- Tap new Reiter 138-kV Switch into existing Odessa EHV to Moss 138-kV transmission line with, approximately 0.2 miles, new transmission line segment rated to at least 614 MVA in a new ROW
- Tap new Reiter 138-kV Switch into existing Odessa EHV to Wolf 138-kV transmission line with, approximately 0.1 miles, new transmission line segment rated to at least 614 MVA in new ROW
- Upgrade Tesoro 345-kV Switch by adding two new breaker-and-a-half rungs with two new breakers rated to at least 2988 MVA on each of the two new rungs
- Construct two new Reiter to Tesoro 345-kV transmission lines, with conductors rated to at least 2988 MVA, in new (estimated 4.0 miles) ROW, installed on new, common double-circuit towers
- Rebuild Morgan Creek (Cattleman) to Odessa EHV 345-kV double-circuit transmission lines, with conductors rated to at least 2988 MVA, in existing (estimated 88.7 miles) ROW installed on common double-circuit towers

The recommended project is a Tier 1 project estimated to cost $1.12 Billion. The estimated cost reflects the fact that the vast majority of the work necessary to complete the various project components will need to be performed on energized transmission elements and/or will require construction of temporary by-pass transmission facilities. The project is recommended for construction to meet a summer 2028 ISD. However, Oncor has advised that the projected in-service date may change based on requirements for various approvals, ROW acquisition and construction progress.

Multiple Certificate of Convenience and Necessity (CCN) filings will be required for this transmission project. Oncor will work with ERCOT as early as practical to develop outage plans needed for construction and implement Constraint Management Plans (CMP) based on summer 2028 operational conditions.

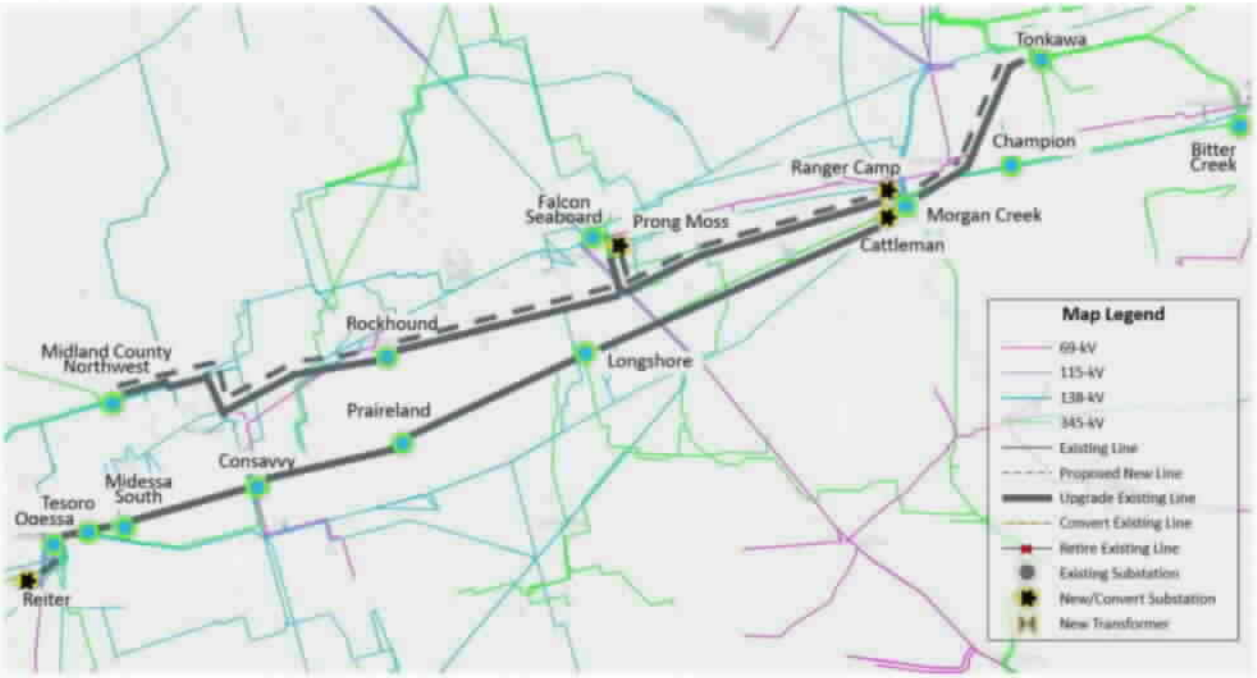

Figure E.1: Map of Recommended Upgrades

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1 Introduction

As part of the continuing efforts to address challenges in the Permian Basin, ERCOT completed the Permian Basin Load Interconnection Study (PBLI)[2] in December 2021 through extensive review and input by TSPs and stakeholders.

