Oncor Forney 345/138-kV Switch Rebuild Project – ERCOT Independent Review Scope

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RPG Meeting
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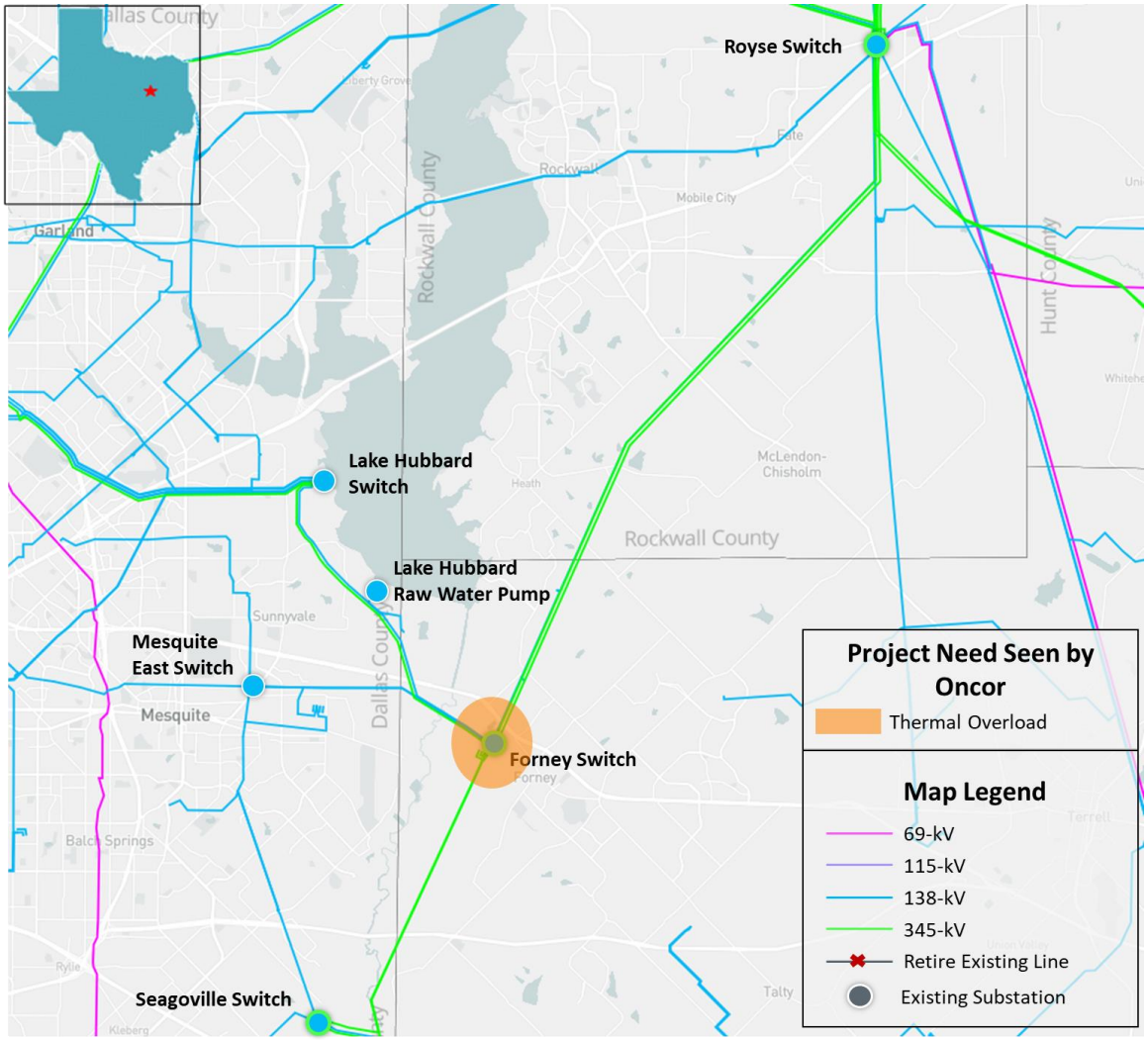
Introduction

