



**Brazos San Miguel to Marion 345-KV
Project – ERCOT Independent Review (EIR)
Status Update**

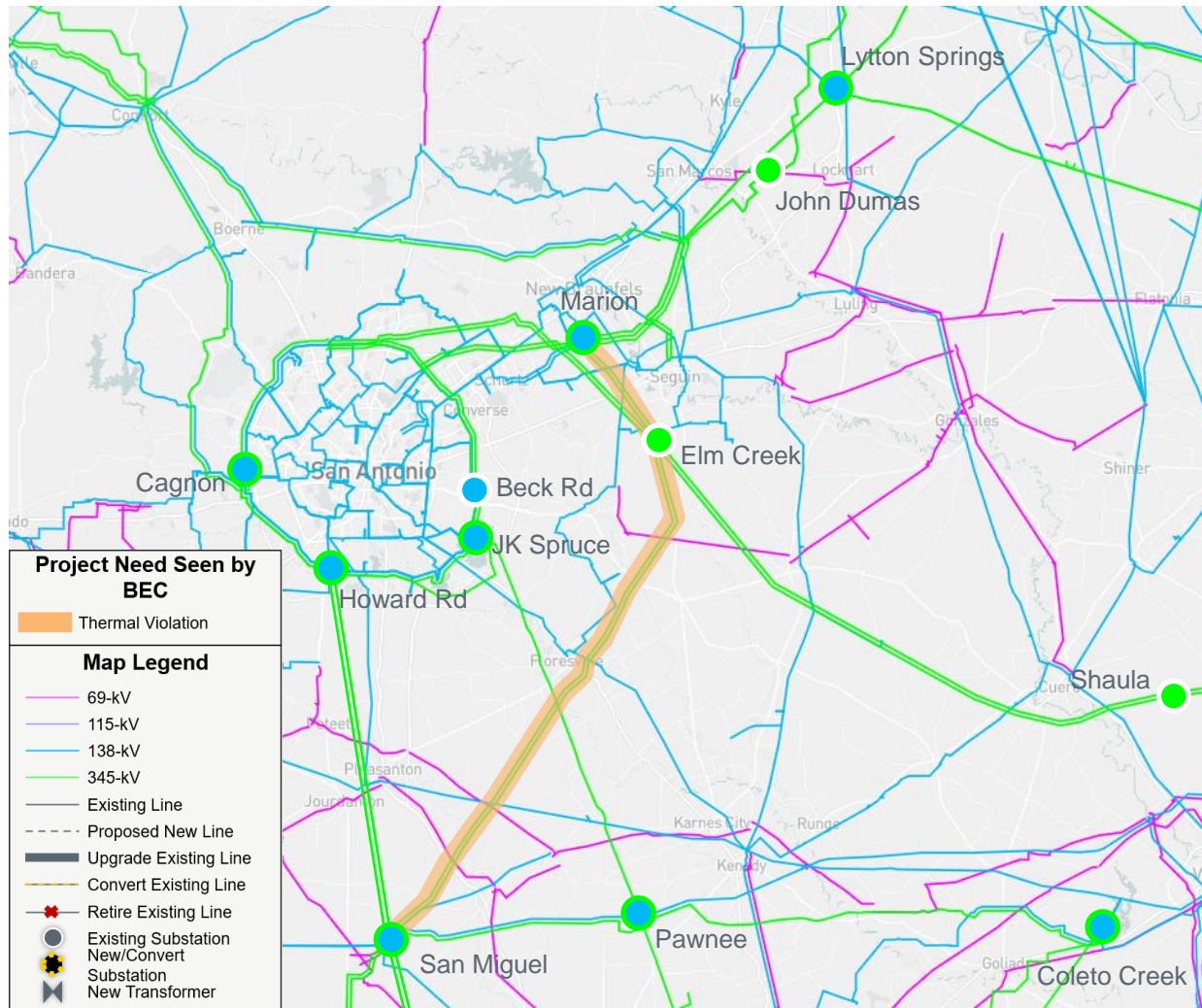
Caleb Holland

RPG Meeting
January 17, 2024

Recap

- Brazos Electric Cooperative (BEC) submitted the San Miguel to Marion 345-kV Project for Regional Planning Group (RPG) review in September 2023
 - This Tier 1 project is estimated to cost \$259 million and will not require a Certificate of Convenience and Necessity (CCN)
 - Estimated in-service date
 - December 2027
 - Addresses thermal overloads in the San Antonio area
- ERCOT provided the study scope at the November 2023 RPG Meeting
 - <https://www.ercot.com/calendar/11142023-RPG-Meeting>
- This project is currently under ERCOT Independent Review (EIR)

Recap: Study Area Map with Project Need



Study Assumptions Update – Base Case

- Study Region
 - South and South Central Weather Zones (WZs), focusing on the transmission elements near the San Antonio Area in Guadalupe, Wilson, and Atascosa 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 (SSC) WZs, posted in Market Information System (MIS), was updated to construct the summer peak load study base case
 - Case: 2023RTP_2029_SUM_SSC_12222023
 - Link: <https://mis.ercot.com/secure/data-products/grid/regional-planning>

Study Assumptions – Load, Reserve, Transmission, & Generation

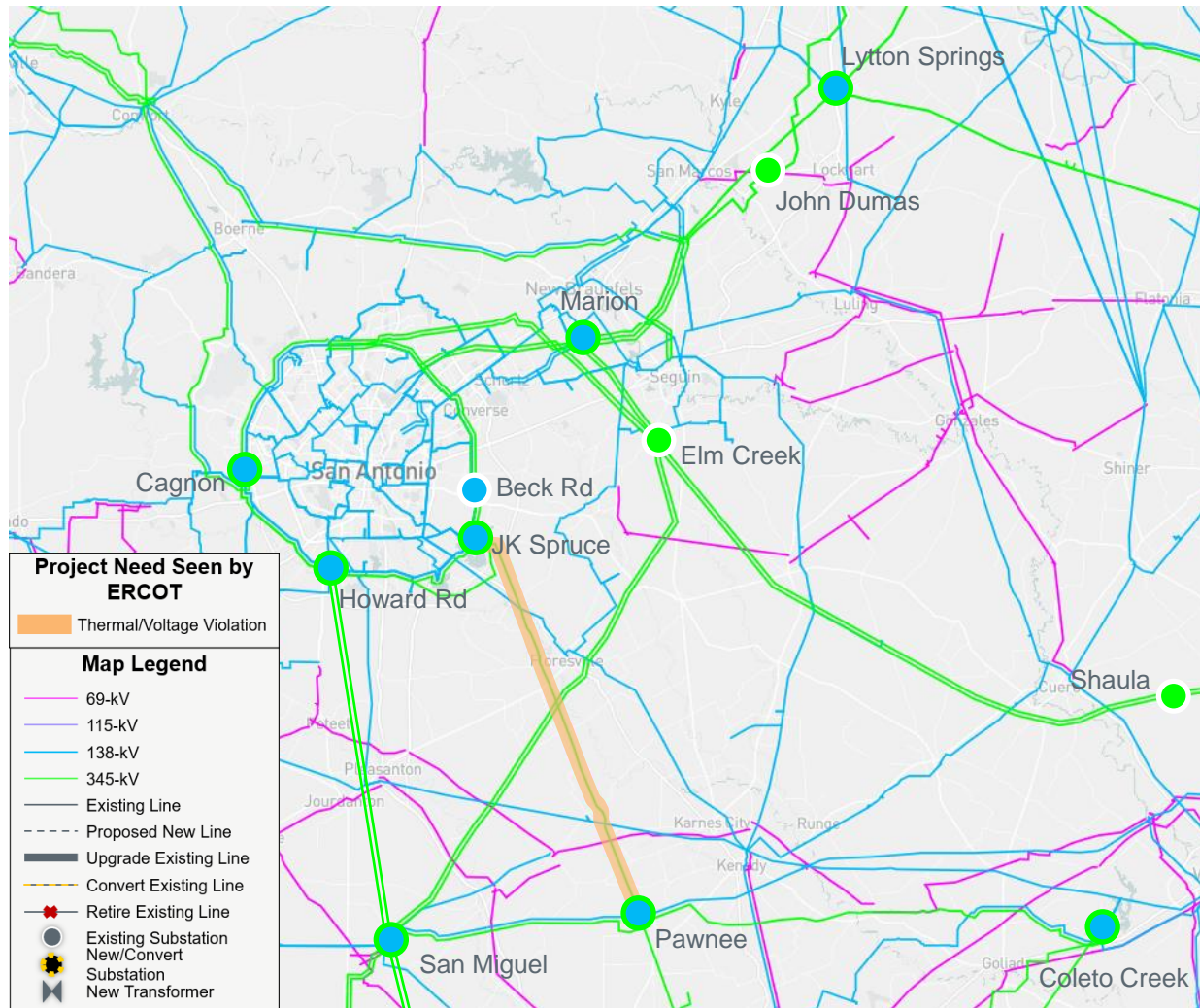
- Load in study area
 - Load levels are consistent with the 2023 RTP
- Reserve
 - Reserve levels are consistent with the 2023 RTP
- Transmission
 - See Appendix A for a list of transmission projects added
 - See Appendix B for a list of RTP placeholder projects that were removed
- Generation
 - See Appendix 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	None	None
P2, P4, P5	None	None	None
P3 (G-1+N-1)*	None	None	3
P6.2 (X-1+N-1)*	None	None	4
P7	None	None	1

