



**The Reliability and Markets (R&M) Committee  
is expected to consider  
R&M Committee Agenda Item 7:**

***Recommendation regarding TNMP Pecos  
County Transmission Improvement Regional  
Planning Group (RPG) Project***

**at its meeting on February 26, 2024.**

**The Board of Directors is expected to hear  
the R&M Committee's recommendation on  
this matter as part of the  
R&M Committee Report  
at the Board meeting  
on February 27, 2024.**

**Attached are the Board and Committee  
materials in relation to these agenda items.**



## **Item 7: Recommendation regarding TNMP Pecos County Transmission Improvement Regional Planning Group (RPG) Project**

*Kristi Hobbs*

Vice President, System Planning and  
Weatherization

Reliability and Markets Committee Meeting

ERCOT Public

February 26, 2024

# Reliability and Markets Committee Request

- **Purpose**
  - Provide an overview of the \$114.8 million TNMP Pecos County Transmission Improvement Tier 1 Reliability Project.
- **Voting Items / Requests**
  - ERCOT staff requests and recommends that the Reliability and Markets (R&M) Committee recommend that the Board of Directors (Board):
    1. Endorse the Pecos County Transmission Improvement Regional Planning Group (RPG) Project based on ERCOT reliability planning criteria; and
    2. Designate the project as critical to the reliability of the ERCOT System pursuant to PUCT Substantive Rule 25.101(b)(3)(D).

## Key Takeaways:

- The Pecos County Transmission Improvement Project is a Tier 1 project requiring Board consideration for endorsement, following a recommendation by the R&M Committee.
- The Project has completed RPG review and received an independent assessment from ERCOT staff and unanimous endorsement by the Technical Advisory Committee (TAC).
- ERCOT studied several options and recommends Option 1 to address the reliability violations, improve the long-term load serving capability, provide an additional load interconnection point and improve operational flexibility in the Reeves and Ward Counties

# Tier 1 Project Requirement

- ERCOT Protocol Section 3.11.4, Regional Planning Group Project Review Process, defines the level of transmission projects that require Board consideration
  - Projects with an estimated capital cost of \$100 Million or greater are Tier 1 projects (3.11.4.3)
  - Tier 1 projects require Board endorsement (3.11.4.7)
  - ERCOT shall present Tier 1 projects to TAC for review and comment; and comments from TAC shall be included in the presentation to the Board (3.11.4.9)
- Pursuant to R&M Committee Charter Section IV(B)(2)(a)
  - R&M Committee's duties include reviewing and making recommendations to the Board regarding any Tier 1 project

**Key Takeaway:** The Pecos County Transmission Improvement Project is a Tier 1 project requiring Board consideration for endorsement, with prior review and recommendation by the R&M Committee.

# Pecos County Transmission Improvement Project

- TNMP submitted the Pecos County Transmission Improvement Project for RPG review in August 2023
- The purpose of the project is to address the reliability need in the Reeves and Ward Counties in the Far West Weather Zone under planned maintenance outage conditions
- ERCOT performed an independent review of the project
  - ERCOT’s endorsement of the project is based on the reliability need to relieve thermal overloads on 52.2 miles of 138-kV transmission lines, 26 voltage violations and 5 instances of voltage instability in the Reeves and Ward Counties to meet ERCOT reliability planning criteria under planned maintenance outage conditions
- ERCOT presented the project to TAC on January 24, 2024
  - TAC voted unanimously to endorse the project (Option 1 from the ERCOT review)

**Key Takeaway:** The Pecos County Transmission Improvement Project has completed RPG review and received unanimous endorsement by TAC.



## Basis for ERCOT Board Endorsement

- ERCOT's independent review identified a reliability need for the Pecos County Transmission Improvement Project to satisfy the ERCOT Planning Guide Section 4.1.1.8, Maintenance Outage Reliability Criteria
- The contingency is a loss of a single transmission element or common tower followed by a single transmission element or common tower outage

**Key Takeaway:** The Pecos County Transmission Improvement Project is needed to meet reliability under ERCOT Planning Guide.

## ERCOT Recommendation

ERCOT recommends Option 1 from the ERCOT review of the TNMP project to:

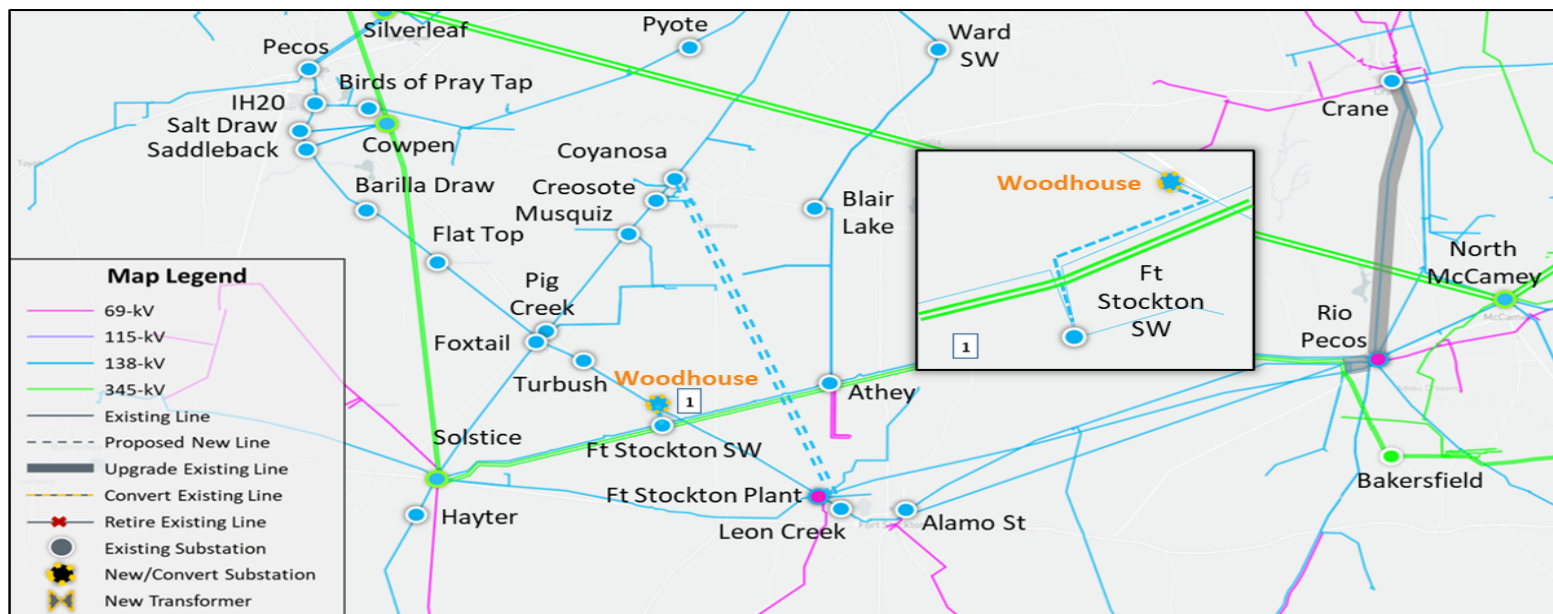
- Construct a new Coyanosa – Leon Creek 138-kV double-circuit lines with rating of at least 717 MVA, will require approximately 31.1-mile of new Rights of Way (ROW)
- Construct a new Woodhouse 138-kV substation by cutting into the existing Tarbush to Leon Creek 138-kV transmission line
- Construct a new tie Woodhouse – Ft. Stockton SW 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.1-mile
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile

**Key Takeaway:** ERCOT studied several options and recommends Option 1 to address the reliability violations, improve the long-term load serving capability, provide an additional load interconnection point and improve operational flexibility in the Reeves and Ward Counties.

# Request for Committee Vote

ERCOT staff requests and recommends that the R&M Committee recommend that the Board:

- Endorse the need for the Pecos County Transmission Improvement Project (Option 1) based on NERC and ERCOT reliability planning criteria
- Designate the Pecos County Transmission Improvement Project (Option 1) as critical to the reliability of the ERCOT System pursuant to PUCT Substantive Rule 25.101(b)(3)(D) (which will expedite Commission consideration of the project)







**Date:** February 20, 2024  
**To:** Board of Directors  
**From:** Bob Flexon, Reliability and Markets (R&M) Committee Chair  
**Subject:** TNMP - Pecos County Transmission Improvement Regional Planning Group Project

**Issue for the ERCOT Board of Directors**

**ERCOT Board of Directors Meeting Date:** February 27, 2024

**Item No.:** 11.3

**Issue:**

Whether the Board of Directors (Board) of Electric Reliability Council of Texas, Inc. (ERCOT) should accept the recommendation of ERCOT staff to: (1) endorse the need for the Tier 1 TNMP - Pecos County Transmission Improvement Regional Planning Group (RPG) Project (Option 1) in order to meet the reliability requirements for the ERCOT System and address thermal overloads and voltage violations in the Reeves and Ward Counties in the Far West Weather Zone, which ERCOT staff has independently reviewed and which the Technical Advisory Committee (TAC) has voted unanimously to endorse, and (2) designate the TNMP - Pecos County Transmission Improvement RPG Project as critical to the reliability of the ERCOT System pursuant to Public Utility Commission of Texas (PUCT) Substantive Rule 25.101(b)(3)(D).

**Background/History:**

TNMP has proposed the Pecos County Transmission Improvement Project, a \$114.8 million, Tier 1 project with an expected in-service date of August 2026, to meet reliability planning criteria and address 52.2-miles of 138-kV transmission line thermal overloads and voltage violations in the Reeves and Ward Counties in the Far West Weather Zone with the following ERCOT System improvements:

- Construct a new Coyanosa – Leon Creek 138-kV double-circuit lines with rating of at least 717 MVA, will require approximately 31.08 miles of new Rights of Way (ROW);
- Construct a new Woodhouse 138-kV substation by cutting into the existing Tarbush to Leon Creek 138-kV transmission line;
- Construct a new tie Woodhouse – Ft. Stockton SW 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.1-mile;
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile; and
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile.



For construction to meet the August 2026 in-service date, the Pecos County Transmission Improvement Project requires Public Utility Commission of Texas (PUCT, Commission) approval of a Certificate of Convenience and Necessity, following Board designation of the project as critical to the reliability of the ERCOT System, which per PUCT Substantive Rule 25.101(b)(3)(D) authorizes Commission consideration on an expedited basis of 180-days from the date of filing for projects deemed critical to reliability. The reliability needs for project completion as soon as possible and the need to limit the duration of any necessary Constraint Management Plans (CMPs) render the project critical to reliability.

TNMP proposed the Pecos County Transmission Improvement Project for RPG review in August 2023. Protocol Section 3.11.4.7, Processing of Tier 1 Projects, requires ERCOT to independently review submitted projects. Of nine options ERCOT analyzed during independent review of the Pecos County Transmission Improvement Project, ERCOT preferred Option 1 as it addresses the reliability violations, improves the long-term load serving capability, and improves operational flexibility. ERCOT's independent review identified a reliability need for the Pecos County Transmission Improvement Project to satisfy Planning Guide Section 4.1.1.8, Maintenance Outage Reliability Criteria. The contingency is a loss of a single transmission element or common tower followed by a single transmission element or common tower outage.

RPG considered project overviews during meetings in October 2023 and January 2024. Between October 2023 and January 2024, ERCOT staff presented scope and status updates at RPG meetings in November and December. Pursuant to paragraph (2) of Protocol Section 3.11.4.9, Regional Planning Group Acceptance and ERCOT Endorsement, ERCOT presented the Tier 1 project to the Technical Advisory Committee (TAC) for review and comment, and on January 24, 2024, TAC unanimously endorsed the project as recommended by ERCOT. Pursuant to paragraph (1)(a) of Protocol Section 3.11.4.3, Categorization of Proposed Transmission Projects, projects with an estimated capital cost of \$100 million or greater are Tier 1 projects, for which Protocol Section 3.11.4.7(2) requires endorsement by the Board. Pursuant to Section 3.11.4.9, ERCOT's endorsement of a Tier 1 project is obtained upon affirmative vote of the Board. Section IV(B)(2)(a) of the R&M Committee Charter requires the R&M Committee to review and make a recommendation to the Board regarding any Tier 1 project.

ERCOT's assessment of the Sub-Synchronous Resonance (SSR) of TNMP's existing facilities in the Reeves and Ward Counties in the Far West Weather Zone, conducted pursuant to Protocol Section 3.22.1.3, Transmission Project Assessment, yielded no adverse SSR impacts to the existing and planned generation resources at the time of the study. Results of the congestion analysis ERCOT conducted pursuant to Planning Guide Section 3.1.3, Project Evaluation, indicate no additional congestion in the area with the addition of Option 1.

The project completion date may change depending on material acquisition, outage coordination, and construction. The cost estimate accounts for the expectation that some construction activities will occur in an energized transmission line corridor. TNMP cooperation with ERCOT could be necessary to develop and implement CMPs based on summer 2026 operational conditions.

The report describing the ERCOT Independent Review of the Pecos County Transmission Improvement Project, including ERCOT staff's recommendation for Option 1, is attached as **Attachment A**.

**Key Factors Influencing Issue:**

1. ERCOT System improvements are needed to meet reliability planning criteria for the Reeves and Ward Counties in the Far West Weather Zone.
2. ERCOT staff found the recommended set of improvements to be the most efficient solution for meeting the planning reliability criteria and addressing both thermal overloads and voltage violations.
3. Protocol Section 3.11.4.7 requires Board endorsement of a Tier 1 project, which is a project with an estimated capital cost of \$100 million or greater pursuant to Protocol Section 3.11.4.3(1)(a).
4. TAC voted unanimously to endorse the Tier 1 Pecos County Transmission Improvement Regional Planning Group Project (Option 1), as recommended by ERCOT, on January 24, 2024.
5. Since there is reliability need to have the project in place as soon as possible, ERCOT staff has deemed this project critical to reliability.

**Conclusion/Recommendation:**

ERCOT staff recommends, and the R&M Committee is expected to recommend, that the Board: (1) endorse the need for the Tier 1 TNMP - Pecos County Transmission Improvement RPG Project (Option 1), which ERCOT staff has independently reviewed and which TAC has voted unanimously to endorse based on ERCOT reliability planning criteria, and (2) designate the TNMP - Pecos County Transmission Improvement RPG Project (Option 1) as critical to the reliability of the ERCOT System pursuant to PUCT Substantive Rule 25.101(b)(3)(D).



**ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.**  
**BOARD OF DIRECTORS RESOLUTION**

WHEREAS, pursuant to Section 3.11.4.3(1)(a) of the Electric Reliability Council of Texas, Inc. (ERCOT) Protocols, projects with an estimated capital cost of \$100 million or greater are Tier 1 projects, for which Section 3.11.4.7 requires endorsement by the ERCOT Board of Directors (Board); and

WHEREAS, after due consideration of the alternatives, the Board deems it desirable and in the best interest of ERCOT to accept ERCOT staff's and the and Reliability and Markets (R&M) Committee's recommendations to (1) endorse the need for the Tier 1 TNMP - Pecos County Transmission Improvement Regional Planning Group Project (Option 1), which ERCOT staff has independently reviewed and which the Technical Advisory Committee (TAC) has voted to endorse based ERCOT reliability planning criteria, and (2) designate the TNMP - Pecos County Transmission Improvement Regional Planning Group Project (Option 1) as critical to the reliability of the ERCOT System pursuant to Public Utility Commission of Texas (PUCT) Substantive Rule 25.101(b)(3)(D);

THEREFORE, BE IT RESOLVED, that the Board hereby (1) endorses the need for the Tier 1 TNMP - Pecos County Transmission Improvement Regional Planning Group Project (Option 1), which ERCOT staff has independently reviewed and which TAC has voted to endorse based on ERCOT reliability planning criteria, and (2) designates the TNMP - Pecos County Transmission Improvement Regional Planning Group Project (Option 1) as critical to the reliability of the ERCOT System pursuant to PUCT Substantive Rule 25.101(b)(3)(D), as recommended by ERCOT staff and the R&M Committee.

**CORPORATE SECRETARY'S CERTIFICATE**

I, Jonathan M. Levine, Assistant Corporate Secretary of ERCOT, do hereby certify that, at its February 27, 2024 meeting, the Board passed a motion approving the above Resolution by \_\_\_\_\_.

IN WITNESS WHEREOF, I have hereunto set my hand this \_\_\_\_ day of February, 2024.

\_\_\_\_\_  
Jonathan M. Levine  
Assistant Corporate Secretary



# ERCOT Independent Review of the TNMP Pecos County Transmission Improvement Project

## Document Revisions

| Date      | Version | Description | Author(s)     |
|-----------|---------|-------------|---------------|
| 1/18/2024 | 1.0     | Final Draft | Tanzila Ahmed |
|           |         | Reviewed by | Robert Golen  |

## Executive Summary

Texas-New Mexico Power (TNMP) submitted the Pecos County Transmission Improvement Project to the Regional Planning Group (RPG) in August 2023. TNMP proposed this project to address thermal overloads and voltage violations under planned maintenance outage conditions in the Far West (FW) Weather Zone in the Delaware Basin area, located in Pecos County.

The TNMP proposed project was estimated to cost approximately \$108.0 million and was classified as a Tier 1 project per ERCOT Nodal Protocol Section 3.11.4.3 since the proposed project would require a Certificate of Convenience and Necessity (CCN) application.

ERCOT performed an Independent Review and confirmed thermal overloads and voltage violations under planned maintenance outage scenario in the Pecos County.

The ERCOT Independent Review (EIR) evaluated nine different transmission project options. Based on the study results described in Section 5 and 6 of this report, ERCOT recommends the following Option 1 to address the reliability issues mentioned above. Option 1 consists of the following:

- Construct a new Coyanosa – Leon Creek double-circuit 138-kV transmission line with a normal and emergency ratings of at least 717 MVA per circuit, approximately 31.1-mile. This transmission line will require new Right of Way (ROW).
- Construct a new Woodhouse 138-kV substation by cutting into the existing Tarbush to Leon Creek 138-kV transmission line.
- Construct a new tie Woodhouse – Ft. Stockton SW 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.1-mile.
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile.

The cost estimate for this Tier 1 project is approximately \$114.8 million. This project will require a CCN for the construction of new 138-kV double-circuit transmission line from Coyanosa 138-kV Substation to Leon Creek 138-kV Substation and the expected In-Service Date (ISD) of this project is August 2026.

TNMP requests this project be designated as critical to reliability of the ERCOT system for expedited processing of associated transmission line applications by the commission.

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# 1 Introduction

In August 2023, TNMP submitted the Pecos County Transmission Improvement Project to the RPG to address NERC TPL-001-5.1 reliability criteria violations (both thermal and voltage) under maintenance outage conditions due to 1,024 MW of new load in the area. This project is in the FW Weather Zone in Pecos County.

This TNMP-proposed project was classified as a Tier 1 project pursuant to ERCOT Nodal Protocol Section 3.11.4.3, with an estimated cost of approximately \$108.0 million. One or more CCN application will be required for the construction of the new 138-kV line from Coyanosa Substation to Leon Creek Substation due to approximately 28.5-mile of new ROW. The expected ISD of the project is May 2026.

ERCOT conducted an Independent Review for this RPG project to identify any reliability needs in the area including thermal overloads and voltage violation under maintenance outage and evaluate various transmission upgrade options. This report describes the study assumptions, methodology, and the results of EIR of the project.

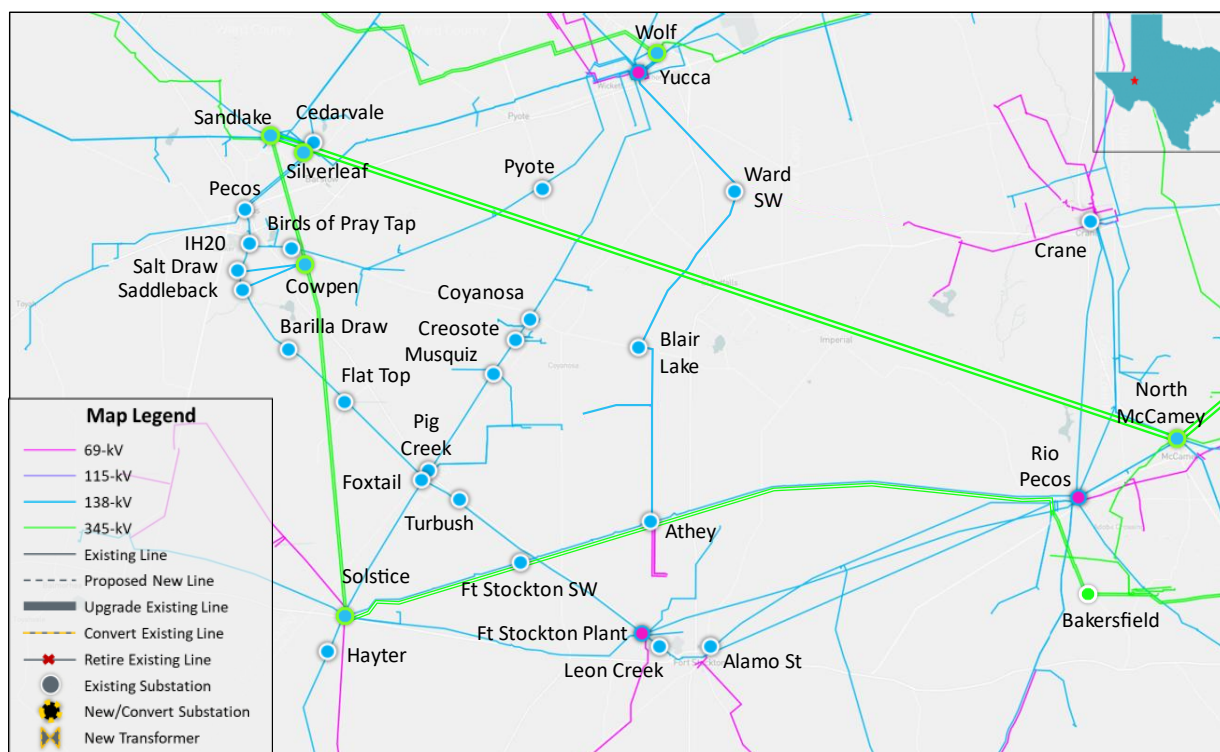


Figure 1.1: Map of Transmission System in The Pecos County

# 2 Study Assumptions and Methodology

ERCOT performed studies under various system conditions to identify any reliability issues and to determine transmission upgrades to support the proposed Pecos County Transmission Improvement

Project if an upgrade is deemed necessary. This section describes the study assumptions and criteria used to conduct the independent study.

## 2.1 Study Assumptions for Reliability Analysis

This project is in the FW Weather Zone in Pecos County. Reeves, Ward, and Winkler Counties were also included in the study because of their electrical proximity to the proposed project.

### 2.1.1 Steady-State Study Base Case

The Final 2022 RTP cases, published on the Market Information System (MIS) on December 22, 2022, were used as reference cases in this study. The Year 2027 Summer peak load case was selected for the long-term outlook. The steady-state study base case was constructed by updating transmission, generation, and loads of the following 2027 Summer peak load case for the West-Far West (WFW) Weather Zones.

- Case: 2022RTP\_2027\_SUM\_WFW\_12222022<sup>1</sup>.

### 2.1.2 Transmission Topology

Transmission projects within the FW Weather Zone with ISDs through June 2027 were added to the study base case. The ERCOT Transmission Project Information and Tracking (TPIT)<sup>2</sup> report posted in June 2023 and October 2023 was used as reference. The added TPIT projects are listed in Table 2.1. These are classified as Tier 2, Tier 3, and Tier 4 projects. The recently approved Tier 1 TNMP Silverleaf and Cowpen 345/138-kV Stations Project was also added to the study base case.

**Table 2.1: List of Transmission Projects Added to the Study Base Case**

| TPIT No | Project Name  | Tier   | Project ISD | TSP      | County    |
|---------|---|--------|-------------|----------|-----------|
| 66571   | Texaco Mabee Tap - Midland East 138 kV Line Rebuild | Tier 4 | 9/15/2023   | Oncor    | Midland   |
| 66621   | Sandhills - Sandhills Tap 138 kV Line Rebuild       | Tier 4 | 5/15/2023   | Oncor    | Ector     |
| 68793   | Expanse 345/138 kV Switch                           | Tier 3 | 5/15/2023   | Oncor    | Martin    |
| 70596   | LCRATSC_CraneEast_CB_Sub_Upgrade                    | Tier 4 | 5/15/2023   | LCRA TSC | Upton     |
| 66074   | Double ckt Soaptree-Holiday-AlamoSt                 | Tier 4 | 12/25/2023  | TNMP     | Pecos     |
| 45670   | East Stiles - Rocky Road 138 kV Line                | Tier 4 | 12/15/2023  | Oncor    | Reagan    |
| 45689   | Pronghorn - Salt Flat Road 138 kV Line              | Tier 4 | 12/15/2023  | Oncor    | Midland   |
| 48587   | Tesoro 345/138 kV Switch                            | Tier 3 | 12/15/2023  | Oncor    | Midland   |
| 68780   | Triangle - Yosemite 138 kV Line                     | Tier 4 | 12/15/2023  | Oncor    | Midland   |
| 71190   | Einstein - St Lawrence 138 kV Line                  | Tier 4 | 12/15/2023  | Oncor    | Glasscock |
| 71193   | Blue Acres - Yosemite 138 kV Line                   | Tier 4 | 12/15/2023  | Oncor    | Midland   |
| 71196   | Grey Well Draw - Pecan Grove 138 kV Line            | Tier 4 | 12/15/2023  | Oncor    | Midland   |
| 50725   | Coalson Draw 138 kV Switch                          | Tier 4 | 5/15/2024   | Oncor    | Reeves    |
| 51225   | Driver - Hadacol Corner 138 kV Line                 | Tier 4 | 5/15/2024   | Oncor    | Midland   |

<sup>1</sup> 2022 Regional Transmission Plan Postings: <https://mis.ercot.com/secure/data-products/grid/regional-planning>

<sup>2</sup> TPIT Report: <https://www.ercot.com/gridinfo/planning>

| TPIT No  | Project Name  | Tier   | Project<br>ISD | TSP   | County          |
|----------|---|--------|----------------|-------|-----------------|
| 71172    | Luther - Vealmoor 138 kV Line                           | Tier 4 | 5/15/2024      | Oncor | Borden          |
| 45640    | Spraberry - Polecat Creek 138 kV Line                   | Tier 3 | 12/15/2024     | Oncor | Midland         |
| 45693    | Rocky Road - Stiles 138 kV Line                         | Tier 4 | 12/15/2024     | Oncor | Reagan          |
| 52332    | Lamesa - Paul Davis Tap 138 kV Line Section             | Tier 3 | 12/15/2024     | Oncor | Dawson          |
| 71175    | Tall City - Pecan Grove 138 kV Line                     | Tier 4 | 12/15/2024     | Oncor | Midland         |
| 71968    | Midkiff - Pemkiff 138 kV Line                           | Tier 4 | 12/15/2024     | Oncor | Upton           |
| 71971    | Peck - Driver 138 kV Line                               | Tier 2 | 12/15/2024     | Oncor | Glasscock       |
| 71989    | Big Spring West - Stanton East 138 kV Line              | Tier 4 | 12/15/2024     | Oncor | Martin          |
| 71993    | Tributary - Vincent 138 kV Line Section                 | Tier 4 | 12/15/2024     | Oncor | Howard          |
| 68669    | Adds Staghorn Switching Station                         | Tier 4 | 6/1/2025       | TNMP  | Ward            |
| 23RPG008 | Fort Stockton Plant to Lynx 138-kV Line Rebuild Project | Tier 4 | 5/1/2025       | AEPSC | Pecos           |
| 68955    | Meteor 345 kV Switch                                    | Tier 4 | 5/15/2024      | Oncor | Ward            |
| 68790    | Wolf - General Tire - Odessa EHV 138 kV Line            | Tier 3 | 12/15/2025     | Oncor | Ector           |
| 71199    | Yucca Drive - Moss 138 kV Line                          | Tier 4 | 5/15/2024      | Oncor | Ector           |
| 70964    | WETT 345 kV Volta witch                                 | Tier 3 | 1/31/2024      | WETT  | Howard          |
| 73452    | TNMP_WINK_FISHHOOK_RECONDUCTOR_A<br>C_4-5-2023          | Tier 4 | 12/15/2024     | TNMP  | Pecos           |
| 73476    | TNMP_KERMIT_RECONDUCTOR                                 | Tier 4 | 11/1/2023      | TNMP  | Pecos           |
| 72884    | Gonzales: Build 69 kV STATCOM                           | Tier 4 | 1/1/2024       | ETT   | Presidio        |
| 73406    | TMentone 138 kV POD                                     | Tier 4 | 5/31/2024      | Oncor | Loving          |
| 68671    | Adds Foxtail Switching Station                          | Tier 4 | 5/15/2025      | TNMP  | Reeves          |
| 72863    | Delaware River 138 kV Switch                            | Tier 4 | 10/1/2022      | Oncor | Culberson       |
| 73434    | Shaw 138 kV POD   | Tier 4 | 5/15/2024      | Oncor | Reagan          |
| 76348    | Reconductor Foxtail-PIGCreek-1926ACSS-<br>138KV         | Tier 4 | 5/15/2024      | TNMP  | Pecos           |
| 77320    | TNMP_77320_PMCRA_Add<br>_CapBank_COYANOSA               | Tier 4 | 5/31/2026      | TNMP  | Ward            |
| 76232    | Reconductor Mivida-Coachwhip-Fishhook 2045<br>ACCC      | Tier 4 | 6/1/2026       | TNMP  | Ward            |
| 76291    | Upgraded Cedarvale–BoneSpringsTap–Fishhook              | Tier 4 | 5/31/2026      | TNMP  | Ward            |
| 76293    | Upgraded Cedvale-MiDiva138KV                            | Tier 4 | 5/31/2026      | TNMP  | Ward            |
| 23RPG013 | Silverleaf and Cowpen 345/138-kV Stations<br>Project    | Tier 1 | 6/30/2027      | TNMP  | Reeves,<br>Ward |

Transmission projects, listed in Table 2.2, identified in the 2022 RTP as placeholders for the Silverleaf and Cowpen 345/138-kV Stations Project were removed from study base case.

