PUBLIC

Combined CPS Energy Large Load Additions Project (25RPG020) and South Texas Electric Cooperative (STEC) Medina County Load Project (25RPG046) – ERCOT Independent Review (EIR) Status Update

Abishek Penti

Regional Planning Group (RPG) Meeting
October 20, 2026

Introduction

CPS Energy submitted the Large Load Additions Project (25RPG020) for Electric Reliability Council of Texas' (ERCOT) Regional Planning Group (RPG) review in June 2025

- This is a Tier 1 project with an estimated cost of approximately $333.7 million and will require a Certificate of Convenience and Necessity (CCN)
- Estimated in-service date (ISD) is Summer Peak 2035
- This project is needed to addresses post-contingency reliability in Bexar and Medina counties with the addition of approximately 2 GW Load by 2035

This project is currently under ERCOT Independent Review (EIR)

- CPS Energy presented project overview and ERCOT provided EIR scope at the August 2025 RPG Meeting
- ERCOT provided EIR status updates at the
  - February 2026 RPG Meeting
  - April 2026 RPG Meeting
  - June 2026 RPG Meeting
  - July 2026 RPG Meeting

Introduction

South Texas Electric Cooperative (STEC) submitted the Medina County Load Project (25RPG046) for Electric Reliability Council of Texas' (ERCOT) Regional Planning Group (RPG) review in December 2025

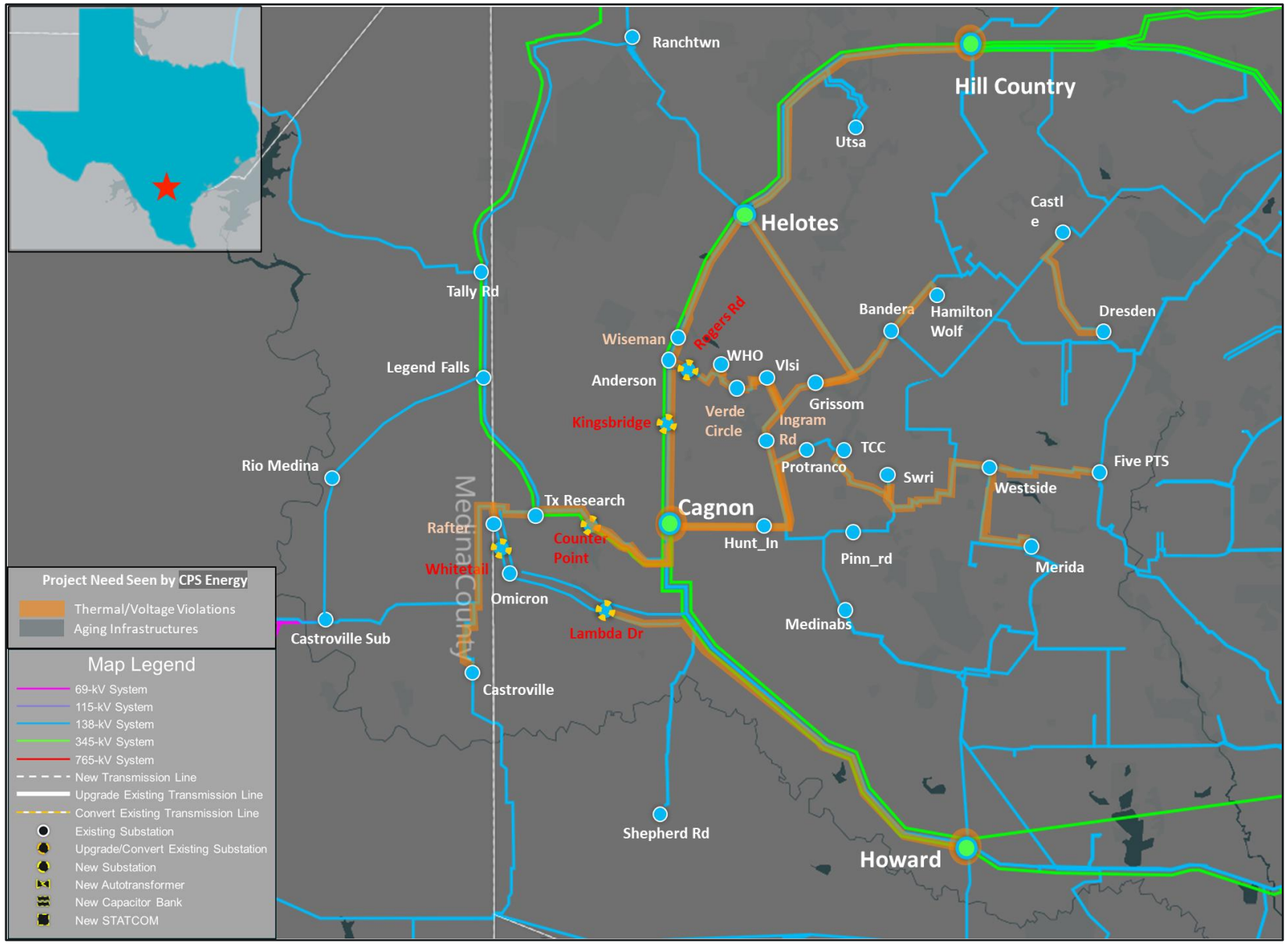
- This is a Tier 1 project with an estimated cost of $492 million and will require a Certificate of Convenience and Necessity (CCN)
- Estimated in-service date (ISD) is June 2031
- Addresses post-contingency reliability concerns seen by STEC with the addition of approximately 1 GW Load

This project is currently under (EIR)

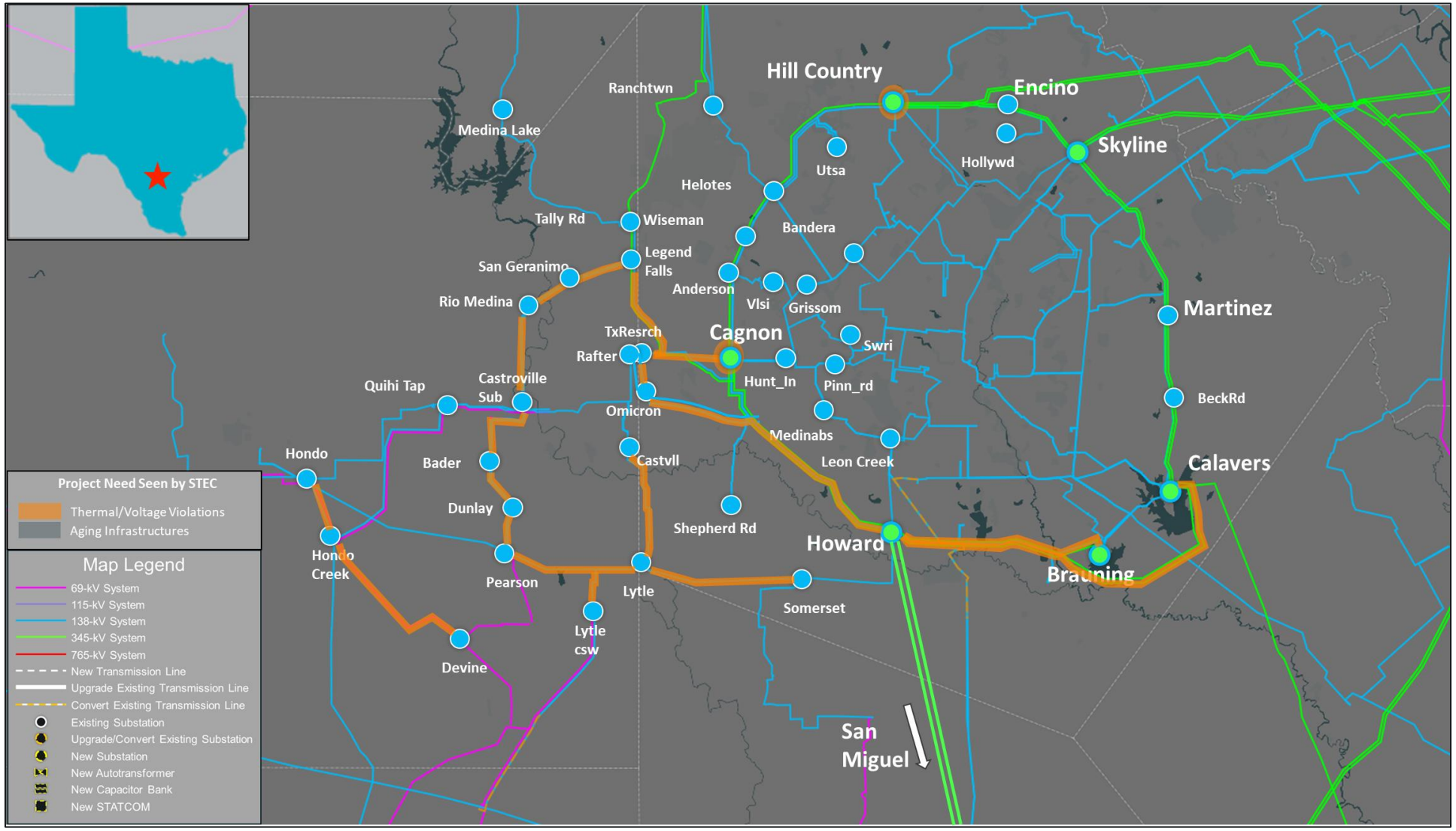
- STEC presented project overview and ERCOT provided EIR scope at the February 2026 RPG Meeting
- ERCOT provided EIR status updates at the
  - April 2026 RPG Meeting
  - June 2026 RPG Meeting
  - July 2026 RPG Meeting

ERCOT will perform a combined EIR Study for CPS Energy Large Load Additions Project (25RPG020) and STEC Medina County Load Project (25RPG046)

