CPS Omicron Reliability Project - ERCOT Independent Review Study

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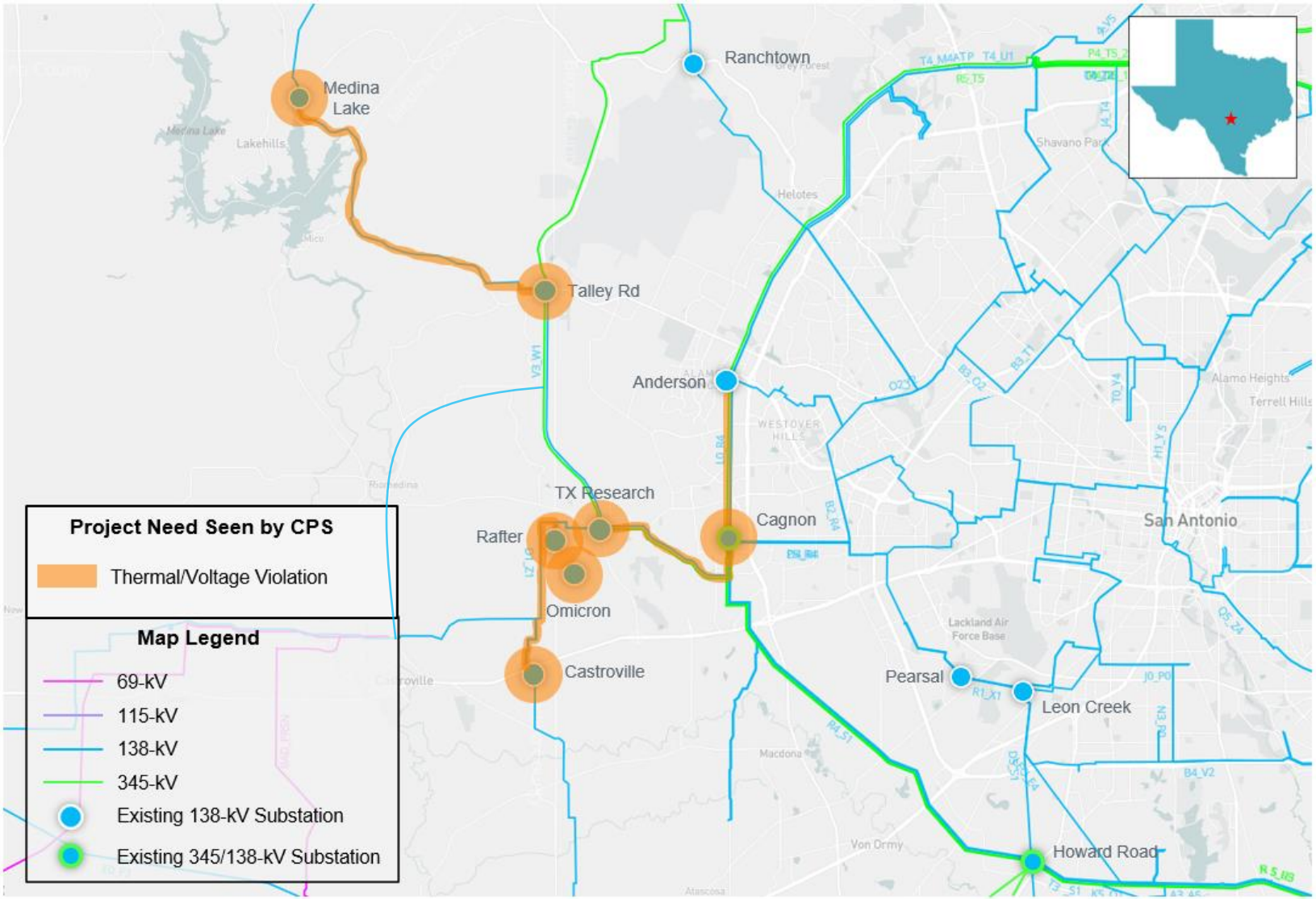
RPG Meeting
May 14, 2024

Recap

- CPS Energy (CPS) submitted the Omicron Reliability Project for Reginal Planning Group (RPG) review in February 2024
  - This Tier 2 project is estimated at $42.5 million and will require a Convenience and Necessity (CCN)
  - Estimated completion date is June 2027
  - Addresses both thermal and voltage violations associated with the new customer load at Omicron 138-kV substation
- CPS provided an overview and ERCOT provided the study scope at the March 2024 RPG Meeting
  - https://www.ercot.com/calendar/03182024-RPG-Meeting-_-Webex
- This project is currently under ERCOT Independent Review (EIR)

