or voltage violations were observed in the N-1-1 analyses for Option 5A, Option 6, Option 7, and Option 9 considering a few new modifications**

# Recap: Long-Term Load-Serving Capability Assessment

ERCOT conducted a long-term load-serving capability assessment on all short-listed options to compare relative performance of the options

- Adjusted load up in the study area and South Weather Zone, excluding non-scalable loads in the area
- Adjusted conforming load down outside of the South Weather Zone to balance power
- Based on N-1 contingency

| Option | Incremental Load-Serving Capability (~MW) |
|---|---|
| 5A | **306.38** |
| 6 | 306.29 |
| 7 | 297.72 |
| 9 | 299.19 |

**Key Takeaway:**

**All options provide comparative incremental load-serving capability**

# Cost Estimate and Feasibility Assessment

AEPSC performed feasibility assessments and provided cost estimates for the four short-listed options

| Option | Cost Estimates (~$Million) | CCN Required (~miles) | Feasibility | Expected ISD |
|---|---|---|---|---|
| 5A | 328.5 | 44.6 | Yes | February 2031 |
| 6 | 467.5 | 76.77 | Yes | May 2031 |
| 7 | 361.1 | 44.6 | Yes | February 2031 |
| 9 | 575.7 | 74.2 | Yes | February 2031 |

**Key Takeaway:**

**Option 5A and Option 7 are the lowest cost options, and each option requires at least a CCN.**

# Preliminary Comparison of Short-listed Options

| | Option 5A | Option 6 | Option 7 | Option 9 |
|---|---|---|---|---|
| Meets ERCOT and NERC Reliability Criteria | **Yes** | Yes | Yes | Yes |
| Feasible | **Yes** | Yes | Yes | Yes |
| CCN Needed (~miles) | **44.6** | 76.77 | 44.6 | 74.2 |
| Improves Long-Term Load-Serving Capability (~MW) | **306.38** | 306.29 | 297.72 | 299.19 |
| Construction Feasibility (Based on AEPSC assessment) | **Yes** | Yes | Yes | Yes |
| Capital Cost Estimates* (~$M) | **328.5** | 467.5 | 361.1 | 575.7 |
| Expected ISD (Year) | **2031** | 2031 | 2031 | 2031 |

* Cost estimates were provided by AEPSC

**Key Takeaways:**

- **Option 5A observed no reliability violations and met the project need**
- **Option 5A requires the least amount of CCN mileage**
- **Option 5A is the least-cost option that meets ERCOT and NERC reliability criteria**

# ERCOT Preferred Option

Option 5A was selected as the ERCOT preferred option because it

- Addresses the project need in the study area
- Meets both ERCOT and NERC reliability criteria
- Requires the least amount of CCN mileage
- Is the least-cost option that meets ERCOT and NERC reliability criteria
- Improves long-term load-serving capability for future load growth in the area

# Additional Analyses

## Congestion Analysis

- Congestion analysis was performed for the preferred Option 5A using the 2025 RTP 2030 economic sensitivity case
- The ERCOT preferred Option 5A did not result in significant new congestion within the study area

# Generation Addition and Load Scaling Sensitivity Analysis

## Generation Addition Sensitivity Analysis

- Per Planning Guide Section 3.1.3(4)(a), ERCOT performed a generation addition sensitivity analysis by adding the new generation listed in Appendix D to the preferred Option 5A. The additional resources were modeled following the 2025 RTP methodology. ERCOT determined relevant generators do not impact the preferred Option 5A

## Load Scaling Sensitivity Analysis

- Planning Guide Section 3.1.3(4)(b) requires an evaluation of the potential impact of load scaling on the criteria violations seen in this EIR. Starting 2024, ERCOT RTP adopted a new methodology of having one summer peak case for each study year with non-coincident peaks for each of the Weather Zones, which would eliminate the load scaling impact. The study case did not include load scaling as such load scaling sensitivity analysis is no longer needed

**Key Takeaways:**

- **The additional generation resources added did not impact the ERCOT preferred option reliability results**
- **Load Scaling Sensitivity Analysis was not needed as ERCOT adopted to have one Summer Peak Case**

# Deliverables and Next Step

## Tentative Timelines

- ERCOT may also perform the following studies on preferred option
  - Sub-synchronous Oscillations Study (SSO)
- ERCOT recommendation in Q4 2026

