- Connect the existing 138 kV lines into the new Ranger Camp Switch:
  - Morgan Creek – Eskota 138 kV Line (normal and emergency rating of 186 MVA)
  - Morgan Creek – Barber Lake West 138 kV Line (normal and emergency rating of 186 MVA)
  - Morgan Creek – Barber Lake East 138 kV Line (normal and emergency rating of 186 MVA)
  - Morgan Creek – Sun 138 kV Line (normal and emergency rating of 186 MVA)
  - Morgan Creek – Cosden 138 kV Line (normal and emergency rating of 287 MVA)
- Reroute the existing Morgan Creek – Falcon Seaboard 345 kV Line (normal and emergency rating of 956 MVA) approximately 1.4 miles, on new right-of-way (ROW), to loop into the new Ranger Camp Switch;
- Reroute the existing Morgan Creek – Tonkawa 345 kV Line (normal and emergency rating of 1072 MVA) approximately 1.7 miles, with approximately 0.76 miles of existing ROW and approximately 0.94 miles of new ROW, to loop into the new Ranger Camp Switch;
- Relocate the existing 177 MVA, 138/69 kV autotransformer from Morgan Creek Switch to the new Ranger Camp Switch;

- Establish the new Cattleman 345/138 kV Switch, approximately 2.0 miles southwest of the existing Morgan Creek 345/138 kV Switch, including two 600 MVA, 345/138 kV autotransformers. The Cattleman 345/138 kV Switch will initially be installed with (1) a 15-breaker, 345 kV, breaker-and-a-half bus arrangement, and (2) a 9-breaker, 138 kV, breaker-and-a-half bus arrangement. All terminal and associated equipment will meet or exceed 5000 A for 345 kV, and 3200 A for 138 kV;
  - Connect the existing McDonald Road – Morgan Creek 138 kV Line (normal and emergency rating of 329 MVA) into the new Cattleman Switch, using new ROW;
  - Reroute the existing Morgan Creek – Champion Creek/LCRA Bitter Creek 345 kV Double-Circuit (DCKT) Line (normal and emergency rating of 1072 MVA) approximately 2.5 miles, with approximately 1.25 miles of existing ROW and approximately 1.25 miles of new ROW, to loop into the new Cattleman Switch;
  - Reroute the existing Morgan Creek – LCRA Gasconades 345 kV Line (normal and emergency rating of 1434 MVA) approximately 2.5 miles, with approximately 0.37 miles of existing ROW and approximately 2.13 miles of new ROW, to loop into the new Cattleman Switch;
  - Connect the existing Morgan Creek – Consavvy 345 kV Line (normal and emergency rating of 1072 MVA) and the existing Morgan Creek – Longshore 345 kV Line (normal and emergency rating of 1072 MVA) into the new Cattleman Switch, using existing ROW;
- Establish the new approximately 4.2 mile Cattleman – Ranger Camp 345 kV DCKT Line (normal and emergency rating of 2987 MVA) using double-circuit capable structures with two circuits in place, using new ROW;
- Rebuild the Morgan Creek 138 kV Switch, in the existing Morgan Creek 345/138 kV Switchyard. The Morgan Creek 138 kV Switch will be rebuilt from the existing 12-breaker, 138 kV double-bus arrangement to a 10-breaker, 138 kV, breaker-and-a-half bus arrangement. All terminal and associated equipment will meet or exceed 3200 A for 138 kV. This portion of the Proposed RPG Project includes the following elements:
  - Establish two approximately 0.1 mile Morgan Creek – Morgan Creek CT Yard 138 kV Lines (normal and emergency rating of 614 MVA) using separate single-circuit capable structures with one circuit in place, using existing ROW;

- Establish a new approximately 1.2 miles Morgan Creek - Ranger Camp 138 kV DCKT Line (normal and emergency rating of 614 MVA) using double-circuit capable structures with two circuits in place, using existing ROW;
- Establish a new approximately 3.3 miles Morgan Creek - Cattleman 138 kV DCKT Line (normal and emergency rating of 614 MVA) using double-circuit capable structures with two circuits in place, using approximately 0.82 miles of existing ROW and approximately 2.48 miles of new ROW;

- Establish the new Prong Moss 345 kV Switch, approximately 29.4 miles southwest of the existing Morgan Creek 345/138 kV Switch along the existing 345 kV Morgan Creek – Midland East 345 kV Line corridor, and approximately 7.0 miles south of the existing Falcon Seaboard generating station. The Prong Moss 345 kV Switch will initially be installed with a 12-breaker, 345 kV, breaker-and-a-half bus arrangement. All terminal and associated equipment will meet or exceed 5000 A;
  - Construct an approximately 0.1 mile loop of the existing Morgan Creek – Falcon Seaboard 345 kV Line (normal and emergency rating of 956 MVA) into the new Prong Moss 345 kV Switch, approximately 7.0 miles south of Falcon Seaboard, using new ROW;
  - Construct an approximately 0.1 mile loop of the existing Falcon Seaboard – Midland East 345 kV Line (normal and emergency rating of 956 MVA) into the new Prong Moss 345 kV Switch, approximately 7.0 miles south of Falcon Seaboard, using new ROW;
  - The existing 345 kV double-circuit line from Falcon Seaboard Switch to the newly proposed location of Prong Moss 345 kV Switch will tie into the new Prong Moss 345 kV Switch but will not be rebuilt as part of this Proposed RPG Project;
- Modify the existing Tonkawa 345 kV Switch by adding one new 5000 A breaker-and-a-half rung with two new 5000 A, 345 kV circuit breakers on the new rung;
- Rebuild the existing 21.3 mile Morgan Creek – Tonkawa 345 kV Line (previously Morgan Creek – Tonkawa, now Ranger Camp – Tonkawa) by:
  - Rebuilding the existing 21.3 mile 345 kV circuit with a conductor rated 5000 A or greater (normal and emergency rating of 2987 MVA), on double-circuit capable structures with one circuit in place, using existing ROW;
  - Installing one new 21.3 mile 345 kV circuit with a conductor rated 5000 A or greater (normal and emergency rating of 2987 MVA) on the vacant side of the structures;
- Rebuild the existing 70.6 mile Morgan Creek – Midland East 345 kV Line (previously Morgan Creek – Falcon Seaboard – Midland East, now Ranger Camp – Prong Moss – Midland East) by:
  - Rebuilding the existing approximately 29.4 mile Ranger Camp – Prong Moss 345 kV circuit with a conductor rated 5000 A or greater (normal and emergency rating of 2987 MVA) using double-circuit capable structures with one circuit in place, using existing ROW;
  - Installing one new 29.4 mile Ranger Camp – Prong Moss 345 kV circuit with a conductor rated 5000 A or greater (normal and emergency rating of 2987 MVA) on the vacant side of the new structures;
  - Rebuilding the existing approximately 41.2 mile Prong Moss – Midland East 345 kV circuit with a conductor rated 5000 A or greater (normal and emergency rating of 2987 MVA) using double-circuit capable structures with one circuit in place, using existing ROW;

- Installing one new 41.2 mile Prong Moss – Midland East 345 kV circuit with a conductor rated 5000 A or greater (normal and emergency rating of 2987 MVA) on the vacant side of the new structures;

- Rebuild the existing 17.3 mile Midland East – Midland County Northwest 345 kV Line by:
  - Rebuilding the existing approximately 17.3 mile Midland East – Midland County Northwest 345 kV circuit with a conductor rated 5000 A or greater (normal and emergency rating of 2987 MVA) using double-circuit capable structures with one circuit in place, with approximately 16.3 miles of existing ROW and 1.0 mile of new ROW;
  - Installing one new 17.3 mile Midland East – Midland County Northwest 345 kV circuit with a conductor rated 5000 A or greater (normal and emergency rating of 2987 MVA) on the vacant side of the new structures;
- Rebuild the existing Midland County Northwest 345 kV Switch buswork and terminal equipment to meet or exceed 5000 A;
  - Modify the existing Midland County Northwest 345 kV Switch by adding one new 5000 A breaker-and-a-half rung with two new 5000 A, 345 kV circuit breakers on the new rung;
- Rebuild the existing 88.7 miles Morgan Creek – Odessa EHV 345 kV DCKT Line (previously Morgan Creek – Odessa EHV, now Cattleman – Odessa EHV) by:
  - Rebuilding the existing 88.7 mile Morgan Creek – Odessa EHV 345 kV DCKT Line with a conductor rated 5000 A or greater (normal and emergency rating of 2987 MVA) using double-circuit capable structures with two circuits in place, using existing ROW;
  - Convert the existing Longshore 345 kV Switch from a 6-breaker ring-bus configuration into an 11-breaker, 345 kV, breaker-and-a-half bus arrangement. All terminal and associated equipment will meet or exceed 5000 A for 345 kV;
    - Construct an approximately 0.1 mile loop of the existing Morgan Creek – Longshore Flyby – Consavvy 345 kV Line into the rebuilt Longshore 345 kV Switch;
  - Upgrade all terminal equipment at the existing 2-breaker Midessa South 345 kV Switch to meet or exceed 5000 A;
  - Upgrade all terminal equipment at the existing Quail East 345 kV Switch, 3-breaker ring bus to meet or exceed 5000 A;
  - Upgrade terminal equipment on two 345 kV breaker-and-a-half rungs of the existing Odessa EHV Switch to meet or exceed 5000 A;
  - Upgrade two 345 kV single breaker terminals and main bus at the existing Odessa EHV Switch to meet or exceed 5000 A;
- Establish the new Reiter 345/138 kV Switch, including two 600 MVA, 345/138 kV autotransformers, approximately 3.0 miles south of the existing Odessa EHV 345/138 kV Switch, along the Odessa EHV – Moss/Wolf 345 kV DCKT Line corridor. The Reiter 345/138 kV Switch will initially be installed with (1) a 12-breaker, 345 kV, breaker-and-a-half bus arrangement and (2) a 10-breaker, 138 kV, breaker-and-a-half bus arrangement. All terminal and associated equipment will meet or exceed 5000 A for 345 kV, and 3200 A for 138 kV;
  - Construct an approximately 0.2 mile loop of the existing Odessa EHV - Moss 138 kV Line (normal and emergency rating of 614 MVA) into the new Reiter 138 kV Switch, using new ROW;

- Construct an approximately 0.1 mile loop of the existing Odessa EHV - Wolf 138 kV Line (normal and emergency rating of 614 MVA) into the new Reiter 138 kV Switch, using new ROW;
- Construct an approximately 0.1 mile loop of the existing Odessa EHV – Moss & Odessa EHV – Wolf 345 kV DCKT Line (normal and emergency rating of 2987 MVA) into the new Reiter 345 kV Switch, using new ROW;

- Modify the existing Tesoro 345 kV Switch by adding two new 5000 A breaker-and-a-half rungs with two new 5000 A, 345 kV circuit breakers on each rung;
- Construct a new approximately 4.0 mile Reiter – Tesoro 345 kV DCKT Line (normal and emergency rating of 2987 MVA) using double-circuit capable structures with two circuits in place, using new ROW;

Table 3 below lists the components of this Proposed RPG Project that will likely require a CCN filing.

This Proposed RPG Project will (1) address ERCOT's identified reliability projects, (2) resolve identified thermal overloads in the ERCOT Permian Basin Load Integration study, (3) improve system operational flexibility, (4) increase system load serving capacity, (5) create an additional 345 kV source for West Texas and (6) upgrade and retire aging infrastructure.

This Tier 1 RPG project in Scurry, Mitchell, Howard, Glasscock, Martin, Midland, and Ector counties is estimated to cost $1.12 billion. The estimated cost of this RPG reflects the fact that the vast majority of the work necessary to complete the various project components associated with this submittal will need to be performed on energized transmission elements ("hot" work) and/or will require construction of temporary by-pass transmission facilities. This type of work on this project is essential for a variety of reasons.

First, obtaining clearances on the existing 345 kV lines would be impractical and risk system reliability. The analysis contained herein demonstrates that thermal violations on various 345 kV lines would occur under certain existing single-circuit 345 kV contingencies, and therefore taking clearances on the existing 345 kV lines would create unfavorable system conditions. Second, load growth in West Texas has been driven primarily by the oil and gas industry. As a result, it is becoming less scalable, because load remains relatively persistent even during off-peak periods when construction is usually performed. Third, obtaining clearances in West Texas is becoming more challenging. Clearance moratoriums are getting longer and more restricted. At times, depending on system conditions and additional work in the area, ERCOT has been required to cancel construction clearances required to perform work on a given project. Clearance cancellations present the worst of both worlds from a project timing and cost perspective, because it necessitates costly hot work but also results in cascading project schedule disruptions based on the shift or disappearance of the clearance previously relied upon in the project work sequencing. Because Oncor does not have control over clearance schedules and clearance timing, it cannot rely on obtaining the necessary clearances while still maintaining a realistic expectation to meet the summer 2028 in-service date for these projects. Thus, performing the work necessary to complete this RPG in a timely and efficient manner requires the flow of 345 kV transmission into West Texas to be uninterrupted and necessitates 'hot' work and/or temporary by-pass transmission facilities for large portions of these projects.

This project is recommended for construction to meet a summer 2028 in-service date. The projected in-service date may change based on requirements for environmental assessment, licensing requests, regulatory approval, rights-of-way acquisition and construction progress. Oncor will work with ERCOT as necessary to develop and implement Constraint Management Plans based on summer 2028 operational conditions. In addition to RPG approval, multiple Certificates of Convenience and Necessity (CCNs) will be required for portions of this Proposed RPG Project, as listed in Table 3 below.

Introduction

Oncor continues to see load growth in west Texas due to the high level of activity in the oil and gas industry. Demand is expected to continue to grow at a rapid pace, mainly driven by new loads and electrification activities, including conversion of gas-powered equipment to electrical operation or moving load from on-site generation to the grid to improve reliability. This growth forecast is supported in the ERCOT Permian Basin Load Interconnection (PBLI) Study report which states that electric load in west Texas is expected to nearly double by 2030.

In order to meet the forecasted Permian Basin load, several projects will be required. Other RPG submittals Oncor has recently submitted or plans to submit for review in the near future are:

- Midland East Area Project (accepted by RPG 3/12/21);
- Consavyy 345/138 kV Switch Project (accepted by RPG 4/4/2022);
- Lenorah/Volta 345/138 kV Switch Project (accepted by RPG 4/4/2022);
- Tesoro (fka known as Quail East) 345/138 kV Switch Project (accepted by RPG 11/7/22);
- Rockhound 345/138 kV Switch Project;
- Prong Moss 345/138 kV Switch Project
- Prairieland 345/138 kV Switch and Prairieland – Quartz Sand 138 kV Line Project; and
- Multiple projects identified in the ERCOT Delaware Basin Load Interconnection Study.

The extent of the necessary transmission system changes and upgrades requires Oncor to submit major projects well in advance of the need, as it is anticipated that the completion of the Proposed RPG Project may take 4-5 years. Oncor's Proposed RPG Project provides a roadmap to improve and reinforce the 345 kV transmission grid in West and Far West Texas. Morgan Creek Switch is an aging facility, and in order to accommodate the aforementioned projects and the increasing area demand more generally, a rebuild of Morgan Creek Switch will be essential for maintaining operational flexibility and reliability in the area. Because of land and routing constraints, the Morgan Creek Switch portion of the Proposed RPG Project will result in two new 345/138 kV switches, Ranger Camp Switch and Cattleman Switch, and one rebuilt 138 kV switch, Morgan Creek Switch. Additionally, the ERCOT Permian Basin Load Interconnection Study recommended the existing single-circuit 345 kV Line from Tonkawa – Morgan Creek – Midland County Northwest, be rebuilt as a double-circuit 345 kV Line.

Figure 1 identifies the approximate location of the Proposed RPG Project, while Figure 2 provides a simplified one-line diagram illustrating the existing configuration of Morgan Creek Switch and adjacent facilities prior to the Proposed RPG Project.

