CPS – Eastside 345/138-kV Switching Station Project ERCOT Independent Review Scope

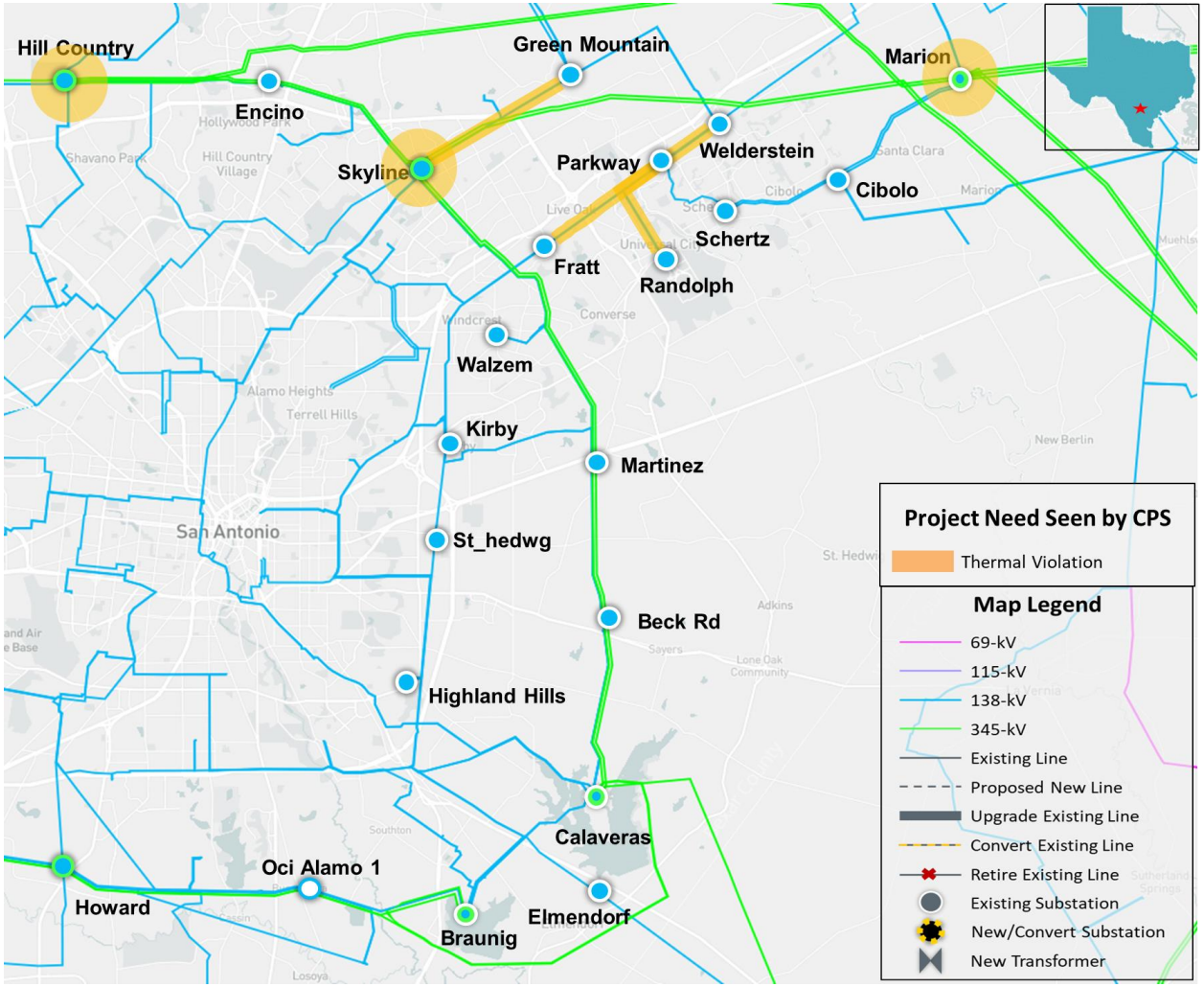
Abishek Penti

RPG Meeting
March 18, 2024

Introduction

- CPS Energy (CPS) submitted the Eastside 345/138-kV Switching Station Project for Regional Planning Group (RPG) review in February 2024
  - This Tier 1 project is estimated to cost $158 million and will require a Certificate of Convenience and Necessity (CCN)
  - Estimated in-service date is June 1, 2028
  - Addresses thermal overloads on 345/138-kV autotransformers and 138-kV transmission lines
- This project is currently under ERCOT Independent Review (EIR)

