

Lubbock Power & Light ERCOT Integration Plan

September 24, 2014



Contents

1. Executive Summary	3
2. Project Background	6
3. Integration Options	10
4. Transmission Cost Estimates.....	22
5. Comparative Transmission Cost Estimates for SPP and ERCOT Options	25
6. Move to ERCOT Option	25
7. Remain in SPP Option	28
8. Conclusions	31

1. Executive Summary

In July 2014, Lubbock Power & Light (LP&L) issued RFP NO: 7128-14-EUA: LP&L Capacity and Energy Supply Services. The RFP seeks proposals for up to approximately 600 MW of natural gas-fired or other firm generation. In addition to SPP-based proposals, due to the proximity of LP&L to existing and planned ERCOT high voltage transmission infrastructure, LP&L recognizes that an ERCOT interconnection could meet the RFP goals. Specifically, the RFP states that:

Proposals involving assets located in ERCOT are acceptable, however, such Proposals must assume all transmission-related costs to provide power to the LP&L system. Should a proposal require LP&L to join ERCOT, the cost of ERCOT membership for LP&L must be included in the offer as well as the cost for any LP&L system modifications that would be required. RFP at 16.

More generally, the RFP states that:

All Proposals involving the sale of capacity must be for capacity that is dispatchable in accordance with Southwest Power Pool (SPP) requirements and policies, and must either: 1) be directly interconnected with LP&L; 2) have the necessary transmission approvals in place to deliver power to LP&L; or 3) demonstrate that all necessary transmission approvals would be in place by the effective start date of the sale. RFP at 2.

In order to provide a common basis for ERCOT-based proposals, and for LP&L's evaluation of such proposals, Sharyland Utilities (Sharyland) provides this "ERCOT Transmission Solution" that can be used for any proposals to provide ERCOT-based capacity and energy to LP&L. A change of interconnection from SPP to ERCOT would be required should LP&L select a bid from an ERCOT resource (or to build a plant at the LP&L preferred site with the LP&L system interconnected to the ERCOT grid). The ERCOT transmission solution presented in this report incorporates all relevant transmission elements, including all transmission-related costs, ERCOT membership and a roadmap for the necessary approvals for the integration of LP&L into ERCOT.

Sharyland is submitting this Integration Plan simultaneously to the ERCOT Regional Planning Group (RPG) and in response to the LP&L RFP. Sharyland does not consider any information contained in this document to be confidential, and therefore authorizes its public disclosure.

ERCOT Transmission Solution

Sharyland evaluated multiple options to reliably integrate the LP&L system into ERCOT. Those options involve either two or three new 345kV sources providing power to Lubbock to maintain adequate voltage levels and system reliability during normal operations and under contingency conditions. The estimated cost is \$166 Million for the two-line option and \$237 Million for the three-line option. The lower cost option with two 345kV ERCOT interconnections assumes the integration of a new 600 MW power plant at the preferred site listed in the RFP. The third line is needed if the selected RFP resource is located elsewhere in the ERCOT grid. A 230kV loop around the LP&L system is assumed for both

options consistent with LP&L's plans to build a 230kV loop¹. Both options provide reliable service to the LP&L system load in terms of external sources and fully meet ERCOT and NERC reliability criteria.

The following upgrades are required for the three-line option:

- Elk – Airport Park (230) 345 kV double circuit line (~25.3 miles).
- Elk – Quincy (230) 345 kV double circuit line (~25.3 miles).
- Vealmoor – Lubbock SE (230) 345 kV double circuit line (~41.4 miles).
- Six (6) 345/230 kV transformers.
- Assumed the completion of the 230kV LP&L loop.

Exhibit 1 on the following page shows the required upgrades including for the three-line option. The two-line option assumes the integration of the new power plant at the preferred site listed in the RFP, and it does not require the Elk-Quincy 345kV double circuit line.

In addition, Sharyland performed an initial evaluation of the cost of a 345kV loop that would replace the 230kV loop currently planned by LP&L. However, further coordination and need determination by ERCOT staff would be required to justify the additional cost of this 345kV loop.

Transmission Cost Summary

Sharyland prepared a preliminary evaluation of the cost of transmission under two assumptions:

- (1) LP&L's load is transferred from the Southwest Power Pool (SPP) to ERCOT. Under this option, generation resources in ERCOT would be available to serve this load beginning June 1, 2019. The annual estimated transmission cost to LP&L is approximately \$4.2 Million.
- (2) LP&L's load remains in SPP. The annual estimated transmission cost to LP&L is \$34.9 Million.

Based on this preliminary transmission cost estimates, LP&L customers would save over \$30 Million in annual transmission costs under the options presented in the ERCOT Transmission Solution.

In addition to the transmission cost discussed above, ERCOT charges a \$0.4650 per MWh System Administrative Fee based on system load to fund ERCOT activities subject to Public Utility Commission of Texas (PUCT) oversight. The SPP administrative fee is \$0.390 per MWh. Both administrative rates are effective January 1, 2014. ERCOT's annual membership fee is \$2,000, and SPP's is \$6,000.

Path Forward

Should LP&L decide to interconnect with ERCOT, Sharyland would submit a CCN application to the PUCT seeking authorization to build the transmission facilities required to integrate LP&L into ERCOT. LP&L would be required to enter into a Market Participant Agreement with ERCOT as a Load Serving Entity (with the option to remain a Non-Opt-In Entity (NOIE) defined by ERCOT as a Municipally Owned Utility that does not offer Customer Choice). Finally, LP&L would have to make a TCOS filing with the PUCT in

¹ LP&L proposed new loop scope and purpose is available at:
http://lpandl.ci.lubbock.tx.us/reliable_power_for_lubbock.htm



Sharyland
Utilities

2. Project Background

Sharyland operates approximately 311 miles of new 345kV transmission line in the Panhandle/South Plains/West Texas regions, shown in Exhibit 2. Sharyland is currently evaluating in excess of 10,452 MW of generation interconnections on its Panhandle transmission facilities, spanning varied generation technologies including wind, solar, compressed air energy storage, natural gas combined cycle and reciprocating engine technologies. Of the 10,452 MW of generation interconnections, close to 2,167 MW of generation has met the financial commitment and ERCOT interconnection requirements.

Sharyland also operates 318 miles of 138kV facilities in West Texas serving close to 300 MW of load via a 138kV loop, shown in Exhibit 3. The loop is currently served via three (3) major 138kV sources from ERCOT, with plans for an additional 138kV source in the near term and three additional 345kV sources in the long term.

Additionally, in December 2013, the PUCT approved Sharyland's acquisition of 66 miles of 345kV transmission lines from Southwest Public Service (SPS). The lines are located south of Lubbock and north of Midland County with connections to Sharyland's 138kV Stanton-Midland loop. Thirty-three miles of 345kV transmission runs through the Borden and Lynn Counties while an additional thirty-three miles of transmission are located within the boundaries of the Andrews County. The 345kV lines acquired from SPS are needed to serve the constant and rapid load growth observed in the oil and gas industry in the Stanton-Midland region. Both connections are expected to be online by summer of 2015.

Sharyland has significant transmission system footprints on either side of the LP&L system. The nature of the transmission systems on either side of the LP&L system are complimentary (i.e., Sharyland Panhandle facilities being generation intensive and Sharyland's West Texas facilities being load intensive). Sharyland's Panhandle interconnections also provide a varied resource mix availability which, when viewed in conjunction with the robust 345kV transmission facilities on either side of the LP&L system, provide an ideal platform to integrate the LP&L system into ERCOT in a technically feasible and cost-efficient manner.

