Oncor – Delaware Basin Stages 3 and 4 Project ERCOT Independent Review Scope

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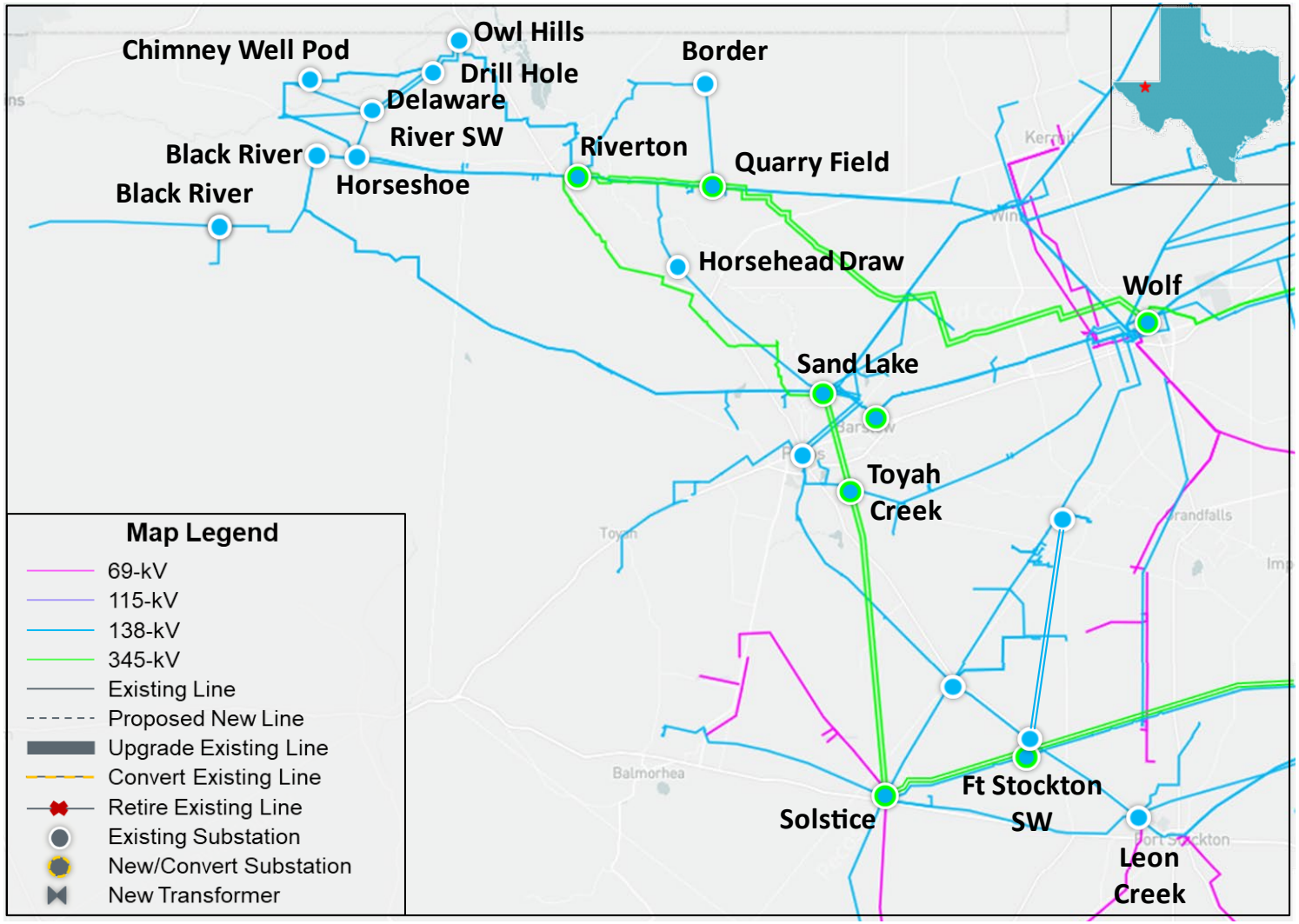
RPG Meeting
May 14, 2024