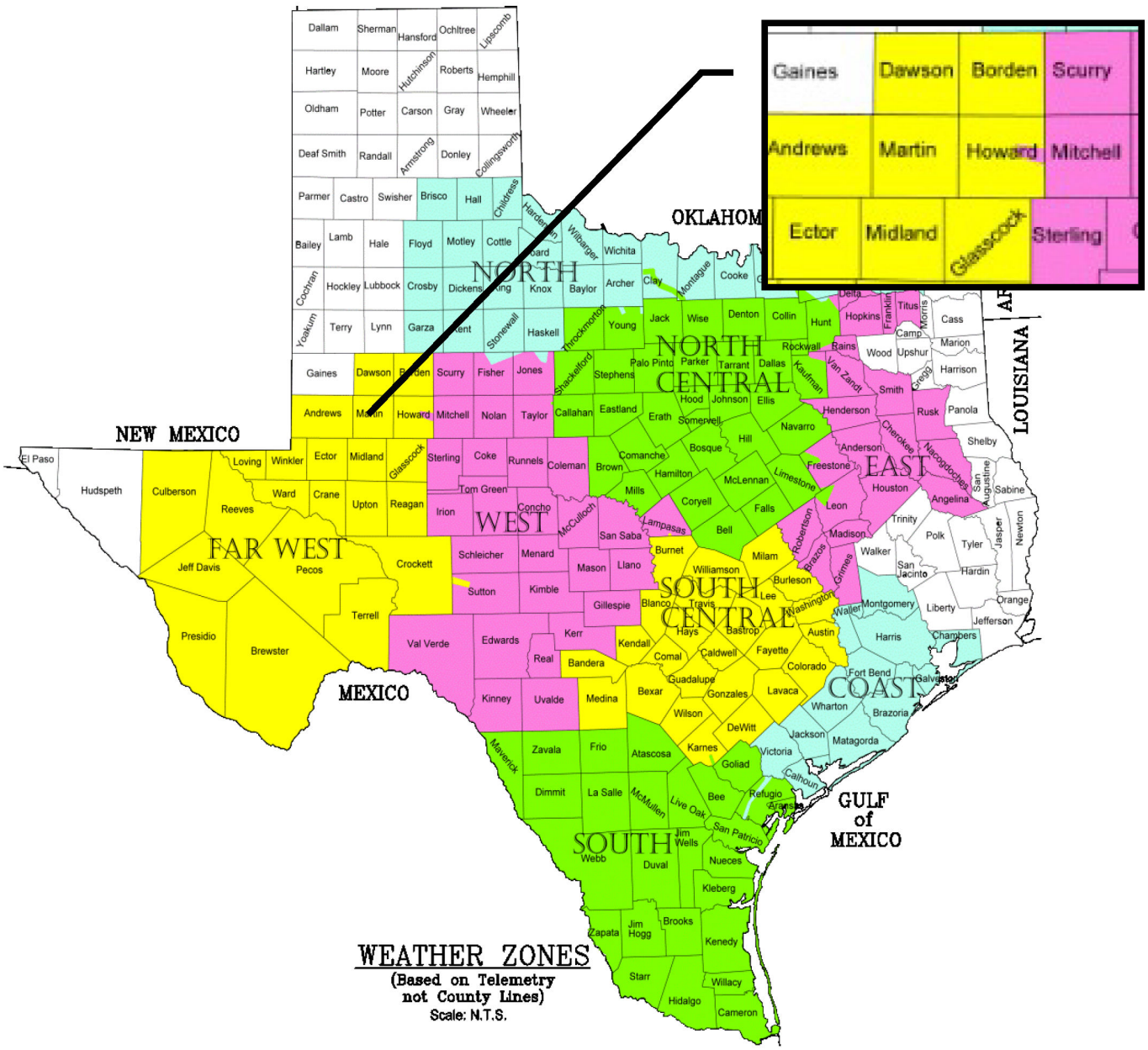

Figure 1. Proposed Project Approximate Location

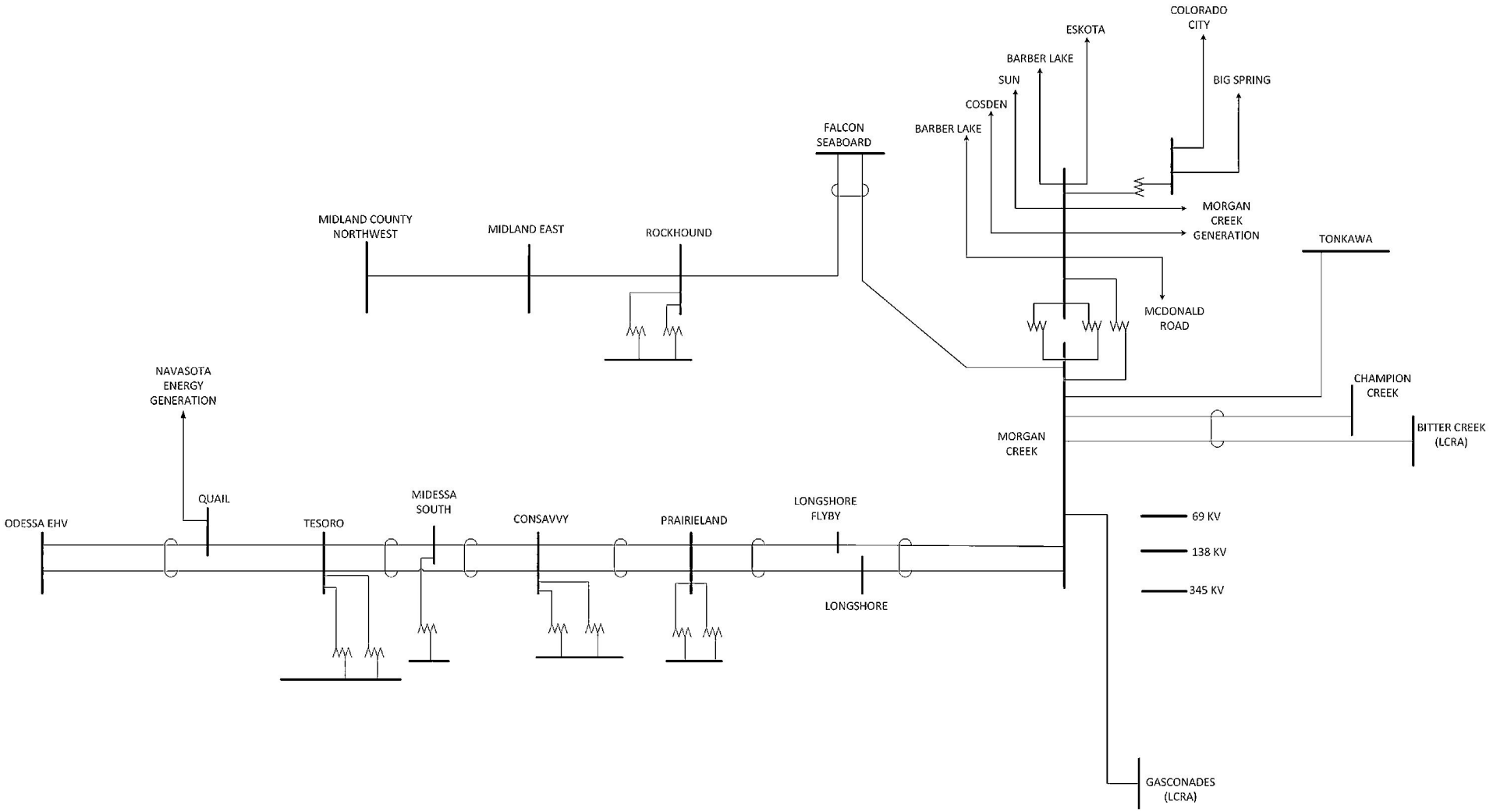

Figure 2. West Texas 345 kV Infrastructure Rebuild Pre-Project Configuration

Purpose and Necessity

The ERCOT Permian Basin Load Interconnection Study and Oncor's analysis identified several transmission upgrades that will be necessary to connect oil and gas loads in the Permian Basin area. The Proposed RPG Project will be necessary to accommodate the upgrades identified in Oncor's analysis and in the ERCOT Permian Basin Load Integration Study. This project, along with the others listed in the Introduction, will be vital to maintaining reliability and operational flexibility within the region for the foreseeable future.

Steady-State Analysis

Oncor performed a comparative steady-state analysis under Summer 2028 conditions which revealed thermal overloads on various 345 kV lines in the West Texas portion of Oncor's transmission grid. These overloads were identified under various contingency conditions, including some N-1 contingency scenarios. The case used for this study was the ERCOT Steady State Working Group (SSWG) case published October 10, 2022 (22SSWG_2028_SUM1_U1_Final_10102022). Relevant off-cycle IDVs published on the ERCOT Market Information System (MIS) as of May 18, 2023 were applied to the base case. Additionally, the base case was modified to include approximately 800 MW of newly signed Oncor loads in West Texas and Far West Texas through May 18, 2023. To determine the Proposed RPG Project's potential adverse impacts to system voltages and thermal loading limits, contingency analysis for this project was performed in accordance with NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Guide Reliability Performance Criteria 4.1.1.1 (1) (d). The results justifying the need for the proposed project, in addition to the results listed in the ERCOT Permian Basin Load Interconnection Study, are summarized in Table 1. The subsequent results after the completion of the Proposed RPG Project are summarized in Table 2.

Pre-Project Thermal Loading				
NERC Category	Contingency		Monitored Element	2028 Summer % Loading Without Proposed Projects
	Initial Event (PSSE Buses)	Second Event (PSSE Buses)		
P1	Prairieland - Morgan Creek 345 kV Line (18548 - 19000 id 1, 19000 - 1030 id 1)	N/A	Longshore - Prairieland 345 kV Line	107.5
	Consavvy - Prairieland 345 kV Line 1 (11387 - 18548 id 1)	N/A	Consavvy - Prairieland 345 kV Line 2	99.4
	Consavvy - Prairieland 345 kV Line 2 (11387 - 18548 id 2)	N/A	Consavvy - Prairieland 345 kV Line 1	99.4
P7	Morgan Creek - Champion Creek/LCRA Bitter Creek 345 kV Double-circuit Line (1030 - 1414 id 1, 1030 - 71050 id 1)	N/A	Morgan Creek - Tonkawa 345 kV Line	129.1
	Prairieland - Longshore/Morgan Creek 345 kV Double-circuit Line (18548 -1058 id 1, 18548 - 19000 id 1, 19000 - 1030 id 1)	N/A	Falcon Seaboard - Rockhound 345 kV Line	105.8
P3	Either Odessa Ector CC Train (130321 id C1, 130322 id C2, 130323 id C0)	Prairieland - Morgan Creek 345 kV Line (18548 - 19000 id 1, 19000 - 1030 id 1)	Morgan Creek - Longshore 345 kV Line	95.1
		Consavvy - Prairieland 345 kV Line 1 (11387 - 18548 id 1)	Consavvy - Prairieland 345 kV Line 2	114.7
		Consavvy - Prairieland 345 kV Line 2 (11387 - 18548 id 2)	Consavvy - Prairieland 345 kV Line 1	114.7
		Prairieland - Longshore 345 kV Line (18548 -1058 id 1)	Prairieland - Morgan Creek 345 kV Line	102.9
EP3	Either Odessa Ector CC Train (130321 id C1, 130322 id C2, 130323 id C0)	Morgan Creek - Champion Creek/LCRA Bitter Creek 345 kV Double-circuit Line (1030 - 1414 id 1, 1030 - 71050 id 1)	Morgan Creek - Tonkawa 345 kV Line	143.3
		Prairieland - Longshore/Morgan Creek 345 kV Double-circuit Line (18548 -1058 id 1, 18548 - 19000 id 1, 19000 - 1030 id 1)	Falcon Seaboard - Rockhound 345 kV Line	116.4
	Falcon Seaboard CC Train (130001 id C1, 130002 id C2, 130003 id C0)	Prairieland - Longshore/Morgan Creek 345 kV Double-circuit Line (18548 -1058 id 1, 18548 - 19000 id 1, 19000 - 1030 id 1)	Falcon Seaboard - Morgan Creek 345 kV Line	108.8
EP6	Consavvy 345/138 kV Autotransformer 1 (11386, 11387, 11388 id 1)	Consavvy - Midessa South/Tesoro 345 kV Double-circuit Line (11387 - 18540 id 1, 11387 - 1125 id 1)	Consavvy 345/138 kV Autotransformer 2	100.5
	Consavvy 345/138 kV Autotransformer 2 (11386, 11387, 11389 id 2)	Consavvy - Midessa South/Tesoro 345 kV Double-circuit Line (11387 - 18540 id 1, 11387 - 1125 id 1)	Consavvy 345/138 kV Autotransformer 1	100.5
	Einstein 345/138 kV Autotransformer (23852, 23874, 23875 id 1)	Bearkat - North McCamey 345 kV Double-circuit Line (59903 - 76000 id 1, 59903 - 76000 id 2)	Longshore - Prairieland 345 kV Line	120.8

Table 1 – Worst Post-Contingency Line Loading (Pre-Project)

Post-Project Thermal Loading	
Monitored Element	**2028 Summer Worst % Loading After Proposed Projects (All Contingencies)**
Ranger Camp - Cattleman 345 kV Line 1	18.8
Ranger Camp - Cattleman 345 kV Line 2	18.8
Falcon Seaboard - Prong Moss 345 kV Line 1	24.6
Falcon Seaboard - Prong Moss 345 kV Line 2	24.6
Midland East - Rockhound 345 kV Line 1	25.1
Midland East - Rockhound 345 kV Line 2	25.1
Ranger Camp - Prong Moss 345 kV Line 1	29.9
Ranger Camp - Prong Moss 345 kV Line 2	29.9
Cattleman - Longshore 345 kV Line 1	32.5
Cattleman - Longshore 345 kV Line 2	32.5
Consavvy - Prairieland 345 kV Line 1	36.1
Consavvy - Prairieland 345 kV Line 2	36.1
Ranger Camp - Tonkawa 345 kV Line 1	37.0
Ranger Camp - Tonkawa 345 kV Line 2	37.0
Prong Moss - Rockhound 345 kV Line 1	38.2
Prong Moss - Rockhound 345 kV Line 2	38.2
Longshore - Prairieland 345 kV Line 1	42.9
Longshore - Prairieland 345 kV Line 2	42.9
Consavvy 345/138 kV Autotransformer 1	84.4
Consavvy 345/138 kV Autotransformer 2	84.4

Table 2 – Worst Post-Contingency Line Loading (Post-Project)

Dynamic Analysis

Oncor performed a dynamic stability analysis to evaluate the impact of the addition of this project on the transmission system. The analysis was conducted using two of the Dynamic Working Group (DWG) cases published in May 2022 (DWG SUM2029 and DWG HWLL2026). The HWLL 2026 case was adjusted to match the long-term topology to create an off- peak 2028 case, designated as HWLL2028. System topology updates necessary to implement the Proposed RPG Project were used in both study cases. Contingencies included in NERC Categories P1, P3, P4, P6, and P7 were studied. NERC Categories P2 and P5 were omitted as NERC category P4 contingencies are more impactful than P2, and P5 contingencies generally would not be applicable given Oncor's redundant system protection philosophy within the study area. The results of the dynamic stability assessment indicate that the proposed project will not have an adverse effect on transmission system dynamic stability in the project vicinity. Oncor will continue to perform annual dynamic analysis for this area.

Subsynchronous Resonance (SSR) Screening

The Proposed Project was screened in 2029 Summer Peak conditions (DWG 2029 Summer Peak case published May 2022). The study was performed with and without the Proposed Project in-service, and the project did not result in a reduction in the number of outages required to create a radial path between a generator and a series compensated line. Since the project will not increase the likelihood of a radial condition occurring with respect to pre-project system conditions, no further SSR analysis is warranted.

Short-Circuit Study

Oncor evaluated the short-circuit impacts of the Proposed Project using the System Protection Working Group (SPWG) case "22_SPWG_2027_FY_06302022_FINAL". The SPWG case was modified to include changes associated with the proposed project, as well as other Oncor system changes that occurred since the development of the SPWG case. The analysis revealed that the Proposed RPG Project did cause various 138 kV breakers, in the vicinity of the project, to become overdutied. The cost of the overdutied breakers is not included in the cost of this Proposed RPG Project. All identified overdutied breakers will be replaced with upgraded breakers over the next 4 – 5 years, prior to or in connection with energization of the Proposed RPG Project, with other breakers identified during Oncor's annual Overdutied Breaker Analysis. Oncor will continue to perform annual short-circuit studies.

Project Description

In order to address the identified reliability concerns, Oncor recommends the project components listed in the Executive Summary section.

Figure 3 provides a simplified one-line diagram illustrating the configuration of Morgan Creek Switch and adjacent facilities after the Proposed RPG Project.

One-Line Diagram

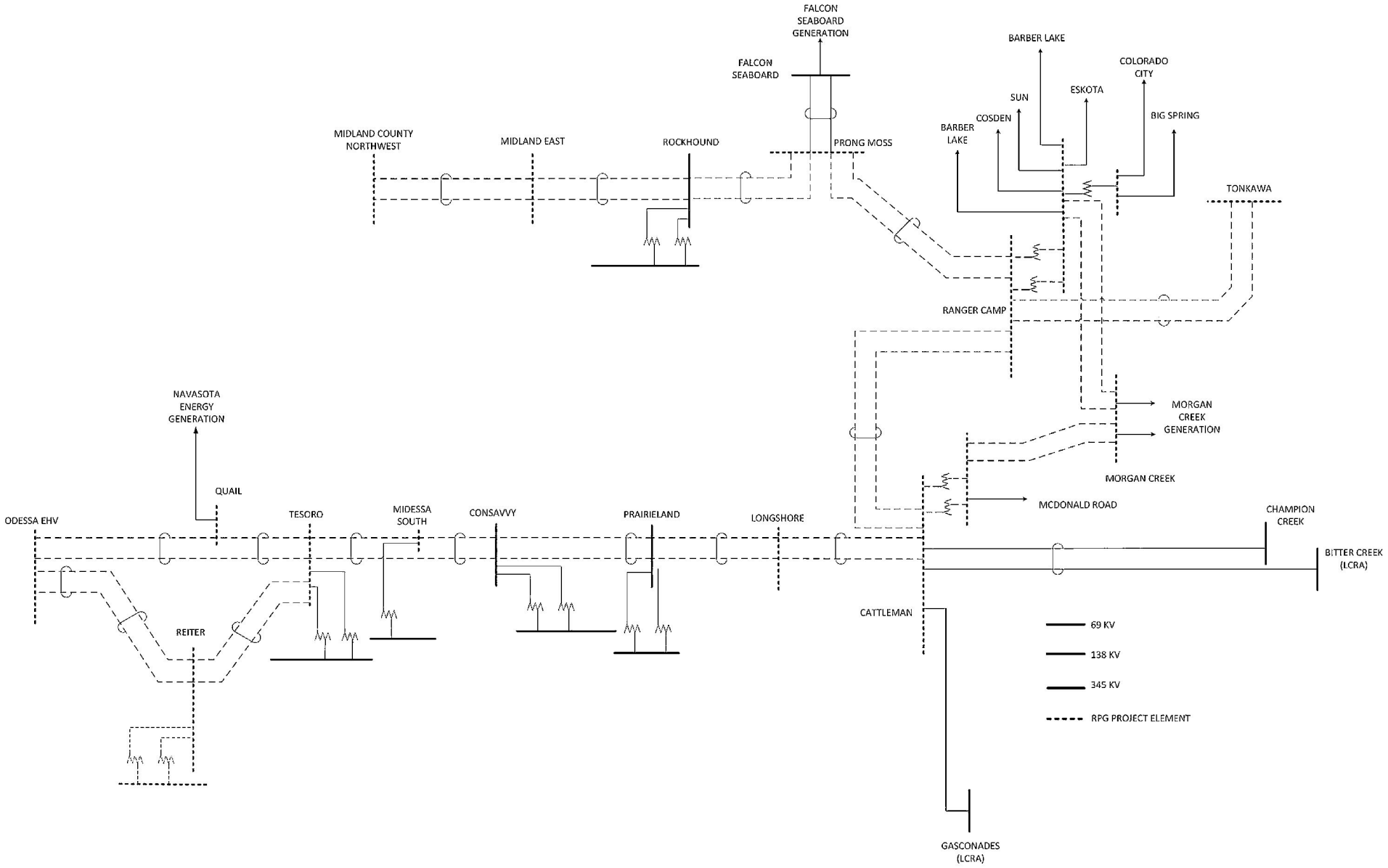

Figure 3. West Texas 345 kV Infrastructure Rebuild Post-Project Configuration

Alternative Solutions Considered

Given the age and state of the existing Morgan Creek Switch and 345 kV lines in West Texas, this project was deemed necessary to accommodate the substantial increases in area demand in general, and the specific upgrades identified in the ERCOT Permian Basin Load Interconnection Study in particular. As mentioned in the Executive Summary and in the Introduction of this submittal, the ERCOT Permian Basin Load Integration Study recommended all of the proposed upgrades included in this Proposed RPG Project.

As a result of the interconnectedness of the existing system, there are no alternatives to many of the upgrade and station reconfigurations discussed above. However, due to the inability of taking multiple, extended clearance outages to rebuild the existing 345 kV lines and stations Oncor did analyze the possibility of constructing additional 345 kV circuits, on new structures within new ROW, next to the existing 345 kV transmission lines leaving Morgan Creek Switch. This alternative does provide certain advantages, avoidance of "hot work", creation of an alternative transmission path into the area, and other operational, resiliency, and flexibility benefits to the system. However, building additional 345 kV transmission lines, adjacent and parallel to, the existing 345 kV transmission lines would require the purchase of additional new ROWs and would also require a CCN for each new 345 kV transmission line, resulting in additional time to complete and the likelihood of higher costs. Nevertheless, this alternative did not produce results similar to the Proposed RPG Project and Oncor did not deem this a viable alternative from a cost or timeliness perspective. No other additional alternatives were considered to the necessary upgrades listed in the ERCOT Permian Basin Load Interconnection Study, and confirmed in Oncor's analysis detailed in this Proposed RPG Project.

Project Cost

Component	Project Cost (Millions)	New ROW Required	CCN
Ranger Camp 345/138 kV Switch *	$94.76	Yes	No
Cattleman 345/138 kV Switch *	$106.48	Yes	No
Morgan Creek 138 kV Switch **	$27.10	Yes	Yes
Tonkawa – Morgan Creek 345 kV DCKT Line	$37.16	No	Yes
Morgan Creek – Odessa EHV 345 kV DCKT Line	$362.70	Yes	No
Morgan Creek – Midland East 345 kV DCKT Line	$307.34	No	Yes
Midland East – Midland County NW 345 kV DCKT Line	$90.02	Yes	Yes
Reiter 345/138 kV Switch	$70.04	No	No
Reiter – Tesoro 345 kV DCKT Line	$20.74	Yes	Yes
TOTALS	**$1,116.34**		

* - Switch cost includes line reroutes and reconnections
** - This cost includes a new 138 kV line from Morgan Creek Switch – Cattleman Switch

Table 3. Proposed RPG Solution Project Cost Summary

Recommendation

In order to accommodate the system upgrades outlined in the Permian Basin Load Interconnection Study, modernize aging infrastructure, and maintain operational flexibility and reliability, Oncor recommends that the West Texas 345 kV Infrastructure Rebuild Project be carried out to include the project components listed in the Executive Summary section.

In addition to the aging infrastructure, this project is necessary to accommodate the upgrades identified in the ERCOT Permian Basin Load Interconnection Study. The projected in-service date may change based on requirements for environmental assessment, licensing requests, regulatory approval, rights-of-way acquisition and construction progress. Completing the West Texas 345 kV Infrastructure Rebuild Project will meet reliability requirements, relieve thermal overloading, maintain acceptable system voltages, and provide adequate transmission capacity for the system under pre- and post-contingency conditions. The estimated cost for this Tier 1 Proposed RPG Project is $1.12 billion, based on the expectation that some elements of this project will be constructed using energized (hot) work processes. This project is recommended to meet a summer 2028 in-service date.