Recap: Study Area Map with Project Need (CPS)



Study Assumptions – Base Case

- Study Area
  - Southern and South Central Weather Zones, focusing on transmission in the San Antonio area in Bexar, Bandera, and Medina counties
  - Monitor surrounding counties that are electrically close to the area
- Steady-State Base Case
  - Final 2023 Regional Transmission Planning (RTP) 2029 summer peak case for South-South Central Weather Zones will be updated to construct the South-South Central (SSC) study base case posted in Market Information System (MIS)
    - Case: 2023RTP_2029_SUM_SSC_12222023
    - Link: https://mis.ercot.com/secure/data-products/grid/regional-planning

Study Assumptions – Load, Reserve, Transmission, & Generation

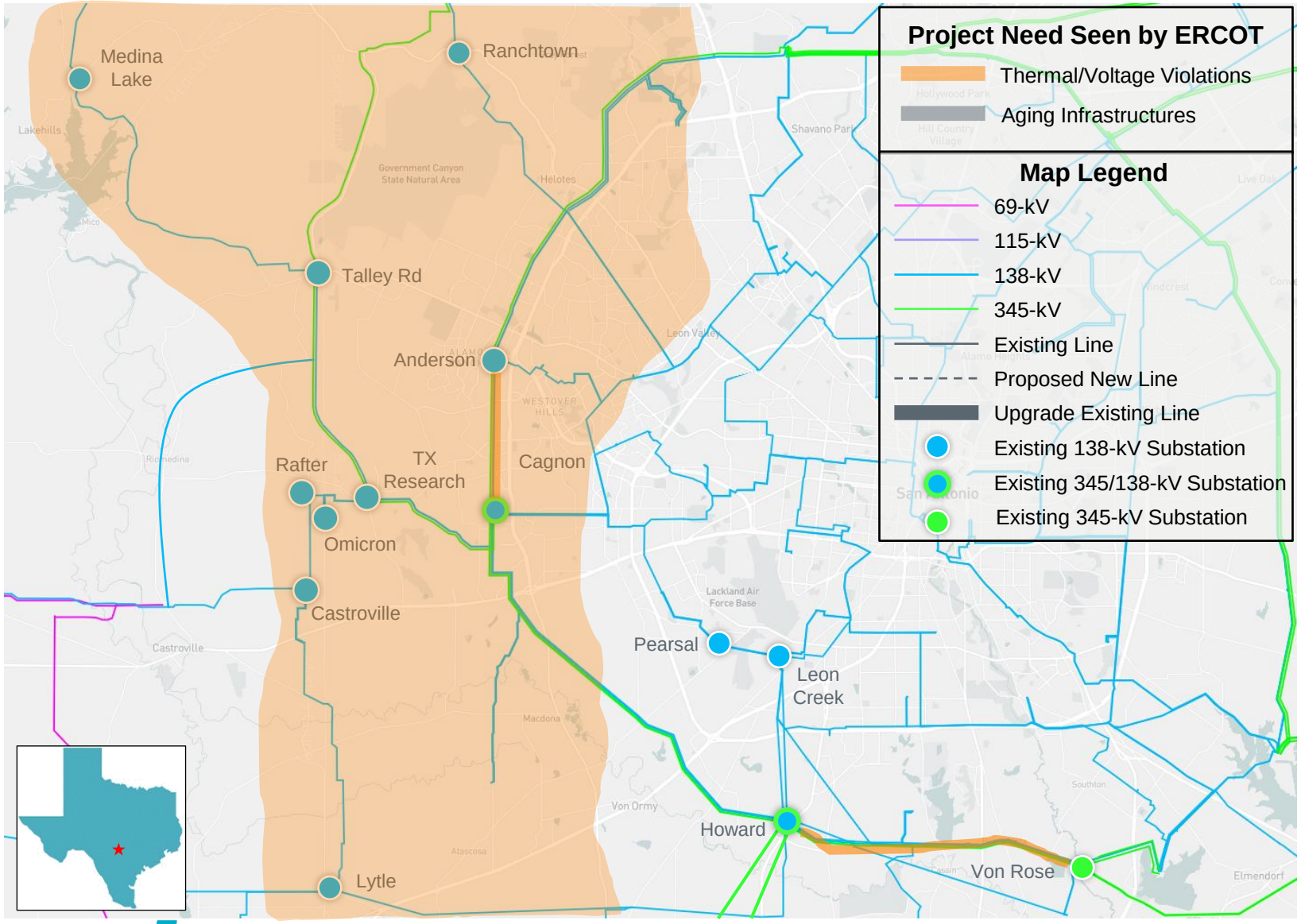
- Load in study area
  - 886MW of confirmed load was added to the study basecase
- Reserve
  - Reserve levels are consistent with the 2023 RTP
- Transmission
  - See Appendix A for a list of transmission projects added
  - See Appendix B for a list of RTP placeholder projects that were removed
- Generation
  - See Appendix C for a list of generation projects added