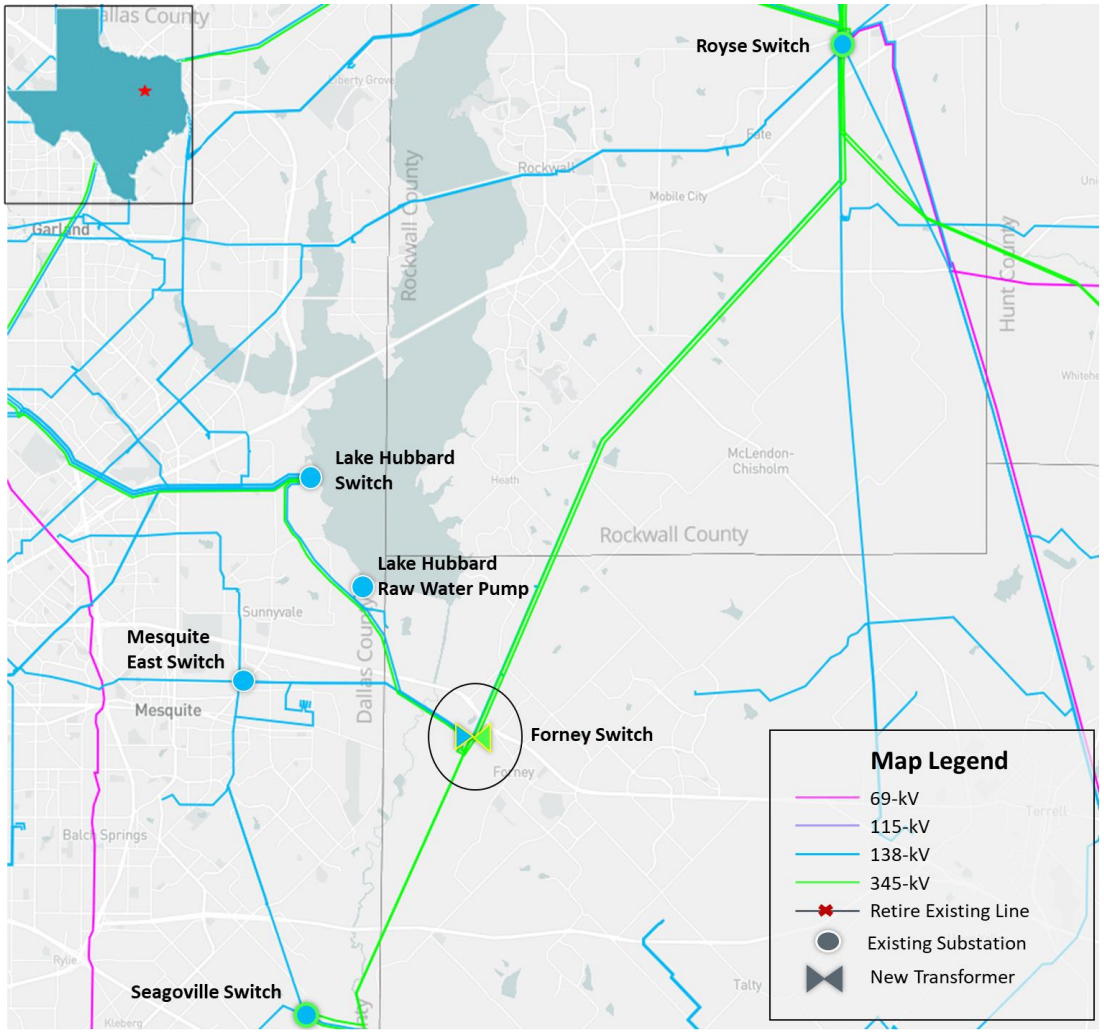
- Oncor submitted the Forney 345/138-kV Switch Rebuild Project for Regional Planning Group (RPG) review in July 2024
  - This Tier 1 project is estimated to cost $103.5 million and will not require a Certificate of Convenience and Necessity (CCN)
  - Estimated in-service date is December 1, 2025
  - Addresses Post-contingency thermal overloads seen in steady state assessment
  - Replace aged infrastructure to improve operational flexibility and system reliability concerns in Dallas/Forth Worth Metroplex
- This project is currently under ERCOT Independent Review (EIR)

