



**The Reliability and Markets (R&M) Committee
is expected to consider
R&M Committee Agenda Item 7.2:**

***Oncor Venus Switch to Sam Switch 345-kV
Line Project***

at its meeting on February 3, 2025.

**The Board of Directors is expected to hear
the R&M Committee's recommendation on
this matter at the Board meeting on
February 4, 2025.**

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



Item 7.2: Oncor Venus Switch to Sam Switch 345-kV Line Project

Kristi Hobbs

Vice President, System Planning and
Weatherization

Reliability and Markets Committee Meeting

ERCOT Public
February 3, 2025

Reliability and Markets Committee Request

- **Purpose**

- Provide an overview of the \$118.9 million Oncor Venus Switch to Sam Switch 345-kV Line 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 Oncor Venus Switch to Sam Switch 345-kV Line Regional Planning Group (RPG) Project (Option 1) based on North American Electric Reliability Corporation (NERC) and Electric Reliability Council of Texas, Inc (ERCOT) reliability planning criteria.

Key Takeaways:

- The Oncor Venus Switch to Sam Switch 345-kV Line Project is a Tier 1 project requiring Board consideration for endorsement.
- 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 as it addressed the reliability violations, is the least cost solution and improves long-term load-serving capability in the study area.

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 Oncor Venus Switch to Sam Switch 345-kV Line Project is a Tier 1 project requiring Board consideration for endorsement.

Oncor Venus Switch to Sam Switch 345-kV Line Project

- Oncor submitted Oncor Venus Switch to Sam Switch 345-kV Line Project for RPG review in June 2024
- The purpose of the project is to address the reliability needs in the Ellis and Hill Counties in the North Central Weather Zone
- ERCOT performed an independent review of the project and identified thermal overloads in the Ellis and Hill Counties
- ERCOT's endorsement of the project is based on the reliability need to relieve thermal overloads on 81.5 miles of 345-kV transmission lines in the Ellis and Hill Counties to meet NERC and ERCOT reliability planning criteria
- ERCOT presented the project to TAC on January 22, 2025
 - TAC voted unanimously to endorse the project

Key Takeaway: The Oncor Venus Switch to Sam Switch 345-kV Line Project has completed RPG review and received unanimous endorsement by TAC.



Basis for ERCOT Board Endorsement

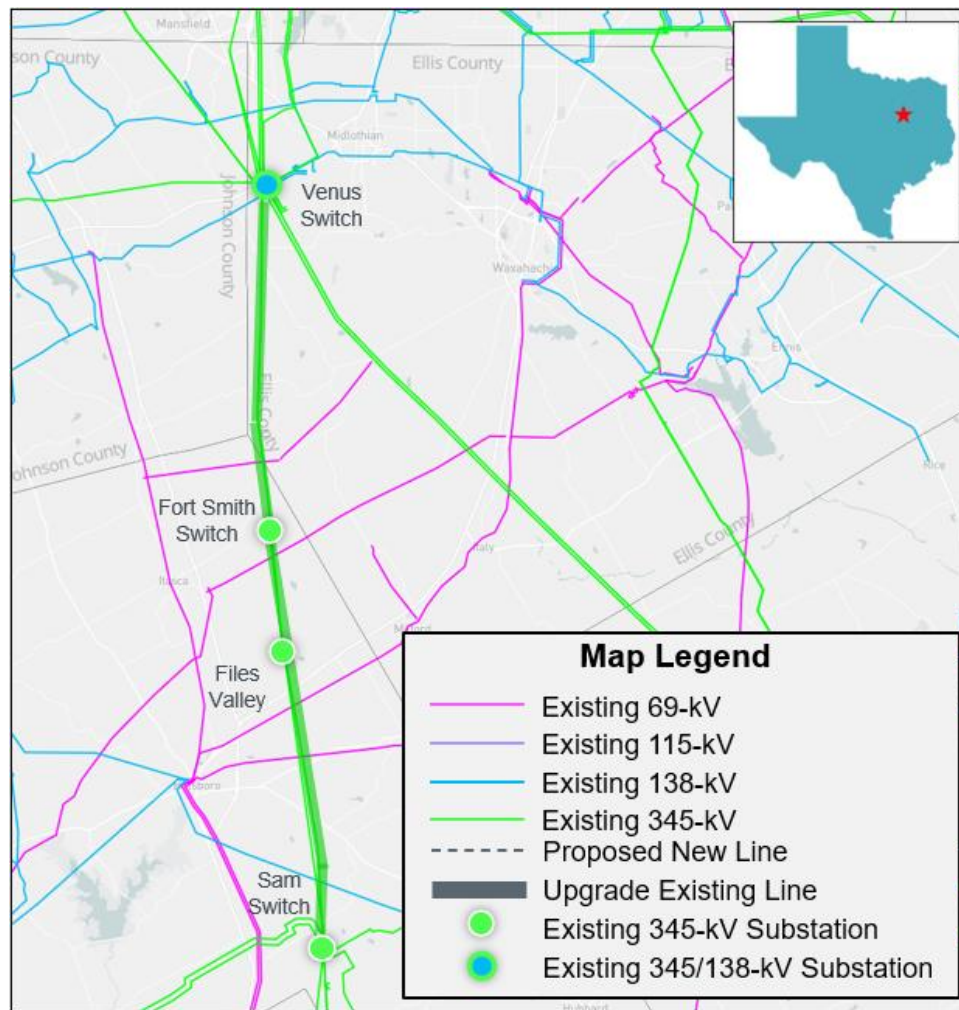
- ERCOT's independent review identified a reliability need for the Oncor Wilmer 345/138-kV Switch Project to satisfy:
 - NERC TPL-001-5.1 Table 1 Reliability Criteria for category:
 - P1 contingency, loss of a single transmission element
 - P3 contingency, loss of generating unit followed by a single transmission element
 - P6-2 contingency, loss of a transformer followed by a single transmission element
 - ERCOT Planning Guide Section Reliability Performance Criteria contingency:
 - 4.1.1.2(1)(c): The contingency is a loss of a single generating unit followed by a single transmission element or common tower outage
 - 4.1.1.2(1)(d): The contingency is a loss of a single 345/138-kV transformer followed by a single transmission element or common tower outage

Key Takeaway: The Oncor Venus Switch to Sam Switch 345-kV Line Project is needed to meet reliability under NERC and ERCOT Planning Guide criteria.

Request for Committee Vote

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

- Endorse the need for the Oncor Venus Switch to Sam Switch 345-kV Line Project (Option 1) based on NERC and ERCOT reliability planning criteria



Appendix

ERCOT Recommendation

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

- Rebuild the existing Venus Switch to Fort Smith Switch 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 17.80-mile;
- Rebuild the existing Venus Switch to Sam Switch 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 38.0-mile;
- Rebuild the existing Fort Smith Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 3.30-mile; and
- Rebuild the existing Sam Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 16.90-mile.

Key Takeaway: ERCOT studied several options and recommends Option 1 to address the reliability violations, is the least cost solution and improves long-term load-serving capability.



Date: January 28, 2025
To: Board of Directors
From: Julie England, Reliability and Markets (R&M) Committee Chair
Subject: Oncor Venus Switch to Sam Switch 345-kV Line Project

Issue for the ERCOT Board of Directors

ERCOT Board of Directors Meeting Date: February 4, 2025

Item No.: 9.3.3

Issue:

Whether the Board of Directors (Board) of Electric Reliability Council of Texas, Inc. (ERCOT) should accept the recommendation of ERCOT staff to endorse the need for the Tier 1 Oncor Electric Delivery Company LLC (Oncor) Venus Switch to Sam Switch 345-kV Line Regional Planning Group (RPG) Project in order to meet the reliability requirements for the ERCOT System and address thermal overloads in the Ellis and Hill Counties in the North Central Weather Zone, which ERCOT staff has independently reviewed and which the Technical Advisory Committee (TAC) has voted unanimously to endorse.

Background/History:

Oncor proposed the Venus Switch to Sam Switch 345-kV Line Project in June 2024, a \$118.9 million, Tier 1 project with the expected in-service date of May 2026, to meet reliability planning criteria in the Ellis and Hill Counties in the North Central Weather Zone. Protocol Section 3.11.4.7, Processing of Tier 1 Projects, requires ERCOT to independently review submitted projects. ERCOT performed an independent review of the Oncor Venus Switch to Sam Switch 345-kV Line Project and identified thermal overloads in the Ellis and Hill Counties. The ERCOT project recommendation (Option 1), a \$118.9 million, Tier 1 project with the expected in-service date of May 2026 addresses the need for a project under North American Electric Reliability Corporation (NERC) and ERCOT Planning Criteria to address thermal overloads on 81.5 miles of 345-kV transmission lines in the Ellis and Hill Counties with the following ERCOT System improvements:

- Rebuild the existing Venus Switch to Fort Smith Switch 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 17.80-mile;
- Rebuild the existing Venus Switch to Sam Switch 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 38.0-mile;
- Rebuild the existing Fort Smith Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 3.30-mile; and

- Rebuild the existing Sam Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 16.90-mile.

ERCOT's independent review verified the reliability need for the Oncor Venus Switch to Sam Switch 345-kV Line Project to satisfy ERCOT Planning Guide Section 4.1.1.2(1)(c), 4.1.1.2(1)(d), Reliability Performance Criteria, contingencies are for the loss of a single generating unit followed by a single transmission element or common tower outage, and the loss of a single 345/138-kV transformer followed by a single transmission element or common tower outage, respectively.

RPG considered project overviews during meetings in August 2024 and December 2024. Between August 2024 and December 2024, ERCOT staff presented scope and status updates at RPG meetings in August, September, October, 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 22, 2025, 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 includes R&M Committee review and recommendation to the Board regarding any Tier 1 project.

ERCOT's assessment of the Sub-Synchronous Resonance (SSR) of existing facilities in the Ellis and Hill Counties in the North Central 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, indicated an increase on existing congestion in the area with the addition of the Oncor Venus Switch to Sam Switch 345-kV Line Project (Option 1). Upgrading the congested line did not yield sufficient economic benefit and therefore was not recommended for upgrade as part of this project.

