

PUBLIC



Texas New Mexico Power (TNMP) Climax to Bells Area Transmission System Improvements Project (26RPG017) – ERCOT Independent Review (EIR) Recommendation

Ying Li

Regional Planning Group (RPG) Meeting
October 20, 2026

Introduction

Texas New Mexico Power (TNMP) submitted the Climax to Bells Area Transmission System Improvements Project (26RPG017) for Electric Reliability Council of Texas' (ERCOT) Regional Planning Group (RPG) review in April 2026

- This is a Tier 1 project with an estimated cost of approximately \$225.4 million and will not require a Certificate of Convenience and Necessity (CCN)
- Estimated in-service date (ISDs) is December 2029
- This project is proposed to address the thermal overloads and voltage violations due to load growth in Grayson and Collin counties in the North Weather Zone

This project is currently under ERCOT Independent Review (EIR)

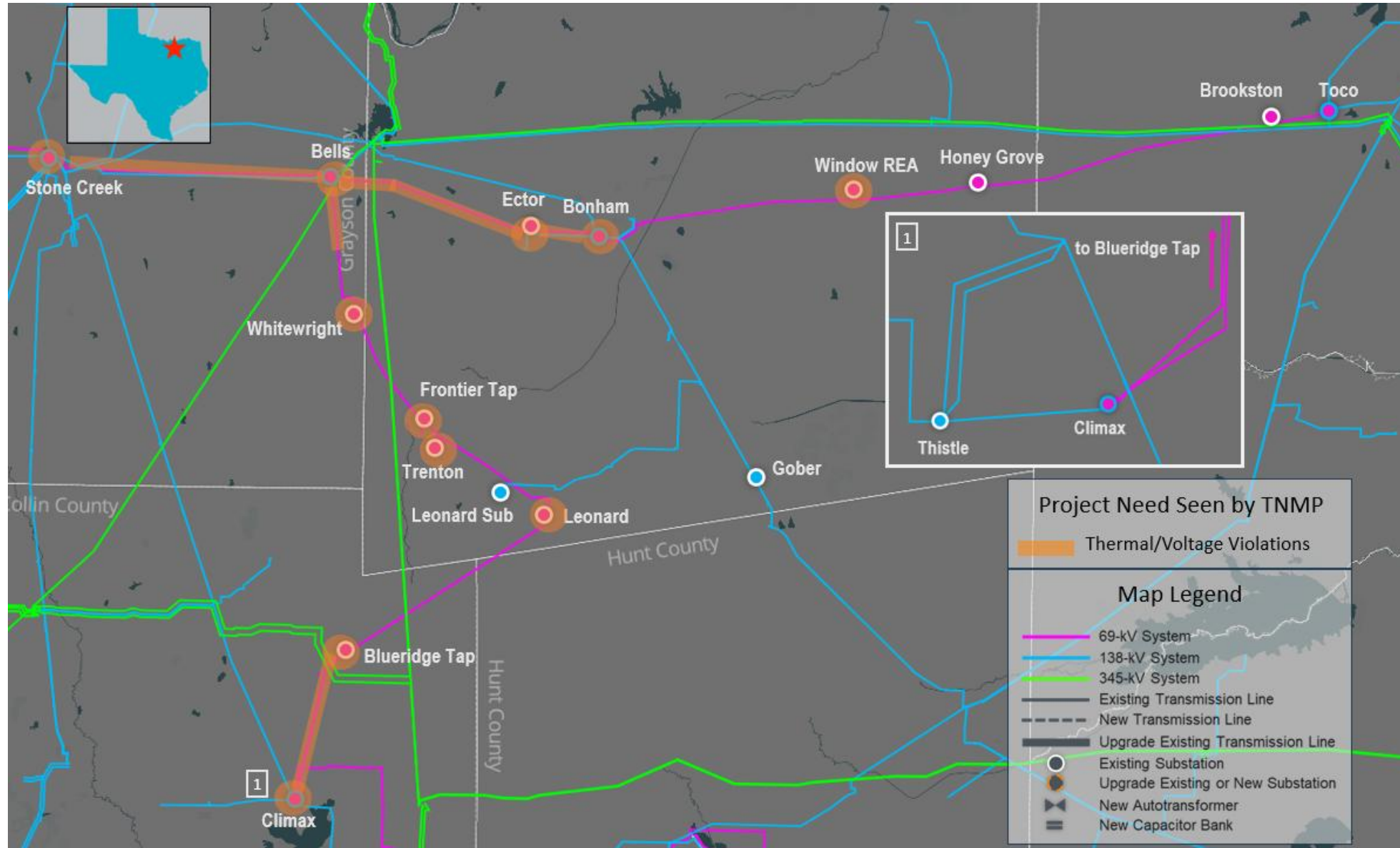
- TNMP presented a project overview and ERCOT provided the EIR scope at the [June 2026 RPG Meeting](#)
- ERCOT provided the EIR status updates at the previous RPG Meetings:
 - [July 2026 RPG Meeting](#)
 - [September 2026 RPG Meeting](#)

Status Update

Studies performed since the September RPG meeting

- Short-listed options
 - Long-Term Load-Serving Capability Assessment
 - Congestion Analysis
 - Cost Estimate and Feasibility Assessment by TSPs
- Preferred option
 - Subsynchronous Oscillations (SSO) Assessment
 - Generation Addition Sensitivity Analysis
 - Load Scaling Sensitivity Analysis
- ERCOT recommendation

Study Area Map with Project Needs Seen by TNMP



Study Assumptions

Study Region

- The project is located in Grayson, Fannin, and Collin counties in the North and North Central Weather Zones. All transmission elements in counties that are electrically close were monitored

Steady-State Base Case

- Final [2025 Regional Transmission Planning \(RTP\)](#) 2030 summer peak load case, published on Market Information System (MIS) on December 22, 2025, was updated to construct the study base case

Transmission Updates

- New transmission projects (listed in [Appendix A1](#)), based on February 2026 [Transmission Project and Information Tracking \(TPIT\) report](#) and/or recently approved RPG project, were added to the base case
- Transmission project (listed in [Appendix A2](#)) identified in the 2025 RTP in the study area that has not been approved by RPG was removed

Generation Updates

- New generation that met ERCOT Planning Guide Section 6.9(1) (listed in [Appendix B](#)) based on the [April 2026 Generator Interconnection Status \(GIS\) report](#) were added to the study base case
- Any generation that cancelled but was included in the 2025 RTP 2030 case was removed based on April GIS report
- All generation were dispatched consistent with the 2025 RTP methodology
- All recent retired/indefinitely mothballed units were reviewed and opened (turned off), if not already reflected in the 2025 RTP Final cases

Load Updates

- New loads (total 65 MW) in Climax area in study region were added to create the study base case