Introduction

- Oncor submitted the Delaware Basin Stages 3 and 4 Project for Regional Planning Group (RPG) review in March 2024
  - This Tier 1 project is estimated to cost $202.2 million
  - Filling of Certificate of Convenience and Necessity (CCN) will be required
  - Estimated in-service date is Summer 2027
  - Project is needed to addresses reliability issues in the Delaware Basin area in the Culberson, Loving, Reeves, and Ward Counties in the Far West (FW) Weather Zone due to the significant load addition in the FW Weather Zone
- Project need and solution was identified in the 2019 ERCOT Delaware Basin Load Integration Study
- This project is currently under ERCOT Independent Review (EIR)

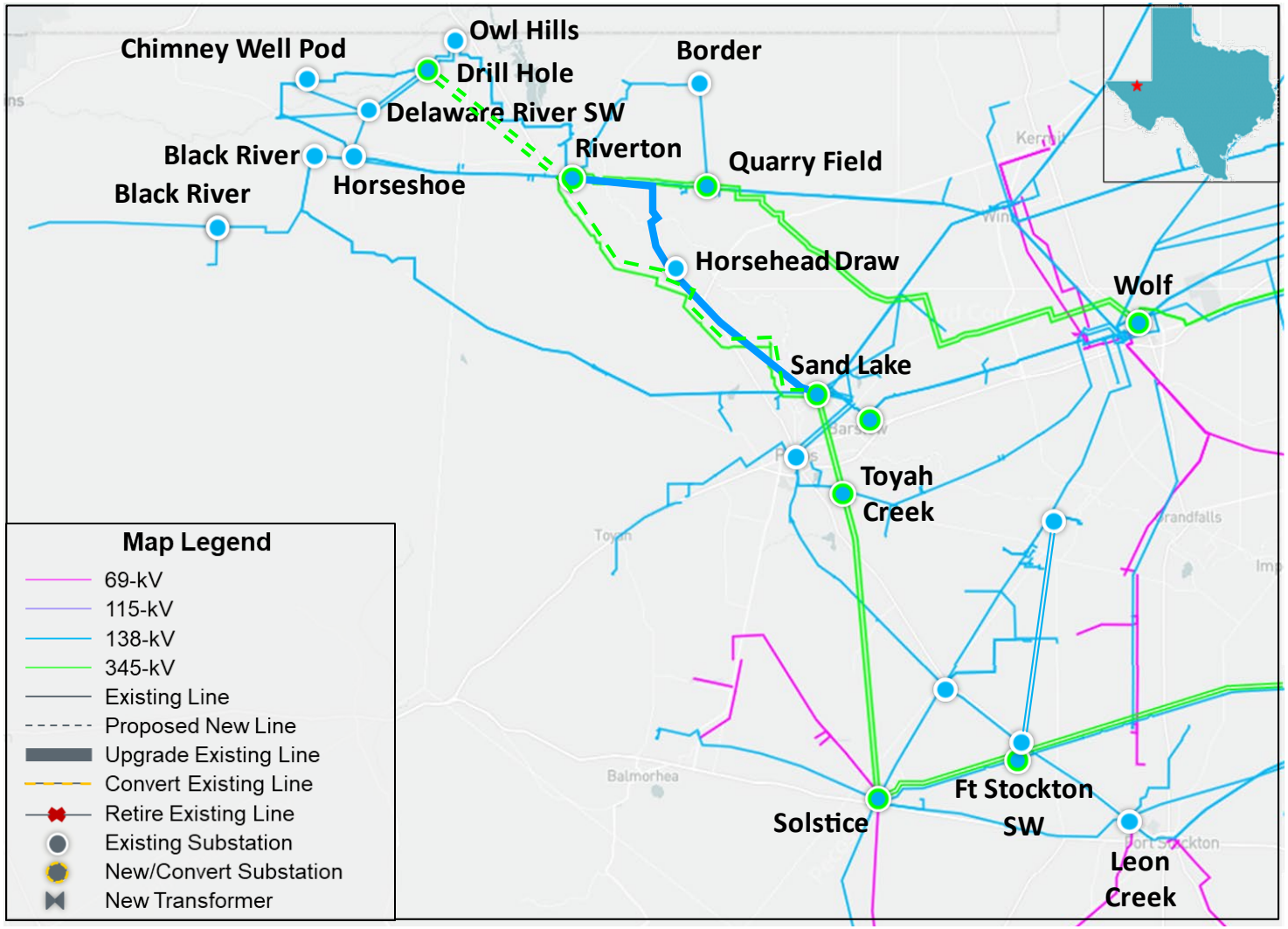
Study Area Map



Proposed Project by Oncor

- Expand the existing Drill Hole Capacitor station into a 345/138-kV Switch by installing a 345/138-kV Switch and two 600 MVA 345/138-kV autotransformers. The Drill Hole 345/138-kV Switch will initially be constructed with an 8-breaker, 345-kV breaker-and-a-half bus arrangement, and a 10-breaker, 138-kV breaker-and-a-half bus arrangement. All terminal and associated equipment will meet or exceed 5000 A for 345-kV and 3200 A for 138-kV
- Construct a loop of the existing Riverton – Owl Hills – Horseshoe Springs 138-kV double-circuit line into the new Drill Hole 138-kV Switch, normal and emergency rating of 614 MVA, ~0.1-mile
- Connect the existing Drill Hole 138-kV Capacitors to the expanded Drill Hole 138-kV Switch
- Construct a new Drill Hole – Riverton 345-kV Double-circuit Line, normal and emergency rating of 2988 MVA, ~18.0-mile
- Install five 5000 A, 345-kV circuit breakers at the existing Riverton Switch
- Install one 5000 A, 345-kV circuit breaker at the existing Sand Lake Switch
- Convert the existing Riverton – Sand Lake 138-kV Line to 345-kV operational by terminating both endpoints into the existing 345-kV stations at Riverton and Sand Lake, normal and emergency rating of 2988 MVA, 40.8-mile
- Construct the new Riverton – Sand Lake 138-kV Line on 138-kV double-circuit structures, with one circuit in place, normal and emergency rating of 614 MVA, ~0.8-mile
- Construct a loop of the new Riverton – Sand Lake 138-kV line into the existing Horsehead Draw 138-kV substation, normal and emergency rating of 614 MVA, ~ 0.1-mile

Map with Project Proposed by Oncor



Study Assumptions – Base Case

- Study Region
  - FW Weather Zone, focusing on the transmission elements in the Culberson, Loving, Reeves, and Ward Counties in the Delaware Basin Area
- Steady-State Base Case
  - Final 2023 Regional Transmission Planning (RTP) 2028 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_2028_SUM_WFW_12222023