Study Area Map with Project Needs Seen by CPS Energy



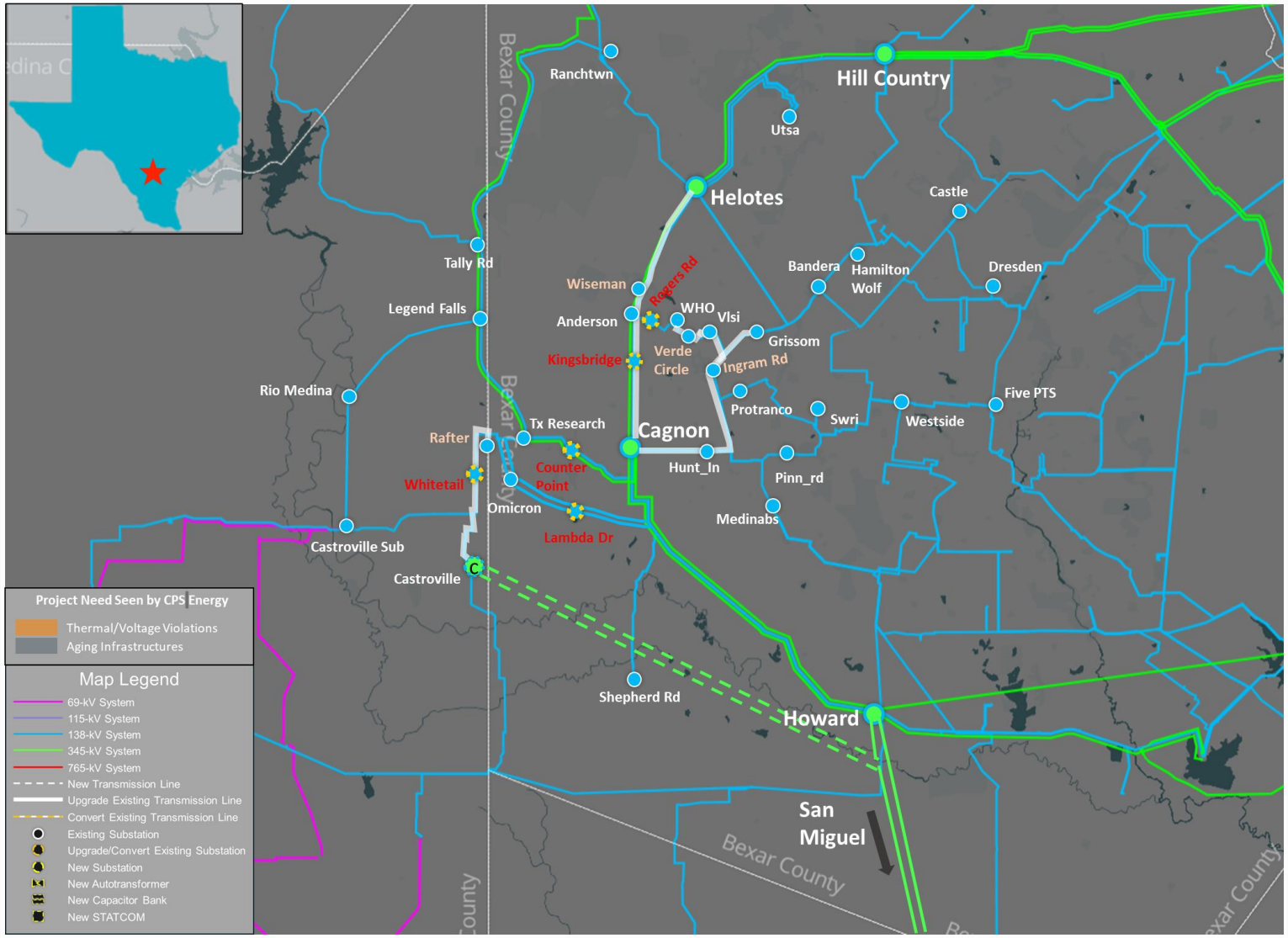
Study Area Map with Project Needs Seen by STEC



Proposed Project by CPS Energy

Summary of Upgrades

- New Castroville 345/138-kV station
  - Three auto Transformers
- Loop Howard to Miguel Circuit 1 into new 345-kV Castroville station
- 138-kV Transmission Lines
  - Rebuild Grissom to VLSI
  - Rebuild Cagnon to VLSI
  - Rebuild Grissom to Ingram
  - Rebuild Verde Circle to VLSI
  - Rebuild Anderson to Rodgers Rd
  - Rebuild Verde Circle to Westover Hills
  - Rebuild Anderson to Cagnon
  - Rebuild Anderson to Helotes
  - Rebuild existing 138-kV Transmission line and a new circuit 2 from Castroville to Rafter
- Install New Cap Banks
  - 50 MVAr at Kingsbridge
  - 50 MVAr at Rodgers Rd
  - 50 MVAr at Whitetail

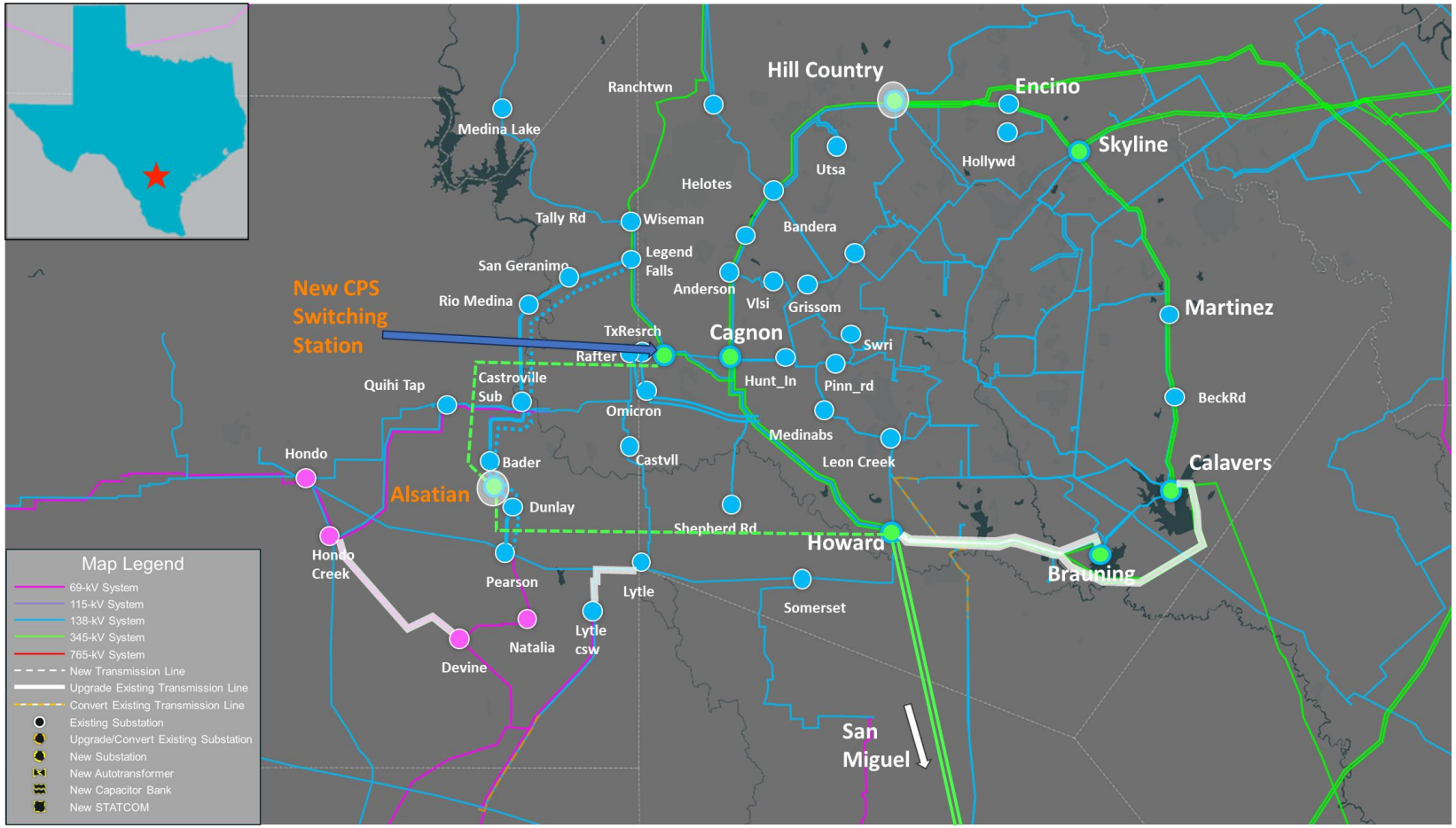


* See Appendix D for the detailed description of the Proposed Project

Proposed Project by STEC

Summary of Upgrades

- Add second circuit from Pearson to Castroville
- New Alsatian 345/138-kV station
  - Two auto Transformers
  - 162MVAr Cap Bank
- New CPS Energy Owned 345-kV Station that cuts Kendall to Cagnon
- New 345-kV line from Howard to Alsatian to New CPS Energy Owned 345-kV Station
- Rebuild Howard to Spruce and Howard to Brauning 345-kV transmission lines
- Option also include other 345-kV and 138-kV transmission line rebuilds
- **STEC also proposed additional Upgrades for Increased Long Term Load Serving Capability**



* See Appendix D for the detailed description of the Proposed Project

Study Assumption

Study Region

- The project is in Bexar, Medina in South Central Weather Zone, and the transmission elements in counties that are electrically close were monitored

Steady-State Base Case

- Final 2025 Regional Transmission Planning (RTP) 2031 summer peak load case, published on Market Information System (MIS) on December 22, 2025, was updated to construct the study base case

Load Updates

- Approximately 980 MW of new STEC load was added in the study area
- Approximately 400 MW of new AEP load was added in the study area
- Approximately 1.5 GW of new CPS load was added in the study area
- Approximately 2.0 GW of loads were added in the study area based on the Attestation Letter from CPS, for the expected 2035 study year

Reserve

- The reserve were kept consistent with the 2025 RTP

Study Assumption (continued)

Transmission Updates

- New transmission projects (listed in Appendix A1), recently approved RPG project and/or Transmission Project and Information Tracking (TPIT) projects based on October 2025 TPIT report, were added to the base case
- Transmission projects (listed in Appendix A2) identified in the 2025 RTP in the study area that have not been approved by RPG were removed
- The following project is also included in the base case development
  - CPS Helotes 345/138-kV Switching Station and Autotransformer Addition at Eastside Switching Station Project and Reactive Power Planning Project

Generation Updates

- New generation (listed in Appendix B) that met ERCOT Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) before the June 2035 (ISD) in the study area at the time of the study, but not already modeled in the RTP cases, were added to the case based on December 2025 Generator Interconnection Status (GIS) report published in MIS in January 2026
- All generation were dispatched consistent with the 2025 RTP methodology

Preliminary Results of Reliability Assessment – Base Case

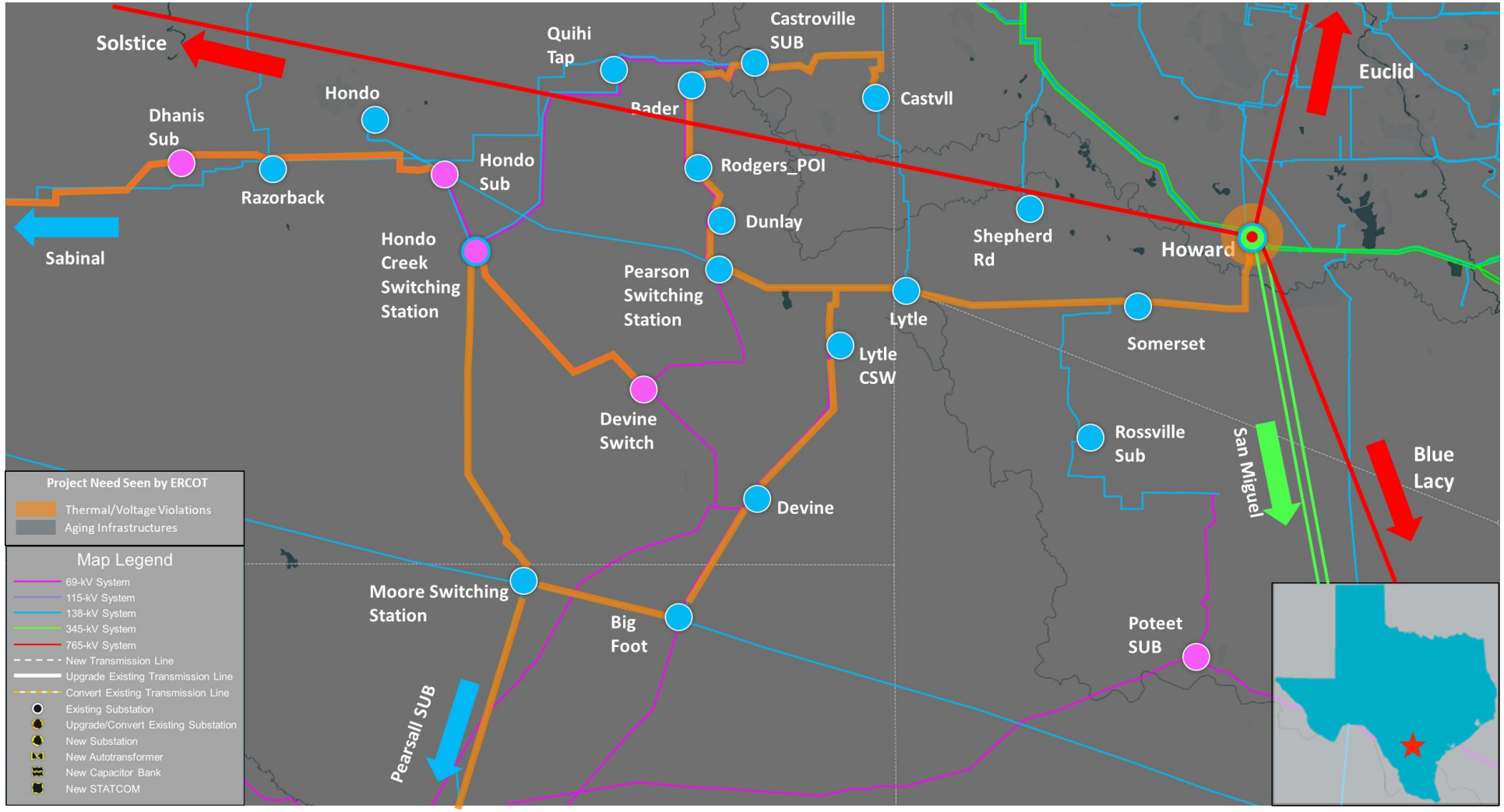
ERCOT conducted steady-state load flow analysis for the study base case according to the NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Criteria to identify the project need