**Table 2.2: List of Transmission Projects Removed from 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,<br>Reeves, Pecos |
| 2022-FW9       | Cholla 345/138-kV Station Addition               | TNMP, Oncor | Ward, Loving                  |

| RTP Project ID | Project Name   | TSP         | County |
|----------------|--|-------------|--------|
| 2022-FW11      | Pecos TNP - Faulkner Toyah TNP 138-kV Line Addition  | TNMP        | Reeves |
| 2022-FW12      | Tarbush TNP - Pig Creek 138-kV Line Upgrade  | TNMP, AEPSC | 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  |

### 2.1.3 Generation

Based on the August 2023 Generator Interconnection Status (GIS)<sup>3</sup> report posted on the ERCOT website on September 1, 2023, generators in the FW Weather Zone that met ERCOT Planning Guide Section 6.9(1) conditions with Commercial Operations Date (COD) prior to June 2027 were added to the study base case. These generation additions are listed in Table 2.3. All new generation dispatches were consistent with the 2022 RTP methodology.

**Table 2.3: List of Generation Added to the Study Base Case Based on the August 2023 GIS Report**

| GINR      | Project Name               | Fuel | Project COD | Capacity (~MW) | County    |
|-----------|----------------------------|------|-------------|----------------|-----------|
| 18INR0043 | Lacy Creek wind            | WIN  | 8/1/2023    | 301.3          | Glasscock |
| 20INR0249 | Appaloosa Run Wind         | WIN  | 7/7/2023    | 175.0          | Upton     |
| 20INR0269 | Texas Solar Nova 2         | SOL  | 12/29/2023  | 201.1          | Kent      |
| 20INR0296 | Sand Bluff Wind Repower    | WIN  | 6/15/2023   | 89.5           | Glasscock |
| 21INR0253 | Ulysses Solar              | SOL  | 11/1/2024   | 150.0          | Coke      |
| 21INR0532 | Brazos Wind Repower        | WIN  | 8/14/2023   | 22.4           | Scurry    |
| 22INR0349 | BRP Antlia BESS            | OTH  | 12/1/2024   | 71.0           | Val Verde |
| 22INR0363 | Hayhurst Texas Solar       | SOL  | 11/1/2023   | 24.8           | Culberson |
| 22INR0412 | Andromeda Solar            | SOL  | 8/30/2023   | 326.6          | Scurry    |
| 22INR0454 | DR Solar                   | SOL  | 6/1/2024    | 46.0           | Culberson |
| 22INR0455 | Blue Sky Sol               | SOL  | 6/15/2024   | 101.2          | Crockett  |
| 22INR0485 | House Mountain             | OTH  | 10/26/2023  | 63.0           | Brewster  |
| 22INR0495 | TIMBERWOLF BESS 2          | OTH  | 9/1/2023    | 150.0          | Crane     |
| 22INR0502 | Shamrock                   | WIN  | 7/1/2024    | 223.9          | Crockett  |
| 22INR0524 | St. Gall I Energy Storage  | OTH  | 12/28/2023  | 102.6          | Pecos     |
| 23INR0371 | Rodeo Ranch Energy Storage | OTH  | 11/6/2023   | 307.5          | Reeves    |
| 23INR0387 | Pioneer DJ Wind            | WIN  | 4/20/2024   | 140.3          | Midland   |
| 19INR0203 | Angelo Solar               | SOL  | 5/3/2024    | 195.4          | Tom Green |
| 23INR0418 | Angelo Storage             | OTH  | 5/3/2024    | 103.0          | Tom Green |
| 21INR0424 | Tierra Bonita Solar        | SOL  | 8/1/2024    | 309.7          | Pecos     |
| 23INR0219 | Dogfish BESS               | OTH  | 12/31/2024  | 75.0           | Pecos     |

The status of each unit that was projected to be either indefinitely mothballed or retired at the time of the study were reviewed. The units listed in Table 2.4 were opened (turned off) in the study base case to reflect their mothballed/retired status.

<sup>3</sup> GIS Report: <https://www.ercot.com/mp/data-products/data-product-details?id=PG7-200-ER>

**Table 2.4: List of Generation Opened to Reflect Mothballed/Retired Status**

| Bus No | Unit Name      | Capacity (~MW) | Weather Zone  |
|--------|----------------|----------------|---------------|
| 170121 | CALAVERS_JTD1  | 420.0          | South Central |
| 170122 | CALAVERS_JTD2  | 420.0          | South Central |
| 150081 | OLINGR_OLING_1 | 78.0           | North Central |
| 170381 | OCI_ALM1_ASTRO | 1.0            | South Central |
| 110111 | DOWGEN_DOW_G37 | 61.0           | Coast         |
| 130003 | FLCNS_UNIT3    | 70.0           | Far West      |
| 142761 | BRANDON_UNIT1  | 20.0           | North         |
| 142714 | MASSENGL_G6    | 18.0           | North         |
| 142716 | MASSENGL_G7    | 18.0           | North         |
| 142713 | MASSENGL_G8    | 38.0           | North         |
| 143671 | TY_COOKE_GT2   | 14.0           | North         |
| 143672 | TY_COOKE_GT3   | 17.0           | North         |
| 110941 | SL_SL_G1       | 65.0           | Coast         |
| 110942 | SL_SL_G2       | 65.0           | Coast         |
| 110943 | SL_SL_G3       | 30.0           | Coast         |
| 110944 | SL_SL_G4       | 30.0           | Coast         |
| 140042 | WFCOGEN_UNIT4  | 17.0           | North         |
| 130121 | SGMTN_SIGNALM2 | 6.6            | Far West      |

Generation listed in Table 2.5 were closed (turned on) in the study base case to reflect the change in their Generation Resource as these recourses are returning to year-round service.

**Table 2.5: List of Generation Closed to Reflect Returning to Service Status**

| Bus No | Unit Name   | Capacity (MW) | Weather Zone  |
|--------|-------------|---------------|---------------|
| 110020 | PNPI_GT2    | 71.0          | Coast         |
| 150023 | MCSES_UNIT8 | 568.0         | North Central |

### 2.1.4 Loads

Loads in the FW Weather Zone were reviewed and updated to reflect the load level in the 2023 RTP study. As shown in Table 2.6, FW Weather Zone total load is 14,349 MW in the study base case. Among the 14,349 MW of total load, 3,959 MW is associated with customers that have flexible loads.

**Table 2.6: FW Load Level in the Study Base Case**

|                         | Load (MW) |
|-------------------------|-----------|
| Far West Total          | 14,349.0  |
| Far West Flexible Loads | 3,959.0   |

Loads outside the WFW Weather Zones were adjusted to maintain the minimum reserve requirements consistent with the 2022 RTP.

### 2.1.5 Long-Term Load Serving Capability Assessment

ERCOT performed long-term load serving capability assessment under base case and higher load conditions to compare the performance of the study options.

In the higher load condition evaluation, the loads in the 138-kV substation in the study area were increased (customer with flexible loads remained at the same level as in the base case), and conforming loads outside of FW Weather Zone were decreased to balance power.

### 2.1.6 Maintenance Outage Scenario

ERCOT developed an off-peak maintenance season scenario to further evaluate the study options.

The load level in the FW Weather Zone was reduced to 96% of its summer peak load level in the study base case. This scaling is meant to reflect assumed off-peak season loads based on ERCOT load forecast for future years as well as historical load in the FW Weather Zone.

## 2.2 Study Assumptions for Congestion Analysis

Congestion analysis was conducted to identify any new congestion in the study area with the addition of the preferred transmission upgrade option.

The 2022 RTP 2027 economic case was updated based on the November 2023 GIS<sup>4</sup> report for generation updates and the June 2023 and October 2023 TPIT<sup>5</sup> reports for transmission updates to conduct congestion analysis. Flexible load in Ward, Reeves, and Pecos Counties were updated to reflect the 2023 RTP load level in Table 2.6. The 2027 study year was selected based on the proposed ISD of the project.

All transmission projects listed in Table 2.1 were added and the RTP projects shown in Table 2.2 that were used as placeholders for the Silverleaf and Cowpen 345/138-kV Stations project were removed from the economic base case.

New generation additions listed in Table A.1 in Appendix A were added to the economic base case and all generation listed in Table 2.4 were opened in the study base case to reflect their mothballed/retired status. Furthermore, generation listed in Table 2.5 were removed from seasonal settings in the study base case as these recourses are returned to year-round service.

## 2.3 Methodology

This section lists the Contingencies and Criteria used for project review along with tool used to perform the various analyses.

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<sup>4</sup> GIS Report: <https://www.ercot.com/mp/data-products/data-product-details?id=PG7-200-ER>

<sup>5</sup> TPIT Report: <https://www.ercot.com/gridinfo/planning>



### 2.3.1 Contingencies and Criteria

The reliability assessments were performed based on NERC Reliability Standard TPL-001-5.1, ERCOT Nodal Protocol, and Planning Criteria<sup>6</sup>.

Contingencies<sup>7</sup> were updated based on the changes made to the topology as described in Section 2.1 of this document. The following steady state contingencies were simulated for the study region:

- P0 (System Intact);
- P1, P2-1, P7 (N-1 conditions);
- P2-2, P2-3, P4, and P5 (Extra High Voltage (EHV) only);
- P3-1: G-1 + N-1 (G-1: generation outages) {Permian Basin Units 1-5, and Riggins Solar}; and
- P6-2: X-1 + N-1 (X-1: 345/138-kV transformers only) {Cowpen, Solstice, and North McCamey}.

All 69-kV and above buses, transmission lines, and transformers in the study region were monitored (excluding generator step-up transformers) and the following thermal and voltage limits were enforced:

- Thermal
  - Rate A (normal rating) for pre-contingency conditions;
  - Rate B (emergency rating) for post-contingency conditions;
- Voltages
  - Voltages exceeding pre-contingency and post-contingency limits; and
  - Voltage deviations exceeding 8% on non-radial load buses.

### 2.3.2 Study Tool

ERCOT utilized the following software tools to perform this independent study:

- PowerWorld Simulator version 23 for Security Constrained Optimal Power Flow (SCOPF) and steady-state contingency analysis and
- UPLAN version 11.4.0.27191 to perform congestion analysis.

## 3 Project Need

Steady-state reliability analysis was performed in accordance with NERC TPL-001-5.1 and ERCOT Planning Criteria described in Section 2.3 of this document. This analysis indicated no violations were observed under NERC TPL-001-5.1 and ERCOT planning criteria in the study area as shown in Table 3.1.

**Table 3.1: Violations Observed under NERC TPL-001-5.1 and ERCOT Planning Criteria in the Study Area**

| NERC Contingency Category | Voltage Violations | Thermal Overloads | Unsolved Power Flow |
|---------------------------|--------------------|-------------------|---------------------|
| N-0 (P0)                  | None               | None              | None                |
| N-1 (P1, P2-1, P7)        | None               | None              | None                |

<sup>6</sup> ERCOT Planning Criteria: <http://www.ercot.com/mktrules/guides/planning/current>

<sup>7</sup> Details of each event and contingency category is defined in the NERC reliability standard TPL-001-5.1

|                |      |      |      |
|----------------|------|------|------|
| G-1+N-1 (P3)   | None | None | None |
| X-1+N-1 (P6-2) | None | None | None |

Planned maintenance outage scenarios analysis were also conducted on the base case to identify project need. This analysis indicated thermal overloads, voltage violations, and voltage instability in the study area.

The five-voltage instability were observed under various planned maintenance outage conditions:

- REDACTED\_\_\_\_\_
- REDACTED\_\_\_\_\_
- REDACTED\_\_\_\_\_
- REDACTED\_\_\_\_\_
- REDACTED\_\_\_\_\_

Twenty-six low voltage violations were observed under various planned maintenance outage conditions which are summarized in Table 3.2.

