Pattern

SouthernCross

HVDC Transmission Line Project for Moving ERCOT Wind Into SERC

ERCOT RPG Meeting

August 13, 2010

Agenda

- Pattern Energy Group
- SERC and ERCOT Market Drivers
- Southern Cross Project Overview
- Project Development Status
- RPG Group and Transmission Planning Path Forward

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Pattern and Market Background

Pattern Energy Group

Pattern Energy	• Pattern is an independent, fully integrated energy company that develops, constructs, owns and operates clean energy and transmission assets in the United States, Canada and Latin America • Formed in June 2009 by Riverstone and a premier management team with a proven track record • Pattern team developed over 2,000 MW wind
Riverstone Holdings LLC	• Riverstone is an energy focused private equity firm with the largest renewable energy fund in the world • Riverstone is committing a significant amount of capital to support and expand Pattern's business • Pattern will be the sole wind energy platform for Riverstone in North America
Growth Projected Strong & Steady	• More than 520 MW operational or under construction within first nine months • 4 GW of wind projects in various development stages • 5 large-scale transmission projects in development

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Pattern Energy Group - Texas

Texas Assets	<u>Operational</u> • 283 MW Gulf Wind Project <u>Under Development</u> • 1000 MW Panhandle Wind • Gulf Wind Phase II • Majestic 2 (SPP wind)
Texas Offices	• Houston – Development & Operations HQ • Austin – Regional Office • Dallas – Regional Office
Past Texas Development	Pattern team also developed or co-developed: • Sweetwater Wind • South Trent Wind • Majestic I (SPP wind)

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Renewable Energy Market Drivers

- Texas has outstanding wind resources and leads the nation in installed capacity
- CREZ development that is underway will allow access to additional very high capacity wind resource areas
- Texas's available wind resources likely exceed the demand for renewable energy within the state
- Inadequate economic renewable resources within SERC to meet even a modest Renewable Energy Standard ("RES")
- Existing or planned transmission availability for delivery of wind from outside SERC into SERC is limited
- TVA has begun contracting for long-term wind energy purchases from the Midwest (Iowa, Kansas, North Dakota, etc.), and other SERC utilities are evaluating renewables options