Preliminary Results of Reliability Assessment – Base Case

Contingency Category*	Unsolved Power Flow	Voltage Violations	Thermal Overloads
P1	None	1	None
P2, P4, P5	None	None	None
P3 (G-1+N-1)*	None	None**	None
P6.2 (X-1+N-1)*	None	None**	1
P7	None	57**	1

*G-1 Generators tested: Leon Creek U1, San Miguel U1, Sunray Solar S1, JK Spruce U2
*X-1 Transformers tested: Cagnon X1, Hill Country X1, Howard X1
**Violations seen in the basecase under P7 events were also seen under G-1 and X-1 events

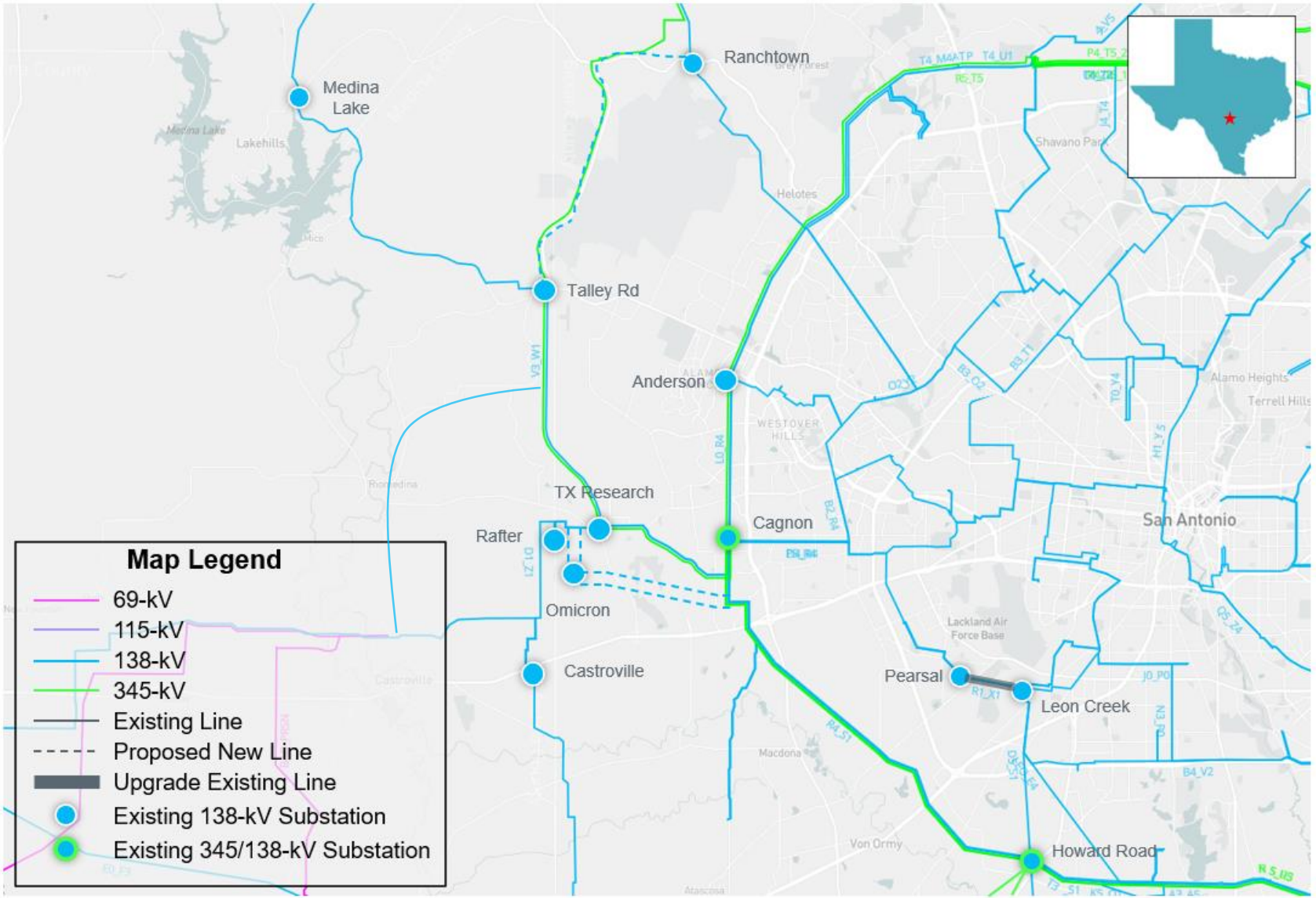
Project Need as Seen by ERCOT – Base Case