The PBLI identified the reliability challenges and a set of transmission upgrades, especially long lead time transmission upgrades, to connect and reliably serve the existing and projected oil and gas loads in the Permian Basin area utilizing the demand forecast from the IHS Markit study[3]. The IHS Markit study is a customer demand study performed by IHS Markit, which provides an in-depth analysis of the oil and gas industry and provides an electricity demand forecast in the Permian area through 2030. According to the IHS Markit study report, the demand forecast was based on geology and resource assessment, industry intelligence, oil and gas expertise, commercial considerations, translations of historical and forecasted oil and gas activities into electric load demands in every single square mile in the Permian Basin area.

As shown in Appendix A, the Permian Basin Load Interconnection Study identified both preferred and placeholder transmission upgrades and stated that "If the preferred upgrades identified in [PBLI] are submitted to Regional Planning Group (RPG) for review, ERCOT may use [PBLI] as part of the ERCOT Independent Review" Some components of PBLI "Preferred upgrades" have already been submitted and approved by ERCOT and the RPG. The Oncor West Texas 345-kV Infrastructure Rebuild Project presents and re-confirms justification for PBLI 'Preferred' Projects IDs 1, 2, 3 and 25.

Oncor submitted the West Texas 345-kV Infrastructure Rebuild Project for RPG review to address load growth, load integration requests and the need to rebuild aging facilities. This submittal is provided in Appendix B.

This RPG project has an estimated cost of $1.12 Billion and is classified as a Tier 1 project pursuant to Protocol Section 3.11.4.3. The estimated cost reflects the fact that the vast majority of the work necessary to complete the various project components associated with this project will need to be performed on energized transmission elements and/or will require construction of temporary by-pass transmission facilities. The project is recommended for construction to meet a summer 2028 in-service date (ISD). However, Oncor has advised that the projected ISD may change based on requirements for various approvals, right-of-way (ROW) acquisition and construction progress.

Multiple Certificate of Convenience and Necessity (CCN) filings will be required for this transmission project. Oncor has committed to work with ERCOT as necessary to develop and implement Constraint Management Plans based on summer 2028 operational conditions.

Since the primary components of the West Texas 345-kV Infrastructure project have already been analyzed and identified as preferred upgrades in the Permian Basin Load Interconnection Study, ERCOT conducted the independent review of this RPG project by updating study results and assumptions to check if any recent system changes would potentially alter or modify the projects recommended in these studies. The following sections describe the details of the updated study assumptions, methodology, and the results of the ERCOT Independent Review.

[2] https://www.ercot.com/gridinfo/planning

[3] ERCOT Letter to Commissioners - Follow-up Status Update on Permian

2 Study Assumptions and Methodology

ERCOT reviewed the RPG project submitted by Oncor and confirmed the submitted project aligns with the Permian Basin Load Interconnection 'Preferred' Projects IDs 1, 2, 3 and 25. As such, for this independent review, ERCOT utilized the study results from the 2021 Permian Basin Load Interconnection Study. Furthermore, ERCOT reviewed the 2023 RTP final reliability case to confirm the project need.

2.1 Study Assumptions for Reliability Analysis

ERCOT conducted the Permian Basin Load Interconnection Study in 2021 based on criteria contained in NERC reliability standard TPL-001-4, ERCOT Nodal Protocol and Planning Guide. The Permian Basin Load Interconnection also examined a number of transmission upgrade options to address the aggregate reliability needs within the Permian Basin. For this reason, no additional options were identified and examined for this independent review.

The following sections describe the study assumptions of this review using a 2023 RTP final case.

2.1.1 Steady-State Study Base Case

A Final 2023 RTP case, published on the Market Information System (MIS) on December 22, 2023, was used as reference case. The 2028 Summer season was selected for the study. The steady-state study base case for the West and Far West Weather Zones was constructed by updating transmission, generation, and loads and using the following 2028 Summer Peak Load Flow case as reference:

- 2023RTP_2028_SUM_WFW_12222023[1]

2.1.2 Transmission Topology

Transmission projects listed in Table 2.1, identified in the 2023 RTP as placeholders for West Texas 345-kV Infrastructure Rebuild Project, were removed to develop the study base case.

[1] 2023RTP_Final_Reliability

Table 2.1 Transmission Projects Removed from Study Base Case

RTP Project ID	Project Name	TSP	County
2021-FW19	Morgan Creek SES - Longshore Switch 345-kV Line Upgrade	ONCOR	Mitchell, Howard
2022-WFW2	Midessa South SW - Consavvy - Longshore Switch - Morgan Creek SES 345-kV Line Upgrades	ONCOR	Midland, Howard, Mitchell
2023-WFW2	Morgan Creek SES - Falcon Seaboard - Midland East 345-kV Line Upgrade	ONCOR	Scurry
2023-W12	Morgan Creek SES - Tonkawa 345-kV Line Rebuild	ONCOR	Mitchell

Transmission projects within the study area with ISD by June 2028 were added to the study base case. The ERCOT Transmission Project Information and Tracking (TPIT)[5] report from October 2023 was used as reference. The added TPIT projects are listed in Table 2.2 below.

