



Rayburn Electric Cooperative Rand Area Loop - ERCOT Independent Review Study

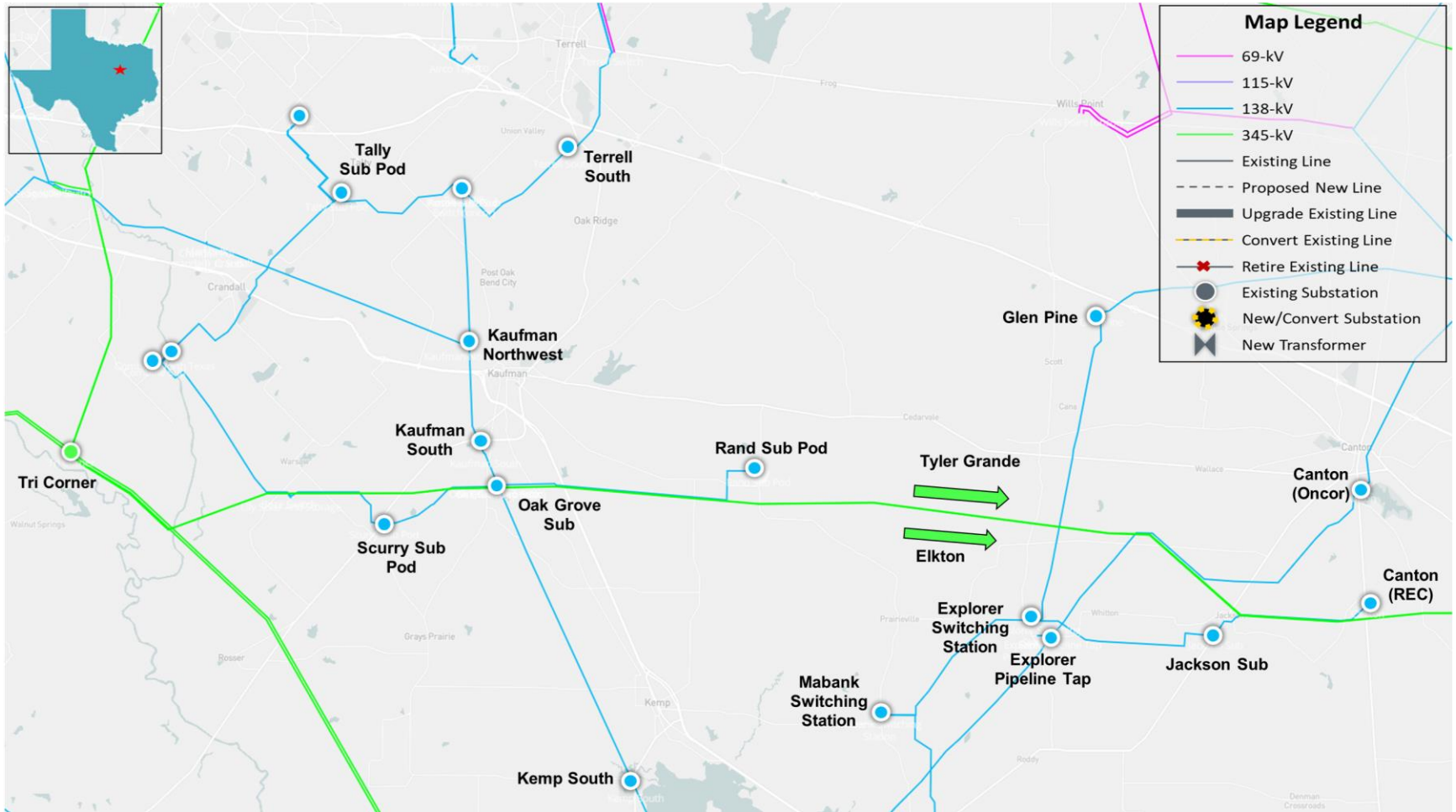
Abishek Penti

RPG Meeting
August 13, 2024

Recap - Introduction

- Rayburn Electric Cooperative (REC) submitted the Rand Area Loop Project for Regional Planning Group (RPG) review in May 2024
 - This Tier 2 project is estimated at \$32.2 million and will require a Convenience and Necessity (CCN)
 - Estimated completion date is April 2027
