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Brattle Analysis of Lancium's Proposed Panhandle Plan's Impacts on Rates

BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS

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PREPARED FOR:



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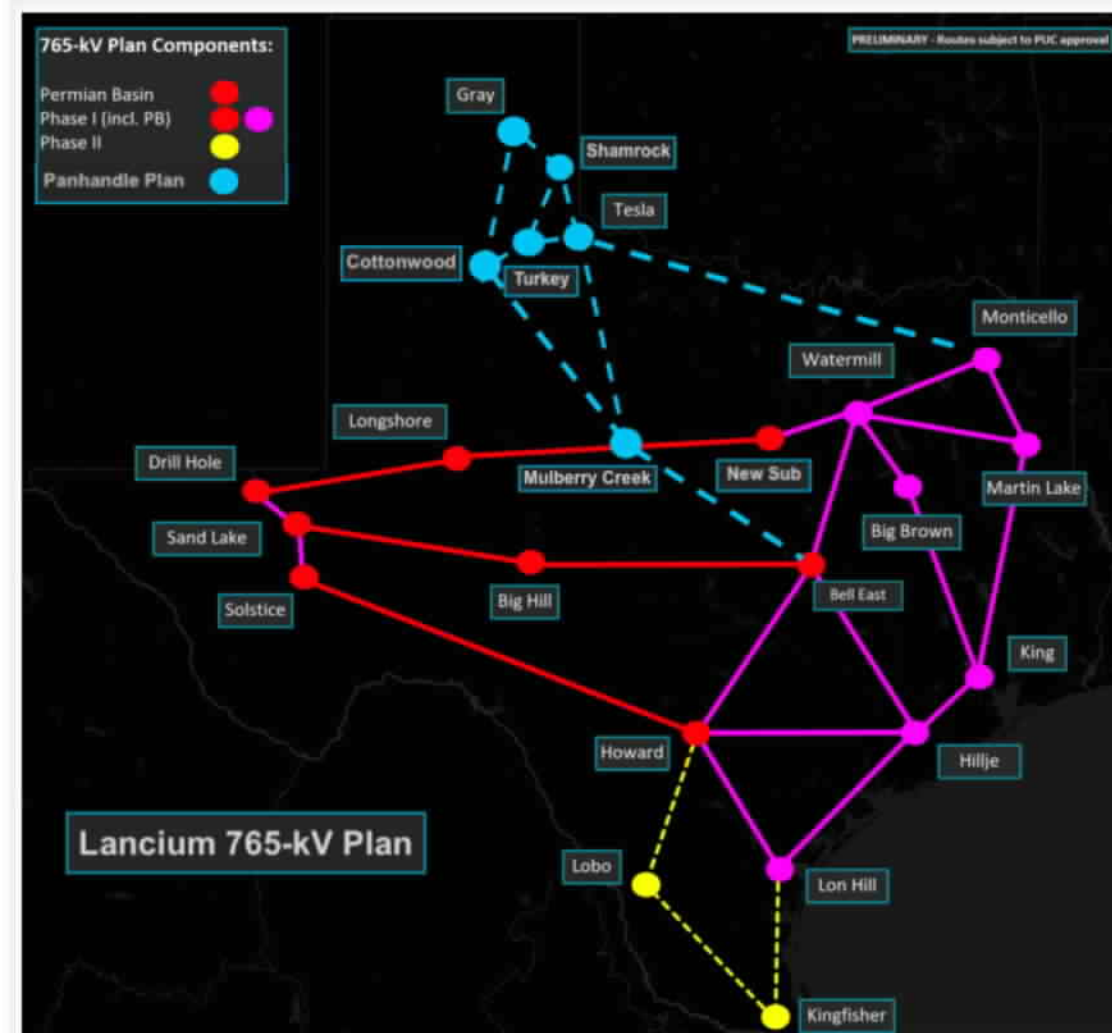
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Overview

Lancium retained The Brattle Group to conduct an independent analysis of the effects the Panhandle Plan would have on the rates of other ERCOT customers.

Our key observations:

- Lancium's 765 kV Panhandle Plan offers economies of scale for accommodating large loads.
- The transmission rate impact on other customers is simple division: assuming large new loads enter as planned and do not avoid 4CP transmission charges, rates for other customers would be approximately neutral or could even decrease.
- Impacts on other customers' energy costs should also be approximately neutral.



Note: blue lines and nodes are the Panhandle Plan that is incremental to ERCOT Phase I 765 kV plan.

Observation 1: Economies of Scale

- We evaluated cost of Panhandle Plan incremental to Permian Plan (and not compared to other plans) to be \$8.7 billion, using MISO's 2024 MTEP cost estimates (in 2024 \$s).
- Lancium's technical consultant, Electric Power Engineers (EPE) showed that the Panhandle Plan can reliably accommodate 24 GW of load and accompanying resources.

Assumption	Unit	Panhandle Plan Cost
Transmission Line Description		
Transmission Line Size (Base Assumption)	MW	10,000
Transmission Line Length	miles	1,071
Transmission Line Voltage	kV	765
Right of Way Width	Feet	200
Transmission Line Costs		
RoW acres purchased	#	25,973
Cost per acre	\$/acre	\$7,500
Land Cost	\$million (2024 \$)	\$195
Transmission Miles	miles	1,071
Cost per Mile	\$ million (2024 \$)	\$6
Transmission Line Cost	\$million (2024 \$)	\$6,428
Substations	#	7
Cost per Substation	\$ million (2024 \$)	\$155
Total Substation Cost	\$million (2024 \$)	\$1,085
Planning and Engineering	\$million (2024 \$)	\$600
Other System Upgrades	\$million (2024 \$)	\$400
Total Cost	\$million (2024 \$)	\$8,708

Source and notes: [Transmission Cost Estimation Guide](#) for MTEP24, May 1, 2024 with assumptions are from Lancium on line miles, number of substations, and on the costs of planning & engineering and other system upgrades. This estimate conservatively includes the Tesla-Monticello line that is in Phase II of ERCOT's 765 kV plan.