**Key Takeaway: ERCOT recommendation in Q4 2026**

# Thank you!
# Questions/Comments?

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# Appendixes

Appendix A: Transmission Projects Added
Appendix B: Generation Added
Appendix C: List of G-1 Generators and X-1 Transformers Tested
Appendix D: Generation Added For Generation Addition Sensitivity Analysis

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# Appendix A: Transmission Projects Added

| TPIT/RPG | Project Name | Tier | Project ISD | County(s) |
|---|---|---|---|---|
| 76569 | Asherton: Rebuild 138 kV station | 3 | Apr-27 | Dimmit |
| 76576 | Asherton to Uvalde: Convert to 138 kV | 3 | Jun-27 | Dimmit |
| 67320 | Cruce to Reforzar: Construct New 345 kV Double Circuit Line | 1 | Sep-26 | Jim Hogg |
| 67318 | Cruce: Construct New 345A kV Station | 1 | Nov-26 | Jim Hogg |
| 67322 | Cenizo to Cruce: Construct New 345 kV Double Circuit Line | 1 | Nov-26 | Webb |
| 67324 | Cruce to Del Sol: Construct New 345 kV Double Circuit Line | 1 | Nov-26 | Jim Hogg |
| 23RPG007 | Asherton - Uvalde 138-kV Conversion Project | 3 | May-25 | Dimmit, Uvalde, and Zavala |
| 25RPG045 | Alice Area Improvements Transmission Project | 3 | Apr-29 | Jim Wells, Duval, Brooks |

Back to Study Assumption

# Appendix B: Generation Added

| GINR | Project Name | Fuel | Project COD | Max Capacity (~MW) | County |
|---|---|---|---|---|---|
| 24INR0632 | Cedro Hill Wind Repower | WIN | 04/01/2026 | 159.9 | Webb |
| 25INR0109 | Sun Cactus Solar | SOL | 10/15/2027 | 120.6 | Duval |
| 27INR0126 | Corvus Solar | SOL | 11/12/2028 | 201.5 | Webb |
| 27INR0126 | Corvus Solar | SOL | 11/12/2028 | 201.5 | Webb |

Back to Study Assumption

# Appendix C: List of G-1 Generators and X-1 Transformers Tested

| Generator | Transformer |
|---|---|
| LAREDO ENERGY CENTER Unit 4 | FOWLERTON 345/138-kV |
| LAREDO ENERGY CENTER Unit 5 | LOBO AUTOTRANSFORMER-A 345/138-KV |
| FRONTERA ENERGY CENTER COMBINED CYCLE TRAIN | LOBO AUTOTRANSFORMER-B 345/138-KV |
| SEVEN FLAGS ENERGY STORAGE | FOWLERTON LOBO CUT-IN 345/138-kV (Option 5) |
| | RAPIDO 345/138-kV (Option 6) |
| | NORTH LAREDO or TRIADA 345/138-kV (Option 6, 7, Option 8, Option 9) |

Back to Reliability Analysis Results

# Appendix D – Generation Added For Generation Addition Sensitivity Analysis

| GINR | Project Name | Fuel | Project COD | Max Capacity (~MW) | County |
|---|---|---|---|---|---|
| 22INR0257 | Corazon Solar Phase II | SOL | 6/1/2028 | 203.9 | Webb |
| 26INR0088 | La Salle Solar | SOL | 9/13/2028 | 512.6 | La Salle |
| 26INR0555 | Desert Palm BESS | BESS | 9/1/2028 | 201.3 | Dimmit |
| 24INR0505 | Corralitos Wind 1 | WIN | 12/1/2027 | 196.1 | Zapata |
| 24INR0506 | Corralitos Wind 2 | WIN | 12/31/2027 | 195.4 | Zapata |
| 26INR0116 | Falcon Zapata Storage 138 | BESS | 3/11/2028 | 200.79 | Zapata |
| 28INR0072 | Mirando Valley Wind | WIN | 7/6/2028 | 478.74 | Jim Hogg |
| 28INR0434 | Viento Bravo Wind | WIN | 7/6/2028 | 366.51 | Jim Hogg |

Back to Additional Analysis Results