



TNMP – Silverleaf and Cowpen 345/138-kV Stations Project ERCOT Independent Review Scope

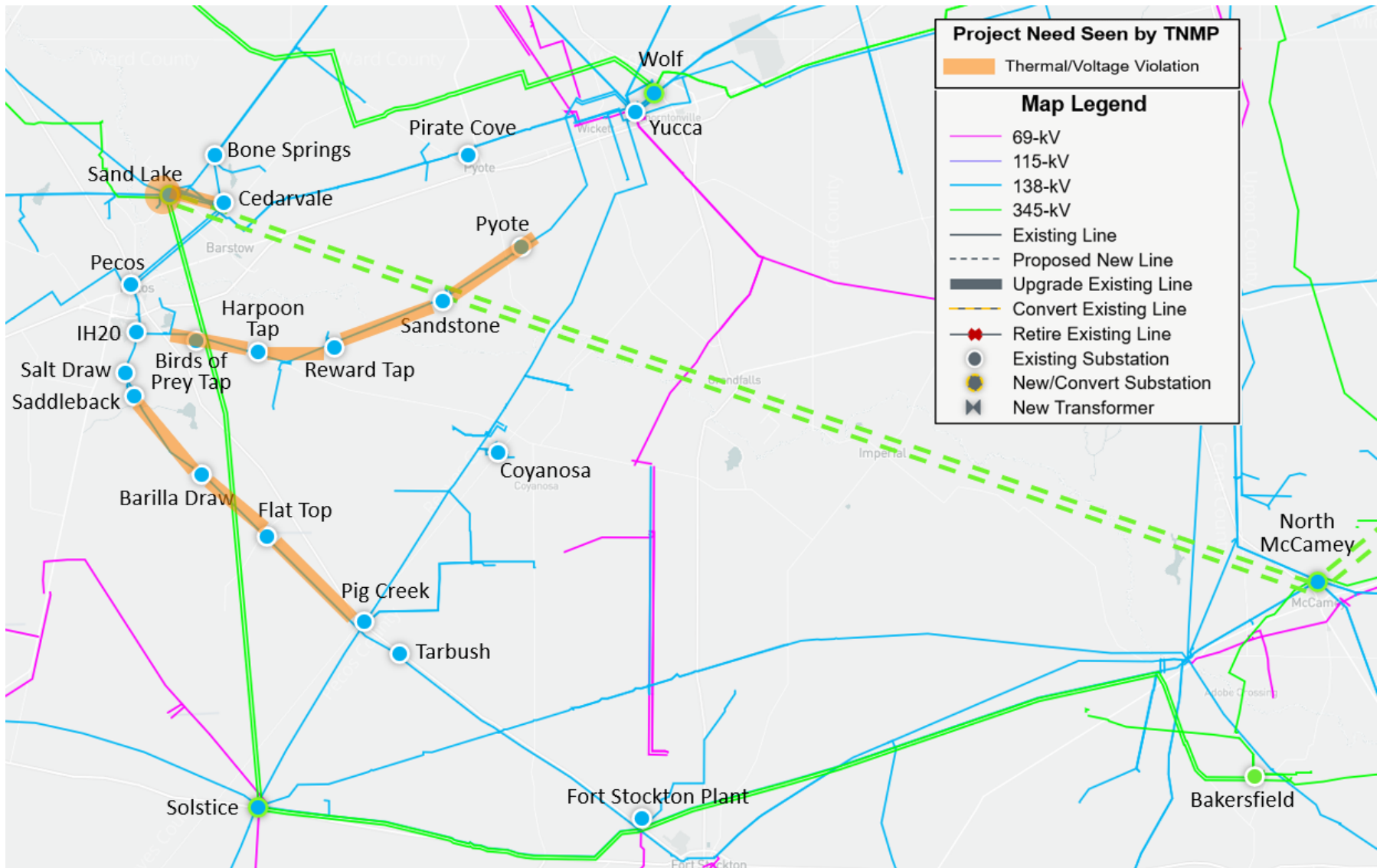
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RPG Meeting
July 18, 2023

Introduction

- TNMP submitted the Silverleaf and Cowpen 345/138-kV Stations Project for Regional Planning Group (RPG) review in May 2023
 - This Tier 1 project is estimated to cost \$299 million and will require Certificate of Convenience and Necessity (CCN) filings
 - Estimated in-service date
 - June 2027
 - Addresses both thermal overloads and voltage violations in the Reeves and Ward Counties in the Far West weather zone
 - TNMP has expressed need for “critical status designation”
- This project is currently under ERCOT Independent Review (EIR)