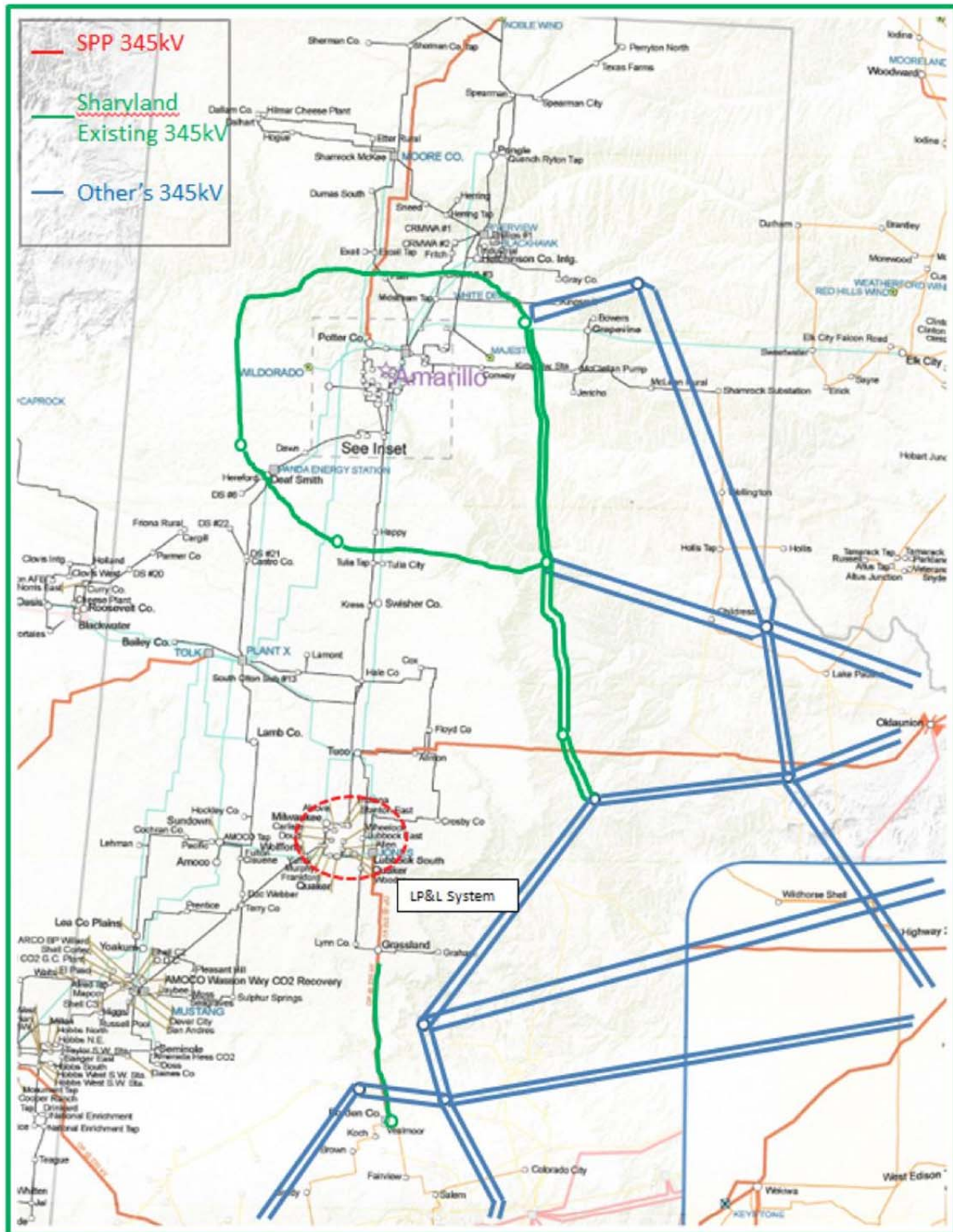


Exhibit 2: Sharyland Existing 345kV Panhandle/South Plains/West Texas Transmission Facilities

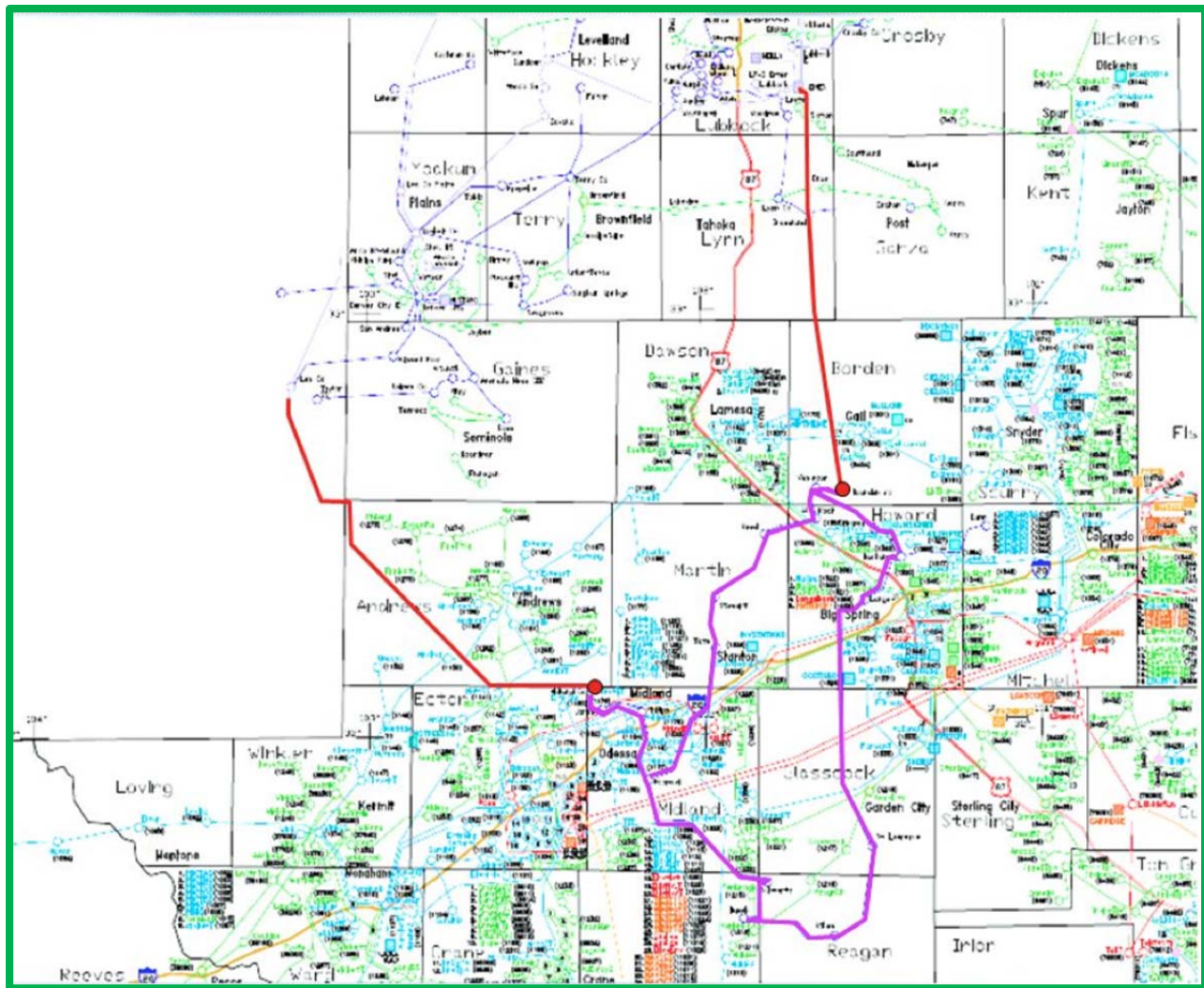


Exhibit 3: Sharyland Existing 345/138kV West Texas Transmission Facilities

In addition to the existing 345kV transmission facilities in the Panhandle, based on financially committed generation, Sharyland anticipates the following material transmission additions in the Amarillo region in the years 2015 and 2016:

- Addition of the second circuit on the existing 345kV Alibates – Windmill – Ogallala – Tule Canyon loop
- Development of a new single-circuit 345kV (on double-circuit capable towers) line to connect the proposed Golden Spread Electric Cooperative (GSEC) Antelope/Elk generation station to Sharyland's 345kV White River station. A CCN to build the line Antelope/Elk to White River station 345kV line was approved by the PUCT in August 2014.

Exhibit 4 depicts the future transmission additions in the Panhandle region in relation to the LP&L transmission system.

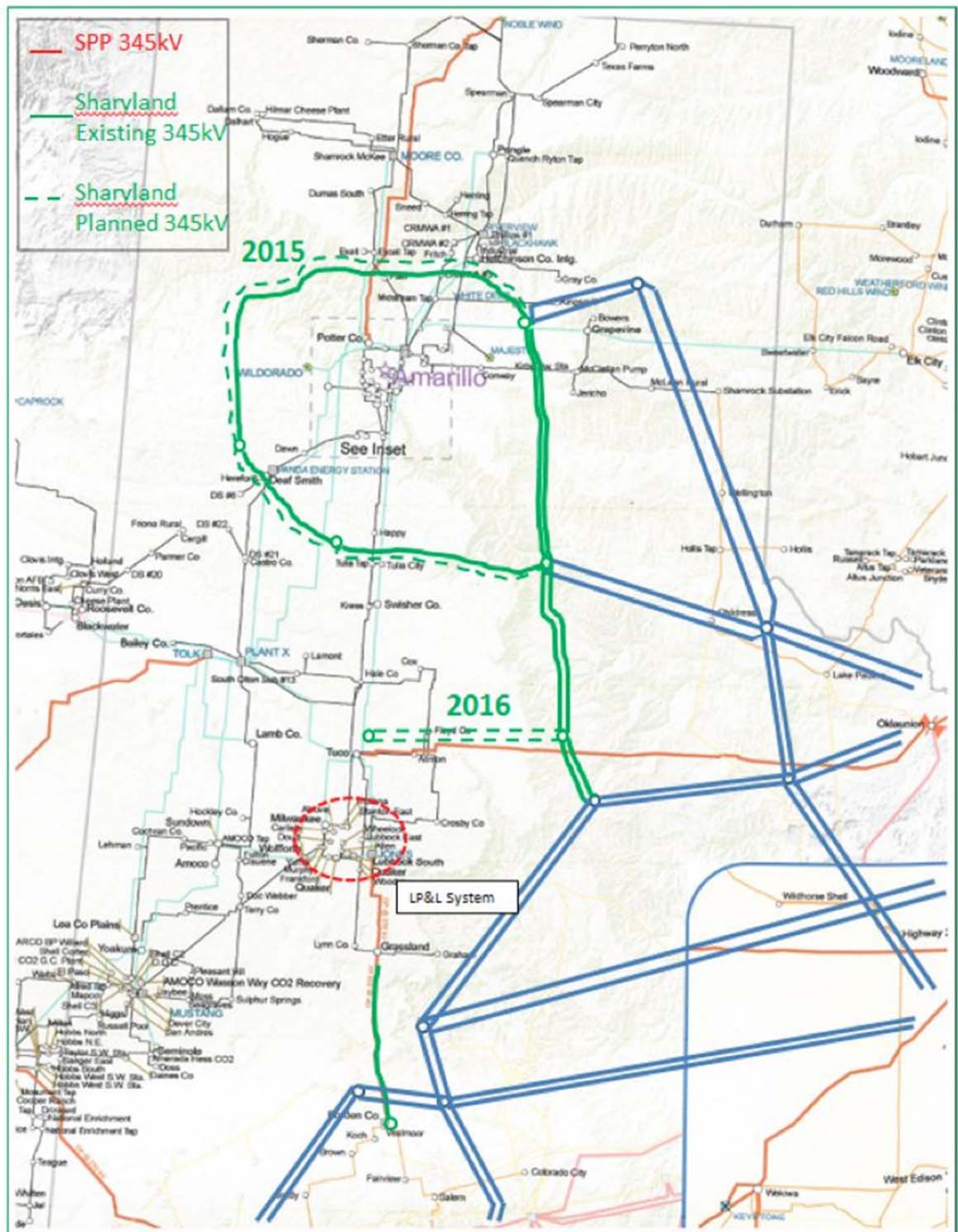


Exhibit 4: Sharyland 345kV Planned Transmission Facilities

3. Integration Options

As outlined above, the presence of a robust 345kV transmission system on either side of the LP&L system was a major factor in evaluating the potential to integrate the LP&L facilities into the ERCOT system. The LP&L existing 230kV and 69kV transmission system facilities and associated load, as modeled in the latest SPP data bases (or “base cases”), was transitioned into the ERCOT base cases for the purpose of this system study.