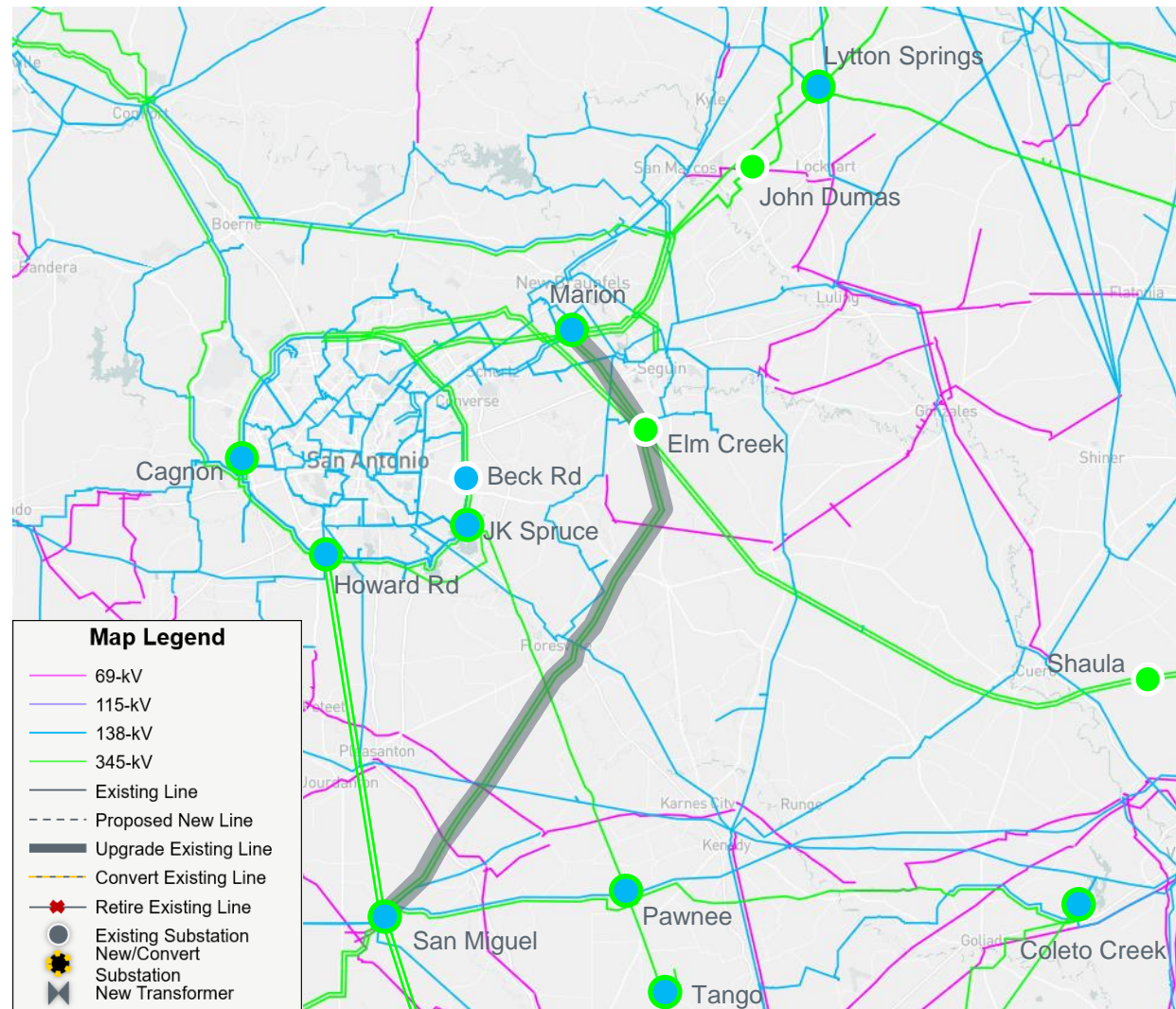
*See Appendix D for list of G-1 generators and X-1 transformers tested

Project Need as Seen by ERCOT – Base Case



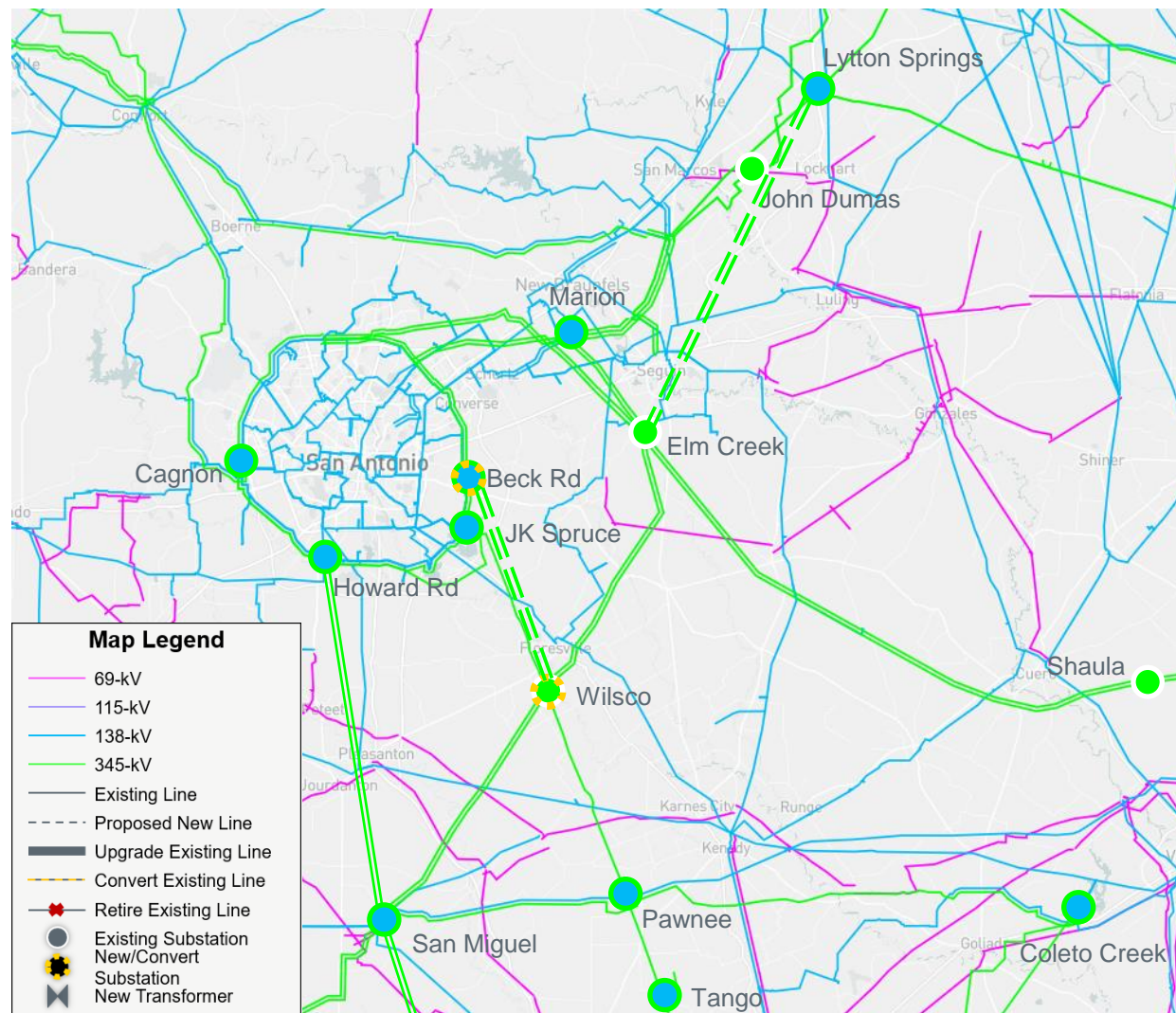
Option 1 – Project Proposed by BEC

- Rebuild the existing San Miguel to Elm Creek 345-kV double circuit transmission line with a minimum circuit rating of 2620 MVA
- Rebuild the existing Elm Creek to Marion 345-kV double circuit transmission line with a minimum circuit rating of 2620 MVA