ERCOT Independent Review of the Oncor West Texas 345-kV Infrastructure Rebuild Project

ATTACHMENT NO. 6

Document Revisions

Date	Version	Description	Author(s)
May 16, 2024	1.0	Final	Ben Richardson
		Reviewed by	Robert Golen, Prabhu Gnanam

Executive Summary

Oncor submitted the West Texas 345-kV Infrastructure Rebuild Project to the Regional Planning Group (RPG) on November 3, 2023. Oncor proposed this project to address load growth, load integration requests, the need to rebuild aging facilities and NERC TPL-001-5 reliability criteria violations. The expected in-service date (ISD) of this project is Summer 2028. This project is located in the West and Far West Weather Zones in Scurry, Mitchell, Howard, Glasscock, Martin, Midland, and Ector Counties.

ERCOT completed the Permian Basin Load Interconnection Study (PBLI)[1] in December 2021 to identify transmission upgrades, especially long lead time transmission upgrades, necessary to reliably serve the existing and projected oil and gas loads in the Permian Basin area. The Permian Basin area includes the Delaware Basin, Midland Basin, and Central Basin Platforms which covers most of the counties in the Far West Weather Zone plus five adjacent counties in the West Weather Zone. The geographic and reliability assessment scope of the West Texas 345-kV Infrastructure Rebuild Project are a subset of the Permian Basin Load Interconnection Study. The Permian Basin Load Interconnection Study stated that if the preferred upgrades identified in that study are submitted to Regional Planning Group (RPG) for review, ERCOT may use that study report as part of ERCOT Independent Review. The West Texas 345-kV Infrastructure Rebuild Project includes components of 'Preferred' Project IDs 1, 2, 3 and 25 identified by the Permian Basin Load Interconnection Study. More details of the Permian Basin Load Interconnection Study can be found in Appendix A.

Additionally, ERCOT completed an updated study which confirmed the need for this project and that the Oncor West Texas 345-kV Infrastructure Rebuild Project addresses the need.

Accordingly, based on this independent review, ERCOT recommends the following project as submitted by Oncor:

- 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

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

  - 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

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.

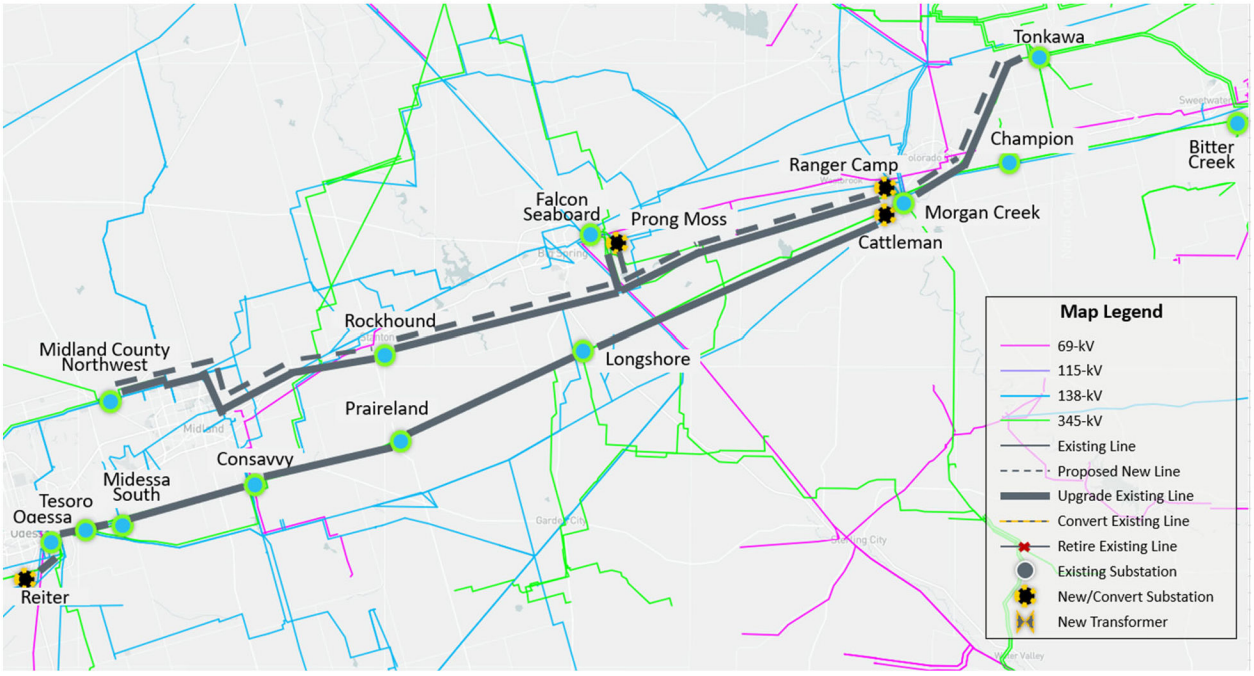

Figure E.1: Map of Recommended Upgrades

Table of Contents

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[4]

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.

[4] 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 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

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

ercot

Date: June 11, 2024
To: Board of Directors
From: Bob Flexon, Reliability and Markets (R&M) Committee Chair
Subject: Oncor West Texas 345-kV Infrastructure Rebuild Regional Planning Group (RPG) Project

Issue for the ERCOT Board of Directors

ERCOT Board of Directors Meeting Date: June 18, 2024
Item No.: 12.2

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 Oncor West Texas 345-kV Infrastructure Rebuild Regional Planning Group (RPG) Project in order to meet the reliability requirements for the ERCOT System and address thermal overloads and load growth in the in Scurry, Mitchell, Howard, Glasscock, Martin, Midland, and Ector Counties in the West and Far West Weather Zones, which ERCOT staff has independently reviewed and which the Technical Advisory Committee (TAC) has voted unanimously to endorse.

Background/History:
Oncor proposed the West Texas 345-kV Infrastructure Rebuild Project in November 2023, a $1.12 billion, Tier 1 project with the expected in-service date of summer 2028, to meet reliability planning criteria. Protocol Section 3.11.4.7, Processing of Tier 1 Projects, requires ERCOT to independently review submitted projects. ERCOT verified the West Texas 345-kV Infrastructure Rebuild Project are components of the Preferred Project IDs 1, 2, 3 and 25 identified in the December 2021 Permian Basin Load Interconnection Study and addresses the need for a project under North American Electric Reliability Corporation (NERC) and ERCOT Planning Criteria to address thermal overloads on 218-miles of 345-kV transmission lines in Scurry, Mitchell, Howard, Glasscock, Martin, Midland, and Ector Counties in the West and Far West Weather Zones with the following ERCOT System improvements:

- 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:

ATTACHMENT NO. 7

    - 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; and
- 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.

For construction to meet the summer 2028 in-service date, the West Texas 345-kV Infrastructure Rebuild Project requires Public Utility Commission of Texas (PUCT, Commission) approval of a Certificate of Convenience and Necessity. 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.

ERCOT verified the West Texas 345-kV Infrastructure Rebuild Project are components of the Preferred Project IDs 1, 2, 3 and 25 identified in the December 2021 Permian Basin Load Interconnection Study and addresses the need in Scurry, Mitchell, Howard, Glasscock, Martin, Midland, and Ector Counties in the West and Far West Weather Zones. ERCOT's independent review verified the reliability need for the West Texas 345-kV Infrastructure Rebuild Project to satisfy ERCOT Planning Guide Section 4.1.1.2(1)(a), 4.1.1.2(1)(c) and 4.1.1.2(1)(d), Reliability Performance Criteria. Contingencies are the loss of a common tower, loss of a single generating unit followed by a single transmission element or common tower outage and loss of a single 345/138-kV transformer followed by a single transmission element or common tower outage, respectively.

RPG considered project overviews during meetings in January 2024 and May 2024. Between January 2024 and May 2024, ERCOT staff presented scope and status updates at RPG meetings in January, February, March, April, and May. 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 TAC for review and comment, and on May 22, 2024, TAC unanimously endorsed the project as recommended by ERCOT. Pursuant to paragraph (1)(a) of Protocol Section 3.11.4.3, Categorization of Proposed Transmission Projects, projects with an estimated capital cost of $100 million or greater are Tier 1 projects, for which Protocol Section 3.11.4.7(2) requires endorsement by the Board. Pursuant to Section 3.11.4.9, ERCOT's endorsement of a Tier 1 project is obtained upon affirmative vote of the Board. Section IV(B)(2)(a) of the R&M Committee Charter requires the R&M Committee to review and make a recommendation to the Board regarding any Tier 1 project.

ERCOT's assessment of the Sub-Synchronous Resonance (SSR) of existing facilities in the Scurry, Mitchell, Howard, Glasscock, Martin, Midland, and Ector Counties in the West and Far West Weather Zones, conducted pursuant to Protocol Section 3.22.1.3, Transmission Project Assessment, yielded no adverse SSR impacts to the existing and planned generation resources at the time of the study. Results of the congestion analysis ERCOT conducted pursuant to Planning Guide Section 3.1.3, Project Evaluation, indicate no additional congestion in the area with the addition of the West Texas 345-kV Infrastructure Rebuild Project.

The project completion date may change depending on material acquisition, outage coordination, and construction. 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. Transmission Service Provider (TSP) cooperation with ERCOT could be necessary to develop and implement CMPs based on summer 2028 operational conditions.

The report describing the ERCOT Independent Review of the Oncor West Texas 345-kV Infrastructure Rebuild Project, including ERCOT staff's recommendation, is attached as ***Attachment A***.

Key Factors Influencing Issue:

1. ERCOT System improvements are needed to meet reliability planning criteria for the Scurry, Mitchell, Howard, Glasscock, Martin, Midland, and Ector Counties in the West and Far West Weather Zones.
2. ERCOT verified the Oncor West Texas 345-kV Infrastructure Rebuild Project are components of the Preferred Project IDs 1, 2, 3 and 25 identified in the December 2021 Permian Basin Load Interconnection Study and addresses the thermal overloads.
3. Protocol Section 3.11.4.7 requires Board endorsement of a Tier 1 project, which is a project with an estimated capital cost of $100 million or greater pursuant to Protocol Section 3.11.4.3(1)(a).
4. TAC voted unanimously to endorse the Tier 1 Oncor West Texas 345-kV Infrastructure Rebuild Regional Planning Group (RPG) Project, as recommended by ERCOT, on May 22, 2024.

Conclusion/Recommendation:

ERCOT staff recommends, and the R&M Committee is expected to recommend, that the Board endorse the need for the Tier 1 Oncor West Texas 345-kV Infrastructure Rebuild RPG Project, which ERCOT staff has independently reviewed and which TAC has voted unanimously to endorse based on NERC and ERCOT reliability planning criteria.

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

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

WHEREAS, after due consideration of the alternatives, the Board deems it desirable and in the best interest of ERCOT to accept ERCOT staff's and the and Reliability and Markets (R&M) Committee's recommendations to endorse the need for the Tier 1 Oncor West Texas 345-kV Infrastructure Rebuild Regional Planning Group Project, which ERCOT staff has independently reviewed and which the Technical Advisory Committee (TAC) has voted to endorse, based on North American Electric Reliability Corporation (NERC) and ERCOT reliability planning criteria;

THEREFORE, BE IT RESOLVED, that the Board hereby endorses the need for the Tier 1 Oncor West Texas 345-kV Infrastructure Rebuild Regional Planning Group Project, which ERCOT staff has independently reviewed and which TAC has voted to endorse, based on NERC and ERCOT reliability planning criteria, as recommended by ERCOT staff and the R&M Committee.

CORPORATE SECRETARY'S CERTIFICATE

I, Jonathan M. Levine, Assistant Corporate Secretary of ERCOT, do hereby certify that, at its June 18, 2024 meeting, the Board passed a motion approving the above Resolution by unanimous voice vote with no abstentions.

IN WITNESS WHEREOF, I have hereunto set my hand this 2nd day of July, 2024.

Jonathan M. Levine
Assistant Corporate Secretary

ERCOT Independent Review of the Oncor West Texas 345-kV Infrastructure Rebuild Project

Document Revisions

Date	Version	Description	Author(s)
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		Reviewed by	Robert Golen, Prabhu Gnanam

Executive Summary

Oncor submitted the West Texas 345-kV Infrastructure Rebuild Project to the Regional Planning Group (RPG) on November 3, 2023. Oncor proposed this project to address load growth, load integration requests, the need to rebuild aging facilities and NERC TPL-001-5 reliability criteria violations. The expected in-service date (ISD) of this project is Summer 2028. This project is located in the West and Far West Weather Zones in Scurry, Mitchell, Howard, Glasscock, Martin, Midland, and Ector Counties.

ERCOT completed the Permian Basin Load Interconnection Study (PBLI)[1] in December 2021 to identify transmission upgrades, especially long lead time transmission upgrades, necessary to reliably serve the existing and projected oil and gas loads in the Permian Basin area. The Permian Basin area includes the Delaware Basin, Midland Basin, and Central Basin Platforms which covers most of the counties in the Far West Weather Zone plus five adjacent counties in the West Weather Zone. The geographic and reliability assessment scope of the West Texas 345-kV Infrastructure Rebuild Project are a subset of the Permian Basin Load Interconnection Study. The Permian Basin Load Interconnection Study stated that if the preferred upgrades identified in that study are submitted to Regional Planning Group (RPG) for review, ERCOT may use that study report as part of ERCOT Independent Review. The West Texas 345-kV Infrastructure Rebuild Project includes components of 'Preferred' Project IDs 1, 2, 3 and 25 identified by the Permian Basin Load Interconnection Study. More details of the Permian Basin Load Interconnection Study can be found in Appendix A.

Additionally, ERCOT completed an updated study which confirmed the need for this project and that the Oncor West Texas 345-kV Infrastructure Rebuild Project addresses the need.

Accordingly, based on this independent review, ERCOT recommends the following project as submitted by Oncor:

- 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

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

- 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

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.

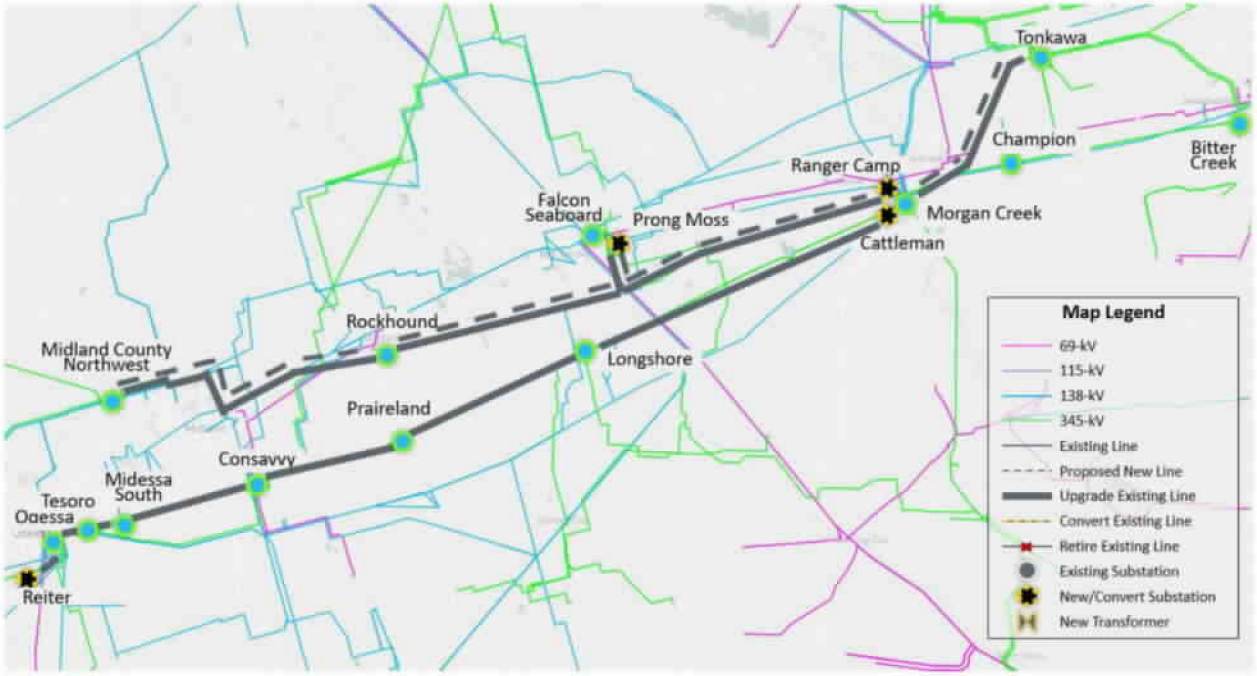

Figure E.1: Map of Recommended Upgrades

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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 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

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

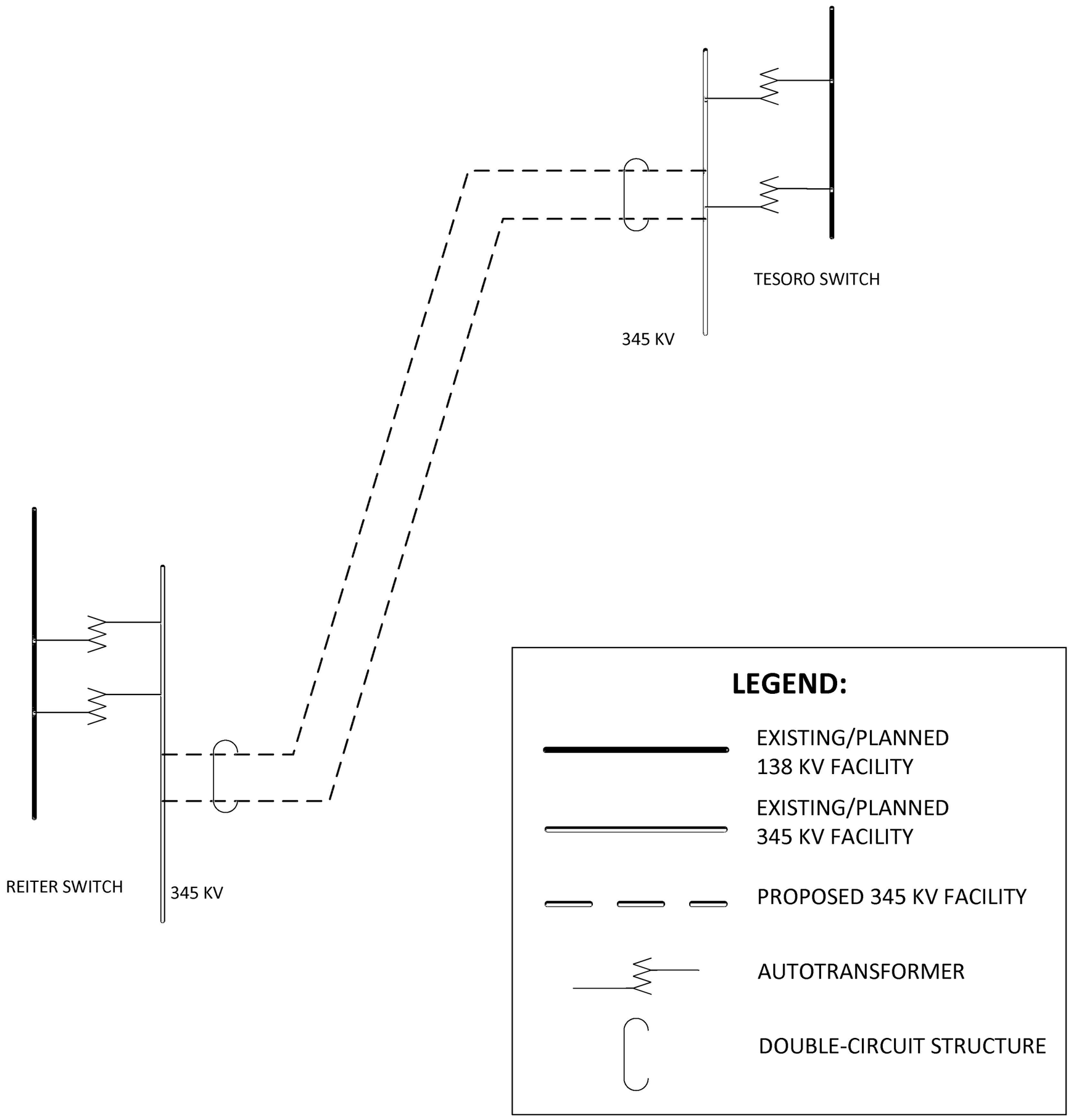
- Rebuild Midland East to Midland County Northwest 345-kV transmission line, replace with two new Midland East to Midland County Northwest 345-kV transmission lines, with conductors rated at least 2988 MVA, in 16.3 miles of existing ROW and 1.0 miles of new ROW, installed on new (estimated 17.3 miles) 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.