The ERCOT integration assessment was performed for 2019 and took into account the following key assumptions:

- The long-term reliability of the LP&L system was enhanced by completing the 230kV loop across their facilities.
- Alternatively, the assessment evaluated a 345kV loop around the LP&L system instead of a 230kV loop.

Sharyland evaluated multiple options to reliably integrate the LP&L system into ERCOT. The LP&L integration options evaluated are comprised of two (2) or three (3) 345kV sources providing power to Lubbock to maintain adequate voltage levels and system reliability during normal operations and under contingency conditions. In case of **three (3) 345kV transmission sources** alternative to integrate LP&L into the ERCOT system, it was assumed that the RFP generation would be located outside of the LP&L 230kV system (elsewhere in ERCOT). In case of **two (2) 345kV transmission sources** alternative, it was assumed that the RFP generation would be located within the LP&L 230kV system at LP&L’s preferred location.

Exhibits 5-a and 5-b depict the one-lines associated with the LP&L system as modeled for the integration assessment. Note that while it was assumed that the 230kV loop around the LP&L system would be built as originally planned, Sharyland also studied each option with a variation around the 230kV loop being built as a 345kV loop. The following stations were chosen as key locations for bringing sources in from the ERCOT system:

- Airport Station
- Quincy Station
- Lubbock Southeast Station

Details associated with each of the options evaluated are presented below and in Exhibits 6 through 13.

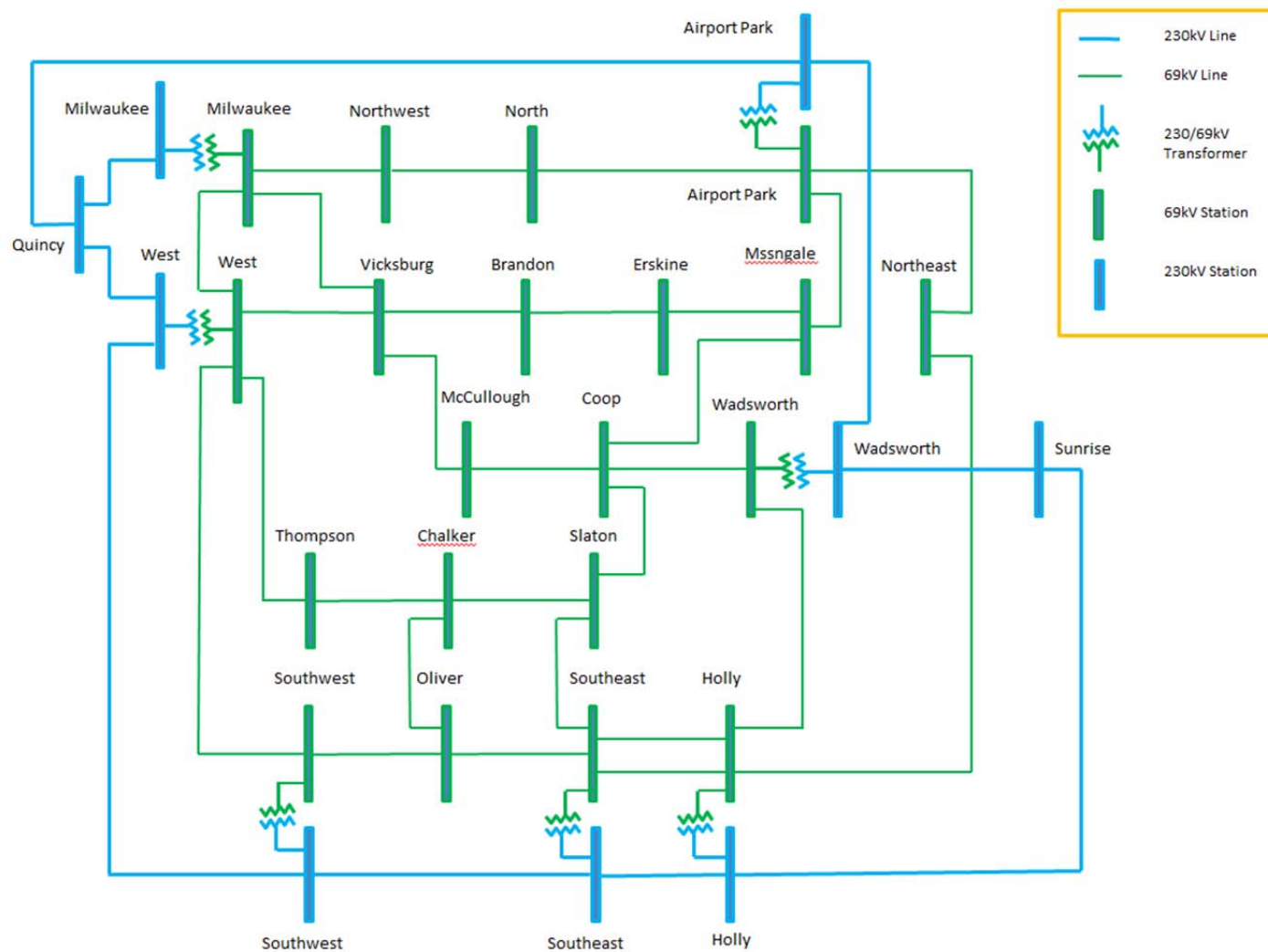


Exhibit 5-a: LP&L System (230kV) - Summer 2019

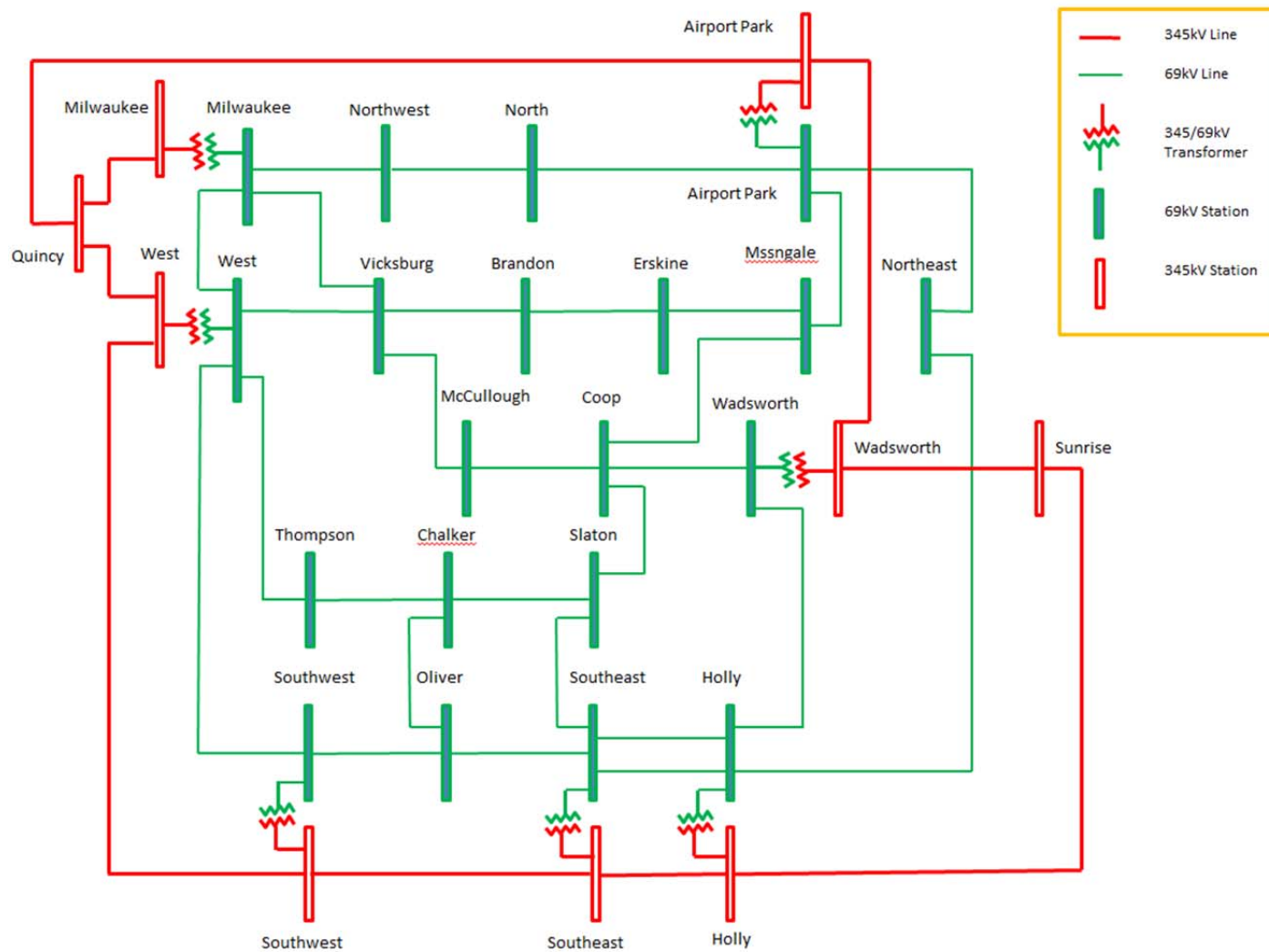


Exhibit 5-b: LP&L System (345kV) - Summer 2019

Option 1-1 (230kV LP&L Loop) Description

- Elk – Airport Park (230) 345 kV double circuit line (~25.3 miles).
- Elk – Quincy (230) 345 kV double circuit line (~25.3 miles).
- Vealmoor – Lubbock SE (230) 345 kV double circuit line (~41.4 miles).
- Six (6) 345/230 kV transformers.
- Assumed the completion of the 230kV LP&L loop.
- Total of 92 miles of 345kV double circuit.
- RFP Generation Resource assumed to be located elsewhere in ERCOT system.