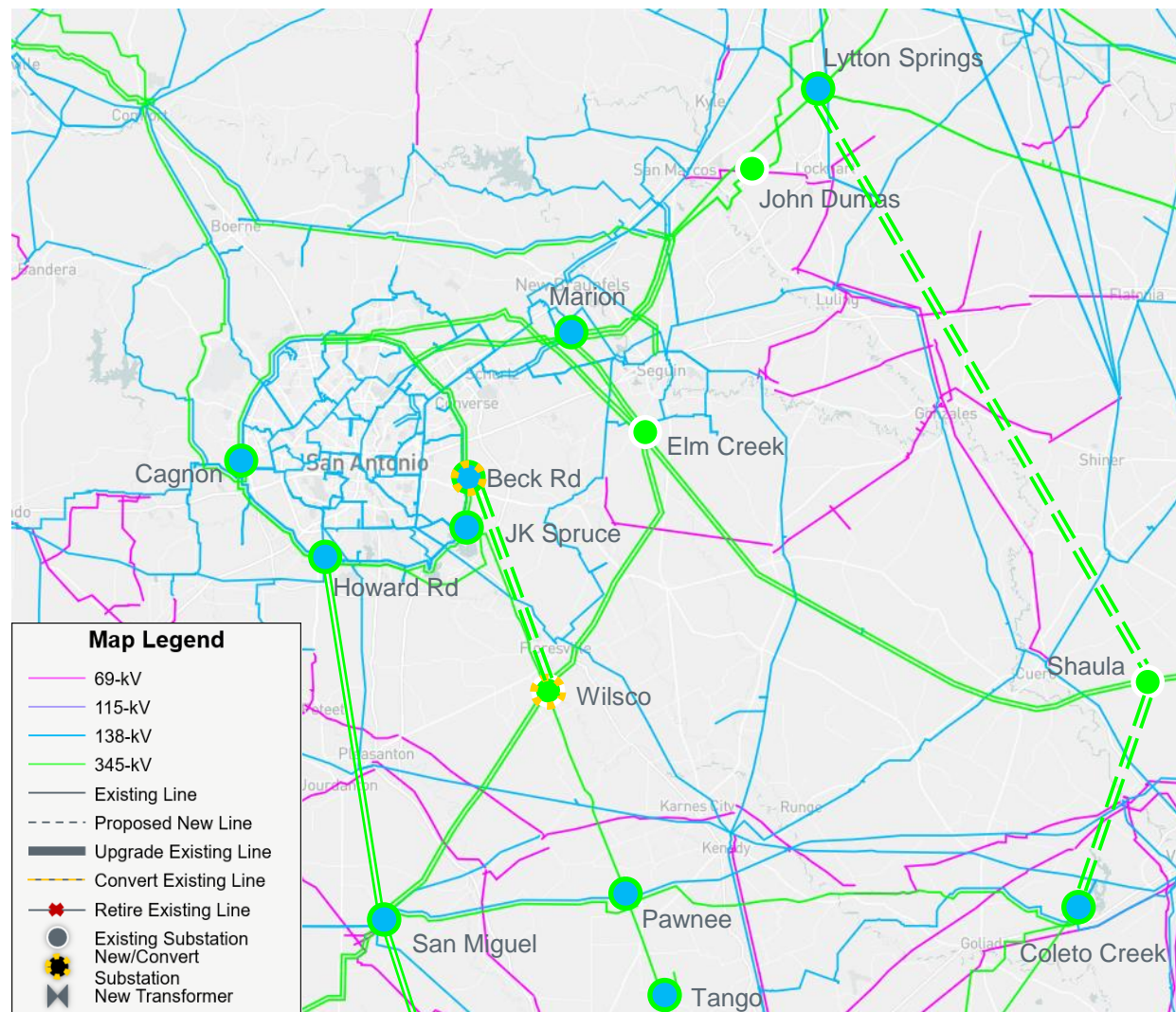
Option 2 – Alternative Proposed by CPS

- Construct a new 345-kV switching station (Wilsco) near the intersection of the San Miguel to Elm Creek 345-kV transmission line and the Spruce to Pawnee 345-kV transmission line
- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd
- Construct a new 345-kV double circuit transmission line from Beck Rd to Wilsco
- Construct a new 345-kV double circuit transmission line from Elm Creek to Lytton Springs



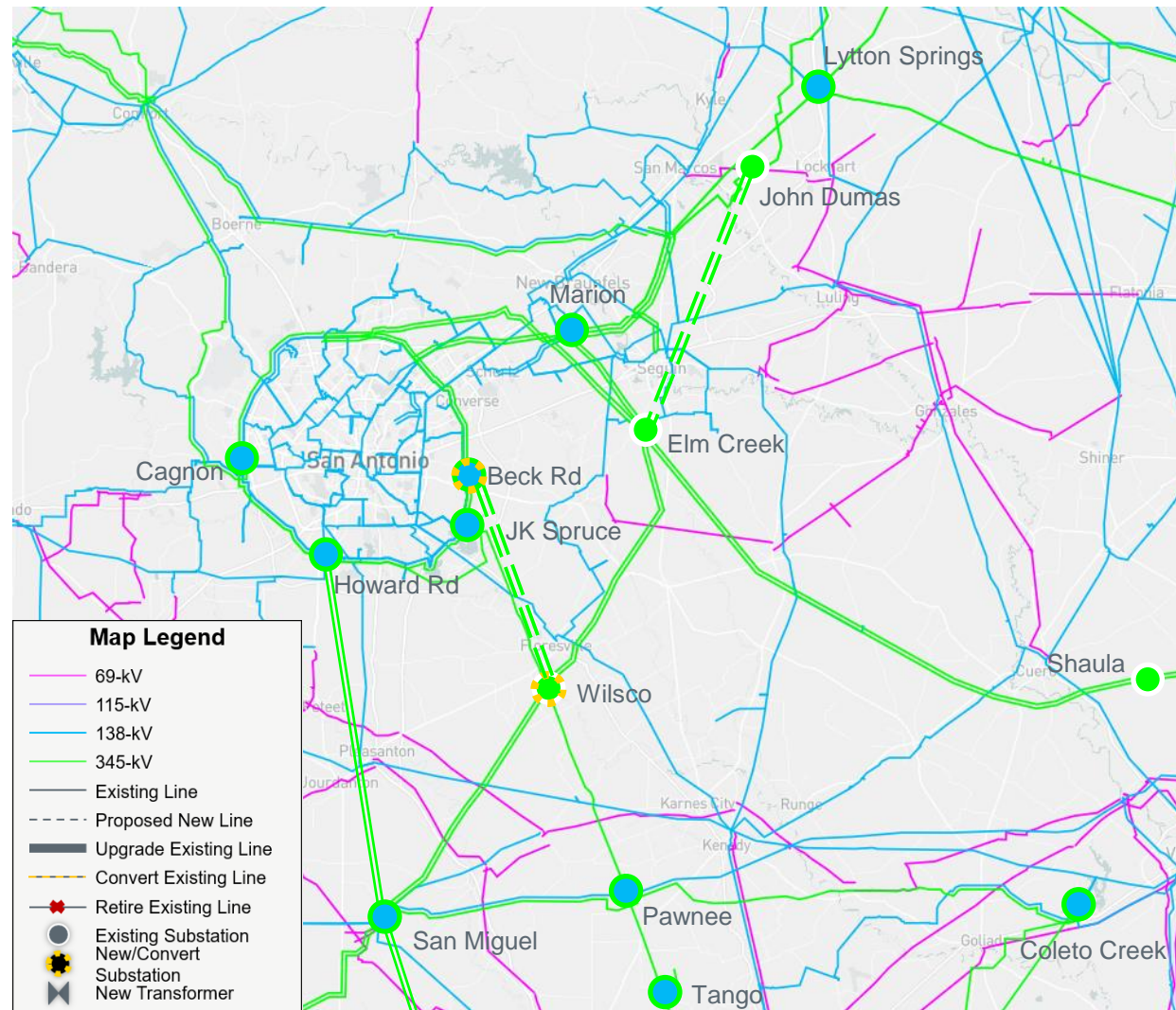
Option 3 – Alternative Proposed by CPS

- Construct a new 345-kV switching station (Wilsco) near the intersection of the San Miguel to Elm Creek 345-kV transmission line and the Spruce to Pawnee 345-kV transmission line
- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd
- Construct a new 345-kV double circuit transmission line from Beck Rd to Wilsco
- Construct a new 345-kV double circuit transmission line from Coletto Creek to Shaula and Shaula to Lytton Springs



