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#### PROJECT NO. 53198

PROJECT TO IDENTIFY ISSUES	§
PERTAINING TO LUBBOCK POWER	§
AND LIGHT'S PROPOSAL TO	§
TRANSFER EXISTING FACILITIES	§
AND LOAD INTO THE ELECTRIC	§
RELIABILITY COUNCIL OF TEXAS	§

PUBLIC UTILITY COMMISSION

**OF TEXAS** 

#### **DOCKET NO. 53529**

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APPLICATION OF THE CITY OF LUBBOCK, ACTING BY AND THROUGH LUBBOCK POWER & LIGHT, FOR AUTHORITY TO CONNECT THE REMAINING PORTION OF ITS LOAD WITH THE ELECTRIC RELIABILITY COUNCIL OF TEXAS AND FOR APPROVAL OF SETTLEMENT AGREEMENT

PUBLIC UTILITY COMMISSION

**OF TEXAS** 

#### ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.'S SUBMISSION OF INDEPENDENT REVIEW OF LUBBOCK POWER & LIGHT <u>REMAINING LOAD INTEGRATION</u>

Electric Reliability Council of Texas, Inc. (ERCOT) submits in Project No. 53198 and Docket No. 53529 its "ERCOT Independent Review of Lubbock Power & Light (LP&L) Remaining Load Integration" (Remaining Load Integration Study). As addressed in its Initial Comments filed on April 29, 2022 in Project No. 53198, ERCOT informed the Public Utility Commission of Texas (Commission) of its intent to submit the finalized Remaining LP&L Load Integration Study to the Commission for its consideration. ERCOT has finalized and hereby submits its Remaining LP&L Load Integration Study to the Commission.

Commission Staff recommended in its Response to Order No. 4 in Project No. 53198 that the need for any additional information for the Commission's consideration should be filed in Docket No. 53529 addressing LP&L's application for authority to connect its remaining load to the ERCOT system. The Commission has yet to issue an Order addressing Commission Staff's recommendation. Thus, ERCOT submits the Remaining LP&L Load Integration Study in both Project No. 53198 and Docket No. 53529. Respectfully Submitted,

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#### **CERTIFICATE OF SERVICE**

I certify that a copy of this document was served on all parties of record to this proceeding on June 2, 2022 by email, in accordance with Second Order Suspending Rules, issued on July 16, 2020 in Project No. 50664.

/s/ Jerry Huerta

Jerry Huerta



# ERCOT Independent Review of Lubbock Power & Light (LP&L) Remaining Load Integration

# **Document Revisions**

Date	Version	Description	Author(s)
5/19/2022	1.0	Final	Tanzila Ahmed
		Reviewed by	Sun Wook Kang, Prabhu Gnanam

### **Executive Summary**

Lubbock Power and Light (LP&L), located in Lubbock County, Texas, integrated approximately 70% of its total load into ERCOT System from Southwest Power Pool (SPP) on May 30, 2021. On June 3, 2021, LP&L filed a Supplement to Quarterly Update with the Public Utility Commission of Texas (PUC or Commission) in Project No. 48113<sup>1</sup> indicating that it had taken certain actions to further LP&L's goal to "fully connect its system to ERCOT." LP&L and ERCOT have been in ongoing discussions regarding the transition of LP&L's remaining load from SPP to the ERCOT System. The remaining load to be integrated is approximately 183 – 188 MW,<sup>2</sup> according to LP&L. On April 27, 2022, the City of Lubbock, acting by and through LP&L, filed an application<sup>3</sup> with the Commission, for authority to connect the remaining portion of its load with ERCOT on or before June 1, 2023.

Based on the study scope presented at the March and April 2022 Regional Planning Group (RPG) meetings, ERCOT conducted an independent review for the proposed integration and potential impacts of the remainder of LP&L's Load connecting to the ERCOT system to identify any reliability need and to determine transmission improvements needed to support long term growth in the region, should any transmission upgrade be deemed necessary.

As a result of the independent review, no reliability issues were observed in the study area modeled with the included remaining load connected to the ERCOT system. Therefore, no transmission upgrade is necessary to fully integrate the remainder of LP&L's Load into ERCOT System. ERCOT concludes that the new LP&L and Oncor Electric Delivery Company, LLC. (Oncor) transmission project additions designed, constructed, and placed in service to support the initial LP&L load integration<sup>4</sup> would sufficiently support LP&L's entire load, which includes not only the initial load integration but also the transition of the remaining approximately 188 MW of LP&L Load from SPP to the ERCOT System.