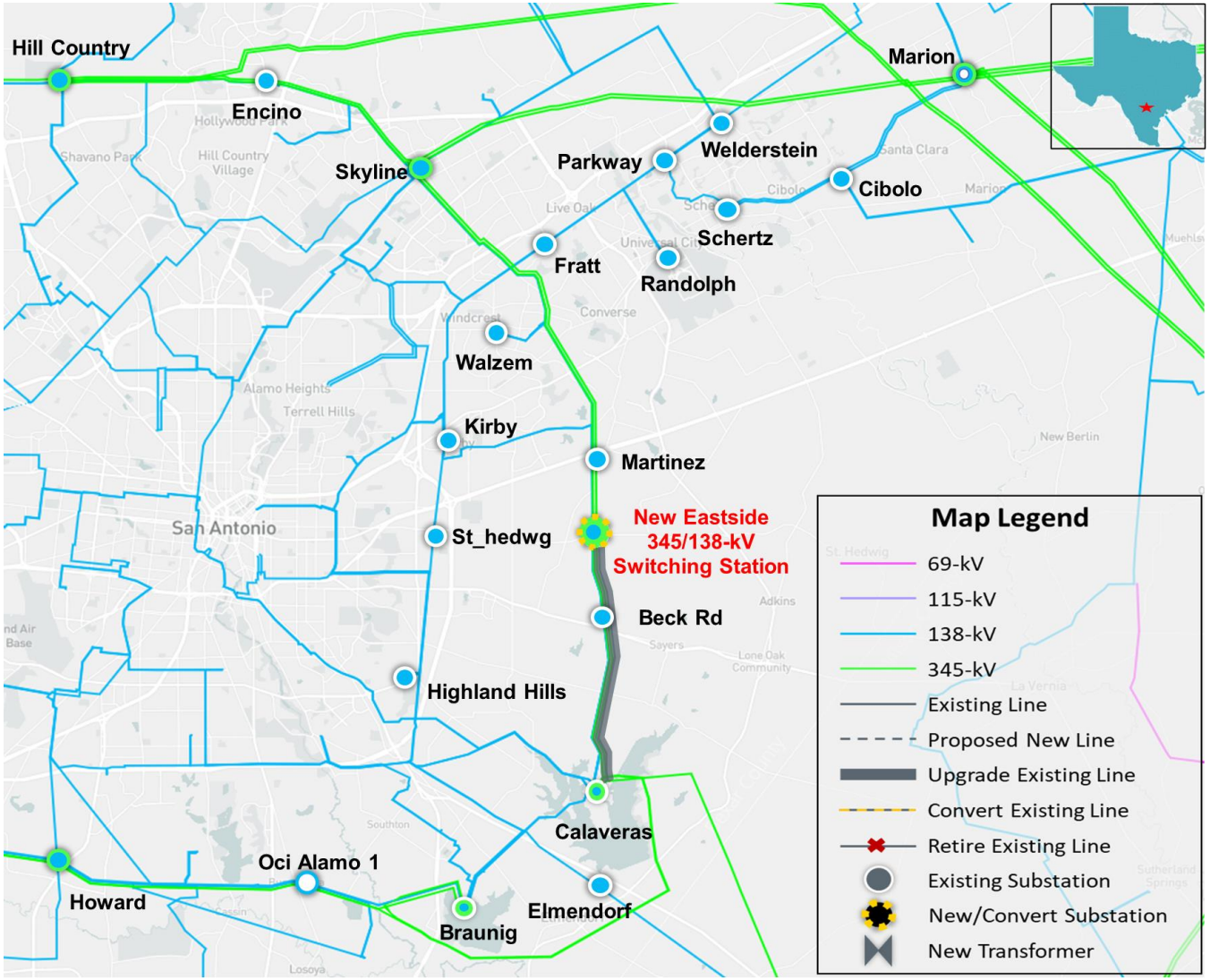
Study Area Map with Violations seen by CPS



Proposed Project by CPS

- Construct a new Eastside 345/138-kV switching station North of Beck Road substation
- Install two 345/138-kV autotransformer with nameplate rating of 600 MVA at the new Eastside 345/138-kV switching station
- Loop Spruce to Skyline 345-kV Circuit 1 and Circuit 2 into the new Eastside 345-kV station
- Loop Deely to Martinez, Deely to Walzem, Beck to Kirby and Sommers to Kirby 138-kV transmission lines into the new Eastside 138-kV station
- Rebuild the 345-kV Spruce – new Eastside switching station circuit 1 and circuit 2 in existing easement with a rating of 2347 MVA or greater, approximately 9.8-mile.