Contingency Category	Thermal Overloads	Voltage Violations	Unsolved Power Flow
P0: N-0	13	34	None
P1, P2-1, P7: N-1	32	5	27
P3: (G-1+N-1)*	1	None	4
P6-2: (X-1+N-1)*	16	12	10
Total	**60**	**51**	**41**

* See Appendix C for the list of G-1 generators and X-1 transformers being tested

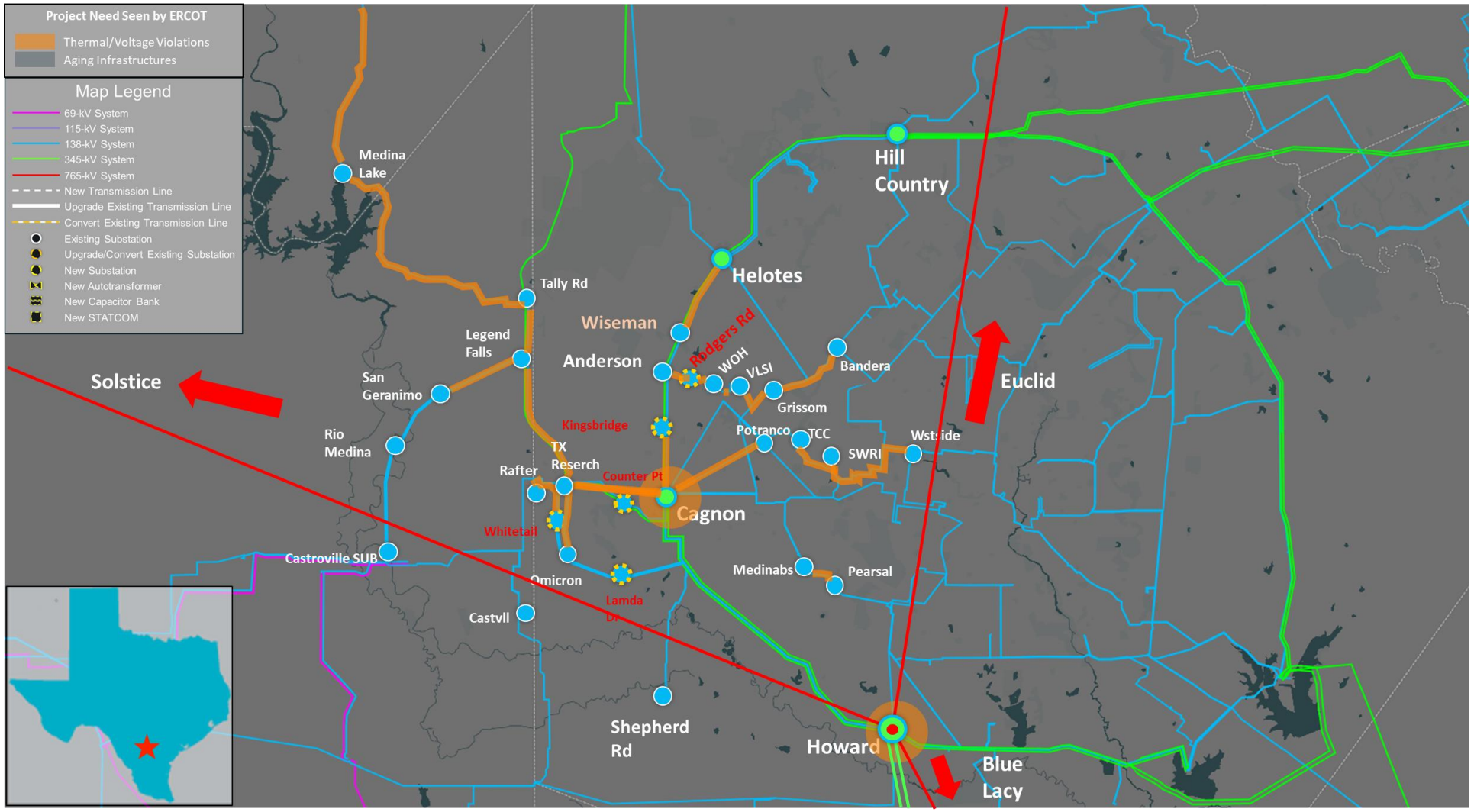
PUBLIC

Study Area Map with Project Needs Seen by ERCOT – Southwest of San Antonio



PUBLIC

Study Area Map with Project Needs Seen by ERCOT – Northwest of San Antonio



List of Options Considered

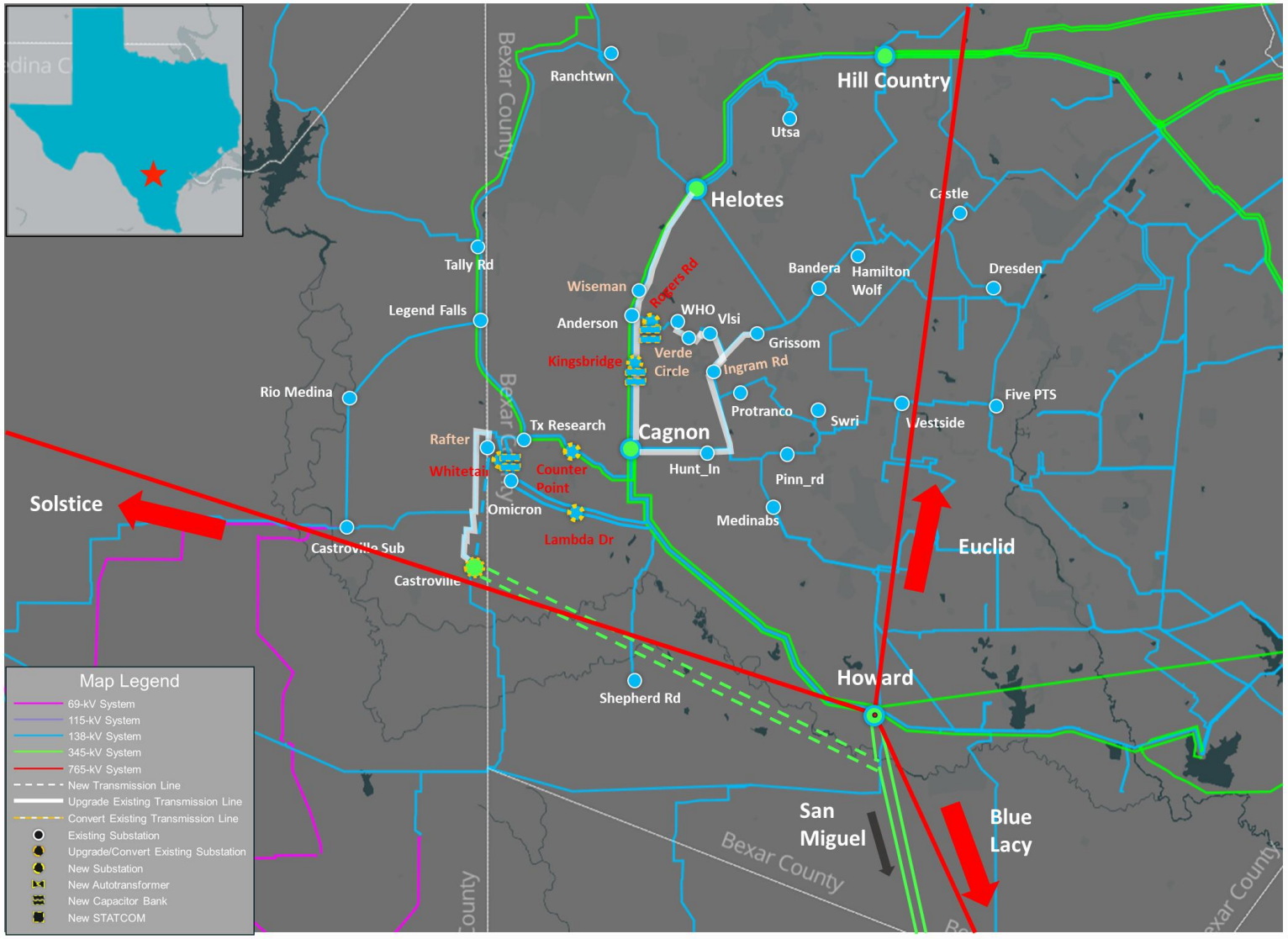
ERCOT developed the following options to resolve the reliability violation seen in the study area by ERCOT:

- Option 1 – CPS Energy Proposed Project
- Option 2 – STEC Proposed Project
- Option 3 – ERCOT Alternative Option
- Option 7 – CPS Alternative Option (Orchid)
  - Option 7A - CPS Alternative Option (Orchid) + Brauning to Alsatian 345-kV line
  - Option 7B - CPS Alternative Option (Orchid) + Double circuit New Sub to Lytle 345-kV line

Option 1 – CPS Energy Proposed Option

Summary of Upgrades

- New Castroville 345/138-kV station
  - Three auto Transformers
- Loop Howard to Miguel Circuit 1 into new 345-kV Castroville station
- 138-kV Transmission Lines
  - Rebuild Grissom to VLSI
  - Rebuild Cagnon to VLSI
  - Rebuild Grissom to Ingram
  - Rebuild Verde Circle to VLSI
  - Rebuild Anderson to Rodgers Rd
  - Rebuild Verde Circle to Westover Hills
  - Rebuild Anderson to Cagnon
  - Rebuild Anderson to Helotes
  - Rebuild existing 138-kV Transmission line and a new circuit 2 from Castroville to Rafter
- Install New Cap Banks
  - 50 MVAr at Kingsbridge
  - 50 MVAr at Rodgers Rd
  - 50 MVAr at Whitetail