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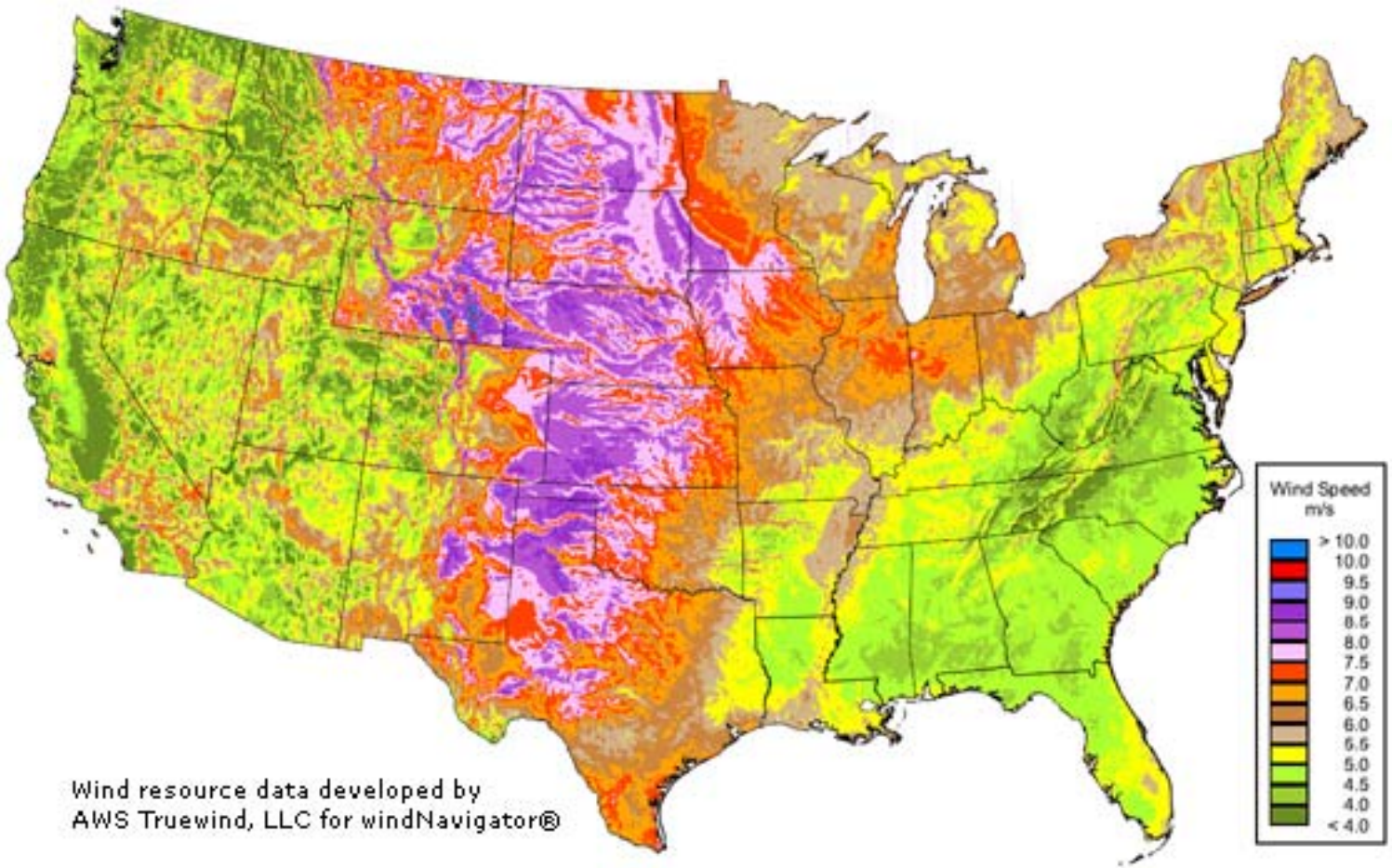
Wind Energy Resource Map: Limited Options for the Southeast



Source: National Renewable Energy Laboratory, 2010.