Table 2.2 Transmission Projects Added to Study Base Case

TPIT Number	Project Name	County	Projected In-service Date	Planning Charter Tier
77146	Reconductor WNK-AAT-MDT-FSH	Winkler	Nov-23	Tier 4
70964	WETT 345 kV Volta witch	Howard	Jan-24	Tier 3
71968	Midkiff - Pemkiff 138 kV Line	Upton	May-24	Tier 4
73434	Shaw 138 kV POD	Reagan	May-24	Tier 4
76212	Model Coachwhip Sub	Ward	May-24	Tier 4
73408	Odysseus: Build new 345 kV Station	Coke	Oct-24	Tier 4
71960	Upgrade Grady - Expanse 138 kV Line	Martin	Dec-24	Tier 4
71989	Big Spring West - Stanton East 138 kV Line	Martin	Dec-24	Tier 4
73043	Peck – Driver 138-kV Line	Glasscock	Dec-24	Tier 2
76686	Add Hog Mountain 138 kV POD	Glasscock	Dec-24	Tier 4
76232	Reconductor Mivida-Coachwhip-Fishhook 2045 ACCC	Ward	May-26	Tier 4
76291	Upgraded Cedarville–BoneSpringsTap–Fishhook	Ward	May-26	Tier 4
76293	Upgraded Cedvale-MiDiva138KV	Ward	May-26	Tier 4
77320	Add CapBANK in COYANOSA	Ward	Jun-26	Tier 4
77803 77807	TNMP Silverleaf and Cowpen 345/138-kV Stations	Reeves, Ward	Jun-27	Tier 1
73368	Grey Well Draw - Buffalo 138 kV Second Circuit	Martin, Midland	Dec-24	Tier 3
78374	Rockhound 345/138-kV Switching Station	Martin, Midland	Dec-24	Tier 3

2.1.3 Generation

Based on the December 2023 Generator Interconnection Status (GIS) report posted on the ERCOT website in January 2024[6], generator additions planned to connect to the study area, before June 2028,

[5] https://www.ercot.com/gridinfo/planning
[6] https://www.ercot.com/mp/data-products/data-product-details?id=PG7-200-ER

and meeting Planning Guide Section 6.9(1) for inclusion in the planning models, that were not in the base case, were added to the study base case. These generator additions are listed in Table 2.3. All the new generation units added to the case were dispatched consistent with the 2023 RTP methodology.

Table 2.3 Generation Units Added to Study Case

GINR Number	Project Name	County	Capacity (MW)	Fuel	Projected Commercial Operation Date
23INR0387	Pioneer DJ Wind	Midland	140.3	WIN	05/03/2024
23INR0470	BoCo BESS	Borden	155.5	OTH	06/22/2024
24INR0273	Al Pastor BESS	Dawson	100.8	OTH	09/02/2024

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

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

Bus No	Unit Name	Capacity (MW)	Weather Zone
110941	SL_SL_G1	65.0	Coast
110942	SL_SL_G2	65.0	Coast
110943	SL_SL_G3	30.0	Coast
110944	SL_SL_G4	30.0	Coast
130121	SGMTN_SIGNALM2	6.6	Far West

2.1.4 Loads

The load level of the Far West Weather Zone remains the same as in the 2023 RTP case. The loads outside of the study Weather Zone, excluding the West and Far West Weather Zones, were adjusted as necessary for power balance consistent with the 2023 RTP assumptions.

2.2 Study Assumptions for Congestion Analysis

2.2.1 Base Case

The 2028 economic final case from the 2023 RTP was used to develop a study base case for congestion analysis.

2.2.2 Transmission Topology

All RPG-approved Tier 1, 2, and 3 transmission projects in the study area as well as the Tier 4 projects in the study area expected to be in-service by 2028 were added to the study base case. The ERCOT TPIT report posted on October 2023, was used as reference. The added TPIT projects are listed in Appendix C.

2.2.3 Generation

Planned generators in the ERCOT system that met Planning Guide Section 6.9(1) conditions for inclusion in the base cases (based on the January 2024 GIS report) were added to the study base case. The added generators are listed in Appendix C.

2.2.4 Loads

Loads were maintained consistent with the 2023 RTP economic model for the year 2028.

2.3 Methodology

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

2.3.1 Contingencies and Criteria

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

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

- P0 (System Intact)
- P1, P2-1, P7 (N-1 conditions);
- P2-2, P2-3, P4, and P5 (Extra High Voltage (EHV) only);
- P3-1: G-1 + N-1 (G-1: Odessa Ector CC Train, Falcon Seaboard CC Train); and
- P6-2: X-1 + N-1 (X-1: 345/138-kV Consavvy 345/138-kV transformer, Einstein 345/138-kV transformers).