    - Link: https://mis.ercot.com/secure/data-products/grid/regional-planning

Study Assumption - Transmission

- Based on the February 2024 Transmission Project and Information Tracking (TPIT) posted on ERCOT website, projects with in-service dates on or before June 2027 within the study area will be added to the study base case if not already modeled in the study base case
  - TPIT Link: https://www.ercot.com/gridinfo/planning
- All recently approved RPG projects in the study area will also be added to the study base case
- See Appendix A for the list of new added transmission projects to be added

Study Assumptions – Generation

- Based on the March 2024 Generator Interconnection Status (GIS) report posted on MIS in April 2024, new generation that met Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) on or before June 2027 in the study area at the time of the study, but not already modeled in the RTP cases, will be added to the study base case GIS
  - GIS Link: https://www.ercot.com/gridinfo/resource
  - See Appendix B for the list of generation projects to be added
- All 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
  - Oil & Gas loads in the FW Weather Zone will be updated based the S&P Global Load Forecast
  - Large Loads with Singed Interconnection Agreement (IA) will also be added in the FW Weather Zone
- Reserve
  - Load outside of WFW Weather Zones may be adjusted to maintain the reserve consistent with the 2023 RTP

Contingencies and Criteria

- Contingencies
  - NERC TPL-001-5.1 and ERCOT Planning Criteria
  - Link: https://www.ercot.com/mktrules/guides/planning/current
    - P0 (System Intact)
    - P1, P2-1, P7 (N-1 condition)
    - P2-2, P2-3, P4, and P5 (EHV only)
    - P3-1 (G-1+N-1: G-1 of Permian Basin all five units, Odessa combined cycle train 1)
    - P6-2 (X-1+N-1: X-1 of Riverton, Sand Lake, and Quarry Field 345/138-kV transformers)
- Criteria
  - Monitor all 60-kV and above buses, transmission lines, and transformers in the study area (excluding generator step-up (GSU) transformers)
  - Thermal
    - Use Rate A for pre-contingency conditions
    - Use Rate B for post-contingency conditions
  - Voltage
    - Voltages exceeding their pre-contingency and post-contingency limits
    - Voltage deviations exceeding 8% on non-radial load busses

Study Procedure

- Need Analysis
  - Reliability analysis will be performed to identify the need to serve the projected area load using the study base case
- Project Evaluation
  - Proposed project will be tested to satisfy the NERC and ERCOT reliability requirements.
  - Generation Addition 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 – Q3 2024

Thank you!