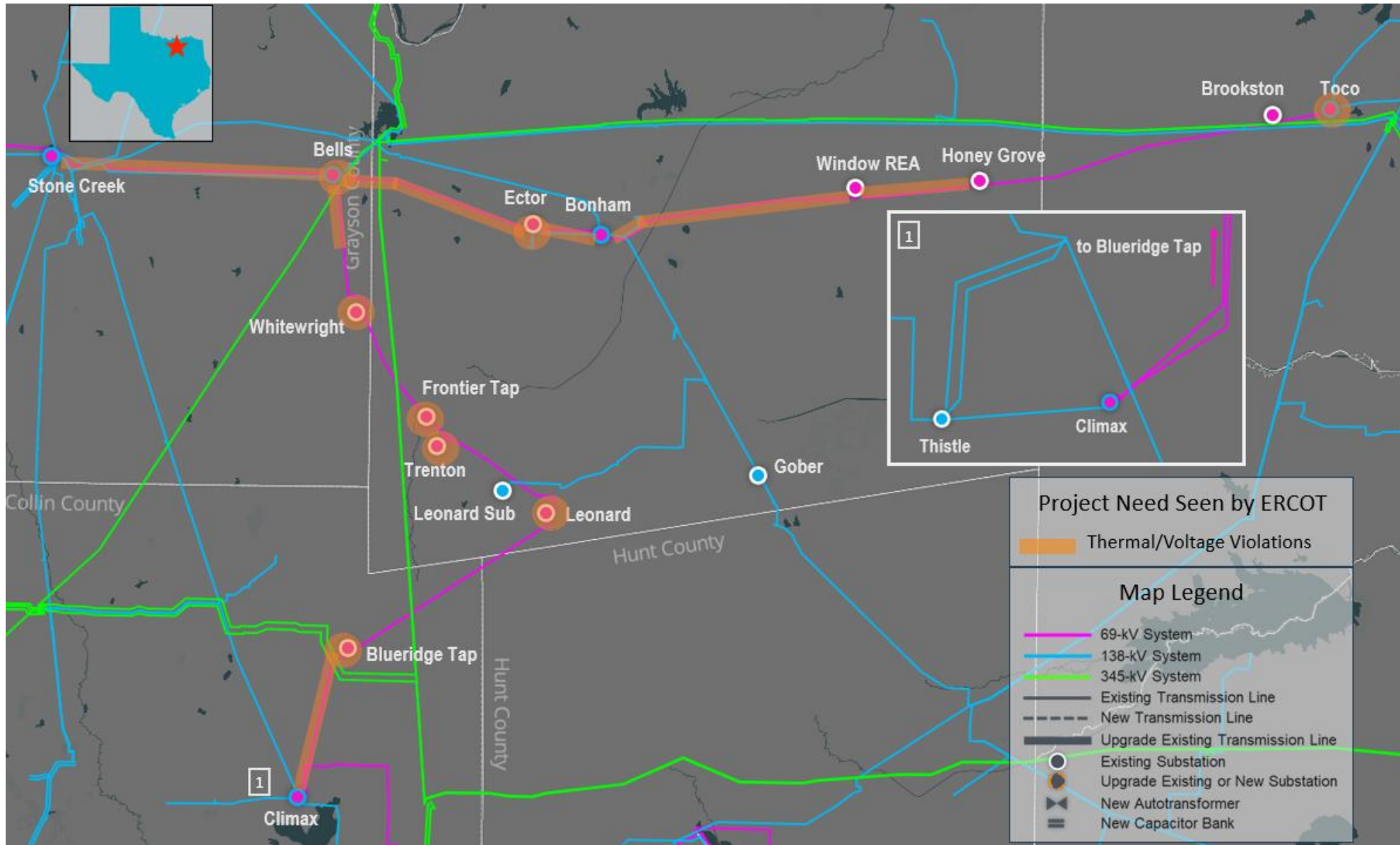
Results of Reliability Assessment – Base Case

ERCOT conducted steady-state load flow analysis for the study base case according to the NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Criteria to identify the project need

Contingency Category	Thermal Overloads	Voltage Violations	Unsolved Power Flow
P0	2	4	None
P1	2	6	None
P2, P4, P5	None	None	None
P3: (G-1+N-1)*	4	1	None
P6-2: (X-1+N-1)*	None	None	None
P7	1	None	None
Total	9	11	None

* See [Appendix C](#) for the list of generators and transformers being tested for (G-1+N-1) and (X-1+N-1) analyses, respectively

Study Area Map with Project Needs Seen by ERCOT

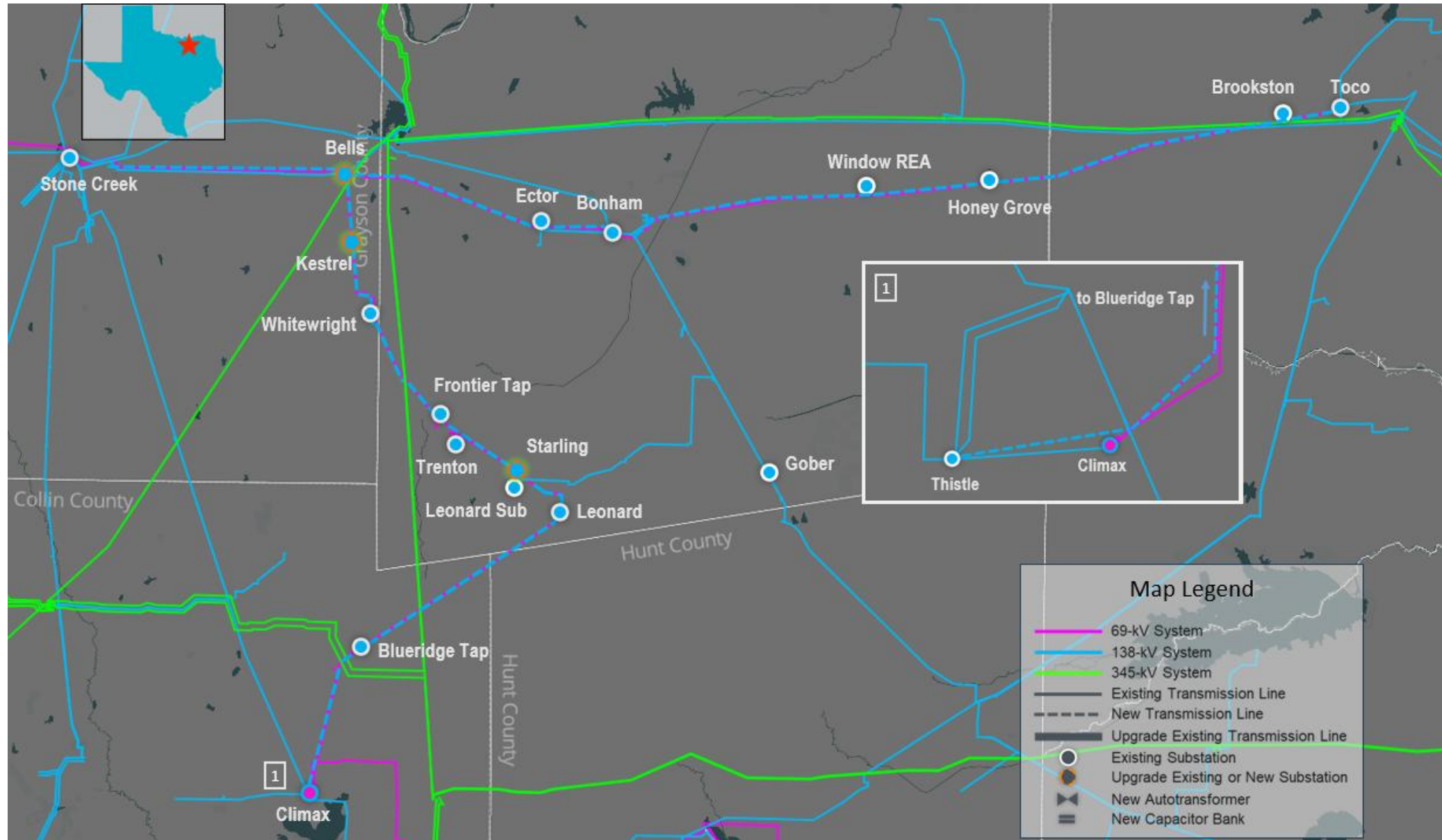


Options Evaluated for the Study

ERCOT evaluated 4 options to resolve the reliability violation seen by ERCOT

- Option 1 – TNMP Proposed Project
- Option 2 – ERCOT Alternative Option
- Option 3 – ERCOT Alternative Option
- Option 4 – ERCOT Alternative Option