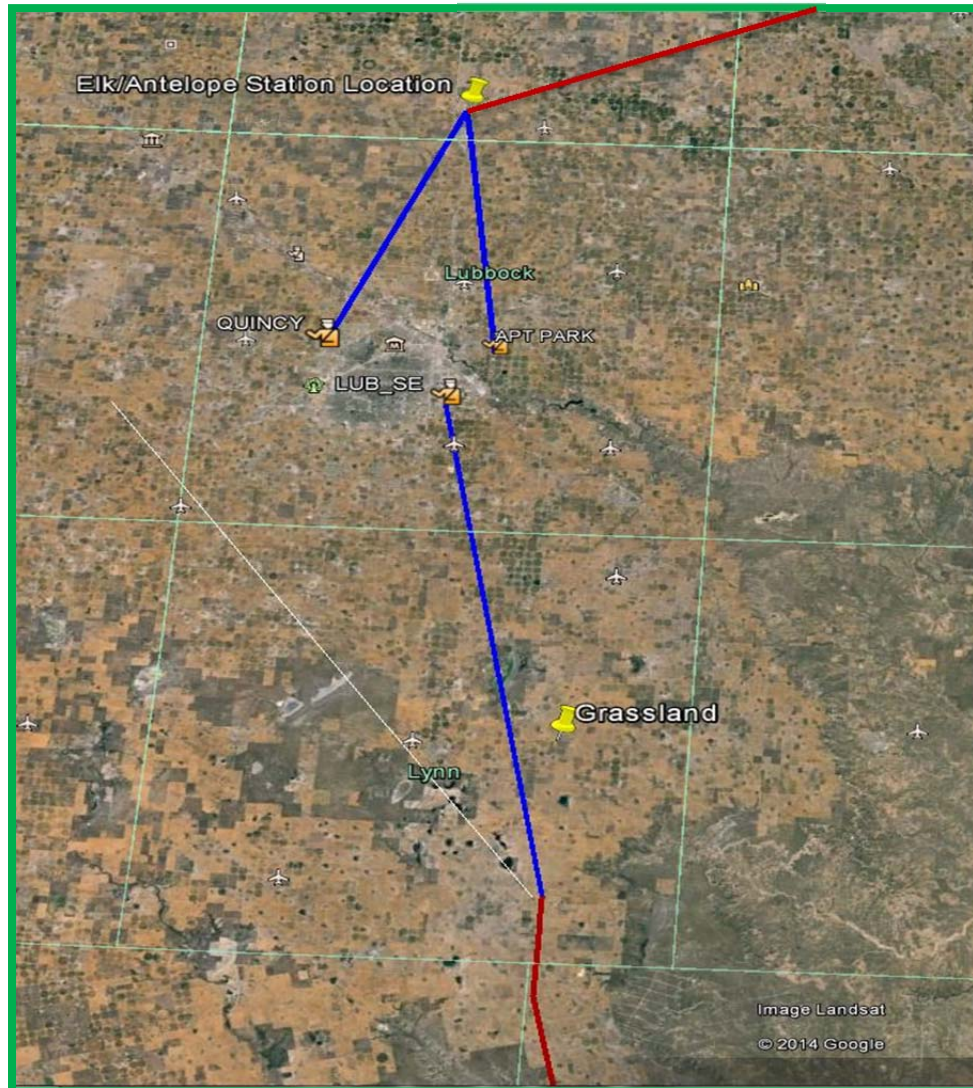


Exhibit 6: Option 1-1

Option 1-2 (230kV LP&L Loop) Description

- White River – Airport Park (230) 345 kV double circuit line (~55.2 miles).
- Elk – Quincy (230) 345 kV double circuit line (~25.3 miles).
- Vealmoor – Lubbock SE (230) 345 kV double circuit line (~41.4 miles).
- Six (6) 345/230 kV transformers.
- Assumed the completion of the 230kV LP&L loop.
- Total of 121.9 miles of 345kV double circuit.
- RFP Generation Resource assumed to be located elsewhere in ERCOT system.

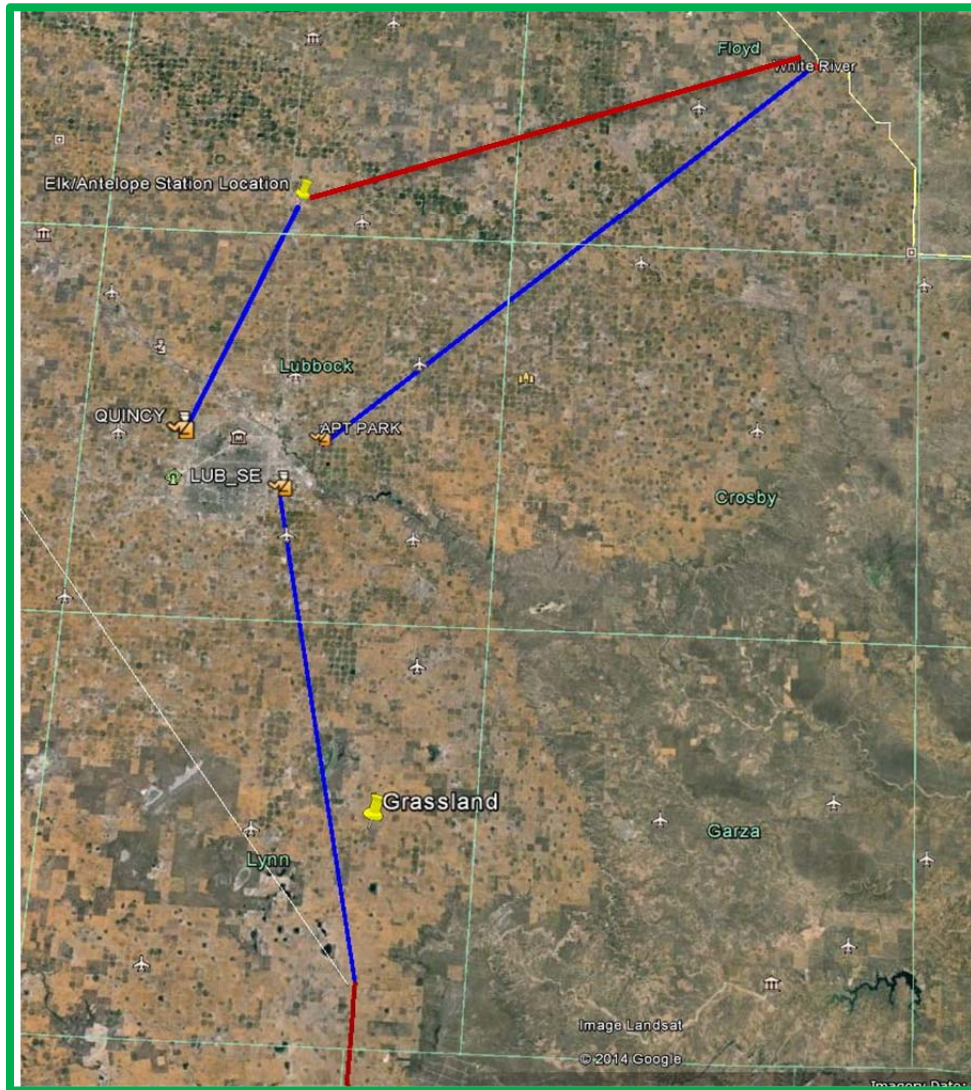


Exhibit 7: Option 1-2

Option 1-3 (345kV LP&L Loop) Description

- Elk – Airport Park 345 kV double circuit line (~25.3 miles).
- Elk – Quincy 345 kV double circuit line (~25.3 miles).
- Vealmoor – Lubbock SE 345 kV double circuit line (~41.4 miles).
- Fourteen (14) 345/69 kV transformers.
- Convert all 230kV stations (9) and lines (9) within Lubbock to operate at 345kV.
- Total of 92 miles of 345kV double circuit and 58 miles of 345kV single circuit
- RFP Generation Resource assumed to be located elsewhere in ERCOT system