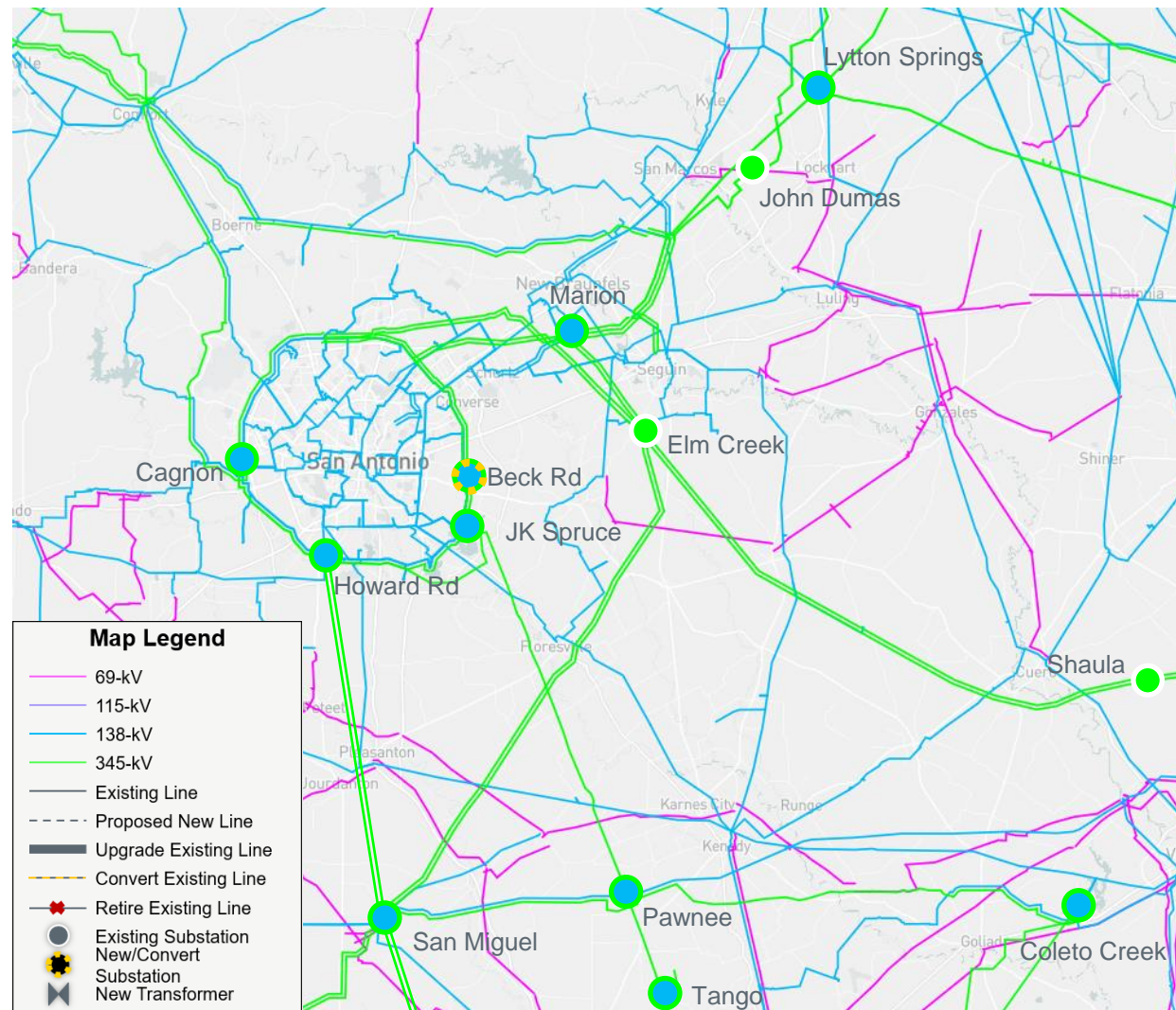
Option 4 – Modified CPS Proposal

- Construct a new 345-kV switching station (Wilsco) near the intersection of the San Miguel to Elm Creek 345-kV transmission line and the Spruce to Pawnee 345-kV transmission line
- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd
- Construct a new 345-kV double circuit transmission line from Beck Rd to Wilsco
- Construct a new 345-kV double circuit transmission line from Elm Creek to John Dumas



