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Item 7.2: BTU - Texas A&M University System RELLIS Campus Reliability Project

Kristi Hobbs
Vice President, System Planning and Weatherization

Board of Directors Meeting

September 22-23, 2025

- **Purpose**
  Provide an overview of the $281.20 million BTU Texas A&M University System RELLIS Campus Tier 1 Reliability Project. Per ERCOT Protocol Section 3.11.4.7 Tier 1 projects require Board endorsement

- **Voting Item**
  ERCOT staff requests and recommends that the Board endorse the BTU Texas A&M University System RELLIS Campus RPG Project (Option 1) based on North American Electric Reliability Corporation (NERC) and ERCOT reliability planning criteria

Key Takeaways

- Ensuring ERCOT's leadership for grid reliability and resilience, 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 addresses all project needs with no reliability violations, improves long-term load-serving capability, and facilitates future transmission expansion for future load in the area

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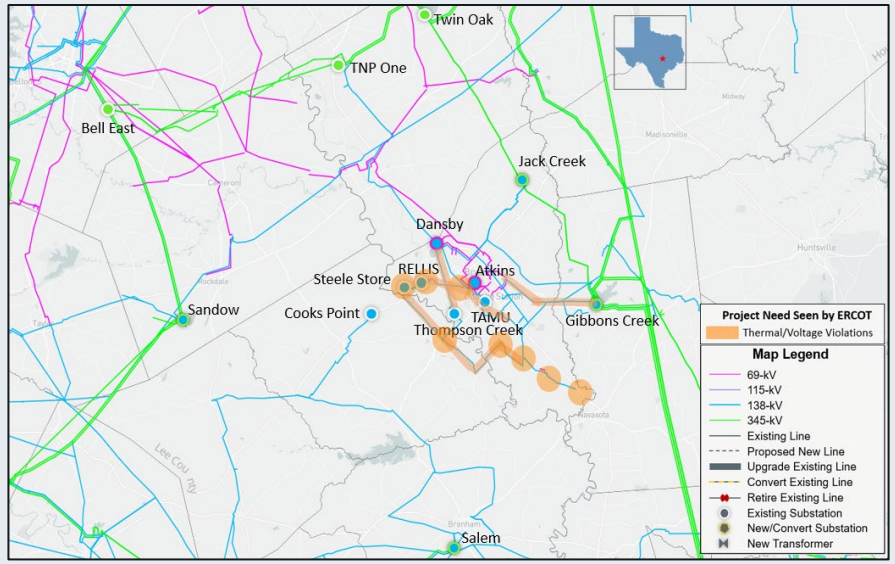
BTU Texas A&M University System RELLIS Campus RPG Project

- BTU submitted the Texas A&M University System RELLIS Campus Reliability Project for RPG review in January 2025
- The purpose of the project is to address the reliability needs due to load growth in Brazos County in the East Weather Zone
- ERCOT performed an independent review of the project and identified thermal overloads and voltage violations in Brazos and neighboring counties
- ERCOT's endorsement of the project is based on the reliability need to relieve thermal overloads on 83.3 miles of 138-kV transmission lines and 15 voltage violations in Brazos and neighboring counties to meet NERC and ERCOT reliability planning criteria
- ERCOT presented the project and TAC voted unanimously to endorse the project on August 27, 2025

Key Takeaway: The BTU Texas A&M University System RELLIS Campus Reliability Project has completed RPG review and received unanimous endorsement by TAC.

Thermal Overloads and Voltage Violations Seen by ERCOT



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Basis for ERCOT Board Endorsement

ERCOT's independent review identified a reliability need for the BTU Texas A&M University System RELLIS Campus Reliability Project to satisfy:

- NERC TPL-001-5.1 Table 1 Reliability Criteria for category:
  - P0, P1, P3 and P6-2 contingencies
- 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 transformer followed by a single transmission element or common tower outage

Key Takeaway: The BTU Texas A&M University System RELLIS Campus Reliability Project is needed to meet reliability under NERC and ERCOT Planning Guide criteria.

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Additional Information based on Comment from TAC

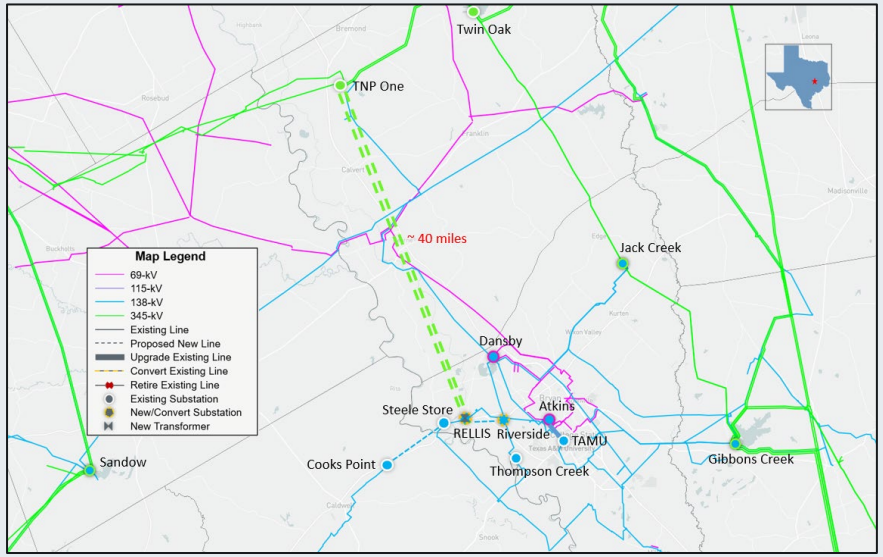
- Option 1 improves the Long-Term Load-Serving Capability better than Option 2 providing an additional 175 MW of Incremental Load-Serving Capability into the study area compared to Option 2.
- ERCOT was informed of a new 1,200 MW large load with a formal Interconnection Request in June 2025.
  - Reliability violations were identified for both Option 1 and Option 2 under N-1 contingency conditions and Additional upgrades are needed to reliable serve the new load

	N-0 Thermal Overloads	N-1 Thermal Overloads	N-1 Unsolvable Contingencies
Option 1	0	8	1
Option 2	10	25	4

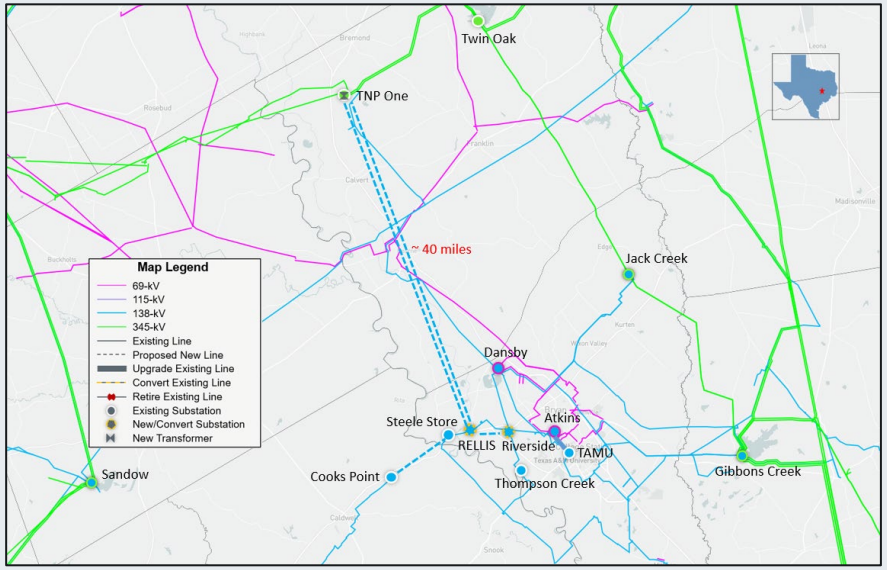
  - Preliminary evaluations identified Option 2 would cost at least $100 million more than Option 1 to reliable serve the new load. Option 2 would require an additional 345-kV source compared to Option 1.

Key Takeaway: The BTU Texas A&M University System RELLIS Campus Reliability Project (Option 1) provides more Load-Serving Capability and can be expanded more efficiently to serve additional Load requests than Option 2.

Option 1



Option 2



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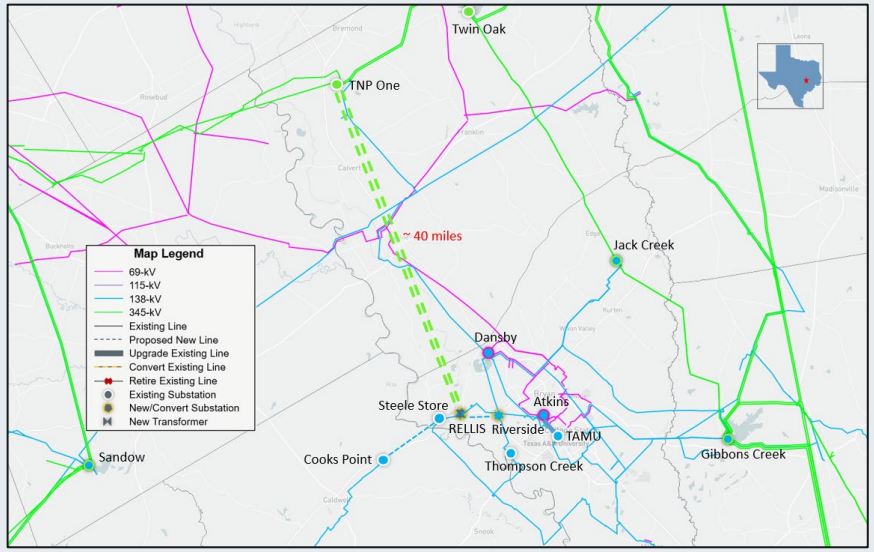
Request for Committee Vote

ERCOT staff requests and recommends that the Board:

- Endorse the need for the BTU Texas A&M University System RELLIS Campus Reliability Project (Option 1) based on NERC and ERCOT reliability planning criteria
- The ERCOT Independent Review (EIR) is included as *Attachment A* to the Board Decision Template

Key Takeaways: ERCOT studied several options and recommends Option 1 to address the reliability violations, improve long-term load-serving capability and facilitate future transmission expansion for future load in the area.

ERCOT Recommendation



Date: September 15, 2025
To: Board of Directors
From: Kristi Hobbs, Vice President, System Planning and Weatherization (ERCOT)
Subject: BTU Texas A&M University System RELLIS Campus Reliability Regional Planning Group (RPG) Project

Issue for the ERCOT Board of Directors

ERCOT Board of Directors Meeting Date: September 22-23, 2025

Item No.: 7.2

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 Bryan Texas Utilities (BTU) Texas A&M University System RELLIS Campus Reliability Regional Planning Group (RPG) Project in order to meet the reliability requirements for the ERCOT System and address thermal overloads and voltage violations due to load growth in Brazos County in the East Weather Zone, which ERCOT staff has independently reviewed and which the Technical Advisory Committee (TAC) has voted unanimously to endorse.

