SPP-ERCOT Coordinated Lubbock ERCOT Integration Study Scope

# Overview

On July 19, 2016, Public Utility Commission of Texas (PUCT) Chairman Nelson filed a memo in docket 45633 addressing the proposed move of the Lubbock Power and Light (LP&L) system from the Southwest Power Pool (SPP) grid into the Electric Reliability Council of Texas (ERCOT) grid. Among other things the memo included a recommendation for analyses to be performed by SPP and ERCOT. This scope document details the studies to be performed to address the recommended analyses.

In order to accomplish the recommended analyses SPP and ERCOT will perform separate, but coordinated, studies. The studies will be performed such that the assumptions and methodologies used by SPP and ERCOT will be as consistent as reasonably possible, though it is understood that market and regulatory differences may prevent absolute consistency.

In June 2016 ERCOT filed its Lubbock Integration Study with the PUCT. This study was narrowly focused on identifying the best and most cost effective way to integrate the LP&L system into the ERCOT grid. The study concluded that “Option 4ow” was the preferred integration alternative should the LP&L system move to ERCOT. The analysis outlined in this study scope builds upon this previous study and will provide further analysis of the impacts of Lubbock Power and Light load and generating resources moving to ERCOT or remaining in SPP.

# Assumptions

The following transmission topology assumptions shall be used:

1. SPP will use the following base cases as the basis for its analysis:
	1. 2021 summer peak from the 2017 Integrated Transmission Planning-Near Term (ITPNT)
	2. 2021 light load from 2017 ITPNT
	3. 2020 and 2025 production cost models from 2017 Integrated Transmission Planning-10 Year Assessment (ITP10) reference case
2. ERCOT will use the following base cases as the basis for its analysis:
	1. The latest WFW 2021 summer peak case from the 2016 Regional Transmission Plan (RTP) will be used for reliability analysis and system strength analysis.
	2. The latest 2026 UPLAN model from the 2016 Long-Term System Assessment (LTSA) Current Trends scenario will be used for long-term production cost modeling and the latest 2019 UPLAN model from the 2016 Regional Transmission Plan (RTP) will be used for the near-term production cost modeling. The 2026 UPLAN model will be modified to create a 2025 Scenario and the 2019 UPLAN model with be modified to create a 2020 Scenario as described in sections below.
	3. 2021 summer peak case from the 2016 RTP will be used for subsynchronous resonance (SSR) analysis.
3. SPP and ERCOT will use the same representation of the LP&L system as provided by LP&L.

The following load assumptions shall be used:

1. SPP will use the following load assumptions:
	1. 2021 summer peak and light load from 2017 ITPNT cases
2. ERCOT will use the following load assumptions:
	1. The load assumptions from the latest WFW 2021 summer peak case from the 2016 RTP will be used for reliability analysis. The North Weather Zone load will be scaled up to its forecasted 2021 peak for this analysis. The load forecast used is the higher of ERCOT’s 90th percentile forecast for West, Far West, and North weather zones or the Transmission Service Provider (TSP) provided forecast for these zones.
	2. The latest 2026 UPLAN model from the 2016 Long-Term System Assessment (LTSA) Current Trends scenario will be used for long-term production cost modeling with loads scaled down per 2016 LTSA Scope to match 2016 LTSA forecast for 2025. The latest 2019 UPLAN model from the 2016 RTP will be used for the near-term production cost modeling with loads scaled up per 2016 RTP Scope to match 2016 RTP forecast for 2020. The load forecast and profile are based on a 2006 weather year pattern.
3. SPP and ERCOT will use the same representation of the LP&L load as provided by LP&L. For reliability analysis both the LP&L “Business As Usual (BAU)” and the LP&L “High Growth” load forecast will be analyzed. For production cost modeling the LP&L BAU load forecast will be used. The hourly load profile will be the same for SPP and ERCOT production cost analyses.

The following generation assumptions shall be used:

1. SPP will use the following generation assumptions:
	1. The reliability analyses will use generation assumptions per Integrated Transmission Planning Manual Section 3.3.1.2.
	2. The production cost analyses will use generation assumptions per ITP10 reference case (Future 3).
	3. Wind and solar profiles will be used in the production cost analysis.
2. ERCOT will use the following generation assumptions:
	1. The 2021 reliability analyses will include all existing generation plus planned generation meeting the conditions of Planning Guide Section 6.9. Known generation retirements will be turned off in the models.
	2. The 2025 production cost analyses will use generation assumptions from the Current Trends scenario based on the 2016 LTSA Scope. And, the 2020 production cost analysis will use generation assumptions per the 2016 RTP Scope.
	3. Wind and solar profiles will be used in the production cost analysis. The profiles will be based on a 2006 weather year pattern.
3. SPP and ERCOT will represent the LP&L generation, including generation retirements, as provided by LP&L. The production cost modeling assumptions for LP&L generation will also be identical for SPP and ERCOT.
4. ERCOT and SPP will use consistent natural gas price forecast
5. Wind and solar will be modeled as $0 marginal cost in the production cost analysis.
6. The Golden Spread Electric Cooperative Antelope/Elk switchable unit status will be consistent between ERCOT and SPP.
7. In the production cost analysis:
	1. SPP will perform the analysis with and without generation forced outages.
	2. ERCOT will perform the analysis without generation forced outages.