The project completion date is subject to change based on material acquisition, outage coordination, construction, or other project related requirements. Oncor will work with ERCOT as necessary to develop and implement Constraint Management Plans (CMP) based on summer operational conditions in 2025. If needed, Oncor will utilize line sectionalizing switches as the primary method to mitigate overload risks under contingency conditions. As a last resort measure, Oncor may utilize load shed to further mitigate the risk of overloads.

The report describing the ERCOT Independent Review of the Oncor Venus Switch to Sam Switch 345-kV Line Project (Option 1), including ERCOT staff's recommendation, is attached as **Attachment A**.

Key Factors Influencing Issue:

1. ERCOT System improvements are needed to meet reliability planning criteria in the Ellis and Hill Counties in the North Central 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 thermal overloads.
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 Oncor Venus Switch to Sam Switch 345-kV Line Regional Planning Group (RPG) Project (Option 1), as recommended by ERCOT, on January 22, 2025.

Conclusion/Recommendation:

ERCOT staff recommends, and the R&M Committee is expected to recommend, that the Board endorse the need for the Tier 1 Venus Switch to Sam Switch 345-kV Line RPG Project (Option 1), which ERCOT staff has independently reviewed, and which TAC has voted unanimously to endorse based on North American Electric Reliability Corporation (NERC) and ERCOT reliability planning criteria.



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 endorse the need for the Tier 1 Oncor Venus Switch to Sam Switch 345-kV Line Regional Planning Group Project (Option 1), which ERCOT staff has independently reviewed and which the Technical Advisory Committee (TAC) has voted to endorse based on North American Electric Reliability Corporation (NERC) and ERCOT reliability planning criteria;

THEREFORE, BE IT RESOLVED, that the Board hereby endorses the need for the Tier 1 Oncor Venus Switch to Sam Switch 345-kV Line Regional Planning Group Project (Option 1), which ERCOT staff has independently reviewed, and which TAC has voted to endorse based on NERC and ERCOT reliability planning criteria.

CORPORATE SECRETARY'S CERTIFICATE

I, Chad V. Seely, Corporate Secretary of ERCOT, do hereby certify that, at its February 4, 2025 meeting, the Board passed a motion approving the above Resolution by _____.

IN WITNESS WHEREOF, I have hereunto set my hand this ____ day of February, 2025.

Chad V. Seely
Corporate Secretary



ERCOT Independent Review of the Oncor Venus Switch to Sam Switch 345-kV Line Project

Document Revisions

Date	Version	Description	Author(s)
12/20/2024	1.0	Final	Sarah Gunasekera
		Reviewed by	Robert Golen, Prabhu Gnanam

Executive Summary

Oncor Electric Delivery Company LLC (Oncor) submitted the Venus Switch to Sam Switch 345-kV Line Project to the Regional Planning Group (RPG) in June 2024. Oncor proposed this project to address North American Electric Reliability Corporation (NERC) Reliability Standard TPL-001-5.1 and ERCOT Planning Guide criteria thermal overloads on the Venus Switch to Sam Switch 345-kV double-circuit transmission line located in Ellis and Hill Counties in the North Central (NC) Weather Zone.

The Oncor proposed project was estimated to cost approximately \$118.9 million and was classified as a Tier 1 project per ERCOT Protocol Section 3.11.4.3 and the project will not require a Certificate of Convenience and Necessity (CCN) application.

ERCOT performed an Independent Review, identified reliability issues (thermal overloads identified in Oncor's project submission in the Ellis and Hill Counties) and evaluated three different transmission project options. Based on the study results described in the Section 5 and 6 of this report, ERCOT recommends the following option (Option 1) to address the reliability issues mentioned. Option 1 consists of the following:

- Rebuild the existing Venus Switch to Fort Smith Switch 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 17.8-mile
- Rebuild the existing Venus Switch to Sam Switch 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 38.0-mile
- Rebuild the existing Fort Smith Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 3.3-mile
- Rebuild the existing Sam Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 16.9-mile

The cost estimate for Option 1 is approximately \$118.9 million. A CCN application will not be required. The expected In-Service Date (ISD) of this project is May 2026. However, Oncor has advised that the completion date may change depending on material acquisition, outage coordination, construction, or other project related requirements.

Oncor will work with ERCOT as necessary to develop and implement Constraint Management Plans (CMP) based on summer operational conditions in 2025. If needed, Oncor will utilize line sectionalizing switches as the primary method to mitigate overload risks under contingency conditions. As a last resort measure, Oncor may utilize load shed to further mitigate the risk of overloads.

Table of Contents

- Executive Summary ii
- 1 Introduction 1
- 2 Study Assumptions and Methodology 2
 - 2.1 Study Assumptions for Reliability Analysis 2
 - 2.1.1 Steady-State Study Base Case 2
 - 2.1.2 Transmission Topology 2
 - 2.1.3 Generation 4
 - 2.1.4 Loads 5
 - 2.2 Long-Term Load-Serving Capability Assessment 6
 - 2.3 Maintenance Outage Scenario 6
 - 2.4 Study Assumptions for Congestion Analysis 6
 - 2.5 Methodology 6
 - 2.5.1 Contingencies and Criteria 7
 - 2.5.2 Study Tools 7
- 3 Project Need 7
- 4 Description of Project Options 9
- 5 Option Evaluations 12
 - 5.1 Results of Reliability Analysis 12
 - 5.2 Long-Term Load-Serving Capability Analysis 12
 - 5.3 Planned Maintenance Outage Evaluation 12
 - 5.4 Short-Listed Options 13
 - 5.5 Cost Estimate and Feasibility Assessment 15
- 6 Comparison of Short-Listed Options 15
- 7 Additional Analysis and Assessment 15
 - 7.1 Generation Addition Sensitivity Analysis 15
 - 7.2 Load Scaling Sensitivity Analysis 16
 - 7.3 Sub-synchronous Resonance (SSR) Assessment 16
- 8 Congestion Analysis 16

9 Conclusion..... 18

Appendix 20

1 Introduction

In June 2024, Oncor Electric Delivery Company LLC (Oncor) submitted the Venus Switch to Sam Switch 345-kV Line Project to the Regional Planning Group (RPG) to address North American Electric Reliability Corporation (NERC) Reliability Standard TPL-001-5.1 and ERCOT Planning Guide criteria thermal overloads on the Venus Switch to Sam Switch 345-kV double-circuit transmission line. This project is in the North Central (NC) Weather Zone in the Ellis and Hill Counties.

The Oncor proposed project was classified as Tier 1 project pursuant to ERCOT Protocol Section 3.11.4.3, with an estimated cost of \$118.9 million. A Certificate of Convenience and Necessity (CCN) application will not be required for this project and the expected In-Service Date (ISD) of the project is May 2026.

ERCOT conducted an Independent Review for this RPG project to identify any reliability needs in the area and evaluate various transmission upgrade options. This report describes the study assumptions, methodology, and the results of ERCOT Independent Review (EIR) of the project.

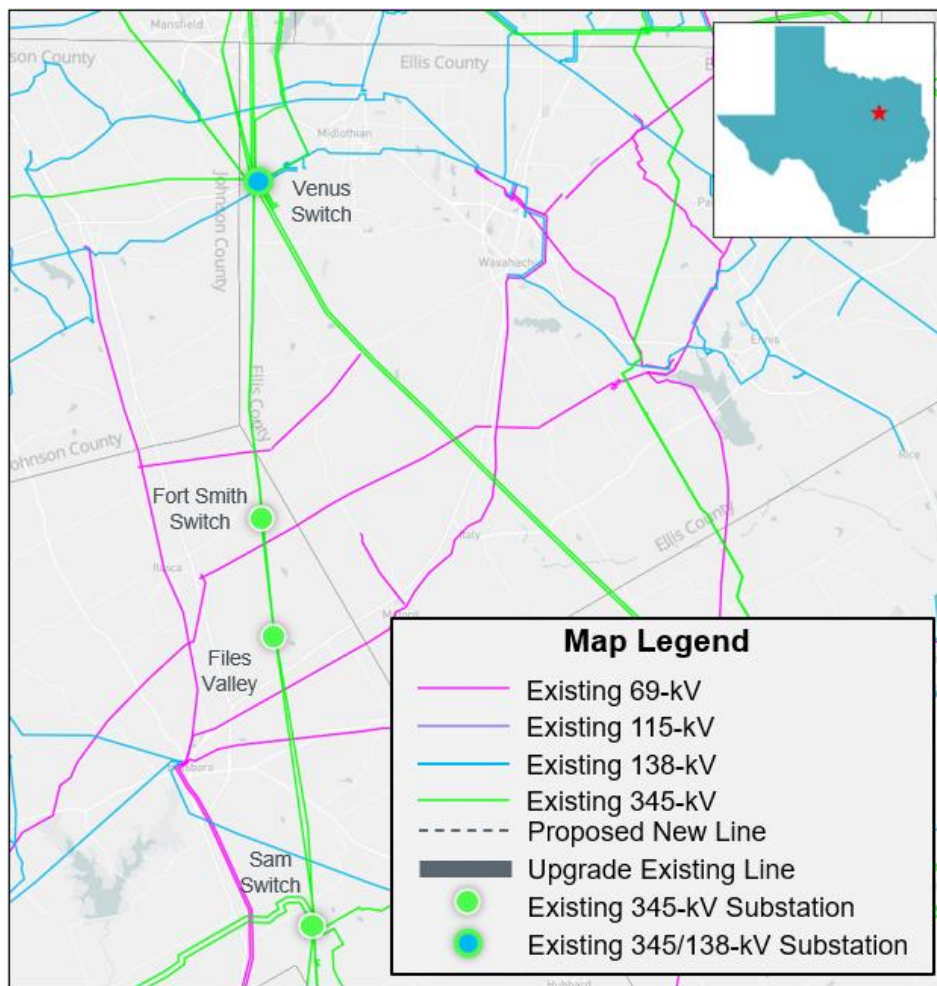


Figure 1.1: Map of Transmission System in Project Study Area

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 Venus Switch to Sam Switch 345-kV Line 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 NC Weather Zone in Ellis and Hill Counties. Dallas, Johnson, Bosque, McClennan Limestone, and Navarro 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 2023 Regional Transmission Plan (RTP) cases, published on the Market Information System (MIS) on December 22, 2023, were used as reference cases in this study. Year 2026 Summer was selected for the long-term outlook. The steady-state study base case was constructed by updating transmission, generation, and loads of the following 2026 Summer Peak Load case for the North and North Central (NNC) Weather Zones:

- Case: 2023RTP_2026_SUM_NNC_12222023¹.