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

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

2.3.2 Study Tool

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

- PowerWorld Simulator version 23 was used for security constrained optimal power flow (SCOPF) and steady state contingency analysis
- UPLAN version 12.3.0.29978 was used to perform the congestion analysis

3 Project Need

ERCOT conducted the review of the Permian Basin Load Interconnection Study, and the 2023 RTP summer peak final reliability case based on the study assumptions and methodologies described in Section 2.

3.1 Review of the 2023 Regional Transmission Plan (RTP) Case

ERCOT evaluated the 2023 RTP 2028 Summer Peak case based on the study assumptions and methodologies described in Section 2. The study results showed thermal overloads under NERC Category P1, P2-1, P3, P6-2 and P7 contingency conditions that confirmed the reliability need and matched results from the PBLI as well as the Oncor submittal.

West Texas 345-kV Infrastructure Rebuild Project upgrade will address these thermal overloads under the N-1, G-1+N-1, X-1+N-1 contingency conditions that resulted in thermal overloads as shown in Table 3.1.

Table 3.1 Thermal Overloads in the 2023 RTP Case

Contingency Category	Thermal Overloads Base Case	Thermal Overloads West Texas 345-kV Infrastructure Rebuild Project Added
N-0 (P0)	None	None
N-1 (P1, P2-1, P7)	58 miles of 345-kV lines	None
G-1+N-1 (P3)	197 miles of 345-kV lines	None
X-1+N-1 (P6-2)	57 miles of 345-kV lines	None

3.2 Review of Permian Basin Load Interconnection Study Results

The Permian Basin Load Interconnection Study identified a set of transmission upgrades, especially long lead time local transmission upgrades, to connect and reliably serve the existing and projected oil and gas loads in the Permian Basin area utilizing the demand forecast from the IHS Markit study, which provides an in-depth analysis of the oil and gas industry and provides an electricity demand forecast in the Permian Basin area through 2030.

The results of the Permian Basin Load Interconnection Study reconfirmed the need for the West Texas 345-kV Infrastructure Rebuild Project upgrade to maintain grid reliability under N-1, G-1+N-1, X-1+N-1 contingency conditions that match those identified by the ERCOT independent review referenced in Section 3.1 of this report as well as those identified in the Oncor submittal.

More details of the Permian Basin Load Interconnection Study can be found in Appendix A while the Oncor submittal can be found in Appendix B.

4 Recommended Project

Based on this independent review and the Permian Basin Load Interconnection Study, ERCOT recommends the following project (West Texas 345-kV Infrastructure Rebuild Project):

- Construct a new Ranger Camp 345/138/69-kV substation, approximately 1.0 miles north of the existing Morgan Creek 345/138-kV Switch, with two new 600 MVA (nameplate) 345/138-kV transformers, a 14-breaker 345-kV breaker-and-a-half bus arrangement, and a 16-breaker, 138-kV breaker-and-a-half arrangement with one new 177 MVA (nameplate) 138/69-kV transformer, and a 2-breaker 69-kV single bus arrangement. All 345-kV equipment will be rated at least 2988 MVA, 138-kV at least 765 MVA and 69-kV at least 239 MVA.
  - Disconnect the following 345-kV lines at Morgan Creek and terminate at new Ranger Camp 345-kV:
    - Morgan Creek to Falcon Seaboard adding approximately 1.4 miles of new Right of Way (ROW)
    - Morgan Creek to Tonkawa adding approximately 0.94 miles of new ROW
  - Disconnect the following 138-kV transmission lines at Morgan Creek and terminate at new Ranger Camp 138-kV:
    - Morgan Creek to Eskota
    - Morgan Creek to Barber Lake West
    - Morgan Creek to Barber Lake East
    - Morgan Creek to Sun
    - Morgan Creek to Cosden
  - Disconnect the following 69-kV transmission lines at Morgan Creek and terminate at new Ranger Camp 69-kV:
    - Morgan Creek to Colorado City
    - Morgan Creek to Big Spring
  - Relocate the existing 177 MVA (nameplate) 138/69-kV transformer from Morgan Creek Switch to new Ranger Camp Switch
- Construct a new breaker-and-a-half rung with two new 345-kV breakers at Tonkawa 345-kV Switch. New breakers will be rated at least 2988 MVA
- Rebuild Morgan Creek (Ranger Camp) to Tonkawa 345-kV transmission line, replace with two new Morgan Creek (Ranger Camp) to Tonkawa 345-kV lines, with conductors rated to at least 2988 MVA, in existing (estimated 21.3 miles) ROW, installed on new, common double-circuit towers
- Construct a new Cattleman 345/138-kV Switch, approximately 2.0 miles southwest of existing Morgan Creek 345/138-kV Switch, with two new 600 MVA (nameplate) 345/138-kV transformers, a 15-breaker 345-kV breaker-and-a-half bus arrangement and a 9-breaker 138-kV breaker-and-a-half bus arrangement. All 345-kV equipment will be rated at least 2988 MVA and 138-kV at least 765 MVA
- Disconnect the following 345-kV transmission lines at Morgan Creek and terminate at new Cattleman 345-kV:

