Oncor Connell 345/138-kV Switch and Connell to Rockhound 345-kV Double-Circuit Line Project – ERCOT Independent Review Scope

Ben Richardson

RPG Meeting
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Introduction

- Oncor submitted the Connell 345/138-kV Switch and Connell – Rockhound 345-kV Double-Circuit Project for Regional Planning Group (RPG) review in June 2024
  - This Tier 1 project is estimated to cost $110.62 million and will require a Certificate of Convenience and Necessity (CCN)
  - Estimated in-service date is December 2026
  - Addresses low voltages and thermal overloads expected as early as summer 2025 as a result of significant load growth primarily in oil and gas industry
- This project is currently under ERCOT Independent Review (EIR)

Study Area Map with Violations seen by Oncor

Proposed Project by Oncor

- Construct a new Connell 345/138-kV switching station approximately 1.0 mile west of existing Oncor Glass Ranch Switch, with two new 600 MVA (nameplate) 345/138-kV transformers, in a 6-breaker 345-kV breaker-and-a-half bus arrangement and a 10-breaker 138-kV breaker-and-a-half bus arrangement, with all 345-kV equipment will be rating at least 2988 MVA and 138-kV at least 765 MVA
- Construct two new Connell to Rockhound 345-kV lines, with conductors rated to at least 2988 MVA, in a new (estimated 13.0 mile) Right-of-Way (ROW), installed on new, common double-circuit towers
- Install two new 345-kV circuit breakers at Oncor's existing Rockhound 345-kV Switch, rated at least 2988 MVA
- Install two new 138-kV circuit breakers at Oncor's existing Sale Ranch 138-kV Switch, rated at least 765 MVA
- Disconnect Oncor's existing Tall City to Sale Ranch 138-kV line at structure 1/9

Proposed Project by Oncor – Cont.

- Rebuild 9.0-mile portion of Oncor's existing single circuit 19.2-mile Sale Ranch to Glass Ranch to Tall City 138-kV line from Sale Ranch to existing 1/9 Structure and replace 9.0-mile portion with two new conductors, rated to at least 614 MVA, installed on new, common double-circuit towers
- Construct two new Connell Switch to 1/9 structure 138-kV lines, with conductors rated to at least 614 MVA, in a new (estimated 0.1-mile) ROW, installed on new, common double-circuit towers configured to create a Connell Switch to Sale Ranch 138-kV double-circuit line
- Construct a new single Connell Switch to 1/9 structure 138-kV line, with conductor rated to at least 614 MVA, in a new (estimated 0.1-mile) ROW, installed in one position on new double-circuit towers leaving one position vacant and configured to create a new Connell Switch to Tall City 138-kV line
- Reconfigure Oncor's existing Red Sand 138-kV POD to be connected to the south circuit on the new Connell to Sale Ranch 138-kV double circuit line

Proposed Project by Oncor

Study Assumptions – Base Case

- Study Region
  - West and Far-West Weather Zones, focusing on the transmission elements northeast of Midland Texas in Martin and Midland Counties.
  - Monitor surrounding counties that are electrically close to the area
- Steady-State Base Case
  - Final 2023 Regional Transmission Planning (RTP) 2026 summer peak case for West and Far-West (WFW) Weather Zones, posted in Market Information System (MIS), will be updated to construct the summer peak load study base case
    - Case: 2023RTP_2026_SUM_WFW_12222023
    - Link: https://mis.ercot.com/secure/data-products/grid/regional-planning

Study Assumption - Transmission

- Based on the June 2024 Transmission Project and Information Tracking (TPIT) posted on MIS, projects with in-service dates before June 1, 2026, within the study area, will be 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 2023 RTP as placeholder projects within the study area will be removed to develop the study base case
  - See Appendix B for a list of placeholder projects removed

Study Assumptions – Generation

- New generation that met Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) before the end of December 1, 2026, in the study area at the time of the study, but not already modeled in the RTP cases, will be added to the case based on the June 2024 Generator Interconnection Status (GIS) report posted in MIS in February 2024
  - GIS Link: https://www.ercot.com/gridinfo/resource
  - See Appendix C for a list of generation projects added
- Generation will be dispatched consistent with the 2024 RTP methodology
- All recent retired/indefinitely mothballed units will be reviewed and opened (turned off), if not already reflected in the 2023 RTP final case

Study Assumptions – Load & Reserve

- Load in study area
  - Loads in the WFW Weather Zone will be maintained to be consistent with the 2023 RTP
  - New confirmed loads will be added to the study base case
- Reserve
  - Load outside of study Weather Zone(s) will be adjusted to maintain the reserve consistent with the 2023 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 (345-kV only)
    - P3: G-1+N-1 (G-1: Odessa Ector CC1)
    - P6: X-1+N-1 (X-1: 345/138-kV transformers at Midland East, Morgan Creek, Rockhound)
- 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 load northeast of Midland Texas in Martin and Midland Counties 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
  - The TSP will provide the Cost Estimate and Feasibility Assessment
- 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 – Q4 2024

Thank you!

Stakeholder comments also welcomed through:

Ben.Richardson@ercot.com
Robert.Golen@ercot.com

Appendix A – Transmission Projects

- List of transmission projects added to study base case

TPIT No	Project Name	Tier	Project ISD	County
78374	Rockhound 345/138 kV Switch	Tier 3	12/1/2024	Midland, Martin
73368	Grey Well Draw - Buffalo 138 kV Second Circuit	Tier 3	12/1/2024	Midland, Martin
45640	Sprayberry - Polecat Creek 138 kV Line	Tier 3	12/4/2025	Midland, Glasscock
80913	Sloan 138 kV Switch	Tier 4	5/1/2025	Midland
71960	Upgrade Grady - Expanse 138 kV Line	Tier 4	12/1/2024	Martin,
71989	Big Spring West - Stanton East 138 kV Line	Tier 4	12/1/2024	Martin, Howard

Appendix B – Transmission Projects

- List of transmission projects removed from the study base case

TPIT No	Project Name	County
None	None	None

Appendix C – Generation Projects

- List of generation projects added to study base case

GINR	Project Name	Fuel	Project COD	Capacity (~MW)	County
None	None	None	None	None	None