**Table 3.2: Low Bus Voltages under Planning Maintenance Outage Conditions in the Study Area**

| Bus Number | Bus Name     | Bus Voltage (kV) | County | Min Voltage (pu) |
|------------|--------------|------------------|--------|------------------|
| 1202       | WARDSS_9     | 138              | WARD   | 0.80             |
| 1238       | ROYALTY_9    | 138              | WARD   | 0.81             |
| 1239       | COYANOSA_9   | 138              | PECOS  | 0.81             |
| 1240       | WFCAMPTA_9   | 138              | PECOS  | 0.82             |
| 6630       | FTST4A       | 138              | PECOS  | 0.86             |
| 6671       | TOMBSTNE4A   | 138              | PECOS  | 0.87             |
| 11204      | MONAHNSO_9   | 138              | WARD   | 0.80             |
| 11236      | BLAIRLAKE_9  | 138              | WARD   | 0.81             |
| 11242      | CRTNYCRK_8   | 138              | HOWARD | 0.84             |
| 11246      | COYANOSAS_9  | 138              | WARD   | 0.82             |
| 38294      | TNFOXTAIL_1  | 138              | REEVES | 0.89             |
| 38295      | TNTARBUSH_1  | 138              | PECOS  | 0.83             |
| 38310      | TN16TH_ST_1  | 138              | PECOS  | 0.85             |
| 38331      | TNALAMOST_1  | 138              | PECOS  | 0.85             |
| 38340      | TNAIRPORT41  | 138              | PECOS  | 0.85             |
| 38345      | TNP900072_TP | 138              | PECOS  | 0.84             |
| 38355      | TNLEONCRK_1  | 138              | PECOS  | 0.85             |
| 38432      | TNCENTRY2_1  | 138              | PECOS  | 0.91             |
| 38455      | TNHOLIDAY_1  | 138              | PECOS  | 0.91             |
| 38465      | TNSTONERD_1  | 138              | PECOS  | 0.91             |
| 60717      | FTSW4A       | 138              | REEVES | 0.83             |
| 60718      | PECV4A       | 138              | PECOS  | 0.88             |
| 60792      | ATHEY4A      | 138              | PECOS  | 0.84             |
| 60798      | ELLENBUR4A   | 138              | PECOS  | 0.84             |

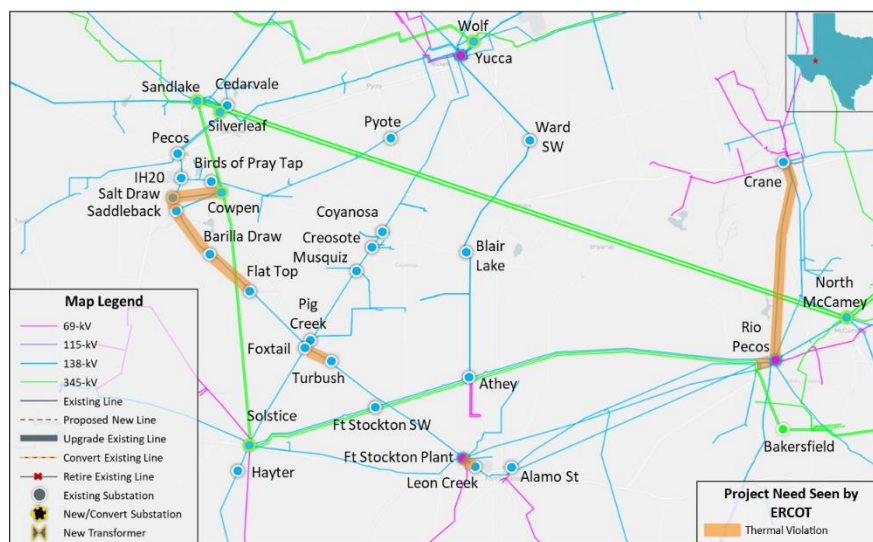


| Bus Number | Bus Name  | Bus Voltage (kV) | County | Min Voltage (pu) |
|------------|-----------|------------------|--------|------------------|
| 900090     | Other_138 | 138              | PECOS  | 0.84             |
| 900097     | Other_139 | 138              | PECOS  | 0.84             |

Ten 138-kV transmission lines overloads were observed under various N-1-1 contingency conditions. These issues are summarized in Table 3.3 and visually illustrated in Figure 3.1.

**Table 3.3: Thermal Overloads Observed under Planning Maintenance Outage Conditions in the Study Area**

| Overloaded Element                          | Worst Contingency (N-1-1)  | Length (~miles) | Max Loading (%) |
|---|--|-----------------|-----------------|
| Rio Pecos - Girvin 138-kV Line Ckt 2        | Rio Pecos - Girvin 138-kV Line + Rio Pecos - Lynx 138-kV Line  | 0.6             | 163.6           |
| Cowpen - Saltdraw 138-kV Line               | Solstice – Pig Creek 138-kV Line + Gaspad Tap - Other_134 138-kV Line  | 10.0            | 134.7           |
| Foxtail - Tarbush 138-kV Line               | Tombstone – Lynx 138-kV Line + P7 Soaptree – Holiday 138-kV DCKT Lines   | 2.3             | 124.7           |
| Saltdraw - Saddleback 138-kV Line           | Solstice – Pig Creek 138-kV Line + Gaspad Tap - Other_134 138-kV Line  | 0.5             | 123.9           |
| Saddleback - Barilla Draw 138-kV Line       | Riverview - Other_134 138-kV Line + Solstice – Pig Creek 138-kV Line   | 6.8             | 117.9           |
| Rio Pecos - Crane 138-kV Line               | P7 Rio Pecos – Soda Lake & Rio Pecos – Horsecar 138-kV Lines + P7 Rio Pecos – Oxtail SW – Spud & Rio Pecos – Spud 138-kV Lines | 23.7            | 117.2           |
| Ft. Stockton Plant - Leon Creek 138-kV Line | P7 Alamo St-Holiday 138-kV DCKT Lines + Tarbush – Foxtail 138-kV Line  | 0.1             | 115.5           |
| Barilla Draw - Flattop 138-kV Line          | Riverview - Other_134 138-kV Line + Solstice – Pig Creek 138-kV Line   | 5.8             | 107.5           |
| Girvin - Soaptree 138-kV Line               | Rio Pecos – Lynx 138-kV Line + Tarbush – Foxtail 138-kV Line   | 1.9             | 104.1           |
| Rio Pecos - Girvin 138-kV Line Ckt 1        | Rio Pecos - Girvin 138-kV Line Ckt 2 + Rio Pecos - Lynx 138-kV Line  | 0.5             | 101.6           |



**Figure 3.1: Study Area Map Showing Project Needs under Planned Maintenance Outage Scenarios**

## 4 Description of Project Options

ERCOT initially evaluated nine system-improvement options to address the thermal overloads and voltage violations under maintenance outage conditions that was observed in the study base case in the Pecos County. All nine options resolved reliability violations in the summer peak conditions in the study area.

Option 1 (TNMP Proposed Solution) consists of the following:

- Construct a new Coyanosa – Leon Creek double-circuit 138-kV transmission line with a normal and emergency ratings of at least 717 MVA per circuit, approximately 31.1-mile. This transmission line will require new ROW.
- Construct a new Woodhouse 138-kV substation by cutting into the existing Tarbush to Leon Creek 138-kV transmission line.
- Construct a new tie Woodhouse – Ft. Stockton SW 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.1-mile.
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile.

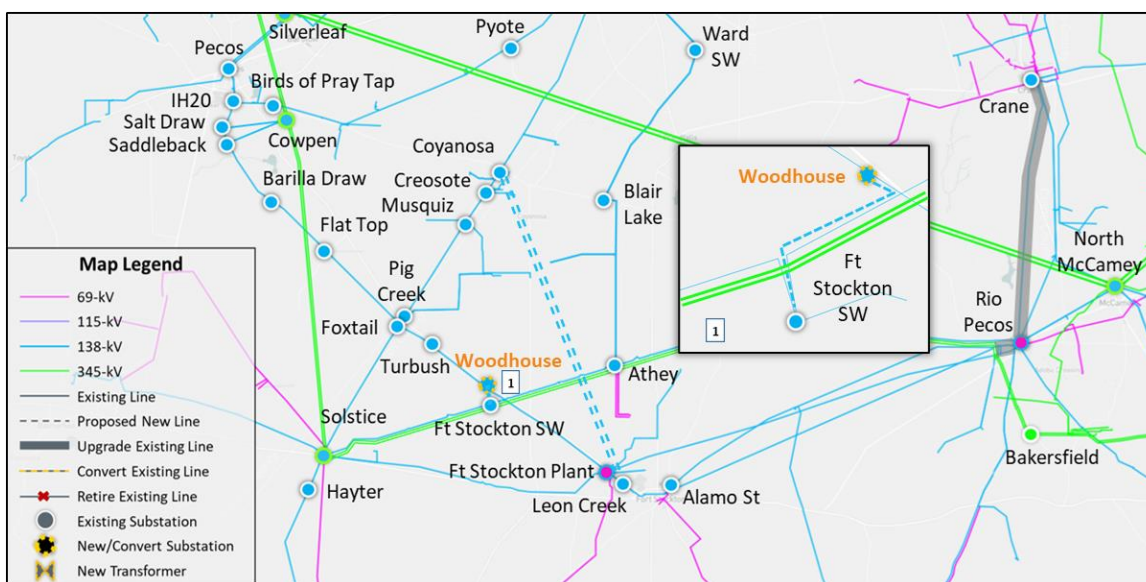


Figure 4.1: Map of Option 1

An alternative version for this option was tested which involved looping in the existing Tarbush – Leon Creek 138-kV line into Ft. Stockton SW 138-kV station instead of building the new Woodhouse 138-kV station and to tie the Woodhouse to Ft. Stockton SW.

Option 2 consists of the following:

- Construct a new Coyanosa – Athey double-circuit 138-kV transmission line with a normal and emergency ratings of at least 717 MVA per circuit, approximately 20.0-mile. This transmission line will require new ROW.
- Construct a new Athey – Leon Creek 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 10.0-mile. This transmission line will require new ROW.
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile.

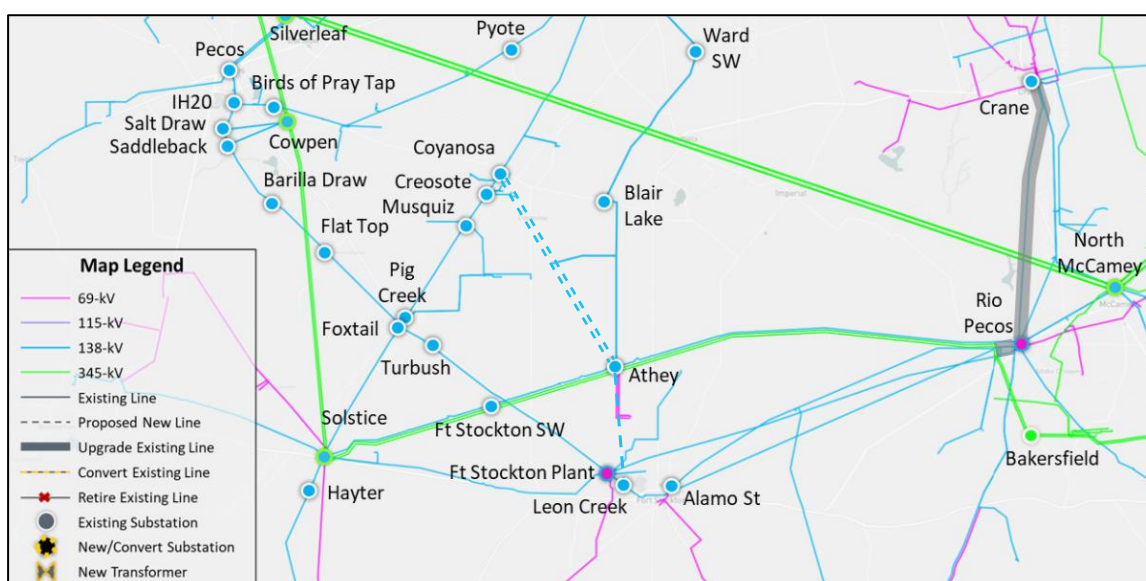


Figure 4.2: Map of Option 2

Option 3 consists of the following:

- Construct a new second circuit to the existing Hayter – Solstice 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 1.7-mile.
- Upgrade the two existing 345/138-kV transformers at Solstice 345/138-kV substation with a normal and emergency ratings of at least 800 MVA.
- Bypass the PST at the Solstice substation.
- Rebuild the existing Solstice – Ft. Stockton SW 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 25.5-mile.
- Rebuild the existing Ft. Stockton SW – Leon Creek 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.1-mile.
- Rebuild the existing Flattop – Foxtail 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 8.6-mile.

- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.

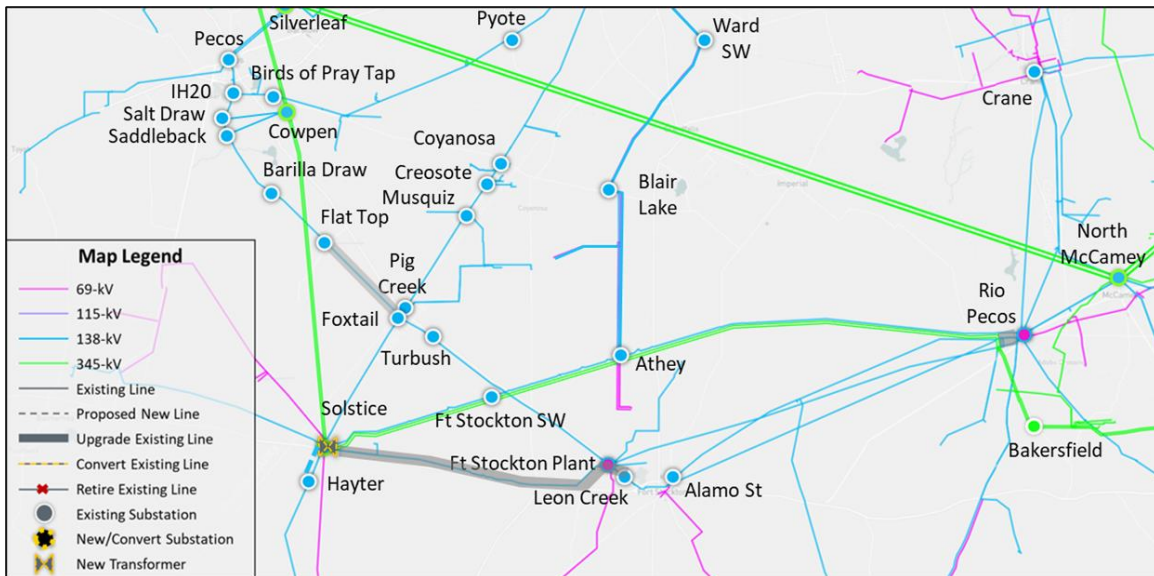


Figure 4.3: Map of Option 3

Option 4 (similar to option 3) consists of the following:

- Construct a new second circuit to the existing Hayter – Solstice 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 1.7-mile.
- Upgrade the two existing 345/138-kV transformers at Solstice 345/138-kV substation with a normal and emergency ratings of at least 800 MVA.
- Bypass the PST at the Solstice substation.
- Rebuild the existing Solstice – Ft. Stockton SW 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 25.5-mile.
- Rebuild the existing Ft. Stockton SW – Leon Creek 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.1-mile.
- Rebuild the existing Flattop – Foxtail 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 8.6-mile.
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Construct a new Creosote – Ft. Stockton SW 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 21.6-mile. This transmission line will require new ROW.