Option 1 – TNMP Proposed Project

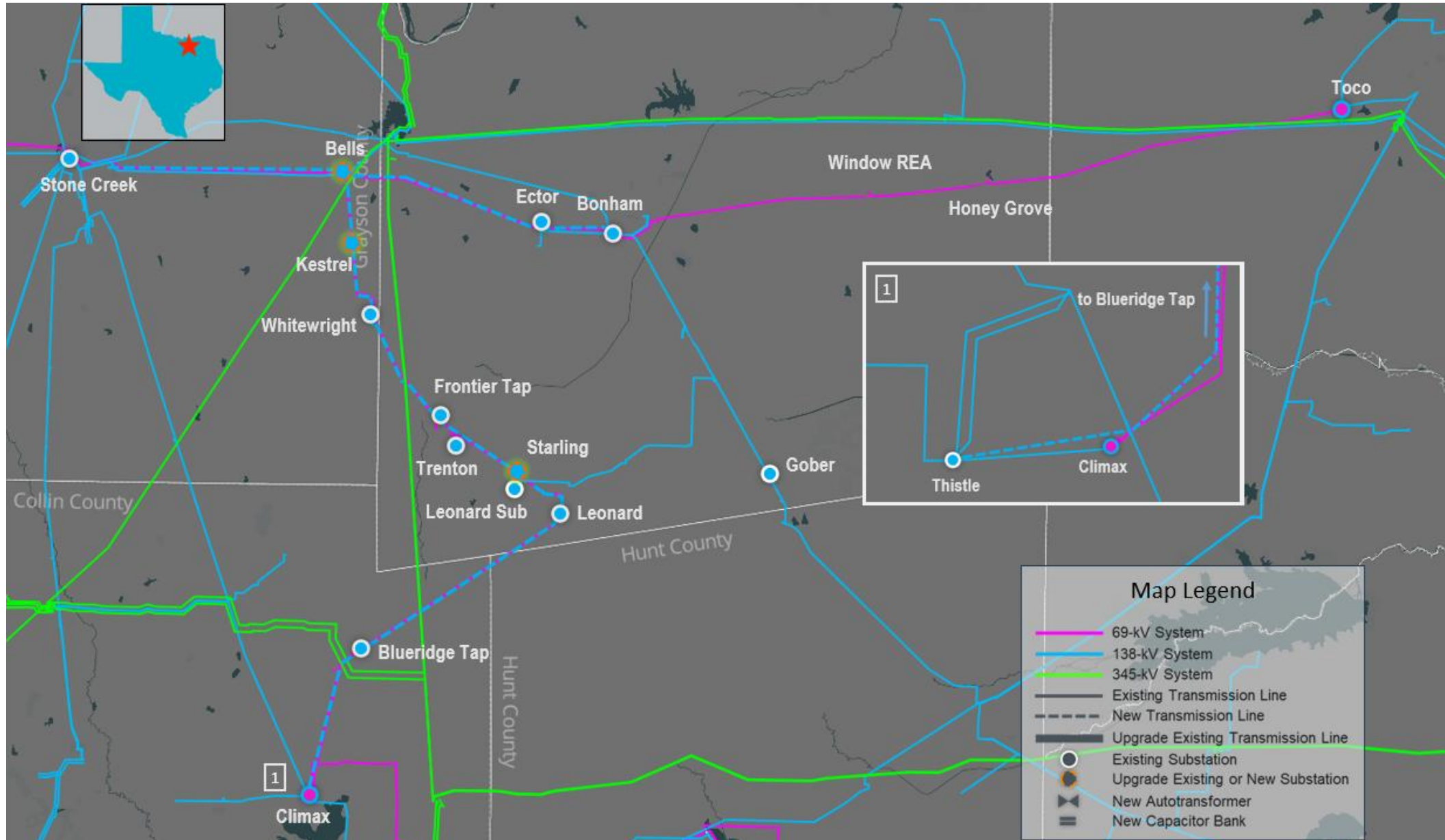


Option 1 – Summary of Upgrades

Overall Project Summary

- Three (3) new 138-kV substations
- Construct approximately 0.37 miles of new 138-kV transmission line on double-circuit capable structures with one circuit in place
- Rebuild/upgrade approximately 65.9 miles of 69-kV transmission lines to 138-kV
- Convert approximately 34.2 miles of 69-kV transmission lines to 138-kV (Rebuild is done in 25RPG030)
- Rebuild/upgrade four (4) 138-kV substations
- Eliminate the existing 138/69-kV autotransformers at Stone Creek, Bonham, and Toco switching stations
- Detailed description in [Appendix D1](#)