 - To address REC planning criteria to limit radial load to less than 20 MW
 - Provide “Looped Service” for REC Rand Station
- ERCOT presented study scope for this ERCOT Independent Review (EIR) at the June RPG Meeting:
 - <https://www.ercot.com/calendar/06112024-RPG-Meeting>
- This project is currently under ERCOT Independent Review (EIR)

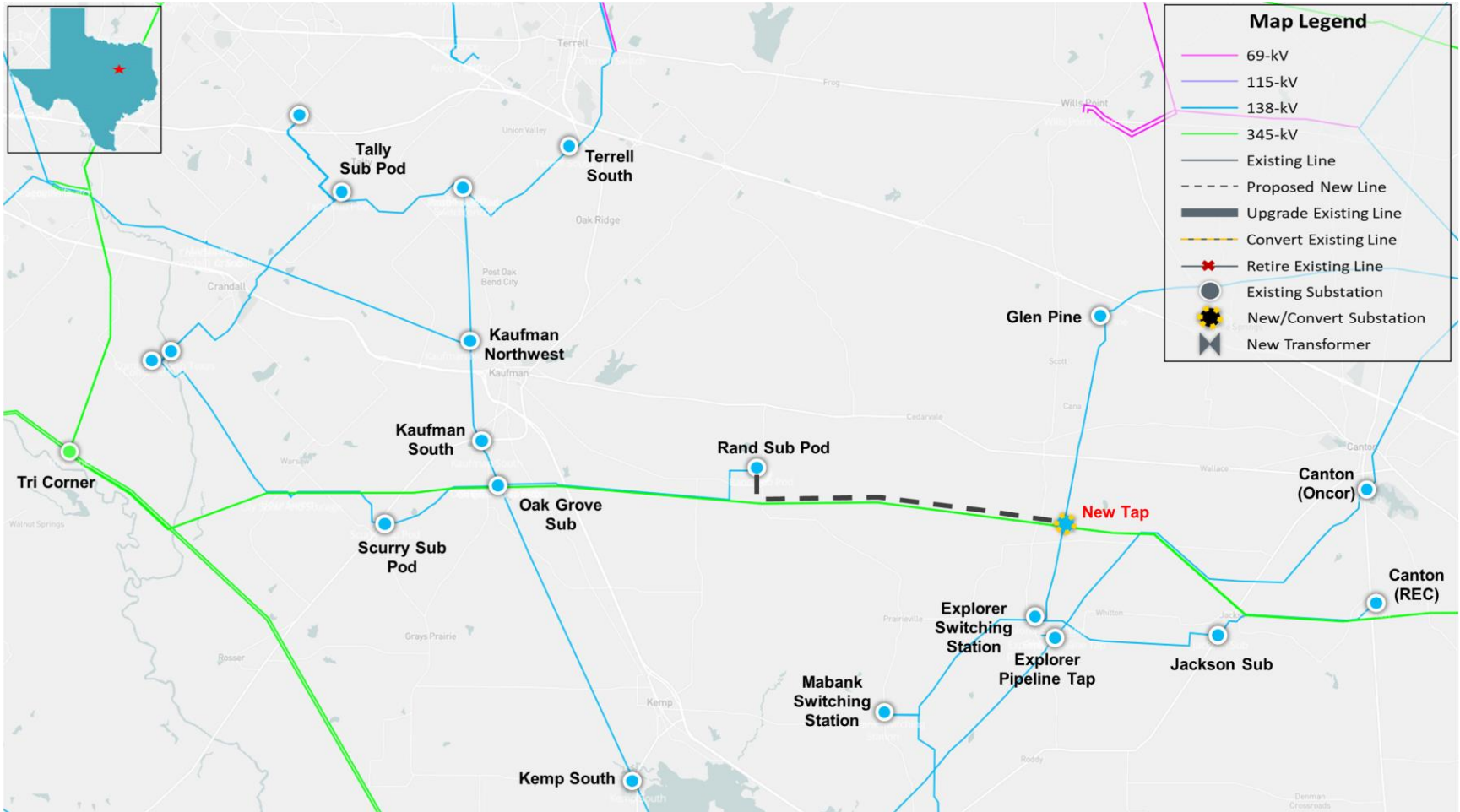
Recap - Study Area Map with Project Need Seen by REC