- Morgan Creek to Champion Creek/LCRA Bitter Creek double circuit transmission lines adding approximately 1.25 miles of new ROW
- Morgan Creek to LCRA Gasconades adding approximately 2.13 miles of new ROW
- Morgan Creek to Consavvy
- Morgan Creek to Longshore

- Disconnect the following 138-kV transmission lines at Morgan Creek and terminate at new Cattleman 138-kV:
  - Morgan Creek to McDonald Road using new ROW
- Construct two new Cattleman to Ranger Camp 345-kV transmission lines, with conductors rated to at least 2988 MVA, in a new (estimated 4.2 miles) ROW, installed on new, common double-circuit towers
- Rebuild Morgan Creek 138-kV Switch, in existing Morgan Creek 345/138-kV Switchyard from existing 12-breaker double-bus arrangement to a new 10-breaker 138-kV breaker-and-a-half bus arrangement. All 138-kV equipment will be rated at least 765 MVA
- Construct two new Morgan Creek to Morgan Creek CT Yard 138-kV transmission lines, with conductors rated to at least 614 MVA in existing (estimated 0.1 miles) ROW
- Construct two new Morgan Creek to Ranger Camp 138-kV transmission lines, with conductors rated to at least 614 MVA, in existing (estimated 1.2 miles) ROW, installed on new, common double-circuit towers
- Construct two new Morgan Creek to Cattleman 138-kV transmission lines, with conductors rated to at least 614 MVA, adding new (estimated 2.48 miles) ROW, installed on new, common double-circuit towers
- Construct a new Prong Moss 345-kV Switch, approximately 29.4 miles southwest of existing Morgan Creek 345/138-kV Switch, and along the existing Morgan Creek to Midland East 345-kV corridor, and approximately 7.0 miles south of the existing Falcon Seaboard generating station in a 12-breaker 345-kV breaker-and-a-half bus arrangement. All equipment will be rated at least 2988 MVA
  - Tap Prong Moss 345-kV Switch into existing Morgan Creek (Ranger Camp) to Falcon Seaboard 345-kV transmission line with, approximately 0.1 miles, new transmission line segment in new ROW
  - Tap Prong Moss 345-kV Switch into Falcon Seaboard to Midland East 345-kV transmission line with, approximately 0.1 miles, new transmission line segment in new ROW
  - Rebuild Morgan Creek (Ranger Camp) to Prong Moss, replace with two new Morgan Creek (Ranger Camp) to Prong Moss 345-kV transmission lines with conductors rated at least 2988 MVA, in existing (estimated 29.4 miles) ROW installed on new, common double-circuit towers
  - Rebuild Prong Moss to Midland East 345-kV line, replace with two new Prong Moss to Midland East 345-kV transmission lines with conductors rated at least 2988 MVA, in existing estimated 41.2 miles) ROW, installed on new, common double-circuit towers
- Rebuild Midland County Northwest 345-kV Switch bus work and terminal equipment to be rated at least 2988 MVA, add one new 2-breaker 345-kV breaker-and-a-half ring rated to at least 2988 MVA
- Rebuild Midland East to Midland County Northwest 345-kV transmission line, replace with two new Midland East to Midland County Northwest 345-kV transmission lines, with conductors rated at

least 2988 MVA, in 16.3 miles of existing ROW and 1.0 miles of new ROW, installed on new (estimated 17.3 miles) common double-circuit towers