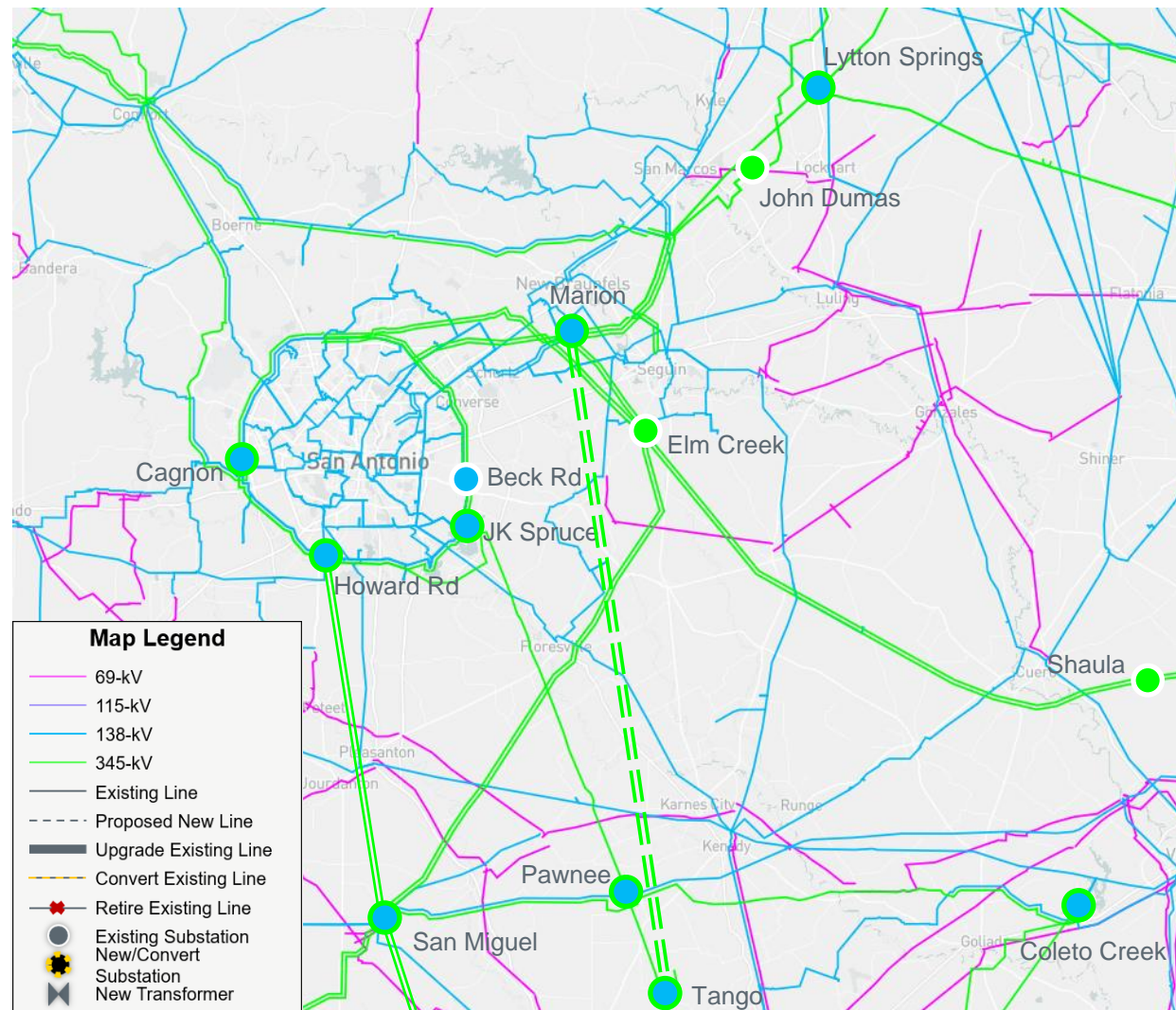
Option 5 – ERCOT Option

- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd



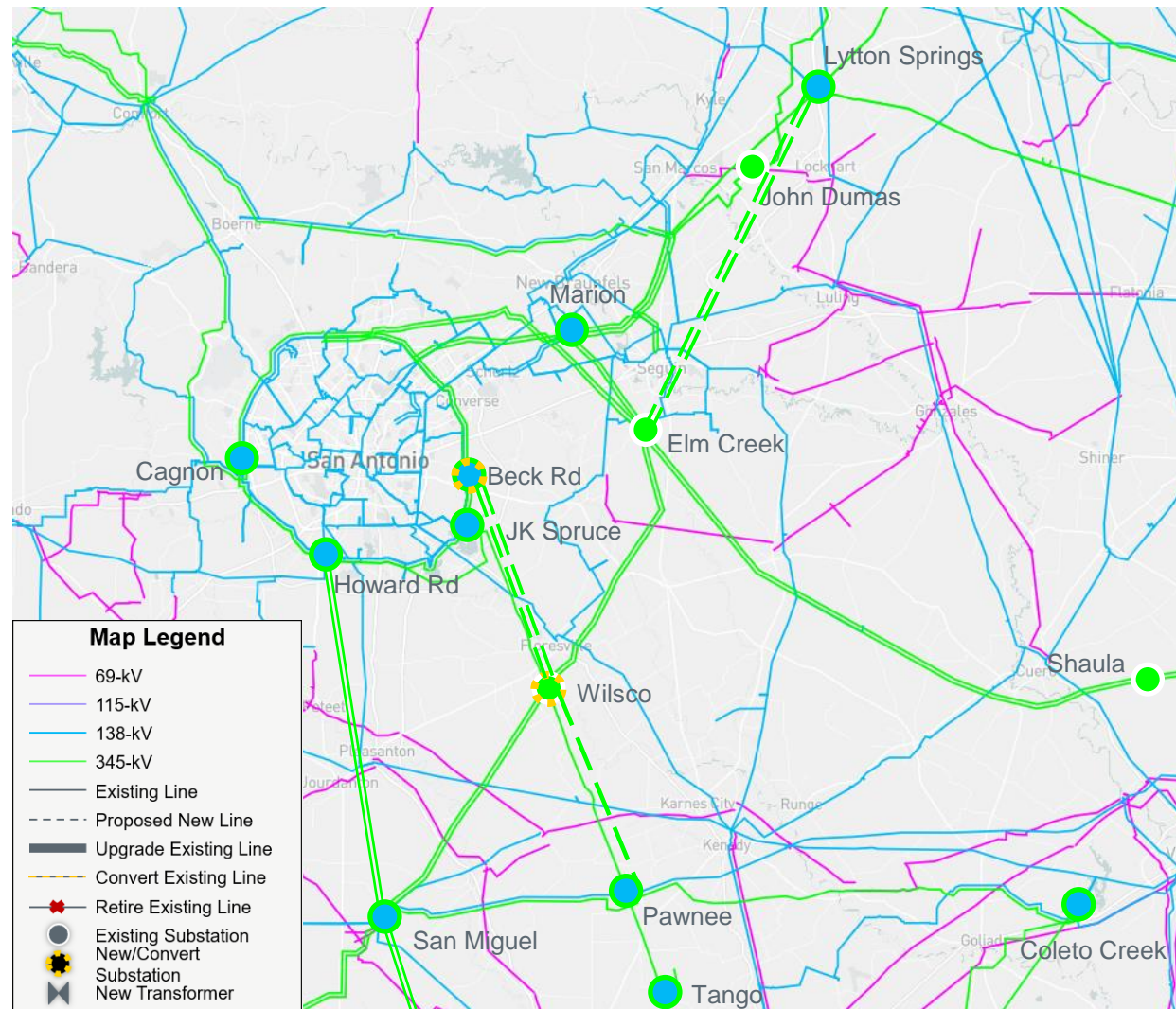
Option 6 – ERCOT Option

- Construct a new 345-kV double circuit transmission line from Tango to Marion



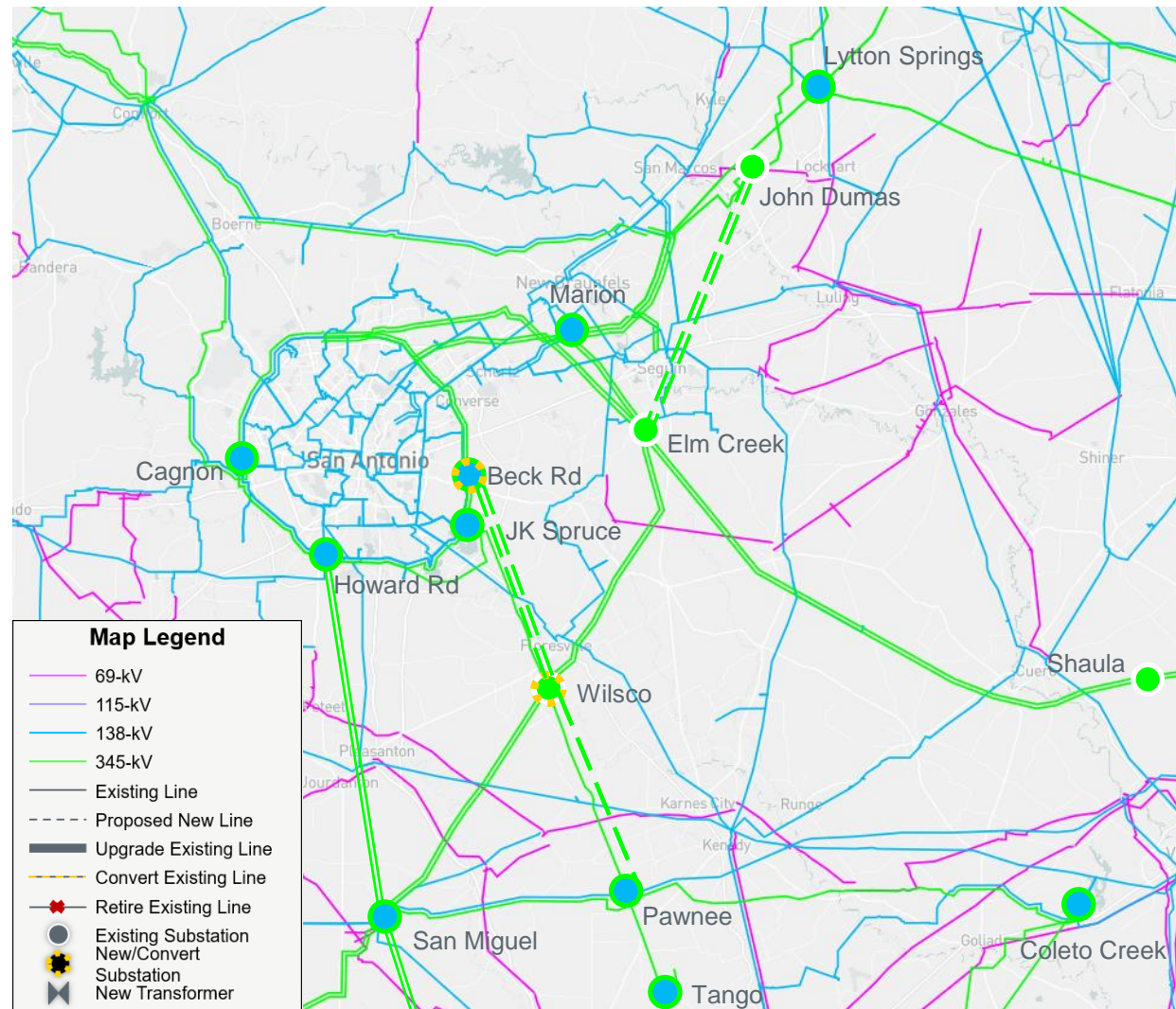
Option 7 – Modified CPS Proposal

- Construct a new 345-kV switching station (Wilsco) near the intersection of the San Miguel to Elm Creek 345-kV transmission line and the Spruce to Pawnee 345-kV transmission line
- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd
- Construct a new 345-kV double circuit transmission line from Beck Rd to Wilsco
- Construct a new 345-kV double circuit transmission line from Elm Creek to Lytton Springs
- Add a second 345-kV circuit from Wilsco to Pawnee