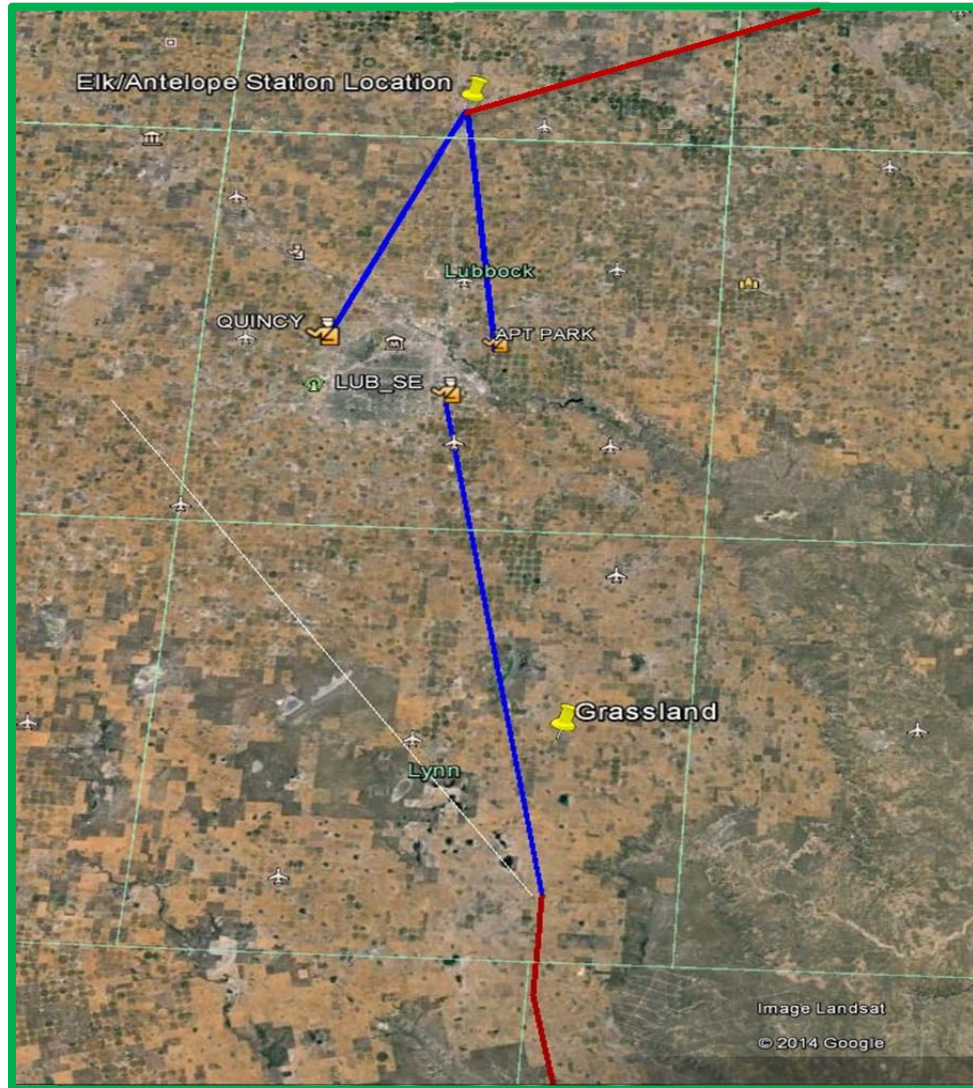


Exhibit 8: Option 1-3

Option 1-4 (345kV LP&L Loop) Description

- White River – Airport Park 345 kV double circuit line (~55.2 miles).
- Elk – Quincy 345 kV double circuit line (~25.3 miles).
- Vealmoor – Lubbock SE 345 kV double circuit line (~41.4 miles).
- Fourteen (14) 345/69 kV transformers.
- Convert all 230kV stations (9) and lines (9) within Lubbock to operate at 345kV.
- Total of 80.5 miles of 345kV double circuit and 58 miles of 345kV single circuit.
- RFP Generation Resource assumed to be located elsewhere in ERCOT system.

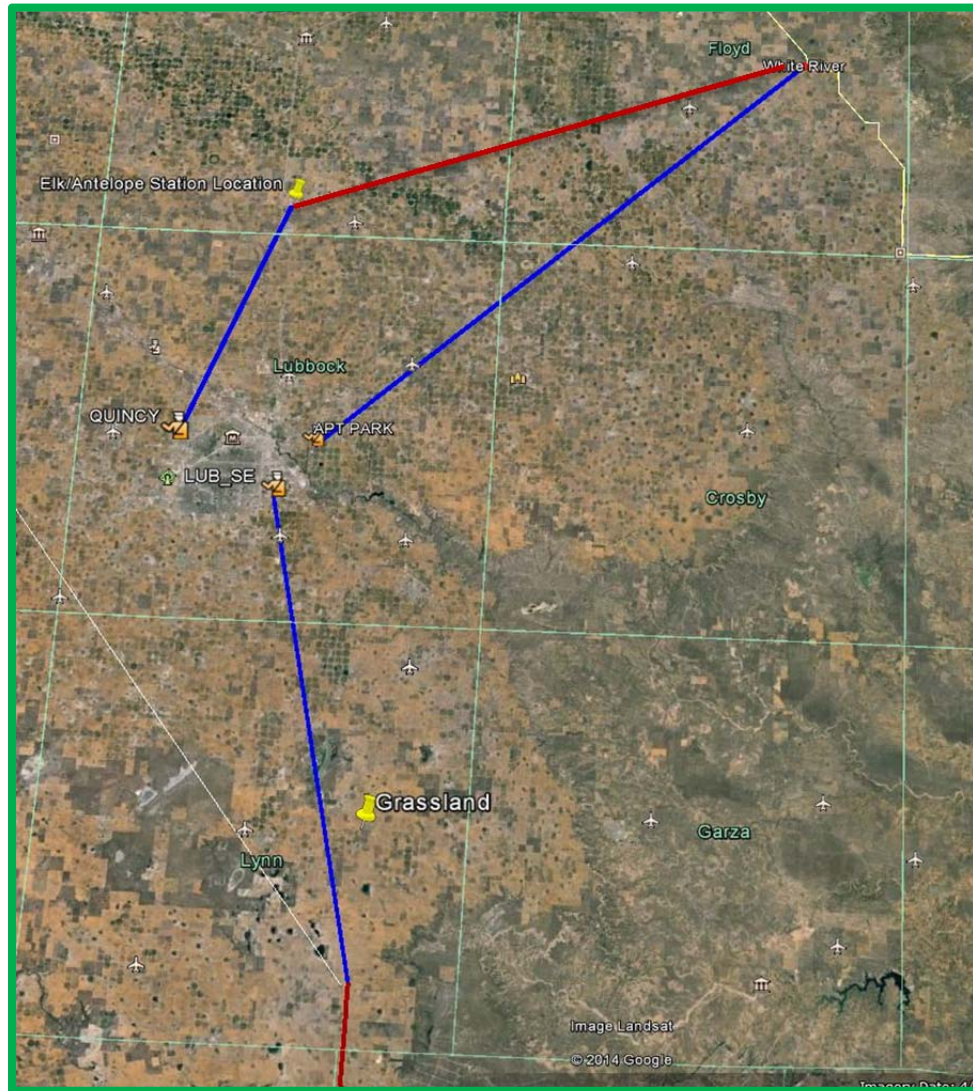


Exhibit 9: Option 1-4

Option 2-1 (230kV LP&L Loop) Description

- Elk – Airport Park (230) 345 kV double circuit line (~25.3 miles).
- Vealmoor – Lubbock SE (230) 345 kV double circuit line (~41.4 miles).
- Four (4) 345/230 kV transformers.
- Assumed the completion of the 230kV LP&L loop.
- Total of 66.7 miles of 345kV double circuit.
- RFP Generation Resource assumed to be located within the LP&L 230kV loop at the preferred location (600 MW).

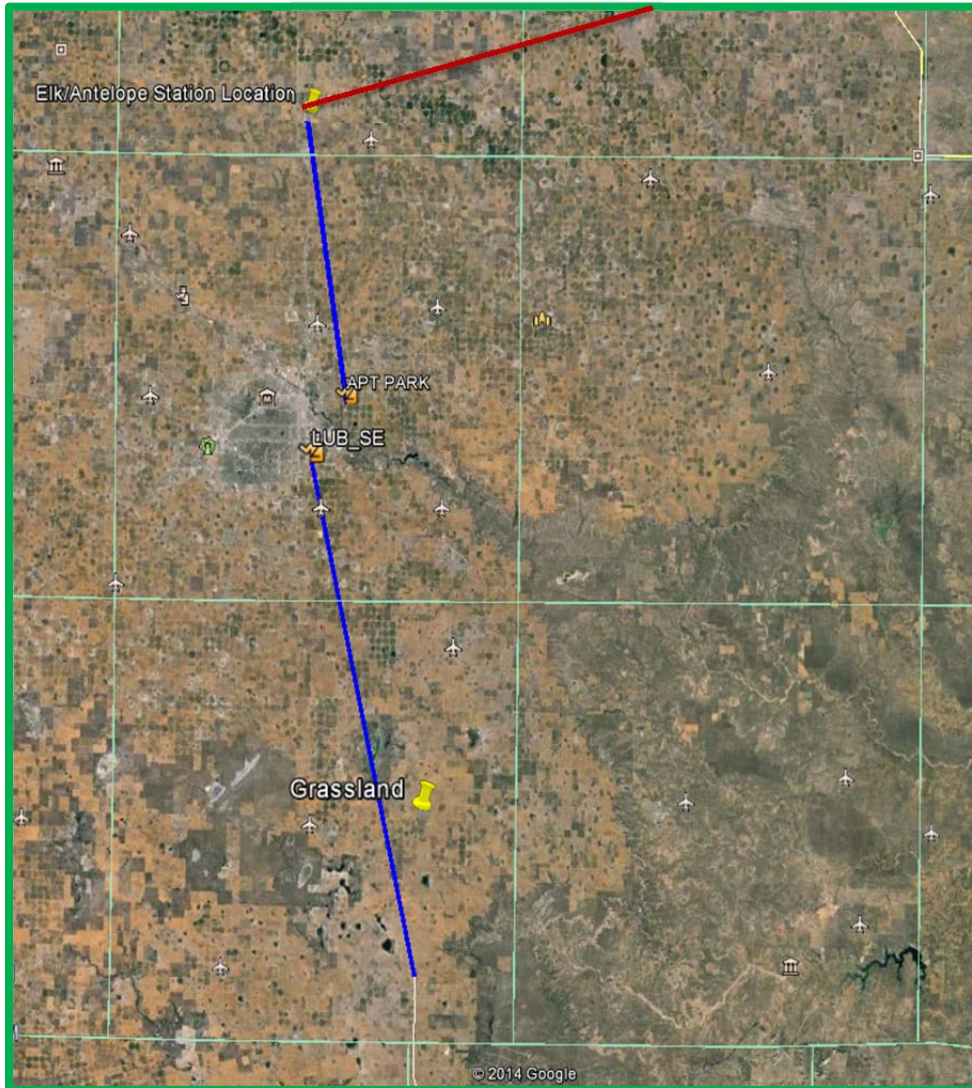


Exhibit 10: Option 2-1

Option 2-2 (230kV LP&L Loop) Description

- Elk – Quincy (230) 345 kV double circuit line (~25.3 miles).
- Vealmoor – Lubbock SE (230) 345 kV double circuit line (~41.4 miles).
- Four (4) 345/230 kV transformers.
- Assumed the completion of the 230kV LP&L loop.
- Total of 66.7 miles of 345kV double circuit.
- RFP Generation Resource assumed to be located within the LP&L 230kV loop at the preferred location (600 MW).