- Rebuild Longshore 345-kV Switch, and upgrade from existing 6-breaker ring-bus configuration to a 11-breaker 345-kV breaker-and-a-half bus arrangement. All equipment will be rated at least 2988 MVA
  - Tap the rebuilt Longshore 345-kV Switch into Morgan Creek (Cattleman) to Consavvy 345-kV transmission line with approximately 0.1 miles of line in existing ROW
- Upgrade all terminal equipment at 2-breaker Midessa South 345-kV Switch to at least 2988 MVA
- Upgrade all terminal equipment at 3-breaker, ring bus, Quail East 345-kV Switch to at least 2988 MVA
- Upgrade terminal equipment on two breaker-and-a-half rungs of Odessa EHV 345-kV Switch to at least 2988 MVA
- Upgrade all terminal equipment on both single breaker terminals and main bus at existing Odessa EHV 345-kV Switch to at least 2988 MVA
- Construct a new Reiter 345/138-kV Switch, approximately 3.0 miles south of the existing Odessa EHV 345/138-kV Switch along the existing Odessa EHV to Moss/Wolf 345-kV double-circuit transmission line, with two new 600 MVA (nameplate) 345/138-kV transformers, in a 12-breaker 345-kV breaker-and-a-half bus arrangement and a 10-breaker 138-kV breaker-and-a-half bus arrangement. All 345-kV equipment will be rated at least 2988 MVA, and 138-kV at least 765 MVA
- Tap new Reiter 345-kV Switch into existing Odessa EHV to Moss & Odessa EHV to Wolf 345-kV double-circuit transmission line with, approximately 0.1 miles, new transmission line segment rated to at least 2987 MVA in new ROW
- Tap new Reiter 138-kV Switch into existing Odessa EHV to Moss 138-kV transmission line with, approximately 0.2 miles, new transmission line segment rated to at least 614 MVA in a new ROW
- Tap new Reiter 138-kV Switch into existing Odessa EHV to Wolf 138-kV transmission line with, approximately 0.1 miles, new transmission line segment rated to at least 614 MVA in new ROW
- Upgrade Tesoro 345-kV Switch by adding two new breaker-and-a-half rungs with two new breakers rated to at least 2988 MVA on each of the two new rungs
- Construct two new Reiter to Tesoro 345-kV transmission lines, with conductors rated to at least 2988 MVA, in new (estimated 4.0 miles) ROW, installed on new, common double-circuit towers
- Rebuild Morgan Creek (Cattleman) to Odessa EHV 345-kV double-circuit transmission lines, with conductors rated to at least 2988 MVA, in existing (estimated 88.7 miles) ROW installed on common double-circuit towers

5 Additional Analysis and Assessment

The recommended West Texas 345-kV Infrastructure Rebuild Project is categorized as a Tier 1 project, pursuant to ERCOT Protocol Section 3.11.4.3(1)(a). As required by Planning Guide Section 3.1.3(4), ERCOT performed generation and load sensitivity studies to identify the preferred option performance. Additionally, a Sub-Synchronous Resonance (SSR) Assessment was performed.

5.1 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 October 2023 GIS report, the following generators in the study area shown in Table 5.1 have a signed interconnection agreement (IA) but have not met all the conditions for inclusion in the case pursuant to Section 6.9(1) of the Planning Guide.

Table 5.1 Generation Units with Signed IA

GINR	Project Name	County	Fuel	Capacity (MW)
21INR0031	Indigo Solar	Fisher	Solar	125
23INR0300	Greater Bryant G Solar	Midland	Solar	42
21INR0268	Greyhound Solar	Ector	Solar	609
22INR0262	Deville Solar	Callahan	Solar	425
16INR0104	Big Sampson Wind	Crockett	Wind	400
23INR0086	Hanson Solar	Coleman	Solar	401
24INR0057	Hanson Storage	Coleman	Other	101
21INR0263	Monarch Creek Wind	Throckmorton	Wind	344
22INR0274	Crowded Star Solar II	Jones	Solar	189
21INR0207	Quantum Solar	Haskell	Solar	374
21INR0021	Green Holly Solar	Dawson	Solar	414
21INR0022	Red Holly Solar	Dawson	Solar	260
21INR0029	Green Holly Storage	Dawson	Other	50
21INR0033	Red Holly Storage	Dawson	Other	50
25INR0400	Maldives Solar (Alternate POI)	Scurry	Solar	184

These future resources did not have a material impact on the need for the West Texas 345-kV Infrastructure Rebuild Project.

5.2 Load Scaling Sensitivity Analysis

Per Planning Guide Section 3.1.3(4)(b), ERCOT evaluated the load scaling sensitivity and concluded that the load scaling assumed in the study case would not have any material impact on the project need because of the following reasons:

- The majority of the need is located in the northern section of the Far West Weather Zone, this region is remote enough from the rest of the ERCOT load as to not be affected by load scaling outside of the West and Far-West Weather Zones.
- The load scaling outside the stud area is not expected to have a material impact on the need for the West Texas 345-kV Infrastructure Rebuild Project.

5.3 Sub-synchronous resonance (SSR) Assessment

Pursuant to Protocol Section 3.22.1.3(2), ERCOT conducted an SSR screening assessment for the recommended West Texas 345-kV Infrastructure Rebuild Project and found no adverse SSR impacts to the existing and planned Generation Resources in the study area.

6 Congestion Analysis

ERCOT conducted a congestion analysis to identify any potential impact on system congestion related to the addition of the West Texas 345-kV Infrastructure Rebuild Project.

