



## **Brazos San Miguel to Marion 345-KV Project – ERCOT Independent Review Scope**

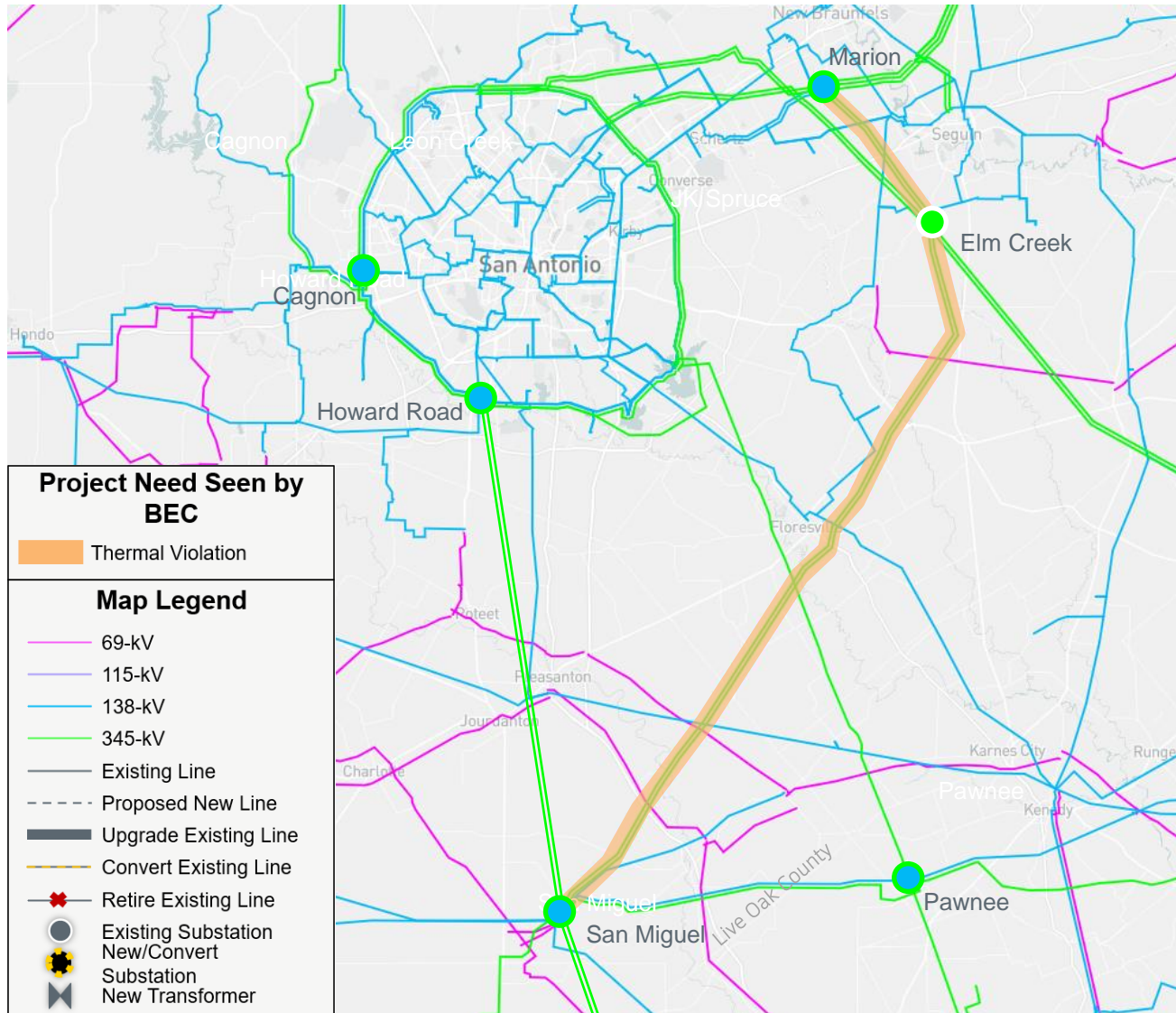
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RPG Meeting  
November 14, 2023