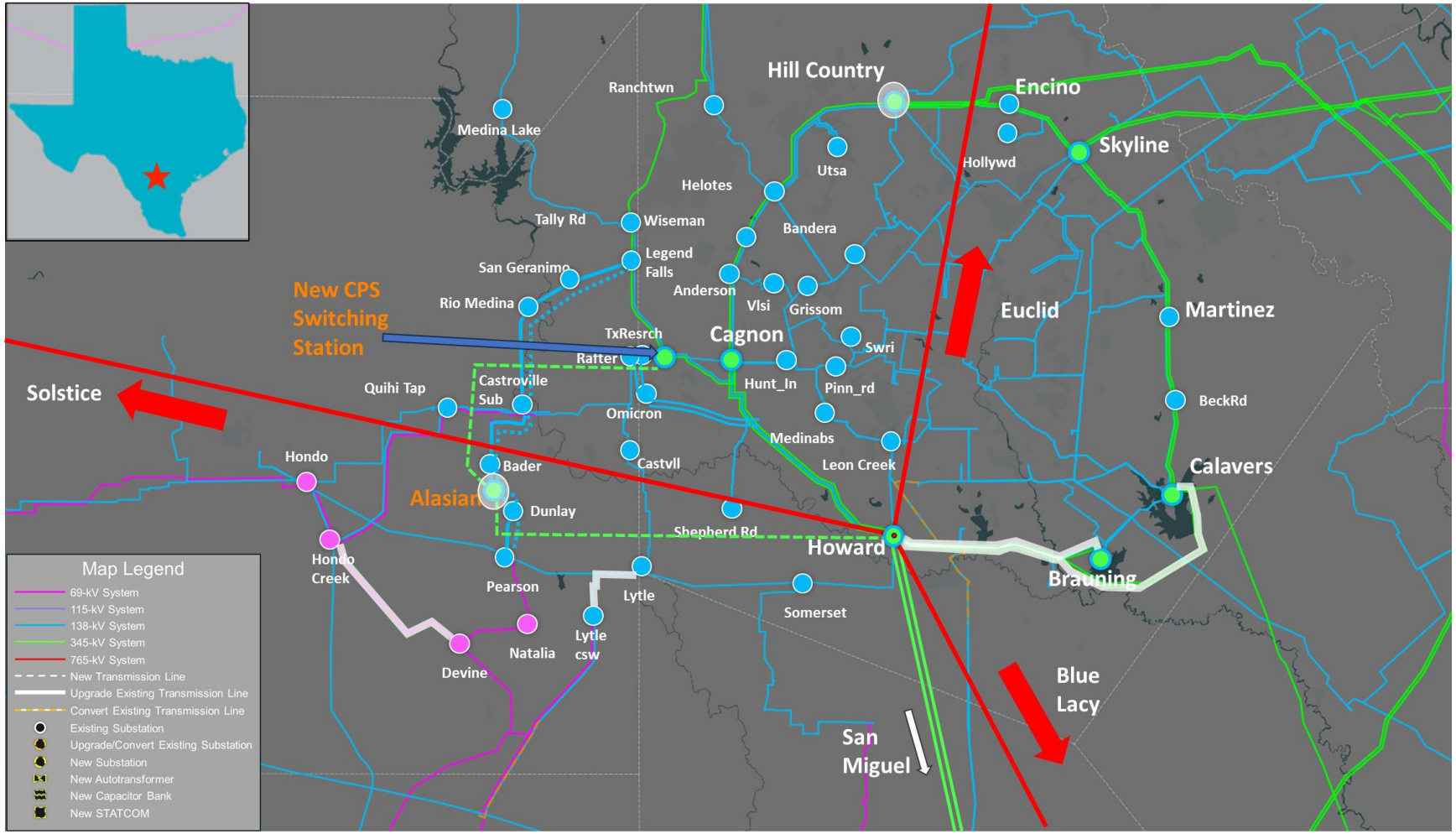


* See Appendix D for the detailed description of the Proposed Project

Option 2 – STEC Proposed Option

Summary of Upgrades

- Add second circuit from Pearson to Castroville to Legend Falls
- New Alsatian 345/138-kV station
  - Two auto Transformers
  - 162 MVAr Cap Bank
- New CPS Energy Owned 345-kV Station that cuts Kendall to Cagnon
- New 345-kV line from Howard to Alsatian to New CPS Energy Owned 345-kV Station
- Rebuild Howard to Spruce and Howard to Brauning 345-kV transmission lines
- Option also include other 345-kV and 138-kV transmission line rebuilds
- **STEC also proposed additional Upgrades for Increased Long Term Load Serving Capability**

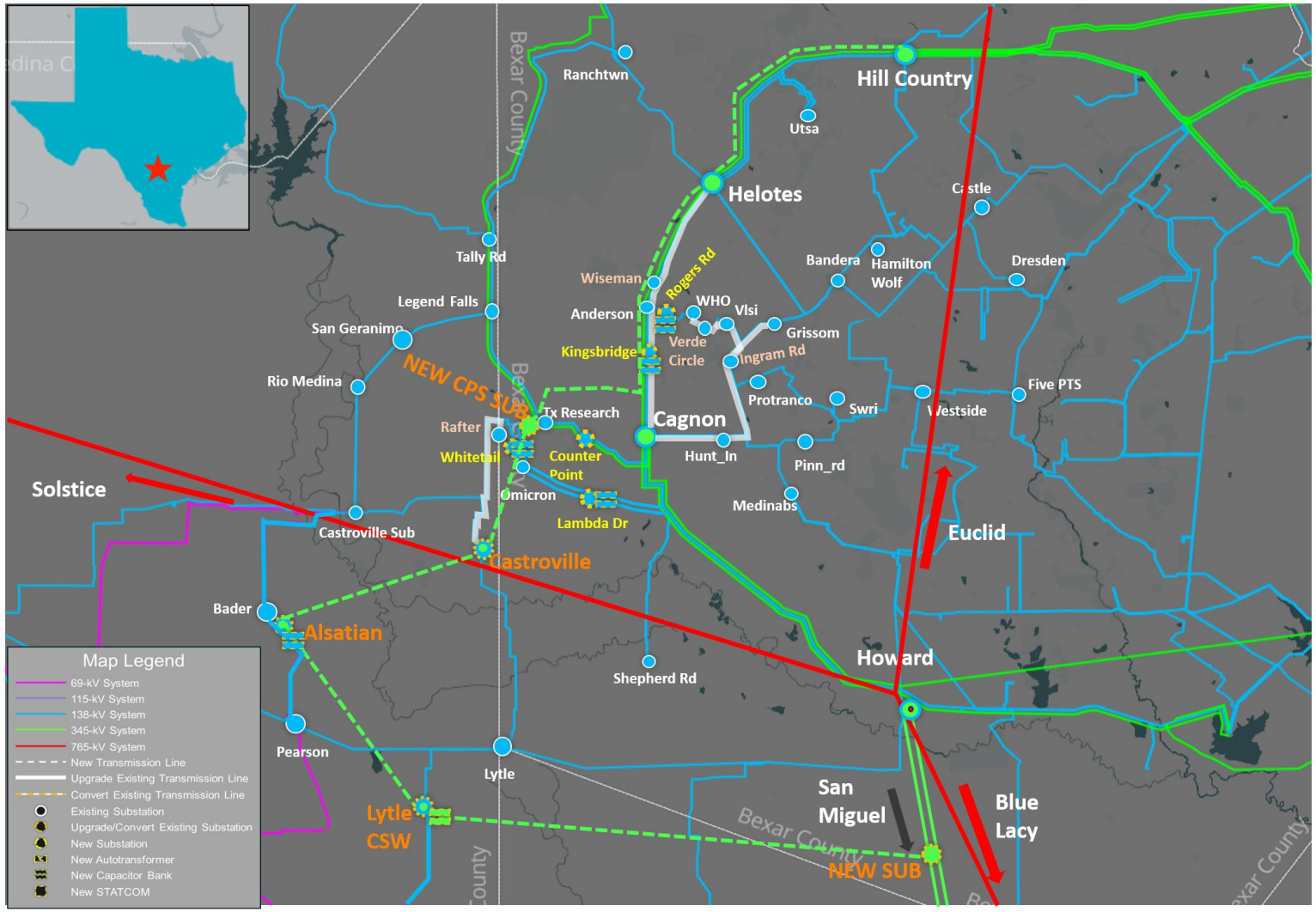


* See Appendix D for the detailed description of the Proposed Project

Option 3 – ERCOT Alternative Option

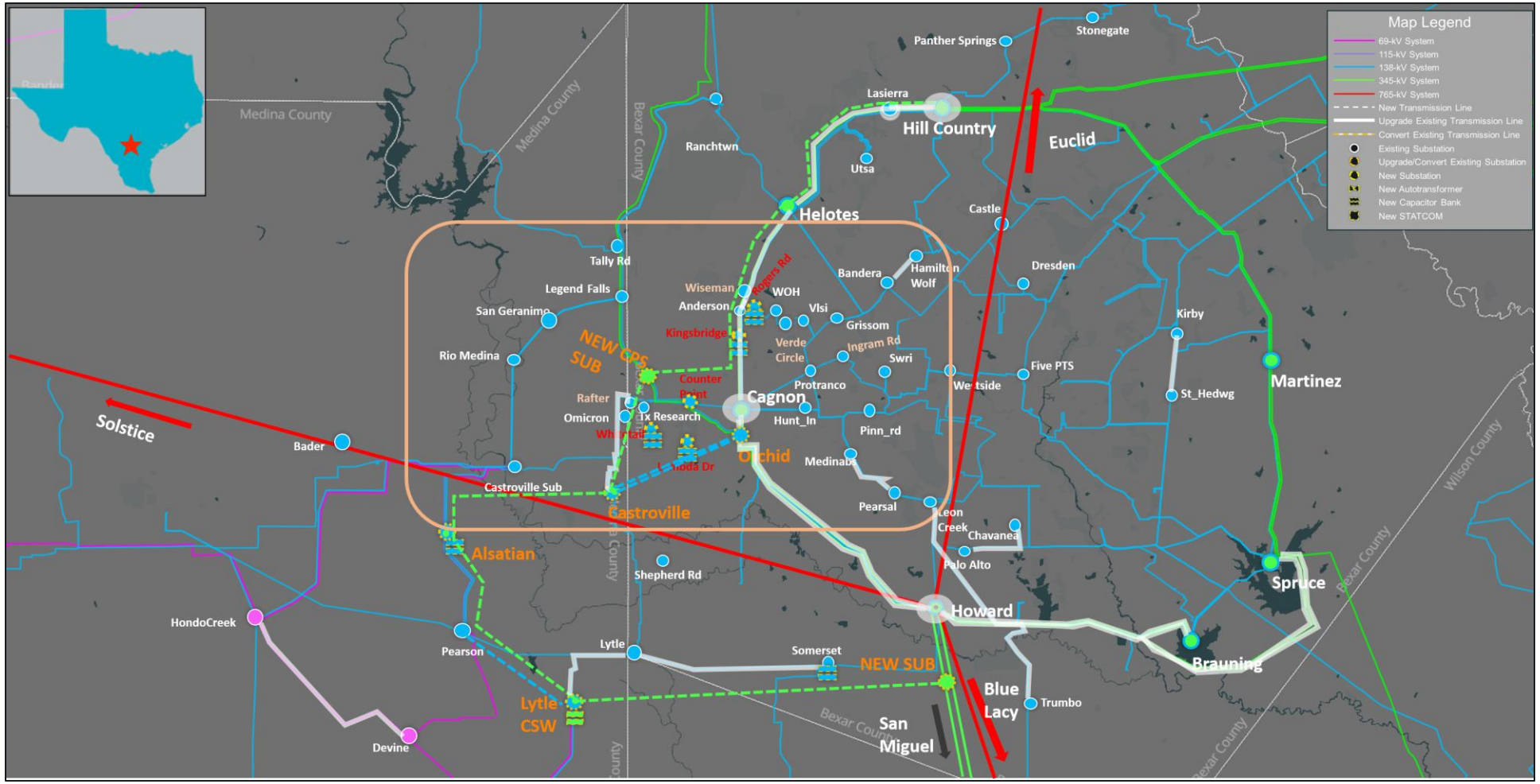
Summary of Upgrades

- New Alsatian 345/138-kV station and install Four autotransformers
- New CPS Sub 345-kV Station that cuts Kendall to Cagnon 345-kV line
- New Sub 345-kV Station that cuts Howard to San Miguel DCKT 345-kV line
- Convert the existing Lytle CSW 138-kV station to Lytle CSW 345/138-kV Station and install two auto transformers
- Convert the existing Castroville 138-kV station to Castroville 345/138-kV Station and install two auto transformers
- New 345-kV line from New Sub to Alsatian to Castroville to New CPS Sub to Helotes 345-kV Station, approximately 72.2 miles
- Install a new second 345-kV circuit on the existing double circuit structures of single circuit 345-kV line from Helotes to Hill country, approximately 22 miles
- Option includes upgrading the emergency ratings of existing Cagnon, Howard and Hill Country Auto transformers
- New 138-kV Transmission lines, approximately 23 miles
- Rebuilding existing 138-kV transmission lines, approximately 42 miles
- Option also includes addition of Cap Banks, approximately 695 MVAr