Recap - Project Proposed by REC

- Construct a new 138-kV Switchyard, with 3-breaker ring bus configuration, at a tap point between Explorer and Glen Pine
- Upgrade Rand 138-kV Switchyard to 3-breaker ring bus configuration
- Construct a new approximately 12.35-mile Rand to new Switchyard 138-kV transmission line with ratings of at least 669/752 MVA Normal/Emergency Rating

Recap - Project Proposed by REC



Preliminary Results of Reliability Assessment – Need Analysis

- ERCOT conducted steady-state load flow analysis for the study base case according to the NERC TPL-001-5.1 and ERCOT Planning Criteria to identify project need

Contingency Category	Voltage Violations	Thermal Violations	Unsolved Power Flow
N-0 (P0)	None	None	None
N-1 (P1, P2-1, P7)	None	None	None
G-1+N-1 (P3)*	None	None	None
X-1+N-1 (P6-2)**	None	None	None

* G-1: Trinidad Unit 6 and Glenpine Solar

** X-1: Elkton, Tyler Grande, Forest Grove, and Sulphur Springs 345/138-kV autotransformers

Option 1

- Upgrade Rand 138-kV Switchyard to 3-breaker ring bus configuration
- Construct a new 345/138-kV Switchyard, at a tap point on the Tri Corner to Tyler Grande 345-kV line
- Construct a new 345/138-kV transformer between the new 345/138-kV Switchyard and Rand 138-kV Switchyard with ratings of at least 360/480 MVA Normal/Emergency Rating

Option 1



Option 2

- Upgrade Rand 138-kV Switchyard to 3-breaker ring bus configuration
- Construct a new 345/138-kV Switchyard, at a tap point on the Tri Corner to Elkton 345-kV line
- Construct a new 345/138-kV transformer between the new 345/138-kV Switchyard and Rand 138-kV Switchyard with ratings of at least 360/480 MVA Normal/Emergency Rating