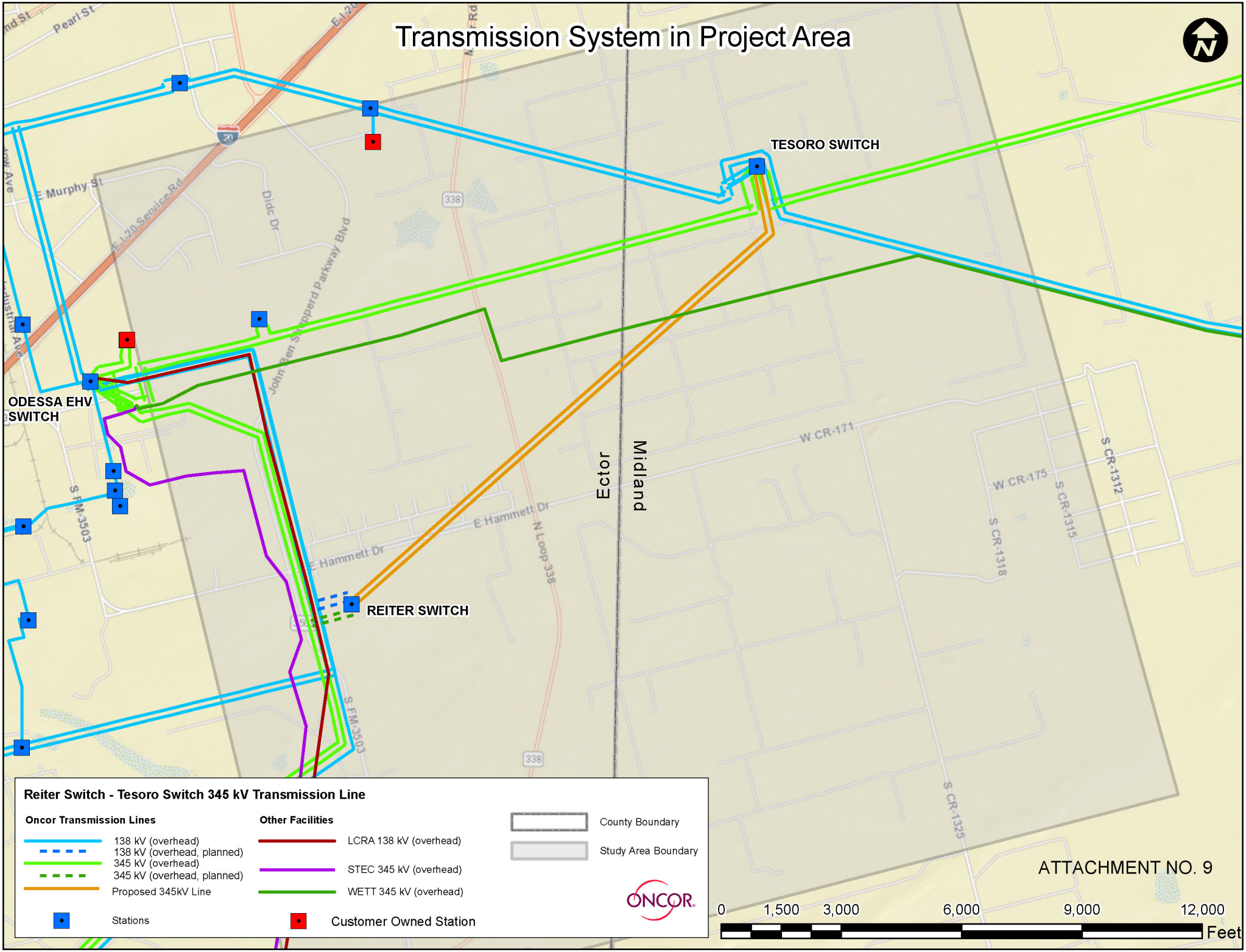
Appendix

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

Schematic of Transmission System in Proximate Area of Project



ATTACHMENT NO. 8


Transmission System in Project Area
TESORO SWITCH
ODESSA EHV SWITCH
REITER SWITCH
Ector
Midland
E Murphy St
E I-20 Service Rd
John Ben Shepperd Parkway Blvd
E Hammett Dr
N Loop 338
S FM-3503
W CR-171
W CR-175
S CR-1312
S CR-1315
S CR-1318
S CR-1325
338
Reiter Switch - Tesoro Switch 345 kV Transmission Line
Oncor Transmission Lines
138 kV (overhead)
138 kV (overhead, planned)
345 kV (overhead)
345 kV (overhead, planned)
Proposed 345kV Line
Stations
Other Facilities
LCRA 138 kV (overhead)
STEC 345 kV (overhead)
WETT 345 kV (overhead)
Customer Owned Station
County Boundary
Study Area Boundary
ONCOR
ATTACHMENT NO. 9
0
1,500
3,000
6,000
9,000
12,000
Feet

Amy L. Zapletal, P.E.
Project Manager Senior
Transmission Engineering Right-of-Way

Office Memorandum

Date: July 2, 2024

To: File

From: Amy L. Zapletal. P.E.

Subject: Alternative Routes Evaluation: Reiter Switch – Tesoro Switch 345 kV Transmission Line Project

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This memorandum discusses my evaluation of routing alternatives for Oncor Electric Delivery Company LLC's ("Oncor's") proposed Reiter Switch – Tesoro Switch 345 kV Transmission Line Project ("Proposed Transmission Line Project"). In addition to the recommendation for a route that best meets the requirements of the Texas Utilities Code and the Substantive Rules of the Public Utility Commission of Texas ("Commission"), I also selected alternative routes to be filed with the CCN Application.

Background

The goal of this route evaluation process is to provide the Commission with an adequate number of alternative routes to conduct a proper evaluation. These alternative routes provide good geographic diversity while complying with Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, Commission Procedural Rule 22.52(a)(4), and Commission Substantive Rule 25.101(b)(3)(B), including the Commission's policy of prudent avoidance.

The alternative route selections are based on my: (1) reconnaissance and observations of the project area; (2) independent review of the data included in the *Environmental Assessment and Alternative Route Analysis for Oncor Electric Delivery Company LLC's Proposed Reiter Switch – Tesoro Switch 345 kV Transmission Line Project in Ector and Midland Counties, Texas* ("Environmental Assessment and Routing Study"), prepared by Halff Associates, Inc. ("Halff"); (3) discussions with Halff personnel; (4) discussions with Oncor personnel; and (5) other information. My recommendation incorporates consideration of information in the Environmental Assessment and Routing Study, engineering feasibility, the estimated cost of alternative routes, and construction limitations.

Development of Alternative Route Links

Halff documented its efforts to identify potential preliminary alternative routes for the Proposed Transmission Line Project in Section 4.0 of the Environmental Assessment and Routing Study. After completing the initial data gathering and constraints mapping process, Halff identified preliminary alternative route links on recent aerial photography obtained from NearMap (available through Halff's subscription service). These preliminary alternative route links were selected considering the location of existing corridors, apparent property boundaries and routing constraints. Some of the routing constraints within the study area include: (1) oil and gas facilities; (2) existing transmission lines; (3) State Highway

("SH") Loop 338 and other state-maintained roadways where 90-degree roadway crossings by transmission lines are typically required by the Texas Department of Transportation; (4) residential development; and (5) commercial and industrial development. Numerous preliminary alternative route links were identified by Halff that, when combined, formed numerous preliminary alternative routes to connect Oncor's proposed Reiter Switch 345 kV switchyard to its existing Tesoro Switch. The preliminary alternative route links evaluated by Halff are depicted in Figure 3-1 (Appendix D) in the Environmental Assessment and Routing Study.

The Proposed Transmission Line Project, including both endpoints, traverses property owned by seven (7) landowners, including Oncor. Oncor did not hold public meetings because the prerequisites for public meetings under 16 TAC § 22.52 were not met. Therefore, the preliminary alternative route links were finalized after incorporating the findings of field reconnaissance by Halff and Oncor and data received from landowners. These route links are discussed in Section 4.0 of the Environmental Assessment and Routing Study.

In general, links were proposed to coordinate with routing constraints and to comply with the Commission's policy of prudent avoidance after field investigation. Following review of the preliminary alternative route links, a total of 52 alternative route links were adopted, from which 150 alternative routes were delineated and further evaluated, as discussed in Section 5.0 of the Environmental Assessment and Routing Study.

Development of Alternative Routes

Halff identified multiple potential alternative routes using these 52 alternative route links. Ultimately, a total of 150 alternative routes were identified for further routing analysis. I initially identified three alternative route links that created corridors in which to group potential alternative routes. The alternative route combinations within each of the three routing corridors were identified. Each of the alternative route link corridors were analyzed to identify a select number of geographically diverse and forward-progressing route alternatives from which the Commission could compare the routing possibilities for the Proposed Transmission Line Project. Below, I discuss the 21 alternative routes that I selected to be filed with the CCN Application, as shown in Table 2 attached to this Memorandum.

Discussion of Alternative Routes

Each of the 150 preliminary alternative routes identified possesses both positive and negative comparative attributes. I considered these attributes to select a set of geographically diverse routing alternatives to be filed as a part of the CCN Application. Below is a discussion of the 21 alternative routes that were identified to be filed with the CCN Application. Each alternative route complies with Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code and Commission Substantive Rule 25.101, including the Commission's policy of prudent avoidance. None of the 150 preliminary alternative routes identified for the Proposed Transmission Line Project have habitable structures within 500 feet of the route centerline.

The alternative routes can be grouped in many different ways; one approach is to group them into geographic corridors. I grouped the alternative routes into three different geographic corridors following the north-south orientation of the alternative route links. These three corridors are identified as the: (1) west corridor using Link E4; (2) central corridor using Link G4; and (3) east corridor using Link I4. The map

attached to this Memorandum shows these alternative route link locations. All alternative routes cross SH Loop 338.

I presented the 52 alternative route links and all 150 preliminary alternative routes to Oncor's engineering witness for this project, Mr. Kaleb Roberts, for consideration of engineering feasibility, construction limitations, and alternative route cost estimates. Mr. Roberts confirmed the engineering feasibility based on known constraints for each of the alternative routes, and he also provided cost estimates for each alternative route.

Based on my analysis, I selected 21 geographically diverse alternative routes to be filed with the CCN Application to allow for an adequate number of alternative routes to conduct a proper evaluation. Table 1, attached to this Memorandum, presents the route links that comprise these alternative routes. Table 2, attached to this Memorandum, presents quantifiable environmental data on the 21 alternative routes filed as a part of the CCN Application. The filed alternative routes use each of the 52 alternative route links in at least one route. Below is a discussion of each of the geographic corridors and the alternative routes selected for filing within each corridor.

The west corridor routes containing Link E4 ("Link E4 Corridor Routes") vary in length from approximately 4.05 to 4.78 miles. Transmission line costs for Link E4 Corridor Routes range from an estimated $19,518,000 to $24,875,000. The Link E4 Corridor Routes range have a range of 31.3% to 64.0% of their total route length parallel to existing compatible corridors and a range of 6.8% to 10.7% of their total route length within existing Oncor easement or fee-owned property (collectively, Oncor right-of-way ["ROW"]). The seven alternatives filed in the CCN Application from the Link E4 Corridor Routes include Alternative Routes 1, 4, 5, 6, 46, 61, and 88.

The central corridor routes containing Link G4 ("Link G4 Corridor Routes") vary in length from approximately 4.11 to 4.66 miles. Transmission line costs for Link G4 Corridor Routes range from an estimated $19,514,000 to $25,591,000. The Link G4 Corridor Routes have a range of 26.6% to 68.3% of their total route length parallel to existing compatible corridors and a range of 6.7% to 10.2% of their total route length within existing Oncor. The six alternatives filed in the CCN Application from the Link G4 Corridor Routes include Alternative Routes 7, 13, 14, 50, 53, and 65.

The east corridor routes containing Link I4 ("Link I4 Corridor Routes") vary in length from approximately 4.20 to 5.23 miles. Transmission line costs for Link I4 Corridor Routes range from an estimated $18,115,000 to $28,794,000. The Link I4 Corridor Routes range have a range of 7.6% to 49.1% of their total route length parallel to existing compatible corridors and a range of 6.4% to 12.2% of their total route length within existing Oncor. The eight alternatives filed in the CCN Application from the Link I4 Corridor Routes include Alternative Routes 10, 15, 27, 52, 66, 73, 106, and 123.

Selection of Route 10 as the Route Best Addressing the Applicable Routing Factors

After holistically analyzing each of the 21 routes within the three geographic corridors, I selected Route 10 of the Link I4 Corridor Routes as the route that best meets the requirements of Texas Utilities Code Section 37.056 (c)(4)(A)-(D) and Commission Substantive Rule 25.101(b)(3)(B). Route 10 is comprised of Links A-B4-D3-F4-H4-I4-I5-I6-J.

Some of the significant factors which led to the selection of Route 10 include the following:

- The length of Route 10 is approximately 4.43 miles, which is only 0.38 mile longer than the shortest among all the filed routes (Routes 46 and 61) and approximately 0.80 mile shorter than the longest alternative route included in the Application (Route 123 is the longest at approximately 5.23 miles);
- The estimated transmission line cost for Route 10 is $18,115,000, which is approximately 0.68% more than the least expensive project cost (Route 52 estimated at $17,993,000) and is approximately 58.9% less than the most expensive (Route 106 estimated at $28,794,000);
- There are no habitable structures within 500 feet of the centerline of Route 10, and there are no habitable structures within 500 feet of the centerline of any alternative route included in the Application;
- Route 10 parallels existing compatible corridors (including apparent property boundaries) for approximately 35.4% of its length. Route 13 possesses the highest percentage parallel to existing compatible corridors (68.3%) but is longer in route length (4.66 miles). Route 66 has the lowest percentage parallel to existing compatible corridors (7.6%);
- Route 10 utilizes existing Oncor ROW for 10.2% of its length. Route 106 possesses the highest percentage of its route length within existing Oncor ROW (12.2%) but is longer in route length (5.15 miles). Route 73 had the lowest percentage (6.4%) of its route length within existing Oncor ROW;
- Route 10 has 1,941 feet of its route through commercial/industrial areas. Route lengths through commercial/industrial areas vary from 1,748 feet (Route 123) to 2,398 feet (Route 4);
- Route 10 crosses 21,458 feet of rangeland pasture. Route lengths crossing rangeland pasture vary from 19,374 feet (Route 61) to 25,844 feet (Route 123);
- Route 10 crosses no parks/recreational areas, does not have any parks/recreational areas within 1,000 feet of its centerline, and does not have any length of ROW within a foreground visual zone (0.5 mile of unobstructed view) of any parks/recreational areas. Because there are no parks/recreational areas within the study area, all alternative filed routes share these characteristics;
- Route 10 has no length of its route across potential wetlands. No filed route crosses potential wetlands;
- Route 10 has no streams crossed by its centerline. No filed route crosses a stream;
- Route 10 has no length of its route parallel to streams (within 100 feet), and there are no routes with any length parallel to streams (within 100 feet) included in the Application;
- Route 10 has no length of its route across lakes or ponds (open waters). No filed route crosses lakes or ponds (open waters);
- Route 10 has no recorded cultural resource site crossed by its centerline. No filed route has a recorded cultural resource site crossed by its centerline;
- Route 10 has: (i) no private airstrip or FAA-registered airport with all runways 3,200 feet or less within 10,000 feet of the centerline along its entire length; (ii) no FAA-registered airport with a runway greater than 3,200 feet within 20,000 feet of the centerline along its entire length; and (iii) no heliport within 5,000 feet of its centerline. All alternative filed routes share these characteristics;
- Route 10 has one electronic installation within 2,000 feet of its centerline. The range in electronic installations within 2,000 feet of the alternative filed route centerlines varies from 0 to 1;
- Route 10 crosses one State Highway, SH Loop 338, along its entire length. Due to the locations of the Reiter Switch and Tesoro Switch stations, all routes cross SH Loop 338;

- Route 10 crosses one Farm-to-Market ("FM") road, county road or other street along its entire length. All filed routes have one FM, county road or other street crossing;
- Route 10 has 5,281 feet of estimated ROW length within the foreground visual zone (0.5 mile of unobstructed view) of US and SH, which is the least (along with Route 7) among all filed routes. The filed routes range in estimated ROW length within the foreground visual zone of US and SH from 5,281 feet to 16,558 feet; and
- Route 10 has been judged to be feasible from an engineering perspective based on currently known conditions, without the benefit of on-the-ground and subsurface surveys. There are no currently-identifiable engineering constraints that impact this alternative route that cannot be addressed with additional consideration by Oncor during the engineering and construction processes.

Additional information concerning the issues addressed in this Memorandum can be found in the Environmental Assessment and Routing Study, included as Attachment No. 1 to the CCN Application, as well as my direct testimony filed concurrently with the CCN Application.