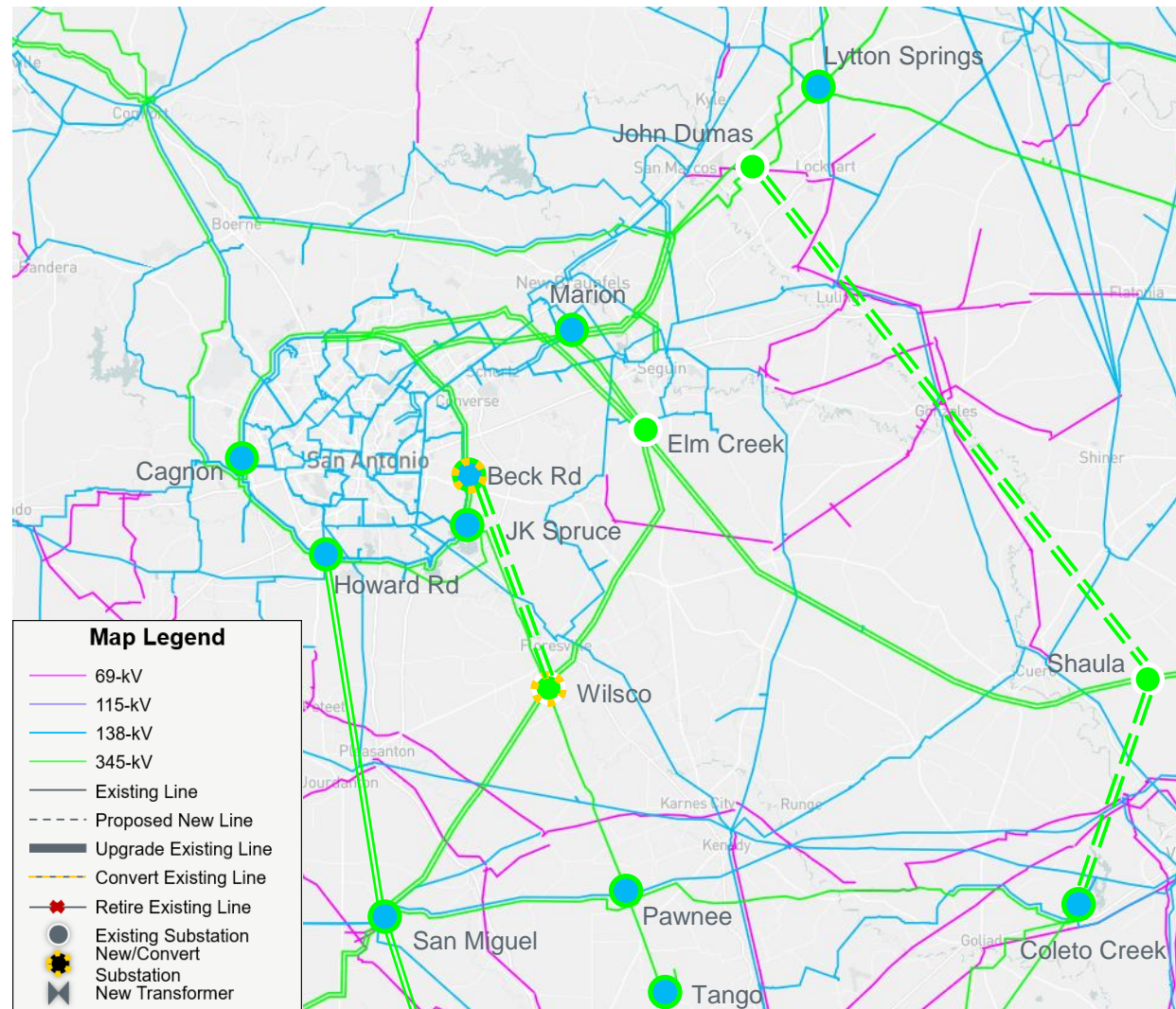
Option 8 – Modified CPS Proposal

- Construct a new 345-kV switching station (Wilsco) near the intersection of the San Miguel to Elm Creek 345-kV transmission line and the Spruce to Pawnee 345-kV transmission line
- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd
- Construct a new 345-kV double circuit transmission line from Beck Rd to Wilsco
- Construct a new 345-kV double circuit transmission line from Elm Creek to John Dumas
- Add a second 345-kV circuit from Wilsco to Pawnee



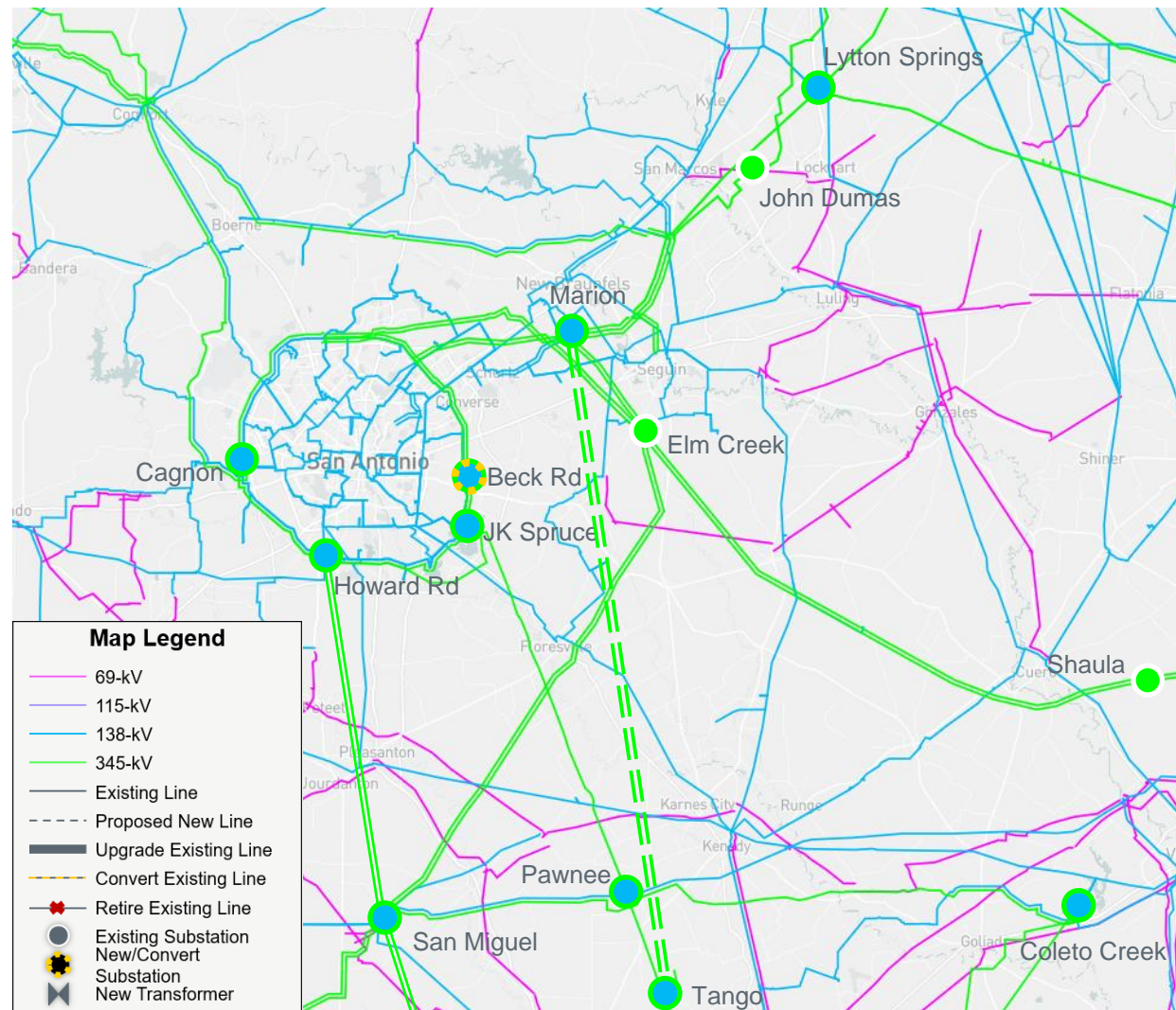
Option 9 – Modified CPS Proposal

- Construct a new 345-kV switching station (Wilsco) near the intersection of the San Miguel to Elm Creek 345-kV transmission line and the Spruce to Pawnee 345-kV transmission line
- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd
- Construct a new 345-kV double circuit transmission line from Beck Rd to Wilsco
- Construct a new 345-kV double circuit transmission line from Coletto Creek to Shaula and Shaula to John Dumas



