CPS ENERGY REACTIVE POWER PLANNING PROJECT

PRESENTED BY:
David Milner, PE
Transmission Planning & Operations Engineering

July 29, 2025

AGENDA

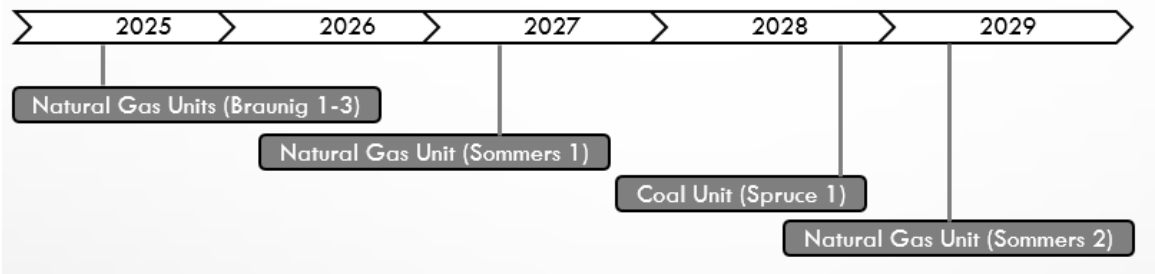
- Project Overview
- Project Need
- Recommended Project

PROJECT OVERVIEW

- Reliability driven Tier-1 Project
- Driven by generation retirements local to CPS Energy and increase in power imports
- Cost Estimate: $116.5M
- Need By: 2027 Summer Peak
  - Install 1x300MVAR STATCOM on the westside of San Antonio
- Need By: 2029 Summer Peak
  - Install 1x300MVAR STATCOM at new Eastside 138-kV switching station
  - Install 200MVAR of capacitor banks

PROJECT NEED

- **Renewable Growth Outside of CPS Energy**
  - Growth of renewables and storage projects outside of CPS Energy Service Territory is causing power to flow into and through CPS Energy increasing reactive power losses.
- **Local Power Generation Retirements**
  - Reduction in local source of reactive power.
  - Increase in reactive power losses due to higher MW imports into San Antonio.



Generating Unit	MW (Max.)	MVAr Lag pf/Lead pf
Sommers 1	420	+217/-124
Sommers 2	410	+190/-146
JK Spruce 1	560	+228/-70
Braunig 1	217	+95/-65
Braunig 2	230	+134/-71
Braunig 3	412	+147/-112
Total	2249	+1011/-588

Reactive power deficit observed due to generation retirement and increase in power imports. Study indicates voltage concerns in 2027 and 2029.

PROJECT NEED

2030 summer peak base case results

Contingency Category	Voltage Criteria (p.u.)	Lowest Bus Voltage (p.u.)
P0	0.95 - 1.05	0.92
P1	0.95 - 1.05	0.90
P2/P4	0.92/0.90 - 1.05	0.89
P3	0.92 - 1.05	Non Convergence
P6	0.90 - 1.05	Non Convergence
P7	0.92 - 1.05	Non Convergence
ERCOT 2	0.90 - 1.05	Non Convergence
ERCOT 3 Auto + P1 (Gen)	0.90 - 1.05	0.88
ERCOT 3 Auto +P7	0.90 - 1.05	Non Convergence

- Base case indicates multiple pre-contingency and post-contingency voltage violations and insufficient voltage stability margin. Voltage instability observed.
- Significant motor stalling and motor tripping causing delayed voltage recovery.

Reactive power projects needed to increase import capability and improve voltage recovery

RECOMMENDED PROJECT

- 2027 Summer Peak
  - Install 1x300MVAR STATCOM on the westside of San Antonio
- 2029 Summer Peak
  - Install 1x300MVAR STATCOM at the new Eastside 138-kV switching station
  - Install 200MVAR of capacitor banks at five locations

This project together with the capacitor bank additions identified in the RPG approved Omicron project resolves all voltage violations and improves voltage recovery performance and import capability.

THANK YOU