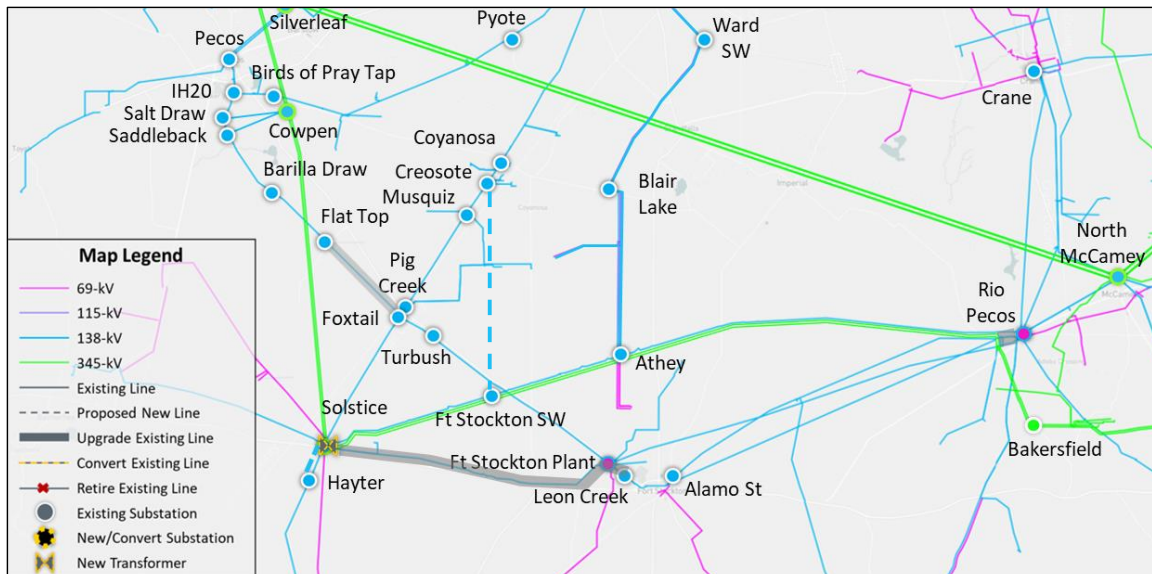


Figure 4.4: Map of Option 4

Option 5 consists of the following:

- Construct a new Coyanosa – Blair Lake double-circuit 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 11.6-mile. This transmission line will require new ROW.
- Construct a new Athey – Leon Creek 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 10.0-mile. This transmission line will require new ROW.
- Rebuild the existing Ft. Stockton SW – Leon Creek 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.1-mile.
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile.

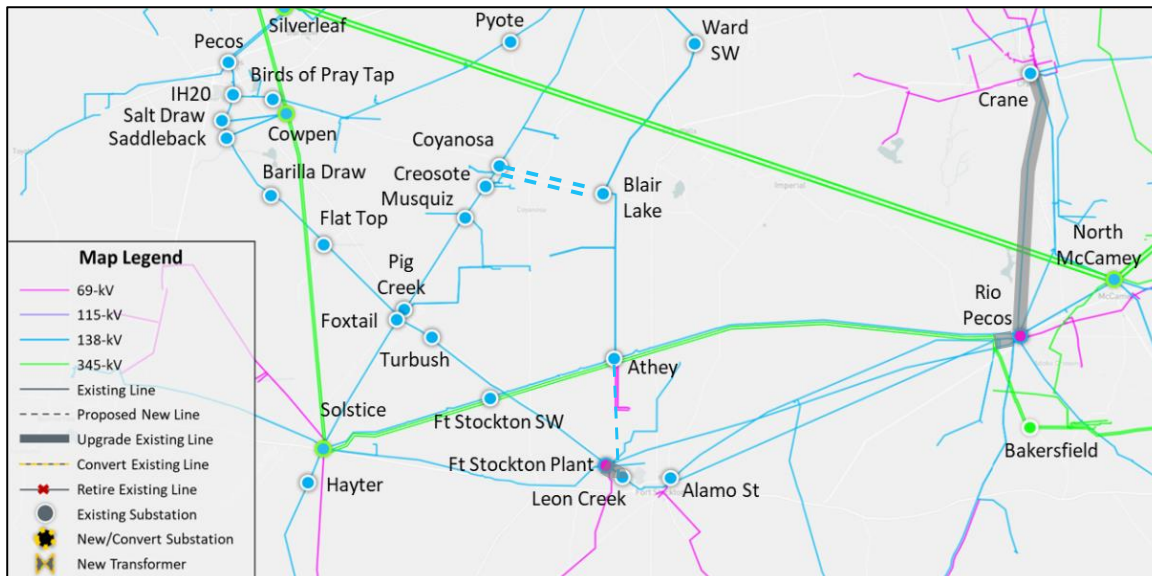


Figure 4.5: Map of Option 5

Option 6 consists of the following:

- Construct a new Coyanosa – Blair Lake double-circuit 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 11.6-mile. This transmission line will require new ROW.
- Construct a new Woodhouse 138-kV substation by cutting into the existing Turbush to Leon Creek 138-kV transmission line.
- Create a new tie between Ft. Stockton SW 138-kV substation and the new Woodhouse 138-kV substation with a normal and emergency ratings of at least 717 MVA
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile.

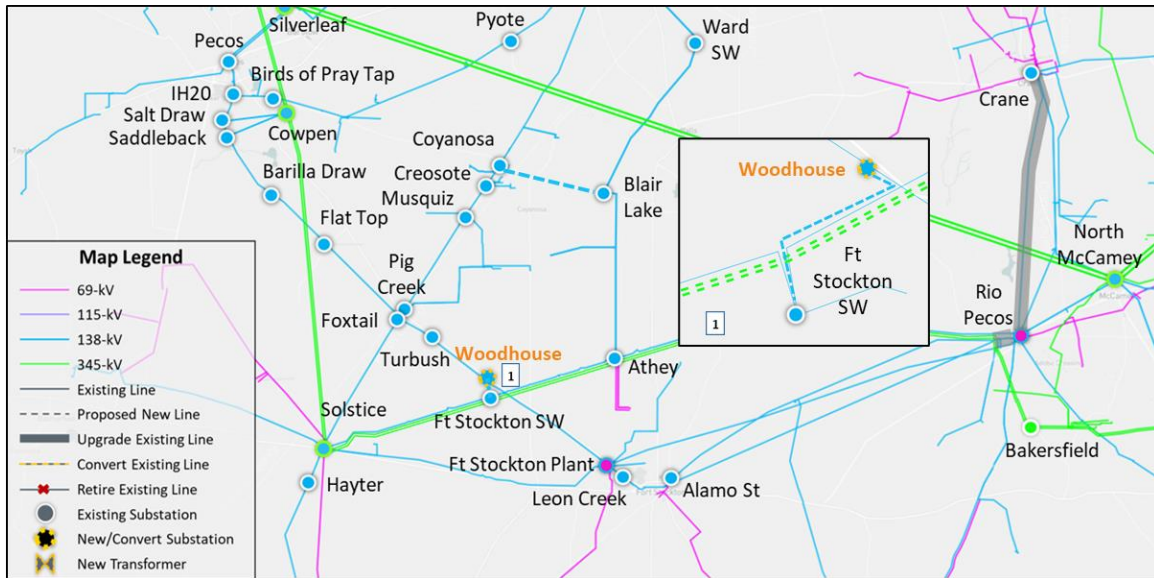


Figure 4.6: Map of Option 6

An alternative version for this option was tested which involved looping in the existing Turbush – Leon Creek 138-kV line into Ft. Stockton SW 138-kV station instead of building the new Woodhouse 138-kV station and to tie the Woodhouse to Ft. Stockton SW.

Option 7 (similar to option 6) consists of the following:

- Construct a new Coyanosa – Blair Lake double-circuit 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 6.1-mile. This transmission line will require new ROW.
- Construct a new Woodhouse 138-kV substation by cutting into the existing Turbush to Leon Creek 138-kV transmission line.
- Create a new tie between Ft. Stockton SW 138-kV substation and the new Woodhouse 138-kV substation with a normal and emergency ratings of at least 717 MVA.
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile.
- Upgrade the existing Ft. Stockton SW 138-kV substation to 345/138-kV substation by installing two new 345/138-kV transformers with a normal and emergency rating of at least 800 MVA and cut into the existing Solstice – Bakersfield 345-kV double-circuit transmission line.

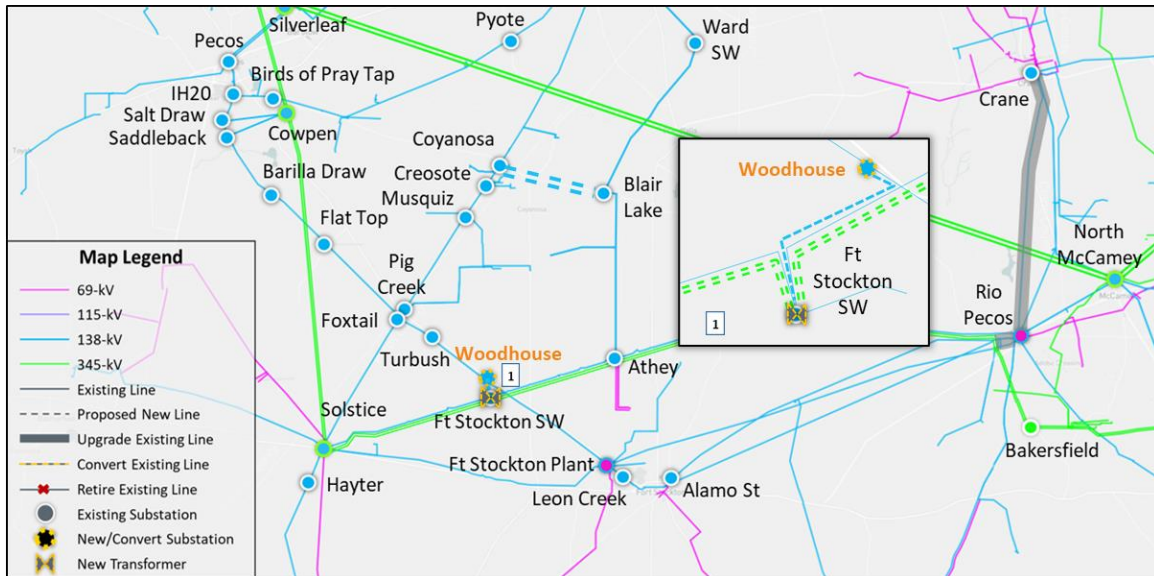


Figure 4.7: Map of Option 7

An alternative version for this option was tested which involved looping in the existing Turbush – Leon Creek 138-kV line into Ft. Stockton SW 138-kV station instead of building the new Woodhouse 138-kV station and to tie the Woodhouse to Ft. Stockton SW.

Option 8 consists of the following:

- Construct a new Athey – Leon Creek 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 10.0-mile. This transmission line will require new ROW.
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile.



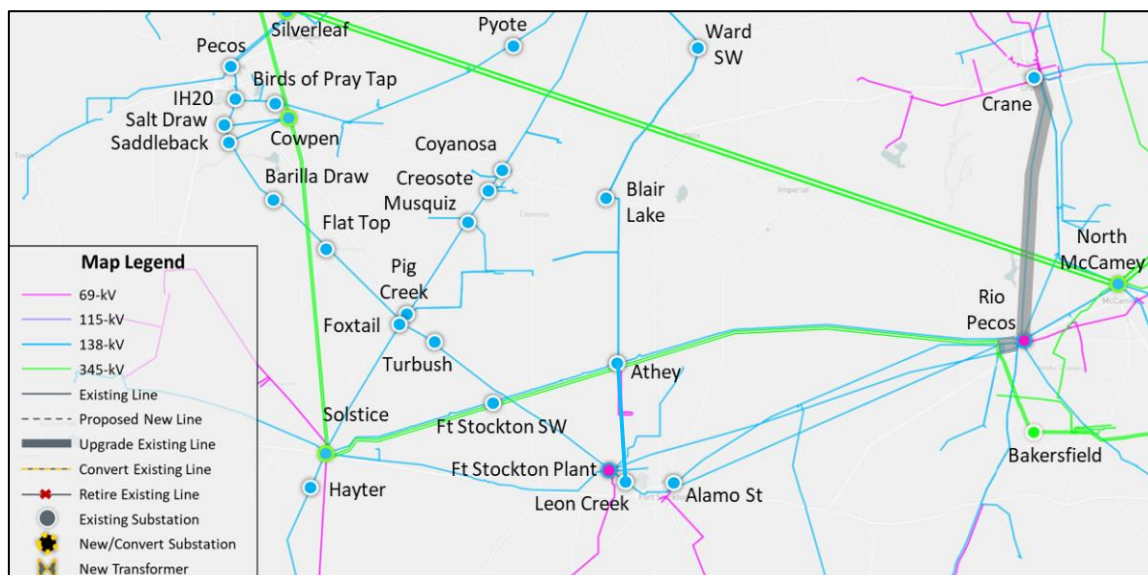


Figure 4.8: Map of Option 8

Option 9 (similar to Option 4) consists of the following:

- Construct a new second circuit to the existing Hayter – Solstice 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 1.7-mile.
- Upgrade the two existing 345/138-kV transformers at Solstice 345/138-kV substation with a normal and emergency ratings of at least 800 MVA.
- Bypass the PST at the Solstice substation.
- Rebuild the existing Solstice – Ft. Stockton SW 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 25.5-mile.
- Rebuild the existing Ft. Stockton SW – Leon Creek 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.1-mile.
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Construct a new Creosote – Ft. Stockton SW 138-kV double-circuit transmission line with a normal and emergency ratings of at least 717 MVA per circuit, approximately 21.6-mile. This transmission line will require new ROW.