For reliability analysis, the North and East DC tie import/ export assumptions will be consistent. ERCOT and SPP will review the production cost results with respect to North and East DC tie imports/ exports for reasonability and consistency.

# Scope

The following are the analyses to be performed per Chairman Nelson’s memo:

1. SPP reliability analysis
	1. SPP will perform a reliability analysis to determine what transmission improvements will be needed or deferred as a consequence of the LP&L system moving to ERCOT. The analyses may include a net present value (NPV) analysis to determine the cost/ benefit of accelerating/ deferring a project. For consistency, SPP and ERCOT will use the same discount rates for NPV calculations.
	2. The reliability analysis will be performed for 2021 summer peak and light load conditions.
	3. As part of this analysis SPP will report the costs necessary to disconnect the LP&L system from SPP.
2. SPP and ERCOT avoided or new projects analysis
	1. SPP will investigate projects in the area that were approved and have not yet gone into service to determine if those projects are no longer needed if the LP&L system moves to ERCOT. SPP will report the list of projects along with their estimated cost.
	2. SPP will assess the need of any new transmission as a result of the LP&L system moving to ERCOT. SPP will report the list of potential projects along with their estimated cost.
	3. ERCOT will take into account the results of the Lubbock Integration Study and the 2016 RTP and 2016 LTSA to determine if there are any avoided or new transmission improvement projects as a result of the LP&L system moving to ERCOT. ERCOT will report the list of projects along with their estimated cost.
	4. The above analyses may include a net present value (NPV) analysis to determine the cost/ benefit of accelerating/ deferring a project. For consistency, SPP and ERCOT will use the same discount rates for NPV calculations.
3. SPP and ERCOT production cost analysis
	1. SPP will perform a production cost analysis with and without the LP&L system (taking into account the results from 3.1). SPP will report the regional production cost difference and the adjusted production cost differences.
	2. ERCOT will perform a production cost analysis without and with the LP&L system (taking into account the results from the Lubbock Integration Study and 3.2). ERCOT will report the production cost difference.
	3. The production cost analysis will be performed for years 2020 and 2025 with loads and generation modeled as described in previous sections of this document. Transmission projects expected to be in-service by 2020 will be added to the 2016 RTP 2019 UPLAN case to reflect expected 2020 transmission topology. However, due to the magnitude of uncertainty, the 2025 transmission topology will remain the same as the topology in the 2016 LTSA Current Trends 2026 UPLAN case.
	4. SPP and ERCOT will report total production cost difference as a result of the LP&L system moving to ERCOT.
		1. SPP and ERCOT will report total adjusted production cost impact for Texas
4. Operational cost and reliability impact assessment
	1. SPP will provide a qualitative description of the reliability impact of the LP&L system moving to ERCOT.
	2. ERCOT will provide a qualitative description of the reliability impact of the LP&L system moving to ERCOT. The description may include system strength benefits and the benefit of load in the ERCOT Panhandle.
5. Ancillary services impact analysis
	1. ERCOT and SPP will provide a qualitative description of the impact on ancillary services.
6. Congestion rights impact analysis
	1. ERCOT and SPP will provide a qualitative description of the impact on congestion rights.
7. SSR impact analysis
	1. ERCOT will perform a topology check for the ERCOT system to evaluate the SSR impact on existing and planned ERCOT generation units.
	2. Based on the results in (a) above, ERCOT may perform a frequency scan for existing and planned ERCOT generation units.
	3. Based on the results in (b) above, ERCOT may perform a detailed SSR analysis for existing and planned ERCOT generation units. This analysis may need to be contracted out.
	4. Based on the results of (a), (b), and (c) above ERCOT will assess the cost impact from an SSR perspective, including potential cost savings, as a result of the LP&L system moving to ERCOT.
8. LP&L generators to synchronous condenser analysis
	1. ERCOT will perform a system strength analysis (weighted short circuit ratio determination) to determine the impact to the Panhandle export limit of converting some or all of LP&L’s retiring generators to synchronous condensers.
	2. ERCOT will perform a production cost analysis using the 2020 UPLAN model to determine the annual production cost benefit of converting some or all of LP&L’s retiring generators to synchronous condensers based on (a) above.
	3. ERCOT will compare the production cost savings to the LP&L provided cost to convert the retiring LP&L generators to synchronous condensers to determine if the cost would be justified.
9. The following analysis recommended in Chairman Nelson’s memo cannot be performed by SPP and ERCOT:
	1. ERCOT is not able to provide an evaluation of the cost and reliability impacts on all customer classes in ERCOT. However, ERCOT can provide average LMP impacts for all substations in the ERCOT Region.
	2. An evaluation of LP&L’s ability to ensure that comingling of the SPP and ERCOT systems will not occur.

# Deliverable

SPP and ERCOT will file a joint report to the PUCT by Q2 2017.