Exhibit 11: Option 2-2

Option 2-3 (345kV LP&L Loop) Description

- Elk – Airport Park 345 kV double circuit line (~25.3 miles).
- Vealmoor – Lubbock SE 345 kV double circuit line (~41.4 miles).
- Fourteen (14) 345/69 kV transformers.
- Convert all 230kV stations (9) and lines (9) within Lubbock to operate at 345kV.
- Total of 66.7 miles of 345kV double circuit and 58 miles of 345kV single circuit.
- RFP Generation Resource assumed to be located within the LP&L 230kV loop at the preferred location (600 MW).

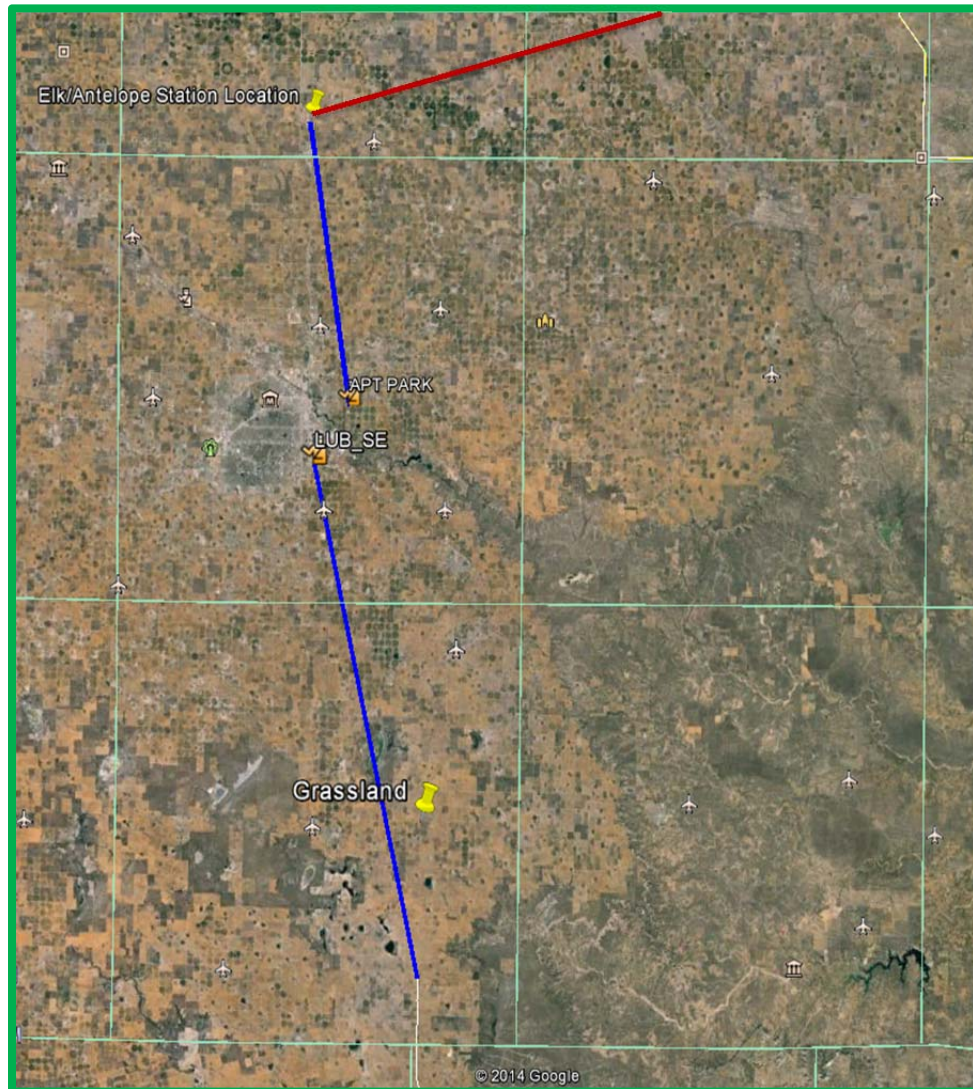


Exhibit 12: Option 2-3

Option 2-4 (345kV LP&L Loop) Description

- Elk – Quincy 345 kV double circuit line (~25.3 miles).
- Vealmoor – Lubbock SE 345 kV double circuit line (~41.4 miles).
- Fourteen (14) 345/69 kV transformers.
- Convert all 230kV stations (9) and lines (9) within Lubbock to operate at 345kV.
- Total of 66.7 miles of 345kV double circuit and 58 miles of 345kV single circuit.
- RFP Generation Resource assumed to be located within the LP&L 230kV loop at the preferred location (600 MW).

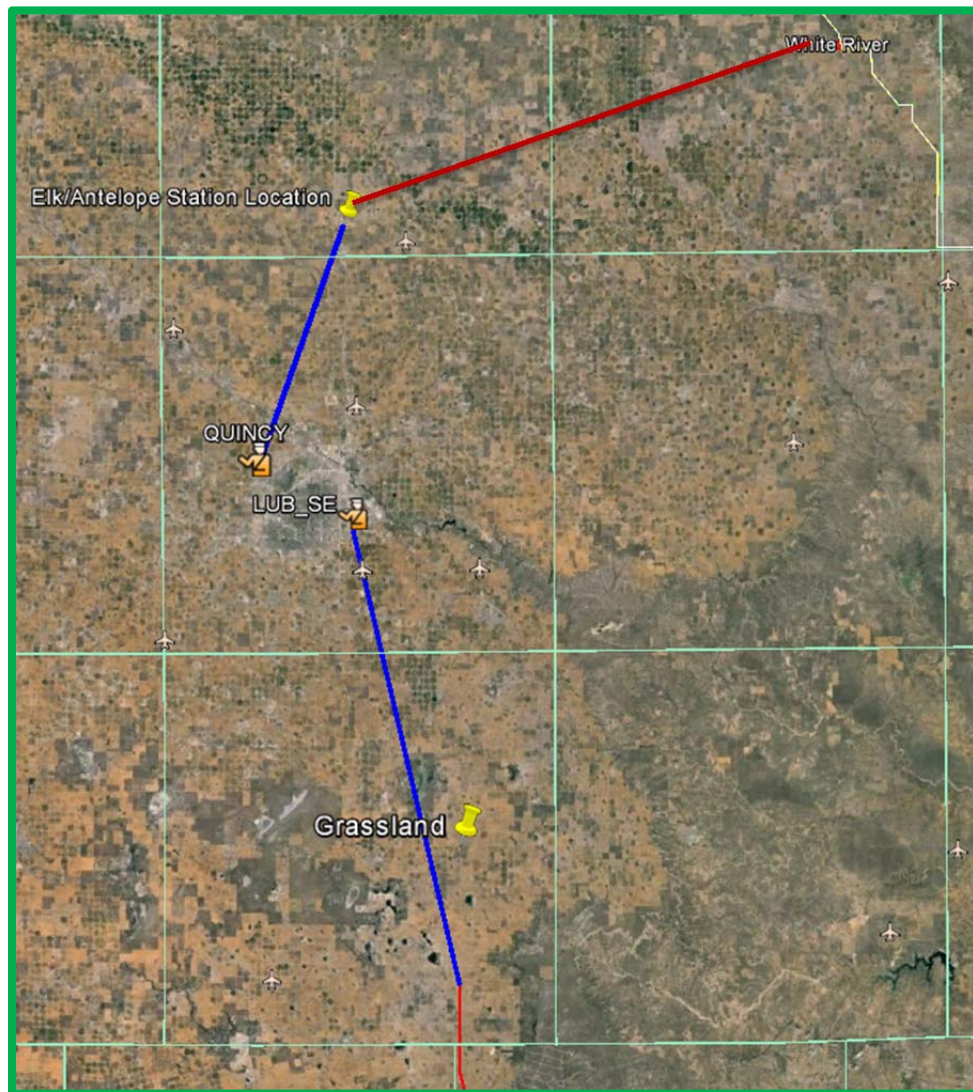


Exhibit 13: Option 2-4

Sharyland performed AC power flow analysis under normal operating and relevant contingency conditions to assess the ability of both options (and all variations for each option) to reliably serve the LP&L system load for the study year. Two specific conditions were studied for the study year namely:

- Summer Peak Conditions, and
- High Wind Conditions

Per ERCOT transmission planning criteria, the following outages were considered for the assessment:

- Single line outages, and
- Double-circuit outages on the same tower were treated as N-1 conditions

To ensure adequacy of the sources to supply the LP&L system load, the above-mentioned outages were also evaluated with the single largest unit in the region out and the system re-dispatched.

Based on the conditions simulated in this study, Options 1-1 through 1-4 met or exceeded the ERCOT reliability criteria when serving the LP&L system load with external sources should the RFP generation resource be located elsewhere in the ERCOT system (external to the LP&L loop). No major steady state voltage security issues were observed for any of the options studied for the conditions evaluated. From an LP&L 69kV loop perspective, the 345kV loop option (around LP&L) was observed to perform slightly better in comparison to the 230kV loop while providing higher transmission capability for longer-term load and generation growth. However, further coordination with, and a need determination by, ERCOT staff would be required to justify the additional cost of this 345kV loop.