Option 2 – ERCOT Alternative Option

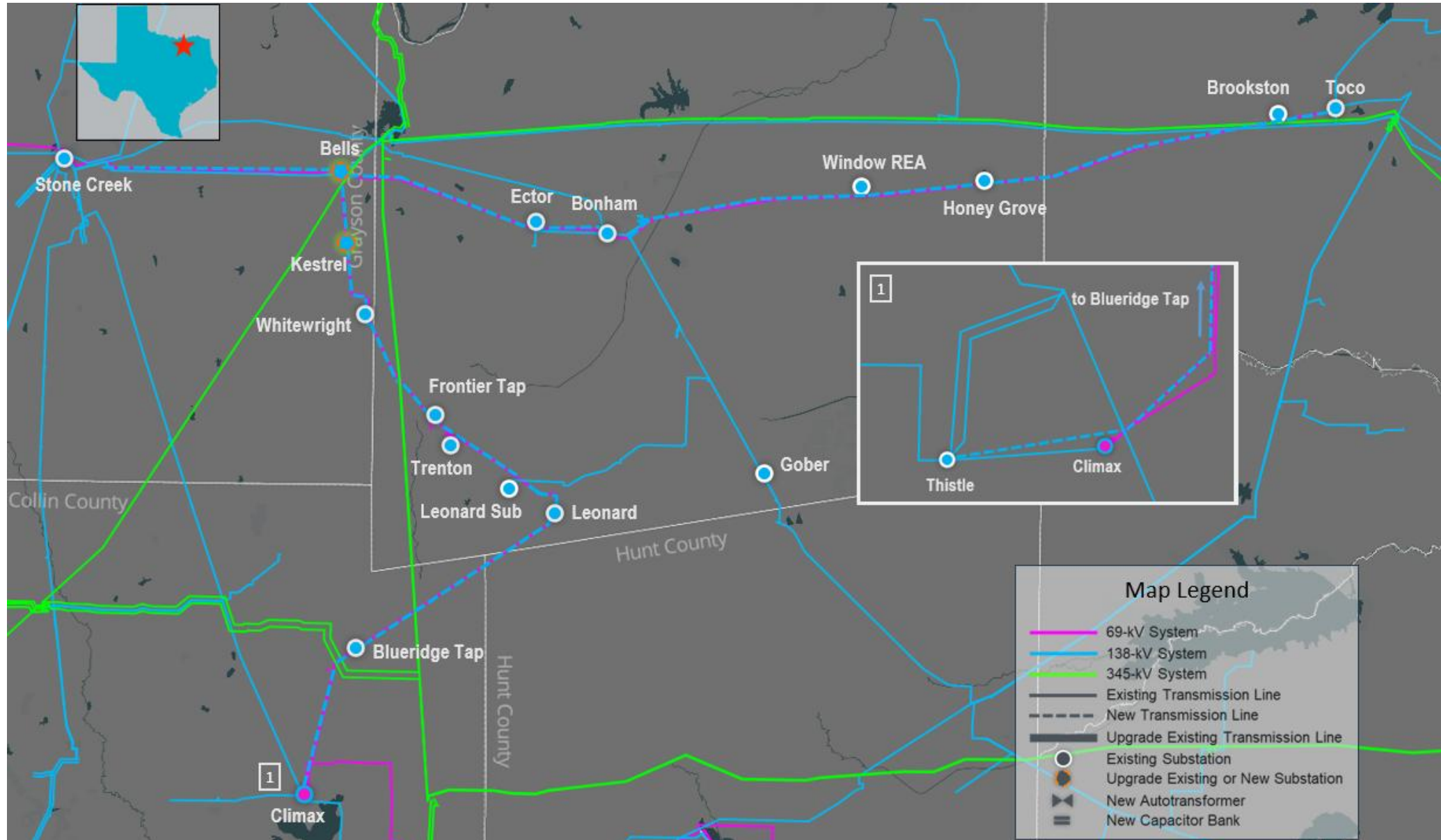


Option 2 – Summary of Upgrades

Overall Project Summary

- Three (3) new 138-kV substations
- Construct approximately 0.37 miles of new 138-kV transmission line on double-circuit capable structures with one circuit in place
- Rebuild/upgrade approximately 65.9 miles of 69-kV transmission lines to 138-kV
- Rebuild two (2) 138-kV substations
- Eliminate the existing 138/69-kV autotransformer at Stone Creek station
- Detailed description in [Appendix D2](#)

Option 3 – ERCOT Alternative Option

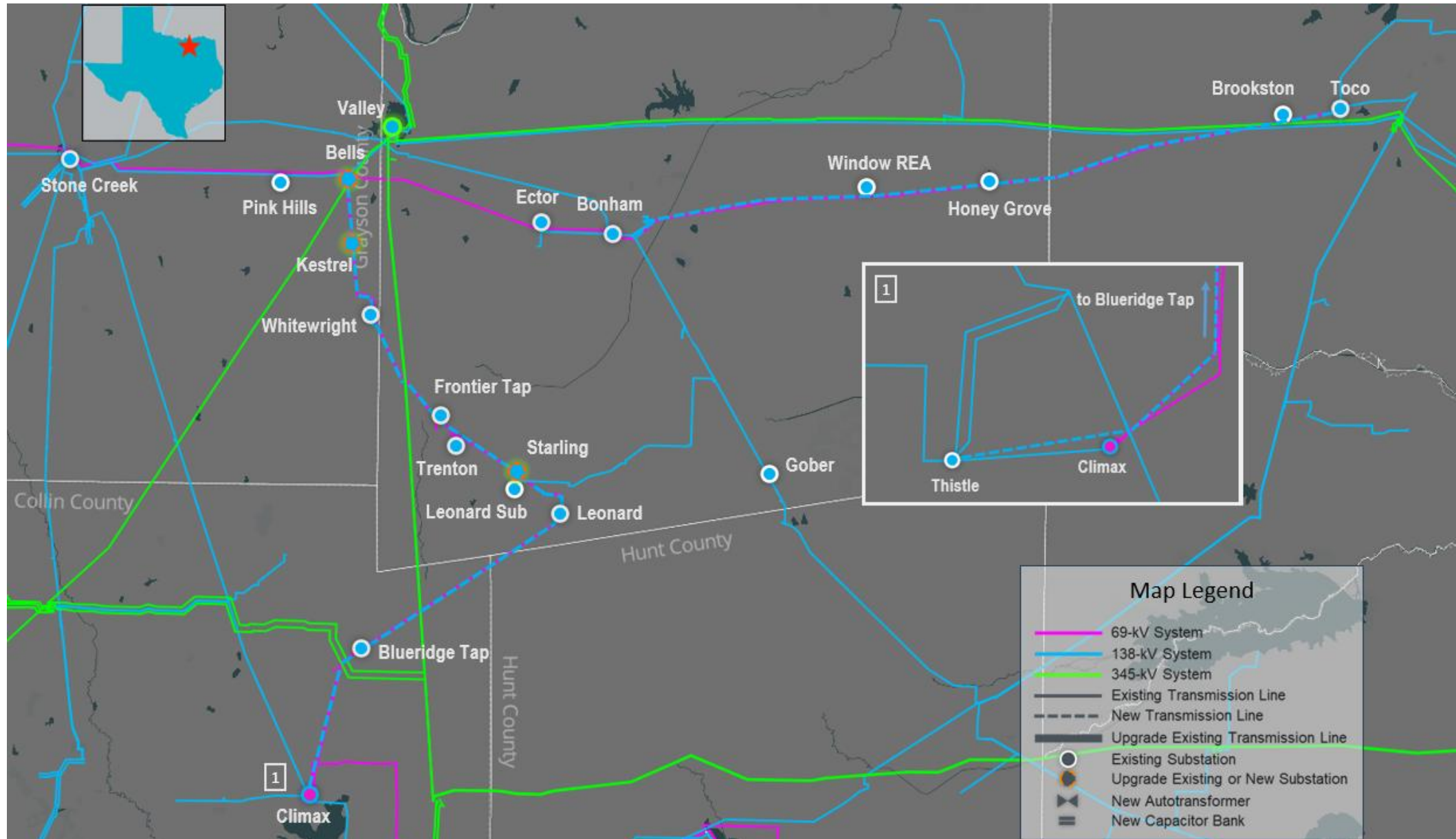


Option 3 – Summary of Upgrades

Overall Project Summary

- Two (2) new 138-kV substations
- Rebuild/upgrade approximately 65.9 miles of 69-kV transmission lines to 138-kV
- Convert approximately 34.2 miles of 69-kV transmission lines to 138-kV (Rebuild is done in 25RPG030)
- Rebuild three (3) 138-kV substations
- Eliminate the existing 138/69-kV autotransformers at Stone Creek, Bonham, and Toco switching stations
- Detailed description in [Appendix D3](#)