# Introduction

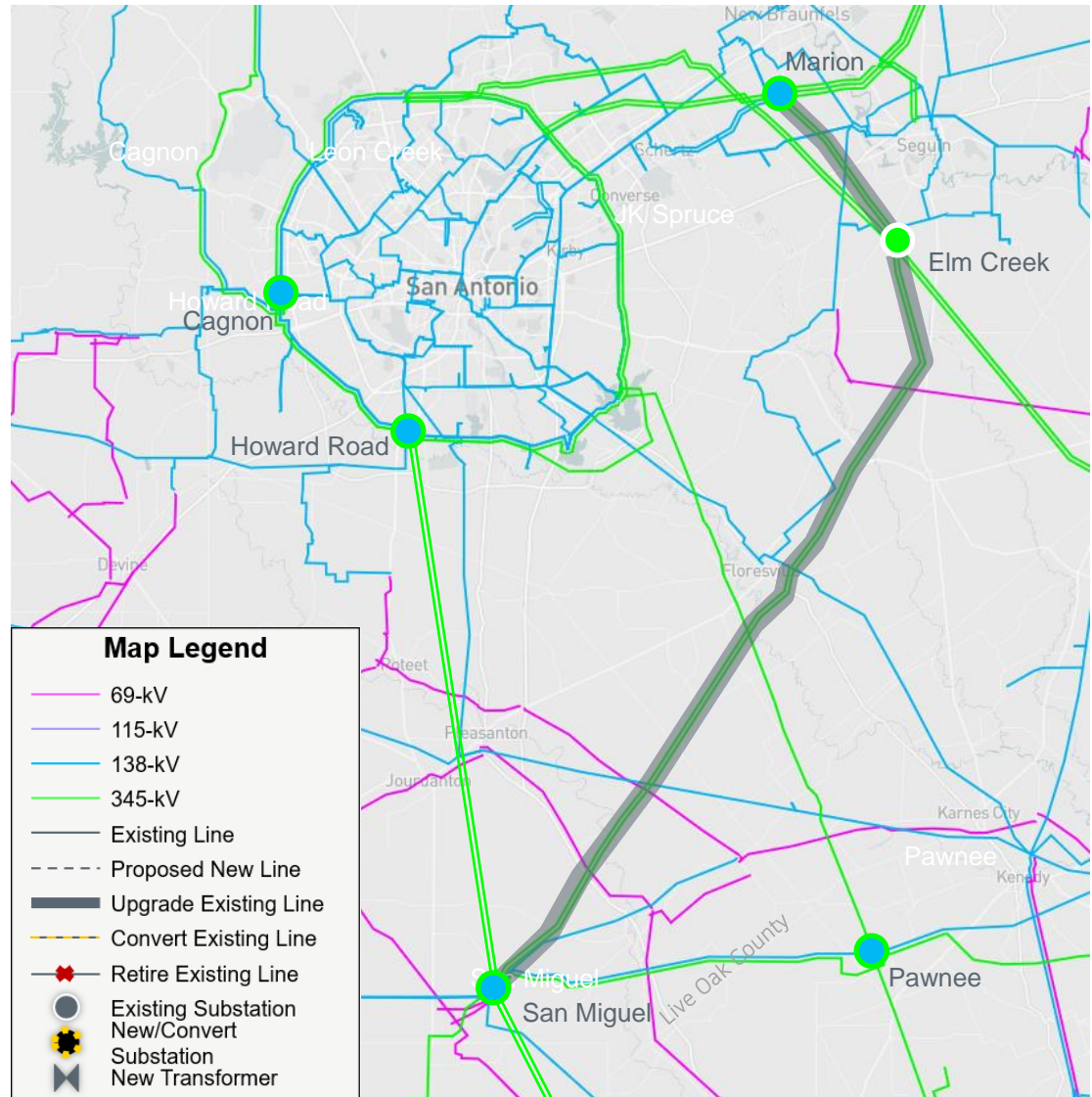
- Brazos Electric Cooperative (BEC) submitted the San Miguel to Marion 345-kV Project for Regional Planning Group (RPG) review in September 2023
  - This Tier 1 project is estimated to cost \$259 million and will not require a Certificate of Convenience and Necessity (CCN)
  - Estimated in-service date
    - December 2027
  - Addresses thermal overloads in the San Antonio area
- This project is currently under ERCOT Independent Review (EIR)