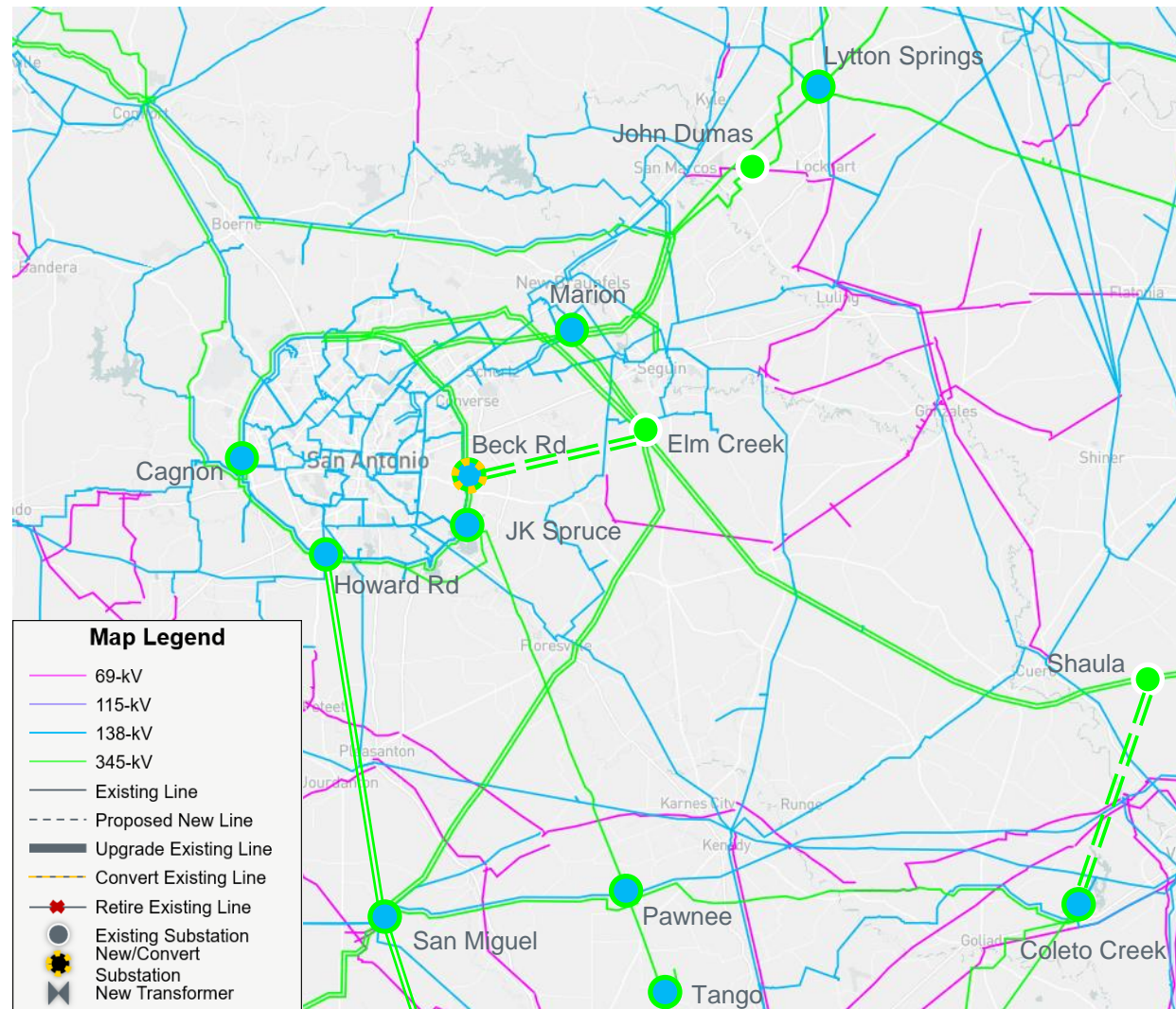
Option 10 – ERCOT Option

- Construct a new 345-kV double circuit transmission line from Tango to Marion
- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd



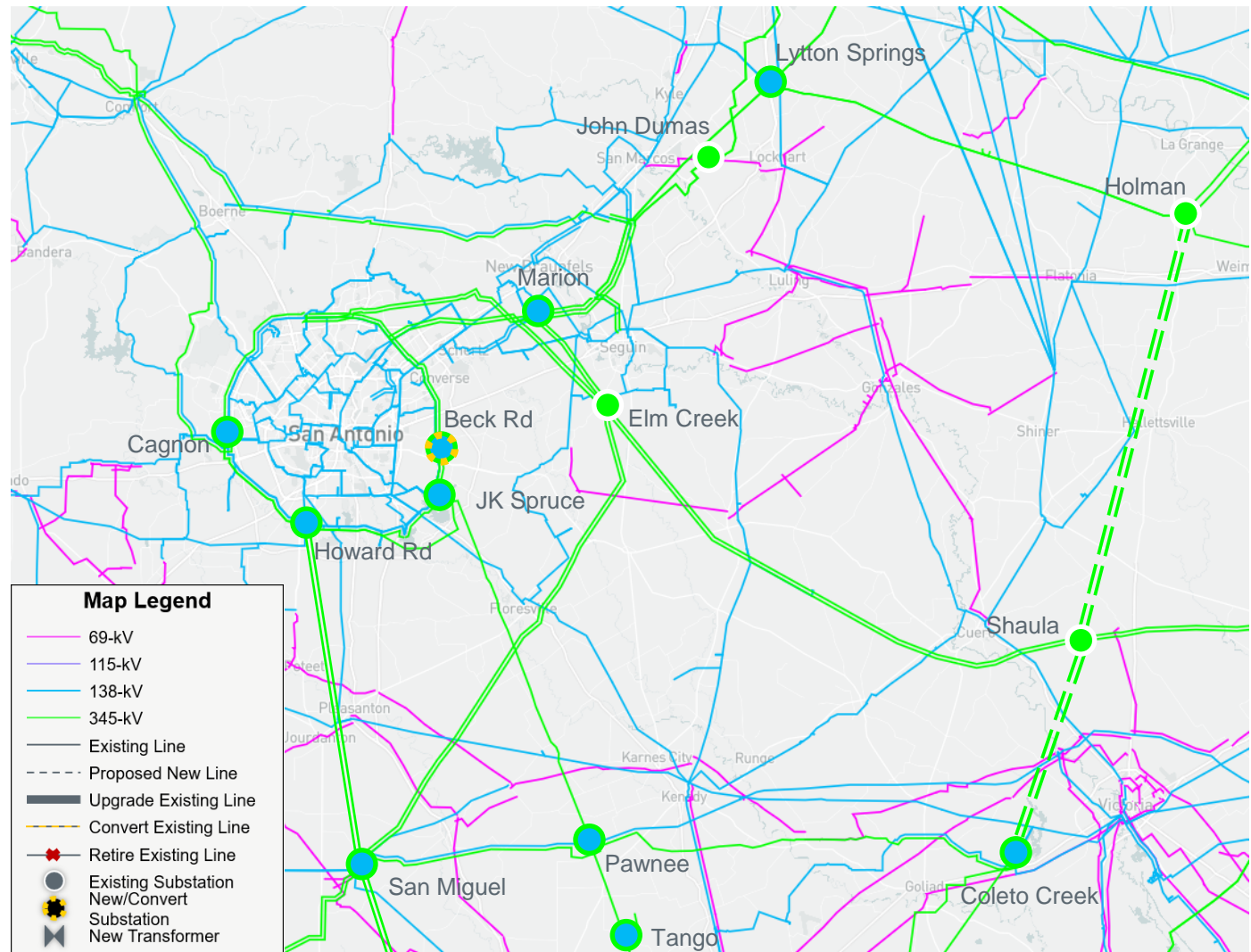
Option 11 – ERCOT Option

- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd
- Construct a new 345-kV double circuit transmission line from Beck Rd to Elm Creek
- Construct a new 345-kV double circuit transmission line from Coletto Creek to Shaula