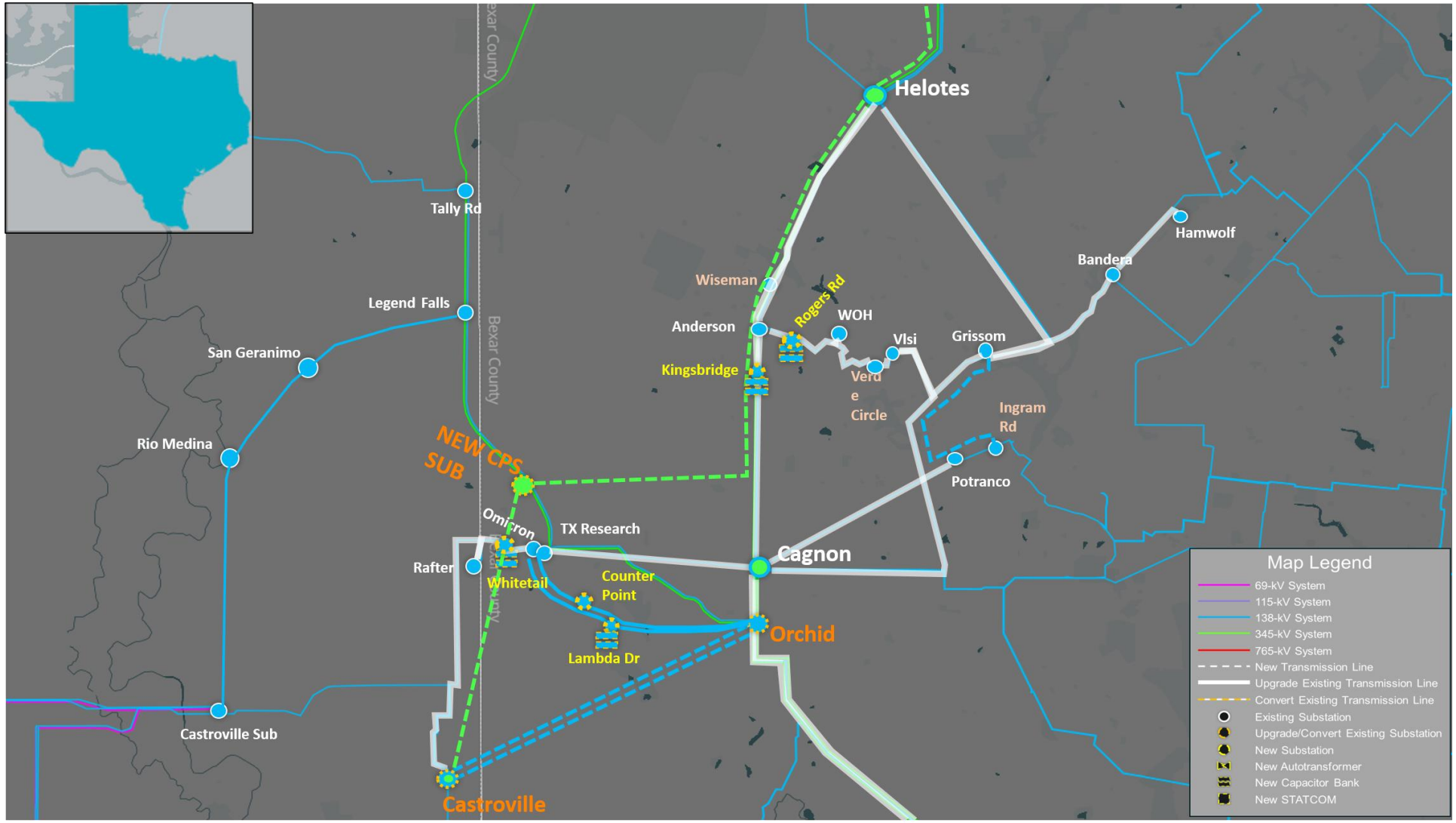
* See Appendix D for the detailed description of the Proposed Project

Option 7 – CPS Alternative Option (Orchid)



* See Appendix D for the detailed description of the Proposed Project

Option 7 – CPS Alternative Option (Orchid) – Cont.

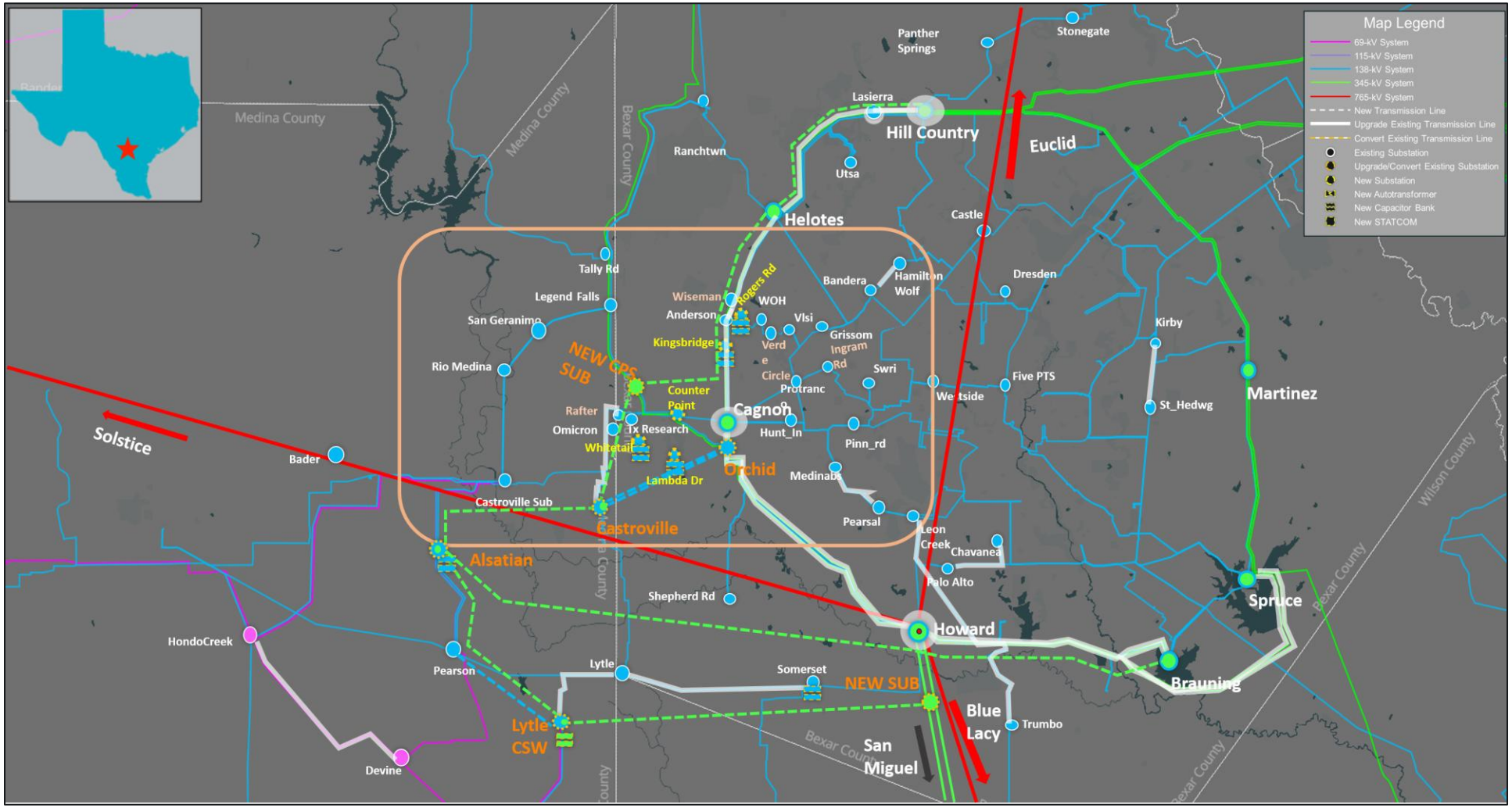


* See Appendix D for the detailed description of the Proposed Project

ercot

PUBLIC

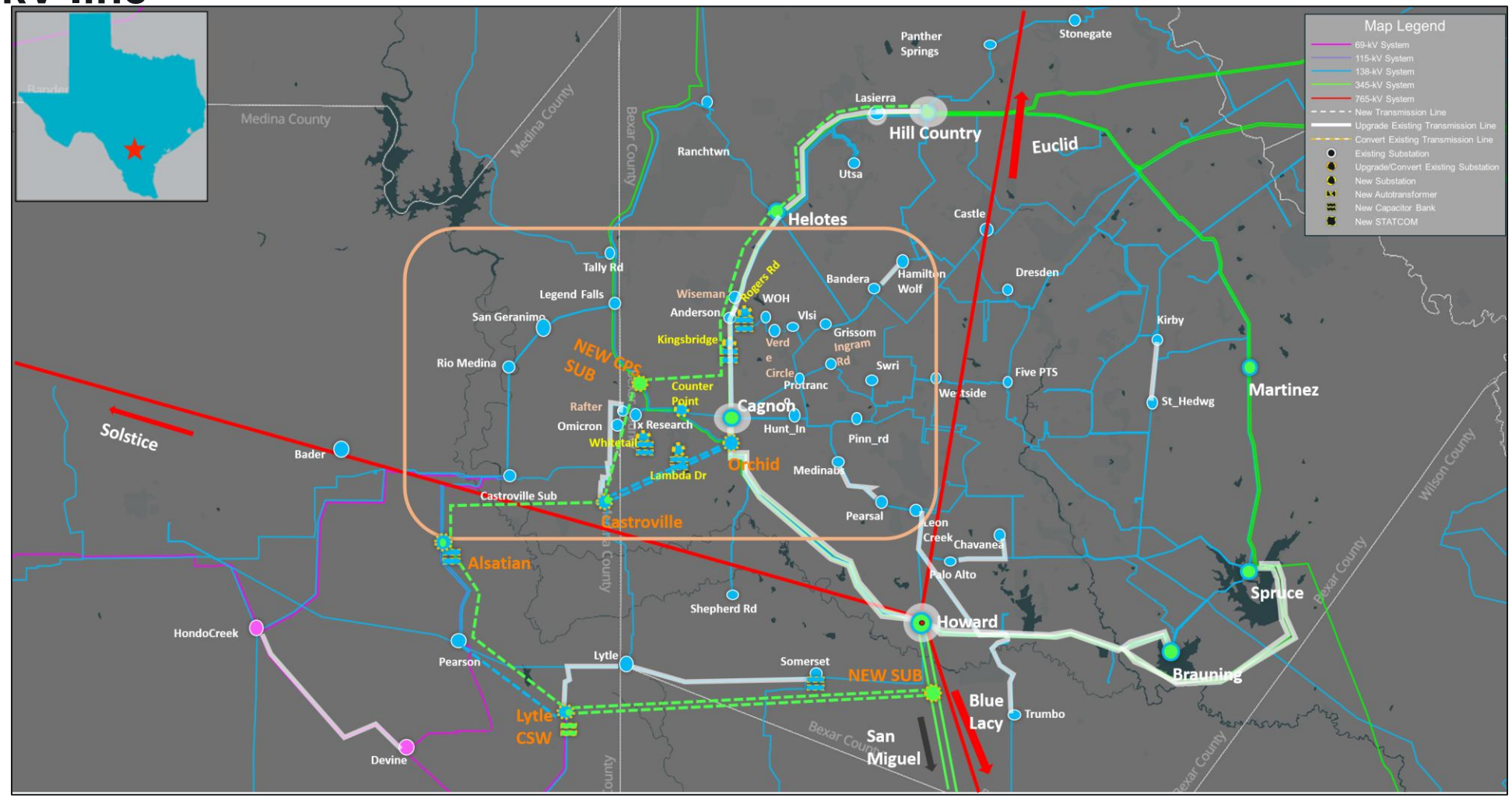
Option 7A – CPS Alternative Option (Orchid) + Brauning to Alsatian 345-kV line