2.1.2 Transmission Topology

Transmission projects within the study area with ISD by May 2026 were added to the study base case. The ERCOT Transmission Project Information and Tracking (TPIT)² report posted in June 2024 was used as a reference. The added TPIT projects are listed in Table 2.1.

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

TPIT/RPG No	Project Name	Tier	Project ISD	County
60094	Convert Waco East - Elm Mott 69 kV Line to 138 kV	Tier 4	5/15/2024	McLennan
62666	Upgrade and convert McGregor - Waco West Line	Tier 4	12/15/2024	McLennan
66216	Upgrade and convert Waco West - Temple 69 kV Line to 138 kV	Tier 4	6/15/2024	McLennan, Bell
66218A	Hillsboro - Italy 69 kV Line	Tier 4	10/15/2023	Ellis
66218B	Hillsboro - Italy 69 kV Line	Tier 4	12/15/2025	Ellis
71136	Waxahachie-Waxahachie OCF 69 kV Line Rebuild	Tier 4	5/15/2025	Dallas, Ellis
71903	Establish Launch Pad 138 kV Switch	Tier 4	12/15/2025	McLennan
72916	Oncor_N_NoTPIT_Geller 138 kV Substation	No TPIT	12/15/2025	Dallas

¹ 2023 Regional Transmission Plan Postings: <https://mis.ercot.com/secure/data-products/grid/regional-planning>

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

TPIT/RPG No	Project Name	Tier	Project ISD	County
73443	Utilize Melton POI via Navarro 345 kV Switch for Project Lefty	Tier 4	5/15/2024	Navarro
78167	Add 2nd autotransformer at Trumbull	Tier 4	11/15/2025	Ellis
78367	Montfort Switch-Shankle Switch 138 kV Line	Tier 3	12/15/2025	Navarro, Ellis
80550	Central Park 138 kV Switch	Tier 4	12/15/2024	McLennan
82304	PMCR for adding Blackjack new station	Tier 4	12/31/2024	Bosque
82810	Olympus 138 kV Switch	Tier 4	5/15/2025	Navarro
82826	Sunflower 138 kV Switch	Tier 4	5/15/2025	McLennan
24RPG025	Gunter 345/138-kV Switch Project	Tier 3	12/1/2025	Collin
24RPG022	Wilmer 345/138-kV Switch Project	Tier 1	5/1/2026	Dallas
24RPG021	Forney 345/138-kV Switch Rebuild Project	Tier 1	12/1/2025	Kaufman
24RPG019	Vineyard Switch to Cypress Waters 138-kV Circuit Addition Project	Tier 2	5/1/2026	Dallas, Tarrant
24RPG018	Salado Switch to Hutto Switch 138-kV Line Project	Tier 3	5/1/2027	Bell, Williamson
24RPG001	Temple Area Project	Tier 1	5/1/2026	Bell
23RPG033	Watermill to Seagoville 138 kV Line Project	Tier 3	12/1/2025	Dallas
23RPG020	Hackberry Switch to DFW D East 2 138-kV Double-Circuit Line Section Project	Tier 3	12/1/2025	Dallas
23RPG018	Arlington Reliability Enhancement Project	Tier 2	5/1/2026	Tarrant, Dallas
23RPG006	North Lake 138 kV Switch Rebuild	Tier 4	5/1/2023	Dallas

Transmission projects, listed in Table 2.2, identified in the 2023 RTP as placeholder projects in the study area and were not approved by RPG were removed from the study base case.

Table 2.2: List of Transmission Projects Removed from the Study Base Case

RTP Project Index	Project Name	County
2023-NC6	Telico Area Upgrades	Ellis
2023-NC7	Four Brothers Switch -Tradinghouse - Outlaw - Lake Hall Switch - Sam Switch Area Improvements	McLennan, Ellis
2023-NC13	Hillboro 138-kV Area Upgrades	Hill
2023-NC16	Sardis Area 138-kV Line Upgrades	Ellis
2023-NC19	Venus - Fort Smith - Sam Switch Double Circuit 345-kV Line Upgrades and Venus Kemp Ranch 345/138-kV Transformer Addition	Ellis
2023-NC23	Venus - Navarro - Jewett Area 345-kV Line Upgrades	Ellis
2023-NC35	Navarro (3478) - Haney (213) - Hubbard (3515) 138-kV Line Upgrade	Navarro
2023-NC37	Hillboro 138/69-kV Transformer Upgrade	Hill
2023-NC45	Cleburne Switch (2279) to Keene (2294) to Alvarado (2297) to Griffith (1905) to Railport (442) to Venus (1908) 138-kV Line Upgrades	Johnson
2023-NC62	Whitney 345/138-kV Transformer Upgrade	Hill

2.1.3 Generation

Based on the August 2024 Generator Interconnection Status (GIS)³ report posted on the ERCOT website on September 3, 2024, generators in the NNC Weather Zones that met Planning Guide Section 6.9(1) conditions with Commercial Operations Date (COD) prior to May 2026 were added to the study base case. These generation additions are listed in Table 2.3. All generation dispatches were consistent with the 2024 RTP methodology.

Table 2.3: List of Generation Added to the Study Base Case Based on the August 2024 Report

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
21INR0379	Ash Creek Solar	SOL	01/31/2025	417.7	Hill
23INR0030	Langer Solar	SOL	03/01/2027	249.8	Bosque
23INR0195	Desert Willow BESS	OTH	02/03/2025	154.4	Ellis
23INR0349	Tokio Solar	SOL	08/25/2025	175.7	McLennan
24INR0023	Compadre Solar	SOL	12/25/2024	406.1	Hill
24INR0038	SP Jaguar Solar	SOL	06/01/2026	300.0	McLennan
24INR0039	SP Jaguar BESS	OTH	06/30/2025	300.0	McLennan
24INR0138	Midpoint Storage	OTH	08/30/2025	51.3	Hill
24INR0139	Midpoint Solar	SOL	08/30/2025	99.8	Hill
24INR0140	Gaia Storage	OTH	07/31/2025	76.8	Navarro
24INR0141	Gaia Solar	SOL	07/31/2025	152.7	Navarro
19INR0110	Azalea Springs Solar	SOL	05/31/2025	181.0	Angelina
20INR0203	Pine Forest Solar	SOL	12/01/2025	301.5	Hopkins
20INR0208	Signal Solar	SOL	03/15/2025	51.8	Hunt
20INR0222	Tyson Nick Solar	SOL	08/01/2025	90.5	Lamar
21INR0240	La Casa Wind	WIN	03/22/2025	148.4	Stephens
21INR0368	Eliza Solar	SOL	12/20/2024	151.7	Kaufman
21INR0511	Wolf Ridge Repower	WIN	08/31/2024	9.0	Cooke
21INR0515	Roadrunner Crossing Wind II SLF	WIN	10/31/2024	126.7	Eastland
22INR0260	Eliza Storage	OTH	02/17/2025	100.4	Kaufman
22INR0526	Pine Forest BESS	OTH	10/29/2025	210.1	Hopkins
22INR0554	Platinum Storage	OTH	03/03/2025	309.5	Fannin
22INR0555	TE Smith Storage	OTH	07/15/2025	125.4	Rockwall
23INR0026	Baker Branch Solar	SOL	09/30/2024	469.4	Lamar
23INR0070	Chillingham Solar	SOL	10/18/2024	352.4	Bell
23INR0114	True North Solar	SOL	12/05/2024	238.8	Falls
23INR0118	Blevins Solar	SOL	07/01/2025	271.6	Falls
23INR0119	Blevins Storage	OTH	07/01/2025	181.3	Falls
23INR0296	Trojan Solar SLF	SOL	02/28/2026	151.3	Cooke
23INR0367	Fewell Solar	SOL	09/09/2025	203.5	Limestone
23INR0403	Connolly Storage	OTH	09/06/2024	125.4	Wise
23INR0469	Big Elm Storage	OTH	11/10/2025	100.8	Bell

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

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
24INR0010	Pinnington Solar	SOL	10/15/2025	666.1	Jack
24INR0015	Five Wells Solar	SOL	09/15/2024	322.8	Bell
24INR0140	Gaia Storage	OTH	07/31/2025	76.8	Navarro
24INR0141	Gaia Solar	SOL	07/31/2025	152.7	Navarro
24INR0198	Two Forks BESS	OTH	07/01/2027	309.0	Cooke
24INR0295	Lucky Bluff BESS SLF	OTH	10/15/2025	100.8	Erath
24INR0312	Wigeon Whistle BESS	OTH	09/23/2024	122.9	Collin
24INR0315	Black Springs BESS SLF	OTH	10/15/2025	120.7	Palo Pinto
24INR0631	Radian Storage SLF	OTH	12/31/2024	160.0	Brown
25INR0231	Apache Hill BESS	OTH	11/15/2026	201.2	Hood

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 (i.e., turned off) in the study base case to reflect their mothballed/retired status.

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

Bus No	Unit Name	Max Capacity (~MW)	Weather Zone
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_UNIT2	17.0	North
130121	SGMTN_SIGNALM2	6.6	Far West
132931	TOSBATT_UNIT1	2.0	Far West

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

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

Bus No	Unit Name	Max Capacity (~MW)	Weather Zone
110020	WAP_GT2	71.0	Coast
150023	MCSES_UNIT8	568.0	North Central
110261	TGF_TGFGT_1	78.0	Coast

2.1.4 Loads

Loads in the NNC Weather Zones were updated based on the new confirmed loads in the NNC Weather Zones. Loads outside the NNC Weather Zones were adjusted to meet the minimum reserve requirements consistent with the 2023 RTP.