# Study Area Map



# Proposed Project by BEC

- Rebuild the existing San Miguel to Elm Creek 345-kV double circuit transmission line with a minimum circuit rating of 2620 MVA (~63 miles)
- Rebuild the existing Elm Creek to Marion 345-kV double circuit transmission line with a minimum circuit rating of 2620 MVA (~14 miles)



# Study Assumptions – Base Case

- Study Region
  - Southern and South Central Weathers Zones (WZs), focusing on the transmission elements near the San Antonio Area in Guadalupe, Wilson, and Atascosa Counties
  - Monitor surrounding counties that are electrically close to the area
- Steady-State Base Case
  - Final 2022 Regional Transmission Planning (RTP) 2028 summer peak case for South-South Central (SSC) WZs, posted in Market Information System (MIS), was updated to construct the summer peak load study base case
    - Case: 2022RTP\_2028\_SUM\_SSC\_12222022
    - Link: <https://mis.ercot.com/secure/data-products/grid/regional-planning>

# Study Assumption - Transmission

- Based on the October 2023 Transmission Project and Information Tracking (TPIT) posted on MIS, Tier 1, 2, 3, and 4 projects with in-service dates before the end of December 2027 within the study area were added to the study base case if not already modeled in the case
  - TPIT Link: <https://www.ercot.com/gridinfo/planning>
  - See Appendix A for a list of transmission projects added
- Transmission projects identified in the 2022 RTP as placeholders for CPS San Antonio South Reliability project were removed to develop the study base case

| RTP Project ID | Project Name  | TSP       | County          |
|----------------|---|-----------|-----------------|
| 2022-SC6       | Howard - San Miguel 345-kV Double Circuit Line Addition and Beck Road 345/138-kV Substation Expansion | CPS, STEC | Bexar, Atascosa |

# Study Assumptions – Generation

- New generation that met Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) before the end of December 2027 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 the September 2023 Generator Interconnection Status (GIS) report posted in MIS in October 2023
  - GIS Link: <https://www.ercot.com/gridinfo/resource>
  - See Appendix B for a list of generation projects added
- All new generation added was dispatched consistent with the 2022 RTP methodology
- All recent retired/indefinitely mothballed units were reviewed and turned off, if not already reflected in the 2022 RTP Final case

# Study Assumptions – Load & Reserve

- Load in study area
  - Load level is consistent with the 2022 RTP
- Reserve
  - Load outside of study weather zone(s) was adjusted to maintain the reserve consistent with the 2022 RTP



# Contingencies & Criteria

- Contingencies for Study Region
  - NERC TPL-001-5.1 and ERCOT Planning Criteria
  - Link: <http://www.ercot.com/mktrules/guides/planning/current>
    - P0 (System Intact)
    - P1, P2-1, P7 (N-1 conditions)
    - P2-2, P2-3, P4, and P5 (EHV only)
    - P3: G-1+N-1 (G-1: OW Sommers Unit 2, JK Spruce Unit 2, Guadalupe Gen CC1)
    - P6: X-1+N-1 (X-1: 345/138-kV transformers at Marion, San Miguel, Skyline)
- 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