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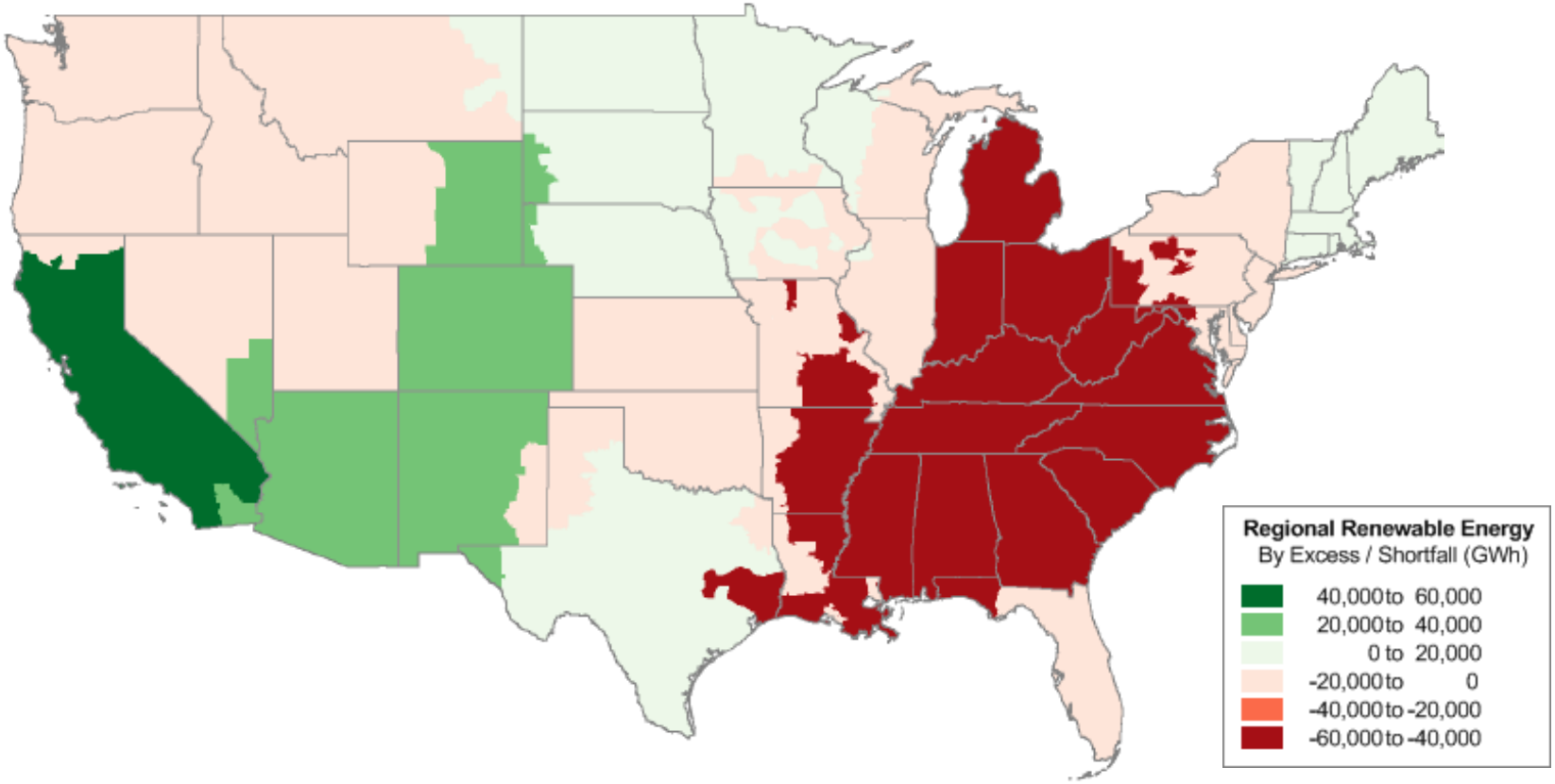
What if We Had a 15% RES? Excess/Shortfall of Available Renewable Energy by NERC Region



Source: Thomas Key, EPRI, "Role of Renewable Energy and Implication of RPS in a Sustainable Electric Generation Portfolio," presented July 16, 2007 at NARUC Electricity Committee, 2007 Annual Conference.