The results of the congestion analysis indicated no additional congestion in the area with the addition of the West Texas 345-kV Infrastructure Rebuild Project.

7 Conclusion

This report describes the ERCOT evaluation of the West Texas 345-kV Infrastructure Rebuild Project submitted Oncor. Based on the results of this independent review and the Permian Basin Load Interconnection Study, ERCOT recommends this RPG project to address the reliability need to accommodate the significant and rapid load growth in the area. The West Texas 345-kV Infrastructure Rebuild Project is estimated to cost $1.12 Billion and consists of the following upgrades:

- Construct a new Ranger Camp 345/138/69-kV substation, approximately 1.0 miles north of the existing Morgan Creek 345/138-kV Switch, with two new 600 MVA (nameplate) 345/138-kV transformers, a 14-breaker 345-kV breaker-and-a-half bus arrangement, and a 16-breaker, 138-kV breaker-and-a-half arrangement with one new 177 MVA (nameplate) 138/69-kV transformer, and a 2-breaker 69-kV single bus arrangement. All 345-kV equipment will be rated at least 2988 MVA, 138-kV at least 765 MVA and 69-kV at least 239 MVA.
  - Disconnect the following 345-kV lines at Morgan Creek and terminate at new Ranger Camp 345-kV:
    - Morgan Creek to Falcon Seaboard adding approximately 1.4 miles of new Right of Way (ROW)
    - Morgan Creek to Tonkawa adding approximately 0.94 miles of new ROW
  - Disconnect the following 138-kV transmission lines at Morgan Creek and terminate at new Ranger Camp 138-kV:
    - Morgan Creek to Eskota
    - Morgan Creek to Barber Lake West
    - Morgan Creek to Barber Lake East
    - Morgan Creek to Sun
    - Morgan Creek to Cosden
  - Disconnect the following 69-kV transmission lines at Morgan Creek and terminate at new Ranger Camp 69-kV:
    - Morgan Creek to Colorado City
    - Morgan Creek to Big Spring
  - Relocate the existing 177 MVA (nameplate) 138/69-kV transformer from Morgan Creek Switch to new Ranger Camp Switch
- Construct a new breaker-and-a-half rung with two new 345-kV breakers at Tonkawa 345-kV Switch. New breakers will be rated at least 2988 MVA
- Rebuild Morgan Creek (Ranger Camp) to Tonkawa 345-kV transmission line, replace with two new Morgan Creek (Ranger Camp) to Tonkawa 345-kV lines, with conductors rated to at least 2988 MVA, in existing (estimated 21.3 miles) ROW, installed on new, common double-circuit towers
- Construct a new Cattleman 345/138-kV Switch, approximately 2.0 miles southwest of existing Morgan Creek 345/138-kV Switch, with two new 600 MVA (nameplate) 345/138-kV transformers, a 15-breaker 345-kV breaker-and-a-half bus arrangement and a 9-breaker 138-kV breaker-and-a-half bus arrangement. All 345-kV equipment will be rated at least 2988 MVA and 138-kV at least 765 MVA

- Disconnect the following 345-kV transmission lines at Morgan Creek and terminate at new Cattleman 345-kV:
  - Morgan Creek to Champion Creek/LCRA Bitter Creek double circuit transmission lines adding approximately 1.25 miles of new ROW
  - Morgan Creek to LCRA Gasconades adding approximately 2.13 miles of new ROW
  - Morgan Creek to Consavvy
  - Morgan Creek to Longshore
- Disconnect the following 138-kV transmission lines at Morgan Creek and terminate at new Cattleman 138-kV:
  - Morgan Creek to McDonald Road using new ROW
- Construct two new Cattleman to Ranger Camp 345-kV transmission lines, with conductors rated to at least 2988 MVA, in a new (estimated 4.2 miles) ROW, installed on new, common double-circuit towers
- Rebuild Morgan Creek 138-kV Switch. in existing Morgan Creek 345/138-kV Switchyard from existing 12-breaker double-bus arrangement to a new 10-breaker 138-kV breaker-and-a-half bus arrangement. All 138-kV equipment will be rated at least 765 MVA
- Construct two new Morgan Creek to Morgan Creek CT Yard 138-kV transmission lines, with conductors rated to at least 614 MVA in existing (estimated 0.1 miles) ROW
- Construct two new Morgan Creek to Ranger Camp 138-kV transmission lines, with conductors rated to at least 614 MVA, in existing (estimated 1.2 miles) ROW, installed on new, common double-circuit towers
- Construct two new Morgan Creek to Cattleman 138-kV transmission lines, with conductors rated to at least 614 MVA, adding new (estimated 2.48 miles) ROW, installed on new, common double-circuit towers
- Construct a new Prong Moss 345-kV Switch, approximately 29.4 miles southwest of existing Morgan Creek 345/138-kV Switch, and along the existing Morgan Creek to Midland East 345-kV corridor, and approximately 7.0 miles south of the existing Falcon Seaboard generating station in a 12-breaker 345-kV breaker-and-a-half bus arrangement. All equipment will be rated at least 2988 MVA
  - Tap Prong Moss 345-kV Switch into existing Morgan Creek (Ranger Camp) to Falcon Seaboard 345-kV transmission line with, approximately 0.1 miles, new transmission line segment in new ROW
  - Tap Prong Moss 345-kV Switch into Falcon Seaboard to Midland East 345-kV transmission line with, approximately 0.1 miles, new transmission line segment in new ROW
  - Rebuild Morgan Creek (Ranger Camp) to Prong Moss, replace with two new Morgan Creek (Ranger Camp) to Prong Moss 345-kV transmission lines with conductors rated at least 2988 MVA, in existing (estimated 29.4 miles) ROW installed on new, common double-circuit towers
  - Rebuild Prong Moss to Midland East 345-kV line, replace with two new Prong Moss to Midland East 345-kV transmission lines with conductors rated at least 2988 MVA, in existing estimated 41.2 miles) ROW, installed on new, common double-circuit towers
- Rebuild Midland County Northwest 345-kV Switch bus work and terminal equipment to be rated at least 2988 MVA, add one new 2-breaker 345-kV breaker-and-a-half rung rated to at least 2988 MVA