TABLE 1 - LINK COMPOSITION OF ALTERNATIVE FILED ROUTES
REITER SWITCH - TESORO SWITCH 345 KV TRANSMISSION LINE

Route	Link Sequence	Total Length (feet)	Total Length (miles)
1	A-B4-D3-E4-F5-H5-I5-I6-J-	23,385	4.43
4	A-B4-D3-E4-E5-F6-F8-F9-H7-J-	22,597	4.28
5	A-B4-D3-E4-E5-F6-F7-G7-H7-J-	22,284	4.22
6	A-B4-D3-E4-E5-E6-F9-H7-J-	22,366	4.24
7	A-B4-D3-F4-G4-H5-I5-I6-J-	23,353	4.42
10	A-B4-D3-F4-H4-I4-I5-I6-J-	23,399	4.43
13	A-A1-B2-D1-F2-G2-G3-G4-G5-H6-I6-J-	24,612	4.66
14	A-A1-B2-D1-F2-G2-G3-G4-G5-G6-G7-H7-J-	24,323	4.61
15	A-A1-B2-D1-F2-G2-G3-H4-I4-I5-I6-J-	25,101	4.75
27	A-A1-B2-C1-D2-F3-H3-I3-I4-I5-I6-J-	23,121	4.38
46	A-B3-C2-D3-E4-E5-F6-F7-G7-H7-J-	21,382	4.05
50	A-B3-C2-D3-F4-G4-G5-G6-G7-H7-J-	21,720	4.11
52	A-B3-D2-F3-H3-I3-I4-I5-I6-J-	22,193	4.20
53	A-B3-D2-F3-G3-G4-H5-I5-I6-J-	22,495	4.26
61	A-B3-D2-E3-E4-E5-F6-F7-G7-H7-J-	21,378	4.05
65	A-B3-D2-E3-F4-G4-G5-G6-G7-H7-J-	21,715	4.11
66	A-B3-D2-E3-F4-H4-I4-I5-I6-J-	22,493	4.26
73	A-B0-B1-E0-F1-G1-H2-I2-I3-I4-I5-I6-J-	26,727	5.06
88	A-B0-B1-E0-E1-E2-E3-E4-E5-F6-F8-F9-H7-J-	25,227	4.78
106	A-A1-A2-A4-E0-E1-F2-G2-G3-H4-I4-I5-I6-J-	27,166	5.15
123	A-B0-A3-A4-E0-F1-H1-I1-I2-I3-I4-I5-I6-J-	27,592	5.23

TABLE 2 - ENVIRONMENTAL DATA FOR ALTERNATIVE FILED ROUTES
REITER SWITCH - TESORO SWITCH 345 KV TRANSMISSION LINE

Alternative Route Number	1	4	5	6	7	10	13
Length of alternative route (feet)	23,385	22,597	22,284	22,366	23,353	23,399	24,612
Length of alternative route (miles)	4.43	4.28	4.22	4.24	4.42	4.43	4.66
Length of route parallel to existing electric transmission lines	796	6,993	6,419	4,180	796	796	3,076
Length of route parallel to railroads	0	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	0	0	0	0	0	0	0
Length of route parallel to pipelines[1]	0	0	0	0	0	0	0
Length of route parallel to apparent property boundaries	5,895	5,895	5,895	5,895	8,675	5,895	12,857
Length of route within existing Oncor easement or fee-owned property	2,379	2,379	2,379	2,379	2,379	2,379	1,666
Total length of route parallel to existing compatible rights-of-way	8,274	14,471	13,896	11,658	11,054	8,274	16,803
Number of habitable structures within 500 feet of the route centerline[2]	0	0	0	0	0	0	0
Number of parks or recreational areas within 1,000 feet of the route centerline[3]	0	0	0	0	0	0	0
Length of the route across parks/recreational areas	0	0	0	0	0	0	0
Length of route through commercial/industrial areas	1,781	2,398	1,933	2,327	1,784	1,941	2,065
Length of the route across cropland/hay meadow	0	0	0	0	0	0	0
Length across rangeland pasture	21,604	20,199	20,351	20,040	21,569	21,458	22,546
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0
Length of route across upland woodlands	0	0	0	0	0	0	0
Length of route across riparian areas	0	0	0	0	0	0	0
Length of route across potential wetlands	0	0	0	0	0	0	0
Number of stream crossings by the route	0	0	0	0	0	0	0
Length of route parallel to streams (within 100 feet)	0	0	0	0	0	0	0
Length across lakes or ponds (open waters)	0	0	0	0	0	0	0
Number of known rare/unique plant locations within the right-of-way	0	0	0	0	0	0	0
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the route centerline	0	0	0	0	0	0	0
Length of route across areas of high archaeological/historical site potential	5,508	4,849	3,696	4,849	5,065	5,193	4,737
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	0	0	0	0	0	0	0
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of heliports located within 5,000 feet of the route centerline	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of FM, microwave and other electronic installations within 2,000 feet of the route centerline	1	1	1	1	1	1	0
Number of U.S. or State Highway crossings by the route	1	1	1	1	1	1	1
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	1	1	1	1	1	1	1
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	8,095	10,284	10,284	11,303	5,281	5,281	5,614
Estimated length of right-of-way within foreground visual zone of park/recreational areas	0	0	0	0	0	0	0
Estimated Transmission Line Cost	$ 19,518,000	$ 20,590,000	$ 20,665,000	$ 19,605,000	$ 19,514,000	$ 18,115,000	$ 24,341,000

NOTES: All length measurements are in feet. Measurements for many of the environmental factors were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 2.2-7.8 inches) horizontal accuracy to true ground location.

[1] Not included in length of route parallel to existing compatible rights-of-way.

[2] Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools

[3] Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

TABLE 2 - ENVIRONMENTAL DATA FOR ALTERNATIVE FILED ROUTES
REITER SWITCH - TESORO SWITCH 345 KV TRANSMISSION LINE

Alternative Route Number	14	15	27	46	50	52	53
Length of alternative route (feet)	24,323	25,101	23,121	21,382	21,720	22,193	22,495
Length of alternative route (miles)	4.61	4.75	4.38	4.05	4.11	4.20	4.26
Length of route parallel to existing electric transmission lines	2,308	796	796	6,419	2,308	796	796
Length of route parallel to railroads	0	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	0	0	0	0	0	0	0
Length of route parallel to pipelines[1]	0	0	0	0	0	0	0
Length of route parallel to apparent property boundaries	12,857	9,467	2,433	2,704	6,094	0	4,261
Length of route within existing Oncor easement or fee-owned property	1,666	1,666	1,666	1,713	1,713	1,713	1,713
Total length of route parallel to existing compatible rights-of-way	16,035	11,133	4,099	10,039	9,319	1,713	5,975
Number of habitable structures within 500 feet of the route centerline[2]	0	0	0	0	0	0	0
Number of parks or recreational areas within 1,000 feet of the route centerline[3]	0	0	0	0	0	0	0
Length of the route across parks/recreational areas	0	0	0	0	0	0	0
Length of route through commercial/industrial areas	2,094	1,970	1,788	1,978	2,111	1,823	1,789
Length of the route across cropland/hay meadow	0	0	0	0	0	0	0
Length across rangeland pasture	22,229	23,131	21,333	19,404	19,609	20,370	20,706
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0
Length of route across upland woodlands	0	0	0	0	0	0	0
Length of route across riparian areas	0	0	0	0	0	0	0
Length of route across potential wetlands	0	0	0	0	0	0	0
Number of stream crossings by the route	0	0	0	0	0	0	0
Length of route parallel to streams (within 100 feet)	0	0	0	0	0	0	0
Length across lakes or ponds (open waters)	0	0	0	0	0	0	0
Number of known rare/unique plant locations within the right-of-way	0	0	0	0	0	0	0
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the route centerline	0	0	0	0	0	0	0
Length of route across areas of high archaeological/historical site potential	3,610	4,573	5,473	5,502	6,036	4,545	4,865
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	0	0	0	0	0	0	0
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of heliports located within 5,000 feet of the route centerline	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of FM, microwave and other electronic installations within 2,000 feet of the route centerline	0	0	0	1	1	0	0
Number of U.S. or State Highway crossings by the route	1	1	1	1	1	1	1
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	1	1	1	1	1	1	1
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	5,614	5,614	7,380	11,997	6,994	5,531	5,531
Estimated length of right-of-way within foreground visual zone of park/recreational areas	0	0	0	0	0	0	0
Estimated Transmission Line Cost	$ 25,591,000	$ 23,103,000	$ 20,615,000	$ 22,391,000	$ 23,736,000	$ 17,993,000	$ 19,689,000

NOTES: All length measurements are in feet. Measurements for many of the environmental factors were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 2.2-7.8 inches) horizontal accuracy to true ground location.

[1] Not included in length of route parallel to existing compatible rights-of-way.

[2] Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools

[3] Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

TABLE 2 - ENVIRONMENTAL DATA FOR ALTERNATIVE FILED ROUTES
REITER SWITCH - TESORO SWITCH 345 KV TRANSMISSION LINE

Alternative Route Number	61	65	66	73	88	106	123
Length of alternative route (feet)	21,378	21,715	22,493	26,727	25,227	27,166	27,592
Length of alternative route (miles)	4.05	4.11	4.26	5.06	4.78	5.15	5.23
Length of route parallel to existing electric transmission lines	6,419	2,308	796	796	6,993	796	796
Length of route parallel to railroads	0	0	0	0	0	0	0
Length of route parallel to existing public roads/highways	0	0	0	0	0	0	0
Length of route parallel to pipelines[1]	0	0	0	0	0	0	0
Length of route parallel to apparent property boundaries	0	3,390	0	4,108	0	10,031	921
Length of route within existing Oncor easement or fee-owned property	1,713	1,713	1,713	1,705	1,705	3,315	2,706
Total length of route parallel to existing compatible rights-of-way	7,336	6,615	1,713	5,812	7,902	13,346	3,627
Number of habitable structures within 500 feet of the route centerline[2]	0	0	0	0	0	0	0
Number of parks or recreational areas within 1,000 feet of the route centerline[3]	0	0	0	0	0	0	0
Length of the route across parks/recreational areas	0	0	0	0	0	0	0
Length of route through commercial/industrial areas	2,003	2,136	2,012	1,774	2,277	1,855	1,748
Length of the route across cropland/hay meadow	0	0	0	0	0	0	0
Length across rangeland pasture	19,374	19,579	20,481	24,953	22,949	25,310	25,844
Length of route across agricultural cropland with mobile irrigation systems	0	0	0	0	0	0	0
Length of route across upland woodlands	0	0	0	0	0	0	0
Length of route across riparian areas	0	0	0	0	0	0	0
Length of route across potential wetlands	0	0	0	0	0	0	0
Number of stream crossings by the route	0	0	0	0	0	0	0
Length of route parallel to streams (within 100 feet)	0	0	0	0	0	0	0
Length across lakes or ponds (open waters)	0	0	0	0	0	0	0
Number of known rare/unique plant locations within the right-of-way	0	0	0	0	0	0	0
Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0
Number of recorded cultural resource sites crossed by the route	0	0	0	0	0	0	0
Number of recorded cultural resources within 1,000 feet of the route centerline	0	0	0	0	0	0	0
Length of route across areas of high archaeological/historical site potential	4,158	4,692	5,655	7,018	6,856	7,629	8,368
Number of private airstrips within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of FAA-registered airports with at least one runway more than 3,200 feet in length within 20,000 feet of route centerline	0	0	0	0	0	0	0
Number of FAA-registered airports with no runway greater than 3,200 feet in length within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of heliports located within 5,000 feet of the route centerline	0	0	0	0	0	0	0
Number of commercial AM radio transmitters located within 10,000 feet of the route centerline	0	0	0	0	0	0	0
Number of FM, microwave and other electronic installations within 2,000 feet of the route centerline	1	1	1	0	1	0	0
Number of U.S. or State Highway crossings by the route	1	1	1	1	1	1	1
Number of Farm to Market (F.M.), county roads, or other street crossings by the route	1	1	1	1	1	1	1
Estimated length of right-of-way within foreground visual zone of U.S. and State Highways	11,993	6,989	6,989	5,468	16,558	7,095	5,865
Estimated length of right-of-way within foreground visual zone of park/recreational areas	0	0	0	0	0	0	0
Estimated Transmission Line Cost	$ 20,834,000	$ 23,582,000	$ 19,689,000	$ 23,841,000	$ 24,875,000	$ 28,794,000	$ 25,257,000

NOTES: All length measurements are in feet. Measurements for many of the environmental factors were obtained from mosaics of ortho-rectified images (NearMap, 2023), whose capture process utilizes global positioning system and precise point positioning technologies to achieve sub-meter (or approximately 2.2-7.8 inches) horizontal accuracy to true ground location.

[1] Not included in length of route parallel to existing compatible rights-of-way.

[2] Structures normally inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, churches, hospitals, nursing homes, and schools

[3] Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

TESORO SWITCH

REITER SWITCH

SEE MAP INSET

LOOP 338

BATES FIELD RD (ECTOR CR 1285)

MIDLAND-CR-171

CR-1325

FM-3503

MONAHANS DRAW

ECTOR COUNTY

MIDLAND COUNTY

MAP INSET

REITER SWITCH -- TESORO SWITCH
345 KV TRANSMISSION LINE PROJECT

N

MAP FEATURES

- STUDY AREA
- NODE BETWEEN ADJACENT ROUTE LINKS
- PRELIMINARY ALTERNATIVE ROUTE LINK
- PROJECT ENDPOINT
- PUBLIC ROAD
- EXISTING TRANSMISSION LINE
- RIVER / STREAM
- COUNTY BOUNDARY

0 1,500 3,000

SCALE IN FEET

Date: 7/11/2024

List of Directly Affected Landowners for Notice
and Recipients of Courtesy Notice to Pipeline Owners/Operators

Last Update: May 30, 2024

Reiter Switch - Tesoro Switch 345 kV Transmission Line
Ector and Midland Counties, Texas

ROUTES WITHIN 520 FT.	ROUTES: DIRECTLY AFFECTED	SEGMENTS WITHIN 520 FT.	SEGMENTS: DIRECTLY AFFECTED	TRACT	HABITABLE STRUCTURE	LAST NAME	FIRST NAME	BUSINESS NAME	ATTN TO	ADDRESS	CITY	STATE	ZIP
	1, 4, 5, 6, 7, 10, 13, 14, 15, 27, 46, 50, 52, 53, 61, 65, 66, 73, 88, 106, 123		A, A1, A2, A3, A4, B0, B1, B2, B3, B4	1, 2, 8	NONE			ONCOR ELECTRIC DELIVERY COMPANY		PO BOX 139100	DALLAS	TX	75313-9100
4, 5, 6, 46, 61, 88	1, 4, 5, 6, 46, 61, 88	F7, F9	E4, E5, E6, F5, F6, F8	16, 17	NONE			HOUSTON ENDOWMENT INC		3683 WILLIA ST	HOUSTON	TX	77007-7427
4, 5, 6, 46, 61, 88	1, 4, 5, 6, 46, 61, 88	F7, F9	E4, E5, E6, F5, F6, F8	16, 17	NONE			TEXAN LAND & CATTLE II LTD	TEXAN BUILDING	PO BOX 130979	HOUSTON	TX	77219-0979
	1, 4, 5, 6, 7, 10, 13, 14, 15, 27, 46, 50, 52, 53, 61, 65, 66, 73, 88, 106, 123		E4, E5, E6, F5, F6, F7, F8, F9, G4, G5, G6, G7, H5, H6, H7, I4, I5, I6, J	16, 17, 21, 22, 25, 26	NONE			BELL LEGACY LAND LLC		PO BOX 10649	MIDLAND	TX	79702-0649
	1, 4, 5, 6, 7, 10, 13, 14, 15, 27, 46, 50, 52, 53, 61, 65, 66, 73, 88, 106, 123		E6, F5, F6, F7, F8, F9, G4, G5, G6, G7, H5, H6, H7, I4, I5, I6, J	21, 22, 25, 26	NONE			HOUSTON ENDOWMENT INC		600 TRAVIS ST STE 6400	HOUSTON	TX	77002-3007
	1, 4, 5, 6, 7, 10, 13, 14, 15, 27, 46, 50, 52, 53, 61, 65, 66, 73, 88, 106, 123		E6, F5, F6, F7, F8, F9, G4, G5, G6, G7, H5, H6, H7, I4, I5, I6, J	21, 22, 25, 26	NONE	TAUB	HENRY J N		TEXAN BUILDING	333 WEST LOOP N 4TH FLR	HOUSTON	TX	77024-7709
88	7, 10, 13, 14, 15, 27, 50, 52, 53, 65, 66, 73, 106, 123	D1, E1, E2	F1, F2, F3, F4, G1, G2, G3, G4, H1, H2, H3, H4, I1, I2, I3, I4	23, 24, 27, 28	NONE			OXY USA WTP LP		5 GREENWAY PLAZA STE 110	HOUSTON	TX	77046
1, 4, 5, 6, 7, 10, 13, 14, 15, 27, 46, 50, 52, 53, 61, 65, 66, 73, 88, 106, 123		A		3, 4, 5	NONE			AVERITT FAMILY LTD		PO BOX 9310	MIDLAND	TX	79708-9310
1, 4, 5, 6, 7, 10, 13, 14, 15, 27, 46, 50, 52, 53, 61, 65, 66, 73, 88, 106, 123	1, 4, 5, 6, 7, 10, 13, 14, 15, 27, 46, 50, 52, 53, 61, 65, 66, 73, 88, 106, 123	A, A1, A3	A2, A4, B0, B1, B2, B3, B4, C1, C2, D1, D2, D3, E0, E1, E2, E3, E4, F1, F2, F3, F4	6, 7, 9, 10, 11, 12, 13, 14, 15, 18, 19, 20	NONE			OXY USA WTP LP		PO BOX 27570	HOUSTON	TX	77227-7570

ATTACHMENT NO. 11

List of Directly Affected Landowners for Notice
and Recipients of Courtesy Notice to Pipeline Owners/Operators

Last Update: May 30, 2024

Reiter Switch - Tesoro Switch 345 kV Transmission Line
Ector and Midland Counties, Texas

ROUTES WITHIN 520 FT.	ROUTES: DIRECTLY AFFECTED	SEGMENTS WITHIN 520 FT.	SEGMENTS: DIRECTLY AFFECTED	TRACT	HABITABLE STRUCTURE	LAST NAME	FIRST NAME	BUSINESS NAME	ATTN TO	ADDRESS	CITY	STATE	ZIP
COURTESY NOTICES													
								CHEVRON U. S. A. INC.		PO BOX 6028	SAN RAMON	CA	94583-0728
								DCP OPERATING COMPANY, LP		411 S KEELER AVE	BARTLESVILLE	OK	74003-6620
								DIAMONDBACK E&P LLC		900 NW 63RD ST STE 200	OKLAHOMA CITY	OK	73116-7640
								ENTERPRISE PRODUCTS OPERATING LLC		PO BOX 4018	HOUSTON	TX	77210-4018
								EVERLINE COMPLIANCE, LLC		211 E 7TH ST STE 620	AUSTIN	TX	78701-3218
								MAGELLAN PIPELINE COMPANY, L.P.		PO BOX 871	TULSA	OK	74102-0871
								ONEOK WESTEX TRANSMISSION,L.L.C.		100 W 5TH ST	TULSA	OK	74103-4204
								PLAINS PIPELINE L.P.		333 CLAY STREET, SUITE 1600	HOUSTON	TX	77002-4101
								QUAIL RUN ENERGY PARTNERS, LP		591 W PUTNAM AVE	GREENWICH	CT	06830-6005
								TARGA PL MID-CONT WESTTEX LLC	TAX DEPT.	811 LOUISIANA, SUITE 2100	HOUSTON	TX	77002-1412
								WWM OPERATING, LLC		100 CONGRESS AVE STE 2200	AUSTIN	TX	78701-2747
								Permian Basin Petroleum Association		601 N MARIENFELD ST STE 200	MIDLAND	TX	79701
								Permian Basin Petroleum Association		1122 COLORADO STREET STE. 2320	AUSTIN	TX	78701
								Texas Oil and Gas Association		304 W 13TH ST	AUSTIN	TX	78701
								Texas Pipeline Association		604 W 14TH ST	AUSTIN	TX	78701

ATTACHMENT NO. 11

Application of Oncor Electric Delivery Company LLC to Amend a Certificate of Convenience and Necessity for the Reiter Switch – Tesoro Switch 345 kV Transmission Line Project in Ector and Midland Counties, Texas

PUBLIC UTILITY COMMISSION OF TEXAS (PUC) DOCKET NO. 56799

LANDOWNER:

This notice is provided to notify you that Oncor Electric Delivery Company LLC ("Oncor") has applied to amend its certificate of convenience and necessity ("CCN") to construct, own, and operate a new double-circuit 345 kV transmission line between Oncor's planned Reiter Switch in Ector County and Oncor's existing Tesoro Switch in Midland County ("Proposed Transmission Line Project"). The location of the planned Reiter Switch is approximately 1.2 miles north of the intersection of State Highway ("SH") Loop 338 and Farm-to-Market Road ("FM") 3503, south of Odessa, Texas. The Tesoro Switch is located approximately 1.5 miles southeast of the intersection of Interstate Highway ("IH") 20 and SH Loop 338 near Odessa, Texas. The Proposed Transmission Line Project includes modifications to the existing 345 kV switchyard at Tesoro Switch. The length of the Proposed Transmission Line Project is approximately 4.0 to 5.2 miles, with an estimated cost range of approximately $23,418,000 to $34,219,000 (including station costs), depending on which route is selected by the Public Utility Commission of Texas ("PUC").

Your land may be directly affected in this docket. If one of Oncor's routes is approved by the PUC, Oncor will have the right to build a facility which may directly affect your land. This docket will not determine the value of your land or the value of an easement if one is needed by Oncor to build the facility. If you have questions about this project, you may contact Christine Williams of Oncor at (214) 486-5841.

A detailed routing map may be reviewed at the following location:

Display Location	Address
Ector County Courthouse Annex	1010 E Eighth Street Odessa, TX 79761

All routes and route segments included in this notice are available for selection and approval by the Public Utility Commission of Texas.