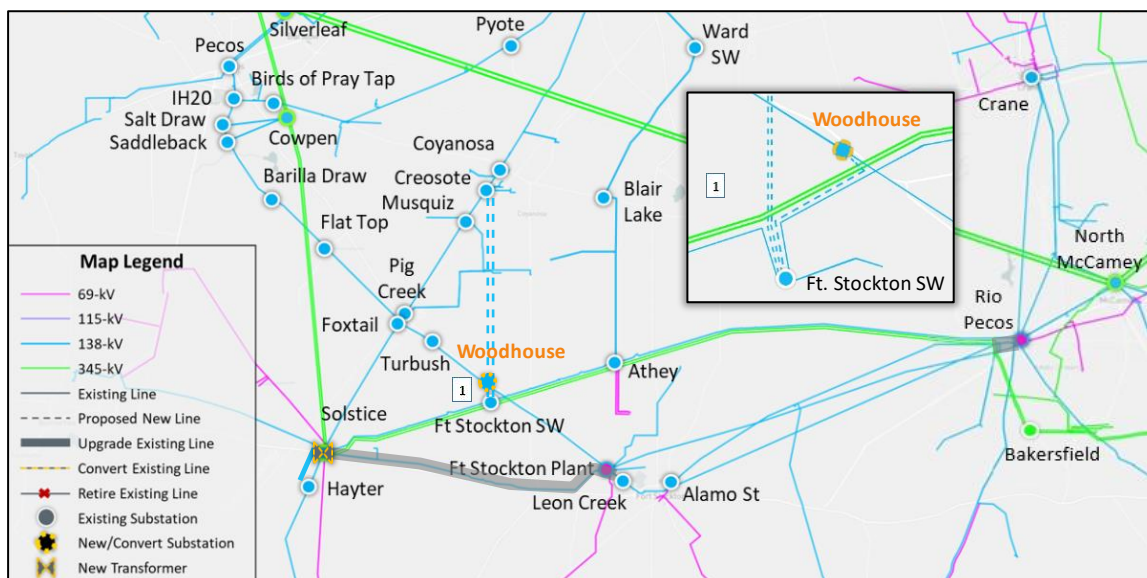


Figure 4.9: Map of Option 9

An alternative version for this option was tested which involved looping in the existing Turbush – Leon Creek 138-kV line into Ft. Stockton SW 138-kV station instead of building the new Woodhouse 138-kV station and to tie the Woodhouse to Ft. Stockton SW.

## 5 Option Evaluations

ERCOT performed reliability analysis, planned maintenance outage evaluation, and long-term load serving capability assessment to evaluate all nine options and to identify any reliability impact of the options in the study area. This section details these studies and their results and compares the options.

### 5.1 Results of Reliability Analysis

All initial nine options were evaluated based on the contingencies described in the methodology section of the report, and no reliability criteria violation were identified for Option 1 through 9 as shown in Table 5.1.

Table 5.1: Results of Initial Reliability Assessment of All Nine Options and Alternatives

| Option           | Voltage Violations | Thermal Overloads | Unsolved Power Flow |
|------------------|--------------------|-------------------|---------------------|
| 1, 1-Alternative | None               | None              | None                |
| 2                | None               | None              | None                |
| 3                | None               | None              | None                |
| 4                | None               | None              | None                |
| 5                | None               | None              | None                |
| 6, 6-Alternative | None               | None              | None                |
| 7, 7-Alternative | None               | None              | None                |
| 8                | None               | None              | None                |
| 9, 9-Alternative | None               | None              | None                |

## 5.2 Planned Maintenance Outage Evaluation

Using the P1, P2.1, and P7 contingencies based on the review of the system topology of the area, ERCOT conducted an N-2 contingency analysis for each of the study options to represent system element outages under planned maintenance condition (N-1-1) in the area. Then, each N-2 violation was run as an N-1-1 contingency scenario, with system adjustments between the contingencies. The transmission elements in the local area of the Pecos County Transmission Improvement Project were monitored in the maintenance outage evaluation.

As shown in Table 5.2, the results of this maintenance assessment indicates that Options 1, 2, 5, and 9 performed similarly and resolved all the reliability issues in the local area. Options 3, 4, 6, 7, and 8 still had the existing or new unsolved power flow issue along with voltage and/or thermal violations.

The alternative versions involve looping in the existing Tarbush – Leon Creek 138-kV line into Ft. Stockton SW 138-kV station instead of building the new Woodhouse 138-kV station and to tie the Woodhouse to Ft. Stockton SW.

**Table 5.2: Results of Planned Maintenance Outage Evaluation for the Nine Options**

| Option           | Voltage Violations | Thermal Overloads         | Unsolved Power Flow |
|------------------|--------------------|---------------------------|---------------------|
| 1, 1-Alternative | 12                 | None                      | None                |
| 2                | None               | None                      | None                |
| 3                | 13                 | 16.8-mile of 138-kV lines | 7                   |
| 4                | 12                 | None                      | 13                  |
| 5                | None               | None                      | None                |
| 6, 6-Alternative | 3                  | 2.9-mile of 138-kV lines  | None                |
| 7, 7-Alternative | None               | 2.9-mile of 138-kV lines  | None                |
| 8                | 3                  | 17.3-mile of 138-kV lines | None                |
| 9, 9-Alternative | 12                 | None                      | None                |

The voltage violations seen in Option 1, 3, 4, and 9 along with their alternatives are pre-existing off-peak that are not related to the project. These can be solved by adding an 80 MVAR (2 blocks of 40 MVAR) capacitor bank at Athey or Blair Lake 138-kV substations.

## 5.3 Short-listed Options

Based on the results shown in Table 5.2, Option 1, 2, 5, and 9 were selected as short-listed options for further evaluations. This section details these studies and their results and compares the short-listed options. These four options are illustrated in Figures 5.1, 5.2, 5.3 and 5.4.

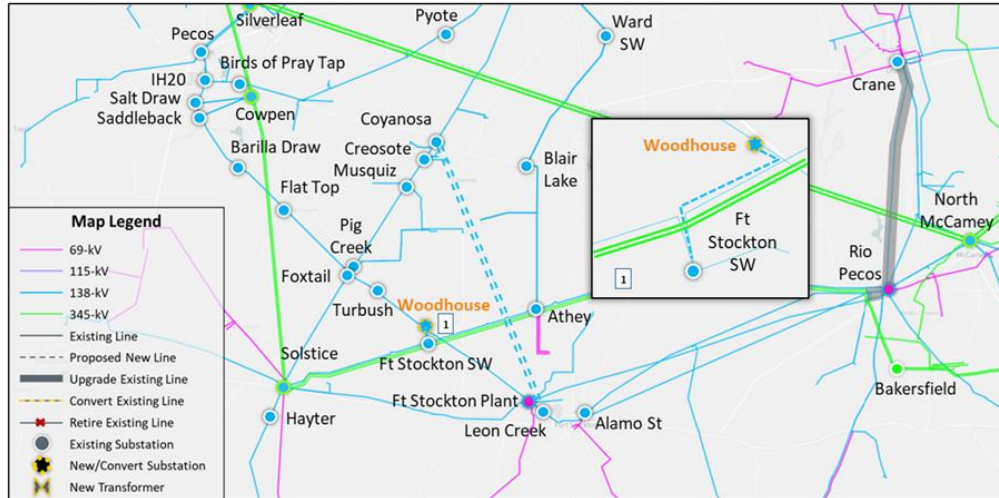


Figure 5.1: Map of Option 1

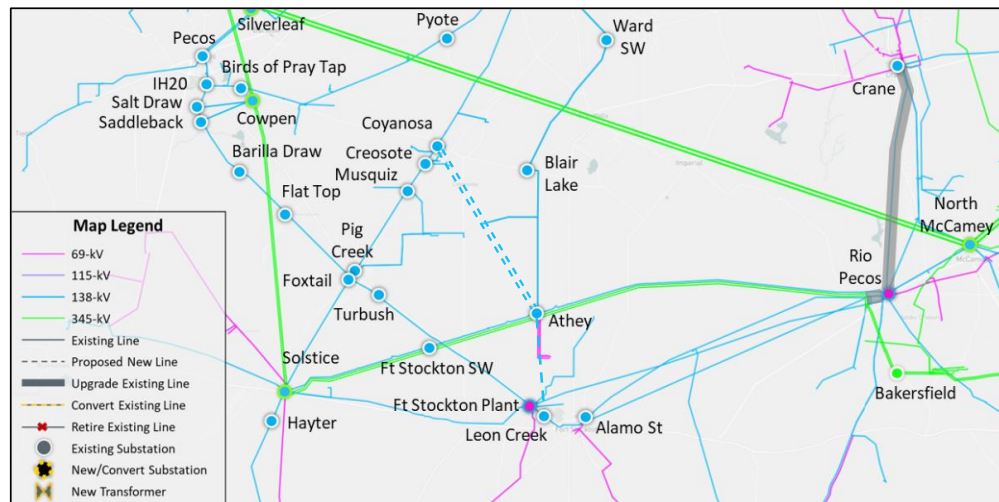


Figure 5.2: Map of Option 2

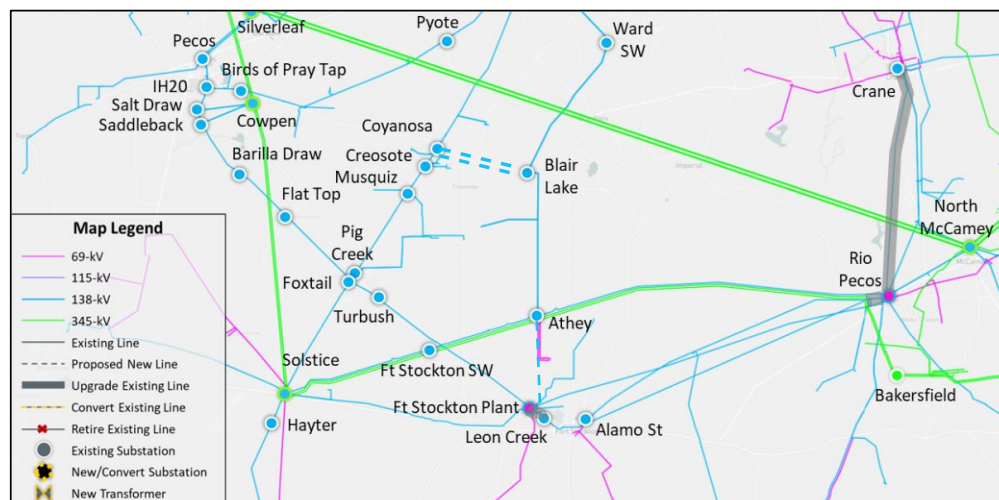


Figure 5.3: Map of Option 5



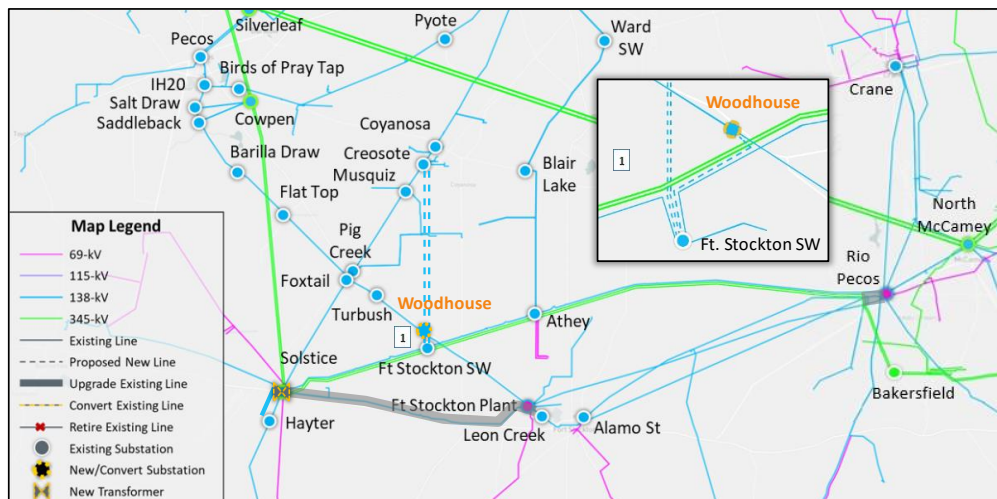


Figure 5.4: Map of Option 9

### 5.4 Long-Term Load Serving Capability Assessment

The Far West Weather Zone, which includes the study area, has experienced an average annual peak demand growth rate of approximately 14% from 2018 to 2023 due to significant growth in oil and natural gas industry demand. In addition to the oil and natural gas industry demand, significant increases in the demand of Customers operating datacenters or virtual currency mining facilities are also forecasted in the study area for the future years. Due to the historical and expected high load growth in this area, ERCOT performed a long-term load serving capability assessment on all four options.

The need drivers for this RPG project are to meet the forecasted loads in the area and address the maintenance outage issues. Options 1, 2, 5, and 9 address these needs and were selected to perform the long-term load serving capability assessment.

The results show Options 5 and 9 to have similar performance while Options 1 and 2 have similar performance. However, Options 1 and 2 had 24% more capability in terms of long-term load serving capability assessment. These results are shown in Table 5.3.

Table 5.3: Results of Long-Term Load Serving Capability Assessment of All Short-listed Options

| Option           | Incremental Load Serving Capability (~MW) |
|------------------|---|
| Base Case        | 52.0                                      |
| 1, 1-Alternative | 189.0                                     |
| 2                | 190.0                                     |
| 5                | 153.0                                     |
| 9, 9-Alternative | 152.0                                     |

## 5.5 Cost Estimate and Feasibility Assessment

TNMP, AEPSC, Oncor, and LCRA TSC performed feasibility assessments and provided cost estimates for the four short-listed options. Table 5.4 summarizes the cost estimate, estimated mileage of CCN required, option feasibility, and expected year of complication for the four short-listed options.