Option 4 – ERCOT Alternative Option



Option 4 – Summary of Upgrades

Overall Project Summary

- Three (3) new 138-kV substations
- Construct approximately 0.37 miles of new 138-kV transmission line on double-circuit capable structures with one circuit in place
- Rebuild/upgrade approximately 39.8 miles of 69-kV transmission lines to 138-kV
- Convert approximately 34.2 miles of 69-kV transmission lines to 138-kV (Rebuild is done in 25RPG030)
- Rebuild/upgrade four (4) 138-kV substations
- Eliminate the existing 138/69-kV autotransformer Toco switching station
- Re-terminate the Whitewright to TNMP Bells transmission line to the new Bells 138-kV Switch
- Detailed description in [Appendix D4](#)

Results of Reliability Assessment – Options

ERCOT conducted steady-state load flow analysis for the all the option cases according to the NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Criteria to evaluate the proposed project and alternative options

Option	N-0		N-1		(G-1+N-1)*		(X-1+N-1)*		Unsolved Power Flows
	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	
1	None	None	None	None	None	None	None	None	None
2	None	None	1	None	6	None	None	None	None
3	None	None	None	None	None	None	None	None	None
4	None	None	None	None	None	None	None	None	None

* See [Appendix C](#) for the list of generators and transformers being tested for (G-1+N-1) and (X-1+N-1) analyses, respectively

Key Takeaway: Option 1, Option 3, and Option 4 observed no reliability violations while Option 2 continued to show violations

Results of Maintenance Outage Evaluation – Options

ERCOT conducted maintenance outage analyses on Option 1, Option 3, and Option 4 which resolved reliability violations under N-1, (G-1+N-1), and (X-1+N-1)

- Load level in the North Weather Zone was scaled down based on the historical non-summer peak data to 81.7%, in order to mimic the non-summer peak load condition
- Based on the review of system topology of the study area, ERCOT tested N-2 contingency combinations, and then tested all applicable contingency violations with system adjustments (N-1-1)

Option	Thermal Overloads	Voltage Violation	Unsolved Power Flow
1	None	None	None
2	n/a	n/a	n/a
3	None	27	2
4	None	None	None

Key Takeaway: Voltage violations were observed in the N-1-1 analysis for Option 3 while Option 1 and Option 4 observed no violations.

Short-Listed Options

Based on the reliability results, Option 1 and Option 4 were short-listed for further evaluation

- Long-Term Load-Serving Capability Assessment
- Congestion Analysis
- Cost Estimate and Feasibility Assessment

Long-Term Load-Serving Capability Assessment

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

- Adjusted load up in the study area, excluding non-scalable loads in the area
- Adjusted conforming load down outside of the study area to balance power
- Based on N-1 contingency

Option	Incremental Load-Serving Capability (~MW)
1	783
4	511

Key Takeaway: Option 1 provides more incremental load-serving capability than Option 4

Congestion Analysis

ERCOT conducted a congestion analysis on the two short-listed options to compare and identify any potential impact on system congestion, using the 2025 RTP 2030 sensitivity economic base case

- Option 1 did not result in any new congestion in the study area
- Option 4 resulted in significant new congestion in the study area

Option	Monitored Line	Congestion Rental (\$Million)	Percent of Time Congestion
1	Bonham to Bonham NW 138-kV line	None	None
4	Bonham to Bonham NW 138-kV line	14.7	17.4%

Key Takeaway: Option 1 did not result in any new congestion in the study area

Cost Estimate and Feasibility Assessment

Transmission Service Providers (TSPs) performed feasibility assessments and provided cost estimates for the two short-listed options

Option	Cost Estimates (~\$Million)	CCN Required	Feasibility	Expected ISD
1	249.8	No	Yes	TNMP: December 2028 Oncor: December 2030
4	180.7	No	Yes	TNMP: December 2028 Oncor: December 2030

The cost difference between Option 1 and Option 4 is associated with rebuilding the existing 69-kV transmission line from Stone Creek Switch to Bells to Ector to Bonham Switch, approximately 26.1 miles. Based on input from Oncor, this 69-kV transmission line is approaching the end of service life. It was originally constructed in the 1960s using old wood and steel poles, and the conductor along the line has a vintage year of 1938. Given the line's age and condition, it is vulnerable to storm and wind damage, which could impact the reliability and continuity of service.

Key Takeaway:

- Option 4 is the least cost option
- The increment cost for Option 1 is driven by the rebuild of the existing 69-kV transmission line from Stone Creek Switch to Bells to Ector to Bonham Switch, approximately 26.1 miles. Based on the input from Oncor, this line is approaching the end of service

Comparison of Short-Listed Options

	Option 1	Option 4
Meets ERCOT and NERC Reliability Criteria	Yes	Yes
Improves Long-Term Load-Serving Capability (~MW)	783	511
Impact on System Congestion in the Study Area	None	Significant New Congestion
CCN Needed	No	No
Construction Feasibility (Based on TSP assessment)	Yes	Yes
Capital Cost Estimates* (~\$M)	249.8	180.7
Expected ISD (Year)	TNMP: December 2028 Oncor: December 2030	TNMP: December 2028 Oncor: December 2030

* Cost estimates were provided by the TSPs

Key Takeaways:

- Both options meet ERCOT and NERC reliability criteria
- Option 1 provides more incremental load-serving capability and does not result in any new congestion in the study area
- Option 4 is the least-cost option while it creates significant new congestion in the study area

ERCOT Preferred Option

Option 1 was selected as the ERCOT preferred option because it

- Addresses the project need in the study area
- Meets both ERCOT and NERC reliability criteria
- Improves long-term load-serving capability and supports future load growth in the area
- Does not result in new congestion in the study area

Subsynchronous Oscillations (SSO) Assessment

Subsynchronous Oscillations (SSO) Assessment was conducted for the preferred option per Nodal Protocol Section 3.22.1.3

- ERCOT found no adverse SSO impacts to the existing and planned generation resources at the time of this study

Key Takeaways:

- **The ERCOT preferred option did not show any adverse SSO impacts to the existing and planned generation resources**

Additional Analyses

Generation Addition Sensitivity Analysis

- ERCOT performed a generation addition sensitivity on the preferred Option, per ERCOT Planning Guide Section 3.1.3(4)(a). Based on a review of the [August 2026 GIS report](#), nine units listed in [Appendix E](#) were added to the preferred option case. The additional resources were modeled following the 2025 RTP methodology. ERCOT determined relevant generators do not impact the preferred option

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. 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. The study case did not include load scaling as such load scaling sensitivity analysis is no longer needed

Key Takeaways:

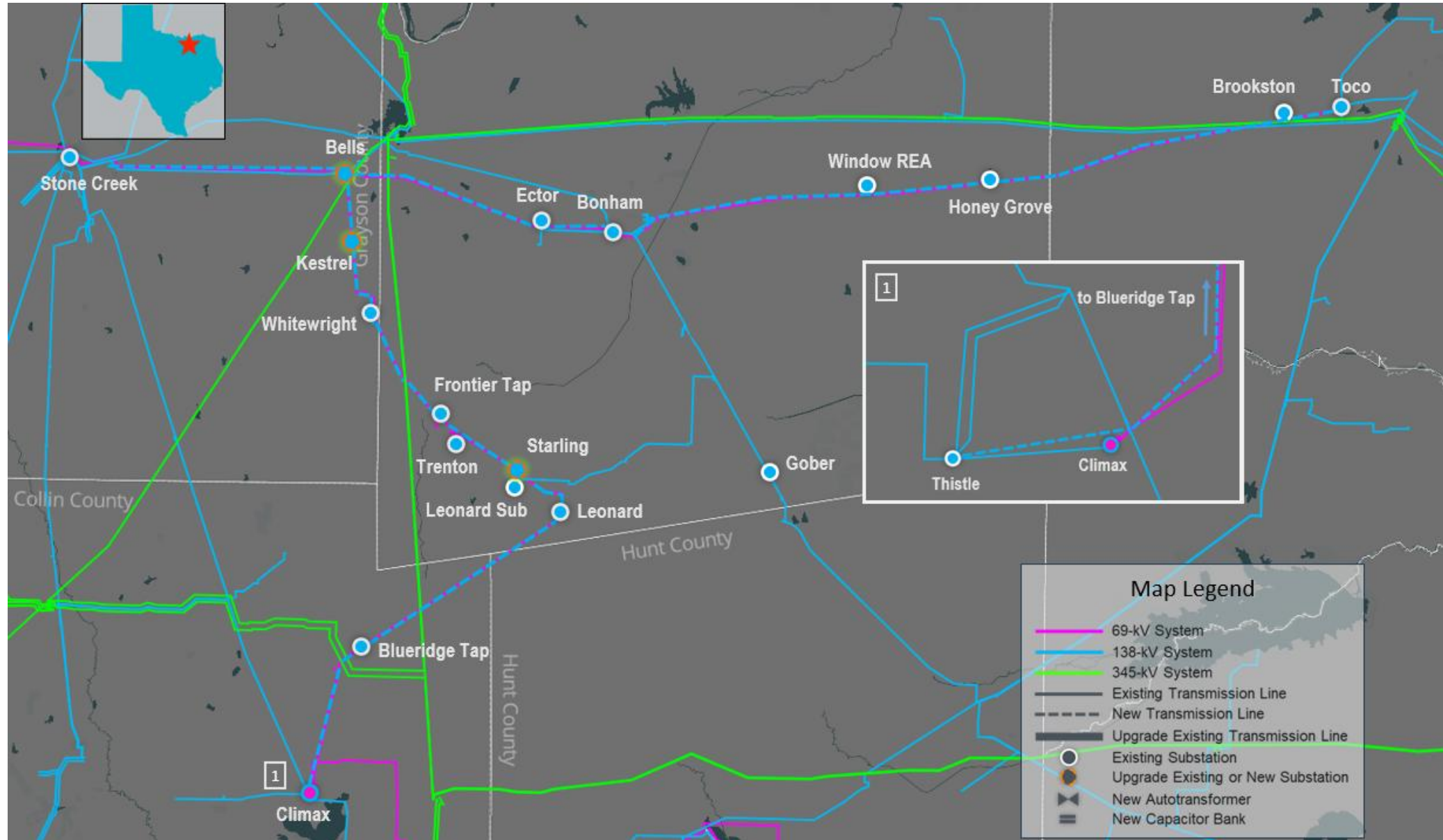
- The additional generation resources added did not impact the ERCOT preferred option reliability results
- Load Scaling Sensitivity Analysis was not needed as ERCOT adopted to have one Summer Peak Case

ERCOT Recommendation

ERCOT recommends Option 1

- Estimated Cost: approximately \$249.8 million
- Expected ISD: December 2030
- CCN filling is not required
- Option 1 Summary of Upgrades
 - Three (3) new 138-kV substations
 - Construct approximately 0.37 miles of new 138-kV transmission line
 - Rebuild/upgrade approximately 65.9 miles of 69-kV transmission lines to 138-kV
 - Convert approximately 34.2 miles of 69-kV transmission lines to 138-kV (Rebuild is done in 25RPG030)
 - Rebuild/upgrade four (4) 138-kV substations
 - Eliminate the existing 138/69-kV autotransformers at Stone Creek, Bonham, and Toco switching stations
 - Detailed description in [Appendix D1](#)

Map of ERCOT Recommendation



Deliverables and Next Step

Tentative Timelines

- EIR report to be posted in the Market Information Service (MIS) in November 2026
- EIR recommendation to Technical Advisory Committee (TAC) in November 2026
 - Post TAC material on November 11, 2026
 - Collect and consolidate questions on November 13, 2026
 - Post consolidated questions and ERCOT responses on November 16, 2026
- Seek ERCOT Board of Directors (BOD) endorsement in December 2026

Key Takeaway: Seek ERCOT BOD endorsement in December 2026

Thank you!

Questions/Comments?

Ying.Li@ercot.com

Robert.Golen@ercot.com

Learn More

www.ercot.com

Download ERCOT Mobile App



Connect With Us



facebook.com/ERCOTISO



x.com/ercot_iso



linkedin.com/company/ercot



instagram.com/ercot_iso

Appendix

- Appendix A1: Transmission Projects to Add to Base Case
- Appendix A2: Transmission to Remove from Base Case
- Appendix B: Generation to Add to Base Case
- Appendix C: G-1 Generators and X-1 Transformers List

Learn More

www.ercot.com

Download ERCOT Mobile App



Connect With Us



facebook.com/ERCOTISO



x.com/ercot_iso



linkedin.com/company/ercot



instagram.com/ercot_iso

Appendix A1: Transmission Projects to Add

TPIT/RPG	Project Name	Tier	Project ISD	County(s)
99321	Austin Ranch 138kV Capacitor Bank	Tier 4	May-27	Denton
91611	Spring to Rector 138 kV Line Upgrade	Tier 4	Sep-27	Cooke
92867	Oncor_ME_Renner Switch – Plano West Switch 138 kV Double-Circuit Line	Tier 4	May-26	Collin
92849	Oncor_ME_92849_Renner Switch 138kV Capacitor Bank	Tier 4	May-26	Collin
25RPG030	Bonham Switch to Toco Switch 69-kV Line Rebuild Project	Tier 4	Dec-28	Lamar and Fannin

Appendix A2: Transmission Projects to Remove

RTP Project ID	Project Name	County(s)
2025-N07	Toco (1703) Area 69-kV to 138-kV Line Conversion	Fannin, Lamar
2025-N06	Valley SES (1691) to Bonham Switch (1762) 138-kV Line Upgrades	Fannin
2024-N10	Bonham (1808) to Copper Head Switch (11809) 138-kV Line Upgrade	Fannin

