

# SU Panhandle Project Update

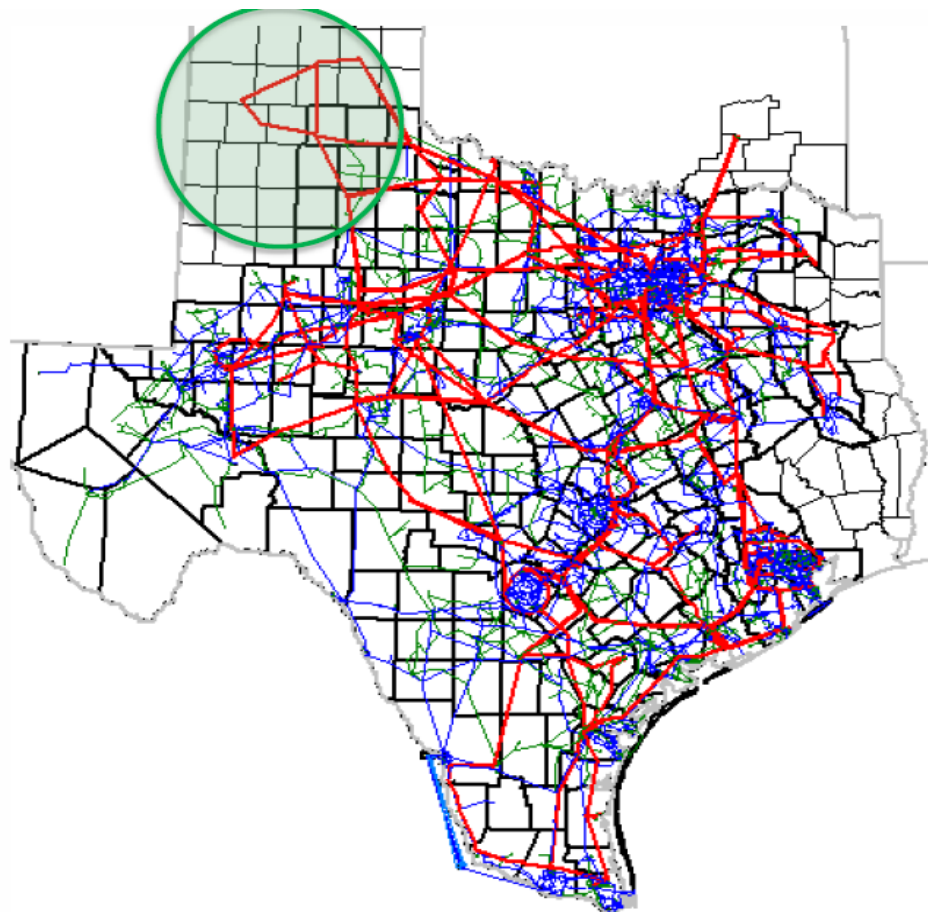


ERCOT Regional Planning Group Meeting  
August 16, 2016

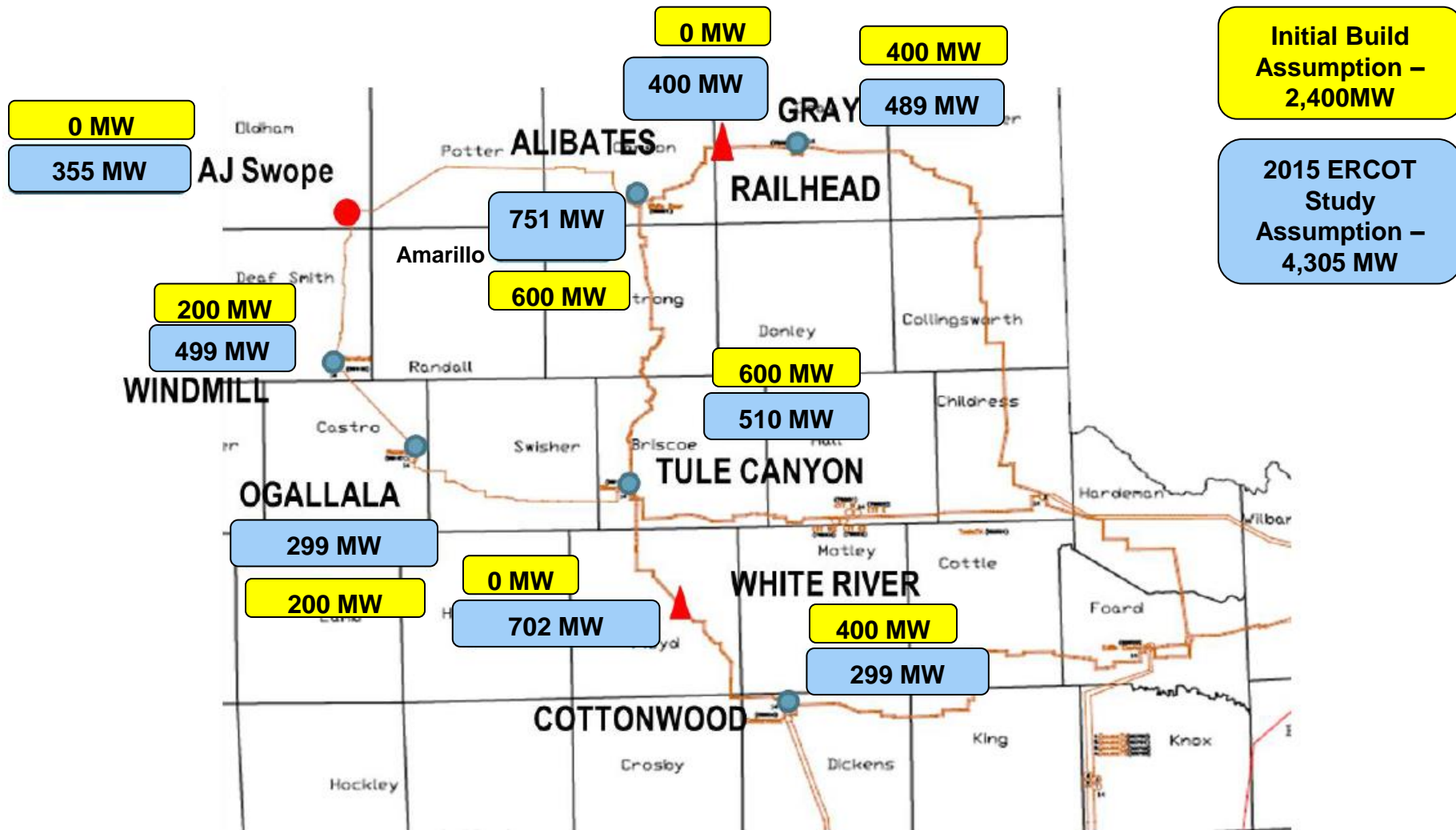
Brad Schwarz

# Background

- Over 5 GW of wind generation have met all interconnection requirements in ERCOT in the Panhandle Area
  - Notices to proceed with interconnection facilities
  - 2016 and 2017 in-service dates for last confirmed group of wind farms
- The Panhandle area does not have any thermal generation, and no load is served from ERCOT
- A “Panhandle export limit” has been established by ERCOT ~ 2.4 – 2.8 GW
  - System Strength constraints (Short Circuit Ratio)