Oncor is filing an application at the PUC to obtain approval for the Proposed Transmission Line Project. Landowners who are directly affected by the Proposed Transmission Line Project may intervene in the PUC proceeding. The enclosure entitled "Guide for Landowners Affected by a New Electric Transmission Line Route" provides basic information about how you may participate in this docket and how you may contact the PUC. Please read this guide carefully. The guide includes sample forms for making comments and for making a request to intervene as a party in this docket. ***The only way to fully participate in the proceeding is to intervene in this docket. It is important for an affected person to intervene because the utility is not obligated to keep affected***

persons informed of the PUC's proceedings and cannot predict which route may or may not be approved by the PUC.

In addition to the contacts listed in the guide, you may call the PUC's Customer Assistance Hotline at (888) 782-8477. Hearing- and speech-impaired individuals may contact the Commission through Relay Texas at 1-800-735-2989. If you wish to participate in this proceeding by becoming an intervenor, the deadline for intervention in the proceeding is **August 26, 2024**, which is 32 days after the filing of the application. The PUC must receive your request to intervene by that date if you choose to intervene. The request to intervene form is included with your guide.

The preferred method for you to file your request for intervention is electronically. If you decide to file a request for intervention, you will be required to serve the request on all other parties by email. Therefore, please include your own email address on the intervention form. Instructions for electronic filing via the "PUC Filer" on the PUC's website can be found here: https://interchange.puc.texas.gov/filer. Instructions for using the PUC Filer are available at https://ftp.puc.texas.gov/public/puct-info/industry/filings/E-Filing_Instructions.pdf. For assistance with your electronic filing, please contact the PUC's Help Desk at (512) 936-7100 or helpdesk@puc.texas.gov. You can review materials filed in this docket on the PUC Interchange at http://interchange.puc.texas.gov.

While the preferred method for submitting a request for intervention is electronically, you may file your request for intervention by mailing a hard copy of your request to the PUC. Any request must be received by the intervention deadline of **August 26, 2024**. If you are not filing your request for intervention electronically, mail the request for intervention and 10 copies of the request to:

Public Utility Commission of Texas
Central Records
Attn: Filing Clerk
1701 N. Congress Avenue
P.O. Box 13326
Austin, Texas 78711-3326

Persons who wish to intervene in the docket must also email or mail a copy of their request for intervention to all parties in the docket and all persons that have pending motions to intervene, at or before the time the request for intervention is electronically filed with, or mailed to, the PUC. In addition to the intervention deadline, other important deadlines may exist that affect your participation in this docket. You should review the orders and other filings made in the docket. The enclosed guide explains how you can access these filings.

Enclosures:

- Route Composition, Route Description and Maps
- Guide for Landowners Affected by a New Electric Transmission Line Route
- Request to Intervene Form
- Comment Form
- The State of Texas Landowner's Bill of Rights

Composition of Routes

Route	Link Sequence
1	A-B4-D3-E4-F5-H5-I5-I6-J-
4	A-B4-D3-E4-E5-F6-F8-F9-H7-J-
5	A-B4-D3-E4-E5-F6-F7-G7-H7-J-
6	A-B4-D3-E4-E5-E6-F9-H7-J-
7	A-B4-D3-F4-G4-H5-I5-I6-J-
10	A-B4-D3-F4-H4-I4-I5-I6-J-
13	A-A1-B2-D1-F2-G2-G3-G4-G5-H6-I6-J-
14	A-A1-B2-D1-F2-G2-G3-G4-G5-G6-G7-H7-J-
15	A-A1-B2-D1-F2-G2-G3-H4-I4-I5-I6-J-
27	A-A1-B2-C1-D2-F3-H3-I3-I4-I5-I6-J-
46	A-B3-C2-D3-E4-E5-F6-F7-G7-H7-J-
50	A-B3-C2-D3-F4-G4-G5-G6-G7-H7-J-
52	A-B3-D2-F3-H3-I3-I4-I5-I6-J-
53	A-B3-D2-F3-G3-G4-H5-I5-I6-J-
61	A-B3-D2-E3-E4-E5-F6-F7-G7-H7-J-
65	A-B3-D2-E3-F4-G4-G5-G6-G7-H7-J-
66	A-B3-D2-E3-F4-H4-I4-I5-I6-J-
73	A-B0-B1-E0-F1-G1-H2-I2-I3-I4-I5-I6-J-
88	A-B0-B1-E0-E1-E2-E3-E4-E5-F6-F8-F9-H7-J-
106	A-A1-A2-A4-E0-E1-F2-G2-G3-H4-I4-I5-I6-J-
123	A-B0-A3-A4-E0-F1-H1-I1-I2-I3-I4-I5-I6-J-

Link A

Link A begins at the location of the Reiter Switch, located approximately 3,990 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of FM 3503 in Ector County. From this point the link proceeds in a northeasterly direction approximately 630 feet before terminating at the intersection of **Links A, A1, B0, B3**, and **B4**, which is located approximately 3,990 feet south of Bates Field Road (Ector CR 1285) and 1,210 feet east of FM 3503.

Link A1

Link A1 begins at the intersection of **Links A, A1, B0, B3**, and **B4**, located approximately 3,990 feet south of Bates Field Road (Ector CR 1285) and 1,210 feet east of FM 3503 in Ector County. From this point the link proceeds in a northeasterly direction approximately 140 feet before terminating at the intersection of **Links A1, A2,** and **B2**, which is located approximately 4,000 feet south of Bates Field Road (Ector CR 1285) and 1,360 feet east of FM 3503.

Link A2

Link A2 begins at the intersection of **Links A1, A2,** and **B2**, located approximately 4,000 feet south of Bates Field Road (Ector CR 1285) and 1,360 feet east of FM 3503 in Ector County. From this point the link proceeds in a southeasterly direction approximately 450 feet to an angle point. From this angle point, Link A2 proceeds in a northeasterly direction approximately 360 feet before terminating at the intersection of **Links A2, A3,** and **A4**, which is located approximately 4,460 feet south of Bates Field Road (Ector CR 1285) and 1,730 feet east of FM 3503.

Link A3

Link A3 begins at the intersection of **Links A3, B0**, and **B1**, located approximately 4,320 feet south of Bates Field Road (Ector CR 1285) and 1,720 feet east of FM 3503 in Ector County. From this point the link proceeds in a southeasterly direction approximately 140 feet before terminating at the intersection of **Links A2, A3,** and **A4**, which is located approximately 4,460 feet south of Bates Field Road (Ector CR 1285) and 1,730 feet east of FM 3503.

Link A4

Link A4 begins at the intersection of **Links A2, A3,** and **A4**, located approximately 4,460 feet south of Bates Field Road (Ector CR 1285) and 1,730 feet east of FM 3503 in Ector County. From this point the link proceeds in a southeasterly direction approximately 1,160 feet to an angle point. From this angle point, Link A4 proceeds in a northeasterly direction approximately 2,490 feet before terminating at the intersection of **Links A4, B1,** and **E0**, which is located approximately 5,930 feet south of Bates Field Road (Ector CR 1285) and 120 feet west of Loop 338.

Link B0

Link B0 begins at the intersection of **Links A, A1, B0, B3**, and **B4**, located approximately 3,990 feet south of Bates Field Road (Ector CR 1285) and 1,210 feet east of FM 3503 in Ector County. From this point the link proceeds in a southeasterly direction approximately 580 feet before terminating at the intersection of **Links A3, B0,** and **B1**, which is located approximately 4,320 feet south of Bates Field Road (Ector CR 1285) and 1,720 feet east of FM 3503.

Link B1

Link B1 begins at the intersection of **Links A3, B0**, and **B1**, located approximately 4,320 feet south of Bates Field Road (Ector CR 1285) and 1,720 feet east of FM 3503 in Ector County. From this point the link proceeds in a southeasterly direction approximately 2,920 feet before

terminating at the intersection of **Links A4, B1,** and **E0**, which is located approximately 5,930 feet south of Bates Field Road (Ector CR 1285) and 120 feet west of Loop 338.

Link B2

Link B2 begins at the intersection of **Links A1, A2,** and **B2**, located approximately 4,000 feet south of Bates Field Road (Ector CR 1285) and 1,360 feet east of FM 3503 in Ector County. From this point the link proceeds in a northeasterly direction approximately 2,660 feet, crossing a natural gas pipeline and a liquids pipeline. Link B2 then terminates at the intersection of **Links B2, C1,** and **D1**, which is located approximately 4,020 feet south of Bates Field Road (Ector CR 1285) and 1,130 feet west of Loop 338.

Link B3

Link B3 begins at the intersection of **Links A, A1, B0, B3,** and **B4**, located approximately 3,990 feet south of Bates Field Road (Ector CR 1285) and 1,210 feet east of FM 3503 in Ector County. From this point the link proceeds in a northeasterly direction approximately 2,360 feet, crossing two natural gas pipelines, a liquids pipeline and a crude oil pipeline. From this angle point, Link B3 proceeds in a northeasterly direction approximately 860 feet before terminating at the intersection of **Links B3, C1, C2,** and **D2**, which is located approximately 2,630 feet south of Bates Field Road (Ector CR 1285) and 1,660 feet west of Loop 338.

Link B4

Link B4 begins at the intersection of **Links A, A1, B0, B3,** and **B4**, located approximately 3,990 feet south of Bates Field Road (Ector CR 1285) and 1,210 feet east of FM 3503 in Ector County. From this point the link proceeds in a northwesterly direction approximately 2,770 feet, crossing two natural gas pipelines, a crude oil pipeline and a liquids pipeline. From this angle point, Link B4 proceeds in a northeasterly direction approximately 2,800 feet before terminating at the intersection of **Links B4, C2,** and **D3**, which is located approximately 1,120 feet south of Bates Field Road (Ector CR 1285) and 1,730 feet west of Loop 338.

Link C1

Link C1 begins at the intersection of **Links B2, C1,** and **D1**, located approximately 4,020 feet south of Bates Field Road (Ector CR 1285) and 1,130 feet west of Loop 338 in Ector County. From this point the link proceeds in a northwesterly direction approximately 1,350 feet, crossing a natural gas pipeline and a crude oil pipeline. Link C1 then terminates at the intersection of **Links B3, C1, C2,** and **D2**, which is located approximately 2,630 feet south of Bates Field Road (Ector CR 1285) and 1,660 feet west of Loop 338.

Link C2

Link C2 begins at the intersection of **Links B3, C1, C2,** and **D2**, located approximately 2,630 feet south of Bates Field Road (Ector CR 1285) and 1,660 feet west of Loop 338 in Ector County. From this point the link proceeds in a northwesterly direction approximately 1,450 feet before terminating at the intersection of **Links B4, C2,** and **D3**, which is located approximately 1,120 feet south of Bates Field Road (Ector CR 1285) and 1,730 feet west of Loop 338.

Link D1

Link D1 begins at the intersection of **Links B2, C1,** and **D1**, located approximately 4,020 feet south of Bates Field Road (Ector CR 1285) and 1,130 feet west of Loop 338 in Ector County. From this point the link proceeds in a southeasterly direction approximately 2,560 feet, crossing Loop 338 and two natural gas pipelines. Link D1 then terminates at the intersection of **Links**

D1, E1, E2, and **F2**, which is located approximately 5,330 feet south of Bates Field Road (Ector CR 1285) and 1,490 feet east of Loop 338.

Link D2
Link D2 begins at the intersection of **Links B3, C1, C2,** and **D2**, located approximately 2,630 feet south of Bates Field Road (Ector CR 1285) and 1,660 feet west of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction approximately 2,230 feet, crossing three natural gas pipelines, a crude oil pipeline and Loop 338. Link D2 then terminates at the intersection of **Links D2, E2, E3,** and **F3**, which is located approximately 2,600 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of Loop 338.

Link D3
Link D3 begins at the intersection of **Links B4, C2,** and **D3**, located approximately 1,120 feet south of Bates Field Road (Ector CR 1285) and 1,730 feet west of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction approximately 2,240 feet, crossing three natural gas pipelines, a crude oil pipeline and Loop 338. Link D3 then terminates at the intersection of **Links D3, E3, E4,** and **F4**, which is located approximately 1,110 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of Loop 338.

Link E0
Link E0 begins at the intersection of **Links A4, B1,** and **E0**, located approximately 5,930 feet south of Bates Field Road (Ector CR 1285) and 120 feet west of Loop 338 in Ector County. From this point the link proceeds in a southeasterly direction approximately 1,270 feet, crossing Loop 338. Link E0 then terminates at the intersection of **Links E0, E1,** and **F1**, which is located approximately 6,610 feet south of Bates Field Road (Ector CR 1285) and 1,170 feet east of Loop 338.

Link E1
Link E1 begins at the intersection of **Links E0, E1,** and **F1**, located approximately 6,610 feet south of Bates Field Road (Ector CR 1285) and 1,170 feet east of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction approximately 1,570 feet, crossing two natural gas pipelines and a liquids pipeline. Link E1 then terminates at the intersection of **Links D1, E1, E2,** and **F2**, which is located approximately 5,330 feet south of Bates Field Road (Ector CR 1285) and 1,490 feet east of Loop 338.

Link E2
Link E2 begins at the intersection of **Links D1, E1, E2,** and **F2**, located approximately 5,330 feet south of Bates Field Road (Ector CR 1285) and 1,490 feet east of Loop 338 in Ector County. From this point the link proceeds in a northwesterly direction approximately 2,650 feet, crossing a natural gas pipeline. Link E2 then terminates at the intersection of **Links D2, E2, E3**, and **F3**, which is located approximately 2,600 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of Loop 338.

Link E3
Link E3 begins at the intersection of **Links D2, E2, E3**, and **F3**, located approximately 2,600 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of Loop 338 in Ector County. From this point the link proceeds in a northwesterly direction approximately 1,450 feet before terminating at the intersection of **Links D3, E3, E4**, and **F4,** which is located approximately 1,110 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of Loop 338.

Link E4

Link E4 begins at the intersection of **Links D3, E3, E4**, and **F4**, located approximately 1,110 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of Loop 338 in Ector County. From this point the link proceeds in a northwesterly direction approximately 2,820 feet, crossing a liquids pipeline, Bates Field Road (Ector CR 1285), and three refined liquid product pipelines. Link E4 then terminates at the intersection of **Links E4, E5**, and **F5**, which is located approximately 1,800 feet north of Bates Field Road (Ector CR 1285) and 580 feet east of Loop 338.

Link E5

Link E5 begins at the intersection of **Links E4, E5**, and **F5**, located approximately 1,800 feet north of Bates Field Road (Ector CR 1285) and 580 feet east of Loop 338 in Ector County. From this point the link proceeds in a northwesterly direction approximately 2,230 feet, crossing a liquids pipeline and an existing transmission line. Link E5 then terminates at the intersection of **Links E5, E6,** and **F6**, which is located approximately 4,100 feet north of Bates Field Road (Ector CR 1285) and 630 feet east of Loop 338.

Link E6

Link E6 begins at the intersection of **Links E5, E6,** and **F6**, located approximately 4,100 feet north of Bates Field Road (Ector CR 1285) and 630 feet east of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction approximately 1,750 feet to an angle point. From this angle point, the link proceeds in a northeasterly direction approximately 2,620 feet, crossing five natural gas pipelines, a crude FWS pipeline, a liquids pipeline and the Ector/Midland County boundary. Link E6 terminates at the intersection of **Links E6, F8,** and **F9**, which is located approximately 5,880 feet north of Midland CR 171 and 4,070 feet east of Loop 338 in Midland County.

Link F1

Link F1 begins at the intersection of **Links E0, E1,** and **F1**, located approximately 6,610 feet south of Bates Field Road (Ector CR 1285) and 1,170 feet east of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction approximately 5,460 feet, crossing two natural gas pipelines, two liquids pipelines and the and the Ector/Midland County boundary. Link F1 terminates at the intersection of **Links F1, G1,** and **H1**, which is located approximately 6,660 feet south of Midland CR 171 and 3,450 feet west of CR 1325 in Midland County.

Link F2

Link F2 begins at the intersection of **Links D1, E1, E2,** and **F2**, located approximately 2,600 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction approximately 4,480 feet, crossing the Ector/Midland County boundary, a natural gas pipeline, and a liquids pipeline. Link F2 terminates at the intersection of **Links F2, G1, G2,** and **H2**, which is located approximately 5,290 feet south of Midland CR 171 and 3,470 feet west of CR 1325 in Midland County.

Link F3

Link F3 begins at the intersection of **Links D2, E2, E3,** and **F3**, located approximately 2,600 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction approximately 4,440 feet, crossing the Ector/Midland County boundary, a liquids pipeline, and a natural gas pipeline. Link F3 terminates at the intersection of **Links F3, G2, G3,** and **H3**, which is located approximately 2,600 feet south of Midland CR 171 and 3,500 feet west of CR 1325 in Midland County.

Link F4
Link F4 begins at the intersection of **Links D3, E3, E4,** and **F4**, located approximately 1,110 feet south of Bates Field Road (Ector CR 1285) and 570 feet east of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction approximately 4,420 feet, crossing the Ector/Midland County boundary, a liquids pipeline, and a natural gas pipeline. Link F4 terminates at the intersection of **Links F4, G3, G4,** and **H4**, which is located approximately 1,070 feet south of Midland CR 171 and 3,520 feet west of CR 1325 in Midland County.

Link F5
Link F5 begins at the intersection of **Links E4, E5,** and **F5**, located approximately 1,800 feet north of Bates Field Road (Ector CR 1285) and 580 feet east of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction approximately 4,420 feet, crossing a liquids pipeline and the Ector/Midland County boundary. Link F5 terminates at the intersection of **Links F5, G4, G5,** and **H5**, which is located approximately 1,810 feet north of Midland CR 171 and 5,130 feet east of Loop 338 in Midland County.

Link F6
Link F6 begins at the intersection of **Links E5, E6,** and **F6**, located approximately 4,100 feet north of Bates Field Road (Ector CR 1285) and 630 feet east of Loop 338 in Ector County. From this point the link proceeds in a northeasterly direction, parallel to the north side of an existing transmission line for approximately 2,810 feet, crossing five natural gas pipelines, a crude FWS pipeline, a liquids pipeline, and the Ector/Midland County boundary. Link F6 terminates at the intersection of **Links F6, F7,** and **F8**, which is located approximately 4,100 feet north of Midland CR 171 and 3,580 feet east of Loop 338 in Midland County.

Link F7
Link F7 begins at the intersection of **Links F6, F7,** and **F8**, located approximately 4,100 feet north of Midland CR 171 and 3,580 feet east of Loop 338 in Midland County. From this point the link proceeds in a northeasterly direction, parallel to the north side of an existing transmission line for approximately 1,300 feet before terminating at the intersection of **Links F7, G6,** and **G7**, which is located approximately 4,080 feet north of Midland CR 171 and 4,930 feet east of Loop 338.

Link F8
Link F8 begins at the intersection of **Links F6, F7,** and **F8**, located approximately 4,100 feet north of Midland CR 171 and 3,580 feet east of Loop 338 in Midland County. From this point the link proceeds in a northerly direction approximately 1,790 feet before terminating at the intersection of **Links E6, F8,** and **F9**, which is located approximately 5,880 feet north of Midland CR 171 and 4,070 feet east of Loop 338.

Link F9
Link F9 begins at the intersection of **Links E6, F8,** and **F9**, located approximately 5,880 feet north of Midland CR 171 and 4,070 feet east of Loop 338 in Midland County. From this point the link proceeds in a northeasterly direction, parallel to the south side of an existing transmission line for approximately 1,870 feet, crossing two natural gas pipelines. Link F9 terminates at the intersection of **Links F9, G7,** and **H7**, which is located approximately 5,900 feet north of Midland CR 171 and 6,000 feet east of Loop 338.