Appendix B: New Generation Projects to Add

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
19INR0002	Grandfalls Solar	SOL	07/01/2027	175.6	Upton
21INR0265	Sisters Solar	SOL	05/31/2027	301.6	Ector
22INR0503	Tidwell Prairie II Batt	OTH	06/01/2026	203.6	Robertson
22INR0504	Barton Branch IA	OTH	03/01/2026	203.6	Robertson
24INR0136	Eagle Springs Storage	OTH	12/31/2026	33.1	Delta
24INR0137	Eagle Springs Solar	SOL	12/31/2026	77.2	Delta
24INR0442	Midnight Sun Energy Storage	OTH	06/29/2028	510.0	Crockett
24INR0485	Rutile BESS	OTH	03/31/2028	100.7	Runnels
25INR0101	Drake BESS	OTH	07/14/2026	257.3	Collin
25INR0112	August Draw Solar	SOL	06/27/2028	250.0	Reeves
25INR0368	Echols Grove, LLC	SOL	04/03/2027	201.2	Lamar
25INR0432	Brotherton Storage	OTH	05/01/2027	176.1	Anderson
25INR0628	Carolina Storage Wichita Falls	OTH	08/01/2028	202.0	Archer
26INR0255	Operation Sunshine	SOL	03/12/2028	603.2	Concho
26INR0357	Operation Sunshine Storage	OTH	03/12/2028	409.8	Concho
26INR0380	Pepper Solar Farm	SOL	09/20/2027	120.9	McLennan
26INR0530	Longview Wind	WIN	12/01/2028	352.6	Dawson
27INR0076	Bob Creek Wind	WIN	07/01/2028	240.0	Sterling
27INR0383	Windjammer Windpower	WIN	12/31/2028	292.6	Glasscock
27INR0435	Clairemont Solar 1	SOL	02/13/2029	251.8	Kent

Appendix B: New Generation Projects to Add (continued)

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
23INR0421	Bee Branch IA	OTH	06/01/2027	200.5	Robertson
25INR0143	Ariji BESS	OTH	06/28/2027	100.3	Howard
25INR0430	Hackberry Creek Solar	SOL	07/01/2028	175.5	Mitchell
26INR0033	Fairway Storage	OTH	09/24/2027	120.3	Freestone
27INR0313	Spindletop Solar	SOL	12/29/2027	286.0	Nacogdoches
28INR0176	Gail Mountain Solar	SOL	08/25/2028	244.4	Borden
29INR0003	Aurelius Solar	SOL	06/30/2028	1124.2	Deaf Smith
29INR0004	Aurelius Wind	WIN	06/30/2028	621.6	Deaf Smith
29INR0025	Skyrider Wind	WIN	07/01/2028	370.0	Pecos
29INR0040	Gusty Windpower	WIN	12/31/2028	208.5	Glasscock
29INR0147	Selenite Springs Solar	SOL	08/30/2028	253.0	Pecos
30INR0058	Springfield Solar	SOL	08/30/2028	400.0	Pecos
21INR0371	Pecan Prairie South	SOL	05/01/2027	133.0	Leon
26INR0098	Douie Solar	SOL	04/18/2028	221.2	Freestone
26INR0440	Hamby Solar	SOL	06/27/2028	205.8	Jones
28INR0013	Varadero Solar	SOL	04/01/2029	206.0	Limestone

Appendix C: G-1 Generators and X-1 Transformers List

Generator	Transformer
Panda Sherman Combined Cycle Train	Royse 345/138-kV Transformer
Coniglio Solar	Valley 345/138-kV Transformer

Appendix D1: Option 1 – TNMP Proposed Project

Project Description

- Re-terminate the Climax terminal of the existing Climax to Blueridge Tap 69-kV transmission line into Thistle 138-kV substation, creating a new Thistle to Blueridge Tap 138-kV transmission line
- Upgrade the existing Thistle to Blueridge Tap to Blueridge 69-kV transmission line to operate at 138-kV, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater; increase the existing normal and emergency ratings of 36 MVA to at least 383 MVA, for approximately 7.3 miles
- Upgrade the existing Blueridge to Leonard to Trenton to Frontier to Whitewright to Bells 69-kV transmission line to operate at 138-kV, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater; increase the existing normal and emergency ratings of 43 MVA to at least 383 MVA, for approximately 32.5 miles
- Construct a new Starling 138-kV substation by cutting into the upgraded Leonard to Trenton 138-kV transmission line, approximately 3 miles from Leonard, initially configured with three 138-kV, 3000 A circuit breakers in a three-breaker ring bus arrangement. The ultimate build-out will transition to a breaker-and-a-half scheme
- Construct a new Kestrel 138-kV substation by cutting into the upgraded Whitewright to Bells 138-kV transmission line, approximately 3.55 miles from Bells, initially configured with three 138-kV, 3000 A circuit breakers in a three-breaker ring bus arrangement. The ultimate build-out will transition to a breaker-and-a-half scheme
- Construct a new Starling to Leonard Sub 138-kV transmission line, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater with normal and emergency ratings of at least 383 MVA, for approximately 0.37 miles. Upgrade the existing Leonard Sub 138-kV substation in a three-breaker ring bus arrangement

Appendix D1: Option 1 – TNMP Proposed Project (continued)

Project Description

- Operate the 138-kV line segment from Trenton to Starling to Leonard as normally closed
- Eliminate the existing 138/69-kV autotransformers at Stone Creek, Bonham, and Toco switching stations
- Establish a new Bells 138-kV Switch near the existing Bells 69-kV substation by installing three 138-kV, 3200 A circuit breakers in a ring bus arrangement
- Rebuild the existing Bonham 138-kV Switch by installing eight 138-kV, 3200 A circuit breakers in a breaker-and-a-half bus arrangement
- Rebuild the existing Windom REA 69-kV substation into Windom REA 138-kV Switch by installing three 138-kV, 3200 A circuit breakers in a ring bus arrangement
- Upgrade the existing Windom Sub 69-kV substation to 138-kV
- Rebuild the existing 69-kV transmission line from Stone Creek Switch to Bells to Ector to Bonham Switch, on double-circuit-capable structures with one circuit in place, using a conductor rated at 2569 A or greater and operated at 138-kV; increase the existing normal and emergency ratings of 60 MVA to at least 614 MVA, for approximately 26.1 miles
- Convert the existing 69-kV transmission line from Bonham Switch to Windom REA to Honey Grove to Brookston to Toco Switch to operate at 138-kV and upgrade line terminal equipment to the normal and emergency ratings of at least 614 MVA

Appendix D2: Option 2 – ERCOT Alternative Option

Project Description

- Re-terminate the Climax terminal of the existing Climax to Blueridge Tap 69-kV transmission line into Thistle 138-kV substation, creating a new Thistle to Blueridge Tap 138-kV transmission line
- Upgrade the existing Thistle to Blueridge Tap to Blueridge 69-kV transmission line to operate at 138-kV, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater; increase the existing normal and emergency ratings of 36 MVA to at least 383 MVA, for approximately 7.3 miles
- Upgrade the existing Blueridge to Leonard to Trenton to Frontier to Whitewright to Bells 69-kV transmission line to operate at 138kV, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater; increase the existing normal and emergency ratings of 43 MVA to at least 383 MVA, for approximately 32.5 miles
- Construct a new Starling 138-kV substation by cutting into the upgraded Leonard to Trenton 138-kV transmission line, approximately 3 miles from Leonard, initially configured with three 138-kV, 3000 A circuit breakers in a three-breaker ring bus arrangement. The ultimate build-out will transition to a breaker-and-a-half scheme
- Construct a new Kestrel 138-kV substation by cutting into the upgraded Whitewright to Bells 138-kV transmission line, approximately 3.55 miles from Bells, initially configured with three 138-kV, 3000 A circuit breakers in a three-breaker ring bus arrangement. The ultimate build-out will transition to a breaker-and-a-half scheme
- Construct a new Starling to Leonard Sub 138-kV transmission line, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater with normal and emergency ratings of at least 383 MVA, for approximately 0.37 miles. Upgrade the existing Leonard Sub 138-kV substation in a three-breaker ring bus arrangement