* See Appendix D for the detailed description of the Proposed Project

PUBLIC

Option 7B – CPS Alternative Option (Orchid) + Double circuit New Sub to Lytle 345-kV line



* See Appendix D for the detailed description of the Proposed Project

Preliminary Results of Reliability Assessment – Options

ERCOT conducted steady-state load flow analysis for the all the option cases according to the NERC Reliability Standard TPL-001-5.1 and ERCOT Planning Criteria to evaluate the proposed project and alternatives options

Option	N-0		N-1		(G-1+N-1)*		(X-1+N-1)*		Unsolved Power Flow
	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	Thermal Violations	Voltage Violations	
1	3	1	17	20	2	1	3	2	2
2	None	None	7	None	None	None	3	None	None
3	None	None	None	None	None	None	None	None	None
7	None	None	None	None	None	None	None	None	None
7A	None	None	None	None	None	None	None	None	None
7B	None	None	None	None	None	None	None	None	None

* See Appendix C for the list of G-1 generators and X-1 transformers being tested

Preliminary Results of Maintenance Outage Evaluation

ERCOT conducted maintenance outage analyses on all four short-listed options to compare relative performance of the options

- Conforming loads in South Central and Southern Weather zones were scaled down based on the historical non-summer peak data to 85.9% and 90%, in order to mimic the non-summer peak load condition
- Based on the review of system topology of the area, ERCOT tested N-2 contingency combinations, and then tested all applicable contingency violations with system adjustments (N-1-1)

Option	Thermal Violation	Voltage Violation	Unsolved Power Flow
3	20+	20+	None
7	2	None	None
7A	1	None	None
7B	None	None	None

Deliverables and Next Step

Tentative Timelines

- ERCOT will continue to evaluation alternative options
  - ERCOT may also perform the following studies
    - Long-Term Load-Serving Capability Assessment
  - TSP's will provide Cost Estimates and Feasibility Assessment
  - Additional Analysis
    - Generation Addition and Load Scaling Sensitivity Analyses
      - ERCOT Planning Guide Section 3.1.3(4)
    - Subsynchronous Oscillations (SSO) Assessment
      - ERCOT Nodal Protocol Section 3.22.1.3(2)
  - 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
- Provide status updates at the future RPG meetings
- ERCOT recommendation in Q4 2026

Key Takeaway: ERCOT recommendation in Q4 2026

Thank you!
Questions/Comments?

Abishek.Penti@ercot.com
Robert.Golen@ercot.com

Learn More

www.ercot.com

Download ERCOT Mobile App

GET IT ON Google Play
Download on the App Store

Connect With Us

facebook.com/ERCOTISO
x.com/ercot_iso
linkedin.com/company/ercot
instagram.com/ercot_iso

Appendix

- Appendix A1 – Transmission Projects Added
- Appendix A2 – Transmission Backed Out
- Appendix B – Generation Added
- Appendix C – G-1 Generators and X-1 Transformers List
- Appendix D – Option Description

Learn More

www.ercot.com

Download ERCOT Mobile App

GET IT ON Google Play
Download on the App Store

Connect With Us

facebook.com/ERCOTISO
x.com/ercot_iso
linkedin.com/company/ercot
instagram.com/ercot_iso

Appendix A1 – Transmission Projects Added

TPIT	Project Name	Tier	Project ISD	TSP(s)
67329	San Miguel to Cruce 345 kV lines	Tier 1	Dec-26	STEC
99207	Rebuild (5.4 miles) Cagnon to VLSI transmission line to at least 698MVA	Tier 1	May-28	CPS
99857	LCRATSC_Gooseneck_Substation_Addition	Tier 1	Sep-28	LCRATSC
99922	Green Valley Substation Addition	Tier 1	Dec-28	LCRATSC
91312	Austrop - Zorn Transmission Line Upgrade	Tier 1	May-29	LCRATSC
98595	Solstice to Howard: Construct New 765 kV Single Circuit Line	Tier 1	Dec-30	AEP TNC
81594	Dunlay substation	Tier 2	Apr-26	STEC
71917	Upgrade STEC castroville to Pearson to 138kV	Tier 2	Apr-26	STEC
73098	Castroville Cut-in 138 kV	Tier 2	Oct-26	ETT
81590	Rio Medina substation	Tier 2	Jan-27	STEC
85008	Add Rio Medina - Legend Falls Tline	Tier 2	Jul-27	STEC
99784	Lytle: Expand 345 kV Station	Tier 2	Nov-30	AEP TCC

Appendix A1 – Transmission Projects Added

TPIT	Project Name	Tier	Project ISD	TSP(s)
61404	Boerne Split-Welfare Transmission Line Upgrade	Tier 3	Jan-26	LCRATSC
76576	Asherton to Uvalde: Convert to 138 kV	Tier 3	Mar-26	AEP TCC
76569	Asherton: Rebuild 138 kV station	Tier 3	Dec-26	AEP TCC
61406	Kendall - Welfare Transmission Line Upgrade	Tier 3	Jun-27	LCRATSC
91392	Bergheim_Autotransformer_Upgrade	Tier 3	Dec-27	LCRATSC
100285	Comfort_Kendall_Transmission_Line_Upgrade	Tier 3	May-28	LCRATSC
67915	Asherton to West Batesville: Rebuild 138 kV Line	Tier 3	Nov-31	AEP TCC/ETT
99187	This involves moving Harmony to a different bus/bay at Hill Country to alleviate the loading on HC auto 3 & 4.	Tier 4	Jan-26	CPS
44946	CPSE_New_Scenic_Loop_138kV_Load_Serving_Station	Tier 4	Jan-26	CPS
80319	Devine: Install Cap Bank	Tier 4	Mar-26	ETT
71319	Upgrade Pearsall Station	Tier 4	May-26	STEC
99904	Install a new 138kV transmission line approximately .1 miles long to connect the generator's interconnection facilities to Leon Creek Switchyard.	Tier 4	May-26	CPS

Appendix A1 – Transmission Projects Added

TPIT	Project Name	Tier	Project ISD	County(s)
99185	This involves moving Potranco to a different bus/bay at Cagnon to alleviate the loading on Cagnon auto 3 & 4.	Tier 4	May-26	CPS
45029	Grandview Highland Hills Rebuild	Tier 4	Jun-26	CPS
76242	Lytle: Construct New 138 kV Terminal	Tier 4	Aug-26	ETT
73063	Big Foot to Lytle: Convert to 138 kV	Tier 4	Aug-26	AEP TCC
72268	CPSE_New Ingram Rd Substation	Tier 4	Oct-26	CPS
45136	CPSE_New Midtown Substation	Tier 4	Dec-26	CPS
92743	Rebuild ~3 miles of double-ckt from VLSI to Grissom transmission line with normal and emergency ratings of at least 478MVA	Tier 4	May-27	CPS
100257	Hill Country Auto #4 will be replaced Summer 2027 to a 10% impedance auto.	Tier 4	May-27	CPS
91708	New San Geronimo Substation	Tier 4	Jul-27	STEC
80315	Big Foot to Pearsall: Convert to 138 kV	Tier 4	Dec-27	AEP TCC
80317	Dilley Switch to Pearsall: Convert to 138 kV, Reroute from Dilley to Dilley Switch, Rebuild Dilley to Dilley Switch 69 kV, and Double Circuit Dilley Switch to Pearsall with Dilley to Dilley Switch	Tier 4	Dec-27	AEP TCC
99802	Aetos: Construct New 138 kV Station	Tier 4	Dec-27	AEP TCC

Appendix A1 – Transmission Projects Added

TPIT	Project Name	Tier	Project ISD	County(s)
73100	Asherton to Piloncillo: Rebuild 138 kV Line	Tier 4	Dec-27	AEP TCC
76768	Upgrade Pearson -Pearsall	Tier 4	May-28	STEC
45125	Quintana Rd to South San Rebuild	Tier 4	May-28	CPS
2308	36th St to Merida - 138 kV Transmission Line Rebuild	Tier 4	May-28	CPS
81659	Lytle: Construct New 138 kV Terminal	Tier 4	Dec-28	AEP TCC/ETT
3021	Sulpher Springs - New 138kV Substation	Tier 4	May-29	CPS
4320	CPSE_Brooks to Chavaneaux MLSE	Tier 4	Jan-30	CPS
2304	Chavaneaux_Chavaneaux Tap Rebuild (Brooks to Chavaneaux ckt)	Tier 4	Jan-30	CPS
1549	Devine Switch breaker addition	Tier 4	Dec-30	STEC
45068	Merida to Harlandale Rebuild	Tier 4	May-31	CPS
57910	Uvalde to West Batesville: Rebuild 138 kV Line	Tier 4	Nov-31	AEP TCC
50647	CPSE_Merida to Westside MLSE	Tier 4	Jan-32	CPS

Appendix A1 – Transmission Projects Added

TPIT	Project Name	Tier	Project ISD	County(s)
76790	Upgrade Pearsall Auto	Tier 4	May-32	STEC
2306	Randolph - 138 kV Substation Equipment Upgrade	Tier 4	Jun-32	CPS
3334	Fort Sam to Kirby and Fort Sam to Tenth Street MLSE Upgrade	Tier 4	Dec-32	CPS
73364	CPSE_New_Omicron_Substation	Tier 4	Oct-25	CPS
88046	Rebuild Omicron to Rafter	Tier 2	Oct-25	CPS
55873	Upgrade Moore to Hondo Creek 138 kV line	Tier 2	Dec-25	STEC
70536	New 138 kV Verde Circle Substation	Tier 4	Dec-25	CPS