Study Area Map with Violations seen by Oncor



Project Proposed by Oncor

- Rebuild Forney 345/138-kV Switch by installing fifteen 345-kV, 5000 A breakers and ten 138-kV, 3200 A breakers in breaker-and-a-half bus arrangements;
- Install a second 345/138-kV autotransformer at Forney Switch with nameplate rating of 600 MVA;
- Connect the Forney substation transformers to the Forney Switch – Mesquite East Switch 138-kV double-circuit Line;
- Install one 110.4-MVAr 138-kV capacitor bank; and
- Ensure all line terminal and associated equipment are rated to meet or exceed 5000 A for 345-kV and 3200 A for 138-kV.



Study Assumptions Base Case

- Study Region
  - North and North Central Weather Zones, focusing on the transmission elements near the Dallas Area in Dallas and Kauffman 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 North and North Central (NNC) Weather Zones, posted in Market Information System (MIS), will be updated to construct the summer peak load study base case
    - Case: 2023RTP_2026_SUM_NNC_12222023
    - Link: https://mis.ercot.com/secure/data-products/grid/regional-planning

Study Assumptions – Transmission

- Based on the June 2024 Transmission Project and Information Tracking (TPIT) posted on MIS, projects with in-service dates before December 1, 2025 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, 2025 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 August 2024 Generator Interconnection Status (GIS) report posted in MIS in September 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 NNC Weather Zone will be maintained to be consistent with the 2023 RTP
  - Newly approved loads in the study area 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: Forney Energy Center CC1)
    - P6: X-1+N-1 (X-1: Watermill, Seagoville, and Forney 345/138-kV transformers)
- 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 Dallas/Fort Worth Metroplex 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
  - 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:

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Appendix A – Transmission Projects

- List of transmission projects added to study base case

RPG/TPIT No	Project Name	Tier	Project ISD	County
22RPG021	Tawakoni Area Transmission Project	Tier 2	June-24	Hunt
23RPG006	North Lake 138 kV Switch Rebuild	Tier 4	May-24	Dallas
23RPG017	Watermill 345/138-kV Switch Project	Tier 3	May-25	Dallas
23RPG020	Hackberry Switch to DFW D East 2 138-kV Double-Circuit Line Section Project	Tier 3	Dec-25	Dallas
23RPG033	Watermill to Seagoville 138 kV Line Project	Tier 3	Dec-25	Dallas
24RPG005	Montfort Switch to Shankle Switch 138-kV Line Project	Tier 3	Dec-25	Ellis, Navarro
75628	Poetry 345 kV Switch	Tier 4	Oct-24	Kaufman
71976	Watermill 138 kV Switch	Tier 3	Dec-24	Dallas
78167	Add 2nd autotransformer at Trumbull	Tier 4	Nov-25	Ellis
71980	Watermill 345 kV Switch	Tier 3	Dec-25	Dallas
78367	Oncor_ME_Montfort-Shankle 138 kV Line	Tier 3	Dec-25	Navarro

Appendix B – Transmission Projects

- List of transmission projects removed from the study base case

TPIT No	Project Name	County
2023-NC18	Tri Corner (2432) to Seagoville Switch (2433) to Forney Switch (2437) 345-kV Line Upgrade	Dallas
2023-NC38	Watermill 345/138-kV Transformer Upgrade	Dallas
2023-NC41	Watermill 138-kV Area Upgrades	Dallas
2023-NC42	Waxahachie Area 69-kV and 138-kV Line Upgrades	Ellis
2023-NC43	Wilmer 138/69-kV Transformer Upgrade	Dallas