**Table 5.4: Cost Estimates and Expected ISD for the Short-Listed Options**

| Option        | Cost Estimates (~\$M) | CCN Required (~Miles) | Feasible     | Expected ISD (Year)    |
|---------------|-----------------------|-----------------------|--------------|------------------------|
| 1             | 114.8*                | 31.1*                 | Feasible     | May-26, Aug-26         |
| 1-Alternative | 108.6**               | 31.1*                 | Not Feasible | May-26, Aug-26         |
| 2             | 114.3*                | 31.3                  | Feasible     | May-26, Apr-27         |
| 5             | 113.1                 | 22.0                  | Feasible     | May-26, Apr-27, May-27 |
| 9             | 138.6                 | 21.6                  | Not Feasible | May-26, 36-48 months   |
| 9-Alternative | 132.4**               | 21.6                  | Not Feasible | May-26, 36-48 months   |

\* Updated cost estimate and CCN mileage from the original estimate in the RPG submittal

\*\* The estimated cost does not include cost of the component that was deemed infeasible by TNMP

Based on the input from TNMP, Option 1-Alternative and 9-Alternative were deemed infeasible due to TNMP interconnection requirements, and Option 9 was deemed infeasible due to TNMP system reliability risk (below unity post-contingency voltages).

## 6 Comparison of Short-listed Options

Based on the feasibility assessments Options 1-Alternative, 9, and 9-Alternative were removed from the comparison of options provided in the Table 6.1. The comparison of Options 1, 2, and 5, with corresponding cost estimates provided by TNMP, AEPSC, Oncor, and LCRA TSC are summarized in Table 6.1.

**Table 6.1: Comparison of the Short-Listed Options**

|  | Option 1     | Option 2     | Option 5    |
|--|--------------|--------------|-------------|
| Meets ERCOT and NERC Reliability Criteria                | Yes          | Yes          | Yes         |
| M TNMP Facility Interconnection Requirement              | Yes          | Yes          | Yes         |
| Improves Operational Flexibility                         | Yes (Better) | Yes          | Yes         |
| Improves Long-Term Load Serving Capability               | Yes (Better) | Yes (Better) | Yes         |
| Provides Additional 138-kV Load Interconnection Point    | Yes          | No           | No          |
| Provides Faster Customer Connectivity (within two-years) | Yes          | No           | No          |
| Requires CCN (Miles)                                     | Yes (~31.1*) | Yes (~31.3)  | Yes (~22.0) |
| Cost Estimates (\$M)                                     | ~114.8*      | ~114.3*      | ~113.1      |

\* Updated cost estimate and CCN mileage from the original estimate in the RPG submittal

ERCOT recommends Option 1 as the preferred option to address the reliability need in the study area based on the following considerations:

- Options 1 and 2 provides better long-term load serving capability than Option 5;
- Option 1 provides better operational flexibility;
- Option 1 provides an additional 138-kv load interconnection point; and
- Option 1 has the shortest anticipated completion time of all the short-listed options.

## 7 Additional Analysis and Assessment

The preferred option (Option 1, approximately \$114.8 million) is categorized as a Tier 1 project, pursuant to ERCOT Protocol 3.11.4.3(1)(a). As required by Planning Guide Section 3.1.3(4), ERCOT performed generation and load sensitivity studies to identify the preferred option performance, as required under Planning Guide Section 3.1.3(4). Additionally, a Sub-synchronous Resonance (SSR) Assessment was performed.

### 7.1 Generation Addition Sensitivity Analysis

ERCOT performed a generation addition sensitivity analysis based on Planning Guide Section 3.1.3(4)(a).

Based on a review of the December 2023 GIS<sup>8</sup> reports, 11 units were found within the FW Weather Zone that could have an impact on the identified reliability issues. These units are listed in the Table 7.1. After the addition of the units to the Option 1 case, no new thermal or voltage violations were identified.

**Table 7.1: List of Units that Could have an Impact on the Identified Reliability Issues**

| GINR      | Unit Name                | Fuel Type | Capacity (~MW) | County   |
|-----------|--------------------------|-----------|----------------|----------|
| 16INR0104 | Big Sampson Wind         | Wind      | 400.0          | Crockett |
| 21INR0021 | Green Holly Solar        | Solar     | 413.6          | Dawson   |
| 21INR0022 | Red Holly Solar          | Solar     | 260.0          | Dawson   |
| 21INR0029 | Green Holly Storage      | Battery   | 50.0           | Dawson   |
| 21INR0033 | Red Holly Storage        | Battery   | 50.0           | Dawson   |
| 21INR0268 | Greyhound Solar          | Solar     | 608.7          | Ector    |
| 23INR0287 | BRP Avila BESS           | Battery   | 165.0          | Pecos    |
| 23INR0300 | Greater Bryant G Solar   | Solar     | 41.6           | Midland  |
| 23INR0340 | Larkspur Energy Storage  | Battery   | 307.5          | Upton    |
| 24INR0273 | AI Pastor BESS           | Battery   | 100.8          | Dawson   |
| 25INR0208 | Iron Belt Energy Storage | Battery   | 401.9          | Borden   |

<sup>8</sup> GIS Report: <https://www.ercot.com/mp/data-products/data-product-details?id=PG7-200-ER>

## 7.2 Load Scaling Sensitivity Analysis

Planning Guide Section 3.1.3(4)(b) requires an evaluation of the potential impact of load scaling on the criteria violations seen in this ERCOT independent review. As stated in Section 2.1, ERCOT used the 2027 WFW summer peak case from the 2022 RTP and adjusted the load to create the 2027 WFW summer peak case to study the area in FW Weather Zone. This study base case, which was created in accordance with the 2022 RTP Study Scope and Process document and Section 2.1 of this document, included load scaled down from the respective non-coincident peaks in the North, North Central, South, South Central, East, and Coast Weather Zones.

The Outage Transfer Distribution Factors (OTDFs) of overloaded elements with respect to the load transfer for each Weather Zone (excluding WFW Weather Zones) were calculated using PowerWorld Simulator. The OTDFs were less than 1% for each of the overloaded elements, *i.e.*, they were not significant enough to have an impact on the overloaded elements. ERCOT concluded that the load scaling used to develop the base case in this study did not have a material impact on the project need, which was primarily driven by thermal overloads and voltage violations under maintenance outage condition in the study area.

## 7.3 Sub-synchronous Resonance (SSR) Assessment

Pursuant to Nodal Protocol Section 3.22.1.3(2), ERCOT conducted a sub-synchronous-resonance (SSR) screening for the preferred option (Option 1) and found no adverse SSR impacts to the existing and planned generation resources in the study area.

## 8 Congestion Analysis

ERCOT conducted a congestion analysis to identify any potential impact on system congestion related to the addition of the recommend project, Option 1, using the 2022 RTP 2027 final economic case.

The results of congestion analysis indicated no additional congestion in the area due to the addition of the recommended transmission upgrades of Option 1.

## 9 Conclusion

ERCOT evaluated the seven transmission upgrade options to resolve the thermal overloads and voltage violations under maintenance outage conditions in the Pecos County. Based on the results of the independent review, ERCOT recommends Option 1 as the preferred solution because it addresses the thermal overloads and voltage violations under maintenance outage condition with no reliability issues. This option also provides better operation flexibility, better long-term load serving capability for future load growth in the area, additional load interconnection point, and shortest anticipated completion time among all the short-listed options.



Option 1 consists of the following upgrades and is estimated to cost \$114.8 million:

- Construct a new Coyanosa – Leon Creek double-circuit 138-kV transmission line with a normal and emergency ratings of at least 717 MVA per circuit, approximately 31.1-mile. This transmission line will require new ROW.
- Construct a new Woodhouse 138-kV substation by cutting into the existing Tarbush to Leon Creek 138-kV transmission line.
- Construct a new tie Woodhouse – Ft. Stockton SW 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.1-mile.
- Rebuild the existing second circuit Rio Pecos – Girvin 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 0.6-mile.
- Rebuild the existing Rio Pecos – Crane 138-kV transmission line with a normal and emergency ratings of at least 717 MVA, approximately 23.7-mile.

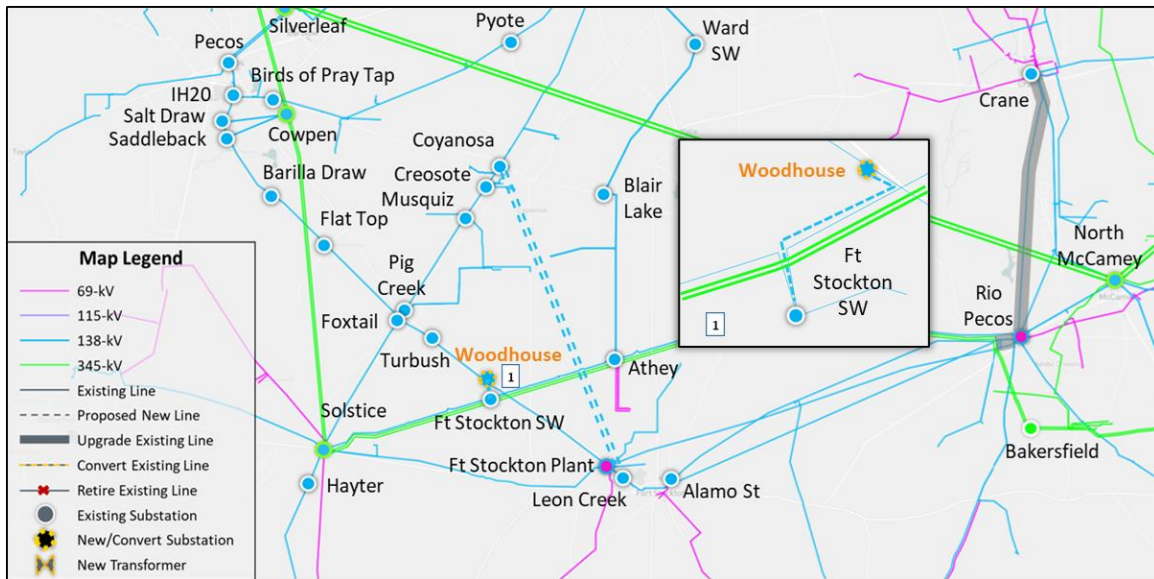


Figure 9.1: Map of Option 1

This project will require a CCN to construct the new 138-kV double-circuit transmission line from Coyanosa 138-kV Substation to Leon Creek 138-kV Substation, and the expected ISD of this project is August 2026.

## Appendix A

**Table A.1: List of Generation Added to the Economic Base Case Based on November 2023 GIS Report**

| GINR      | Project Name            | Fuel | Project COD | Capacity (~MW) | County    |
|-----------|-------------------------|------|-------------|----------------|-----------|
| 14INR0033 | Goodnight Wind          | WIN  | 12/30/2023  | 258.1          | Armstrong |
| 18INR0043 | Lacy Creek wind         | WIN  | 8/1/2023    | 301.3          | Glasscock |
| 18INR0058 | Texana Solar            | SOL  | 9/27/2024   | 152.3          | Wharton   |
| 19INR0134 | Cottonwood Bayou Solar  | SOL  | 6/30/2024   | 351.4          | Brazoria  |
| 19INR0177 | Crawfish                | WIN  | 12/31/2023  | 163.2          | Wharton   |
| 19INR0203 | Angelo Solar            | SOL  | 5/3/2024    | 195.4          | Tom Green |
| 20INR0035 | Angus Solar             | SOL  | 4/1/2025    | 112.0          | Bosque    |
| 20INR0047 | Siete                   | WIN  | 10/31/2024  | 375.1          | Webb      |
| 20INR0069 | Danish Fields Solar     | SOL  | 12/15/2023  | 602.8          | Wharton   |
| 20INR0074 | Pitts Dudik Solar       | SOL  | 8/18/2023   | 49.6           | Hill      |
| 20INR0080 | Frye Solar              | SOL  | 3/15/2024   | 514.1          | Swisher   |
| 20INR0164 | BPL Files Solar         | SOL  | 7/26/2023   | 148.7          | Hill      |
| 20INR0208 | Signal Solar            | SOL  | 3/15/2025   | 51.8           | Hunt      |
| 20INR0210 | Hopkins Solar           | SOL  | 12/31/2023  | 253.1          | Hopkins   |
| 20INR0246 | Ryan Energy Storage     | OTH  | 10/21/2024  | 50.0           | Coryell   |
| 20INR0249 | Appaloosa Run Wind      | WIN  | 7/7/2023    | 175.0          | Upton     |
| 20INR0250 | Aguayo Wind             | WIN  | 7/15/2023   | 196.0          | Mills     |
| 20INR0269 | Texas Solar Nova 2      | SOL  | 12/29/2023  | 201.1          | Kent      |
| 20INR0296 | Sand Bluff Wind Repower | WIN  | 6/15/2023   | 89.5           | Glasscock |
| 21INR0012 | Air Products GCA        | GAS  | 11/30/2023  | 14.0           | Galveston |
| 21INR0019 | Zier Solar              | SOL  | 3/5/2024    | 163.0          | Kinney    |
| 21INR0027 | Zier Storage            | OTH  | 3/5/2024    | 40.4           | Kinney    |
| 21INR0203 | Eastbell Milam Solar    | SOL  | 11/30/2023  | 244.9          | Milam     |
| 21INR0220 | Maleza Solar            | SOL  | 12/1/2024   | 254.9          | Wharton   |
| 21INR0223 | Tulsita Solar           | SOL  | 12/31/2024  | 261.0          | Goliad    |
| 21INR0253 | Ulysses Solar           | SOL  | 11/1/2024   | 150.0          | Coke      |
| 21INR0257 | Mercury Solar           | SOL  | 6/30/2024   | 206.1          | Hill      |
| 21INR0324 | Board Creek Wind        | WIN  | 7/30/2023   | 299.2          | Navarro   |
| 21INR0325 | Sheep Creek Wind        | WIN  | 12/31/2023  | 153.0          | Callahan  |
| 21INR0344 | Lunis Creek Solar SLF   | SOL  | 12/31/2024  | 617.1          | Jackson   |
| 21INR0351 | 7V Solar                | SOL  | 4/30/2024   | 240.6          | Fayette   |
| 21INR0353 | Big Elm Solar           | SOL  | 7/31/2024   | 203.6          | Bell      |
| 21INR0368 | Eliza Solar             | SOL  | 11/1/2024   | 151.9          | Kaufman   |
| 21INR0389 | Hollywood Solar         | SOL  | 6/30/2024   | 353.4          | Wharton   |
| 21INR0401 | Young Wind              | WIN  | 7/7/2023    | 499.1          | Young     |
| 21INR0442 | Myrtle Storage          | OTH  | 12/15/2023  | 155.0          | Brazoria  |
| 21INR0458 | Porter Solar            | SOL  | 3/31/2024   | 245.8          | Denton    |
| 21INR0484 | Mustang Creek Storage   | OTH  | 8/15/2023   | 70.5           | Jackson   |