- Rebuild Midland East to Midland County Northwest 345-kV transmission line, replace with two new Midland East to Midland County Northwest 345-kV transmission lines, with conductors rated at least 2988 MVA, in 16.3 miles of existing ROW and 1.0 miles of new ROW, installed on new (estimated 17.3 miles) common double-circuit towers
- Rebuild Longshore 345-kV Switch, and upgrade from existing 6-breaker ring-bus configuration to a 11-breaker 345-kV breaker-and-a-half bus arrangement. All equipment will be rated at least 2988 MVA
  - Tap the rebuilt Longshore 345-kV Switch into Morgan Creek (Cattleman) to Consavvy 345-kV transmission line with approximately 0.1 miles of line in existing ROW
- Upgrade all terminal equipment at 2-breaker Midessa South 345-kV Switch to at least 2988 MVA
- Upgrade all terminal equipment at 3-breaker, ring bus, Quail East 345-kV Switch to at least 2988 MVA
- Upgrade terminal equipment on two breaker-and-a-half rungs of Odessa EHV 345-kV Switch to at least 2988 MVA
- Upgrade all terminal equipment on both single breaker terminals and main bus at existing Odessa EHV 345-kV Switch to at least 2988 MVA
- Construct a new Reiter 345/138-kV Switch, approximately 3.0 miles south of the existing Odessa EHV 345/138-kV Switch along the existing Odessa EHV to Moss/Wolf 345-kV double-circuit transmission line, with two new 600 MVA (nameplate) 345/138-kV transformers, in a 12-breaker 345-kV breaker-and-a-half bus arrangement and a 10-breaker 138-kV breaker-and-a-half bus arrangement. All 345-kV equipment will be rated at least 2988 MVA, and 138-kV at least 765 MVA
- Tap new Reiter 345-kV Switch into existing Odessa EHV to Moss & Odessa EHV to Wolf 345-kV double-circuit transmission line with, approximately 0.1 miles, new transmission line segment rated to at least 2987 MVA in new ROW
- Tap new Reiter 138-kV Switch into existing Odessa EHV to Moss 138-kV transmission line with, approximately 0.2 miles, new transmission line segment rated to at least 614 MVA in a new ROW
- Tap new Reiter 138-kV Switch into existing Odessa EHV to Wolf 138-kV transmission line with, approximately 0.1 miles, new transmission line segment rated to at least 614 MVA in new ROW
- Upgrade Tesoro 345-kV Switch by adding two new breaker-and-a-half rungs with two new breakers rated to at least 2988 MVA on each of the two new rungs
- Construct two new Reiter to Tesoro 345-kV transmission lines, with conductors rated to at least 2988 MVA, in new (estimated 4.0 miles) ROW, installed on new, common double-circuit towers
- Rebuild Morgan Creek (Cattleman) to Odessa EHV 345-kV double-circuit transmission lines, with conductors rated to at least 2988 MVA, in existing (estimated 88.7 miles) ROW installed on common double-circuit towers

This project will require multiple CCN filings and the expected ISD for this project is summer 2028.

Appendix

Appendix A: Permian Basin Load Interconnection Study Report	ERCOT_Permian_Basin_Load_Interconne
Appendix B: Oncor West Texas 345-kV Infrastructure Rebuild Project RPG Submittal	Oncor West Texas 345 kV Infrastructur
Appendix C: Projects Added to Economics Case	Appenidx_C.pdf