Option 1 - Project Proposed by CPS

- Construct a new approximately 5-mile line extension with ratings of 698 MVA from the new Omicron 138-kV substation to the existing Cagnon to Howard 138-kV transmission line. This creates a new Cagnon to Omicron 138-kV transmission line and a new Howard to Omicron 138-kV transmission line
- Construct a new approximately 14.3-mile Talley Rd to Ranchtown 138-kV transmission line with ratings of at least 570 MVA
- Rebuild approximately 1.7-mile Leon Creek to Pearsal 138-kV transmission line with ratings of at least 468 MVA

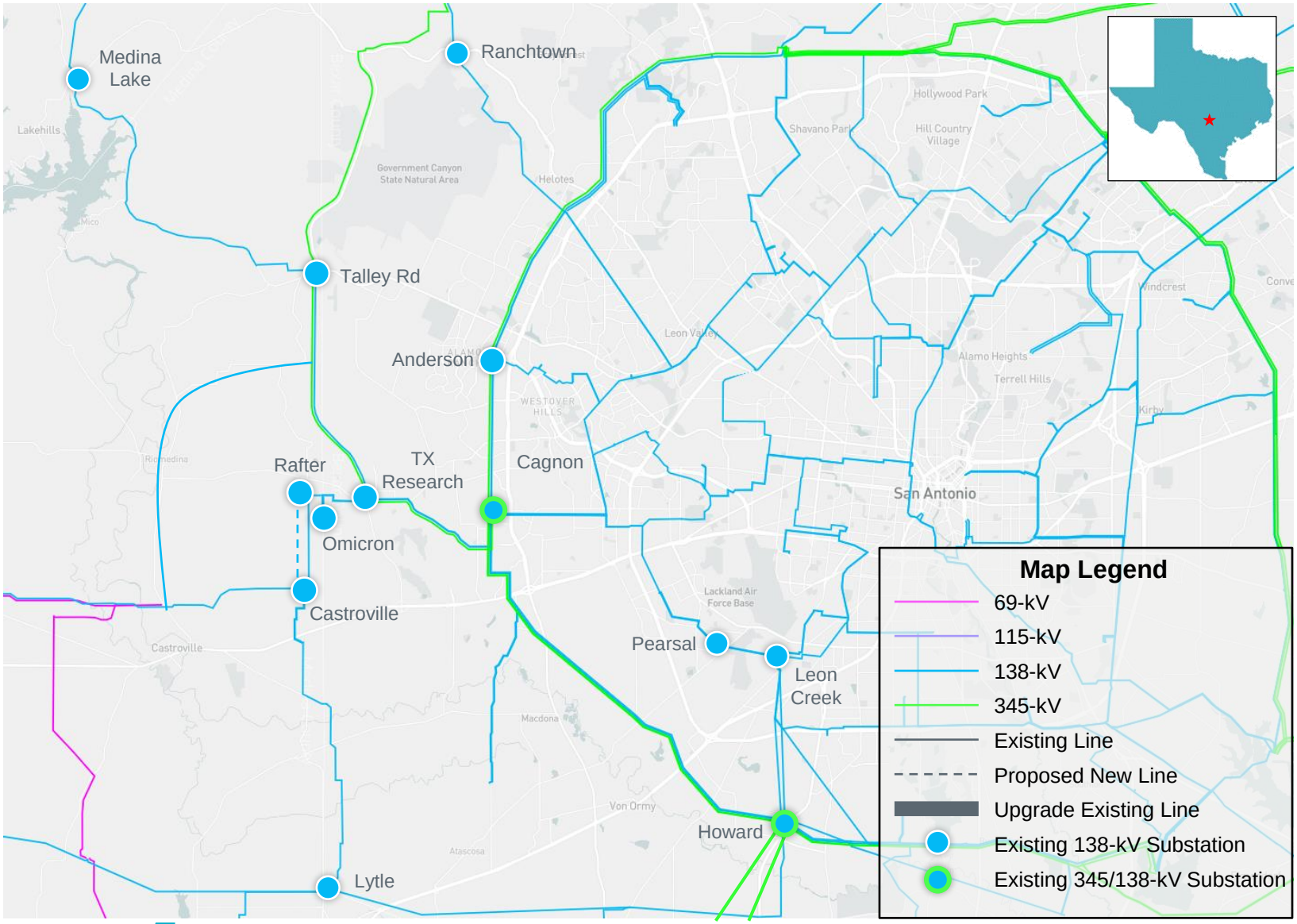
Option 1 - Project Proposed by CPS



Option 2 – Alternative Proposed by CPS

- Rebuild approximately 6.1-mile Castroville to Rafter single circuit 138-kV transmission line as a double circuit 138-kV transmission line with ratings of at least 570 MVA