Link G1
Link G1 begins at the intersection of **Links F1, G1,** and **H1**, located approximately 6,660 feet south of Midland CR 171 and 3,450 feet west of CR 1325 in Midland County. From this point

the link proceeds in a northwesterly direction approximately 1,320 before terminating at the intersection of **Links F2, G1, G2,** and **H2**, which is located approximately 5,290 feet south of Midland CR 171 and 3,470 feet west of CR 1325.

Link G2

Link G2 begins at the intersection of **Links F2, G1, G2,** and **H2**, located approximately 5,290 feet south of Midland CR 171 and 3,470 feet west of CR 1325 in Midland County. From this point the link proceeds in a northwesterly direction approximately 2,610 feet, crossing a natural gas pipeline. Link G2 terminates at the intersection of **Links F3, G2, G3,** and **H3**, which is located approximately 2,600 feet south of Midland CR 171 and 3,500 feet west of CR 1325.

Link G3

Link G3 begins at the intersection of **Links F3, G2, G3,** and **H3**, located approximately 2,600 feet south of Midland CR 171 and 3,500 feet west of CR 1325 in Midland County. From this point the link proceeds in a northwesterly direction approximately 1,480 feet before terminating at the intersection of **Links F4, G3, G4,** and **H4**, which is located approximately 1,070 feet south of Midland CR 171 and 3,520 feet west of CR 1325.

Link G4

Link G4 begins at the intersection of **Links F4, G3, G4,** and **H4**, located approximately 1,070 feet south of Midland CR 171 and 3,520 feet west of CR 1325 in Midland County. From this point the link proceeds in a northwesterly direction approximately 2,780 feet, crossing Midland CR 171 and three refined liquid product pipelines. Link G4 terminates at the intersection of **Links F5, G4, G5,** and **H5**, which is located approximately 1,810 feet north of Midland CR 171 and 5,130 feet east of Loop 338.

Link G5

Link G5 begins at the intersection of **Links F5, G4, G5,** and **H5**, located approximately 1,810 feet north of Midland CR 171 and 5,130 feet east of Loop 338 in Midland County. From this point the link proceeds in a northwesterly direction approximately 610 feet before terminating at the intersection of **Links G5, G6,** and **H6**, which is located approximately 2,440 feet north of Midland CR 171 and 5,150 feet east of Loop 338.

Link G6

Link G6 begins at the intersection of **Links G5, G6,** and **H6**, located approximately 2,440 feet north of Midland CR 171 and 5,150 feet east of Loop 338 in Midland County. From this point the link proceeds in a northwesterly direction approximately 600 feet to an angle point, crossing a liquids pipeline. From this angle point, the link proceeds in a northwesterly direction approximately 1,080 feet, crossing five natural gas pipelines, a crude FWS pipeline, and an existing transmission line. Link **G6** terminates at the intersection of **Links F7, G6,** and **G7**, which is located approximately 4,080 feet north of Midland CR 171 and 4,930 feet east of Loop 338.

Link G7

Link G7 begins at the intersection of **Links F7, G6,** and **G7**, located approximately 4,080 feet north of Midland CR 171 and 4,930 feet east of Loop 338 in Midland County. From this point the link proceeds in a northeasterly direction approximately 2,050 feet, crossing two natural gas pipelines. Link G7 terminates at the intersection of **Links F9, G7,** and **H7**, which is located approximately 5,900 feet north of Midland CR 171 and 6,000 feet east of Loop 338.

Link H1

Link H1 begins at the intersection of **Links F1, G1,** and **H1**, located approximately 6,660 feet south of Midland CR 171 and 3,450 feet west of CR 1325 in Midland County. From this point the link proceeds in a northeasterly direction for approximately 2,740 feet, crossing four natural gas pipelines and a liquids pipeline. Link H1 terminates at the intersection of **Links H1** and **I1**, which is located approximately 6,700 feet south of Midland CR 171 and 630 feet west of CR 1325.

Link H2

Link H2 begins at the intersection of **Links F2, G1, G2,** and **H2**, located approximately 5,290 feet south of Midland CR 171 and 3,470 feet west of CR 1325 in Midland County. From this point the link proceeds in a northeasterly direction for approximately 2,780 feet, crossing three natural gas pipelines and a liquids pipeline. Link H2 terminates at the intersection of **Links H2, I1,** and **I2**, which is located approximately 5,280 feet south of Midland CR 171 and 600 feet west of CR 1325.

Link H3

Link H3 begins at the intersection of **Links F3, G2, G3,** and **H3**, located approximately 2,600 feet south of Midland CR 171 and 3,500 feet west of CR 1325 in Midland County. From this point the link proceeds in a northeasterly direction for approximately 2,910 feet, crossing four natural gas pipelines and a liquids pipeline. Link H3 terminates at the intersection of **Links H3, I2,** and **I3**, which is located approximately 2,170 feet south of Midland CR 171 and 530 feet west of CR 1325.

Link H4

Link H4 begins at the intersection of **Links F4, G3, G4,** and **H4**, located approximately 1,070 feet south of Midland CR 171 and 3,520 feet west of CR 1325 in Midland County. From this point the link proceeds in a northeasterly direction for approximately 2,870 feet crossing four natural gas pipelines and a liquids pipeline. Link H4 terminates at the intersection of **Links H4, I3,** and **I4**, which is located approximately 1,040 feet south of Midland CR 171 and 560 feet west of CR 1325.

Link H5

Link H5 begins at the intersection of **Links F5, G4, G5,** and **H5**, located approximately 1,810 feet north of Midland CR 171 and 5,130 feet east of Loop 338 in Midland County. From this point the link proceeds in a northeasterly direction for approximately 2,800 feet, crossing three natural gas pipelines and a liquids pipeline. Link H5 terminates at the intersection of **Links H5, I4,** and **I5**, which is located approximately 1,800 feet north of Midland CR 171 and 8,040 feet east of Loop 338.

Link H6

Link H6 begins at the intersection of **Links G5, G6,** and **H6**, located approximately 2,440 feet north of Midland CR 171 and 5,150 feet east of Loop 338 in Midland County. From this point the link proceeds in a northerly direction approximately 1,340 feet, crossing six natural gas pipelines, a crude FWS, and a liquids pipeline. From this angle point, the link proceeds in a northeasterly direction, parallel to the south side of an existing transmission line for approximately 2,280 feet, crossing four natural gas pipelines and a liquids pipeline. Link H6 terminates at the intersection of **Links H6, I5,** and **I6**, which is located approximately 3,730 feet north of Midland CR 171 and 8,040 feet east of Loop 338.

Link H7

Link H7 begins at the intersection of **Links F9, G7,** and **H7**, located approximately 5,900 feet north of Midland CR 171 and 6,000 feet east of Loop 338 in Midland County. From this point the link proceeds in a northeasterly direction, parallel to the south side of an existing transmission line for approximately 1,740 feet, crossing three natural gas pipelines and a liquids pipeline. Link H7 terminates at the intersection of **Links H7, I6,** and **J**, which is located approximately 5,920 feet north of Midland CR 171 and 7,780 feet east of Loop 338.

Link I1

Link I1 begins at the intersection of **Links H1** and **I1**, located approximately 6,700 feet south of Midland CR 171 and 630 feet west of CR 1325 in Midland County. From this point the link proceeds in a northwesterly direction for approximately 1,370 feet before terminating at the intersection of **Links H2, I1** and **I2**, which is located approximately 5,280 feet south of Midland CR 171 and 600 feet west of CR 1325.

Link I2

Link I2 begins at the intersection of **Links H2, I1,** and **I2**, located approximately 5,280 feet south of Midland CR 171 and 600 feet west of CR 1325 in Midland County. From this point the link proceeds in a northwesterly direction for approximately 3,000 feet, crossing one crude oil pipeline and four natural gas pipelines. Link I2 terminates at the intersection of **Links H3, I2,** and **I3**, which is located approximately 2,170 feet south of Midland CR 171 and 530 feet west of CR 1325.

Link I3

Link I3 begins at the intersection of **Links H3, I2,** and **I3**, located approximately 2,170 feet south of Midland CR 171 and 530 feet west of CR 1325 in Midland County. From this point the link proceeds in a northwesterly direction for approximately 1,090 feet before terminating at the intersection of **Links H4, I3,** and **I4**, which is located approximately 1,040 feet south of Midland CR 171 and 560 feet west of CR 1325.

Link I4

Link I4 begins at the intersection of **Links H4, I3,** and **I4**, located approximately 1,040 feet south of Midland CR 171 and 560 feet west of CR 1325 in Midland County. From this point the link proceeds in a northwesterly direction for approximately 2,760 feet, crossing Midland CR 171 and three refined liquid product pipelines. Link I4 terminates at the intersection of **Links H5, I4,** and **I5**, which is located approximately 1,800 feet north of Midland CR 171 and 8,040 feet east of Loop 338.

Link I5

Link I5 begins at the intersection of **Links H5, I4,** and **I5**, located approximately 1,800 feet north of Midland CR 171 and 8,040 feet east of Loop 338 in Midland County. From this point the link proceeds in a northwesterly direction for approximately 1,870 feet before terminating at the intersection of **Links H6, I5,** and **I6**, which is located approximately 3,730 feet north of Midland CR 171 and 8,040 feet east of Loop 338.

Link I6

Link I6 begins at the intersection of **Links H6, I5,** and **I6**, located approximately 3,730 feet north of Midland CR 171 and 8,040 feet east of Loop 338 in Midland County. From this point the link proceeds in a northwesterly direction for approximately 930 feet to a slight angle point, crossing an existing transmission line and a natural gas pipeline. From this slight angle point, the link proceeds in a northwesterly direction approximately 1,210 feet, crossing a natural gas pipeline.

Link I6 terminates at the intersection of **Links H7, I6,** and **J**, which is located approximately 5,920 feet north of Midland CR 171 and 7,780 feet east of Loop 338.

Link J

Link J begins at the intersection of **Links H7, I6,** and **J**, located approximately 5,920 feet north of Midland CR 171 and 7,780 feet east of Loop 338 in Midland County. From this point the link proceeds in a northwesterly direction, parallel to the east and west sides of existing transmission lines for approximately 910 feet. Link J then terminates at the Tesoro Switch, which is located approximately 7,550 feet north of Midland CR 171 and 6,850 feet east of Loop 338 in Midland County.

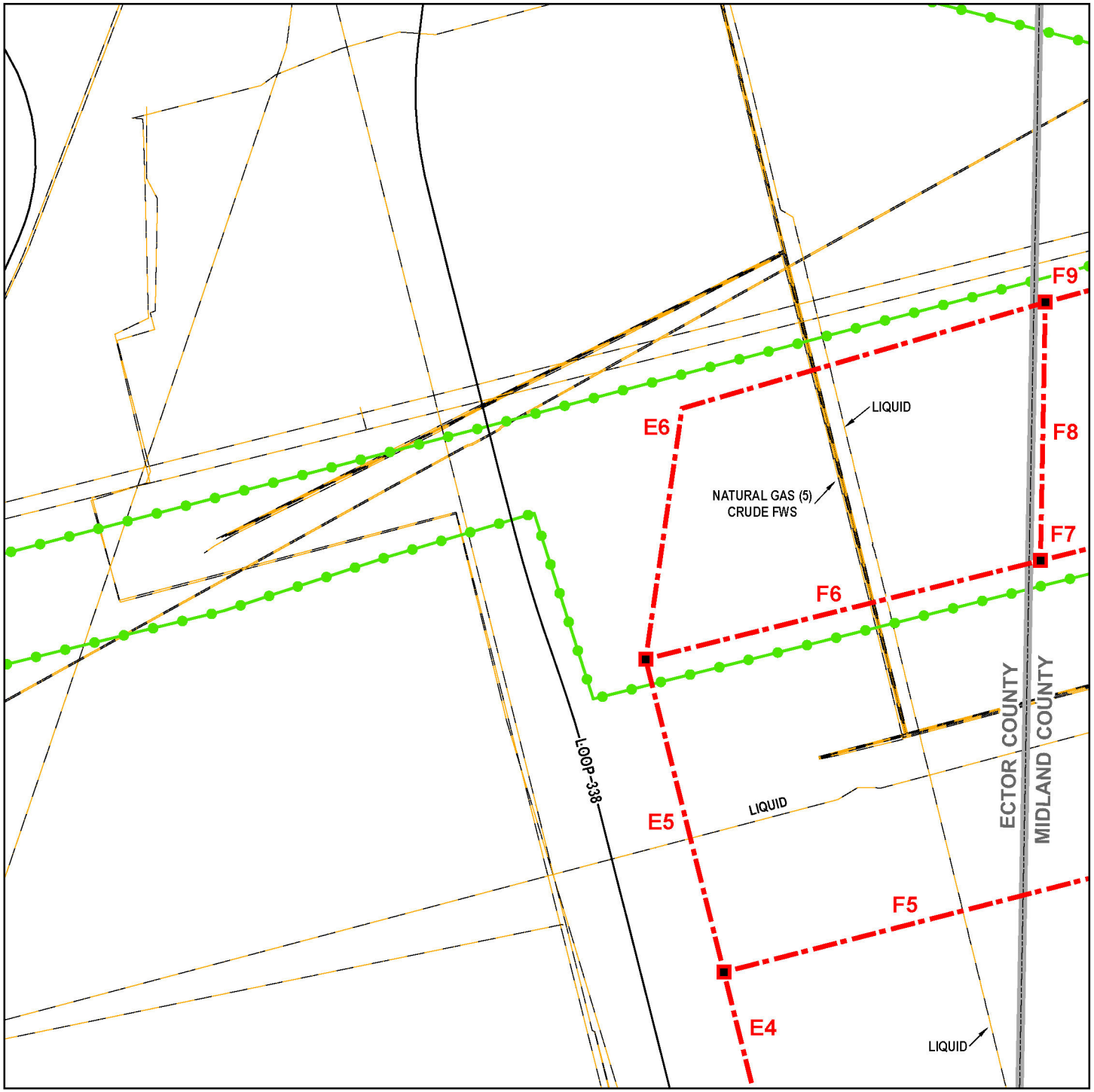


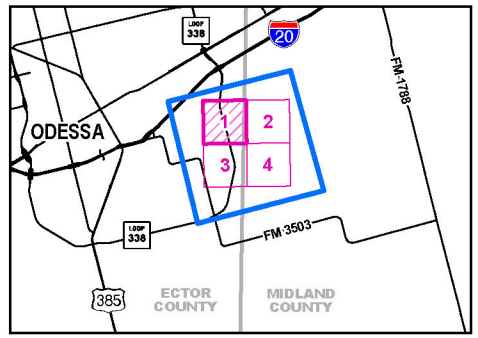
FIGURE 1
DETAILED ROUTE DESCRIPTION MAP
REITER SWITCH — TESORO SWITCH
345 KV TRANSMISSION LINE PROJECT

LEGEND

- TESORO SWITCH
- REITER SWITCH
- COUNTY BOUNDARY
- STUDY AREA
- NODE BETWEEN ADJACENT ROUTE LINKS
- ALTERNATIVE ROUTE LINK
- EXISTING TRANSMISSION LINE
- ROADWAY
- PIPELINE

SOURCE: TNRIS, 2024

STUDY AREA LOCATION



0 1,000 2,000

FEET

ONCOR

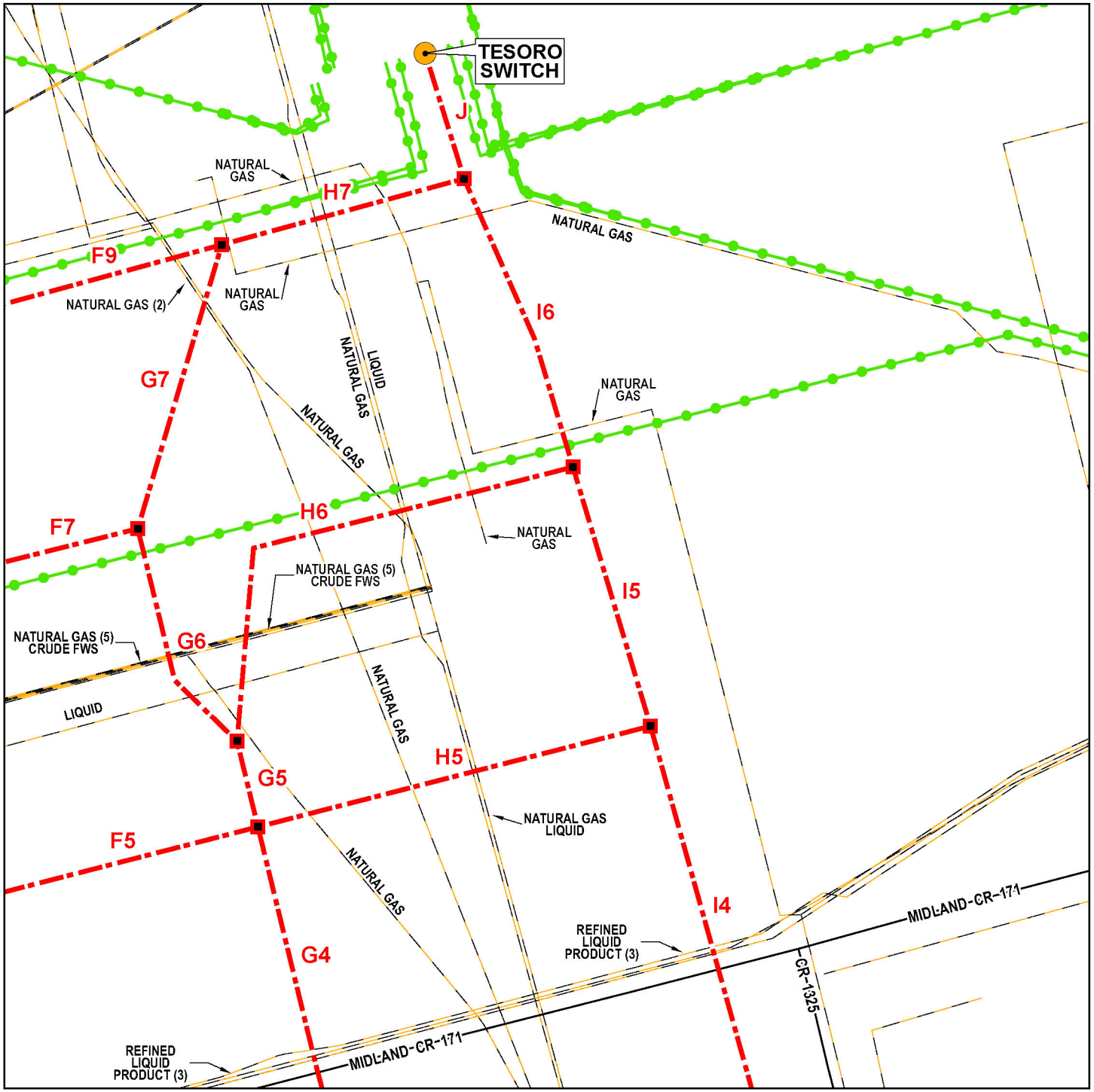


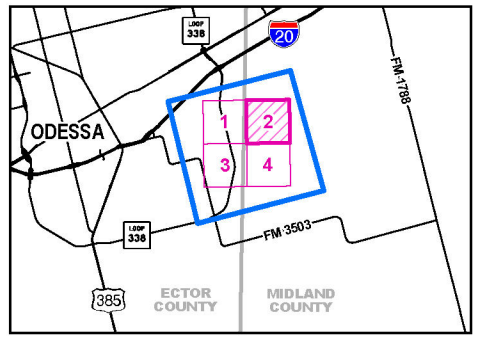
FIGURE 2
DETAILED ROUTE DESCRIPTION MAP
REITER SWITCH — TESORO SWITCH
345 KV TRANSMISSION LINE PROJECT

LEGEND

- TESORO SWITCH
- REITER SWITCH
- COUNTY BOUNDARY
- STUDY AREA
- NODE BETWEEN ADJACENT ROUTE LINKS
- ALTERNATIVE ROUTE LINK
- EXISTING TRANSMISSION LINE
- ROADWAY
- PIPELINE