Proposed Project by CPS



Study Assumptions – Base Case

- Study Region
  - Southern and South Central Weather Zones, focusing on the transmission elements near the San Antonio Area in Bexar County.
  - 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) Weather Zones, posted in Market Information System (MIS), will be 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 Assumption - Transmission

- Based on the February 2024 Transmission Project and Information Tracking (TPIT) posted on MIS, Tier 1, 2, 3, and 4 projects with in-service dates before June 1, 2028 within the study area will be added to the study base case if not already modeled in the case
  - TPIT Link: https://www.ercot.com/gridinfo/planning
  - See Appendix A for a list of transmission projects added
- Transmission projects identified in the 2023 RTP as placeholder projects within the study area will be removed to develop the study base case
  - See Appendix B for a list of placeholder projects removed

Study Assumptions – Generation

- New generation that met Planning Guide Section 6.9(1) condition with Commercial Operation Date (COD) before the end of June 1, 2028 in the study area at the time of the study, but not already modeled in the RTP cases, will be added to the case based on the January 2024 Generator Interconnection Status (GIS) report posted in MIS in February 2024
  - GIS Link: https://www.ercot.com/gridinfo/resource
  - See Appendix C for a list of generation projects added
- Generation will be dispatched consistent with the 2024 RTP methodology
- All recent retired/indefinitely mothballed units will be reviewed and opened (turned off), if not already reflected in the 2023 RTP final case

Study Assumptions – Load & Reserve

- Load in study area
  - Loads in the SSC Weather Zone will be maintained to be consistent with the 2023 RTP
- Reserve
  - Load outside of study Weather Zone(s) will be adjusted to maintain the reserve consistent with the 2023 RTP

Contingencies & Criteria

- Contingencies for Study Region
  - NERC TPL-001-5.1 and ERCOT Planning Criteria
  - Link: http://www.ercot.com/mktrules/guides/planning/current)
    - P0 (System Intact)
    - P1, P2-1, P7 (N-1 conditions)
    - P2-2, P2-3, P4, and P5 (EHV only)
    - P3: G-1+N-1 (G-1: OW Sommers Unit 2, JK Spruce Unit 2, Guadalupe Gen CC1)
    - P6: X-1+N-1 (X-1: 345/138-kV transformers at Marion, San Miguel, Skyline)
- Criteria
  - Monitor all 60 kV and above busses, transmission lines, and transformers in the study region (excluding generator step-up transformers)
    - Thermal
      - Use Rate A for normal conditions
      - Use Rate B for emergency conditions
    - Voltage
      - Voltages exceeding their pre-contingency and post-contingency limits
      - Voltage deviations exceeding 8% on non-radial load buses

Study Procedure

- Need Analysis
  - The reliability analysis will be performed to identify the need to serve the projected San Antonio and surrounding area load using the study base case
- Project Evaluation
  - 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
- 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)
- 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 future RPG meetings
  - Final recommendation – Q2 2024

Thank you!

Stakeholder comments also welcomed through:

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

Appendix A – Transmission Projects

- List of transmission projects added to study base case

TPIT No	Project Name	Tier	Project ISD	TSP	County
23RPG028	Rio Medina Project	Tier 2	1/1/2027	STEC	Medina
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
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

Appendix A – Transmission Projects (cont.)

TPIT No	Project Name	Tier	Project ISD	TSP	County
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
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 Projects

- List of transmission projects removed from the study base case

TPIT No	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
2023-SC16	Hondo to Hondo Creek Switching Station 138-kV Line Upgrade	CPS, STEC	Medina
2023-SC20	Pearson - Natalia - Devine - Moore - Pearsall 69-kV Line Rebuild	STEC	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 Projects

- List of generation projects added to study base case

GINR	Project Name	Fuel	Project COD	Capacity (MW)	County
22INR0366	LIBRA BESS	OTH	03/30/2024	206.21	Guadalupe
22INR0422	Ferdinand Grid BESS	OTH	05/31/2026	202.65	Bexar
23INR0154	Ebony Energy Storage	OTH	04/30/2024	203.5	Comal
23INR0381	Soportar ESS	OTH	03/15/2025	102.11	Bexar
23INR0483	Rio Nogales CT1 Rotor Replacement	Gas	6/8/2023	3.10	Guadalupe
24INR0427	CPS AvR CT1 Rotor Replacement	GAS	02/15/2024	11.3	Bexar