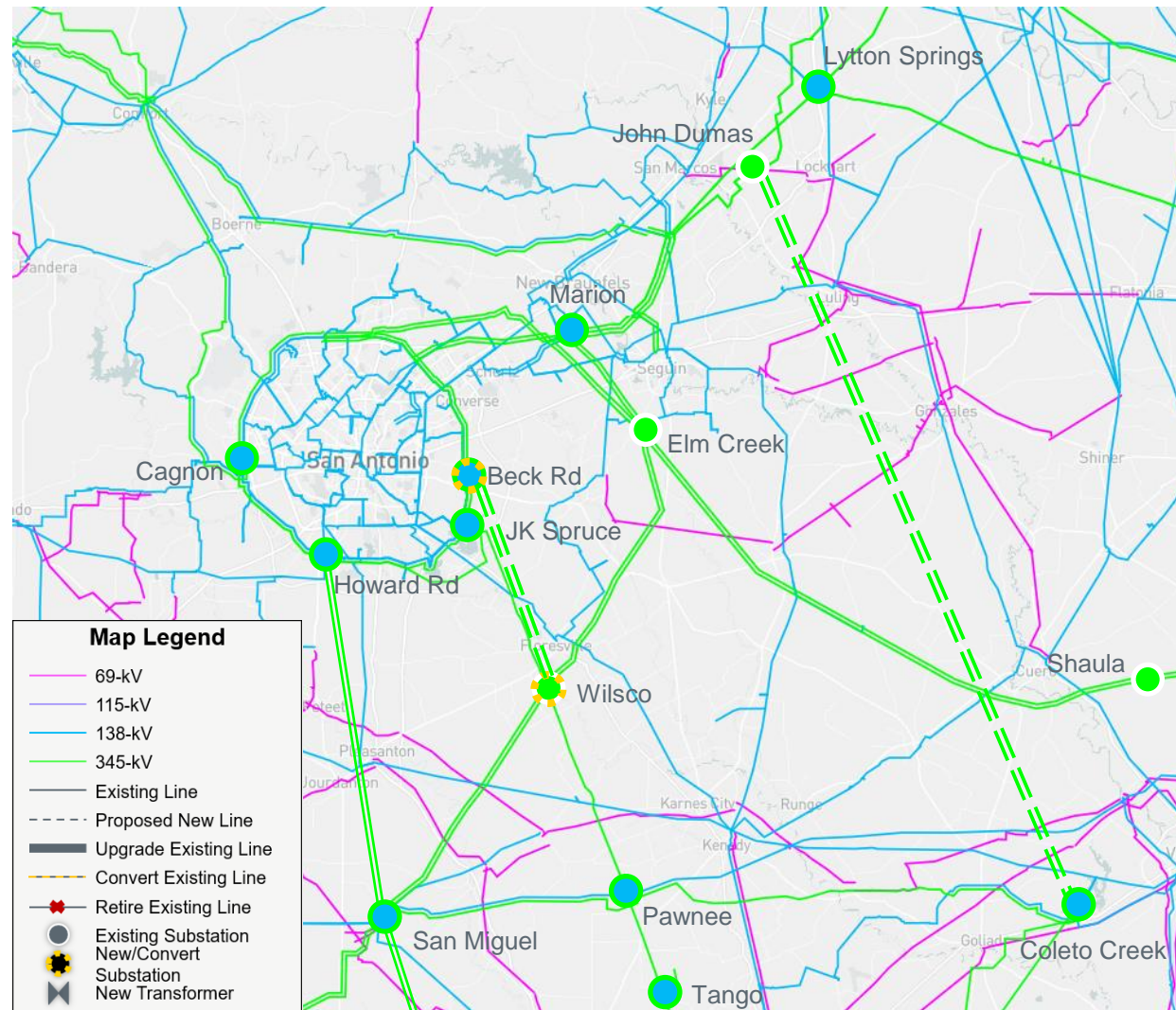
Option 12 – ERCOT Option

- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd
- Construct a new 345-kV double circuit transmission line from Coletto Creek to Shaula
- Construct a new 345-kV double circuit transmission line from Shaula to Holman



Option 13 – Modified CPS Proposal

- Construct a new 345-kV switching station (Wilsco) near the intersection of the San Miguel to Elm Creek 345-kV transmission line and the Spruce to Pawnee 345-kV transmission line
- Construct a new 345/138-kV switching station on the East side of San Antonio near Beck Rd
- Construct a new 345-kV double circuit transmission line from Beck Rd to Wilsco
- Construct a new 345-kV double circuit transmission line from Coletto Creek to John Dumas



Preliminary Results of Reliability Assessment – Options

	N-1	
	Thermal Violations	Voltage Violations
Option 1	1	None
Option 2	1	None
Option 3	None	None
Option 4	1	None
Option 5	1	None
Option 6	None*	None
Option 7	None	None
Option 8	None	None
Option 9	1	None
Option 10	None	None
Option 11	1	None
Option 12	1	None
Option 13	2	None

*Caused high loading on certain lines and transformers

- Options 3, 7, 8, and 10 are short-listed

Next Steps and Tentative Timeline

- ERCOT will continue to evaluate options and provide status updates at future RPG meetings
 - ERCOT may perform the following studies
 - Planned maintenance outage analysis
 - Long-term load serving capability assessment
 - 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
 - Generation and Load Scaling Sensitivity Analyses
 - Planning Guide Section 3.1.3(4)
 - Subsynchronous Resonance (SSR) Assessment
 - Nodal Protocol Section 3.22.1.3(2)
 - Cost estimates and feasibility assessments will be requested from CPS
- Tentative timeline
 - Final recommendation – Q1 2024

Thank you!



Stakeholder comments also welcomed through:

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Appendix A – Transmission Projects Added to Study Case

TPIT No	Project Name	Tier	Project ISD	TSP	County
67992	CPSE_345- kV_Howard_Switching_Station,CPSE_Hamilton_to_MedCtr_U pgrade,CPSE_Medina_to_36th_Street_Upgrade	Tier 3	26-Jan	CPS	Bexar
71873	CPSE_Hill Country Auto# 2 Impedance Upgrade	Tier 3	25-Jun	CPS	Bexar
71917	Upgrade STEC Castroville to Pearson to 138-kV	Tier 2	25-May	STEC	Medina
71935	STEC_71935_HCCastrovl138	Tier 2	25-Feb	STEC	Medina
72882	LCRATSC_Lockhart_Luling_69kV_TL_Overhaul	Tier 4	25-Jun	LCRA TSC	Caldwell
73050	LCRATSC_JohnDumas_Substation_Addition	Tier 4	25-Feb	LCRA TSC	Caldwell
73053	Wimberley Loop to New Substation	Tier 2	27-May	PEC	Hays
73417	LCRATSC_Schumansville_SheriffsPosse_StormHardening	Tier 4	25-May	LCRA TSC	Guadalup e
73793	LCRATSC_McCartyLaneEast_Zorn_TL_Storm_Hardening	Tier 4	25-May	LCRA TSC	Hays
73838	LCRATSC_Redwood_SanMarcos_TL_Upgrade	Tier 4	25-May	LCRA TSC	Hays
75682	Add Branch between Libra and Elm Creek	Tier 4	23-Nov	CPS	Wilson
76790	Upgrade Pearsall Auto	Tier 4	27-May	STEC	Frio
73025	CPSE_NEW_SHAULA	Tier 4	24-Nov	CPS	Dewitt

Appendix B – RTP Placeholder Projects Removed from Study Case

RTP Project ID	Project Name	TSP	County
2023-SC5	Beck Road 345/138-kV Substation Expansion	CPS	Bexar
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-SC10	Wiseman 138-kV Substation Addition and CPS Multiple Cap Bank Additions	CPS	Bexar, Comal

Appendix C – Generation Added to Study Case

GINR	Project Name	Fuel	Project COD	Capacity (MW)	County
22INR0366	BRP Libra BESS	OTH	01/26/2024	206.21	Guadalupe
22INR0368	Padua Grid BESS	OTH	12/01/2024	51.39	Bexar
22INR0422	Ferdinand Grid BESS	OTH	05/31/2026	202.65	Bexar
23INR0027	Cachena Solar SLF	SOL	12/31/2025	600	Wilson
23INR0154	Ebony Energy Storage	OTH	04/01/2024	203.5	Comal
23INR0381	Soportar ESS	OTH	03/15/2025	102.11	Bexar
24INR0427	CPS AvR CT1 Rotor Replacement	GAS	01/30/2024	11.3	Bexar
25INR0223	Uhland Maxwell	GAS	04/15/2025	181.1	Caldwell
22INR0251	Shaula I Solar	SOL	10/30/2025	205.2	DeWitt
22INR0267	Shaula II Solar	SOL	05/30/2026	205.2	DeWitt

Appendix D – G-1 Generators and X-1 Transformers

G-1 Generators	X-1 Transformers
Guadalupe – GUADG_GAS1 GUADG_GAS2 GUADG_STM5	Hill Country – Ckt 1 345/138-kV
San Miguel – SAN_SANMIGG1	Marion – Ckt 1 345/138-kV
Spruce – CALAVER_JKS2	San Miguel – Ckt 1 345/138-kV
	Skyline – Ckt 1 345/138-kV