Appendix A2 – Transmission Backed Out

RTP Project ID	Project Name	County(s)
2025-SC07	Medina (5305) to 36th St (5427) 138-kV Line Upgrade	Bexar
2025-SC11	Lytle (5290) Area 138-kV Line Upgrades	Medina
2025-SC15	Omicron (5326) Area 138-kV Line Additions and Upgrades	Bexar
2025-SC16	Hamwolf (5187) to Bandera (5020) 138-kV Line Upgrade	Bexar
2025-SC17	Martinez (5295/5294) 345/138-kV Transformer Addition	Bexar
2025-W03	Carver (60412) to Poblano (8009) 69-kV to 138-kV Line Conversion	Edwards, Sutton, Uvalde

Appendix B – Generation Added

GINR	Project Name	Fuel	Project COD	Capacity (~MW)	County
21INR0334	Nightfall Solar	SOL	06/30/2026	180.9	Uvalde
23INR0479	Taormina Storage	BAT	05/26/2029	231.9	Bexar
24INR0533	Padua Grid BESS Unit 2	BAT	03/16/2026	150.9	Bexar
26INR0407	Rock Creek BESS	BAT	03/29/2028	251.1	Kendall
28INR0024	Padua Grid BESS Unit 3	BAT	05/15/2026	201.4	Bexar
22INR0350	Sandow Solar	SOL	06/01/2028	287.2	Milam
22INR0605	Camino Santiago Solar	SOL	02/18/2027	196.3	Milam
23INR0231	Hoke Solar	SOL	03/16/2027	95.3	Gonzales
23INR0232	Hoke Storage	BAT	03/16/2027	33.2	Gonzales
26INR0021	Crossroads Wind	WIN	06/30/2027	276.8	Victoria
26INR0116	Falcon Zapata Storage 138	BAT	03/11/2028	200.8	Zapata
26INR0530	Longview Wind	WIN	12/01/2028	352.6	Dawson
27INR0076	Bob Creek Wind	WIN	07/01/2028	240.0	Sterling
27INR0118	Grapefruit Solar	SOL	12/31/2028	291.4	Hidalgo
27INR0126	Corvus Solar	SOL	11/12/2028	201.5	Webb

Appendix B – Generation Added

GINR	Project Name	Fuel	Project COD	Capacity (~MW)	County
27INR0224	Leopard BESS	BAT	06/29/2028	264.2	Victoria
27INR0383	Windjammer Windpower	WIN	12/31/2028	292.6	Glasscock
27INR0389	Sugaree Solar	SOL	09/21/2028	251.4	Maverick
27INR0465	Althea Storage	BAT	09/21/2028	251.3	Maverick
28INR0037	Bullring Wind 1	WIN	06/30/2028	303.5	Starr
28INR0038	Bullring Wind 2	WIN	06/30/2028	303.8	Starr
28INR0039	Bullring Wind 3	WIN	06/30/2028	190.4	Starr
28INR0072	Mirando Valley Wind	WIN	07/06/2028	478.7	Jim Hogg
28INR0127	Half Moon Solar	SOL	07/01/2029	512.5	Starr
28INR0434	Viento Bravo Wind	WIN	07/06/2028	366.5	Jim Hogg
29INR0003	Aurelius Solar	SOL	06/30/2028	1124.2	Deaf Smith
29INR0004	Aurelius Wind	WIN	06/30/2028	621.6	Deaf Smith
29INR0025	Skyrider Wind	WIN	07/01/2028	370.0	Pecos
29INR0040	Gusty Windpower	WIN	12/31/2028	208.5	Glasscock
30INR0018	Big Canyon Wind	WIN	07/01/2030	1500.0	Pecos

Appendix C: List of G-1 Generators and X-1 Transformers Tested

Generator	Transformer
Leon Creek U1	Cagnon 345/138-kV Autotransformer 1
San Miguel U1	Cagnon 345/138-kV Autotransformer 2
Sunray Solar	Cagnon 345/138-kV Autotransformer 3
JK Spruce Unit 2	Cagnon 345/138-kV Autotransformer 4
Brauning Unit 1	Hill Country 345/138-kV Autotransformer 1
	Hill Country 345/138-kV Autotransformer 4
	Howard 345/138-kV
	Howard 765/345-kV
	Edwards 345/138-kV
	Lytle 345/138-kV
	Castroville 345/138-kV
	Helotes 345/138-kV

Appendix D: Option Description – Option 1 – CPS Energy Proposed Option

- Rebuild existing 138 kV Transmission Line from Grissom to VLSI (~3 miles) with minimum Normal and Emergency rating of 698 MVA.
- Rebuild existing 138 kV Transmission Line from Cagnon to VLSI (~9 miles) with minimum Normal and Emergency rating of 698 MVA.
- Construct a new 138 kV Transmission line from Grissom to Ingram (~1 mile) with minimum Normal and Emergency rating of 698 MVA.
- Rebuild the existing 138 kV Transmission Line from Verde Circle to VLSI (~0.26 miles) with minimum Normal and Emergency rating of 698 MVA.
- Rebuild the future 138 kV Transmission Line from Anderson to Rogers Rd to Westover Hills (~2 miles) with minimum Normal and Emergency rating of 698 MVA.
- Rebuild the existing 138 kV Transmission Line from Verde Circle to Westover Hills in existing easement (~2 miles) with minimum Normal and Emergency rating of 698 MVA.
- Rebuild existing 138 kV Transmission corridor from Anderson to Cagnon, which includes future 138kV Transmission Line(s) Cagnon to Kingsbridge and Kingsbridge to Wiseman. (~5 miles) with minimum Normal and Emergency rating of 698 MVA.
- Rebuild the existing 138 kV Transmission corridor from Anderson to Helotes, which includes future 138kV Transmission Line Helotes to Wiseman. (~8 miles) with minimum Normal and Emergency rating of 698 MVA.
- Construct a new 50 MVAr Capacitor Bank at Kingsbridge
- Construct a new 50 MVAr Capacitor Bank at Rogers Rd

Appendix D: Option Description – Option 1 – CPS Energy Proposed Option

- Rebuild the existing 138 kV Transmission Line from Castroville to Rafter Circuit 1 and construct a new 138 kV Transmission Line from Castroville to Rafter Circuit 2 (~6 miles) with minimum Normal and Emergency rating of 698 MVA.
- Construct a new Castroville 345/138-kV Switching Station with three 600 MVA autotransformers.
- Loop Howard to Miguel Circuit 1 into the new 345-kV Castroville station.
- Construct a new 50 MVAr Capacitor Bank at Whitetail

Appendix D: Option Description – Option 2 – STEC Proposed Option

- Add the second 138 kV circuit to the existing Pearson to Castroville corridor, which includes the following line segments: Pearson to Dunlay, Dunlay to the new STEC Alsatian station, new STEC Alsatian station to Bader, and Bader to Castroville, with a rating of 426/474 MVA Normal/Emergency rating.
- Construct a new STEC-owned Alsatian 345/138 kV station on the Bader to Pearson 138 kV line approximately 0.8 miles from the Bader station with two parallel 345/138 kV autotransformers with at least 675/675 MVA Normal/Emergency rating.
- Install a new 162 MVAr capacitor bank on the 138 kV side of the new STEC-owned Alsatian 345/138 kV station (Rodgers and Edwards POI).
- Construct a new CPS Energy-owned three-terminal 345 kV switching station on the Kendall to Cagnon 345 kV line approximately 5 miles from Cagnon station.
- Construct a new 345 kV transmission line from CPS Howard station to the new STEC-owned Alsatian 345/138 kV station with at least 1746/1746 MVA Normal/Emergency ratings. This line will have a single circuit installed with double circuit capable structures and will require a CCN.
- Construct a new 345 kV transmission line from a new CPS 345 kV switching station in the Cagnon to Kendall 345 kV transmission line to the new STEC-owned Alsatian 345/138 kV station with at least 1746/1746 MVA Normal/Emergency ratings. This line will have a single circuit installed with double circuit capable structures and will require a CCN.
- Install a new capacitor bank with at least 19.2 MVAr at STEC’s Natalia 69 kV station.
- Rebuild STEC’s Palo Duro to Dilley 138 kV line with a conductor rated at least 312/312 MVA Normal/Emergency rating.
- Install a new capacitor bank with at least 134 MVAr at AEP’s Lytle 138 kV station.
- Install a new capacitor bank with at least 5.6 MVAr at AEP’s Asherton 138 kV station.

Appendix D: Option Description – Option 2 – STEC Proposed Option

- Rebuild CPS Energy's Bandera to Hamilton Wolf 138 kV line with conductors rated at least 371/371 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Cachena to Elmcreek 345 kV line with conductors rated at least 1250/1250 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Howard to Spruce 345 kV line with conductors rated at least 1580/1580 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Howard to Braunig 345 kV with conductors rated at least 1457/1457 MVA Normal/Emergency rating.
- Rebuild CPS Energy's/AEP's Lytle to Lytle 138 kV line with conductors rated at least 354/354 MVA Normal/Emergency rating.
- Upgrade CPS Energy's Hill Country 345/138 kV autotransformers #3 and #4 to at least 740/740 MVA Normal/Emergency rating.

Appendix D: Option Description – Option 2 – STEC Proposed Option Additional Upgrades for Long Term Load Serving

- Install a third 345/138kV autotransformer in parallel at the new Alsatian 345/138 kV station with at least 675/675 MVA Normal/Emergency rating.
- Add the second 138 kV circuit along the existing Legend Falls to STEC Castroville corridor, which includes the following line segments: Legend Falls to San Geronimo new station, San Geronimo to Rio Medina, and Rio Medina to Castroville, with a rating of 426/474 MVA Normal/Emergency rating.
- Install an additional 223 MVAr of reactive support at the new Alsatian 345/138 kV Station.
- Install a new capacitor bank with at least 55.01 MVAr at Pearsall Switching Station 69 kV bus.
- Rebuild STEC's Hondo Creek to Devine 69 kV line with conductors rated at least 109/109 MVA Normal/Emergency rating.
- Install a new capacitor bank with at least 9.2 MVAr at CPS Energy's Somerset 138kV station.
- Rebuild AEP's Big Foot to Pleasanton 138 kV line with conductors rated at least 147/147 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Lytle to Somerset 138 kV line with conductors rated at least 339/339 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Omicron to Rafter 138 kV line with conductors rated at least 642/642 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Cagnon to Texas Research 138 kV with conductors rated at least 465/465 MVA Normal/Emergency rating.