# Study Procedure

- Need Analysis
  - The reliability analysis will be performed to identify the need to serve the projected San Antonio and surrounding area load using the study base case
- Project Evaluation
  - Project alternatives will be tested to satisfy the NERC and ERCOT reliability requirements
  - ERCOT may also perform the following studies:
    - Planned maintenance outage
    - Long-term Load Serving Capability Assessment
    - Dynamic stability impact
- Generation and Load Scaling Sensitivity Analyses
  - Planning Guide Section 3.1.3(4)
- Subsynchronous Resonance (SSR) Assessment
  - Nodal Protocol Section 3.22.1.3(2)
- Congestion Analysis
  - Congestion analysis may be performed based on the recommended transmission upgrades to ensure that the identified transmission upgrades do not result in new congestion within the study area

# Deliverables

- Tentative Timelines
  - Status updates at future RPG meetings
  - Final recommendation – Q1 2024

*Thank you!*



Stakeholder comments also welcomed through:

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# Appendix A – Transmission Projects

- List of transmission projects added to study base case

| TPIT No | Project Name   | Tier   | Project ISD | TSP     | County   |
|---------|--|--------|-------------|---------|----------|
| 71942   | LCRATSC_Birdhouse_Substation_Addition  | Tier 4 | Jun-23      | LCRATSC | Gonzales |
| 71319   | Upgrade Pearsall Station   | Tier 4 | Dec-23      | STEC    | Frio     |
| 67992   | CPSE_345KV_Howard_Switching_Station,CPSE_Hamilton_to_MedCtr_Upgrade,CPSE_Medina_to_36th_Street_Upgrade | Tier 3 | Feb-24      | CPS     | Bexar    |
| 67992C  | CPSE_345KV_Howard_Switching_Station,CPSE_Hamilton_to_MedCtr_Upgrade,CPSE_Medina_to_36th_Street_Upgrade | Tier 3 | May-24      | CPS     | Bexar    |
| 61356   | Hays Energy-Henne Split Transmission Line Upgrade  | Tier 3 | May-24      | LCRATSC | Hays     |
| 70534   | LCRATSC_Hueco_Springs_Sub_Add  | Tier 4 | May-24      | LCRATSC | Comal    |
| 72572   | Highway 32 capacitor bank addition   | Tier 4 | May-24      | PEC     | Hays     |
| 72878   | LCRATSC_Leesville_Substation_Addition  | Tier 4 | May-24      | LCRATSC | Gonzales |
| 70536   | New 138 kV Verde Circle Substation   | Tier 4 | Oct-24      | CPS     | Bexar    |
| 70714   | LCRATSC_La_Cima_Substation_Addition  | Tier 4 | Dec-24      | LCRATSC | Hays     |

# Appendix A – Transmission Projects (cont.)

| TPIT No | Project Name   | Tier   | Project ISD | TSP     | County    |
|---------|--|--------|-------------|---------|-----------|
| 70717   | LCRATSC_Yarrington_Substation_Addition   | Tier 4 | Dec-24      | LCRATSC | Hays      |
| 73059   | Barrera: Construct New Distribution Station  | Tier 4 | Jan-25      | AEP TCC | La Salle  |
| 73050   | LCRATSC_JohnDumas_Substation_Addition  | Tier 4 | Feb-25      | LCRATSC | Caldwell  |
| 71937   | Caterpillar Substation   | Tier 4 | Mar-25      | GVEC    | Guadalupe |
| 71917   | Upgrade STEC castroville to Pearson to 138kV   | Tier 2 | May-25      | STEC    | Medina    |
| 72268   | CPSE_New Ingram Rd Substation  | Tier 4 | May-25      | CPS     | Bexar     |
| 61358   | Highway 46-River Oaks Transmission Line Upgrade  | Tier 3 | May-25      | LCRATSC | Comal     |
| 70204   | LCRATSC_McCarty_Rattler_TL_Upgrade   | Tier 4 | May-25      | LCRATSC | Hays      |
| 70351   | LCRATSC_Rattler_Redwood_TL_Upgrade   | Tier 4 | May-25      | LCRATSC | Hays      |
| 73417   | LCRATSC_Schumansville_SheriffsPosse_StormHardening   | Tier 4 | May-25      | LCRATSC | Guadalupe |
| 73793   | LCRATSC_McCartyLaneEast_Zorn_TL_Storm_Hardening  | Tier 4 | May-25      | LCRATSC | Hays      |
| 73838   | LCRATSC_Redwood_SanMarcos_TL_Upgrade   | Tier 4 | May-25      | LCRATSC | Hays      |
| 67992A  | CPSE_345KV_Howard_Switching_Station,CPSE_Hamilton_to_MedCtr_Upgrade,CPSE_Medina_to_36th_Street_Upgrade | Tier 3 | Jun-25      | CPS     | Bexar     |