2.2 Long-Term Load-Serving Capability Assessment

ERCOT performed a 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, loads in the study area were increased (however customers with flexible loads remained at the same level as in the base case), and conforming loads outside of NC Weather Zone were decreased to balance power.

2.3 Maintenance Outage Scenario

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

The load level in the NC Weather Zone was reduced to 81.3% 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 NC Weather Zone.

2.4 Study Assumptions for Congestion Analysis

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

The 2023 RTP 2028 economic case was updated based on the August 2024 GIS⁴ report for generation updates and the June 2024 TPIT⁵ reports for transmission updates to conduct congestion analysis. New confirmed loads in the NNC Weather Zones were also added to the study base case. The 2028 study year was selected based on the proposed ISD of the project.

All transmission projects listed in Table A.1 in Appendix A were added and the RTP projects shown in Table 2.2 were used as placeholders for the Venus Switch to Sam Switch 345-kV Line Project and removed from the economic base case.

New generation additions listed in Table A.2 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 resources are returned to year-round service.

2.5 Methodology

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

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

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

2.5.1 Contingencies and Criteria

The reliability assessments were performed based on NERC Reliability Standard TPL-001-5.1, ERCOT Protocols, and ERCOT Planning Criteria⁶.

Contingencies⁷ 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 (345-kV only);
- P3: G-1+N-1 (G-1: generation outages) {Comanche Peak SES U1, Midlothian N1, Compadre S1, and Sunvalley S1}; and
- P6-2: X-1+N-1 (X-1: 345/138-kV transformers only) {Sherry Switch X1, Everman Switch X1, and Lake Creek SES X1}.

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

2.5.2 Study Tools

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 12.3.0.29978 to perform congestion analysis.

3 Project Need

Steady-state reliability analysis was performed in accordance with NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Criteria described in Section 2.3 of this document. This analysis indicated thermal overloads in the Ellis and Hill Counties as seen in the Oncor project submission under NERC P1 (N-1), P3 (G-1+N-1) and P6-2 (X-1+N-1) conditions in the study area. These violations are summarized in Table 3.1 and visually illustrated in Figure 3.1. Detailed thermal overloads are listed in Table 3.2. No voltage violations or unsolved power flow was observed.

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

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

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
P0: N-0	None	None	None
P1, P2-1, P7: N-1	None	4	None
P3: G-1+N-1	None	5*	None
P6-2: X-1+N-1	None	4*	None

*Violations under P1 (N-1) events were also observed under P3 (G-1+N-1) and P6-2 (X-1+N-1) events

Table 3.2: Thermal Overloads in the Study Area

NERC Contingency Category	Overloaded Element	Voltage Level (kV)	Length (~miles)	Max Loading %
P3: G-1+N-1	Files Valley to Fort Smith Switch	345	3.3	100.5
P3: G-1+N-1	Fort Smith Switch to Venus Switch	345	17.5	105.2
P3: G-1+N-1	Four Brothers to Sam Switch	345	2.5	105.5
P1: N-1	Sam Switch to Venus Switch	345	38.0	104.7
P1: N-1	Trading House SES to Four Brothers	345	20.2	104.2

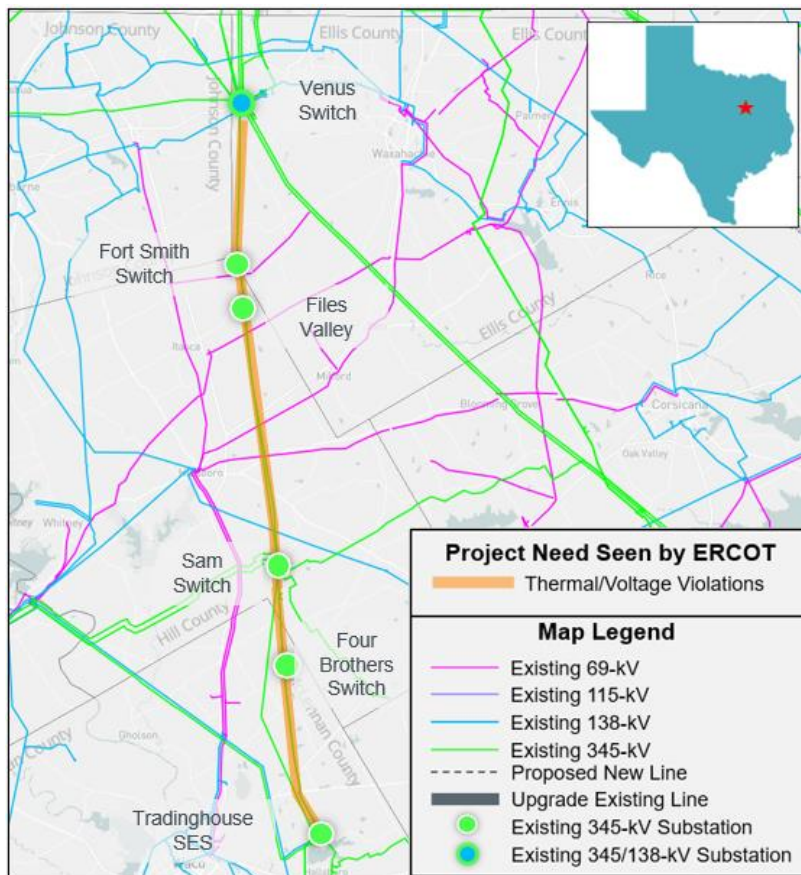


Figure 3.1: Study Area Map Showing Project Need Seen by ERCOT

4 Description of Project Options

ERCOT evaluated three system improvement options to address the thermal overloads that were observed in the study base case. All three options resolved the thermal overload in the study area.

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

- Rebuild the existing Venus Switch to Fort Smith Switch 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 17.8-mile
- Rebuild the existing Venus Switch to Sam Switch 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 38.0-mile
- Rebuild the existing Fort Smith Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 3.3-mile
- Rebuild the existing Sam Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 16.9-mile

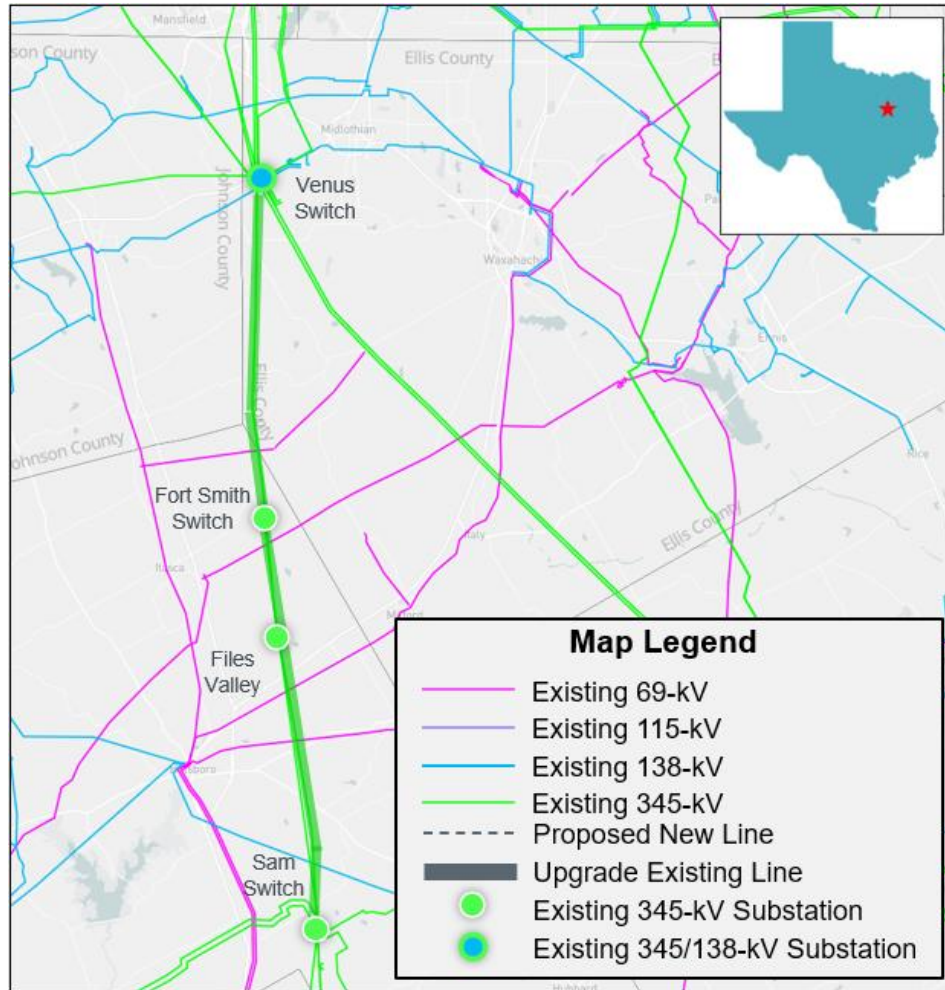


Figure 4.1: Map of Study Area with Option 1

Option 2 consists of the following:

- Rebuild the existing Venus Switch to Fort Smith Switch 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 17.8-mile
- Rebuild the existing Venus Switch to Sam Switch 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 38.0-mile
- Rebuild the existing Fort Smith Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 3.3-mile
- Rebuild the existing Sam Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 16.9-mile
- Rebuild the existing Venus Switch to Navarro 345-kV double-circuit transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 33.2-mile