Appendix D: Option Description – Option 3 – ERCOT Alternative Option

- Add the second 138 kV circuit to the existing Pearson to Castroville corridor, which includes the following line segments: Pearson to Dunlay, Dunlay to the new STEC Alsatian station, new STEC Alsatian station to Bader, and Bader to Castroville, with a rating of 426/474 MVA Normal/Emergency rating, approximately 12.6 miles;
- Construct a new STEC-owned Alsatian 345/138 kV station on the Bader to Pearson 138 kV line approximately 0.8 miles from the Bader station with four parallel 345/138 kV autotransformers with at least 545/625 MVA Normal/Emergency rating;
- Install a new 385 MVAr capacitor bank on the 138 kV side of the new STEC-owned Alsatian 345/138 kV station (Rodgers and Edwards POI);
- Construct a new “New Sub” 345-kV station on the Howard to San Miguel double-circuit 345-kV line approximately 10-miles from the Howard station;
- Convert the existing Lytle CSW 138-kV station into a 345/138-kV switching station with two parallel 345/138 kV autotransformers with at least 600/600 MVA Normal/Emergency rating;
- Install a new 110 MVAr capacitor bank on the 345-kV side of the new Lytle CSW 345/138 kV station;
- Convert the existing Castroville 138-kV station into a 345/138-kV switching station with two parallel 345/138 kV autotransformers with at least 600/600 MVA Normal/Emergency rating;
- Construct a new CPS Energy-owned three-terminal 345 kV switching station on the Kendall to Cagnon 345 kV line approximately 5 miles from Cagnon station;
- Construct a new 345 kV transmission line from New Sub 345-kV station to the Lytle 345/138-kV switching station to the new STEC-owned Alsatian 345/138 kV station to Castroville 345/138-kV switching station to New 345-kV station to Helotes 345/138-kV switching station with at least 1746/1746 MVA Normal/Emergency ratings. This line will have a single circuit installed with double circuit capable structures and will require a CCN, approximately 72.2 miles;

Appendix D: Option Description – Option 3 – ERCOT Alternative Option

- Install a new second 345-kV transmission line from Helotes 345/138-kV station to the Hill Country 345/138 kV station utilizing the double circuit capable structure of the existing Helotes to Hill country 345-kV single circuit with at least 1746/1746 MVA Normal/Emergency ratings, approximately 22 miles;
- Construct a new 138-kV transmission line from Grissom to Ingram with minimum Normal and Emergency rating of 698 MVA, approximately 1 mile;
- Construct a new 138-kV transmission line from Lytle CSW to Pearsons with minimum Normal and Emergency rating of 466 MVA, approximately 6 miles;
- Install a new 50 MVAr capacitor bank on the 138 kV side of the new Whitetail 138-kV station;
- Install a new 50 MVAr capacitor bank on the 138 kV side of the new Kingsbridge 138-kV station;
- Install a new 50 MVAr capacitor bank on the 138 kV side of the new Rodgers Road 138-kV station;
- Install a new 50 MVAr capacitor bank on the 138 kV side of the new Lamda Drive 138-kV station;
- Upgrade the Emergency Ratings of Cagnon, Howard and Hill Country 345/138-kV stations to 660 MVA;
- Rebuild CPS Energy's Cagnon to Anderson 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Anderson to Rodgers Road 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Cagnon to Kingsbridge 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Kingsbridge to Wiseman 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Wiseman to Helotes 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Cagnon to Potranco 138-kV line with conductors rated at least 565/565 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Grissom to VLSI 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating.

Appendix D: Option Description – Option 3 – ERCOT Alternative Option

- Rebuild CPS Energy's VLSI to Verde Circle 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Castroville to Rafter 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Palo Alto to Chavanea 138-kV line with conductors rated at least 326/326 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Pearsal to Medinabs 138-kV line with conductors rated at least 478/478 MVA Normal/Emergency rating.
- Rebuild CPS Energy's Hamwolf to Bandera 138-kV line with conductors rated at least 318 MVA Emergency rating.

Appendix D: Option Description – Option 7 – CPS Alternative Option (Orchid)

- Add the second 138 kV circuit to the existing Pearson to Castroville corridor, which includes the following line segments: Pearson to Dunlay, Dunlay to the new STEC Alsatian station, new STEC Alsatian station to Bader, and Bader to Castroville, with a rating of 426/474 MVA Normal/Emergency rating, approximately 12.6 miles;
- Construct a new STEC-owned Alsatian 345/138 kV station on the Bader to Pearson 138 kV line approximately 0.8 miles from the Bader station with four parallel 345/138 kV autotransformers with at least 545/625 MVA Normal/Emergency rating;
- Install a new 385 MVAr capacitor bank on the 138 kV side of the new STEC-owned Alsatian 345/138 kV station (Rodgers and Edwards POI);
- Construct a new “New Sub” 345-kV station on the Howard to San Miguel double-circuit 345-kV line approximately 10-miles from the Howard station;
- Convert the existing Lytle CSW 138-kV station into a 345/138-kV switching station with two parallel 345/138 kV autotransformers with at least 600/600 MVA Normal/Emergency rating;
- Install a new 110 MVAr capacitor bank on the 345-kV side of the new Lytle CSW 345/138 kV station;
- Convert the existing Castroville 138-kV station into a 345/138-kV switching station with two parallel 345/138 kV autotransformers with at least 600/600 MVA Normal/Emergency rating;
- Construct a new CPS Energy-owned three-terminal 345 kV switching station on the Kendall to Cagnon 345 kV line approximately 5 miles from Cagnon station;
- Construct a new 345 kV transmission line from New Sub 345-kV station to the Lytle 345/138-kV switching station to the new STEC-owned Alsatian 345/138 kV station to Castroville 345/138-kV switching station to New 345-kV station to Helotes 345/138-kV switching station with at least 1746/1746 MVA Normal/Emergency ratings. This line will have a single circuit installed with double circuit capable structures and will require a CCN, approximately 72.2 miles;

Appendix D: Option Description – Option 7 – CPS Alternative Option (Orchid)

- Install a new second 345-kV transmission line from Helotes 345/138-kV station to the Hill Country 345/138 kV station utilizing the double circuit capable structure of the existing Helotes to Hill country 345-kV single circuit with at least 1746/1746 MVA Normal/Emergency ratings, approximately 22 miles;
- Construct a new 138-kV transmission line from Grissom to Ingram with minimum Normal and Emergency rating of 698 MVA, approximately 1 mile;
- Construct a new 138-kV transmission line from Lytle CSW to Pearsons with minimum Normal and Emergency rating of 466 MVA, approximately 6 miles;
- Install a new 50 MVAr capacitor bank on the 138 kV side of the new Whitetail 138-kV station;
- Install a new 50 MVAr capacitor bank on the 138 kV side of the new Kingsbridge 138-kV station;
- Install a new 50 MVAr capacitor bank on the 138 kV side of the new Rodgers Road 138-kV station;
- Install a new 50 MVAr capacitor bank on the 138 kV side of the new Lamda Drive 138-kV station;
- Upgrade the Emergency Ratings of Cagnon, Howard and Hill Country 345/138-kV stations to 660 MVA;
- Rebuild CPS Energy's Cagnon to Anderson 138-kV line with conductors rated at least 956/956 MVA Normal/Emergency rating;
- Rebuild CPS Energy's Anderson to Rodgers Road 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating;
- Rebuild CPS Energy's Rodgers Rd to WOH 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating;
- Rebuild CPS Energy's Verde Circle to WOH 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating;
- Rebuild CPS Energy's VLSI to Verde Circle 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating;

Appendix D: Option Description – Option 7 – CPS Alternative Option (Orchid)

- Rebuild CPS Energy's Grissom to VLSI 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating;
- Rebuild Cagnon to VLSI 138-kV line with conductors rated at least 698 MVA Emergency rating;
- Rebuild Helotes to Anderson 138-kV line with conductors rated at least 956 MVA Emergency rating;
- Rebuild CPS Energy's Cagnon to Kingsbridge 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating;
- Rebuild CPS Energy's Kingsbridge to Wiseman 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating;
- Rebuild CPS Energy's Wiseman to Helotes 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating;
- Rebuild CPS Energy's Cagnon to Potranco 138-kV line with conductors rated at least 565/565 MVA Normal/Emergency rating;
- Rebuild CPS Energy's Palo Alto to Chavanea 138-kV line with conductors rated at least 326/326 MVA Normal/Emergency rating;
- Rebuild CPS Energy's Pearsal to Medinabs 138-kV line with conductors rated at least 478/478 MVA Normal/Emergency rating;
- Rebuild CPS Energy's Hamwolf to Bandera 138-kV line with conductors rated at least 318 MVA Emergency rating;
- Upgrade Leon Creek to Trumbo 138-kV line with conductors rated at least 380 MVA Emergency rating;
- Upgrade Kirby to St_Hedgwg 138-kV line with conductors rated at least 314/314 MVA Normal/Emergency rating;
- Upgrade Lytle to Lytle 138-kV line with conductors rated at least 354/354 MVA Normal/Emergency rating;
- Upgrade Lytle to Somerset 138-kV line with conductors rated at least 441/441 MVA Normal/Emergency rating;
- Install two blocks of new 18.2 MVAr capacitor bank at the Somerset 138 kV station;

Appendix D: Option Description – Option 7 – CPS Alternative Option (Orchid)

- Construct a new “Orchid” 138-kV station approximately 2-miles south of the Cagnon station;
- Loop the Cagnon to Counter point 138-kV line into the new 138-kV Orchid station;
- Loop Howard to Lamda Dr 138-kV line into the new 138-kV Orchid station;
- Construct new 138-kV double-circuit 138-kV lines from new Orchid station to Castroville Station;
- Swap the Cagnon terminals that connects to Kingsbridge and Pinn Rd;
- Upgrade Cagnon (#5053) to Cagnon (#5054) 138-kV line with conductors rated at least 765 MVA Emergency rating;
- Rebuild Spruce to Howard 345-kV line with conductors rated at least 1792/1792 MVA Normal/Emergency rating;
- Rebuild Howard to Von Rose 345-kV line with conductors rated at least 1792/1792 MVA Normal/Emergency rating;
- Rebuild Cagnon to Howard 345-kV double circuit lines conductors rated at least 2390/2390 MVA Normal/Emergency rating;
- Rebuild Helotes to Hill Country Circuit 1 345-kV line with conductors rated at 1746 MVA Emergency rating;
- Rebuild Cagnon to Omicron 138-kV line with conductors rated at least 956 MVA Emergency rating;
- Rebuild Rafter to TX research 138-kV line with conductors rated at least 698 MVA Emergency rating;
- Rebuild CPS Energy’s Castroville to Rafter 138-kV line with conductors rated at least 698/698 MVA Normal/Emergency rating;
- Rebuild Rafter to Whitetail 138-kV line with conductors rated at least 956 MVA Emergency rating;
- Rebuild Omicron to Whitetail 138-kV line with conductors rated at least 956 MVA Emergency rating;

Appendix D: Option Description – Option 7 – CPS Alternative Option (Orchid)

- Rebuild STEC's Palo Duro to Dilley 138 kV line with a conductor rated at least 312/312 MVA Normal/Emergency rating;
- Upgrade Elm Creek to Skyline Double Circuit 345-kV line with conductors rated at least 1250 MVA Emergency rating;
- Upgrade Marion to Hill County Double Circuit 345-kV line with conductors rated at least 1380 MVA Emergency rating;
- Upgrade Elm Creek to Shaula Circuit 345-kV line with conductors rated at least 1076/1076 MVA Normal/Emergency rating;
- Rebuild STEC's Hondo Creek to Devine 69 kV line with conductors rated at least 56/56 MVA Normal/Emergency rating;
- Upgrade Ferriss to Downie 69-kV line with conductors rated at least 60/60MVA Normal/Emergency rating;
- Upgrade Sabinal to Ferriss 69-kV line with conductors rated at least 60/60MVA Normal/Emergency rating; and
- Upgrade Danisub to Sabinal 69-kV line with conductors rated at least 60/60MVA Normal/Emergency rating.

Appendix D: Option Description – Option 7A – CPS Alternative Option (Orchid) + Brauning to Alsatian 345-kV line

- All the upgrades in Option 7
- Construct a new 345 kV transmission line from Brauning 345-kV station to the Alsatian 345/138-kV switching station with at least 1746/1746 MVA Normal/Emergency ratings. This line will have a single circuit installed with double circuit capable structures and will require a CCN, approximately 50 miles;

Appendix D: Option Description – Option 7B – CPS Alternative Option (Orchid) + Double circuit New Sub to Lytle 345-kV line

- All the upgrades in Option 7
- Construct a new second 345 kV transmission line from New Sub 345-kV station to the Lytle 345/138-kV switching station with at least 1746/1746 MVA Normal/Emergency ratings. This second line will be built on separate structures, approximately 21.4 miles;