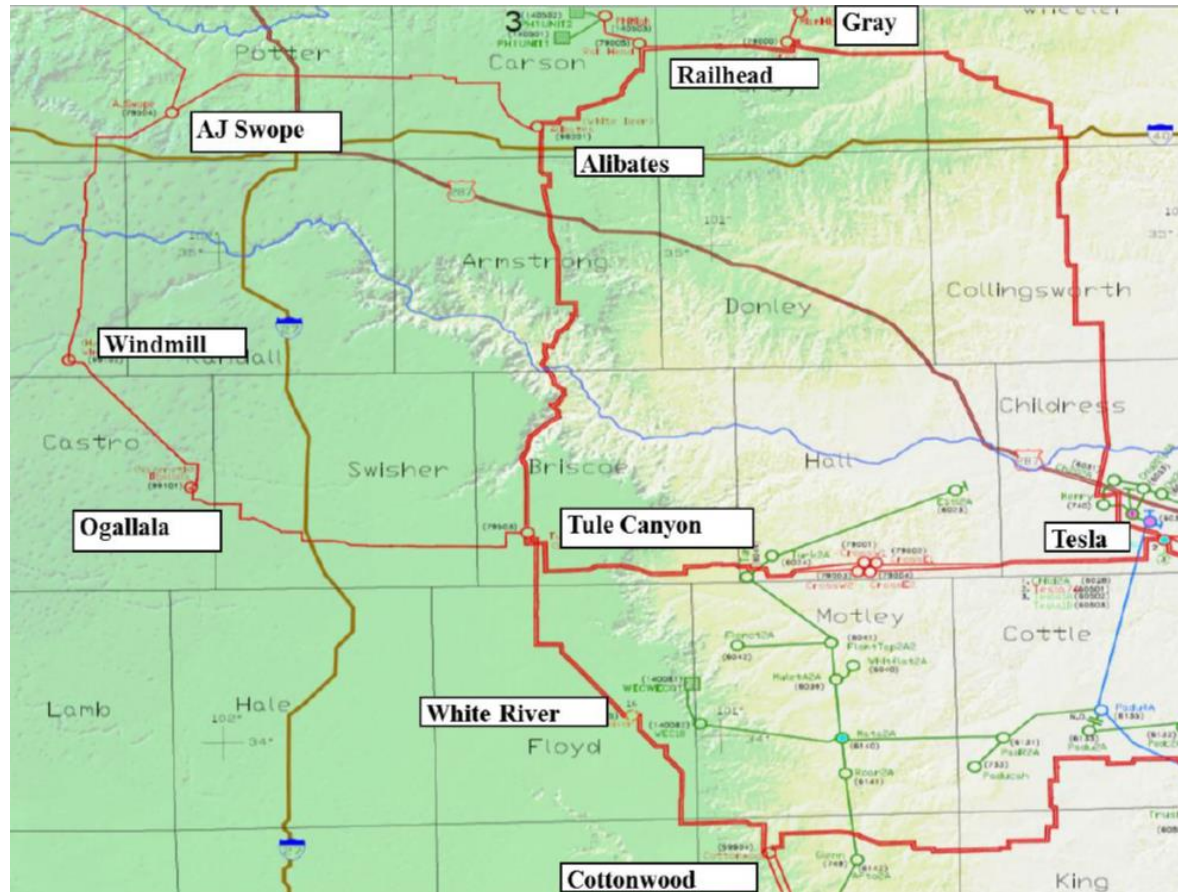


# Background – Initial Build and 2015 Study Assumptions



# Second Circuit Recommendation

- PUCT recommended moving forward with the second 345 kV circuit on the Alibates – AJ Swope – Windmill – Ogallala – Tule Canyon (AAWOT) line under the CREZ Order (PURA §39.904(g)) at the September 24, 2015 Open Meeting.
  - According to the ERCOT presentation given at the Board of Directors meeting, the second circuit would have passed the ERCOT economic planning criteria
  - CCN is currently pending at the PUCT and is on the agenda to be discussed at the August 18, 2016 open meeting.
  - On schedule to be completed by June of 2018



# Synchronous Condenser Recommendation

- On December 8, 2015, the ERCOT Board of Directors approved the addition of two 150 MVA, 1050 Amp synchronous condensers
  - Alibates and Tule Canyon were deemed the best location for the condensers
  - Approved under the ERCOT economic criteria for transmission additions
  - The tender for the synchronous condenser has been awarded and condensers are on schedule to be completed by June of 2018

Scenario	Transmission Options	Upgrade Cost Assumption (M\$)	Annual Production Cost Savings / Capital Cost	Pass Economic Criteria (3)?
0	N/A	0	N/A	N/A
1	PH Second Circuit	80	21% (1)	Yes
2	PH Second Circuit + SC(4) at Alibates and Tule Canyon	64.25 (SCs only)	34% (2)	Yes

(1) Compared to Scenario 0

(2) Compared to Scenario 1

(3) Per Protocol Section 3.11.2 (5) the projected annual production cost savings of a project must be greater than or equal to the first year annual revenue requirement of a project which is assumed to be 15% of the capital cost of the project