Appendix D2: Option 2 – ERCOT Alternative Option (continued)

Project Description

- Operate the 138-kV line segment from Trenton to Starling to Leonard as normally closed
- Eliminate the existing 138/69-kV autotransformer at Stone Creek
- Establish a new Bells 138-kV Switch near the existing Bells 69-kV substation by installing three 138-kV, 3200 A circuit breakers in a ring bus arrangement
- Rebuild the existing Bonham 138-kV Switch by installing eight 138-kV, 3200 A circuit breakers in a breaker-and-a-half bus arrangement
- Rebuild the existing 69-kV transmission line from Stone Creek Switch to Bells to Ector to Bonham Switch, on double-circuit-capable structures with one circuit in place, using a conductor rated at 2569 A or greater and operated at 138-kV; increase the existing normal and emergency ratings of 60 MVA to at least 614 MVA, for approximately 26.1 miles

Appendix D3: Option 3 – ERCOT Alternative Option

Project Description

- Re-terminate the Climax terminal of the existing Climax to Blueridge Tap 69-kV transmission line into Thistle 138-kV substation, creating a new Thistle to Blueridge Tap 138-kV transmission line
- Upgrade the existing Thistle to Blueridge Tap to Blueridge 69-kV transmission line to operate at 138-kV, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater; increase the existing normal and emergency ratings of 36 MVA to at least 383 MVA, for approximately 7.3 miles
- Upgrade the existing Blueridge to Leonard to Trenton to Frontier to Whitewright to Bells 69-kV transmission line to operate at 138kV, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater; increase the existing normal and emergency ratings of 43 MVA to at least 383 MVA, for approximately 32.5 miles
- Construct a new Kestrel 138-kV substation by cutting into the upgraded Whitewright to Bells 138-kV transmission line, approximately 3.55 miles from Bells, initially configured with three 138-kV, 3000 A circuit breakers in a three-breaker ring bus arrangement. The ultimate build-out will transition to a breaker-and-a-half scheme

Appendix D3: Option 3 – ERCOT Alternative Option (continued)

Project Description

- Operate the 138-kV line segment from Trenton to Starling to Leonard as normally closed
- Eliminate the existing 138/69-kV autotransformers at Stone Creek, Bonham, and Toco switching stations
- Establish a new Bells 138-kV Switch near the existing Bells 69-kV substation by installing three 138-kV, 3200 A circuit breakers in a ring bus arrangement
- Rebuild the existing Bonham 138-kV Switch by installing eight 138-kV, 3200 A circuit breakers in a breaker-and-a-half bus arrangement
- Rebuild the existing Windom REA 69-kV substation into Windom REA 138-kV Switch by installing three 138-kV, 3200 A circuit breakers in a ring bus arrangement
- Upgrade the existing Windom Sub 69-kV substation to 138-kV
- Rebuild the existing 69-kV transmission line from Stone Creek Switch to Bells to Ector to Bonham Switch, on double-circuit-capable structures with one circuit in place, using a conductor rated at 2569 A or greater and operated at 138-kV; increase the existing normal and emergency ratings of 60 MVA to at least 614 MVA, for approximately 26.1 miles
- Convert the existing 69-kV transmission line from Bonham Switch to Windom REA to Honey Grove to Brookston to Toco Switch to operate at 138-kV and upgrade line terminal equipment to the normal and emergency ratings of at least 614 MVA

Appendix D4: Option 4 – ERCOT Alternative Option

Project Description

- Re-terminate the Climax terminal of the existing Climax to Blueridge Tap 69-kV transmission line into Thistle 138-kV substation, creating a new Thistle to Blueridge Tap 138-kV transmission line
- Upgrade the existing Thistle to Blueridge Tap to Blueridge 69-kV transmission line to operate at 138-kV, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater; increase the existing normal and emergency ratings of 36 MVA to at least 383 MVA, for approximately 7.3 miles
- Upgrade the existing Blueridge to Leonard to Trenton to Frontier to Whitewright to Bells 69-kV transmission line to operate at 138kV, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater; increase the existing normal and emergency ratings of 43 MVA to at least 383 MVA, for approximately 32.5 miles
- Construct a new Starling 138-kV substation by cutting into the upgraded Leonard to Trenton 138-kV transmission line, approximately 3 miles from Leonard, initially configured with three 138-kV, 3000 A circuit breakers in a three-breaker ring bus arrangement. The ultimate build-out will transition to a breaker-and-a-half scheme
- Construct a new Kestrel 138-kV substation by cutting into the upgraded Whitewright to Bells 138-kV transmission line, approximately 3.55 miles from Bells, initially configured with three 138-kV, 3000 A circuit breakers in a three-breaker ring bus arrangement. The ultimate build-out will transition to a breaker-and-a-half scheme
- Construct a new Starling to Leonard Sub 138-kV transmission line, on double-circuit capable structures with one circuit in place, using a conductor rated at 1600 A or greater with normal and emergency ratings of at least 383 MVA, for approximately 0.37 miles. Upgrade the existing Leonard Sub 138-kV substation in a three-breaker ring bus arrangement

Appendix D4: Option 4 – ERCOT Alternative Option (continued)

Project Description

- Operate the 138-kV line segment from Trenton to Starling to Leonard as normally closed
- Eliminate the existing 138/69-kV autotransformer at Toco switching station
- Establish a new Bells 138-kV Switch, cutting into the existing Valley to Pink Hills 138-kV transmission line, near the existing Bells 69-kV substation by installing three 138-kV, 3200 A circuit breakers in a ring bus arrangement
- Rebuild the existing Bonham 138-kV Switch by installing eight 138-kV, 3200 A circuit breakers in a breaker-and-a-half bus arrangement
- Rebuild the existing Windom REA 69-kV substation into Windom REA 138-kV Switch by installing three 138-kV, 3200 A circuit breakers in a ring bus arrangement
- Upgrade the existing Windom Sub 69-kV substation to 138-kV
- Convert the existing 69-kV transmission line from Bonham Switch to Windom REA to Honey Grove to Brookston to Toco Switch to operate at 138-kV and upgrade line terminal equipment to the normal and emergency ratings of at least 614 MVA
- Re-terminate the Whitewright to TNMP Bells transmission line to the new Bells 138-kV Switch

Appendix E – New Generation Projects Added for Generation Sensitivity Analysis

GINR	Project Name	Fuel	Project COD	Max Capacity (~MW)	County
22INR0281	Pink Solar SLF	SOL	07/31/2029	152.4	Hunt
23INR0441	Bug Tussle Wind Project	WIN	09/18/2028	396.8	Lamar
24INR0326	Blarney Solar	SOL	10/01/2027	81.5	Hopkins
25INR0164	Star Dairy Solar	SOL	07/12/2027	115.6	Lamar
25INR0204	Cedar Range Solar	SOL	09/17/2027	150.6	Hopkins
25INR0227	SERENGETI SOLAR	SOL	09/18/2028	76.2	Delta
25INR0334	Star Dairy Storage	OTH	07/12/2027	205.2	Lamar
25INR0371	McMurtre Storage	OTH	12/31/2027	176.1	Hunt
26INR0409	Lucky 7 Solar	SOL	09/20/2027	101.4	Hopkins