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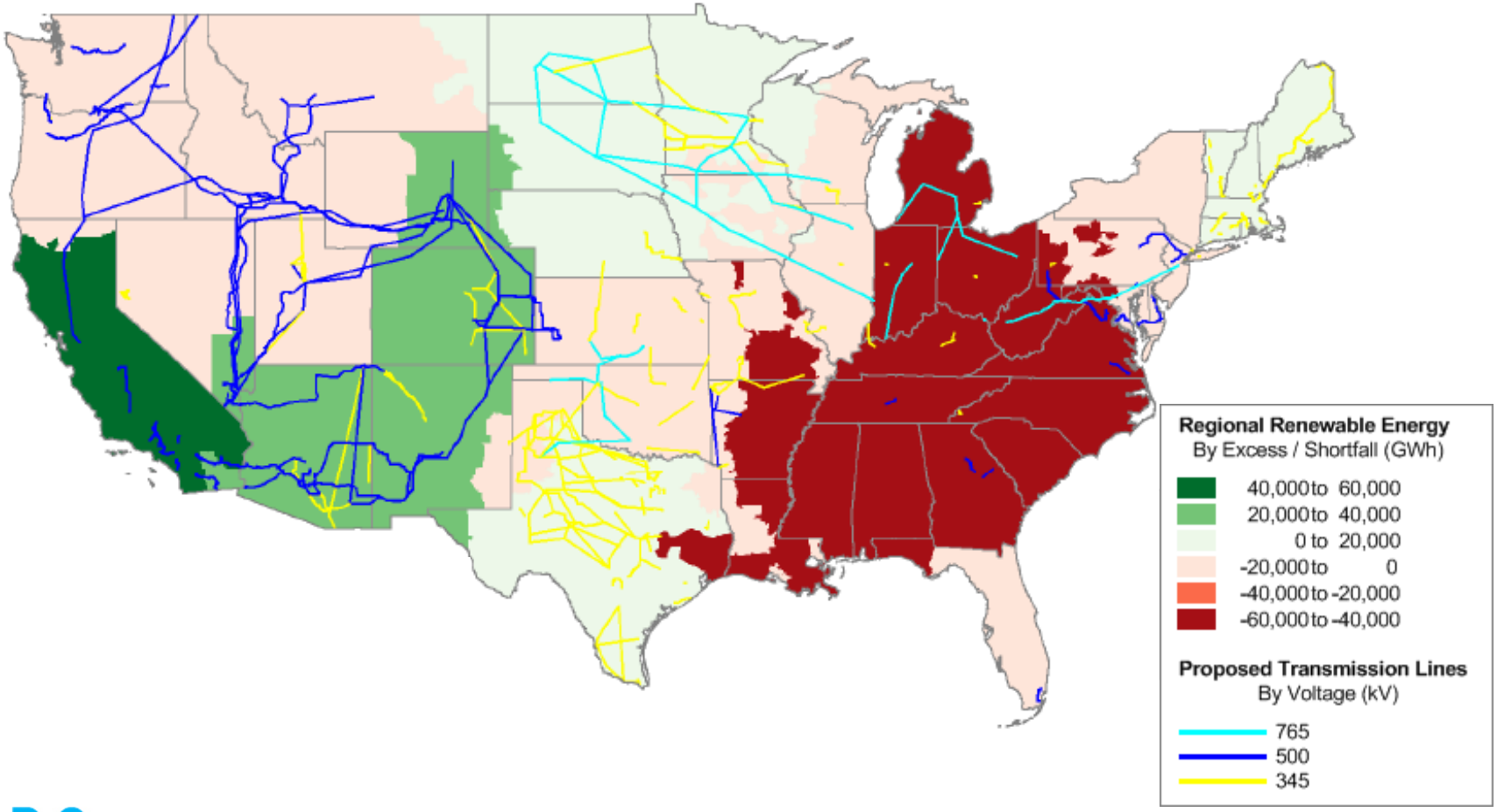
Limited Transmission to Assist SERC in Importing Renewable Energy



Source: Ventyx, The Velocity Suite, 2010.

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Southern Cross Project Overview

Why is Pattern Proposing the Project?

- Pattern teamed with Burns & McDonnell to study transmission routes eastward from the central United States:
  - Wind resources in Kansas, Oklahoma, Texas and all of the Southeast
  - Studied SPP, ERCOT, and SERC transmission systems
  - Cost and load flow analyses on many combinations of source points (Central Plains, ERCOT), sink points, size (1000 – 3000 MW), and technology (500 kV, 765 kV, HVDC, etc.)
- Based on those studies, Pattern concluded:
  - Utilizing Texas wind resources transmitted via the ERCOT transmission system provides significant cost advantages over other alternatives
  - Dedicated transmission lines from Central Plains are substantially longer, more expensive, and technically challenging
  - Capability for delivery via existing SPP networks is limited
  - There are very limited economically efficient wind resources in SERC

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Pattern's Proposed "Southern Cross" Project

- Western End: New 345 kV ERCOT Switchyard in Rusk County, Texas
- Eastern End: One or more Existing 500 kV Switchyards in Northeastern Mississippi
- Technology: Bi-directional conventional HVDC bipole
- Sizing:
  - Initially targeting 1500 MW with Anchor Tenants
  - Expandable up to 3000 MW (subject to reliability study)
- Target Markets: TVA, Southern Company, Entergy, Others
- Target Online Date: 2015