SOURCE: TNRIS, 2024

STUDY AREA LOCATION



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FEET

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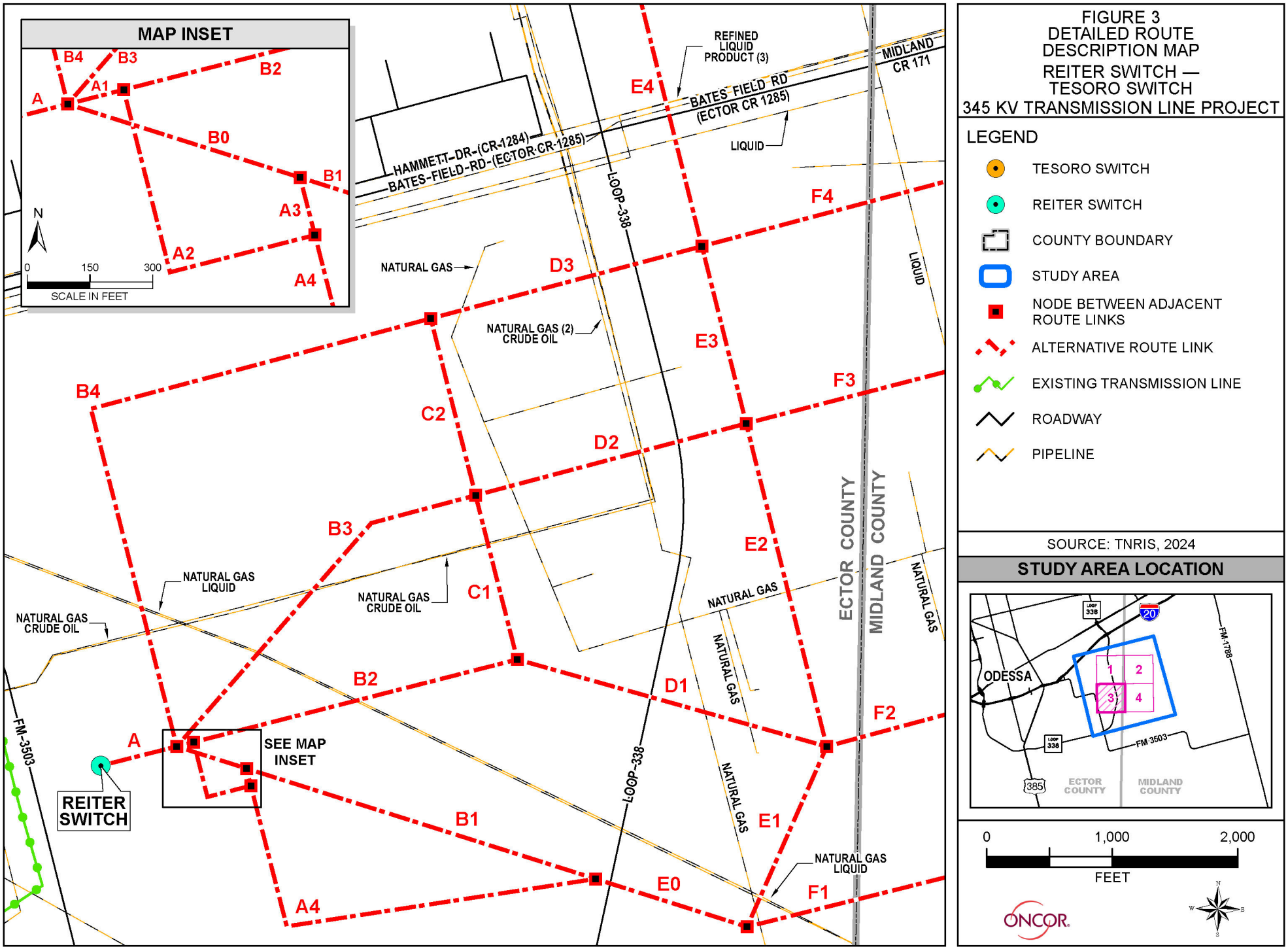


FIGURE 3
DETAILED ROUTE DESCRIPTION MAP
REITER SWITCH — TESORO SWITCH
345 KV TRANSMISSION LINE PROJECT

LEGEND

- TESORO SWITCH
- REITER SWITCH
- COUNTY BOUNDARY
- STUDY AREA
- NODE BETWEEN ADJACENT ROUTE LINKS
- ALTERNATIVE ROUTE LINK
- EXISTING TRANSMISSION LINE
- ROADWAY
- PIPELINE

SOURCE: TNRIS, 2024

STUDY AREA LOCATION

0 1,000 2,000
FEET

ONCOR

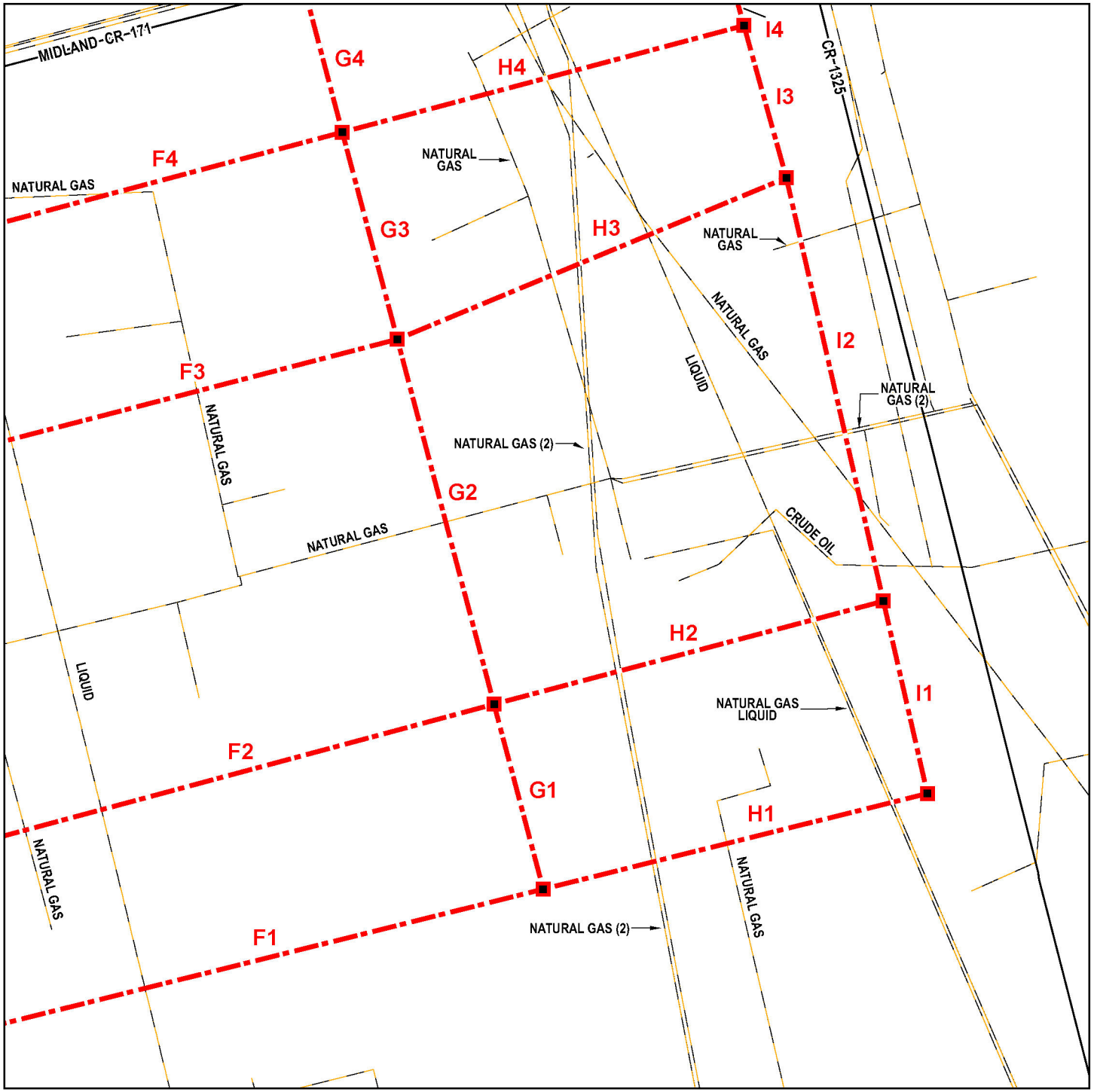


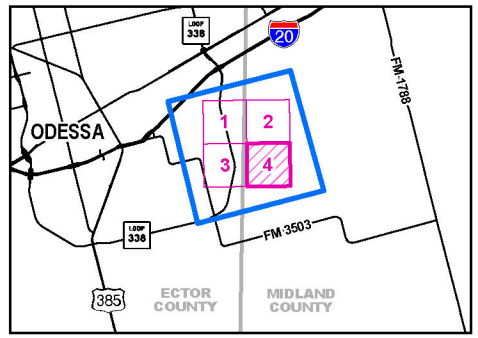
FIGURE 4
DETAILED ROUTE DESCRIPTION MAP
REITER SWITCH — TESORO SWITCH
345 KV TRANSMISSION LINE PROJECT

LEGEND

- TESORO SWITCH
- REITER SWITCH
- COUNTY BOUNDARY
- STUDY AREA
- NODE BETWEEN ADJACENT ROUTE LINKS
- ALTERNATIVE ROUTE LINK
- EXISTING TRANSMISSION LINE
- ROADWAY
- PIPELINE

SOURCE: TNRIS, 2024

STUDY AREA LOCATION



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FEET

ONCOR

PUBLIC UTILITY COMMISSION OF TEXAS

Guide for Landowners Affected by a New Electric Transmission Line Route

Why am I receiving this notice?

You are receiving this notice because your property is near one of the possible routes for a proposed electric transmission line. You can find maps of the proposed routes on the website of the company that applied to build the line.

What does the Public Utility Commission of Texas (PUCT) do?

The PUCT is the Texas state agency that decides if a transmission line is needed and what route the line will follow. The PUCT does not build or operate electric transmission lines.

What are transmission lines and why do we need them?

Electric transmission lines carry electricity long distances across the state. They bring electricity from power plants to cities and neighborhoods where they link to smaller wires called distribution-level wires, that carry electricity to individual customers' homes and businesses. New electric transmission lines are needed where there is growth in electricity demand or where existing transmission lines are at full capacity.

Public Participation in the Transmission Line Siting Process

How can I participate?

Depending on the level of participation you choose, you can either be a protestor or an intervenor.

- **Protestors** – If you have concerns about the transmission line, you can send us written comments about the proposed routes. These comments are filed in the public record and are available to e anyone who is interested in the application. Comments help inform the PUCT Commissioners and staff of the public concerns.
- **Intervenors** – Intervening makes you an official participant in the legal case where the transmission line and the route are debated in front of a judge and the PUC Commissioners. You will be allowed to present evidence in the case and can cross-examine witnesses. You can testify in the case and may also be cross-examined by the other parties in the case. Intervenors must follow along with the process of the case, respond to requests from the Administrative Law Judge (ALJ) and other parties, and actively participate in the case. Otherwise, they may lose their status as an intervenor. Intervenors are not required to have an attorney.

Why should I participate?

If you have any concerns about the proposed routes, the PUCT encourages you to participate in the siting process. As a landowner, you have detailed knowledge of the impacted area that might not be reflected in the application. Sharing your knowledge with the PUCT allows us to make better-informed decisions about the route of the line.

How can I follow the process?

All the documents related to a case are filed in the PUCT public document interchange. You can search for the case by name or by the five-digit docket number. You can also sign up to receive a notification every time a new document is added related to the case. The interchange is at https://interchange.puc.texas.gov/

What is the process?

After the company applies to build a new transmission line to the PUCT, technical staff reviews the application. The PUCT sends the application to the State Office of Administrative Hearings (SOAH) when an intervenor or technical staff requests a hearing. A SOAH judge will schedule a prehearing conference to address procedural matters, including setting a procedural schedule for the case. The procedural schedule will set a hearing date, deadlines to request information from other participants and deadlines to file written testimony prior to the hearing. SOAH conferences and hearings can be held by video conference with a call-in option. All participants in the case must attend the hearing to have their written testimony entered into evidence. After the hearing, the SOAH judge will give the PUCT a recommendation about the route.

The PUCT Commissioners are not bound by this recommendation in selecting a route for the transmission line. The PUCT Commissioners will issue a final decision at a public meeting, which the people participating in the case can attend and request to make a statement. The PUCT Commissioners can and sometimes do make alterations to the route in response to statements from landowners. The company building the transmission line will then negotiate with landowners for the easements on their property. PUCT Commissioners meet in public meetings broadcast online.

During the time the case is going through the hearing process, participants in the case also negotiate to find a route that satisfies everyone. The PUCT Commissioners are not required to approve a negotiated route.

The entire process can take up to six months.

Where do I go for more information?

The company that has applied to build the line will have maps on their website. For more information about how to participate in the process please contact the PUCT Office of Public Engagement https://www.puc.texas.gov/agency/about/ope/ or 512-936-7374.

Guía Para Propietarios Afectados por Una Nueva Ruta de Línea de Transmisión Eléctrica

¿Por qué recibo este aviso?

Está recibiendo este aviso porque su propiedad está cerca de una de las posibles rutas para una línea de transmisión eléctrica propuesta o cerca de un sitio de subestación propuesto. Puede encontrar mapas de las rutas propuestas en la solicitud de la compañía en el intercambio de la Comisión de Servicios Públicos de Texas (PUCT) utilizando el número de expediente de cinco dígitos.

¿Qué hace la PUCT?

La PUCT es la agencia estatal de Texas que decide si se necesita una línea de transmisión y qué ruta seguirá la línea. La PUCT no construye ni opera líneas de transmisión eléctrica.

¿Qué son las líneas de transmisión y por qué las necesitamos?

Las líneas de transmisión eléctrica transportan electricidad a largas distancias por todo el estado. Llevan la electricidad desde las plantas de energía a las ciudades y vecindarios donde se conectan a cables más pequeños llamados cables de nivel de distribución, que llevan la electricidad a los hogares y negocios de los clientes individuales. Se necesitan nuevas líneas de transmisión eléctrica donde hay un aumento en la demanda de electricidad o donde las líneas de transmisión existentes están a capacidad completa y es necesario ampliarlas.

Participación Pública en el Proceso de Emplazamiento de Líneas de Transmisión

¿Cómo puedo participar?

Según el nivel de participación que elija, puede ser un manifestante o un interventor.

- **Manifestantes** – Si tienen inquietudes sobre la línea de transmisión, pueden enviarnos comentarios por escrito sobre las rutas propuestas. Estos comentarios se archivan en el registro público y están disponibles para cualquier persona interesada en la solicitud. Los comentarios ayudan a informar a los comisionados y al personal de la PUCT sobre las preocupaciones del público.

- **Interventores** – -La intervención lo convierte en un participante oficial en el caso legal donde la transmisión y la ruta se debaten frente a un juez y los Comisionados de la PUC. Se le permitirá presentar pruebas en el caso y podrá contrainterrogar a los testigos. Puede testificar en el caso y también puede ser interrogado por las otras partes en el caso. Los interventores deben seguir con el proceso del caso, responder a las solicitudes del Juez de Derecho Administrativo (ALJ) y otras partes, y participar activamente en el caso. De lo contrario, puede perder su condición de interventor. Los interventores no están obligados a tener un abogado. El aviso que recibió indica la fecha límite para intervenir. Los formularios para interventores se pueden encontrar en el sitio web de la PUC.

¿Por qué debo participar?

Si tiene inquietudes sobre las rutas propuestas, la PUCT lo alienta a participar en el proceso de ubicación. Como propietario, tiene un conocimiento detallado del área afectada que podría no estar reflejado en la solicitud. Compartir su conocimiento con la PUCT nos permite tomar una decisión mejor informada sobre la ruta de la línea.

¿Cómo puedo seguir el proceso?

Todos los documentos relacionados con un caso se archivan en el intercambio de documentos públicos de la PUCT. Puede buscar el caso por nombre o por el número de expediente de cinco dígitos. También puede registrarse para recibir una notificación cada vez que se agregue un nuevo documento relacionado con el caso. El intercambio está en https://interchange.puc.texas.gov/

¿Cuál es el proceso?

Después de que la empresa presenta una solicitud ante la PUCT para construir una nueva línea de transmisión, el personal técnico de la PUCT revisa la solicitud en un procedimiento legal. Cuando un interventor o personal técnico de la PUCT solicite una audiencia, la PUCT enviará la solicitud a la Oficina Estatal de Audiencias Administrativas (SOAH). El juez de SOAH fijará una fecha de audiencia, plazos para solicitar información de otros participantes y plazos para presentar testimonio escrito o una declaración de posición antes de la audiencia. El juez de SOAH puede determinar el formato de las conferencias y audiencias, por ejemplo, mediante videoconferencia con opción de llamada telefonica. Los participantes en el caso deben asistir a la audiencia para que su testimonio escrito se convierta en prueba. Después de la audiencia, el juez de SOAH brindará a los Comisionados de la PUCT una recomendación sobre la ruta propuesta para la línea de transmisión.

Los Comisionados de la PUCT no están obligados por la recomendación del juez de la SOAH al seleccionar una ruta para la línea de transmisión. Los Comisionados de la PUCT emitirán una decisión final en una reunión pública a la que podrán asistir los participantes del caso y solicitar declarar. Las reuniones públicas de la PUCT se transmiten en línea. Los Comisionados de la PUCT pueden y en ocasiones hacen modificaciones a la ruta en respuesta a declaraciones de los propietarios de terrenos. Luego, la empresa que construye la línea de transmisión negociará con los propietarios de terrenos para comprar derechos de servidumbre sobre sus propiedades. La PUCT no determina la cantidad de dinero que se debe pagar a los propietarios por servidumbres u otros derechos de paso.

Hasta que los comisionados de la PUCT tomen una decisión final, los participantes en el caso también negocian para encontrar una ruta que satisfaga a todos. Los Comisionados de la PUCT no están obligados a aprobar una ruta negociada.

Todo el proceso de revisión de ruta de la línea de transmisión de la PUCT puede tardar hasta seis meses.

¿Dónde me dirijo para obtener más información?

La empresa que haya solicitado construir la línea tendrá mapas en su sitio web. Para obtener más información sobre cómo participar en el proceso, comuníquese con la Oficina de Participación Pública de PUCT https://www.puc.texas.gov/agency/about/ope/ o 512-936-7374.

Request to Intervene in PUC Docket No. 56799

The following information must be submitted by the person requesting to intervene in this proceeding. This completed form will be provided to all parties in this docket. **If you DO NOT want to be an intervenor, but still want to file comments, please complete the "Comments" page.**

For USPS, send one copy to:

Public Utility Commission of Texas
Central Records
P.O. Box 13326
Austin, TX 78711-3326

For all other delivery or courier services, send one copy to:

Public Utility Commission of Texas
Central Records
1701 N. Congress Ave.
Austin, TX 78701

First Name:_____ Last Name: _____

Phone Number:_____ Fax Number:_____

Address, City, State:_____

Email Address:_____

I am requesting to intervene in this proceeding. As an INTERVENOR, I understand the following:

- I am a party to the case;
- I am required to respond to all discovery requests from other parties in the case;
- If I file testimony, I may be cross-examined in the hearing;
- If I file any documents in the case, I will have to provide a copy of that document to every other party in the case; and
- I acknowledge that I am bound by the Procedural Rules of the Public Utility Commission of Texas (PUC) and the State Office of Administrative Hearings (SOAH).

Please check one of the following:

☐ I own property with a habitable structure located near one or more of the utility's proposed routes for a transmission line.

☐ One or more of the utility's proposed routes would cross my property.

☐ Other. Please describe and provide comments. You may attach a separate page, if necessary.

_____

_____

_____

Signature of person requesting intervention:

_____ Date: _____