Observation 1 (con't)

- Based on typical regulatory financial assumptions and the total project cost, we estimate the first-year transmission revenue requirement (TRR) of the Panhandle Plan to be \$1.2 billion per year.
- The TRR will decline in future years as the project depreciates.
- For 24 GW of load, the average cost per kW for load is \$50/kW-yr, or higher if less load connects.
- This is less than current ERCOT rates of \$67/kW-yr.
- Moreso, it is less than the \$71/kW-yr rate in 2030, estimated as:
 - ERCOT estimated \$32.3 billion for Permian Basin + 2024 RTP plan.
 - At the same first-year TRR per \$ of capital cost as above, this adds \$4.3b to the \$5b base, resulting in total TCOS of \$9.3b in 2030.
 - Divide by forecast peak load of 152 GW in 2030, and scaling factor.
 - Plus \$6.4/kW-yr adder based on ERCOT 2024, assuming persistence of the current postage stamp's premium to current TCOS/4CP, reflecting timing of TO rate cases.

Source and notes: for the current ERCOT TCOS and 4 CP, see PUCT Docket No. 56050. Available at:

https://interchange.puc.texas.gov/Documents/56050_56_1376812.PDF

Estimated cost of Permian Basin and 2024 RTP plan: [2024-regional-transmission-plan-rtp-345-kv-plan-and-texas-765-kv-strategic-transmission-expans.pdf](#). Estimated cost of \$33 billion in Jan 2025 is de-escalated to \$32.3 billion expressed in Mar 2024\$ comparable to current TCOS.

First-year TRR of Panhandle Plan

		Panhandle Plan
Project Cost	\$ million (2024 \$)	\$8,708
Net Project Cost	\$ million (2024 \$)	
Depreciation	\$ million (2024 \$)	\$174
Equity Payments	\$ million (2024 \$)	\$392
Interest Payments	\$ million (2024 \$)	\$287
O&M	\$ million (2024 \$)	\$174
Net Income Tax	\$ million (2024 \$)	\$131
First-year TRR	\$ million (2024 \$)	\$1,158

Financial Assumptions		Value
Cost of Equity	%	10%
Cost of Debt	%	6%
Equity Percentage	%	45%
Debt Percentage	%	55%
Book Life	years	50
Net Income Tax	%	25%
O&M	% of capital cost	2.0%

Observation 2: Approximately Neutral Transmission Rates for Others

Assuming hosted loads pay for transmission based on 4CP at their full peak loads, transmission rates for other customers would be approximately neutral or could even decrease.

- With 18 GW load, the average cost would be the same as the base rate.
 - Rates for other customers would hold neutral.
 - If the loads exceed 18 GW, rates for other customers would decrease.
- With 12 GW load, the Panhandle Plan would increase others' rate by \$2.5/kW-yr, equating to +\$0.3/MWh (approximately neutral).
- With 24 GW load, the Panhandle Plan would *reduce* others' rate by \$2.2/kW-yr, equating to -\$0.26/MWh (still approximately neutral).

		ERCOT 2024	2030 ERCOT (w/ 2024 RTP & Permian Basin)	2030 ERCOT with 12 GW Load	2030 ERCOT with 24 GW Load
Existing ERCOT Transmission TCOS	\$ million/yr	\$5,054	\$9,356	\$9,356	\$9,356
Lancium Incremental TCOS	\$ million/yr			\$1,158	\$1,158
New ERCOT TCOS	\$ million/yr			\$10,514	\$10,514
ERCOT 4 CP Peak Demand	MW	83,685	145,920	157,920	169,920
ERCOT Transmission Rate	\$/kW-yr	\$66.8	\$70.5	\$72.9	\$68.2
Impacts of Panhandle Plan on the rate of other ERCOT customers				+\$2.5	-\$2.2

Note: all dollars are in 2024\$.

Observation 3: Approximately Neutral Energy Prices

Impact on other customers' energy costs should also be approximately neutral

- As we have explained before in studies for ERCOT and the PUCT, the ERCOT market is designed to attract enough dispatchable and other generation to meet a market-equilibrium reserve margin either with or without the added load.
 - This assumes no barriers to generation entry. The Panhandle Plan helps expand the sites and interconnection points where new generation can be added.
 - Prices with the Panhandle Plan should therefore equilibrate to about the same level as without the project.
- Our preliminary production cost model simulations suggest that the Panhandle Plan may somewhat mitigate congestion, although we do not expect that to fundamentally change the overall impact on rates from being approximately neutral.

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Dr. Newell leads Brattle's Electricity Practice of 60 consultants addressing the most challenging economic questions facing the electricity industry.

His expertise centers on wholesale electricity markets, market design, generation asset valuation, integrated resource planning, transmission planning, and transmission benefit-cost analyses. He frequently provides testimony and expert reports to Independent System Operators (ISOs), the Federal Energy Regulatory Commission (FERC), state regulatory commissions and legislatures, state courts, and the American Arbitration Association.

In Texas, Dr. Newell has consulted extensively to ERCOT and the PUCT, as lead author on the 2012 "Investment Incentives for Resource Adequacy" study, analyses of the ORDC and the "Market Equilibrium Reserve Margin" (2012-2022), a benefit-cost analysis of changes to ancillary services market design (2015), a post-Uri Phase I study of market design options (2022), and a Cost of New Entry study (2024).

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