Background/History:
BTU proposed the Texas A&M University System RELLIS Campus Reliability Project in January 2025, a $271.50 million, Tier 1 project with the expected in-service date of May 2029, to meet reliability planning criteria due to load growth in Brazos County in the East 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 Texas A&M University System RELLIS Campus Reliability Project and identified thermal overloads and voltage violations in Brazos and neighboring counties. The ERCOT project recommendation (Option 1), a $281.20 million, Tier 1 project with the expected in-service date of October 2029 addresses the need for a project under North American Electric Reliability Corporation (NERC) and ERCOT Planning Criteria to address thermal overloads on 83.3 miles of 138-kV transmission lines and 15 voltage violations in Brazos and neighboring counties with the following ERCOT System improvements:

- Expand the existing RELLIS 138-kV substation to establish the new RELLIS 345/138-kV switchyard by installing four additional 138-kV breakers in the existing 138-kV ring bus and adding four 345-kV breakers in a ring bus configuration;
    - Install two 345/138-kV autotransformers with normal and emergency ratings of at least 600 MVA each; and
    - Install two 54 MVAr (in three 18 MVAr stages) 138-kV capacitor banks;
- Construct a new TNP One to RELLIS 345-kV double-circuit transmission line on double-circuit capable structures with both circuits in place with normal and emergency ratings of at least 1765 MVA and 3603 MVA, respectively, for each circuit, which will require new right of way (ROW), approximately 40-mile;
- Construct a new Riverside 138-kV switching station by cutting into the existing Dansby to Thompson Creek 138-kV transmission line using a 3-breaker ring bus configuration;
- Construct a new RELLIS to Riverside 138-kV transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, which will require ROW, approximately 6.1-mile;
- Construct a new Steele Store to Cooks Point 138-kV transmission line with normal and emergency ratings of at least 440 MVA, which will require ROW, approximately 5.7-mile. Approximately 5.7-mile of the 7.2-mile transmission line will be on single-circuit structures requiring the new ROW, and the remaining 1.5-mile will utilize the de-energized conductor already in place on the existing double-circuit structures; and
- Re-build the existing Atkins to TAMU 138-kV single-circuit transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, approximately 3.3-mile.

ERCOT's independent review verified the reliability need for the BTU Texas A&M University System RELLIS Campus Reliability Project to satisfy ERCOT Planning Guide Section 4.1.1.2(1)(c) and 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 for the loss of a single transformer followed by a single transmission element or common tower outage, respectively.

RPG considered project overviews during meetings in March 2025 and July 2025. Between March 2025 and July 2025, ERCOT staff presented scope and status updates at RPG meetings in March, April, and July. 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 August 27, 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.

ERCOT's assessment of the Sub-Synchronous Resonance (SSR) of existing facilities in Brazos and neighboring counties in the East 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 no significant new congestion in the area with the addition of the BTU Texas A&M University System RELLIS Campus Reliability Project (Option 1).

The project completion date is subject to change based on several factors, including environmental assessments, licensing requests, regulatory approvals, ROW acquisitions, supply chain constraints and/or construction processes.

The report describing the ERCOT Independent Review of the BTU Texas A&M University System RELLIS Campus Reliability Project (Option 1), including ERCOT staff's recommendation, is included as ***Attachment A***.

Key Factors Influencing Issue:

1. ERCOT System improvements are needed to meet reliability planning criteria due to load growth in Brazos County in the East Weather Zone.
2. ERCOT staff found the recommended set of improvements to be the most efficient solution for meeting the planning reliability criteria, addressing thermal overloads and voltage violations and facilitating future transmission expansion for future load in the area.
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 BTU Texas A&M University System RELLIS Campus Reliability Regional Planning Group (RPG) Project (Option 1), as recommended by ERCOT, on August 27, 2025.

Conclusion/Recommendation:

ERCOT staff recommends that the Board endorse the need for the Tier 1 BTU Texas A&M University System RELLIS Campus Reliability 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 recommendation to endorse the need for the Tier 1 BTU Texas A&M University System RELLIS Campus Reliability 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 ERCOT is hereby authorized and approved to endorse the need for the Tier 1 BTU Texas A&M University System RELLIS Campus Reliability 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, Brandon Gleason, Assistant Corporate Secretary of ERCOT, do hereby certify that, at its _____ meeting, the Board passed a motion approving the above Resolution by _____.

IN WITNESS WHEREOF, I have hereunto set my hand this ___ day of _____, 2025.

_____

Brandon Gleason

Assistant Corporate Secretary

ERCOT Independent Review of the BTU Texas A&M University System RELLIS Campus Reliability Project

Document Revisions

Date	Version	Description	Author(s)
8/15/2025	1.0	Final	Ying Li
		Reviewed by	Robert Golen, Prabhu Gnanam

Executive Summary

Bryan Texas Utilities (BTU) submitted the Texas A&M University System RELLIS Campus Reliability Project to the Regional Planning Group (RPG) in January 2025. BTU proposed this project to address North American Electric Reliability Corporation (NERC) Reliability Standard TPL-001-5.1 and ERCOT Planning Guide criteria thermal overloads and voltage violations due to load growth in Brazos County in the East Weather Zone.

The BTU proposed project is estimated to cost approximately $271.5 million, was classified as a Tier 1 project per ERCOT Protocol Section 3.11.4.3, and the proposed project will require a Certificate of Convenience and Necessity (CCN) application.

ERCOT performed an Independent Review, identified reliability issues (thermal overloads and voltage violations identified in BTU's project submission in Brazos and neighboring counties) and evaluated four different transmission project options.

The ERCOT Independent Review (EIR) evaluated four different transmission project options. Based on the study results described in Sections 5, 6, 7 and 8 of this report, ERCOT recommends the following option (Option 1) to address the reliability issues mentioned. Option 1 consists of the following:

- Expand the existing RELLIS 138-kV substation to establish the new RELLIS 345/138-kV switchyard by installing four additional 138-kV breakers in the existing 138-kV ring bus and adding four 345-kV breakers in a ring bus configuration;
    - Install two 345/138-kV autotransformers with normal and emergency ratings of at least 600 MVA each; and
    - Install two 54 MVAr (in three 18 MVAr stages) 138-kV capacitor banks;
- Construct a new TNP One to RELLIS 345-kV double-circuit transmission line on double-circuit capable structures with both circuits in place with normal and emergency ratings of at least 1765 MVA and 3603 MVA, respectively, for each circuit, which will require new right of way (ROW), approximately 40-mile;
- Construct a new Riverside 138-kV switching station by cutting into the existing Dansby to Thompson Creek 138-kV transmission line using a 3-breaker ring bus configuration;
- Construct a new RELLIS to Riverside 138-kV transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, which will require ROW, approximately 6.1-mile;
- Construct a new Steele Store to Cooks Point 138-kV transmission line with normal and emergency ratings of at least 440 MVA, which will require ROW, approximately 5.7-mile. Approximately 5.7-mile of the 7.2-mile transmission line will be on single-circuit structures requiring the new ROW, and the remaining 1.5-mile will utilize the de-energized conductor already in place on the existing double-circuit structures; and

- Re-build the existing Atkins to TAMU 138-kV single-circuit transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, approximately 3.3-mile.

The cost estimate for Option 1 is approximately $281.2 million and is classified as a Tier 1 project per ERCOT Protocol Section 3.11.4.3(a). One or more CCN applications will be required for the construction of the new 345-kV double-circuit line from TNP One to RELLIS due to approximately 40-mile of new ROW and new Steele Store to Cooks Point 138-kV line due to approximately 5.7-mile of new ROW. The expected in-service date (ISD) of this project is October 2029. However, BTU has advised that the projected ISD may change based on several factors, including environmental assessments, licensing requests, regulatory approvals, ROW acquisitions, supply chain constraints and/or construction processes.

Table of Contents

1 Introduction

In January 2025, Bryan Texas Utilities (BTU) submitted the Texas A&M University System RELLIS Campus Reliability 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 and voltage violations in Brazos and neighboring counties due to a new large load confirmed by TSP Attestation Letter (122.31 MW in 2026, 147.36 MW in 2027, and full load of 377.97 MW in 2030). The proposed project is located in the East Weather Zone in Brazos and Robertson Counties.

This BTU proposed project was classified as a Tier 1 project pursuant to ERCOT Protocol Section 3.11.4.3, with an estimated cost of approximately $271.5 million. One or more Certificate of Convenience and Necessity (CCN) applications will be required for the construction of the new 345-kV line from TNP One to RELLIS and new Steele Store to Cooks Point 138-kV line, due to approximately 45.7-mile of new right of way (ROW). The expected in-service date (ISD) of the project is May 2029.

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 the ERCOT Independent Review of the project.