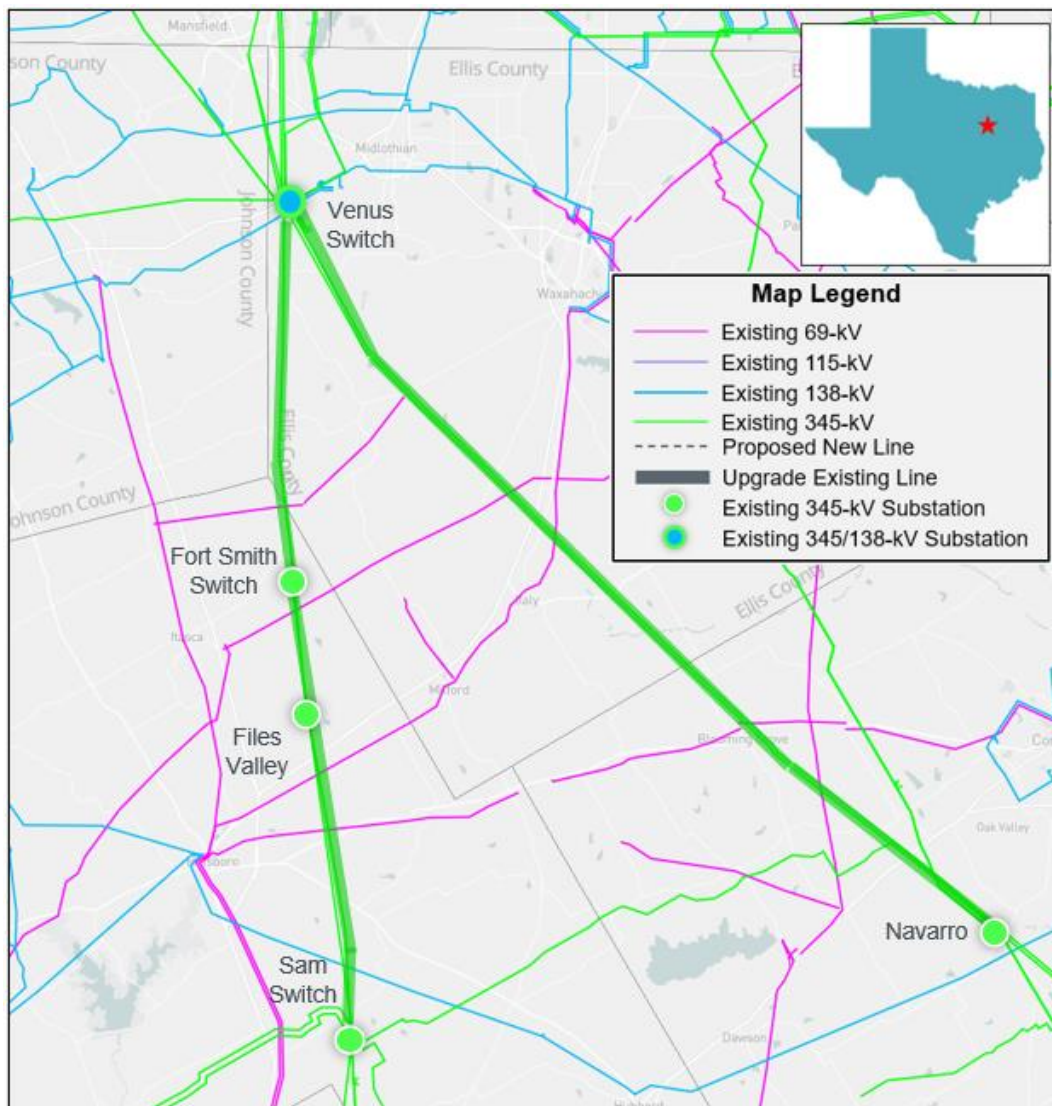


Figure 4.2: Map of Study Area with Option 2

Option 3 consists of the following:

- Build a new Venus Switch to Sam Switch 345-kV transmission line (circuit 2) with normal and emergency ratings of 1792 MVA or greater, approximately 38.0-mile
- Rebuild the existing Sam Switch to Four Brothers Switch 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 2.5-mile
- Rebuild the existing Four Brothers Switch to Tradinghouse SES 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 20.2-mile

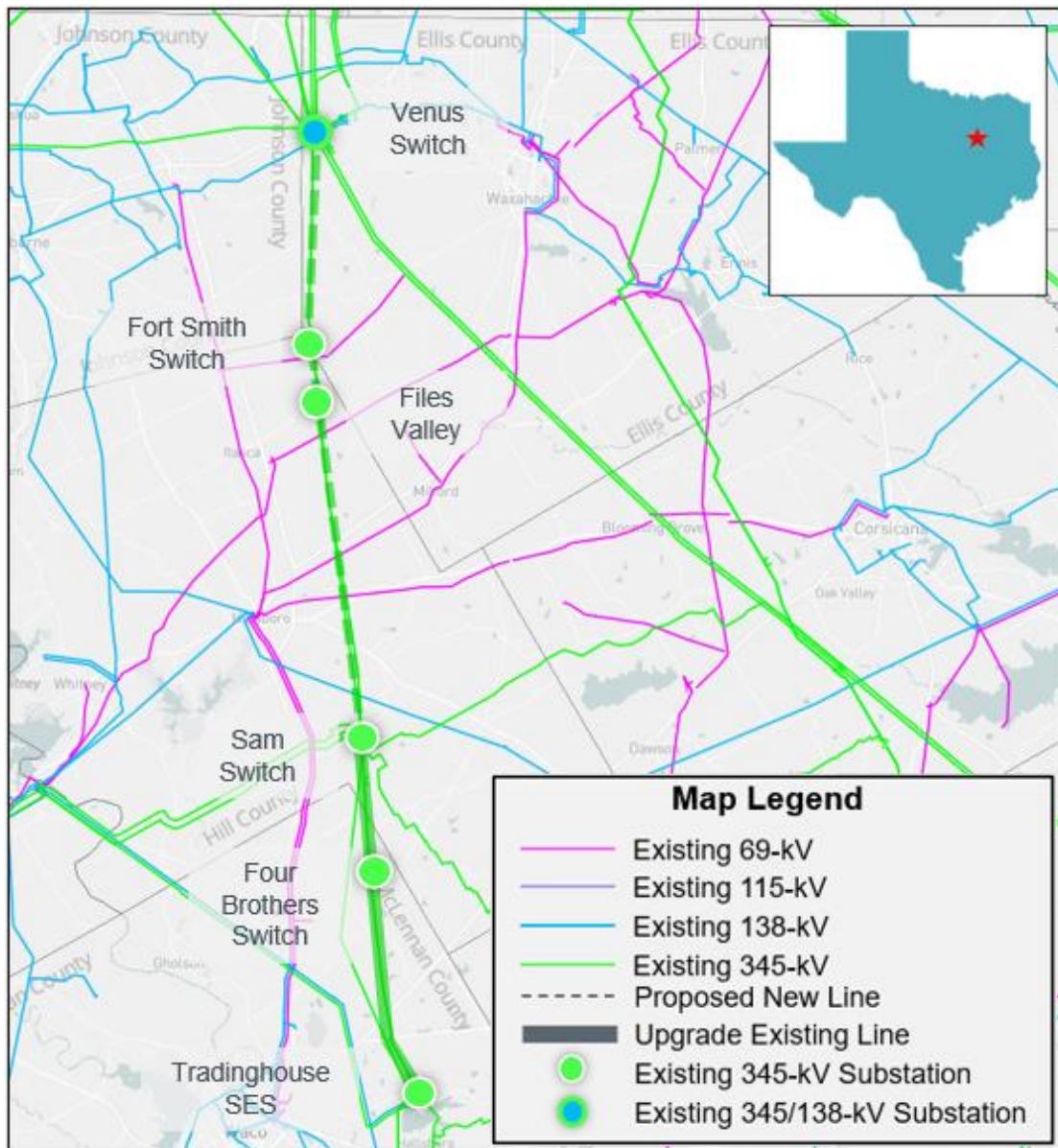


Figure 4.3: Map of Study Area with Option 3

5 Option Evaluations

ERCOT performed a reliability analysis, planned maintenance outage evaluation, and load serving capability assessment to evaluate all initial options and to identify any reliability impact of the options in the study area. Based on the results of these analyses, short-listed options were selected for further evaluations. This section details these studies and their results and compares the short-listed options.

5.1 Results of Reliability Analysis

All three initial 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, Option 2, and Option 3 as shown in Table 5.1.

Table 5.1: Results of Initial Reliability Assessment of All Three Options

Option	Unsolved Power Flow	N-1		X-1+N-1		G-1+N-1	
		Thermal Overload	Voltage Violation	Thermal Overload	Voltage Violation	Thermal Overload	Voltage Violation
1	None	None	None	None	None	None	None
2	None	None	None	None	None	None	None
3	None	None	None	None	None	None	None

5.2 Long-Term Load-Serving Capability Analysis

ERCOT performed a long-term load-serving capability assessment on the six options to compare their relative performance.

The results show that Option 2 provides the greatest long-term load-serving capability. Option 1 also shows good capability while Option 3 has much less capability. These results are shown in Table 5.2.

Table 5.2: Results of Long-Term Load-Serving Capability Assessment of All Three Options

Option	Incremental Load-Serving Capability (~MW)
1	2758
2	3442
3	814

5.3 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 option to represent system element outage(s) 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 Oncor Venus Switch to Sam Switch 345-kV Line Project were monitored in the maintenance outage evaluation.

As shown in Table 5.3, the results of this maintenance assessment indicate that all three Options performed similarly.