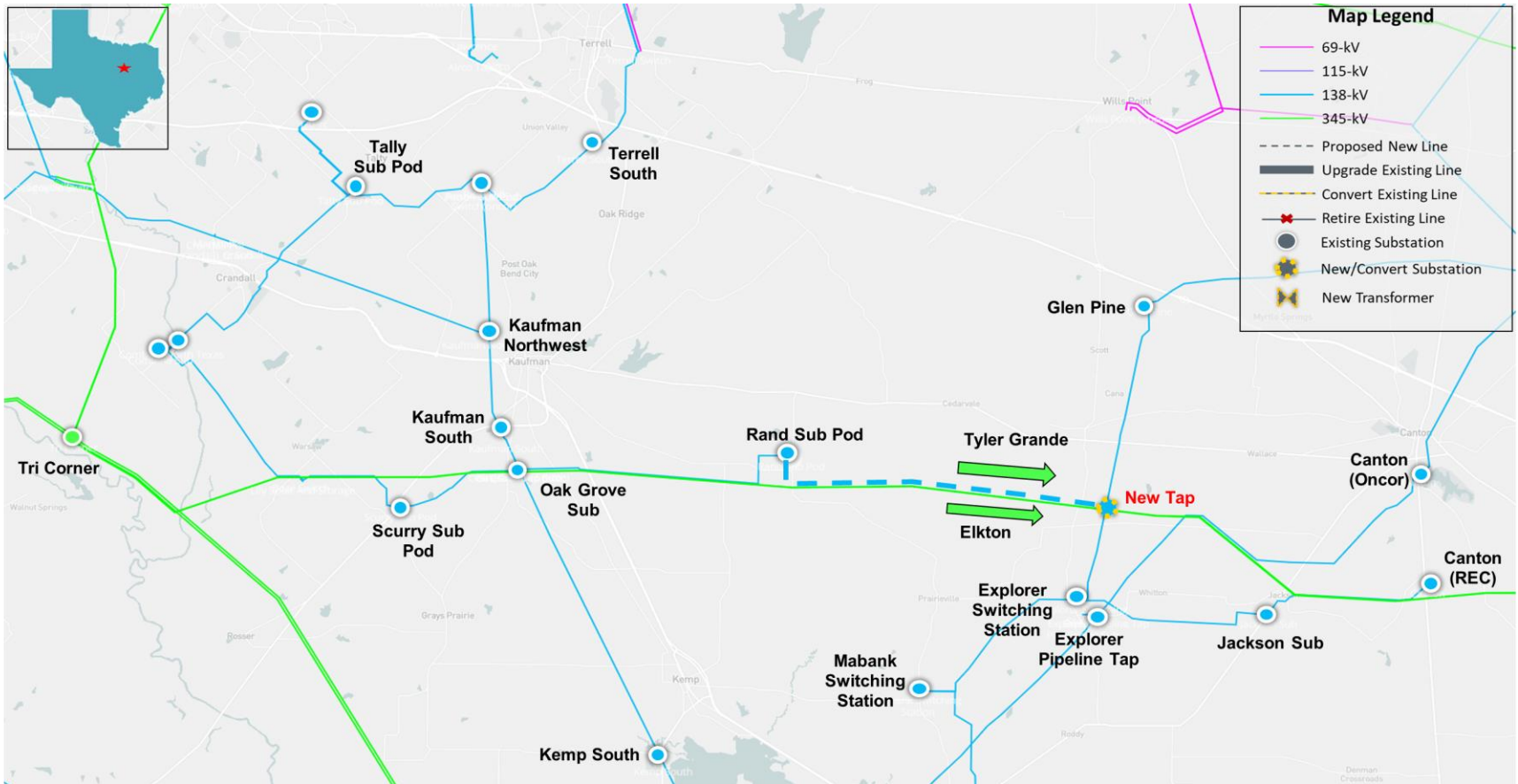
Option 2



Option 3 – REC Preferred Option

- Construct a new 138-kV Switchyard, with 3-breaker ring bus configuration, at a tap point between Explorer and Glen Pine
- Upgrade Rand 138-kV Switchyard to 3-breaker ring bus configuration
- Construct a new approximately 12.35-mile Rand 138-kV Switchyard to new Switchyard 138-kV transmission line with ratings of at least 669/752 MVA Normal/Emergency Rating

Option 3 - REC Preferred Option



Option 4

- Upgrade Rand 138-kV Switchyard to 3-breaker ring bus configuration
- Construct a new approximately 17-mile Rand 138-kV Switchyard to Glen Pine 138-kV transmission line with ratings of at least 669/752 MVA Normal/Emergency Rating