Appendix C – New Generation Projects to Add

GINR	Project Name	Fuel	Projected COD	Capacity (~MW)	County
19INR0110	Azalea Springs Solar	SOL	05/31/2025	181.0	Angelina
20INR0203	Pine Forest Solar	SOL	12/01/2025	301.5	Hopkins
20INR0208	Signal Solar	SOL	03/15/2025	51.8	Hunt
20INR0222	Tyson Nick Solar	SOL	08/01/2025	90.5	Lamar
21INR0240	La Casa Wind	WIN	03/22/2025	148.4	Stephens
21INR0368	Eliza Solar	SOL	12/20/2024	151.7	Kaufman
21INR0379	Ash Creek Solar	SOL	01/31/2025	417.7	Hill
21INR0511	Wolf Ridge Repower	WIN	08/31/2024	121.5	Cooke
21INR0515	Roadrunner Crossing Wind II SLF	WIN	10/31/2024	126.7	Eastland
22INR0260	Eliza Storage	OTH	02/17/2025	100.4	Kaufman
22INR0526	Pine Forest BESS	OTH	10/29/2025	200.74	Hopkins
22INR0554	Platinum Storage	OTH	03/03/2025	309.5	Fannin
22INR0555	TE Smith Storage	OTH	07/15/2025	125.4	Rockwall
23INR0026	Baker Branch Solar	SOL	09/30/2024	469.4	Lamar
23INR0030	Langer Solar	SOL	03/01/2027	249.8	Bosque
23INR0070	Chillingham Solar	SOL	10/18/2024	352.4	Bell
23INR0114	True North Solar	SOL	12/05/2024	238.8	Falls
23INR0118	Blevins Solar	SOL	07/01/2025	271.6	Falls
23INR0119	Blevins Storage	OTH	07/01/2025	181.3	Falls
23INR0195	Desert Willow BESS	OTH	02/03/2025	154.4	Ellis
23INR0296	Trojan Solar SLF	SOL	02/28/2026	153.0	Cooke

Appendix C – New Generation Projects to Add (cont.)

GINR	Project Name	Fuel	Projected COD	Capacity (~MW)	County
23INR0299	Anole BESS	OTH	05/30/2025	247.1	Dallas
23INR0349	Tokio Solar	SOL	08/25/2025	170.5	McLennan
23INR0367	Fewell Solar	SOL	09/09/2025	203.5	Limestone
23INR0403	Connolly Storage	OTH	09/06/2024	125.4	Wise
23INR0469	Big Elm Storage	OTH	11/10/2025	100.8	Bell
24INR0010	Pinnington Solar	SOL	10/15/2025	666.1	Jack
24INR0015	Five Wells Solar	SOL	09/15/2024	322.8	Bell
24INR0023	Compadre Solar	SOL	12/25/2024	406.1	Hill
24INR0038	SP Jaguar Solar	SOL	06/01/2026	300.0	McLennan
24INR0039	SP Jaguar BESS	OTH	06/30/2025	314.3	McLennan
24INR0138	Midpoint Storage	OTH	08/30/2025	51.3	Hill
24INR0139	Midpoint Solar	SOL	08/30/2025	99.8	Hill
24INR0140	Gaia Storage	OTH	07/31/2025	76.8	Navarro
24INR0141	Gaia Solar	SOL	07/31/2025	152.7	Navarro
24INR0198	Two Forks BESS	OTH	07/01/2027	309.0	Cooke
24INR0295	Lucky Bluff BESS SLF	OTH	10/15/2025	100.8	Erath
24INR0312	Wigeon Whistle BESS	OTH	09/23/2024	122.9	Collin
24INR0315	Black Springs BESS SLF	OTH	10/15/2025	120.7	Palo Pinto
24INR0631	Radian Storage SLF	OTH	12/31/2024	160.25	Brown
25INR0105	Diver Solar SLF	SOL	06/30/2026	225.6	Limestone
25INR0231	Apache Hill BESS	OTH	11/15/2026	201.2	Hood