Table 5.3: Results of Planned Maintenance Outage Evaluation for the Three Options

Option	Voltage Violations	Thermal Overloads	Unsolved Power Flow
1	None	None	None
2	None	None	None
3	None	None	None

5.4 Short-Listed Options

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

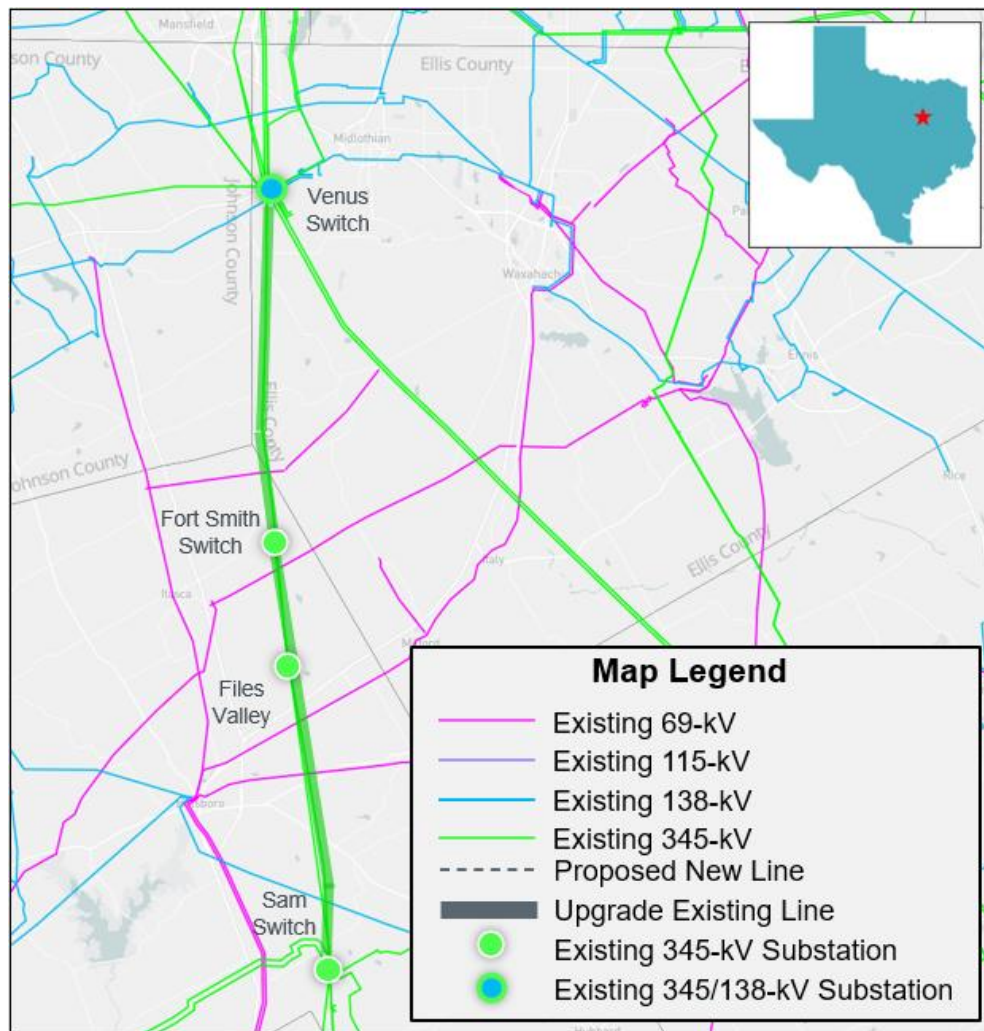


Figure 5.1: Map of Study Area with Option 1

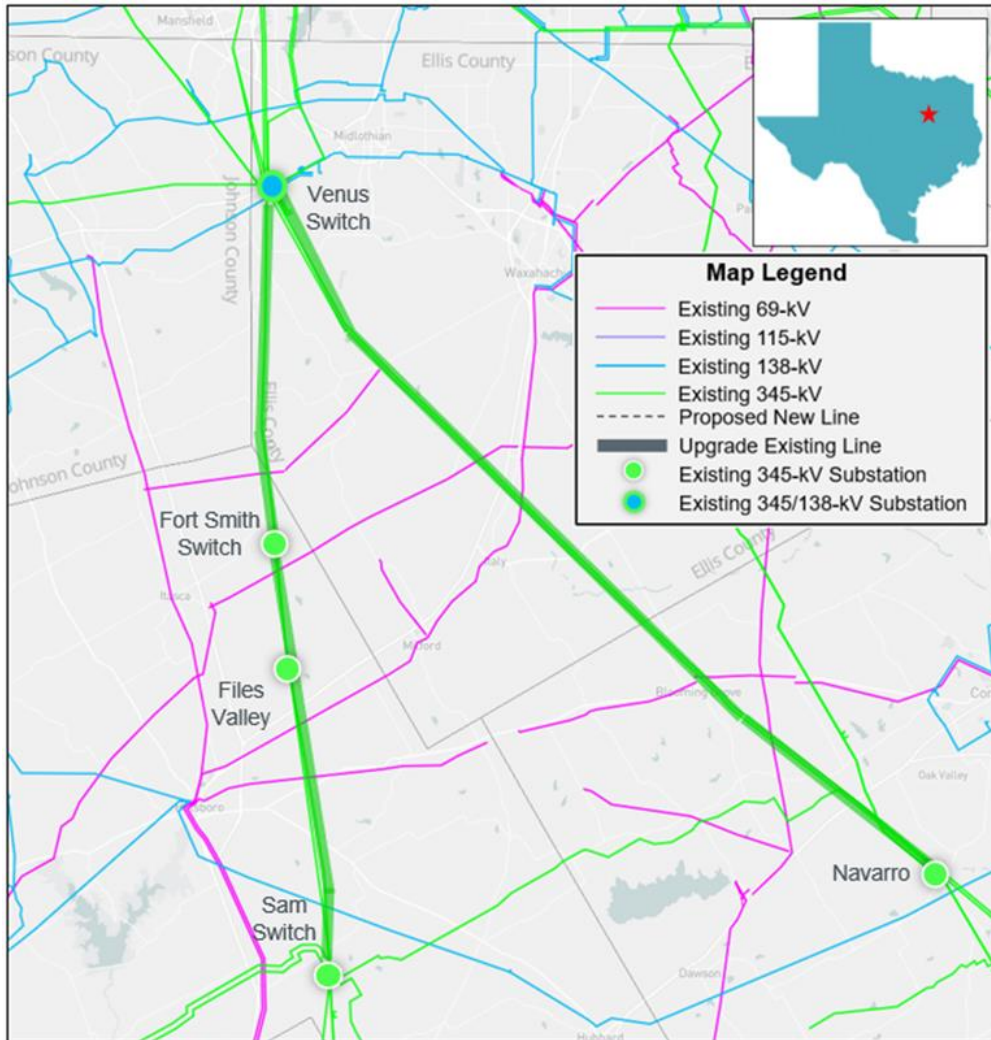


Figure 5.2: Map of Study Area with Option 2

5.5 Cost Estimate and Feasibility Assessment

Oncor performed feasibility assessments and provided cost estimates for the two short-listed options. Table 5.4 summarizes the cost estimate, estimated mileage of CCN required, and option feasibility for the two short-listed options.

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

Option	Cost Estimates (~\$M)	CCN Required (~miles)	Feasible
1	118.9	0.0	Yes
2	253.9	0.0	Yes

6 Comparison of Short-Listed Options

The comparison of Option 1 and Option 2, with corresponding cost estimates provided by Oncor is provided in the Table 6.1.

Table 6.1: Comparison of the Short-Listed Options

	Option 1	Option 2
Met ERCOT and NERC Reliability Criteria	Yes	Yes
Improved Operational Flexibility (Planned Maintenance Outages)	Yes	Yes
Improved Long-Term Load-Serving Capability	Yes	Yes
CCN Needed	No	No
Capital Cost Estimates	\$118.9 M	\$253.5 M

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

- Option 1 meets ERCOT and NERC reliability criteria;
- Option 1 is the least expensive option;
- Option 1 increases long-term load-serving capability.

7 Additional Analysis and Assessment

The recommended option (Option 1, with a cost estimate of approximately \$118.9 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 recommended option performance. 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 July 2024 GIS report, five units were found within the study area which could have an impact on the identified reliability issues. The generators listed in Table 7.1 were added to the Option 1 case and were modeled following the 2024 RTP methodology.

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

GINR	Unit Name	Fuel Type	Project COD	Capacity (~MW)	County
21INR0359	Hickerson Solar	SOL	03/01/2026	316.3	Bosque
21INR0362	Oystercatcher Solar	SOL	04/15/2026	220.3	Ellis
24INR0106	Payne Battlecreek	SOL	05/15/2026	85.0	Hill
24INR0364	Pitts Dudik II	SOL	01/29/2026	30.2	Hill
25INR0018	Yellow Cat Wind	WIN	03/31/2026	300.0	Navarro

After the addition of the units to the Option 1 case, no new thermal or voltage violations were identified.

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 EIR. As stated in Section 3.1, ERCOT used the 2026 NNC summer peak case from the 2023 RTP and adjusted the load to create the 2026 NNC summer peak case to study the Ellis and Hill Counties. This study base case, which was created in accordance with the 2023 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 Coast, East, Far West, and West Weather Zones.

The Outage Transfer Distribution Factors (OTDFs) of overloaded elements with respect to the load transfer for each Weather Zone (excluding NC) were calculated using PowerWorld Simulator. The OTDFs were less than 2.5% 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 aging infrastructure issues in the Ellis and Hill Counties.

7.3 Sub-synchronous Resonance (SSR) Assessment

Pursuant to Protocol Section 3.22.1.3(2), ERCOT conducted an SSR screening for the recommended 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 recommended option (Option 1) using the 2023 RTP 2028 economic study case.

The results of congestion analysis indicated Option 1 relieved three existing congestions and increased two existing congestions in the study area as shown in Table 8.1.

Table 8.1: List of New and Existing Congestion Due to Transmission Upgrade of Option 1

Monitored Line	% Time of Congestion	New / Existing
Four Brothers Switch to Tradinghouse SES 345-kV transmission line	5.27	Existing
Four Brothers Switch to Sam Switch 345-kV transmission line	4.22	Existing

An additional test was conducted by upgrading the Four Brothers Switch to Tradinghouse SES 345-kV transmission line and the Four Brother Switch to Sam Switch 345-kV transmission line to see if this alleviated the existing congestion. Based on the results summarized in Table 8.2, the additional upgrade would not yield any economic benefit. Therefore, no upgrades will be recommended to solve this new congestion as part of Option 1.