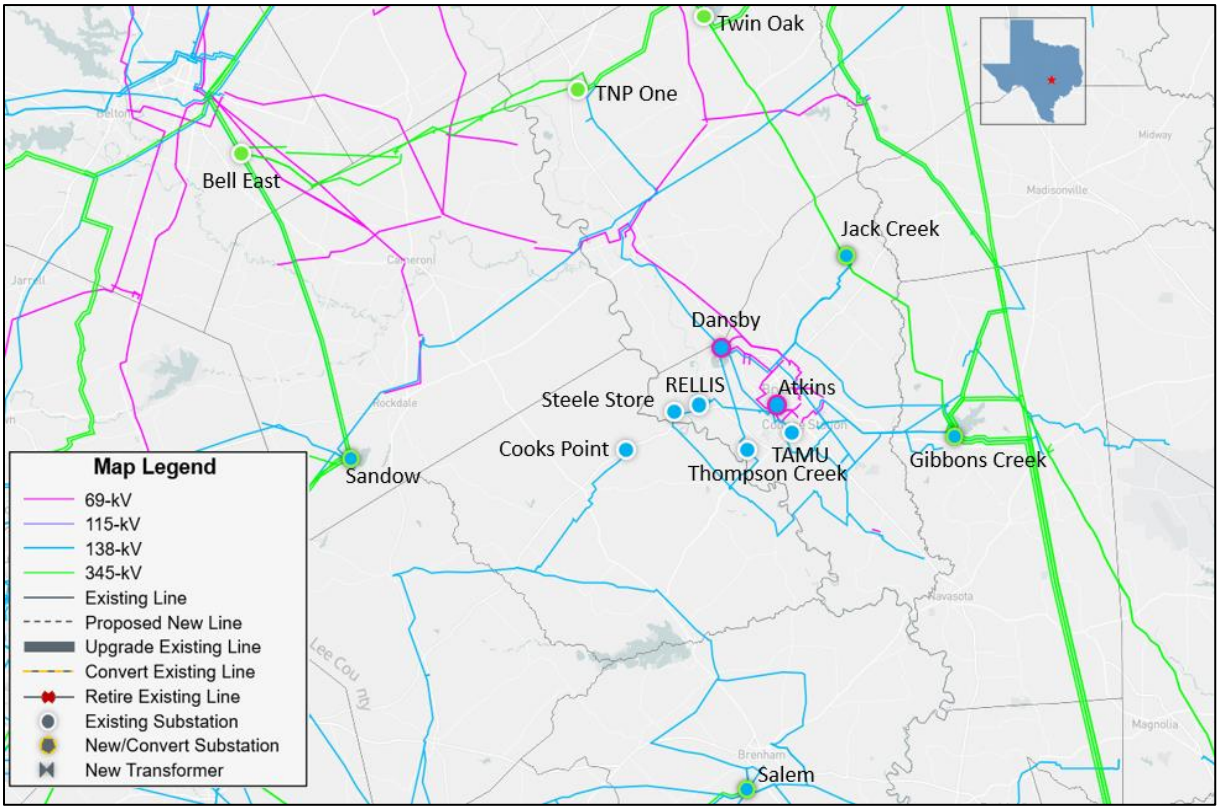


Figure 1.1: Map of Transmission System in Study Area

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 Texas A&M University System RELLIS Campus Reliability 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 East Weather Zone in Brazos and Robertson Counties. The bordering Grimes, Madison, Leon, Limestone, Falls, Milam, Burleson, and Washington 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 2024 Regional Transmission Plan (RTP) cases, published on the Market Information System (MIS) on December 20, 2024, were used as reference cases in this study. The 2030 study year was selected for the long-term outlook. The steady-state study base cases were constructed by updating transmission, generation, and loads of the following 2030 Summer peak load and 2030 planned maintenance outage cases[1]:

- Summer Peak Case: 2024RTP_2030_SUM_12202024
- Planned Maintenance Case: 2024RTP_2030_MaintenanceOutage_12202024

2.1.2 Transmission Topology

Transmission projects within the study area with ISDs by June 2029 were added to the study base cases. The ERCOT Transmission Project Information and Tracking (TPIT)[2] report posted in February 2025 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	Project Name	Tier	Project ISD	County
87395	LCRATSC_Caldwell_Substation_Addition	Tier 4	May-25	Burleson
80404	Reroute East to Rodgers 69-kV line to create East to Rayburn 69-kV line to accommodate the TXDOT SH6 project	Tier 4	Jun-26	Brazos
80424	Rebuild / Reconductor Dansby to Business Park 69-kV for Rail Spur	Tier 4	Jun-26	Brazos
78175	BEPC_27TPIT78175_Franklin_Capacitor	Tier 4	Oct-26	Robertson
80342	BEPC_TPIT80342_Hilltoplakes_Secondauto	Tier 4	Mar-27	Leon
80340	BEPC_TPIT80340_Keithsw_Iola	Tier 4	Mar-27	Grimes
80346	BEPC_TPIT80346_Sandysw_Crutchfield	Tier 4	Mar-29	Grimes
80373	BEPC_TPIT80373_Iola_Crutchfield	Tier 4	Mar-29	Grimes

[1] 2024 Regional Transmission Plan Postings: https://mis.ercot.com/secure/data-products/grid/regional-planning
[2] TPIT Report: https://www.ercot.com/gridinfo/planning

Transmission project, listed in Table 2.2, identified in the 2024 RTP as placeholder project in the study area and was not approved by RPG was removed from the study base cases.

Table 2.2: List of Transmission Project Removed from the Study Base Cases

RTP Project ID	Project Name	County
2024-E4	Bryan Area Project	Brazos, Burleson, Robertson

2.1.3 Generation

Based on the February 2025 Generator Interconnection Status (GIS)[3] report posted on the ERCOT website on March 3, 2025, generators that met Planning Guide Section 6.9(1) conditions with Commercial Operations Date (COD) prior to June 2029 were added to the study base cases. 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 Cases Based on the February 2025 GIS Report

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
21INR0359	Hickerson Solar	SOL	03/01/2026	316.3	Bosque
22INR0525	St. Gall II Energy Storage	OTH	07/01/2025	100.2	Pecos
23INR0372	Cross Trails Storage	OTH	05/26/2025	58.3	Scurry
24INR0493	Crowned Heron BESS 2	OTH	07/31/2025	154.2	Fort Bend
24INR0578	Panther Creek 1 Repower	WIN	04/01/2025	11.0	Glasscock
24INR0582	Panther Creek 2 Repower	WIN	04/01/2025	8.0	Glasscock
24INR0631	Radian Storage SLF	OTH	04/22/2025	160.3	Brown
25INR0231	Apache Hill BESS	OTH	11/15/2026	200.9	Hood
25INR0578	Forest Creek Wind Repower	WIN	12/15/2025	125.1	Glasscock
25INR0672	Fagus Solar Park 2 SLF	SOL	02/11/2026	166.6	Childress
26INR0524	Fagus Solar Park 3 SLF	SOL	04/01/2026	186.8	Childress
20INR0162	Diamondback solar	SOL	12/31/2027	203.8	Starr
22INR0239	Rockefeller Storage	OTH	06/01/2027	206.8	Schleicher
22INR0437	Tormes Solar	SOL	03/31/2027	382.1	Navarro
22INR0457	Anson BAT	OTH	05/29/2026	150.6	Jones
23INR0181	Starling Storage	OTH	05/15/2027	63.6	Gonzales
23INR0244	Tiger Solar	SOL	06/30/2027	255.0	Jones
24INR0126	High Noon Storage	OTH	12/01/2027	94.0	Hill
24INR0188	Tehuacana Creek Solar SLF	SOL	03/10/2027	505.5	Navarro
24INR0189	Tehuacana Creek BESS SLF	OTH	03/10/2027	419.0	Navarro
24INR0201	Short Creek Solar	SOL	03/02/2029	625.0	Wichita
24INR0305	MRG Goody Storage	OTH	01/31/2026	52.3	Lamar
24INR0355	Anatole Renewable Energy Storage	OTH	01/11/2026	207.8	Henderson
24INR0364	Pitts Dudik II	SOL	01/29/2026	30.2	Hill
24INR0386	Black & Gold Energy Storage	OTH	06/30/2027	254.6	Menard

[3] GIS Report: https://www.ercot.com/misapp/GetReports.do?reportTypeId=15933

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
24INR0498	Fort Watt Storage	OTH	04/20/2027	205.4	Tarrant
24INR0528	Blanquilla BESS	OTH	05/15/2026	200.8	Nueces
24INR0584	Houston IV BESS	OTH	06/03/2026	168.6	Harris
25INR0018	Yellow Cat Wind	WIN	09/30/2026	301.2	Navarro
25INR0046	Blue Skies BESS	OTH	12/31/2027	306.3	Hill
25INR0103	Elio BESS	OTH	12/02/2026	317.2	Brazoria
25INR0282	Hornet Solar II SLF	SOL	06/01/2026	209.0	Swisher
25INR0283	Hornet Storage II SLF	OTH	06/01/2026	208.0	Swisher
25INR0319	Northington Solar	SOL	07/15/2027	129.8	Wharton
25INR0391	Purple Sage BESS 1	OTH	05/30/2027	156.0	Collin
25INR0392	Purple Sage BESS 2	OTH	05/30/2027	156.0	Collin
25INR0425	Aldrin 345 BESS	OTH	12/01/2027	362.0	Brazoria
25INR0492	Blue Summit Energy Storage	OTH	07/01/2026	100.0	Wilbarger
26INR0034	Bracero Pecan Storage	OTH	06/01/2026	232.0	Reeves
26INR0189	Skipjack Energy Storage	OTH	04/05/2027	150.6	Brazoria
26INR0226	First Capitol BESS	OTH	05/01/2026	257.5	Brazoria
26INR0269	Moccasin Solar	SOL	06/01/2027	806.8	Stonewall
26INR0296	Sherbino II BESS SLF	OTH	02/08/2026	77.4	Pecos
26INR0333	Vertus Energy Storage	OTH	02/01/2026	401.4	Galveston
26INR0447	Honey Mesquite Wind Farm	WIN	12/15/2026	180.5	Glasscock
26INR0452	Cannibal Draw Solar	SOL	04/10/2028	149.5	Glasscock
26INR0453	Cannibal Draw Storage	OTH	04/10/2028	98.6	Glasscock
26INR0543	Three Canes Solar SLF	SOL	12/31/2026	333.0	Navarro

The status of each unit that was projected to be either indefinitely mothballed or retired at the time of the study was reviewed. The units listed in Table 2.4 were opened (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
110205	BYU_BYU_G8	4.0	Coast
110124	DOWGEN_DOW_G66	95.62	Coast

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 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

2.1.4 Loads

Loads in the ERCOT system were maintained consistent with the 2024 RTP. This project is driven by the new large load confirmed by TSP Attestation Letter from BTU, shown in Table 2.6. This load was already modelled in the 2024 RTP. No load adjustments outside the East Weather Zone was needed to maintain the minimum reserve requirements consistent with the 2024 RTP methodology.

Table 2.6: Newly Confirmed Load

Year	Load (MW)
2026	122.31
2027	147.36
2030	377.97

2.2 Long-Term Load-Serving Capability Assessment

ERCOT performed a long-term load-serving capability assessment to compare the performance of the study options.

Incremental load serving capability was evaluated to assess the long-term load-serving capability. The loads in the study area were increased (customer designated as non-scalable remained at the same level as in the study base case), and conforming loads outside of East Weather Zone and nearby study area were decreased to balance power.

2.3 Maintenance Outage Scenario

ERCOT performed planned maintenance outage evaluation utilizing the 2024 RTP 2030 maintenance outage case to further evaluate the study options. Loads in the ERCOT system were maintained consistent with 2024 RTP maintenance outage case.

2.4 Study Assumptions for Economic Study

An economic study was performed to further evaluate the study options and to identify any new congestion in the study area with the addition of the respective transmission upgrade options.

The 2024 RTP 2029 economic case was updated based on the February 2025 GIS[4] report for generation updates and the February 2025 TPIT[5] report for transmission updates to conduct the economic study. The 2029 study year was selected as it's the future year case currently available.

New transmission project additions are listed in Table A.1 in the Appendix A of this document.

New generation additions listed in Table A.2 in Appendix A of this document were added to the economic base case and all generation listed in Table 2.4 were opened (turned off) in the study base case to reflect their mothballed/retired status. Furthermore, generation listed in Table 2.5 were

[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

removed from seasonal settings in the study base case as these resources are returned to year-round service.

The newly confirmed load (full load of 377.97 MW) listed in Table 2.6 was added to the economic study cases.