<sup>&</sup>lt;sup>1</sup> Project to Monitor Lubbock Power & Light's Transition to ERCOT, Project No. 48113, Supplement to Quarterly Update (June 3, 2021), – Item Number 24: <u>http://interchange.puc.texas.gov/Documents/48113\_24\_1131948.PDF</u>

<sup>&</sup>lt;sup>2</sup> According to the latest information provided by LP&L, the total load including the remainder is estimated to be approximately 609 MW (Year 2024) - 627 MW (Year 2028).

<sup>&</sup>lt;sup>3</sup> Application of the city of Lubbock, acting by and through Lubbock Power & Light, for Authority to Connect the Remaining Portion of its Load with the Electric Reliability Council of Texas and for Approval of Settlement, Docket No. 53529 (April 27, 2022) – Item Number 1: <u>https://interchange.puc.texas.gov/Documents/53529 1 1204109.ZIP</u>

<sup>&</sup>lt;sup>4</sup> See Project to Identify Issues Pertaining to Lubbock Power & Light's Proposal to Become Part of the Electric Reliability Council of Texas, Project No. 45633, and Application of the City of Lubbock through Lubbock Power and Light for Authority to Connect a Portion of its System with the Electric Reliability Council of Texas, Docket No. 47576, Order (Mar. 15, 2018), Ordering Paragraph 2(authorizing transmission plan for initial integration).

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# 1 Introduction

LP&L is a municipally owned electric utility company located in Lubbock County, Texas. LP&L's transmission system is shown in Figure 1 below. The Commission issued its Final Order on March 15, 2018, in Docket No. 47576, approving LP&L's application to connect the initial approximately 70% of its total load to the ERCOT System from SPP.<sup>5</sup> The integration of this initial Load into the ERCOT System was completed on May 30, 2021.

On June 3, 2021, LP&L filed a Supplement to Quarterly Update in Project No. 48113 with the Commission indicating that it had taken certain actions to further LP&L's goal to "fully connect its system to ERCOT." More specifically, LP&L stated that it had entered into an agreement with Southwestern Public Service Company (SPS) to end its power contract with SPS in May 2023.<sup>6</sup> On April 27, 2022, the City of Lubbock, acting by and through LP&L, filed an application<sup>3</sup> with the Commission, for authority to connect the remaining portion of its load with the ERCOT on or before June 1, 2023.<sup>7</sup>

LP&L and ERCOT have been in ongoing discussions regarding the transition of the remaining LP&L Load from SPP to the ERCOT System. According to the latest information provided by LP&L, the total LP&L Load including the remainder to be integrated is estimated to be 609 MW (Year 2024) - 627 MW (Year 2028). Inclusive in those MW estimates, the remaining load to be transferred is between approximately 183 - 188 MW. The LP&L system is comprised of 69-kV and 115-kV transmission facilities connected to the 345-kV system via the Posey, Dunbar, and Yellow House Canyon substations.

ERCOT performed an independent review for the proposed integration of the remainder of LP&L's Load with a longer-term outlook using the Final 2021 RTP 2027 Summer Peak Load, to identify any reliability need and to determine if transmission improvements may be needed to support long-term growth in the region.

<sup>&</sup>lt;sup>5</sup> See Docket No. 47576, Ordering Paragraph No. 1.

<sup>&</sup>lt;sup>6</sup> Project No. 48113, LP&L's Supplemental Quarterly Update.

<sup>7</sup> See Docket No. 53529.



Figure 1: LP&L Area Map

### 2 Study Assumptions and Methodology

ERCOT performed studies under various system conditions to identify any reliability issue and to determine transmission upgrades to support the proposed integration of LP&L's remaining load into ERCOT System, should any upgrade be deemed necessary. This section describes the study assumptions and criteria used to conduct the independent study.

#### 2.1 Study Assumptions for Reliability Analysis

LP&L is in the North weather zone at the border of West and Far West weather zones. As shown in Figure 2, the study region for this review included transmission facilities in the West, Far West, and North weather zones that are electrically close to the LP&L area.