For options associated with the RFP generation resource being located within the LP&L loop (at LP&L's preferred location), no reliability concerns were observed for any options (Options 2-1 through 2-4) in terms of their ability to reliably serve the LP&L load for Summer Peak conditions. Sharyland did observe some 230kV system overloads under high wind conditions for N-1+G-1 evaluations assuming the build out of the LP&L 230kV loop as planned – these were observed to be alleviated with re-dispatch of local conventional generation resources. Note that it is unlikely that conventional generation resources would be dispatched at full output during high wind conditions in the Panhandle. The aforementioned 230kV overloads were not observed under the assumption that the 230kV loop around LP&L is converted to 345kV. Finally, if the selected RFP generation resource was located at LP&L's preferred location, for the options studied, it would be necessary to upgrade some of 69kV sections of LP&L loop that have relatively lower thermal ratings i.e., 54 – 108 MVA.

Sharyland has not performed any dynamic analysis associated with integration of the LP&L system into ERCOT, and all the results and comments provided in the report are based on steady state assessment.

4. Transmission Cost Estimates

Exhibits 14 and 15 provide cost estimates associated with the options evaluated for the LP&L ERCOT integration. Key cost estimate assumptions are:

- The 345kV single- and double-circuit line cost estimates are based on Sharyland's as-built estimates for the Panhandle facilities.
- All other 345/138kV cost estimates are based on ERCOT average cost estimates.
- Industry typical estimates are utilized for 345/230kV and 230/69kV transformers.
- Industry and SPP typical estimates are utilized for the 230kV transmission line estimates (\$1.0M/mile).
- LP&L is proceeding with the construction of the 230kV loop and the upgrades that may be necessary to serve load in its 69kV system.
- The 230kV LP&L loop would be built as originally planned, and only the incremental costs between that and the 345kV loop have been taken into account for the 345kV option.
- Cost for converting the 230kV stations to 345kV is assumed to be around \$5 Million, not including cost of new transformers.

Description	Cost/Unit (\$M)	Op1-1		Op1-2		Op1-3		Op1-4	
		Units	Cost	Units	Cost	Units	Cost	Units	Cost
345kV Elk - Airport Park double circuit line	1.5	25.3	37.95	0	0	25.3	37.95	0	0
345kV White River - Airport Park double circuit line	1.5	0	0	55.2	82.8	0	0	55.2	82.8
345kV Elk - Quincy double circuit line	1.5	25.3	37.95	25.3	37.95	25.3	37.95	25.3	37.95
345kV Long Draw - Lubbock SE double circuit line	1.5	41.4	62.1	41.4	62.1	41.4	62.1	41.4	62.1
345/230kV Station Expansions @ Airport Park, Quincy & Lubbock SE (6-breaker ring bus @345)	16	3	48	3	48	0	0	0	0
345/230kV 600 MVA transformer	8.5	6	51	6	51	0	0	0	0
Converting four (4) stations from 230kV to 345kV	5	0	0	0	0	4	20	4	20
Five (5) new 345kV stations (6-breaker ring bus)	16	0	0	0	0	5	80	5	80
345/69kV 300 MVA transformer	6.5	0	0	0	0	14	91	14	91
Incremental Cost for 230/345kV LP&L loop	N/A	N/A	N/A	N/A	N/A	N/A	20.3	N/A	20.3
Total (\$M)		237		281.85		349.30		394.15	

Exhibit 14: Budgetary Cost Estimates, LP&L ERCOT Integration Options (RFP generation resource located elsewhere on the system)

Description	Cost/Unit (\$M)	Op2-1		Op2-2		Op2-3		Op2-4	
		Units	Cost	Units	Cost	Units	Cost	Units	Cost
345kV Elk - Airport Park double circuit line	1.5	25.3	37.95	0	0	25.3	37.95	0	0
345kV Elk - Quincy double circuit line	1.5	0	0	25.3	37.95	0	0	25.3	37.95
345kV Long Draw - Lubbock SE double circuit line	1.5	41.4	62.1	41.4	62.1	41.4	62.1	41.4	62.1
345/230kV Station Expansions @ Airport Park, Quincy & Lubbock SE (6-breaker ring bus @345)	16	2	32	2	32	0	0	0	0
345/230kV 600 MVA transformer	8.5	4	34	4	34	0	0	0	0
Converting four (4) stations from 230kV to 345kV	5	0	0	0	0	4	20	4	20
Five (5) new 345kV stations (6-breaker ring bus)	16	0	0	0	0	5	80	5	80
345/69kV 300 MVA transformer	6.5	0	0	0	0	14	91	14	91
Incremental Cost for 230/345kV LP&L loop	N/A	N/A	N/A	N/A	N/A	N/A	20.3	N/A	20.3
Total (\$M)		166.05		166.05		311.35		311.35	

Exhibit 15: Budgetary Cost Estimates, LP&L ERCOT Integration Options (RFP generation resource located within the 230kV Loop @ 600 MW)

5. Comparative Transmission Cost Estimates for SPP and ERCOT Options

Sharyland has estimated LP&L's transmission costs for the following two options.

- (1) LP&L would transfer its load from SPP to ERCOT. Under this option, generation resources in ERCOT (or built at the preferred site listed in the RFP) would be available to serve this load beginning June 1, 2019. Generation facilities within the LP&L footprint would also be transferred to ERCOT. The annual estimated transmission cost to LP&L is approximately \$4.2 Million.
- (2) LP&L's load remains in SPP: the annual estimated transmission cost to LP&L is \$34.9 Million.

Based on this preliminary transmission cost estimates, LP&L customers would save over \$30 Million in annual transmission costs under the options presented in the ERCOT Transmission Solution.

Estimated Initial Annual Transmission Costs		
Option	Annual Costs Two-Line Option	Annual Costs Three-Line Option
1. Move to ERCOT	\$4,136,077	\$4,234,975
2. Remain in SPP	\$34,861,946	\$34,861,946
3. Difference	(\$30,725,869)	(\$30,626,971)

Exhibit 16: Estimated transmission costs for LP&L under both options

The above cost estimates reflect the costs for the new LP&L 230kV transmission loop mentioned in the RFP. Additional details on the calculations of the estimated transmission costs are discussed in sections 6 and 7 below.

6. Move to ERCOT Option

The cost of all transmission facilities in ERCOT are recovered through an ERCOT-wide postage stamp transmission rate. The transmission rate is reset every year by the PUCT using updated transmission facilities costs and loads. All load serving entities in ERCOT pay the ERCOT-wide transmission rate based on their 4 coincident peak (4 CP) demand during the prior year. All transmission owning entities in ERCOT are paid for the cost of their transmission facilities (referred to as TCOS).

If LP&L becomes part of ERCOT in 2019, it will be included in the wholesale transmission cost of service matrix and both receive wholesale transmission revenues (TCOS) and pay wholesale transmission costs (the ERCOT-wide transmission rate). As an ERCOT transmission service provider (TSP), LP&L would receive access fee revenues from all load serving entities (LSEs) equal to its TCOS rate or annual access fee times the LSEs ERCOT average 4 CP. LP&L would also pay the other TSPs for transmission service. The annual amount paid to other TSPs is equal to the ERCOT-wide rate or access fee times LP&L's estimated ERCOT 4 CP.

Based upon the assumptions explained below, LP&L's estimated TCOS (or annual access fee revenues) in 2019 is approximately \$24.7 Million. LP&L would pay other TSPs approximately in between \$28.8 and \$28.9 Million annually for transmission service. The net of these two amounts results in a net annual LP&L Transmission Cost between \$4.1 and \$4.2 Million included in Exhibit 17 and the summary table in Exhibit 16. The assumptions for estimating these amounts are:

Net transmission plant:	Calculated on an average cost per mile of line basis using the average net book value of transmission plant for SPS, AEP TNC, Entergy Texas, SWEPCO, and Oncor and includes an estimate of the transmission voltage portion of the investment in substations.
Rate of Return:	Estimated based on recent allowed rates of return allowed to investor-owned utilities and cooperatives. The optional cash flow method of calculating LP&L's return is likely to result in a lower rate of return as actual 2013 debt service coverage was 3.11. However, without more detailed information regarding bond covenants, it is not possible to estimate the cash flow method return.
O&M/A&G expense:	Estimated as 15% of net transmission plant based on averages for the same utilities used to estimate net transmission plant. The range for this value is 4% to 24%.
Depreciation rate:	Estimated useful life of transmission plant is 33 years. LP&L useful lives for infrastructure range from 10 to 50 years.
PILOT:	The transfer to the general fund (aka payment in lieu of taxes) percentage is the actual rate for fiscal 2013.
Estimated 2019 4CP:	The estimate for the ERCOT 2019 4 CP is per ERCOT's peak demand forecast. LP&L's estimate is equal to the peak demand of 691 MW.
Est. 2019 ERCOT-wide rate:	The ERCOT-wide transmission rate for 2019 is estimated as the current total TCOS amount plus LP&L's estimated TCOS plus the additional TCOS amount for the facilities to be constructed by Sharyland to interconnect LP&L with ERCOT divided by the estimated 2019 4 CP.
Est. increase in SU TCOS:	Both the incremental and total ERCOT TCOS are estimated based on an additional \$166 Million for the two-line and \$237 Million for the three-line new transmission investment options and Sharyland's most recently approved TCOS amounts. The assumption is that this plant will be reflected in an interim update TCOS filing in which only depreciation expense, other taxes, federal income taxes, and return are adjusted. The calculations include the actual allowed rate of return and other costs, such as O&M expenses, per Docket No. 41474.