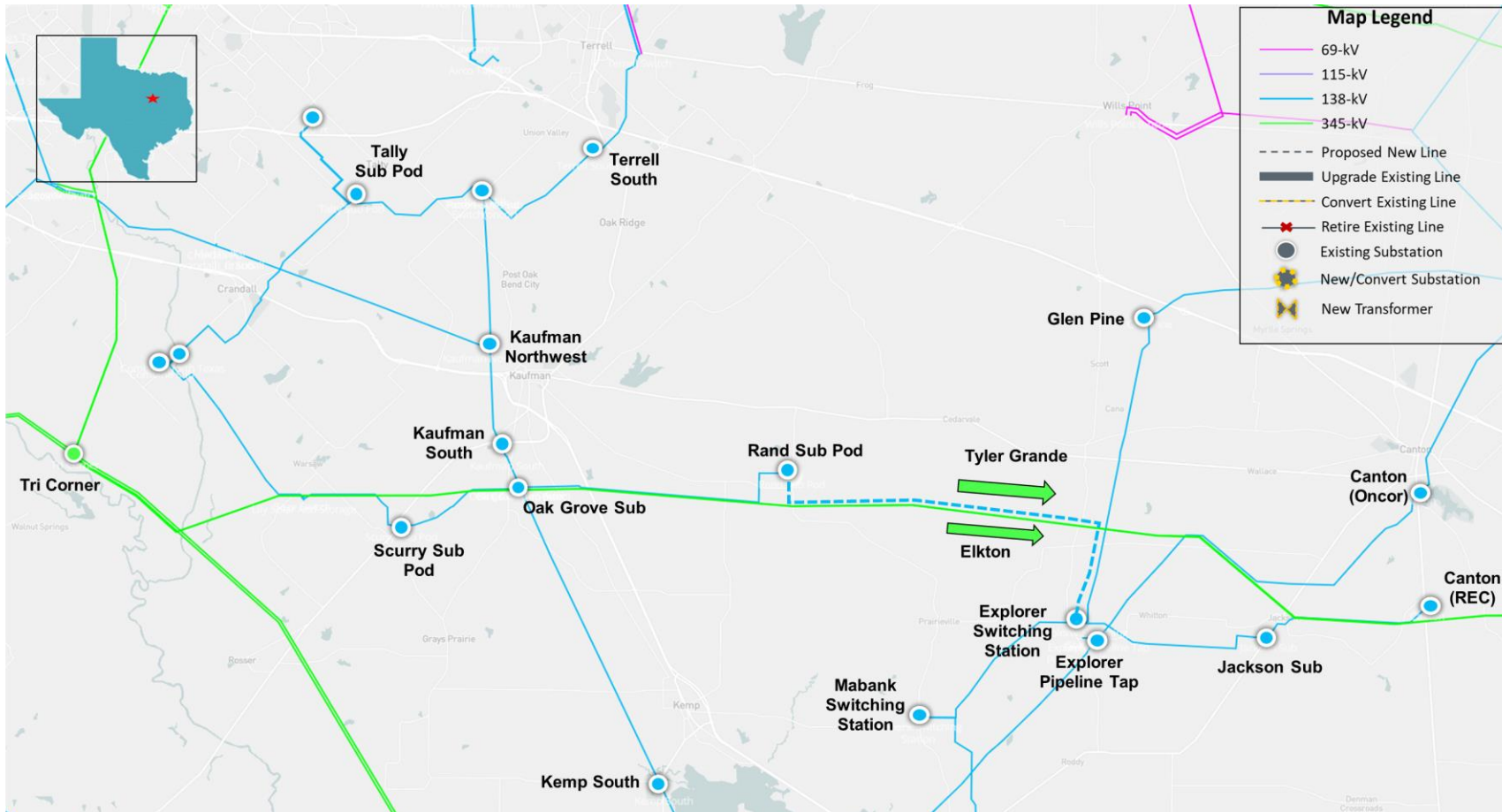
Option 4



Option 5

- Upgrade Rand 138-kV Switchyard to 3-breaker ring bus configuration
- Construct a new approximately 13.5-mile Rand 138-kV Switchyard to Explorer 138-kV transmission line with ratings of at least 669/752 MVA Normal/Emergency Rating