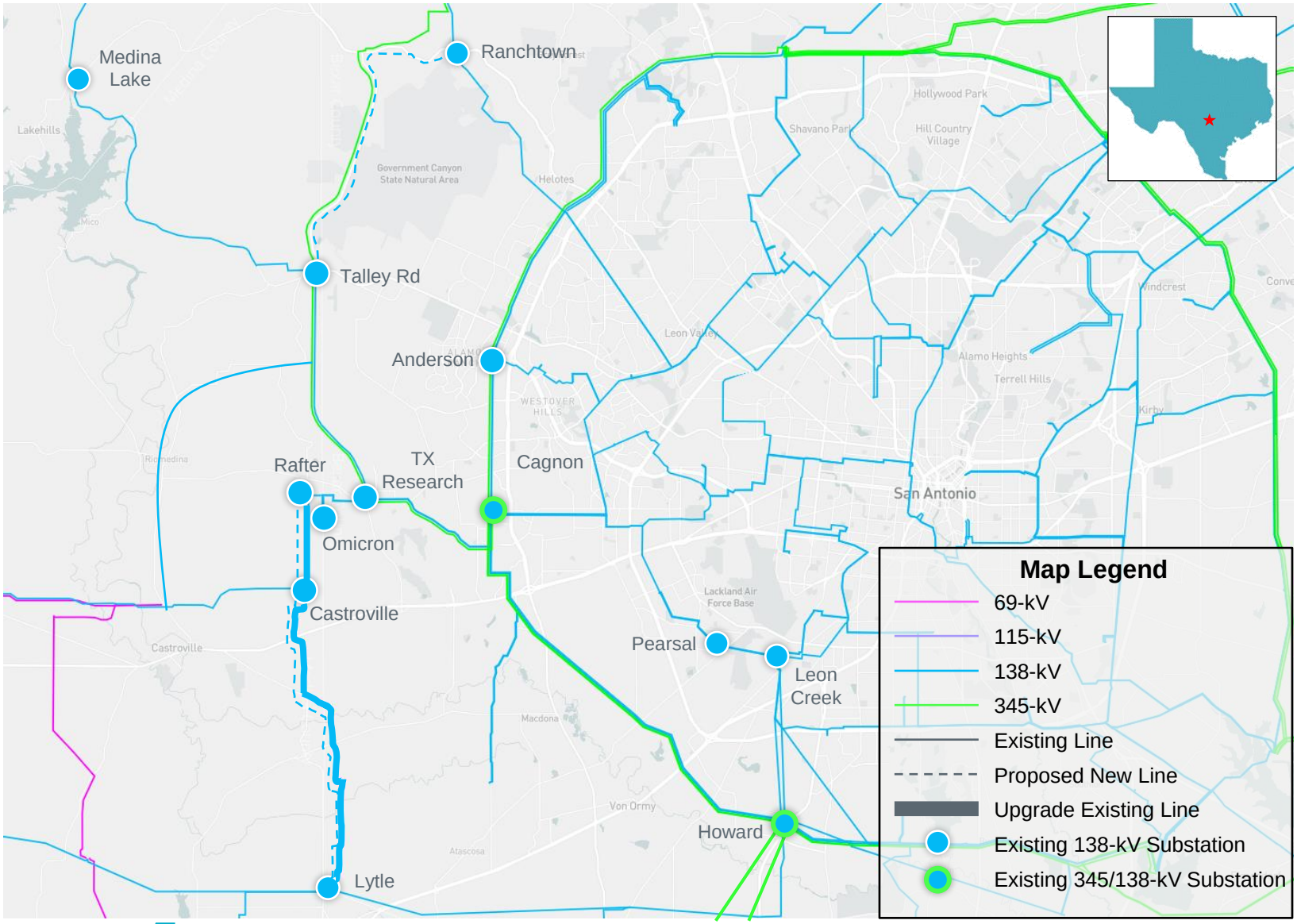
Option 2 – Alternative Proposed by CPS



Option 3 – Alternative Proposed by CPS

- Rebuild approximately 14.8-mile Castroville to Rafter 138-kV single circuit transmission line and Castroville to Lytle 138-kV single circuit transmission line as a double circuit transmission line with circuits Castroville to Rafter, Castroville to Lytle, and Rafter to Lytle with ratings of at least 570 MVA per circuit
- Construct a new approximately 14.3-mile Talley Rd to Ranchtown 138-kV transmission line with ratings of at least 570 MVA