2.5 Methodology

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

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 Criteria.[6]

Contingencies[7] 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 outage) {Dansby Unit1 and Frontier Combined Cycle Train}; and
- P6-2: X-1+N-1 (X-1: 345/138-kV transformer only) {Jack Creek T1 and Gibbons Creek T2}.

All 60-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 12.3.0.30786 to perform congestion analysis.

[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

3 Project Need

A steady-state reliability analysis was performed in accordance with NERC TPL-001-5.1 and ERCOT Planning Criteria described in Section 2.1 of this document. This analysis indicated both thermal overloads and voltage violations in Brazos and neighboring counties as seen in the BTU project submission in the study area. These issues are summarized in Table 3.1 and visually illustrated in Figure 3.1. Detailed thermal overloads and voltage violations are listed in Table 3.2 and Table 3.3 respectively.

Table 3.1: Reliability Issues Seen 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	3	None	None
P1, P2-1, P7: N-1	12	11	None
P3: G-1+N-1	None	3	None
P6-2: X-1+N-1	None	1	None

Table 3.2: Thermal Overloads Observed in the Study Area

NERC Contingency Category	Overloaded Element	Voltage Level (kV)	Length (~miles)	Max Loading (%)
P1: N-1	Dowling – Enterprise	138	2.5	109.3
P1: N-1	Dowling – Hollemn	138	1.1	119.0
P1: N-1	RELLIS – Steele Store	138	2.8	106.0
P1: N-1	Enterprise – Tamu	138	1.2	103.2
P1: N-1	Leonard Road – Atkins	138	2.0	207.7
P1: N-1	Steele Store – Snook	138	9.8	112.1
P1: N-1	Snook – Koppe Bridge	138	12.8	113.7
P1: N-1	Snook – Brusck	138	5.4	109.5
P1: N-1	Koppe Bridge – Wellborn	138	6.3	120.2
P1: N-1	Thompson Creek – Brusck	138	3.5	115.2
P1: N-1	Thompson Creek – Dansby	138	11.1	124.9
P3: G-1+N-1	Gibbons Creek – East	138	14.5	100.9
P3: G-1+N-1	Tamu – Atkins	138	3.3	104.1
P3: G-1+N-1	Leonard Road – Smetana	138	5.6	100.4
P6-2: X-1+N-1	RELLIS – Smetana	138	1.4	102.9

Table 3.3: Voltage Violations Observed in the Study Area

NERC Contingency Category	Bus Name	Voltage Level (kV)	Voltage (pu)
P0: System Intact	Steele Store	138	0.95
P0: System Intact	RELLIS	138	0.93
P0: System Intact	Smetana	138	0.95
P1: N-1	Snook	69	0.80
P1: N-1	Snook	138	0.81

NERC Contingency Category	Bus Name	Voltage Level (kV)	Voltage (pu)
P1: N-1	Brusck	138	0.85
P1: N-1	Leonard Road	138	0.86
P1: N-1	Thompson Creek	138	0.88
P1: N-1	Millican	69	0.90
P1: N-1	Millican Switch	69	0.90
P1: N-1	Lawridge	138	0.90
P1: N-1	Highway 6	138	0.90
P1: N-1	Millican Switch	138	0.90
P1: N-1	Koppe Bridge	138	0.90
P1: N-1	Wellborn	138	0.90

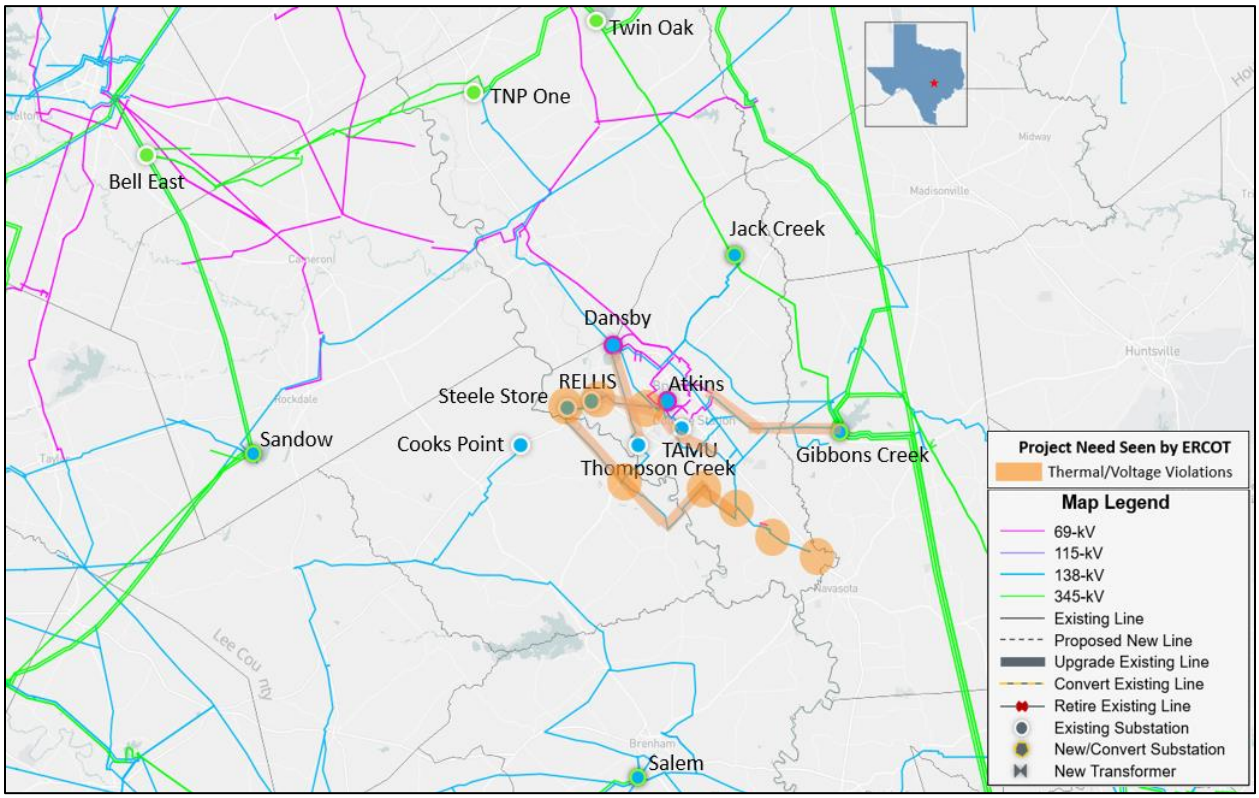


Figure 3.1: Study Area Map Showing Project Need Seen by ERCOT

4 Description of Project Options

ERCOT evaluated four system improvement options to address the reliability violations observed in the study base case in the study area.

Option 1 (BTU proposed solution) consists of the following:

- Expand the existing RELLIS 138-kV substation to establish the new RELLIS 345/138-kV switchyard by installing four additional 138-kV breakers in the existing 138-kV ring bus and adding four 345-kV breakers in a ring bus configuration;
    - Install two 345/138-kV autotransformers with normal and emergency ratings of at least 600 MVA each; and
    - Install two 54 MVAr (in three 18 MVAr stages) 138-kV capacitor banks;
- Construct a new TNP One to RELLIS 345-kV double-circuit transmission line on double-circuit capable structures with both circuits in place with normal and emergency ratings of at least 1765 MVA and 3603 MVA, respectively, for each circuit, which will require new ROW, approximately 40-mile;
- Construct a new Riverside 138-kV switching station by cutting into the existing Dansby to Thompson Creek 138-kV transmission line using a 3-breaker ring bus configuration;
- Construct a new RELLIS to Riverside 138-kV transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, which will require ROW, approximately 6.1-mile;
- Construct a new Steele Store to Cooks Point 138-kV transmission line with normal and emergency ratings of at least 440 MVA, which will require ROW, approximately 5.7-mile. Approximately 5.7-mile of the 7.2-mile transmission line will be on single-circuit structures requiring the new ROW, and the remaining 1.5-mile will utilize the de-energized conductor already in place on the existing double-circuit structures; and
- Re-build the existing Atkins to TAMU 138-kV single-circuit transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, approximately 3.3-mile.

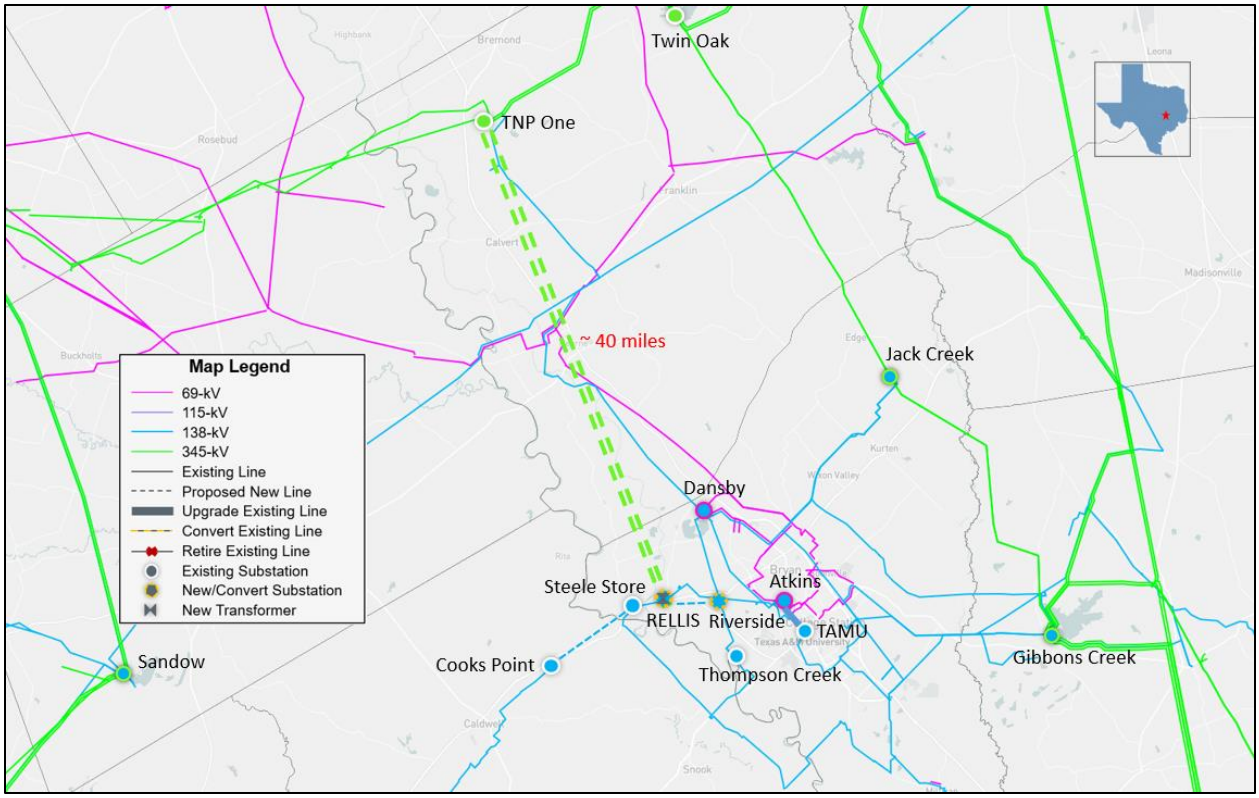


Figure 4.1: Map of Option 1

Option 2 consists of the following:

- Establish a new 138-kV switchyard at the existing TNP One 345-kV substation and include two 345/138-kV autotransformers with normal and emergency ratings of at least 600 MVA each;
- Construct a new TNP One to RELLIS 138-kV double-circuit transmission line on double-circuit capable structures with both circuits in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively for each circuit, which will require new ROW, approximately 40-mile;
- Install two 54 MVAr (in three 18 MVAr stages) capacitor banks at RELLIS 138-kV substation;
- Construct a new Riverside 138-kV switching station by cutting into the existing Dansby to Thompson Creek 138-kV line using a 3-breaker ring bus configuration;
- Construct a new RELLIS to Riverside 138-kV transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, which will require ROW, approximately 6.1-mile;
- Construct a new Steele Store to Cooks Point 138-kV transmission line with normal and emergency ratings of at least 440 MVA, which will require ROW, approximately 5.7-mile. Approximately 5.7-mile of the 7.2-mile transmission line will be on single-circuit structures requiring the new ROW, and the remaining 1.5-mile will utilize the de-energized conductor already in place on the existing double-circuit structures; and

- Re-build the existing Atkins to TAMU 138-kV single-circuit transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, approximately 3.3-mile.

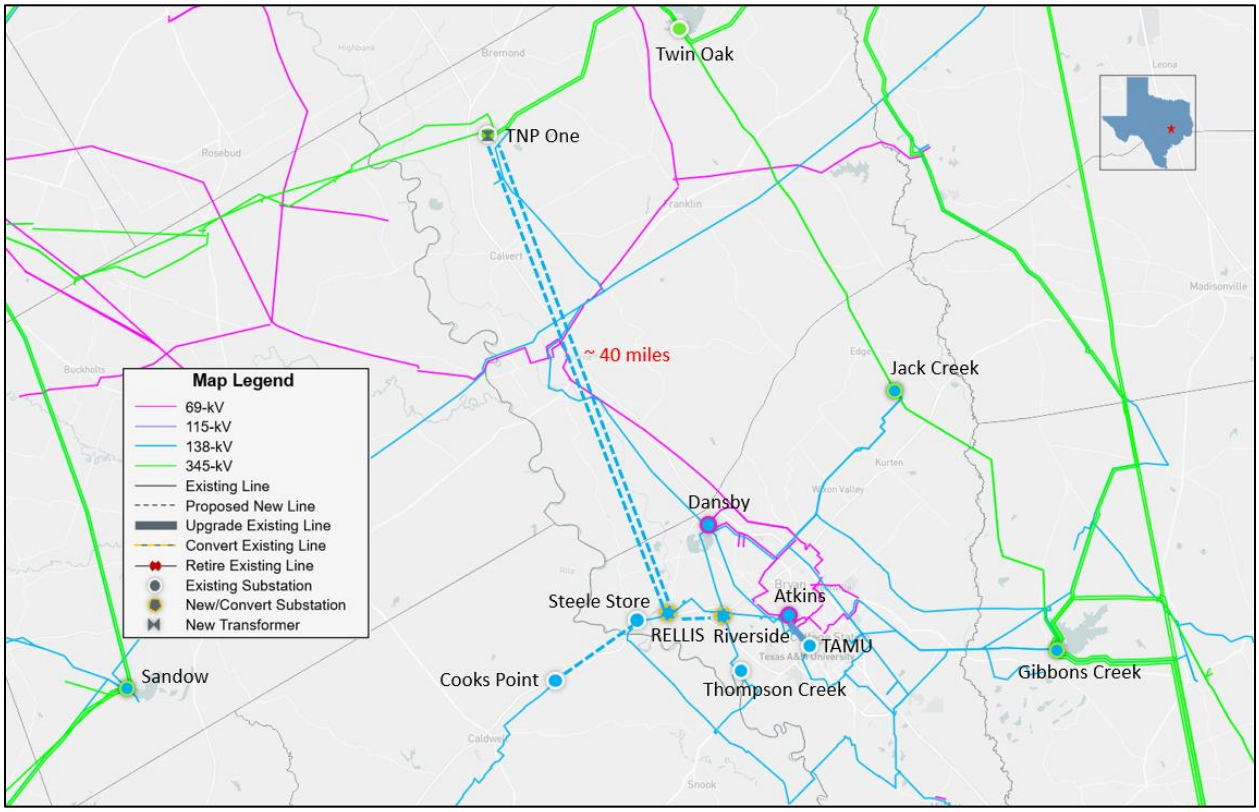


Figure 4.2: Map of Option 2

Option 3 consists of the following:

- Expand the existing RELLIS 138-kV substation to establish the new RELLIS 345/138-kV switchyard by installing four additional 138-kV breakers in the existing 138-kV ring bus and adding four 345-kV breakers in a ring bus configuration;
  - Install two 345/138-kV autotransformers with normal and emergency ratings of at least 600 MVA each; and
  - Install two 54 MVAr (in three 18 MVAr stages) 138-kV capacitor banks;
- Construct a new Sandow to RELLIS 345-kV double-circuit transmission line on double-circuit capable structures with both circuits in place with normal and emergency ratings of at least 1765 MVA and 3603 MVA, respectively for each circuit, which will require ROW, approximately 42-mile;
- Construct a new Riverside 138-kV switching station by cutting into the existing Dansby to Thompson Creek 138-kV transmission line using a 3-breaker ring bus configuration;

- Construct a new RELLIS to Riverside 138-kV transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, which will require ROW, approximately 6.1-mile;
- Construct a new Steele Store to Cooks Point 138-kV transmission line with normal and emergency ratings of at least 440 MVA, which will require ROW, approximately 5.7-mile. Approximately 5.7-mile of the 7.2-mile transmission line will be on single-circuit structures requiring the new ROW, and the remaining 1.5-mile will utilize the de-energized conductor already in place on the existing double-circuit structures; and
- Re-build the existing Atkins to TAMU 138-kV single-circuit transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, approximately 3.3-mile.

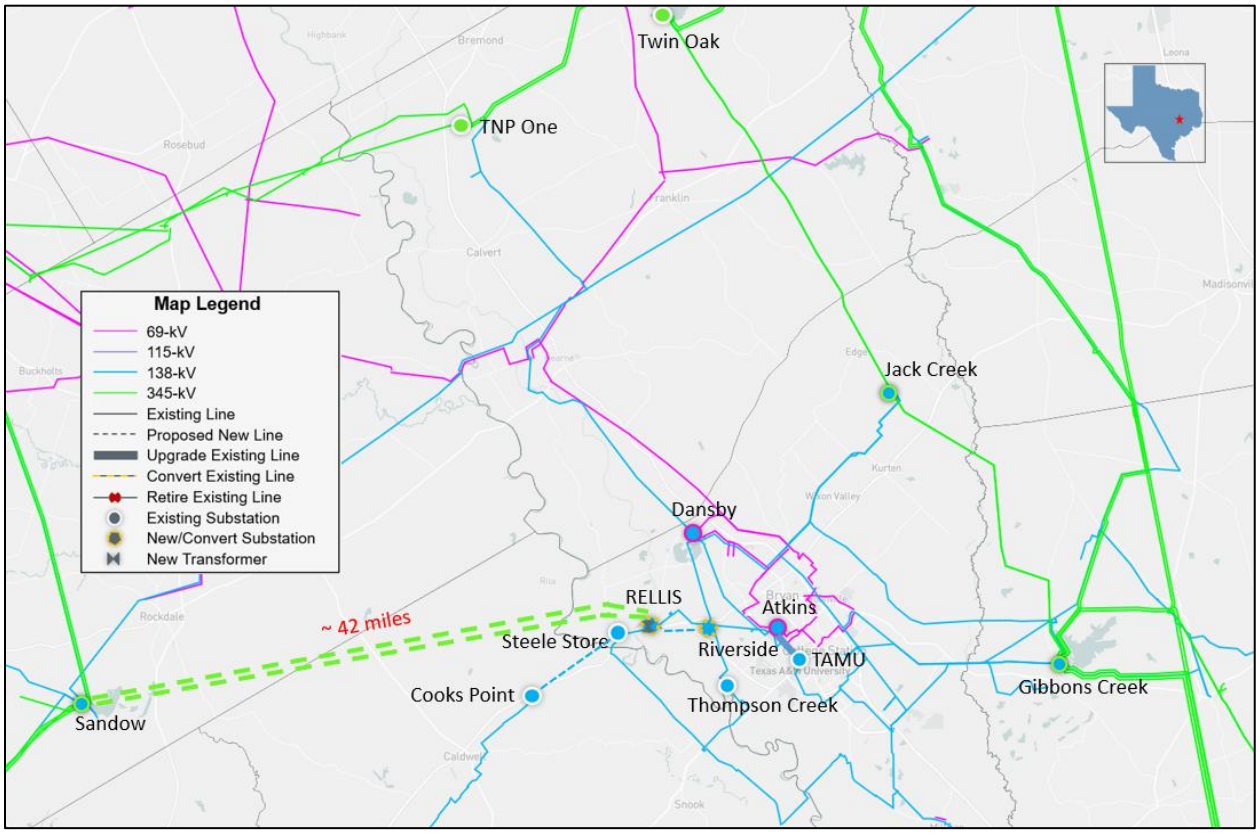


Figure 4.3: Map of Option 3

Option 4 consists of the following:

- Expand the existing RELLIS 138-kV substation to establish the new RELLIS 345/138-kV switchyard by installing four additional 138-kV breakers in the existing 138-kV ring bus and adding four 345-kV breakers in a ring bus configuration;
    - Install two 345/138-kV autotransformers with normal and emergency ratings of at least 600 MVA each; and
    - Install two 54 MVAr (in three 18 MVAr stages) 138-kV capacitor banks;

- Construct a new Salem to RELLIS 345-kV double-circuit transmission line on double-circuit capable structures with both circuits in place with normal and emergency ratings of at least 1765 MVA and 3603 MVA, respectively, for each circuit, which will require ROW, approximately 45-mile;
- Construct a new Riverside 138-kV switching station by cutting into the existing Dansby to Thompson Creek 138-kV transmission line using a 3-breaker ring bus configuration;
- Construct a new RELLIS to Riverside 138-kV transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, which will require ROW, approximately 6.1-mile;
- Construct a new Steele Store to Cooks Point 138-kV transmission line with normal and emergency ratings of at least 440 MVA, which will require ROW, approximately 5.7-mile. Approximately 5.7-mile of the 7.2-mile transmission line will be on single-circuit structures requiring the new ROW, and the remaining 1.5-mile will utilize the de-energized conductor already in place on the existing double-circuit structures; and
- Re-build the existing Atkins to TAMU 138-kV single-circuit transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, approximately 3.3-mile.