Table 8.2: Test Results Upgraded Lines

Upgrades Tested	Mileage (~mi)	Passed Production Cost Savings Test	Passed Generation Revenue Reduction Test
Four Brothers Switch to Tradinghouse SES 345-kV transmission line	20.2	No	No
Four Brothers Switch to Sam Switch 345-kV transmission line	2.5	No	No

9 Conclusion

ERCOT evaluated the three transmission upgrade options to resolve the thermal overloads in the study area. Based on the results of the independent review, ERCOT recommends Option 1 as the preferred solution because it addresses the thermal violations with no reliability issues and is the least costly among all options evaluated.

Option 1 (Oncor proposed solution) consists of the following upgrades:

- Rebuild the existing Venus Switch to Fort Smith Switch 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 17.80-mile
- Rebuild the existing Venus Switch to Sam Switch 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 38.0-mile
- Rebuild the existing Fort Smith Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1912 MVA or greater, approximately 3.30-mile
- Rebuild the existing Sam Switch to Files Valley 345-kV transmission line with normal and emergency ratings of 1792 MVA or greater, approximately 16.90-mile

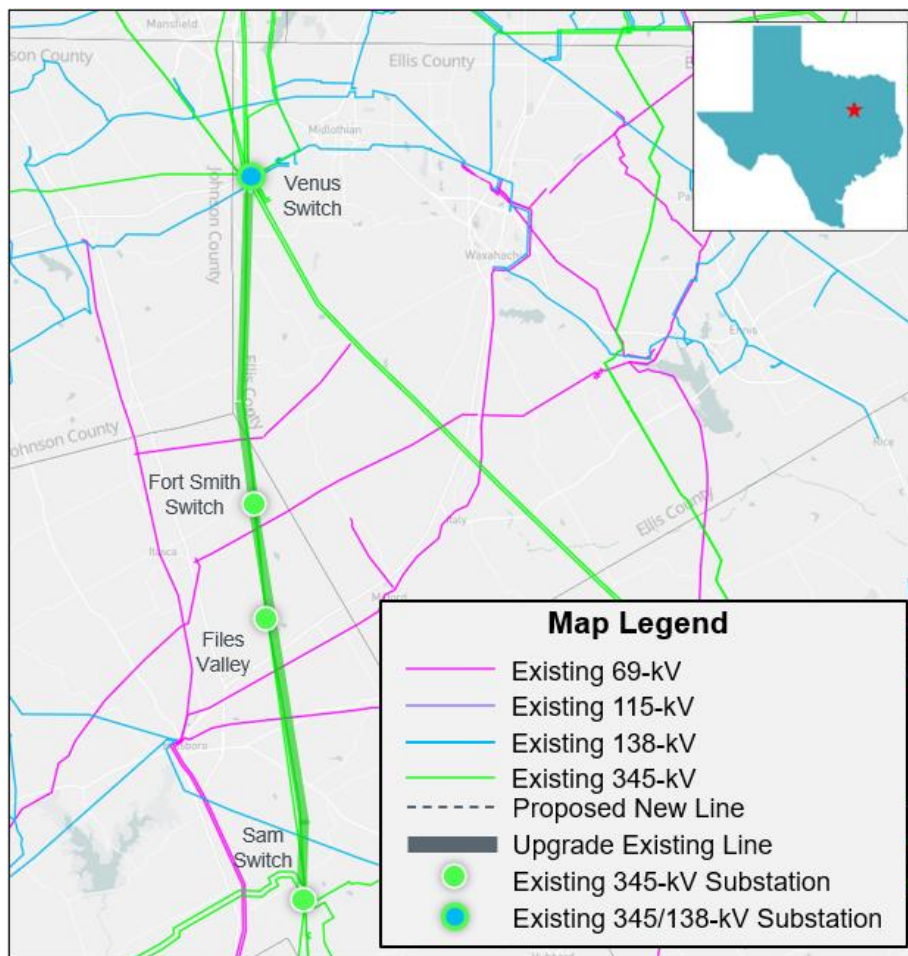


Figure 9.1: Map of Study Area with Option 1

The cost estimate for the project is approximately \$118.9 million and the project is classified as a Tier 1 project per ERCOT Protocol Section 3.11.4.3(1)(a). The project is recommended for construction to meet a May 2026 ISD. Oncor has advised that the completion date may change depending on material acquisition, outage coordination, construction, or other project related requirements.

A CCN application will not be required for the project. Oncor will work with ERCOT as necessary to develop and implement Constraint Management Plans (CMP) based on summer operational conditions in 2025. If needed, Oncor will utilize line sectionalizing switches as our primary method to mitigate overload risks under contingency conditions. As a last resort measure, Oncor may utilize load shed to further mitigate the risk of overloads.

Appendix

Table A.1: List of Transmission Projects added to the Economic Base Case

TPIT/RPG No	Project Name	Tier	Project ISD	County
67992	CPSE_345KV_Howard_Switching_Station_ALL	Tier 3	2/1/2024	Bexar
71871	CPSE_Cagnon to Shepherd Rd Rebuild Phase A	Tier 4	5/1/2023	Bexar
67329	STEC_67329_Cruce-SanMiguel	Tier 1	6/1/2027	Bexar, Atascosa
23RPG024	Big Foot to Dilley Switch 138-kV Conversion Project	Tier 4	8/30/2026	Frio
73063	AEP_TCC_BigFoot_LytleConversion	Tier 4	9/20/2025	Medina, Frio
67915	AEP_TCC_Asherton-West Batesville138kVLineRebuild	Tier 3	12/30/2028	Dimmit, Zavala
22RPG026	Wimberley Loop project	Tier 2	5/1/2027	Blanco, Hays
23RPG013	Silverleaf and Cowpen 345/138-kV Stations Project	Tier 1	6/1/2027	Reeves, Ward
23RPG018	Arlington Reliability Enhancement Project	Tier 2	5/1/2026	Tarrant, Dallas
23RPG023	Pecos County Transmission Improvement Project	Tier 1	8/31/2026	Pecos
23RPG028	Rio Medina Project	Tier 2	1/1/2027	Medina
23RPG002	Hamlin to Roby 69 kV Line Rebuild Project	Tier 4	11/1/2026	Jones, Fisher
23RPG008	Fort Stockton Plant to Lynx 138-kV Line Rebuild Project	Tier 4	5/31/2025	Pecos
23RPG009	Spraberry to Polecat 138-kV Line Rebuild Project	Tier 3	Summer 2024	Midland, Glasscock
23RPG011	Morgan Creek to McDonald Road 138-kV Line Project	Tier 3	Summer 2024	Howard, Mitchell
23RPG010	Big Spring West to Stanton East 138-kV Line Rebuild Project	Tier 3	Summer 2024	Martin, Howard
23RPG014	Lamesa to Jim Payne POI to Paul Davis Tap 138-kV Line Rebuild Project	Tier 3	Summer 2024	Dawson, Martin
23RPG016	Tributary Switch – Vincent Rebuild Project	Tier 3	12/31/2024	Howard
23RPG001	Bessel to Falfurrias 138 kV Line Rebuild Project	Tier 4	4/30/2026 11/30/2026	Nueces, Kleberg, Brooks, Jim Wells
23RPG003	Eagle Ford Large Load Interconnection Project	Tier 3	12/4/2025	DeWitt
23RPG004	Lockhart to Luling 69-kV Transmission Line Overhaul Project	Tier 4	6/30/2025	Caldwell
23RPG012	Stone Lake Area Upgrades Project	Tier 3	Summer 2024 Summer 2025	Harris
23RPG015	Cuero Substation Upgrade Project	Tier 4	5/15/2024	DeWitt
23RPG017	Watermill 345/138-kV Switch Project	Tier 3	5/1/2025	Dallas
23RPG020	Hackberry Switch to DFW D East 2 138-kV Double-Circuit Line Section Project	Tier 3	12/1/2025	Dallas
23RPG021	West Columbia to Big Creek ckt 89 Reconductor Project	Tier 4	Summer 2026	Fort Bend, Brazoria
23RPG025	Britmoore to Bellaire Ckt 24 Upgrade Project	Tier 3	Summer 2025	Harris

TPIT/RPG No	Project Name	Tier	Project ISD	County
23RPG030	Walleye Creek 345/138-kV Switch Project	Tier 3	5/1/2025	Milam
23RPG031	345 kV Jeanetta Autotransformer Upgrades Project	Tier 3	Summer 2025	Harris
23RPG033	Watermill to Seagoville 138 kV Line Project	Tier 3	12/1/2025	Dallas
24RPG002	Rockhound 345/138-kV Switch and Grey Well Draw to Buffalo 2nd 138-kV Circuit Project	Tier 3	12/1/2024	Martin, Midland
24RPG005	Montfort Switch to Shankle Switch 138-kV Line Project	Tier 3	12/1/2025	Ellis, Navarro
72916	Oncor_N_NoTPIT_Geller 138 kV Substation	No TPIT	5/15/2026	Dallas
67616	ONCOR_ME_NOTPIT_Ten Mile Substation	No TPIT	5/1/2025	Dallas
60094	Convert Waco East - Elm Mott 69 kV Line to 138 kV	Tier 4	5/15/2024	McLennan
62666	Upgrade and convert McGregor - Waco West Line	Tier 4	12/15/2024	McLennan
66216	Upgrade and convert Waco West - Temple 69 kV Line to 138 kV	Tier 4	6/15/2024	McLennan, Bell
66218A	Hillsboro - Italy 69 kV Line	Tier 4	10/15/2023	Ellis
66218B	Hillsboro - Italy 69 kV Line	Tier 4	12/15/2025	Ellis
71136	Waxahachie-Waxahachie OCF 69 kV Line Rebuild	Tier 4	5/15/2025	Dallas, Ellis
71903	Establish Launch Pad 138 kV Switch	Tier 4	12/15/2025	McLennan
72916	Oncor_N_NoTPIT_Geller 138 kV Substation	No TPIT	12/15/2025	Dallas
73443	Utilize Melton POI via Navarro 345 kV Switch for Project Lefty	Tier 4	5/15/2024	Navarro
78167	Add 2nd autotransformer at Trumbull	Tier 4	11/15/2025	Ellis
78367	Montfort Switch-Shankle Switch 138 kV Line	Tier 3	12/15/2025	Navarro, Ellis
80550	Central Park 138 kV Switch	Tier 4	12/15/2024	McLennan
82304	PMCR for adding Blackjack new station	Tier 4	12/31/2024	Bosque