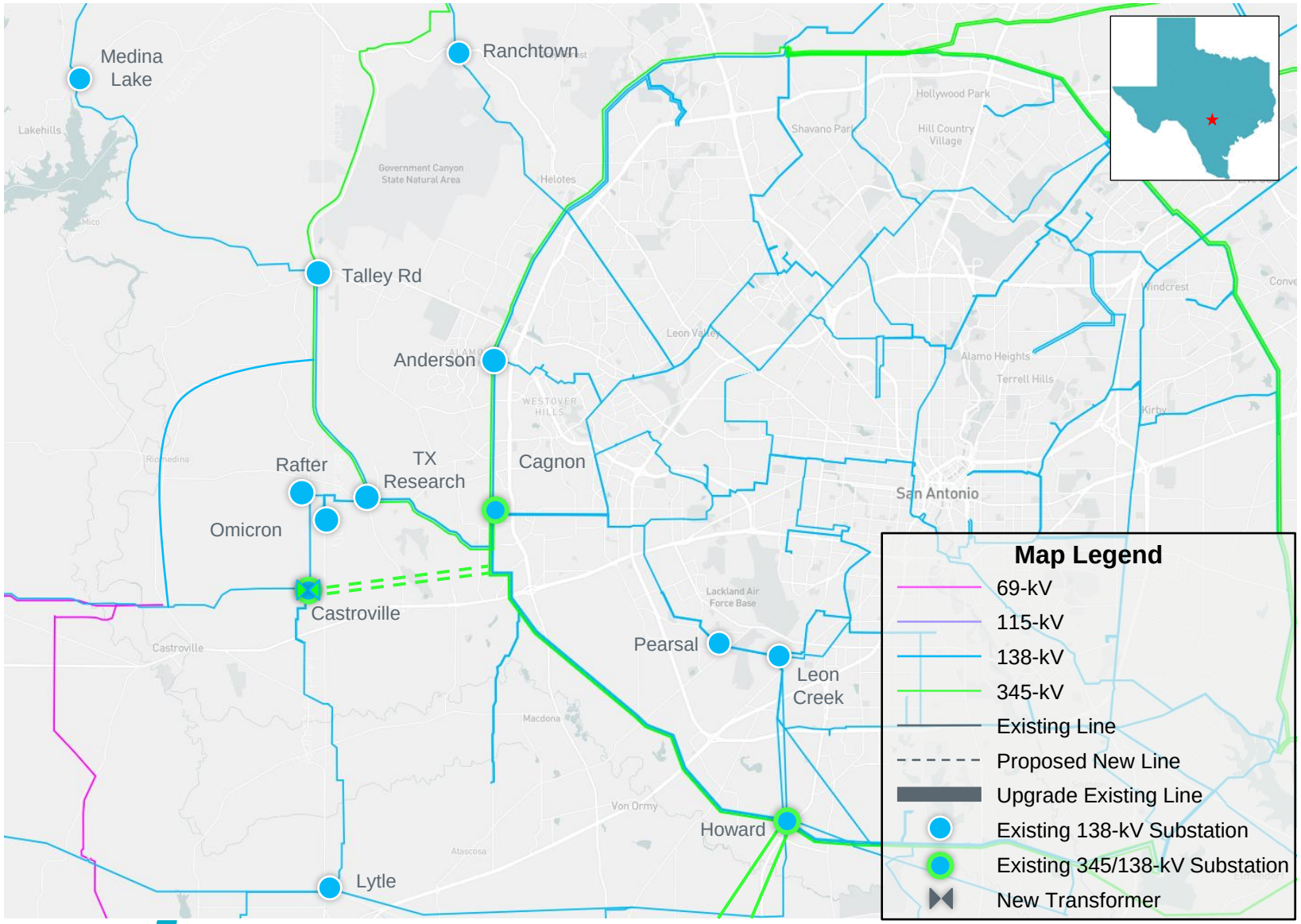
Option 3 – Alternative Proposed by CPS



Option 4 – ERCOT Option

- Construct a new 345-kV bus at the existing 138-kV Castroville substation
- Construct two 345/138-kV autotransformers at the Castroville substation
- Construct a new approximately 5-mile line extension with ratings of at least 1746 MVA from the new Castroville 345-kV substation to the existing Cagnon to Howard 345-kV transmission line. This creates a new Cagnon to Castroville 345-kV transmission line and a new Howard to Castroville 345-kV transmission line