Study Area Map



Proposed Project by TNMP

- 345-kV support nearby TNMP Cedarvale substation
 - Add a new 345-kV switching station, nearby TNMP Cedarvale 138-kV substation, by cutting into the planned North McCamey – Sand Lake 345-kV double-circuit transmission line
 - Add a new Silverleaf 345/138-kV station with three 345/138-kV transformers, connecting to the new 345-kV switching station via three 345-kV tie-lines
 - Loop the existing Cedarvale - Pecos 138-kV line #1 and line #2 into the new Silverleaf 138-kV station
 - Loop the existing Cedarvale – Bone Springs 138-kV line into the new Silverleaf 138-kV station
- 345-kV support nearby TNMP IH20 substation
 - Add a new 345-kV switching station, about 13 miles away from the existing Sand Lake 345-kV substation, by cutting into the existing Sand Lake – Solstice 345-kV double-circuit transmission line
 - Add a new Cowpen 345/138-kV station with two 345/138-kV transformers, connecting to the new 345-kV switching station via two 345-kV tie-lines
 - Loop the existing IH20 – Salt Draw 138-kV line into the new Cowpen 138-kV station. The line extensions are estimated at approximately 7 miles each
 - Loop the existing Birds of Prey Tap – Harpoon Tap 138-kV line into the new Cowpen 138-kV station. The line extensions are estimated at approximately 0.25 miles each

Study Assumptions – Base Case

- Study Region
 - Far West weather zone, focusing on the transmission elements in the Delaware Basin area especially in Reeves and Ward Counties
- Steady-State Base Case
 - Final 2022 Regional Transmission Planning (RTP) 2027 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: 2022RTP_2027_SUM_WFW_12222022
 - Link: <https://mis.ercot.com/secure/data-products/grid/regional-planning>

Study Assumption - Transmission

- Based on the May 2023 Transmission Project and Information Tracking (TPIT) posted on ERCOT website, RPG approved Tier 1, Tier 2, and Tier 3 projects as well as Tier 4 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 case
 - TPIT Link: <https://www.ercot.com/gridinfo/planning>
 - See appendix for the list of transmission projects to be added

Study Assumption – Transmission (cont.)

- Transmission projects identified in the 2022 RTP as placeholders related to this RPG project will be removed to develop the study base case

RTP Project ID	Project Name	TSP	County
2022-FW2	Cedarvale 345-kV Substation Expansion	TNMP, Oncor	Ward
2022-FW4	New Opyote to Pyote 138-kV Line Addition	TNMP, Oncor	Ward
2022-FW6	Far West Reactive Power Support Device Additions	TNMP, Oncor	Ward, Ector, Reeves, Pecos
2022-FW9	Cholla 345/138-kV Station Addition	TNMP, Oncor	Ward, Loving
2022-FW11	Pecos TNP - Faulkner Toyah TNP 138-kV Line Addition	TNMP	Reeves
2022-FW12	Tarbush TNP - Pig Creek 138-kV Line Upgrade	TNMP, AEP	Reeves
2022-FW25	Cedarvale Third 345/138-kV Transformer Addition	TNMP	Ward
2022-FW26	Tarbush TNP - Leon Creek TNP and Woodward - Airport TNP - Leon Creek TNP 138-kV Line Additions	TNMP	Pecos

Study Assumptions – Generation

- New generation that met Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) 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 based on the June 2023 Generator Interconnection Status (GIS) report posted in MIS in July 2023
 - GIS Link: <https://www.ercot.com/gridinfo/resource>
 - See appendix for the list of generation projects to be added
- All new generation added will be dispatched consistent with the 2022 RTP methodology
- All recent retired/indefinitely mothballed units will be reviewed and turned off, if not already reflected in the 2022 RTP Final case

Study Assumptions – Load & Reserve

- Load in study area
 - Loads in the Far West weather zone will be reviewed and updated to reflect the load level in the 2023 RTP
- Reserve
 - Load outside of WFW weather zones may be adjusted to maintain the reserve consistent with the 2022 RTP

Contingencies and Criteria

- Contingencies
 - NERC TPL-001-5 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 (G-1+N-1: G-1 of Permian Basin all five units, Riggins solar)
 - P6-2 (X-1+N-1: X-1 of Sand Lake, Solstice 345/138-kV transformer)
- Criteria
 - Monitor all 60-kV and above buses, transmission lines, and transformers in the study area (excluding generator step-up 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
 - The reliability analysis will be performed to identify the need to serve the projected 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 – Q4 2023

Thank you!



Stakeholder comments also welcomed through:

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Appendix – New Transmission Projects Added