Figure 2: Map of Study Area

#### 2.1.1 Steady-State Study Base Case

The Final 2021 RTP cases, published on the Market Information System (MIS) on December 23, 2021, were used as reference cases in this study. Year 2027 Summer was selected to assess the long-term reliability need. The steady-state study base case was constructed by updating transmission, generation, and loads of the following 2027 Summer Peak Load case for the West, Far West, and North weather zones as necessary.

• Case: 2021RTP\_2027\_SUM\_WFW\_122320218

#### 2.1.1.1 Transmission Topology

Transmission projects within the study area with In-Service Date (ISD) by May 2027 were added to the study case. The ERCOT Transmission Project Information and Tracking (TPIT)<sup>9</sup> report posted in October 2021 was used as reference. The added TPIT projects are listed in Table 1 below. These are

<sup>&</sup>lt;sup>8</sup> 2021 Regional Transmission Plan Postings: <u>https://mis.ercot.com/secure/data-products/grid/regional-planning?id=PG3-2178-M</u> <sup>9</sup> TPIT Report: <u>https://www.ercot.com/files/docs/2021/10/22/ERCOT\_October\_TPIT\_No\_Cost\_100121.xlsx</u>).

Midland, Howard,

Mitchell, Scurry

all classified at Tier 4 projects. All approved Tier 1, 2, and 3 projects were already modeled in the base case. Therefore, no new Tier 1, 2, or 3 transmission projects were added.

		Project				
TPIT No	Project Name	Tier	ISD	TSP	County	
63772	Hyperion: Build 345 kV Station	4	Apr 2022	AEP	Dickens	
59546	Lamesa 138/69 kV Autotransformer #1	4	May 2022	ONCOR	Dawson	
63900	Nebula: Build New 345 kV Station	4	Dec 2022	ETT	Scurry	
61552	Matador to Turkey: Rebuild 69 kV Line	4	Nov 2022	AEP	Motley	

Transmission projects within the study area that are not approved by RPG were removed from the base case. These projects are listed in Table 2 below.

RTP		
Project Index	Project Name	County
2021-FW20	Lamesa – Key Sub – Gail Sub – Willow Valley Switch 138-kV Line Upgrade	Dawson, Borden
2021-FW21	Lamesa – Jim Payne POI 138-kV Line Upgrade	Dawson
2021-W3	Scurry – Kndrsacrc – Oncor 90041 Tap 138-kV Line Upgrade	Scurry
2021-W4	Oncor 90041 Tap – Knapp – Bluff Creek Switch 138-kV Line Upgrade	Scurry
2021-W5	Sacroc – Deep Creek Sub 138-kV Line Upgrade	Scurry

#### Table 2: List of transmission projects removed from the study base case

In addition, the parameters and topology of certain LP&L transmission facilities were further updated based on inputs from LP&L.

Midland County Northwest to Midland East to Falcon Seaboard to Morgan

Creek to Tonkawa Switch 345-kV Existing Circuit Rebuild and Second

**Circuit Addition** 

#### 2.1.1.2 Generation

2021-WFW2

Based on the December 2021 Generator Interconnection Status (GIS)<sup>10</sup> report posted on the ERCOT website on January 3, 2022, generators in the study area that met Planning Guide Section 6.9(1) conditions with Commercial Operations Date (COD) prior to May 2027 that were not already modeled in the reference case were added to create the study base case. These generation additions are listed in Table 3 below. All new generation dispatches were consistent with the 2021 RTP methodology.

Table 3: List of new generation added to the study base case based on December 2021 GIS Report

GINR	Project Name	Fuel	Project COD	Capacity (MW)	County
21INR0479	Endurance Park Storage	OTH	May 2022	52.25	Scurry
19INR0360	Jade Solar	SOL	Jun 2023	374.4	Scurry

The status of the units either indefinitely mothballed or retired at the time of the study were reviewed and the following unit was turned off to reflect the status, as it was not already reflected in the Final 2021 RTP cases.

• Olinger G1 (North Central)

<sup>&</sup>lt;sup>10</sup> GIS Report: <u>https://www.ercot.com/misapp/GetReports.do?reportTypeId=15933.</u>

Additional updates were made to the existing generation in the LP&L system based on the input received from LP&L.