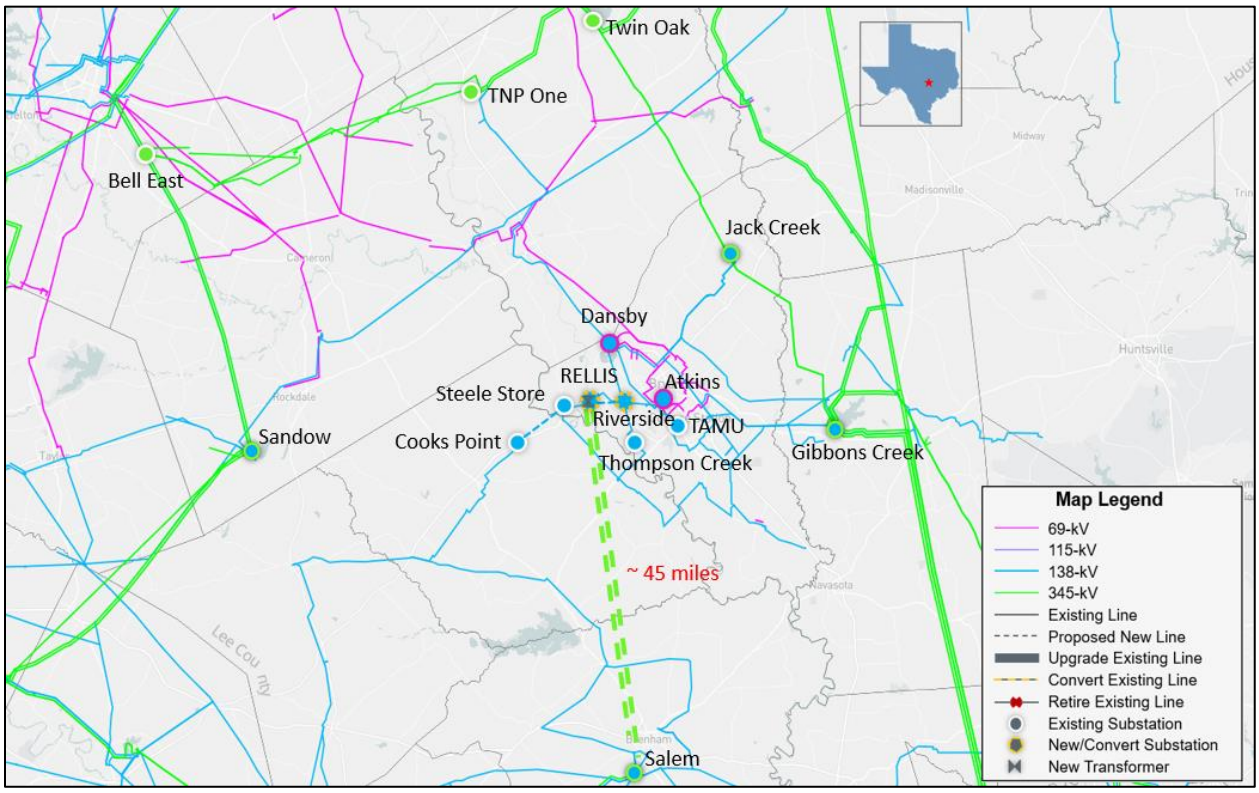


Figure 4.4: Map of Option 4

5 Option Evaluations

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

5.1 Results of Reliability Analysis

All four options were evaluated based on the contingencies described in Section 2.1 of this report. Option 3 observed thermal overloads under N-1 contingency conditions. No reliability criteria violations were identified for Option 1, Option 2, and Option 4 under N-1, X-1+N-1, or G-1+N-1 as shown in Table 5.1.

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

Option	N-1			X-1+N-1		G-1+N-1	
	Unsolved Power Flow	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	5	None	1	None	3	None
4	None	None	None	None	None	None	None

5.2 Short-Listed Options

Based on the results shown in Section 5.1, Option 1, Option 2, and Option 4 were selected as short-listed options for further evaluations. These three options are illustrated in Figures 5.1, 5.2, and 5.3.