| GINR      | Project Name                | Fuel | Project COD | Capacity (~MW) | County    |
|-----------|-----------------------------|------|-------------|----------------|-----------|
| 21INR0492 | Stockyard Grid Batt         | OTH  | 3/29/2024   | 150.6          | Tarrant   |
| 21INR0499 | Neptune Solar               | SOL  | 12/22/2023  | 204.7          | Jackson   |
| 21INR0511 | Wolf Ridge Repower          | WIN  | 12/31/2024  | 9.0            | Cooke     |
| 21INR0515 | Roadrunner Crossing Wind II | WIN  | 12/31/2023  | 126.7          | Eastland  |
| 21INR0532 | Brazos Wind Repower         | WIN  | 8/14/2023   | 22.4           | Scurry    |
| 22INR0223 | Eiffel Solar                | SOL  | 10/30/2023  | 241.0          | Lamar     |
| 22INR0251 | Shaula I Solar              | SOL  | 10/30/2025  | 205.2          | DeWitt    |
| 22INR0254 | Pisgah Ridge Solar          | SOL  | 5/15/2023   | 253.9          | Navarro   |
| 22INR0260 | Eliza Storage               | OTH  | 11/1/2024   | 100.2          | Kaufman   |
| 22INR0267 | Shaula II Solar             | SOL  | 5/30/2026   | 205.2          | DeWitt    |
| 22INR0295 | Coral Solar                 | SOL  | 12/15/2023  | 151.6          | Falls     |
| 22INR0302 | Bright Arrow Storage        | OTH  | 9/19/2023   | 103.6          | Hopkins   |
| 22INR0327 | Hummingbird Storage         | OTH  | 2/24/2024   | 103.8          | Denton    |
| 22INR0335 | Estonian Solar              | SOL  | 10/15/2024  | 202.5          | Delta     |
| 22INR0336 | Estonian Storage            | OTH  | 2/24/2024   | 101.6          | Delta     |
| 22INR0338 | Limousin Oak Storage        | OTH  | 2/23/2024   | 104.6          | Grimes    |
| 22INR0349 | BRP Antlia BESS             | OTH  | 12/1/2024   | 71.0           | Val Verde |
| 22INR0359 | Dileo Solar                 | SOL  | 8/18/2023   | 71.4           | Bosque    |
| 22INR0363 | Hayhurst Texas Solar        | SOL  | 11/1/2023   | 24.8           | Culberson |
| 22INR0366 | BRP Libra BESS              | OTH  | 11/27/2023  | 206.2          | Guadalupe |
| 22INR0368 | Padua Grid BESS             | OTH  | 12/31/2024  | 50.8           | Bexar     |
| 22INR0397 | Buckeye Corpus Fuels Solar  | SOL  | 2/22/2025   | 57.6           | Nueces    |
| 22INR0398 | Sabal Storage               | OTH  | 9/30/2023   | 18.0           | Cameron   |
| 22INR0404 | Fence Post Solar            | SOL  | 7/12/2024   | 237.3          | Navarro   |
| 22INR0405 | Fence Post BESS             | OTH  | 6/19/2024   | 71.6           | Navarro   |
| 22INR0409 | Stampede Solar              | SOL  | 12/20/2024  | 255.7          | Hopkins   |
| 22INR0410 | Stampede BESS               | OTH  | 9/21/2024   | 71.6           | Hopkins   |
| 22INR0412 | Andromeda Solar             | SOL  | 8/30/2023   | 326.6          | Scurry    |
| 22INR0429 | Sun Valley BESS             | OTH  | 9/10/2023   | 101.4          | Hill      |
| 22INR0454 | DR Solar                    | SOL  | 6/1/2024    | 46.0           | Culberson |
| 22INR0455 | Blue Sky Sol                | SOL  | 6/15/2024   | 101.2          | Crockett  |
| 22INR0485 | House Mountain              | OTH  | 10/26/2023  | 63.0           | Brewster  |
| 22INR0490 | Callisto I Energy Center    | OTH  | 6/1/2024    | 203.0          | Harris    |
| 22INR0495 | TIMBERWOLF BESS 2           | OTH  | 9/1/2023    | 150.0          | Crane     |
| 22INR0502 | Shamrock                    | WIN  | 7/1/2024    | 223.9          | Crockett  |
| 22INR0509 | Turquoise Storage           | OTH  | 7/31/2023   | 196.2          | Hunt      |
| 22INR0524 | St. Gall I Energy Storage   | OTH  | 12/28/2023  | 102.6          | Pecos     |
| 22INR0549 | Tanzanite Storage           | OTH  | 12/1/2024   | 257.7          | Henderson |
| 22INR0550 | BLUE SUMMIT I REPOWER       | WIN  | 7/1/2023    | 4.4            | Wilbarger |
| 22INR0551 | Wolf Tank Storage           | OTH  | 7/1/2023    | 155.5          | Webb      |
| 22INR0552 | Sowers Storage              | OTH  | 12/1/2024   | 200.8          | Kaufman   |
| 23INR0007 | Outpost Solar               | SOL  | 10/31/2024  | 513.7          | Webb      |

| GINR      | Project Name                  | Fuel | Project COD | Capacity (~MW) | County    |
|-----------|-------------------------------|------|-------------|----------------|-----------|
| 23INR0047 | Charger Solar                 | SOL  | 5/31/2025   | 406.8          | Refugio   |
| 23INR0054 | Tanglewood Solar              | SOL  | 1/16/2025   | 257.0          | Brazoria  |
| 23INR0062 | Noria Storage                 | OTH  | 9/1/2025    | 75.0           | Nueces    |
| 23INR0111 | GULF STAR SOLAR               | SOL  | 2/1/2024    | 300.5          | Wharton   |
| 23INR0124 | Coral Storage                 | OTH  | 12/15/2023  | 99.0           | Falls     |
| 23INR0153 | Mercury II Solar              | SOL  | 6/30/2024   | 206.1          | Hill      |
| 23INR0154 | Ebony Energy Storage          | OTH  | 4/1/2024    | 208.4          | Comal     |
| 23INR0159 | Five Wells Storage            | OTH  | 12/29/2023  | 220.8          | Bell      |
| 23INR0160 | Grimes County Solar           | SOL  | 3/15/2025   | 210.0          | Grimes    |
| 23INR0162 | Redonda Solar                 | SOL  | 12/1/2024   | 253.2          | Zapata    |
| 23INR0166 | Great Kiskadee Storage        | OTH  | 8/1/2024    | 103.1          | Hidalgo   |
| 23INR0223 | Garcitas Creek Solar          | SOL  | 3/31/2025   | 201.9          | Jackson   |
| 23INR0239 | Giga Texas Energy Storage     | OTH  | 12/15/2023  | 131.1          | Travis    |
| 23INR0331 | Talitha BESS                  | OTH  | 6/30/2024   | 61.4           | Jim Wells |
| 23INR0339 | Remy Jade Power Station       | GAS  | 4/1/2024    | 408.0          | Harris    |
| 23INR0343 | Guajillo Energy Storage       | OTH  | 9/30/2024   | 201.1          | Webb      |
| 23INR0363 | Brazos Bend BESS              | OTH  | 4/15/2024   | 101.6          | Fort Bend |
| 23INR0369 | Anemoi Energy Storage         | OTH  | 12/20/2023  | 205.0          | Hidalgo   |
| 23INR0371 | Rodeo Ranch Energy Storage    | OTH  | 11/6/2023   | 307.5          | Reeves    |
| 23INR0387 | Pioneer DJ Wind               | WIN  | 4/20/2024   | 140.3          | Midland   |
| 23INR0408 | TECO GTG2                     | GAS  | 2/18/2024   | 50.0           | Harris    |
| 23INR0418 | Angelo Storage                | OTH  | 5/3/2024    | 103.0          | Tom Green |
| 23INR0419 | SOHO BESS                     | OTH  | 1/1/2025    | 206.3          | Brazoria  |
| 23INR0460 | GULF STAR STORAGE             | OTH  | 2/1/2024    | 301.0          | Wharton   |
| 23INR0472 | Frontera Energy Center        | GAS  | 7/14/2023   | 524.0          | Hidalgo   |
| 23INR0506 | Beachwood II Power Station    | GAS  | 3/1/2024    | 102.0          | Brazoria  |
| 23INR0524 | Temple II Repower             | GAS  | 10/15/2023  | 0.0            | Bell      |
| 23INR0551 | Brotman II Power Station      | GAS  | 8/7/2023    | 102.0          | Brazoria  |
| 23INR0637 | Goodnight Wind II             | WIN  | 12/30/2023  | 258.3          | Armstrong |
| 24INR0015 | Five Wells Solar              | SOL  | 12/29/2023  | 322.8          | Bell      |
| 24INR0147 | Citadel BESS                  | OTH  | 5/7/2024    | 201.3          | Harris    |
| 24INR0427 | CPS AvR CT1 Rotor Replacement | GAS  | 1/30/2024   | 11.3           | Bexar     |
| 23INR0470 | BoCo BESS                     | OTH  | 6/22/2024   | 155.5          | Borden    |
| 22INR0353 | BRP Carina BESS               | OTH  | 12/31/2024  | 151.9          | Nueces    |
| 21INR0450 | Danish Fields Storage         | OTH  | 2/15/2024   | 152.4          | Wharton   |
| 22INR0261 | Dorado Solar                  | SOL  | 12/31/2025  | 406.3          | Callahan  |
| 20INR0040 | Montgomery Ranch Wind         | WIN  | 2/29/2024   | 200.2          | Foard     |
| 21INR0424 | Tierra Bonita Solar           | SOL  | 8/1/2024    | 309.7          | Pecos     |
| 23INR0296 | Trojan Solar                  | SOL  | 2/28/2026   | 151.3          | Cooke     |
| 24INR0382 | Remy Jade II Power Station    | GAS  | 11/30/2024  | 102.0          | Harris    |
| 21INR0444 | Long Point Storage            | OTH  | 12/1/2025   | 100.6          | Brazoria  |
| 21INR0505 | Ramsey Storage                | OTH  | 6/1/2024    | 510.4          | Wharton   |

| GINR      | Project Name                  | Fuel | Project COD | Capacity (~MW) | County    |
|-----------|-------------------------------|------|-------------|----------------|-----------|
| 22INR0422 | Ferdinand Grid BESS           | OTH  | 5/31/2026   | 202.7          | Bexar     |
| 23INR0219 | Dogfish BESS                  | OTH  | 12/31/2024  | 75.0           | Pecos     |
| 23INR0381 | Soportar ESS                  | OTH  | 3/15/2025   | 102.1          | Bexar     |
| 24INR0039 | SP Jaguar BESS                | OTH  | 6/30/2025   | 300.0          | McLennan  |
| 24INR0109 | Oriana BESS                   | OTH  | 7/2/2025    | 60.3           | Victoria  |
| 24INR0265 | Ironman BESS                  | OTH  | 11/1/2024   | 304.2          | Brazoria  |
| 24INR0281 | Red Egret BESS                | OTH  | 6/1/2025    | 309.0          | Galveston |
| 24INR0436 | Carambola BESS                | OTH  | 5/31/2026   | 97.4           | Hidalgo   |
| 25INR0162 | SOHO II BESS                  | OTH  | 1/1/2025    | 206.3          | Brazoria  |
| 21INR0302 | Aureola Solar                 | SOL  | 6/28/2024   | 203.0          | Milam     |
| 21INR0303 | Mandorla Solar                | SOL  | 1/2/2024    | 254.0          | Milam     |
| 21INR0304 | Halo Solar                    | SOL  | 6/20/2024   | 254.0          | Bell      |
| 22INR0354 | XE MURAT Solar                | SOL  | 5/13/2024   | 60.4           | Harris    |
| 23INR0367 | Fewell Solar                  | SOL  | 9/9/2025    | 203.5          | Limestone |
| 24INR0038 | SP Jaguar Solar               | SOL  | 6/30/2025   | 300.0          | McLennan  |
| 19INR0054 | Monte Cristo 1 Wind           | WIN  | 12/31/2024  | 236.9          | Hidalgo   |
| 20INR0248 | Second Division Solar         | SOL  | 9/17/2024   | 100.3          | Brazoria  |
| 23INR0026 | Baker Branch Solar            | SOL  | 8/1/2024    | 469.4          | Lamar     |
| 23INR0525 | Pyron Wind Repower            | WIN  | 2/1/2024    | 19.9           | Nolan     |
| 24INR0070 | Sypert Branch Solar Project   | SOL  | 6/1/2025    | 261.8          | Milam     |
| 24INR0609 | Rodeo Ranch Energy Storage II | OTH  | 11/6/2023   | 307.5          | Reeves    |
| 25INR0223 | Uhland Maxwell                | GAS  | 4/15/2025   | 188.4          | Caldwell  |
| 25INR0232 | Isaac Solar                   | SOL  | 3/31/2026   | 51.6           | Matagorda |
| 22INR0555 | Guevara Storage               | OTH  | 7/15/2025   | 125.4          | Rockwall  |
| 24INR0100 | Sheep Creek Storage           | OTH  | 7/1/2024    | 142.0          | Callahan  |
| 24INR0138 | Midpoint Storage              | OTH  | 8/30/2025   | 52.2           | Hill      |
| 24INR0140 | Gaia Storage                  | OTH  | 7/31/2025   | 76.8           | Navarro   |
| 24INR0273 | Al Pastor BESS                | OTH  | 9/2/2024    | 100.8          | Dawson    |
| 24INR0295 | Lucky Bluff BESS              | OTH  | 5/31/2025   | 100.8          | Erath     |
| 23INR0349 | Tokio Solar                   | SOL  | 8/25/2025   | 177.6          | McLennan  |
| 24INR0010 | Pinnington Solar              | SOL  | 10/15/2025  | 666.1          | Jack      |
| 24INR0139 | Midpoint Solar                | SOL  | 8/30/2025   | 103.8          | Hill      |
| 24INR0141 | Gaia Solar                    | SOL  | 7/31/2025   | 152.7          | Navarro   |