Option 4 – ERCOT Option



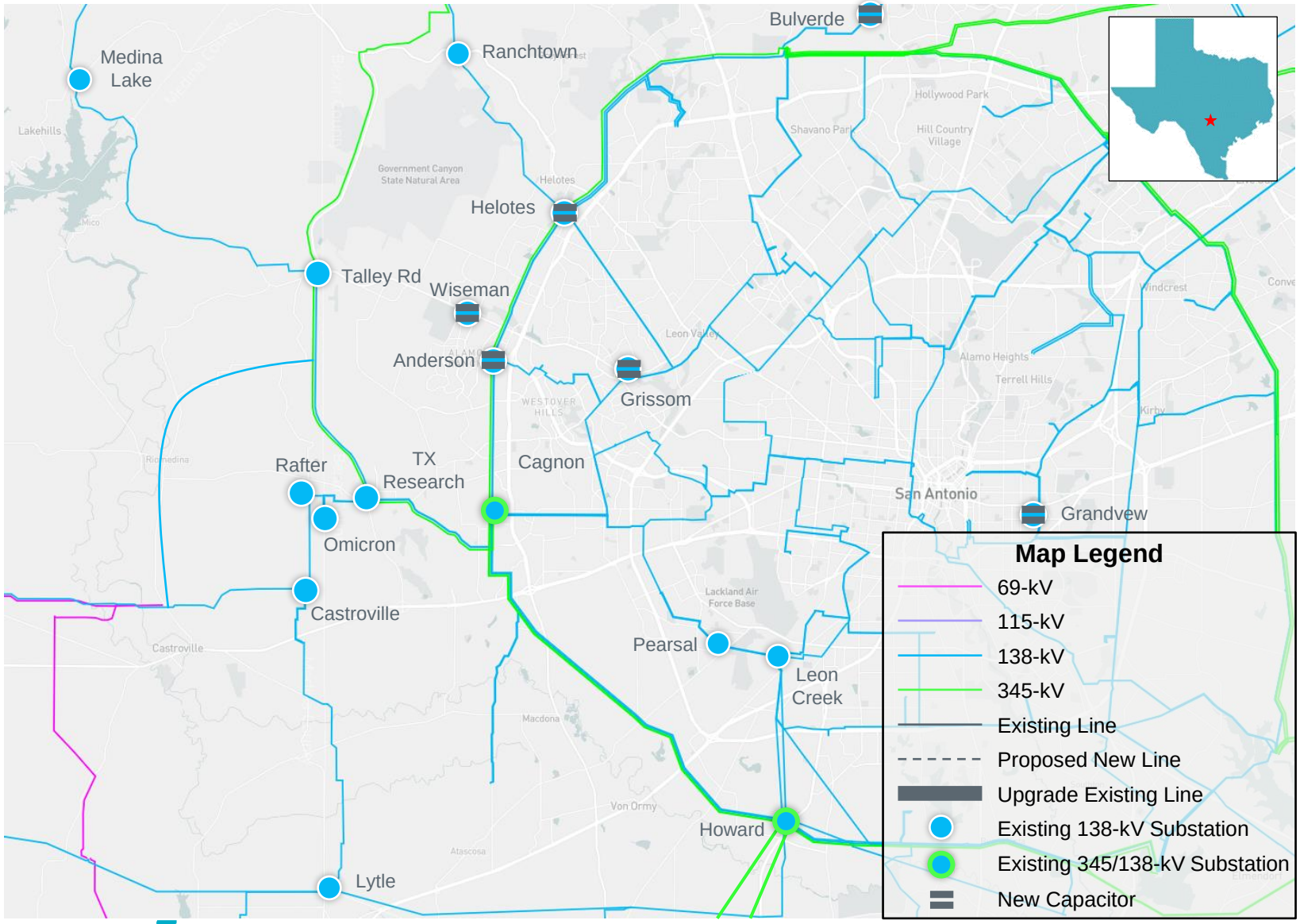
Preliminary Results of Reliability Assessment – Options

	N-1		
	Thermal Violations	Voltage Violations	Unsolved
Option 1	None	51	None
Option 2	None	51	None
Option 3	None	51	None
Option 4	None	18	None

Adding Capacitance to Options

Substation	MVAR
Anderson	50
Bulverde	50
Grandvew	50
Grissom	50
Helotes	50
Verde Circle	50
Wiseman	50

Adding Capacitors to Options



Preliminary Results of Reliability Assessment – Options with Capacitors Added

	N-1		
	Thermal Violations	**Voltage Violations***	**Unsolved**
Option 1 w caps	None	1	None
Option 2 w caps	None	1	None
Option 3 w caps	None	1	None
Option 4 w caps	None	1	None