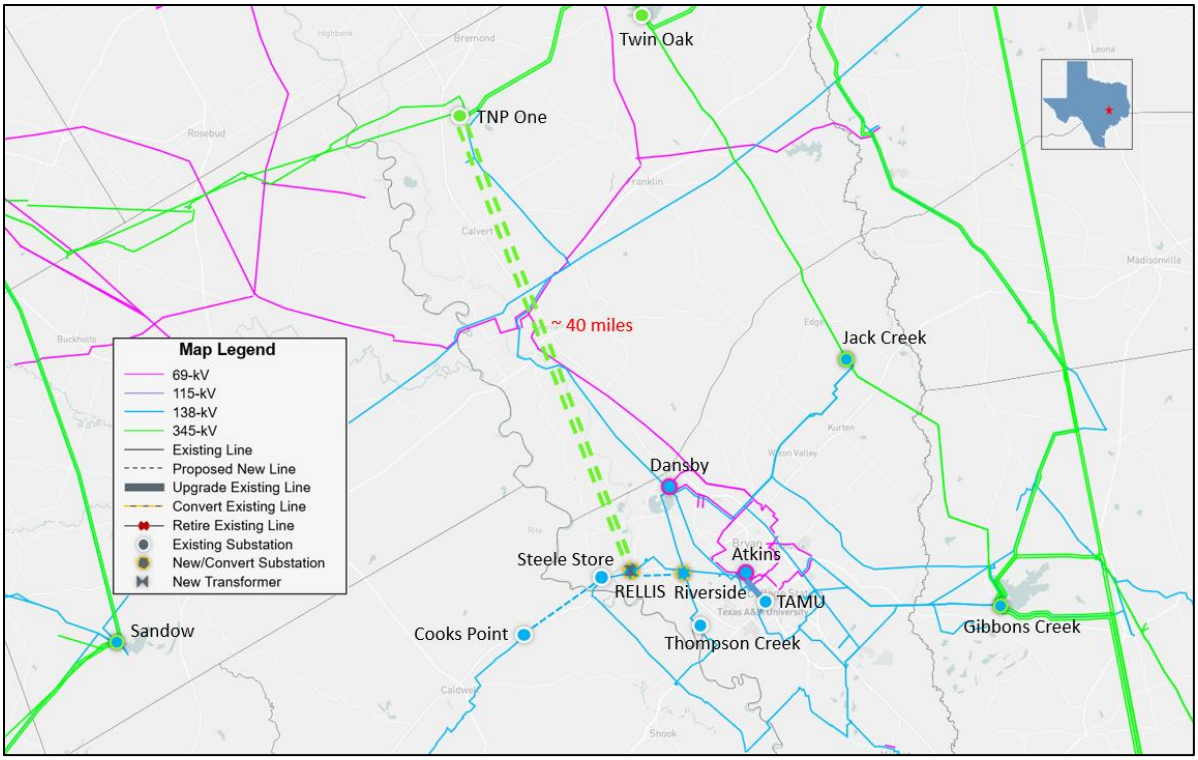


Figure 5.1: Map of Option 1

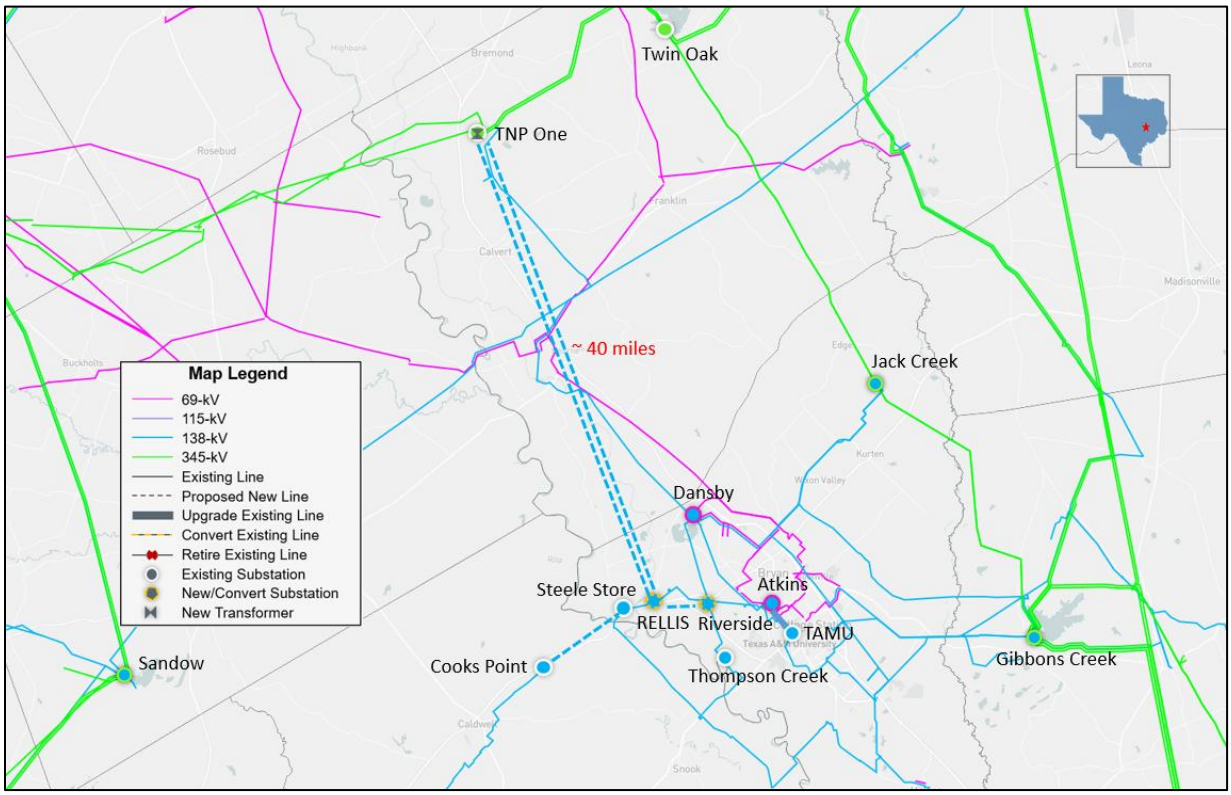


Figure 5.2: Map of Option 2

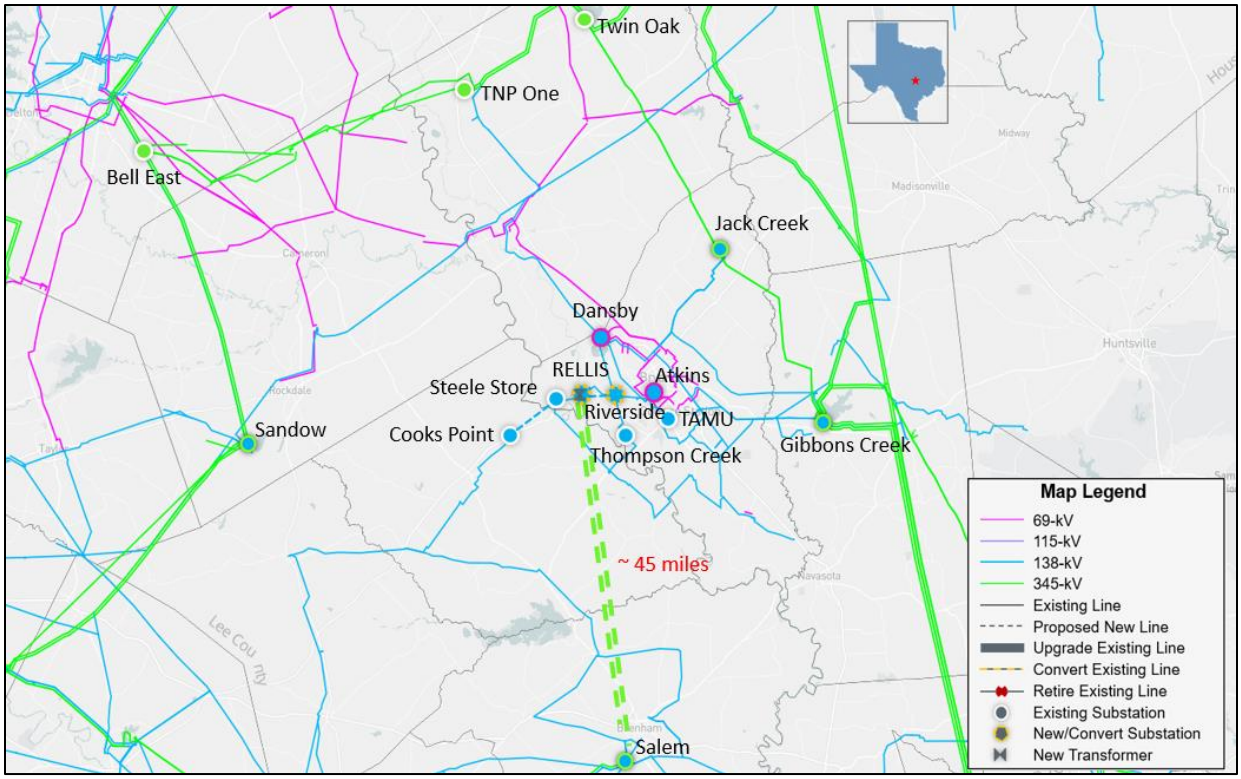


Figure 5.3: Map of Option 4

5.3 Long-Term Load-Serving Capability Assessment

ERCOT conducted a long-term load-serving capability assessment on the three short-listed options to compare the relative performance.

The results show that the three short-listed options provided additional long-term load-serving capability with Option 1 providing the greatest and Option 4 providing the least. These results are shown in Table 5.2

Table 5.2: Results of Long-Term Load-Serving Capability Assessment of the Three Short-Listed Options

Option	Incremental Load-Serving Capability (~MW)
1	456
2	281
4	201

5.4 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 short-listed options 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 study area were monitored in the maintenance outage evaluation.

As shown in Table 5.3, the results of this planned maintenance assessment indicate the three short-listed options did not result in any reliability violations.

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

Option	Voltage Violations	Thermal Violations	Unsolved Power Flow
1	None	None	None
2	None	None	None
4	None	None	None

5.5 Cost Estimate and Feasibility Assessment

TSPs performed feasibility assessments and provided final cost estimates for the three short-listed options. Table 5.4 summarizes the cost estimate, estimated mileage of CCN required, and option feasibility for the three 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	281.2	45.7	Feasible
2	199.5	45.7	Feasible
4	293.5	50.7	Feasible

6 Comparison of Short-Listed Options

Based on the results from Option Evaluations in Section 5, the three short-listed options are summarized in Table 6.1.

Table 6.1: Comparison of the Three Short-Listed Options

	Option 1	Option 2	Option 4
Addresses the Project Needs	Yes	Yes	Yes
Meets ERCOT and NERC Reliability Criteria	Yes	Yes	Yes
Improves Long-Term Load-Serving Capability	Yes (Better)	Yes	Yes
CCN Required (~miles)	Yes (45.7)	Yes (45.7)	Yes (50.7)
Construction Feasibility (Based on TSP assessment)	Yes	Yes	Yes
Capital Cost Estimates[8] (~$M)	281.2	199.5	293.5

Option 1 provides better long-term load-serving capability for future load growth in the area. Option 1 will better facilitate future transmission expansion due to higher voltage level. Option 2 is the least cost solution. Option 4 was eliminated from further evaluation due to a higher cost estimate. Option 1 and Option 2 were further evaluated.

[8] The cost estimates were provided by the TSPs.

7 Sensitivity Analyses

Additional sensitivity analyses were performed to further compare Option 1 and Option 2.

7.1 Impact of Gen Hubs

To accommodate the unprecedented load levels and constant nature of the large loads in the 2024 RTP, ERCOT incorporated additional dispatchable generation resources (Gen Hubs) in the 2024 RTP cases.

Gen Hubs near the study area were removed from the study cases for Option 1 and Option 2. The study showed that no negative impact was identified for Option 1 and Option 2.

7.2 Impact of Permian Basin Reliability Plan 765-kV Import Paths

On April 24, 2025, the Public Utilities Commission of Texas (PUCT) approved a plan to build the ERCOT region's first 765-kV extra high voltage transmission lines proposed in the ERCOT Permian Basin Reliability Plan Study, completed in 2024. The approved plan includes three 765-kV import paths to the Permian Basin region: New Substation 2 to Longshore to Drill Hole 765-kV line; Bell East to Big Hill to Sand Lake 765-kV line; and Howard to Solstice 765-kV line.

All three approved 765-kV import paths were modelled to evaluate the impact for both Option 1 and Option 2. The study showed that no negative impact was identified for Option 1 and Option 2.

7.3 Economic Study

ERCOT conducted an economic study to compare the economic benefits and identify any potential impact on system congestion for Option 1 and Option 2. The study was performed using the 2024 RTP 2029 economic study case, using the study assumptions identified in Section 2.4 of this document.

As shown in Table 7.1, the production cost saving for Option 1 is about $4 million when compared to Option 2 under the base case scenario as well as maintenance outage scenarios. Option 2 is used as a reference case to compare the cost differences in the table. The project cost estimate for Option 1 is about $82 million more than the cost estimate for Option 2. The study showed that Option 1 is not economically justifiable under either Production Cost Savings test or Congestion Cost Savings test.

Table 7.1: Economic Study Results for Option 1 and Option 2 ($M)

Option	Production Cost Savings	Congestion Cost Savings	Production Cost Savings with Maintenance Outages	Congestion Cost Savings with Maintenance Outages
1	3.5	0.7	4.0	1.6
2	0	0	0	0

The economic study also indicated no significant new congestion in the study area due to the addition of Option 1 or Option 2.

7.4 Higher Load Sensitivity Analysis

Two TSPs notified ERCOT that there are two new large loads in the study area in different locations that may connect before 2030. Large load 1 is a confirmed load of 1000 MW by the letter from the TSP's officer in May 2025. Large load 2 is a load of 1200 MW with a formal interconnection request that the TSP informed ERCOT of in June 2025. Due to the timeline notified by TSPs and the status of these two large loads, ERCOT did not include them in the project need analysis. These potential new loads were added incrementally to the study area load for this higher load sensitivity analysis to compare the relative performance of Option 1 and Option 2.

For the large load 1 of 1000 MW confirmed by the letter from the TSP's officer, no reliability violations in the study area were identified under N-1, G-1+N-1, and X-1+N-1 contingency conditions for both Option 1 and Option 2. However, both options are insufficient to address the reliability violations under planned maintenance outage conditions. Option 2 has more unsolvable contingencies than Option 1 under planned maintenance outage conditions. Table 7.2 summarizes the study results for Option 1 and Option 2.

Table 7.2: Results of Large Load 1 Sensitivity Analysis for Option 1 and Option 2

Option	Summer Peak (N-1, X-1+N-1, G-1+N-1)			Planned Maintenance Outage		
	Unsolved Power Flow	Thermal Overload	Voltage Violation	Unsolved Power Flow	Thermal Violation	Voltage Overload
1	None	None	None	2	3	None
2	None	None	None	12	4	None

For the large load 2 of 1200 MW with a formal interconnection request, both Option 1 and Option 2 are insufficient to address the reliability violations under N-1 contingency conditions. Table 7.3 summarizes the study results under N-1 contingency conditions for Option 1 and Option 2. The large amount of reliability violations under N-1 contingency conditions indicate additional transmission would be needed to reliably serve this large load. No studies were conducted under X-1+N-1, G-1+N-1, and planned maintenance outage conditions.

Table 7.3: Results of Large Load 2 Sensitivity Analysis under N-1 for Option 1 and Option 2

Option	N-0 Thermal Overloads	N-1 Thermal Overloads	N-1 Unsolvable Contingencies
1	0	8	1
2	10	25	4

ERCOT performed a preliminary study to reliably serve the large load 2 of 1200 MW under N-0 and N-1 contingency conditions. The study showed that Option 2 would cost at least more than $100 million than Option 1 to meet the reliability needs under N-0 and N-1 contingency conditions.

A separate EIR review would be needed in the future for these large loads if an RPG project is submitted.

8 Further Comparison of Option 1 and Option 2

Based on the results from Option Evaluations in Section 5 and Sensitivity Analyses in Section 7, Option 1 and Option 2 are further summarized in Table 8.1.

Table 8.1: Further Comparison of Option 1 and Option 2

	Option 1	Option 2
Addresses the Project Needs	Yes	Yes
Meets ERCOT and NERC Reliability Criteria	Yes	Yes
Improves Long-Term Load-Serving Capability	Yes (Better)	Yes
CCN Required (~miles)	Yes (45.7)	Yes (45.7)
Construction Feasibility (Based on TSP assessment)	Yes	Yes
Capital Cost Estimates[9] (~$M)	281.2	199.5
Economic Benefit	Better	N/A
Facilitates Transmission Expansion for Future Loads	Yes	No

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

- Option 1 addresses project need in the study area and meets ERCOT and NERC Reliability Criteria;
- Option 1 improves long-term load-serving capability for future load growth in the area; and
- Option 1 facilitates transmission expansion for future load in the area.