#### 2.1.1.3 Loads

Loads in the North weather zone were further updated based on the Final 2021 RTP 2027 Summer Peak NNC case to develop the study base case.

Additionally, new confirmed loads in the study area were also added to the study base case.

Lastly, loads outside the study weather zones were adjusted to meet the minimum reserve requirements to be consistent with the 2021 RTP.

#### 2.1.2 Study Scenario Cases

ERCOT performed the independent study for the following eight scenarios to identify any reliability need due to the integration of the remaining LP&L Load into ERCOT System:

• Scenarios with the remaining LP&L Load integrated (System Intact):

The loads at certain LP&L substations were increased based on load forecast received from LP&L. Table 4 below shows the total load projections for 2024 to 2028 for all LP&L area provided by LP&L.

Table 4: Total (new and existing) LP&L loads projection by year

Year	2024	2025	2026	2027	2028
System Total (MW)	609	614	618	623	627

• EHV Transformer outage scenarios for the X-1+N-1 study:

Three separate scenarios were simulated to test each of the EHV 345/115-kV transformers in LP&L area.

- Dunbar
- Posey
- Yellow House Canyon
- Generation outage scenarios for the G-1+N-1 study:

Three separate generation outage scenarios were simulated the following generations in LP&L area.

- Brandon (20 MW)
- Cooke (31 MW)
- Massengale (56 MW)
- Scenario with all LP&L generation out of service

#### 2.2 Methodology

The reliability assessments were performed based on NERC Reliability Standard TPL-001-4, ERCOT Notal Protocol, and Planning Criteria.

#### 2.2.1 Contingencies

Contingencies<sup>11</sup> were updated based on the changes made to the topology as described in Section 3.1.1.1 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 (EHV only)
- P3-1: G-1 + N-1 (G-1: generation outages)
- P6-2: X-1 + N-1 (X-1: EHV transformers only)

#### 2.2.2 Criteria

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 for pre-contingency conditions
  - Rate B for post-contingency conditions
- Voltages
  - Voltages exceeding pre-contingency and post-contingency limits
  - Voltage deviations exceeding 8% on non-radial load buses

#### 2.2.3 Study Tool

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

• PowerWorld Simulator version 22 for Security Constrained Optimal Power Flow (SCOPF) and steady-state contingency analysis

# **3 Other Considerations**

For the initial LP&L load integration into the ERCOT system, ERCOT performed dynamic stability and Subsynchronous Resonance (SSR) impact analyses with the transmission improvement plan Option 4ow (new LP&L and Oncor transmission project additions designed, constructed, and placed in service to support the initial LP&L load integration), and those analyses did not reveal any impacts that would require additional transmission improvements other than Option 4ow. Since the amount of the remaining LP&L load integration is relatively smaller and does not require any additional transmission system change in the area, ERCOT concludes that the previous dynamic stability and SSR analyses are still applicable and valid for this remaining LP&L Load Integration study.

In LP&L's application filed with the Commission on April 27, 2022, LP&L stated that the integration of the Remaining Load will be at the distribution level and will not require any transmission outage on the ERCOT System. Also, LP&L further stated that no additional transmission facilities will need to be constructed to facilitate the integration of the Remaining Load.<sup>12</sup>

<sup>&</sup>lt;sup>11</sup> Details of each event and contingency category is defined in the NERC reliability standard TPL-001-4.

<sup>&</sup>lt;sup>12</sup> See LP&L's Application at p. 6, Docket No. 53529.

# 4 Study Results and Conclusion

ERCOT completed the independent study using the 2027 Summer Peak Load case based on the study scope, and no reliability issues were observed in the study area due to the integration of the remaining loads of LP&L into ERCOT System.

Based on the study results, ERCOT concludes that the new LP&L and Oncor transmission project additions designed, constructed, and placed in service to support the initial LP&L load integration would sufficiently support LP&L's entire load, which includes not only the initial load integration but also the transition of the remaining LP&L Load of approximately 188 MW, according to LP&L, from SPP to the ERCOT System. No transmission upgrade is deemed necessary for the proposed integration of the remaining LP&L Load to support the projected LP&L load in the near-term planning horizon (up to 2028).