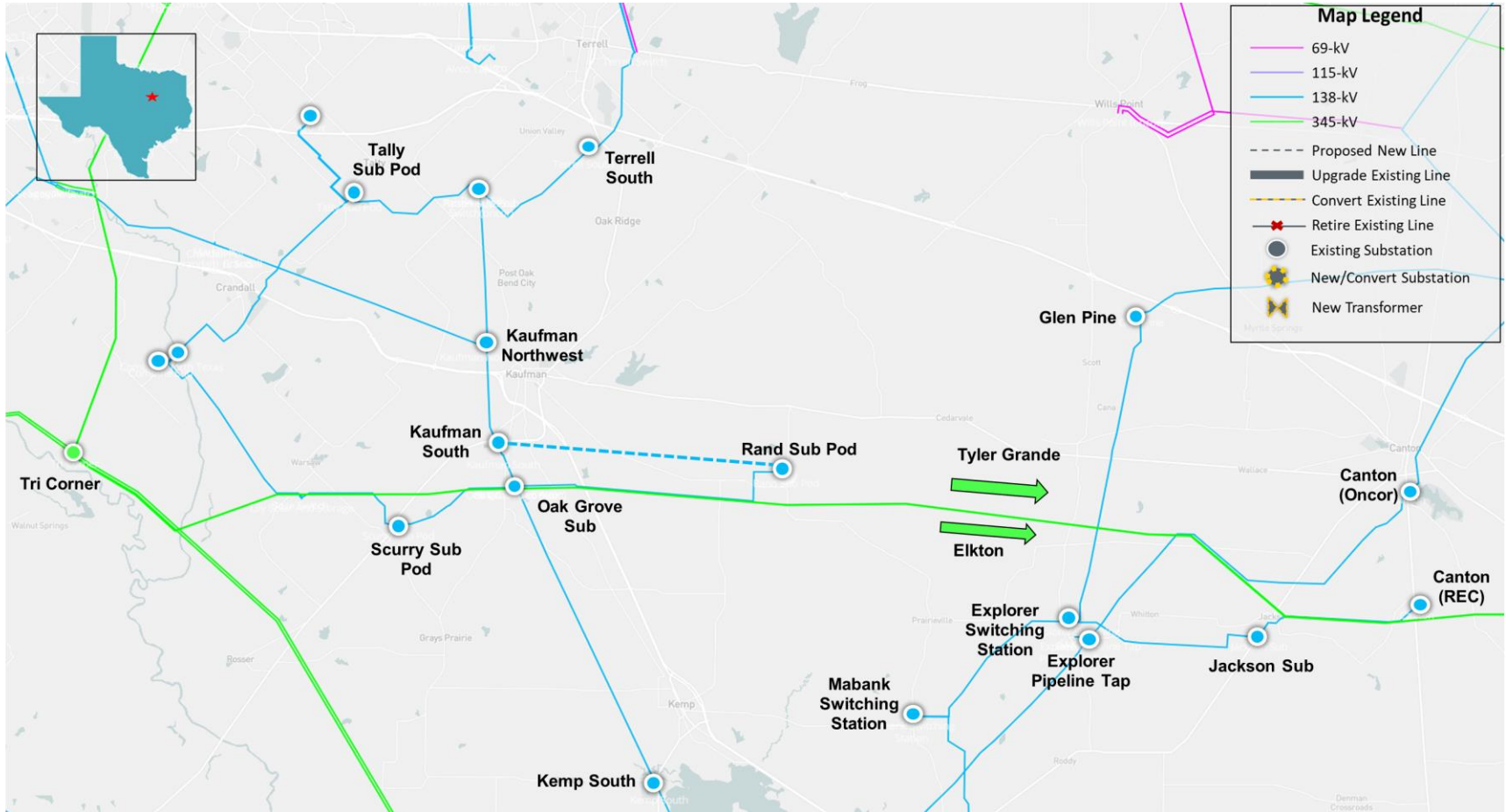
Option 5



Option 6

- Upgrade Rand 138-kV Switchyard to 3-breaker ring bus configuration
- Construct a new approximately 10-mile Rand 138-kV Switchyard to Kauffman South 138-kV transmission line with ratings of at least 669/752 MVA Normal/Emergency Rating with a new ROW