# Appendix A – Transmission Projects (cont.)

| TPIT No | Project Name   | Tier   | Project ISD | TSP     | County    |
|---------|--|--------|-------------|---------|-----------|
| 61234   | Antler-Bergheim Transmission Line Upgrade              | Tier 3 | May-26      | LCRATSC | Comal     |
| 61350   | Antler-Highway 46 Transmission Line Upgrade            | Tier 3 | May-26      | LCRATSC | Comal     |
| 61392   | Bergheim-Fair Oaks Ranch Transmission Line Upgrade     | Tier 4 | May-26      | LCRATSC | Comal     |
| 73106   | LCRATSC_Lockhart_SanMarcos_TL_Conversion_Updated       | Tier 4 | May-26      | LCRATSC | Caldwell  |
| 71408   | Upgrade CKT943 to 3000 amperes                         | Tier 4 | Jun-26      | AEN     | Caldwell  |
| 66023   | T340 T-Line Upgrade                                    | Tier 4 | Jul-26      | NBU     | Guadalupe |
| 67329   | San Miguel to Cruce 345 kV lines                       | Tier 1 | Jan-27      | STEC    | Atascosa  |
| 73053   | Wimberley Loop to New Substation                       | Tier 2 | May-27      | PEC     | Hays      |
| 71935   | STEC_71935_HCCastrovl138                               | Tier 2 | Feb-25      | STEC    | Medina    |
| 76790   | Upgrade Pearsall Auto                                  | Tier 4 | May-27      | STEC    | Frio      |
| 75255   | CPSE_Howard to San Miguel Double Circuit Line Addition | Tier 1 | Jun-27      | CPS     | Bexar     |
| 75682   | Add Branch between Libra and Elm Creek                 | Tier 4 | Nov-23      | CPS     | Wilson    |

# Appendix B – Generation Projects

- List of generation projects added to study base case

| GINR      | Project Name                  | Fuel | Project COD | Capacity (MW) | County    |
|-----------|-------------------------------|------|-------------|---------------|-----------|
| 22INR0366 | BRP Libra BESS                | OTH  | 01/26/2024  | 206.21        | Guadalupe |
| 22INR0368 | Padua Grid BESS               | OTH  | 12/01/2024  | 51.39         | Bexar     |
| 22INR0422 | Ferdinand Grid BESS           | OTH  | 05/31/2026  | 202.65        | Bexar     |
| 23INR0027 | Cachena Solar SLF             | SOL  | 12/31/2025  | 600           | Wilson    |
| 23INR0154 | Ebony Energy Storage          | OTH  | 04/01/2024  | 203.5         | Comal     |
| 23INR0381 | Soportar ESS                  | OTH  | 03/15/2025  | 102.11        | Bexar     |
| 24INR0427 | CPS AvR CT1 Rotor Replacement | GAS  | 01/30/2024  | 11.3          | Bexar     |
| 25INR0223 | Uhland Maxwell                | GAS  | 04/15/2025  | 181.1         | Caldwell  |
| 22INR0251 | Shaula I Solar                | SOL  | 10/30/2025  | 205.2         | DeWitt    |
| 22INR0267 | Shaula II Solar               | SOL  | 05/30/2026  | 205.2         | DeWitt    |