9 Additional Analysis and Assessment

The recommended option (Option 1, with a cost estimate of approximately $281.2 million) is categorized as a Tier 1 project, pursuant to ERCOT Protocol 3.11.4.3(1)(a). ERCOT performed generation and load sensitivity studies to identify the recommended option performance, as required under Planning Guide Section 3.1.3(4). Additionally, a Sub-synchronous Resonance (SSR) Assessment was performed.

9.1 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 June 2025 GIS[10] report, 11 units were found within the study area that could have an impact on the identified reliability issues. These units, listed in Table 9.1, were added to the recommended option case following 2024 RTP Methodology. ERCOT determined that the addition of these generators do not impact the recommended option.

[9] The cost estimates were provided by the TSPs.
[10] GIS Report: https://www.ercot.com/mp/data-products/data-product-details?id=PG7-200-ER

Table 9.1: List of Units that Could Have an Impact on the Identified Reliability Issues

GINR	Unit Name	Fuel Type	Max Capacity (~MW)	County
22INR0605	Camino Santiago Solar	SOL	196.3	Milam
23INR0502	Adelite Storage	OTH	231.9	Milam
24INR0422	Hollow Branch Creek Solar	SOL	460.0	Leon
25INR0230	Great Rock BESS	OTH	300.9	Leon
25INR0382	Happy Dog Solar	SOL	85.5	Milam
25INR0442	Happy Dog Storage	OTH	104.5	Milam
26INR0431	Big Rooter West Solar SLF	SOL	403.4	Robertson
22INR0504	Barton Branch IA	OTH	203.6	Robertson
24INR0476	Dos Rios Energy Storage SLF	OTH	164.5	Milam
29INR0017	Big Rooter East Solar SLF	SOL	554.9	Robertson
29INR0018	Big Rooter East Storage SLF	OTH	553.7	Robertson

9.2 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. Before 2024, ERCOT RTP adopted the methodology of developing four sets of summer peak cases with each case representing one study region for each study year. For each summer peak case, the loads outside of the study region may be scaled down from the respective non-coincident summer peak levels to maintain a certain reserve requirement. This methodology may cause potential impact of load scaling on the criteria violations. Starting 2024, ERCOT RTP adopted a new methodology of having one summer peak case for each study year with non-coincident peaks for each of the Weather Zones, which would eliminate the load scaling impact. As stated in Section 2.1, ERCOT used the 2030 summer peak case from the 2024 RTP for this EIR project. The study base case, which was created in accordance with the 2024 RTP Study Scope and Process document and Section 2.1 of this document, did not include load scaling down from the respective non-coincident peaks in any of the eight Weather Zones. As such, load scaling sensitivity analysis is no longer needed.

9.3 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.

10 Conclusion

ERCOT evaluated four transmission upgrade options to resolve the thermal overloads and voltage violations identified in the study area. Based on the results of the independent review, ERCOT recommends Option 1 as the preferred solution because it addresses all project needs with no reliability violations, improves long-term load-serving capability, and facilitates future transmission expansion for future load in the area.

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

- Expand the existing RELLIS 138-kV substation to establish the new RELLIS 345/138-kV switchyard by installing four additional 138-kV breakers in the existing 138-kV ring bus and adding four 345-kV breakers in a ring bus configuration;
    - Install two 345/138-kV autotransformers with normal and emergency ratings of at least 600 MVA each; and
    - Install two 54 MVAr (in three 18 MVAr stages) 138-kV capacitor banks;
- Construct a new TNP One to RELLIS 345-kV double-circuit transmission line on double-circuit capable structures with both circuits in place with normal and emergency ratings of at least 1765 MVA and 3603 MVA, respectively, for each circuit, which will require new right of way (ROW), approximately 40-mile;
- Construct a new Riverside 138-kV switching station by cutting into the existing Dansby to Thompson Creek 138-kV transmission line using a 3-breaker ring bus configuration;
- Construct a new RELLIS to Riverside 138-kV transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, which will require ROW, approximately 6.1-mile;
- Construct a new Steele Store to Cooks Point 138-kV transmission line with normal and emergency ratings of at least 440 MVA, which will require ROW, approximately 5.7-mile. Approximately 5.7-mile of the 7.2-mile transmission line will be on single-circuit structures requiring the new ROW, and the remaining 1.5-mile will utilize the de-energized conductor already in place on the existing double-circuit structures; and
- Re-build the existing Atkins to TAMU 138-kV single-circuit transmission line on double-circuit capable structures with one circuit in place with normal and emergency ratings of at least 495 MVA and 521 MVA, respectively, approximately 3.3-mile.

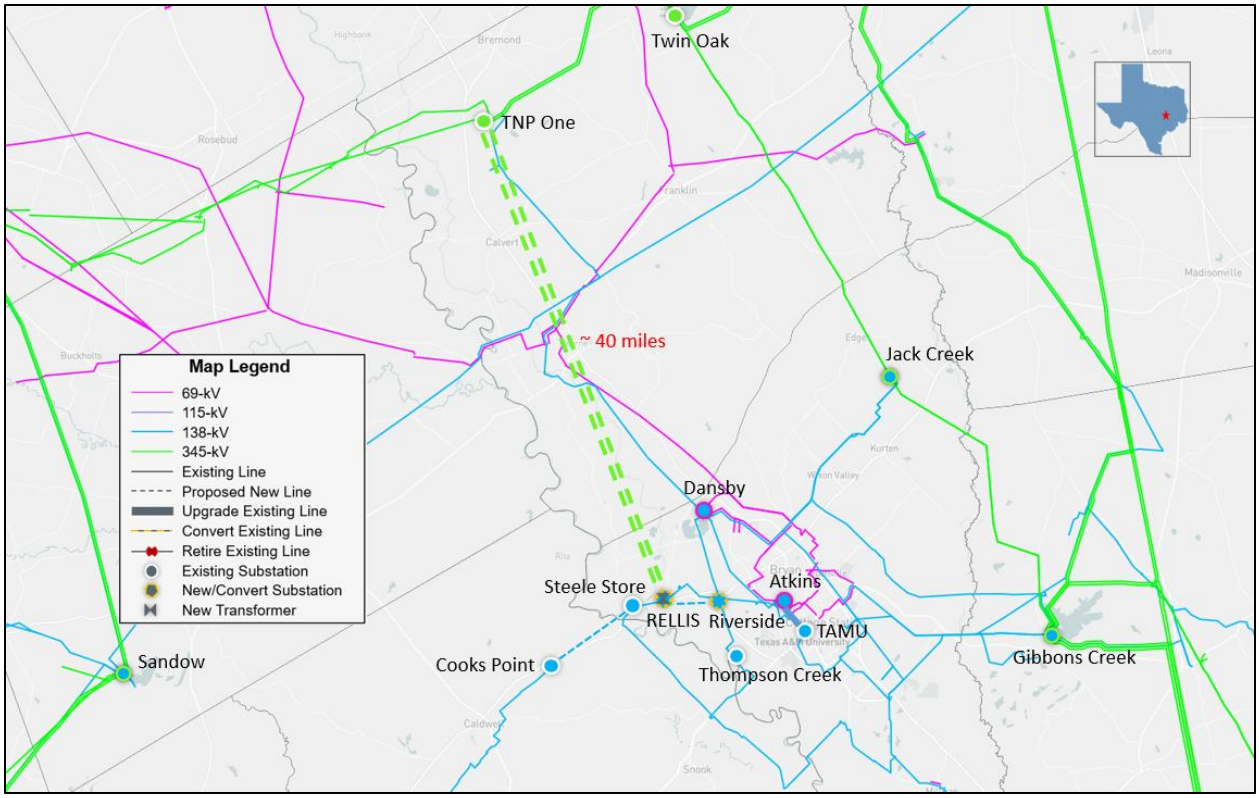


Figure 10.1: Map of Option 1

The cost estimate for this project is approximately $281.2 million and is classified as Tier 1 project per ERCOT Protocol Section 3.11.4.3(1)(a). The expected ISD of this project is October 2029. However, BTU has advised that the projected ISD may change based on several factors, including environmental assessments, licensing requests, regulatory approvals, ROW acquisitions, supply chain constraints and/or construction processes.

CCN applications will be required for the new 345-kV transmission line from TNP One to RELLIS Switch and the new 138-kV transmission line from Steele Store to Cooks Point.

Appendix A

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

TPIT No	Project Name	Tier	Project ISD	County
80404	Reroute East to Rodgers 69-kV line to create East to Rayburn 69-kV line to accommodate the TXDOT SH6 project	Tier 4	Jun-26	Brazos
80424	Rebuild / Reconductor Dansby to Business Park 69-kV for Rail Spur	Tier 4	Jun-26	Brazos
80342	BEPC_TPIT80342_Hilltoplakes_Secondauto	Tier 4	Mar-27	Leon
80340	BEPC_TPIT80340_Keithsw_Iola	Tier 4	Mar-27	Grimes
80346	BEPC_TPIT80346_Sandysw_Crutchfield	Tier 4	Mar-29	Grimes
80373	BEPC_TPIT80373_Iola_Crutchfield	Tier 4	Mar-29	Grimes

Table A.2: List of Generation Added to the Economic Base Case Based on February 2025 GIS Report

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
23INR0079	Chillingham Storage	OTH	5/1/2025	153.9	Bell
23INR0249	Limewood Solar	SOL	12/31/2025	204.6	Bell
23INR0344	Hermes Solar	SOL	9/30/2025	100.4	Bell
23INR0469	Big Elm Storage	OTH	8/15/2026	100.8	Bell
24INR0166	Stillhouse Solar	SOL	9/1/2025	210.8	Bell
24INR0365	Hermes Storage	OTH	9/30/2025	100.4	Bell
23INR0079	Chillingham Storage	OTH	5/1/2025	153.9	Bell
21INR0517	Tidwell Prairie Storage 1	OTH	07/31/2025	204.0	Robertson
22INR0356	Jungmann Solar	SOL	06/30/2025	40.2	Milam
22INR0511	Gransolar Texas One	SOL	06/30/2025	50.8	Milam
23INR0235	Hoyte Solar	SOL	12/15/2026	206.8	Milam
24INR0031	Stoneridge Solar	SOL	09/04/2025	201.6	Milam
26INR0023	Leon Solar Park	SOL	07/01/2026	210.1	Leon

Table A.3: Project Related Document

No	Document Name	Attachment
1	BTU - Texas A&M University System RELLIS Campus Reliability Project Public 01.10.25.pdf	BTU - Texas A&M University System RE