Option 6



Preliminary Results of Reliability Assessment – Options

Option	N-1		G-1 + N-1		X-1 + N-1	
	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations
1	2	None	3	None	2	None
2	2	None	3	None	2	None
3	None	None	None	None	None	None
4	None	None	None	None	None	None
5	None	None	None	None	None	None
6	None	None	None	None	None	None

* G-1: Trinidad Unit 6 and Glenpine Solar

** X-1: Elkton, Tyler Grande, Forest Grove, and Sulphur Springs 345/138-kV autotransformers

- Options 3, 4, 5, and 6 are selected for further evaluation.

Next Steps

- Project evaluation
 - ERCOT may also perform the following studies:
 - Planned maintenance outage
 - Long-term Load Serving Capability Assessment
 - The TSP will provide the Cost Estimate and Feasibility Assessment
- Congestion analysis
 - Congestion analysis may be performed based on the recommended transmission upgrades to ensure that the identified transmission upgrades do not result in new congestion within the study area

Deliverables

- Tentative Timelines
 - Status updates at the future RPG meetings
 - Final Recommendation – Q3 2024

Thank you!



Stakeholder comments also welcomed through:

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Appendix A – Transmission Projects Added

TPIT/RPG No	Project Name	Tier	Project ISD	TSP	County(s)
75628	Poetry 345 kV Switch	Tier 4	Oct-24	ONCOR	Kaufman
71976	Watermill 138 kV Switch	Tier 3	Dec-24	ONCOR	Dallas
78167	Add 2nd autotransformer at Trumbull	Tier 4	Nov-25	BEPC	Ellis
71980	Watermill 345 kV Switch	Tier 3	Dec-25	ONCOR	Dallas
78367	Oncor_ME_Montfort-Shankle 138 kV Line	Tier 3	Dec-25	ONCOR	Navarro

Appendix B – Transmission Backed Out

RTP Project ID	Project Name	TSP	County(s)
2023-E2	Canton Switch (3174) to Edgewood (3181) 138-kV Line Upgrade	ONCOR	Van Zandt
2023-NC6	Telico Area Upgrades	ONCOR	Ellis
2023-NC18	Tri Corner (2432) to Seagoville Switch (2433) to Forney Switch (2437) 345-kV Line Upgrade	ONCOR	Dallas
2023-NC20	Kemp South (2726) to Seven Points (3264) to Will White POI (3287) 138-kV Line Upgrade	ONCOR	Henderson
2023-NC21	Cedar Creek Pump (3263) to Mankin SW (3265) 138-kV Line Upgrade	ONCOR	Henderson
2023-NC24	Southside POI (230) to MCCree (832) 69-kV Line Upgrade	BEPC	Dallas
2023-NC38	Watermill 345/138-kV Transformer Upgrade	ONCOR	Dallas
2023-NC41	Watermill 138-kV Area Upgrades	ONCOR	Dallas
2023-NC42	Waxahachie Area 69-kV and 138-kV Line Upgrades	ONCOR	Ellis
2023-NC43	Wilmer 138/69-kV Transformer Upgrade	ONCOR	Dallas
2023-NC46	Desoto Switch (2424) to Parkerville Road (12425, 2425) 138-kV Line Upgrade	ONCOR	Dallas

Appendix C – Generation Added

GINR	Project Name	Fuel	Project COD	Capacity (MW)	County
20INR0208	Signal Solar	SOL	3/15/2025	51.8	Hunt
21INR0368	Eliza Solar	SOL	11/01/2024	151.7	Kaufman
22INR0260	Eliza Storage	Other	09/27/2024	100.4	Kaufman
22INR0549	Tanzanite Storage	Other	12/31/2024	265.8	Henderson
22INR0552	Sowers Storage	Other	12/01/2025	206.1	Kaufman
22INR0555	TE Smith Storage	Other	07/15/2025	125.36	Rockwall