Options will be further studied

Study Procedure

- ERCOT will continue to evaluate options and provide status updates at future RPG meetings
  - Project alternatives will be tested to satisfy the NERC and ERCOT reliability requirements
  - 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 – Q2 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)
22RPG026	Wimberley Loop project	Tier 2	5/1/2027	PEC	Blanco, Hays
23RPG003	Eagle Ford Large Load Interconnection Project	Tier 3	12/4/2025	GVEC	DeWitt
23RPG004	Lockhart to Luling 69-kV Transmission Line Overhaul Project	Tier 4	6/30/2025	LCRA	Caldwell
23RPG015	Cuero Substation Upgrade Project	Tier 4	5/15/2024	LCRA	DeWitt
23RPG028	Rio Medina Project	Tier 2	1/1/2027	STEC	Medina
23RPG032	San Antonio South Reliability II Project	Tier 1	05/01/2029	CPS, AEP, STEC	Guadalupe, Wilson, Atascosa
72500	Rio Lago - New 138kV Substation	Tier 4	11/30/2024	BEC	Bandera
72268	CPSE_New Ingram Rd Substation	Tier 4	5/1/2025	CPS	Bexar
73098	Castroville Cut-in 138 kV	Tier 2	5/30/2025	ETT TCC	Medina
71873	CPSE_Hill Country Auto# 2 Impedance Upgrade	Tier 3	6/1/2025	CPS	Bexar
73063	Big Foot to Lytle: Convert to 138 kV	Tier 4	9/20/2025	AEP TCC	Medina, Frio
76242	Lytle: Build new 138 kV terminal	Tier 4	9/20/2025	AEP TCC	Medina
76768	Upgrade Pearson -Pearsall	Tier 4	12/1/2025	STEC	Frio, Medina
67992D	CPSE_345KV_Howard_Switching_Station,CPSE_Hamilton_to_MedCtr_Upgrade,CPSE_Medina_to_36th_Street_Upgrade	Tier 3	1/31/2026	CPS	Bexar
72502	Tarpley Substation Upgrades	Tier 4	12/30/2026	BEC	Bandera
76790	Upgrade Pearsall Auto	Tier 4	5/1/2027	STEC	Frio
73417	LCRATSC_Schumansville_SheriffsPosse_StormHardening	Tier 4	15/5/2025	LCRA	Guadalupe, Comal
73793	LCRATSC_McCartyLaneEast_Zorn_TL_Storm_Hardening	Tier 4	15/5/2025	LCRA	Hays, Guadalupe

Appendix B – Transmission Backed Out

RTP Project ID	Project Name	TSP	County(s)
2023-SC10	Wiseman 138-kV Substation Addition and CPS Multiple Cap Bank Additions	CPS	Bexar, Comal
2023-SC16	Hondo to Hondo Creek Switching Station 138-kV Line Upgrade	CPS, STEC	Medina
2023-SC19	South to Central Texas 345-kV Double-Circuit Line Additions	AEN, AEP, LCRA, ONCOR	San Patricio, Bee, Karnes, Wilson, Guadalupe, Comal, Hays, Travis, Williamson
2023-SC20	Pearson - Natalia - Devine - Moore - Pearsall 69-kV Line Rebuild	STEC	Frio, Medina
2023-SC21	Big Foot to Lytle 69-kV to 138-kV Line Conversion	AEP	Frio, Medina
2022-S3	Pearsall 138/69-kV Transformer Upgrade	STEC	Frio
2023-S3	Oaks Sub 138/69-kV Transformer Upgrade	STEC	Atascosa
2023-S4	Poteet Sub to Oaks Sub 69-kV Line Upgrade	STEC	Atascosa
2023-S5	Poteet Sub to Pearsall Switching Station 69-kV Line Upgrade	STEC	Atascosa, Frio
2023-S6	Rossville Substation Cap Bank Addition	STEC	Atascosa

Appendix C – Generation Added

GINR	Project Name	Fuel	Project COD	Capacity (MW)	County
22INR0366	LIBRA BESS	Other	3/30/2024	206.21	Guadalupe
22INR0422	Ferdinand Grid BESS	Other	5/31/2026	202.65	Bexar
23INR0154	Ebony Energy Storage	Other	4/30/2024	203.50	Comal
23INR0381	Soportar ESS	Other	3/15/2025	102.11	Bexar
23INR0483	Rio Nogales CT1 Rotor Replacement	Gas	6/8/2023	3.10	Guadalupe
24INR0427	CPS AvR CT1 Rotor Replacement	Gas	2/15/2024	11.30	Bexar