TPIT No	Project Name	Tier	Project ISD	TSP	From County
66571	Texaco Mabee Tap - Midland East 138 kV Line Rebuild	Tier 4	Sep-23	ONCOR	Midland
66621	Sandhills - Sandhills Tap 138 kV Line Rebuild	Tier 4	May-23	ONCOR	Ector
68793	Expanse 345/138 kV Switch	Tier 3	May-23	ONCOR	Martin
70596	LCRATSC_CraneEast_CB_Sub_Upgrade	Tier 4	May-23	LCRATSC	Upton
66074	Double ckt Soaptree-Holiday-AlamoSt	Tier 4	Dec-23	TNMP	Pecos
45670	East Stiles - Rocky Road 138 kV Line	Tier 4	Dec-23	ONCOR	Reagan
45689	Pronghorn - Salt Flat Road 138 kV Line	Tier 4	Dec-23	ONCOR	Midland
48587	Tesoro 345/138 kV Switch	Tier 3	Dec-23	ONCOR	Midland
68780	Triangle - Yosemite 138 kV Line	Tier 4	Dec-23	ONCOR	Midland
71190	Einstein - St Lawrence 138 kV Line	Tier 4	Dec-23	ONCOR	Glasscock
71193	Blue Acres - Yosemite 138 kV Line	Tier 4	Dec-23	ONCOR	Midland
71196	Grey Well Draw - Pecan Grove 138 kV Line	Tier 4	Dec-23	ONCOR	Midland
50725	Coalson Draw 138 kV Switch	Tier 4	May-24	ONCOR	Reeves
51225	Driver - Hadacol Corner 138 kV Line	Tier 4	May-24	ONCOR	Midland
71172	Luther - Vealmoor 138 kV Line	Tier 4	May-24	ONCOR	Borden
45640	Spraberry - Polecat Creek 138 kV Line	Tier 3	Dec-24	ONCOR	Midland
45693	Rocky Road - Stiles 138 kV Line	Tier 4	Dec-24	ONCOR	Reagan
52332	Lamesa - Paul Davis Tap 138 kV Line Section	Tier 3	Dec-24	ONCOR	Dawson

Appendix – New Transmission Projects Added (cont.)

TPIT No	Project Name	Tier	Project ISD	TSP	From County
71175	Tall City - Pecan Grove 138 kV Line	Tier 4	Dec-24	ONCOR	Midland
71968	Midkiff - Pemkiff 138 kV Line	Tier 4	Dec-24	ONCOR	Upton
71971	Peck - Driver 138 kV Line	Tier 2	Dec-24	ONCOR	Glasscock
71989	Big Spring West - Stanton East 138 kV Line	Tier 4	Dec-24	ONCOR	Martin
71993	Tributary - Vincent 138 kV Line Section	Tier 4	Dec-24	ONCOR	Howard
68669	Adds Staghorn Switching Station	Tier 4	Jun-25	TNMP	Ward
23RPG008	Fort Stockton Plant to Lynx 138-kV Line Rebuild Project	Tier 4	May-25	AEPSC	Pecos
68955	Meteor 345 kV Switch	Tier 4	May-24	ONCOR	Ward
68790	Wolf - General Tire - Odessa EHV 138 kV Line	Tier 3	Dec-25	ONCOR	Ector
71199	Yucca Drive - Moss 138 kV Line	Tier 4	May-24	ONCOR	Ector
70964	WETT 345 kV Volta witch	Tier 3	Jan-24	WETT	Howard
71960	Upgrade Grady - Expanse 138 kV Line	Tier 4	Dec-24	ONCOR	Martin
73452	TNMP_WINK_FISHHOOK_RECONDUCTOR_AC_4-5-2023	Tier 4	Nov-23	TNMP	Pecos
73476	TNMP_KERMIT_RECONDUCTOR	Tier 4	Jan-24	TNMP	Pecos
72884	Gonzales: Build 69 kV STATCOM	Tier 4	May-24	ETT	Presidio
73406	TMentone 138 kV POD	Tier 4	May-25	ONCOR	Loving
68671	Adds Foxtail Switching Station	Tier 4	Oct-22	TNMP	Reeves
72863	Delaware River 138 kV Switch	Tier 4	May-24	ONCOR	Culberson
73434	Shaw 138 kV POD	Tier 4	May-24	ONCOR	Reagan

Appendix – New Generation Projects Added

GINR	Project Name	Fuel	Projected COD	Capacity (MW)	County
18INR0043	Lacy Creek wind	Wind	06/01/2023	301.3	Glasscock
20INR0249	Appaloosa Run Wind	Wind	07/07/2023	175	Upton
20INR0269	Texas Solar Nova 2	Solar	12/29/2023	201.14	Kent
20INR0296	Sand Bluff Wind Repower	Wind	05/11/2023	89.5	Glasscock
21INR0253	Ulysses Solar	Solar	11/01/2024	150	Coke
21INR0532	Brazos Wind Repower	Wind	08/14/2023	22.4	Scurry
22INR0349	BRP Antlia BESS	Battery	12/01/2023	70.95	Val Verde
22INR0363	Hayhurst Texas Solar	Solar	11/01/2023	24.76	Culberson
22INR0412	Andromeda Solar	Solar	06/30/2023	326.6	Scurry
22INR0454	DR Solar	Solar	06/01/2024	46.02	Culberson
22INR0455	Blue Sky Sol	Solar	06/15/2024	101.2	Crockett
22INR0485	House Mountain	Battery	08/25/2023	63	Brewster
22INR0495	TIMBERWOLF BESS 2	Battery	09/01/2023	150	Crane
22INR0502	Shamrock	Wind	07/01/2024	223.92	Crockett
22INR0524	St. Gall I Energy Storage	Battery	12/01/2023	102.6	Pecos
23INR0371	Rodeo Ranch Energy Storage	Battery	07/31/2023	307.46	Reeves
23INR0387	Pioneer DJ Wind	Wind	04/20/2024	140.32	Midland
19INR0203	Angelo Solar	Solar	05/03/2024	195.41	Tom Green
23INR0418	Angelo Storage	Battery	05/03/2024	102.97	Tom Green