Table A.2: List of Generation Added to the Economic Base Case Based on August 2024 GIS Report

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
14INR0033	Goodnight Wind	WND	2/14/2024	258.1	Armstrong
19INR0054	Monte Cristo 1 Wind	WND	9/30/2025	236.9	Hidalgo
19INR0134	Cottonwood Bayou Solar	SOL	8/13/2024	351.4	Brazoria
19INR0203	Angelo Solar	SOL	8/12/2024	195.4	Tom Green
20INR0040	Montgomery Ranch Wind	WND	9/1/2024	200.2	Foard
20INR0208	Signal Solar	SOL	3/15/2025	51.8	Hunt
20INR0210	Hopkins Solar	SOL	12/30/2023	253.1	Hopkins
20INR0248	Second Division Solar	SOL	9/17/2024	100.3	Brazoria
21INR0302	Aureola Solar	SOL	6/28/2024	203.0	Milam
21INR0303	Mandorla Solar	SOL	11/29/2024	254.0	Milam
21INR0304	Halo Solar	SOL	6/20/2024	254.0	Bell
21INR0325	Sheep Creek Wind	WND	1/31/2024	153.0	Callahan
21INR0368	Eliza Solar	SOL	11/1/2024	151.6	Kaufman
21INR0389	Hollywood Solar	SOL	6/30/2024	353.4	Wharton
21INR0424	Tierra Bonita Solar	SOL	10/29/2024	306.9	Pecos
21INR0450	Danish Fields Storage	BAT	3/6/2024	152.4	Wharton
21INR0505	Ramsey Storage	BAT	12/31/2025	510.4	Wharton
21INR0511	Wolf Ridge Repower	WND	4/2/2024	9.0	Cooke
21INR0515	Roadrunner Crossing Wind II SLF	WND	1/20/2025	126.7	Eastland
22INR0251	Shaula I Solar	SOL	10/30/2025	205.2	DeWitt
22INR0260	Eliza Storage	BAT	11/1/2024	100.2	Kaufman
22INR0261	Dorado Solar	SOL	12/31/2025	406.3	Callahan
22INR0267	Shaula II Solar	SOL	5/30/2026	205.2	DeWitt
22INR0353	BRP Carina BESS	BAT	12/31/2024	151.9	Nueces
22INR0354	XE MURAT Solar	SOL	5/13/2024	60.4	Harris
22INR0366	LIBRA BESS	BAT	1/26/2024	206.2	Guadalupe
22INR0422	Ferdinand Grid BESS	BAT	5/31/2026	202.7	Bexar
22INR0502	Shamrock	WND	4/19/2024	223.9	Crockett
22INR0555	Guevara Storage	BAT	7/15/2025	125.4	Rockwall
23INR0026	Baker Branch Solar	SOL	8/1/2024	469.4	Lamar
23INR0054	Tanglewood Solar	SOL	1/16/2025	257.0	Brazoria
23INR0062	Noria Storage	BAT	9/1/2025	75.0	Nueces
23INR0091	Cascade Solar	SOL	12/31/2024	254.2	Brazoria
23INR0114	True North Solar	SOL	6/30/2024	238.3	Falls
23INR0154	Ebony Energy Storage	BAT	5/6/2024	203.5	Comal
23INR0159	Five Wells Storage	BAT	12/30/2023	220.8	Bell
23INR0219	Dogfish BESS	BAT	12/31/2024	75.0	Pecos
23INR0239	Giga Texas Energy Storage	BAT	1/31/2024	131.1	Travis
23INR0296	Trojan Solar	SOL	2/28/2026	151.3	Cooke
23INR0331	Talitha BESS	BAT	6/30/2024	61.4	Jim Wells
23INR0349	Tokio Solar	SOL	8/25/2025	177.6	McLennan

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
23INR0367	Fewell Solar	SOL	9/9/2025	203.5	Limestone
23INR0381	Soportar ESS	BAT	3/15/2025	102.1	Bexar
23INR0387	Pioneer DJ Wind	WND	5/3/2024	140.3	Midland
23INR0408	TECO GTG2	GAS	1/30/2024	50.0	Harris
23INR0418	Angelo Storage	BAT	5/3/2024	103.0	Tom Green
23INR0460	GULF STAR STORAGE	BAT	6/25/2024	301.0	Wharton
23INR0470	BoCo BESS	BAT	6/22/2024	155.5	Borden
23INR0525	Pyron Wind Repower	WND	2/1/2024	19.9	Nolan
23INR0637	Goodnight Wind II	WND	12/30/2024	258.3	Armstrong
24INR0010	Pinnington Solar	SOL	10/15/2025	666.1	Jack
24INR0015	Five Wells Solar	SOL	12/29/2023	322.8	Bell
24INR0038	SP Jaguar Solar	SOL	6/30/2025	300.0	McLennan
24INR0039	SP Jaguar BESS	BAT	6/30/2025	300.0	McLennan
24INR0070	Sypert Branch Solar Project	SOL	6/1/2025	261.8	Milam
24INR0100	Sheep Creek Storage	BAT	7/1/2024	142.1	Callahan
24INR0109	Oriana BESS	BAT	7/2/2025	60.3	Victoria
24INR0138	Midpoint Storage	BAT	8/30/2025	52.2	Hill
24INR0139	Midpoint Solar	SOL	8/30/2025	103.8	Hill
24INR0140	Gaia Storage	BAT	7/31/2025	76.8	Navarro
24INR0141	Gaia Solar	SOL	7/31/2025	152.7	Navarro
24INR0265	Ironman BESS	BAT	11/1/2024	304.2	Brazoria
24INR0273	AI Pastor BESS	BAT	8/16/2024	103.1	Dawson
24INR0281	Red Egret BESS	BAT	6/1/2025	310.6	Galveston
24INR0295	Lucky Bluff BESS	BAT	5/31/2025	100.8	Erath
24INR0312	Wigeon Whistle BESS	BAT	9/1/2024	122.9	Collin
24INR0337	Eldora Solar	SOL	6/30/2026	200.9	Matagorda
24INR0338	Eldora BESS	BAT	6/30/2026	201.3	Matagorda
24INR0436	Carambola BESS	BAT	5/31/2026	97.4	Hidalgo
25INR0105	Diver Solar	SOL	6/30/2026	228.2	Limestone
25INR0162	SOHO II BESS	BAT	1/1/2025	206.3	Brazoria
25INR0223	Uhland Maxwell	GAS	4/15/2025	188.4	Caldwell
25INR0232	Isaac Solar	SOL	3/31/2026	51.6	Matagorda
25INR0328	Longbow BESS	BAT	11/13/2024	180.8	Brazoria
23INR0403	Connolly Storage	BAT	8/18/2023	125.4	Wise
24INR0147	Holy ESS	BAT	1/19/2023	209.3	Harris
24INR0397	Destiny Storage	BAT	9/21/2023	201.1	Harris
20INR0217	CAROL wind	WND	1/31/2024	165.4	Potter
21INR0240	La Casa Wind	WND	1/4/2024	148.4	Stephens
21INR0379	Ash Creek Solar	SOL	1/17/2024	417.7	Hill
23INR0030	Langer Solar	SOL	1/5/2024	249.8	Bosque
23INR0070	Chillingham Solar	SOL	1/30/2024	352.4	Bell
23INR0336	Bypass Battery Storage	BAT	1/9/2024	206.9	Fort Bend

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
24INR0632	Cedro Hill Wind Repower	WND	1/30/2024	9.9	Webb
26INR0042	Valhalla Solar	SOL	1/5/2024	306.8	Brazoria
23INR0044	Parliament Solar U1	SOL	12/31/2024	250.4	Waller
23INR0044	Parliament Solar U2	SOL	12/31/2024	234.2	Waller
24INR0023	Compadre Solar U1	SOL	12/25/2024	194.7	Hill
24INR0023	Compadre Solar U2	SOL	12/25/2024	211.5	Hill
24INR0208	Eastbell Milam Solar II	SOL	12/20/2024	151.0	Milam
24INR0329	XE Murat Storage	BAT	12/14/2024	60.1	Harris
24INR0605	TEXAS GULF SULPHUR REPOWER	GAS	6/25/2024	94.0	Wharton
16INR0049	Nazareth Solar	SOL	3/24/2025	204.0	Castro
21INR0428	Nabatoto Solar North U1	SOL	2/1/2026	224.8	Leon
21INR0428	Nabatoto Solar North U2	SOL	2/1/2026	140.9	Leon
24INR0395	Berkman Storage	BAT	4/30/2026	150.9	Galveston
19INR0110	Azalea Springs Solar	SOL	5/31/2025	181.0	Angelina
20INR0222	Tyson Nick Solar	SOL	8/1/2025	90.5	Lamar
23INR0469	Big Elm Storage	BAT	11/10/2025	100.8	Bell
23INR0195	Desert Willow BESS	BAT	2/3/2025	154.4	Ellis
23INR0299	Anole BESS	BAT	2/9/2025	247.1	Dallas
22INR0526	Pine Forest BESS	BAT	10/29/2025	210.1	Hopkins
20INR0203	Pine Forest Solar	SOL	12/1/2025	301.5	Hopkins
24INR0198	Two Forks BESS	BAT	7/1/2027	309.0	Cooke
24INR0315	Black Springs BESS SLF	BAT	10/15/2025	120.7	Palo Pinto
24INR0631	Radian Storage SLF	BAT	12/31/2024	160.0	Brown
25INR0231	Apache Hill BESS	BAT	11/15/2026	201.2	Hood
22INR0554	Platinum Storage	BAT	3/3/2025	309.5	Fannin
23INR0118	Blevins Solar	SOL	7/1/2025	271.6	Falls
23INR0119	Blevins Storage	BAT	7/1/2025	181.3	Falls

Table A.3: Project Related Document

No	Document Name	Attachment
1	Venus Switch to Sam Switch 345-kV Line Project	 Venus Switch to Sam Switch