Lubbock Power & Light Estimated TCOS in ERCOT		
INPUTS:		
Net transmission plant		\$ 75,335,046
Rate of return		9.00%
O&M/A&G expense as % of net plant		15.00%
Transmission plant deprn rate		3.00%
PILOT % of net plant		5.79%
2019 Estimated TCOS		
Return		\$ 6,780,154
O&M		11,300,257
Depreciation expense		2,260,051
PILOT		4,363,671
Total TCOS revenue requirement		\$ 24,704,134
ERCOT forecast peak-kW (2019)		71,805,848
LP&L estimated 4CP - kW (2019)		691,000
		72,496,848
LP&L wholesale TCOS rate - kW		\$ 0.3407615
<i>SULP Low Cost:</i>		
LP&L pays others		\$ 28,840,211
LP&L wholesale TCOS revenues		24,704,134
Net LP&L transmission cost - ERCOT		\$ 4,136,077
Remain in SPP		\$34,861,946
Difference		\$(30,725,869)
<i>SULP High Cost:</i>		
LP&L pays others		\$ 28,939,108
LP&L wholesale TCOS revenues		24,704,134
Net LP&L transmission cost - ERCOT		\$ 4,234,975
Remain in SPP		34,861,946
		\$(30,626,971)

Exhibit 17: Estimated transmission costs for LP&L under the move to ERCOT option

Membership and administrative fees are not included in the transmission cost calculations. The annual ERCOT Membership fee is currently \$2,000. The ERCOT Administrative Fee is currently \$0.4650 per MWh.

7. Remain in SPP Option

Assessment of SPP transmission revenues or credits in addition to costs for taking SPP transmission service to serve projected 2019 LP&L network load requirements includes consideration of SPP capacity margin requirements, netting of behind the meter generation assets and any potential residual grandfathered power supply arrangements. The basis and assumptions used for determining the SPP transmission cost estimate are as follows:

Cost Recovery and Transmission Revenue Options for New LP&L Transmission Loop

If LP&L does not join SPP, the cost will be the full responsibility of LP&L customers. Using an average 17% Annual Revenue Requirement this would add approximately $(\$58M) \times (0.17) = \$9.86M/Yr$ to the transmission costs to remain in SPP. However, if LP&L were to join SPP as a Transmission Owning Member and successfully qualify these new facilities as “Transmission” under Attachment AI, the costs could be regionalized under the SPP Attachment J, Highway/Byway cost allocation structure. For purpose of this analysis, it is assumed LP&L will remain independent and fully bear the cost of the new transmission loop.

Transmission Revenues & Credits

LP&L is not an SPP Member, so it does not have transmission revenues from transmission service utilization. SPP Membership is required for transmission facilities qualified under SPP Attachment AI to be rolled under the tariff and to be qualified to receive transmission revenues from transmission service.

Transmission credits under Attachment Z1/Z2 of the SPP OATT are contract relationships with SPP and identified Transmission Owners of new facilities necessary for Generation Interconnection projects qualified to receive payment from Transmission Customers for cost recovery. There has been no information identified indicating LP&L is a party to any such agreements.

Transmission Costs

LP&L is a member of the West Texas Municipal Power Agency. Under the SPP/SPS NITSA with Lubbock/WTMPA (filed in FERC Docket ER11-2190), which expires July 1, 2019, Lubbock/WTMPA load is contracted in the NITSA as part of the SPS network load profile. Transmission Service charges are therefore calculated based on the SPS Firm Point-To-Point rates listed in the September 2014 SPP Revenue Requirements and Rates publication, Yearly Firm SPS PTP service is \$43,330.93/MW. This charge is composed of the Schedule 9 PTP Zonal Rate (Zonal Firm), Schedule 11 PTP Rate + Region Wide Charge and the Schedule 1 Scheduling Charge.

SPS Transmission Rate for Firm PTP

This Yearly Transmission Rate is calculated based on posted 2014 values.

Sch 9 PTP Zonal Rate (Zonal Firm): Y-24,616 M-2,051

Sch 11 PTP Rate: Y-8,365.39 M-697.12

Sch 11 Region Wide Charge: Y-9,331.20 M-777.60

Sch 1 Scheduling Charge: Y-1,018.34 M-84.86 W-19.58

Monthly: \$/MW/Month \$3,610.58

Yearly: \$/MW/Year \$43,330.93

Starting with the projected peak LP&L network load for 2019 of 691 MW, this network load requirement will be offset by 114MW of behind the meter LP&L generation and any residual partial requirements purchases.

With no residual partial requirements purchases, the SPP Transmission Service cost estimate for 577MW @ \$43,330.93 (Aug 1, 2014 RRR File) = \$25,001,946/Year. Exhibit 18 summarizes the major components of LP&L annual transmission costs under the “Remain in SPP” option.

	Estimated Annual Costs
SPP Transmission Service Cost	\$25,001,946
230kV Loop Annual Revenue Requirement	\$ 9,860,000
Total:	\$34,861,946

Exhibit 18: Estimated transmission costs for LP&L under Remain in SPP option

Transmission Charges Are the Sum Total of the Following Rates

The Zonal Revenue Requirements for each SPP Transmission Owner is recovered through Schedule 9, Zonal NITS (monthly demand charge) which is also used to determine Schedule 7&8. The revenue from Point-to-Point rates is over and above the zonal revenue requirements recovered under Schedule 9. Schedule 11 Base Plan ATRR recovery of SPP BOD approved base plan allocated upgrades.

Schedule 9 PTP Zonal Rate (Zonal Firm)

Schedule 11 PTP Rate + Region Wide Charge

Schedule 1 Scheduling Charge

Schedule 9 PTP Zonal Rate: Is the NITS monthly demand charge. The revenue requirements in Attachment H, column 3 includes legacy upgrades prior to the implementation of the SPP OATT cost allocation and rates approvals as well as the Transmission Owner's day-to-day operating expenses. Legacy projects and day-to-day operating expenses are included in this portion of the transmission revenue requirement. This rate is zone specific.

Schedule 11 PTP Rate: Schedule 11 is composed of three parts: a Point-to-Point zone specific rate and a Region wide Point-to-Point rate, which is not zone specific and a Schedule 11 NITS rate. Schedule 11 recovers the revenue requirement associated with upgrades approved by SPP. Schedule 11 determinants are derived from the sum of column 4 Base Plan Zonal ATRR and column 5 Base Plan Zonal ATRR (for projects with an NTC after June 19, 2010). This rate is zone specific.

Schedule 11 Region Wide PTP Rate: The determinant for Schedule 11 is based on Attachment H, Table 2 Region Wide ATRR. This ATRR is composed of Base Plan Region wide ATRR for approved base plan funded Highway/Byway upgrades.

Schedule 1 scheduling fee: Is based on expenses associated with specific expense accounts tied to scheduling charges. The billing determinant is the prior year 12-CP load.

Potential Additional Impacts of LP&L Network Load Joining SPP

- 1) SPP Membership Costs: The annual SPP Membership fee is currently \$6,000. The SPP Administrative Fee is currently \$0.390 per MWh, but it is forecasted to increase as high as \$0.4840 per MWh in 2022.
- 2) SPP Integrated Marketplace and Consolidated Balancing Authority (CBA): SPP requires all network load be registered under the SPP Consolidated Balancing Authority for purpose of regionalized dispatch of network resources unlike in the past where individual balancing authorities issued their own dispatch instructions. If LP&L decouples from SPS and becomes an SPP Member, LP&L will have to become its own balancing authority or join SPP and register its load within the SPP CBA.

Regardless of LP&L decision in this regard, any purchased annual firm transmission service will be subject to the Integrated Marketplace Transmission Congestion Right (TCR) hedging procedures and will be able to submit its TCR for conversion to Annual Revenue Rights.

- 3) Capacity Benefit Margin: As an SPP Member, LP&L network load would be subject to the Capacity Benefit Margin criteria. SPP Criteria 4.3 mandates a 12% Capacity Benefit Margin for steam-based utilities. Currently the SPP/SPA NITSA/NOA includes provisions where SPS fulfills the necessary Capacity Benefit Margin requirements on behalf of the LP&L load. Upon

registration of LP&L load in the SPP Consolidated Balancing Authority, a 12% Capacity Benefit Margin would be calculated as part of the LP&L required network load responsibility. This margin would add 82.9MW to the LP&L network load responsibility and cost an additional $(82.9\text{MW}) \times (\$43,330.93) = \$3.59\text{M/year}$ in transmission costs.

8. Conclusions

Sharyland analyzed multiple transmission options that would reliably integrate the LP&L system into the ERCOT grid with estimated costs ranging from \$166 Million to \$394 Million. Assuming that the RFP generation is located outside the LP&L system, Sharyland recommends Option 1-1, which integrates the LP&L system into the ERCOT grid via three new 345kV sources and has an estimated transmission expansion cost of \$237 Million. If LP&L elects to build the new 600 MW unit within their transmission system, Sharyland's recommended option would be Option 2-1, which integrates the LP&L system into ERCOT with two new 345kV sources with an estimated cost of \$166 Million.

While building the LP&L loop at 230kV is the least-cost option, ERCOT should consider the long term benefits of utilizing a 345kV loop around the LP&L system with the ongoing build out of generation resources in the ERCOT Panhandle region.

Based on this preliminary transmission cost estimates, LP&L customers would save over \$30 Million in annual transmission costs under the options presented in the ERCOT Transmission Solution.

Should LP&L decide to interconnect with ERCOT, Sharyland would submit a CCN application to the PUCT seeking authorization to build the transmission facilities required to integrate LP&L into ERCOT. LP&L would be required to enter into a Market Participant Agreement with ERCOT as a Load Serving Entity (with the option to remain a Non-Opt-In Entity (NOIE) defined by ERCOT as a Municipally Owned Utility that does not offer Customer Choice). Finally, LP&L would have to make a TCOS filing with the PUCT in order to be included in the wholesale transmission cost of service matrix and both receive wholesale transmission revenues (TCOS) and pay wholesale transmission costs (the ERCOT-wide transmission rate).