Stakeholder comments also welcomed through:

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Appendix A – New Transmission Projects Added

TPIT No	Project Name	Tier	Project ISD	TSP	From County
6719	Twelvemile Substation Addition	4	5/30/2025	LCRATSC	Pecos
72863	Delaware River 138 kV Switch	4	5/15/2024	ONCOR	Culberson
72935	Saragosa: Install 2nd Bay	4	9/30/2024	AEP TNC	Reeves
73381	TNMP_JACKRABBIT_CUTIN_AC_4-5-2023	4	8/2/2023	TNMP	Pecos
73452	TNMP_WINK_FISHHOOK_RECONDUCTOR_AC_4-5-2023	4	1/31/2024	TNMP	Pecos
73476	TNMP_KERMIT_RECONDUCTOR	4	12/31/2024	TNMP	Pecos
76151	Gas Pad Tap: Replace CTVT	4	4/30/2024	AEP TNC	Reeves
76174	Origin 138 kV Interconnection	4	6/30/2025	AEP TNC	Reeves
76212	Model Coachwhip Sub	4	5/31/2024	TNMP	Ward
76232	Reconductor Mivida-Coachwhip-Fishhook 2045 ACCC	4	5/31/2026	TNMP	Ward
76291	Upgraded Cedarvale–BoneSpringsTap–Fishhook	4	5/31/2026	TNMP	Ward
76293	Upgraded Cedvale-MiDiva138KV	4	5/31/2026	TNMP	Ward
76348	Reconductor Foxtail-PIGCreek-1926ACSS-138KV	4	5/31/2026	TNMP	Pecos
76696	Construct a new Border – Shifting Sands 138 kV Line	2	12/15/2026	ONCOR	Loving
76719	Establish Bull Moose 138 kV Switch	4	12/15/2024	ONCOR	Loving
77146	Reconducter WNK-AAT-MDT-FSH	4	1/31/2024	TNMP	Winkler
77320	Add CapBANK in COYANOSA	4	6/1/2026	TNMP	Ward
78044	ROCK DRAW 345 kV Switch	3	12/30/2026	ONCOR	Ward
78046	TOYAH CREEK 345 kV Switch	3	12/30/2026	ONCOR	Ward

Appendix A – New Transmission Projects Added (Cont.)

RPG No	Project Name	Tier	Project ISD	TSP	From County
22RPG045	Yucca to Moss 138 kV Line Project	4	5/1/2024	ONCOR	Ward
23RPG013	Silverleaf and Cowpen 345/138-kV Stations Project	1	5/31/2025	AEPSC	Ward, Reeves
23RPG023	Pecos County Transmission Improvement Project	1	6/1/2027	TNMP	Pecos
23RPG027	Bakersfield Dynamic Reactive Substation Upgrade	1	8/31/2026	TNMP	Pecos

Appendix B – New Generation Added

GINR	Project Name	Fuel	Projected COD	Capacity (MW)	County
19INR0203	Angelo Solar	SOL	5/31/2024	195.4	Tom Green
21INR0424	Tierra Bonita Solar	SOL	9/26/2024	306.9	Pecos
22INR0502	Shamrock	WIN	4/19/2024	223.9	Crockett
23INR0219	Dogfish BESS	OTH	4/16/2025	75.0	Pecos
23INR0387	Pioneer DJ Wind	WIN	5/3/2024	140.3	Midland
23INR0418	Angelo Storage	OTH	5/31/2024	103.0	Tom Green
23INR0470	BoCo BESS	OTH	6/22/2024	155.5	Borden
23INR0525	Pyron Wind Repower	WIN	6/3/2024	19.9	Nolan
24INR0273	Al Pastor BESS	OTH	8/16/2024	103.1	Dawson