(4) SC = Synchronous Condenser

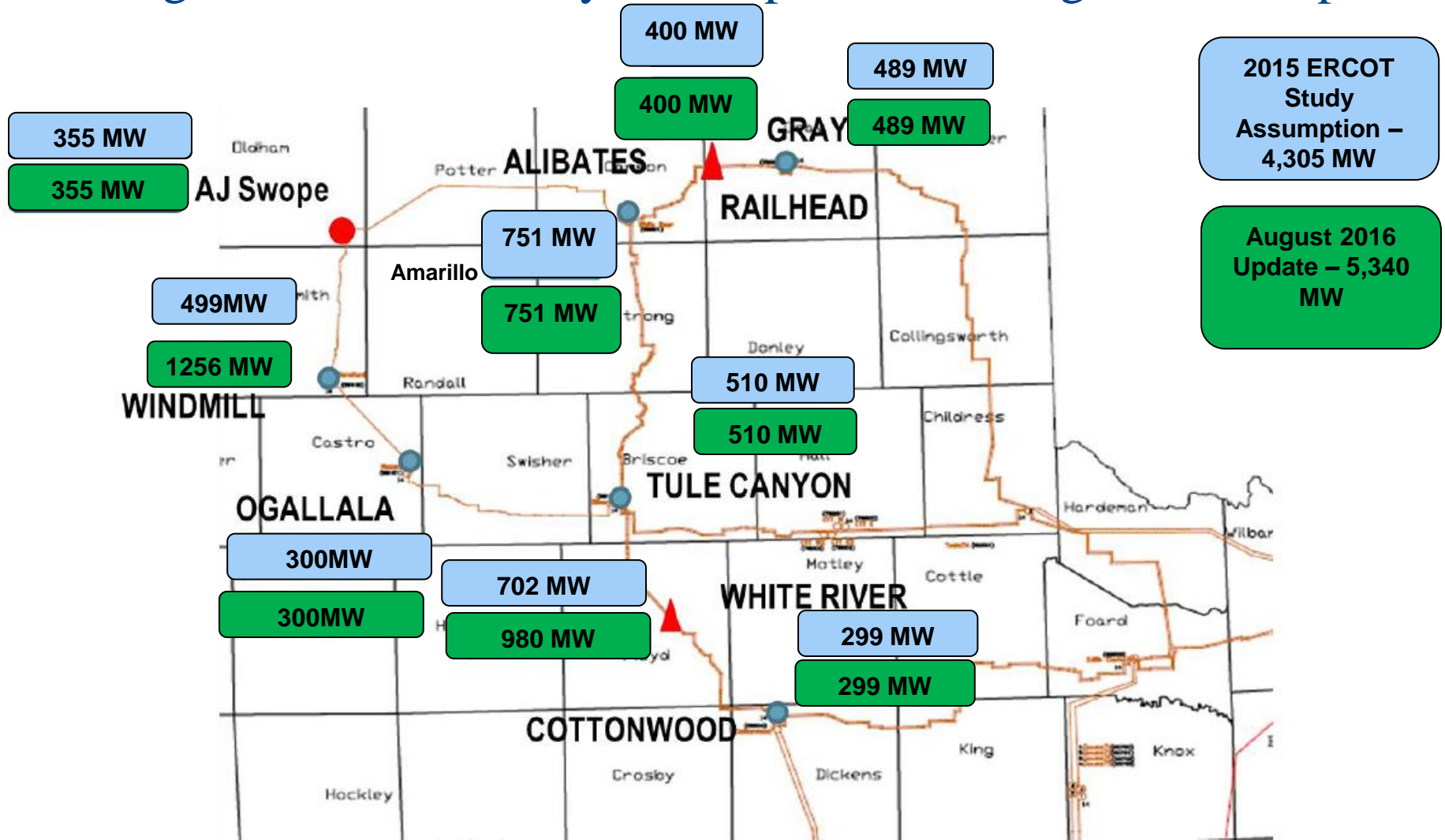
# Synchronous Condenser Procurement Process

- First synchronous condensers in the ERCOT footprint
- Sharyland had to develop a specification for the synchronous condenser to outline the required performance of the machines
- Met with multiple synchronous condenser vendors, including conversion vendors
- Visited three synchronous condenser installations
- Total of seven participants in the RFP process
- Narrowed down the list to three vendors and conducted vendor interviews

# Synchronous Condenser Visits



# Background – 2015 Study Assumptions and August 2016 Update



**WGRs meeting PG 6.9 requirements (August 2016) – 5,340 MW**



# Synchronous Condenser Selection

- Sharyland Utilities selected Siemens as the synchronous condenser vendor
  - Siemens offered one of their standard machines that has over 1000 units in operation
  - Rating of +175/-125 MVAr
    - Compared to the +150/-75 MVAr minimum requirement
  - Provides 1606 Amps of short circuit capability
    - Compared to the 1050 Amps minimum requirement
- Siemens has used this machine for many synchronous condenser units
  - SDGE has purchased many of these machines to address issues resulting from the SONGS retirement.
- Increase in machines' capabilities from 1050 Amps SC to 1606 Amps
- Two synchronous condensers provide an estimated improvement of 250 MW in the Panhandle Export Limit
- Two synchronous condensers will reduce panhandle system congestion and Sharyland has estimated \$14.5M in annual production cost savings based on a 250 MW Panhandle Export Limit increase

# Next Steps

- Panhandle Wind meeting Planning Guide 6.9 at the time the second circuit and synchronous condensers were approved
  - 4,305 MW
- Current Panhandle Wind meeting Planning Guide 6.9
  - 5,340 MW
- Continued refinement of the Sharyland Economic Planning Models
- Identify additional projects that could meet economic planning criteria per ERCOT Protocols Section 3.11.2
  - Additional synchronous condensers
  - Additional dynamic reactive devices
  - Other shunt reactive devices
  - New transmission paths out of the panhandle
- Test transmission options with and without the LP&L integration
- Plan is to present new findings at the September RPG meeting

# Questions?