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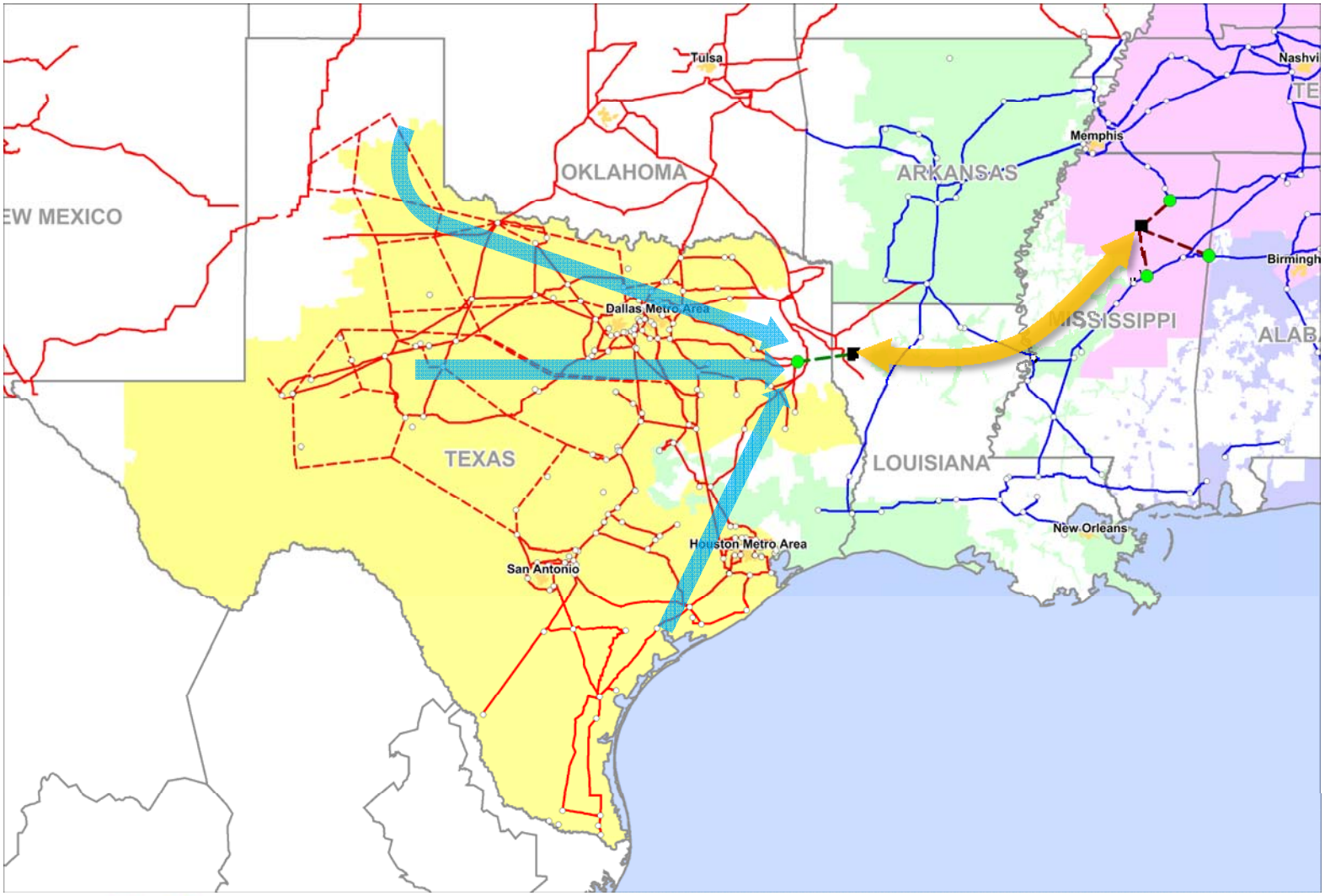
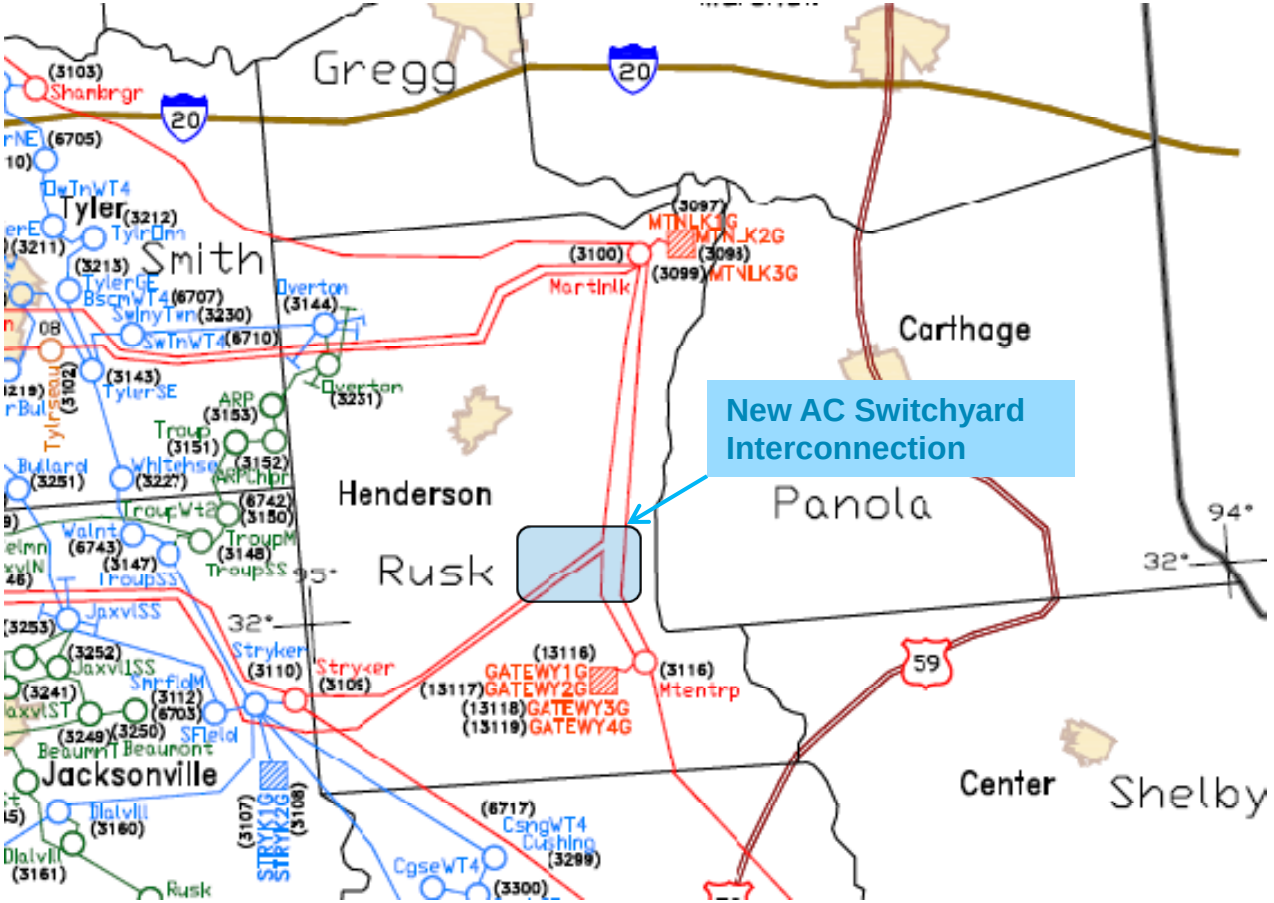
Preliminary Southern Cross Map



ERCOT transmission utilized

Proposed 500-kV DC Transmission Line

Proposed ERCOT Interconnection



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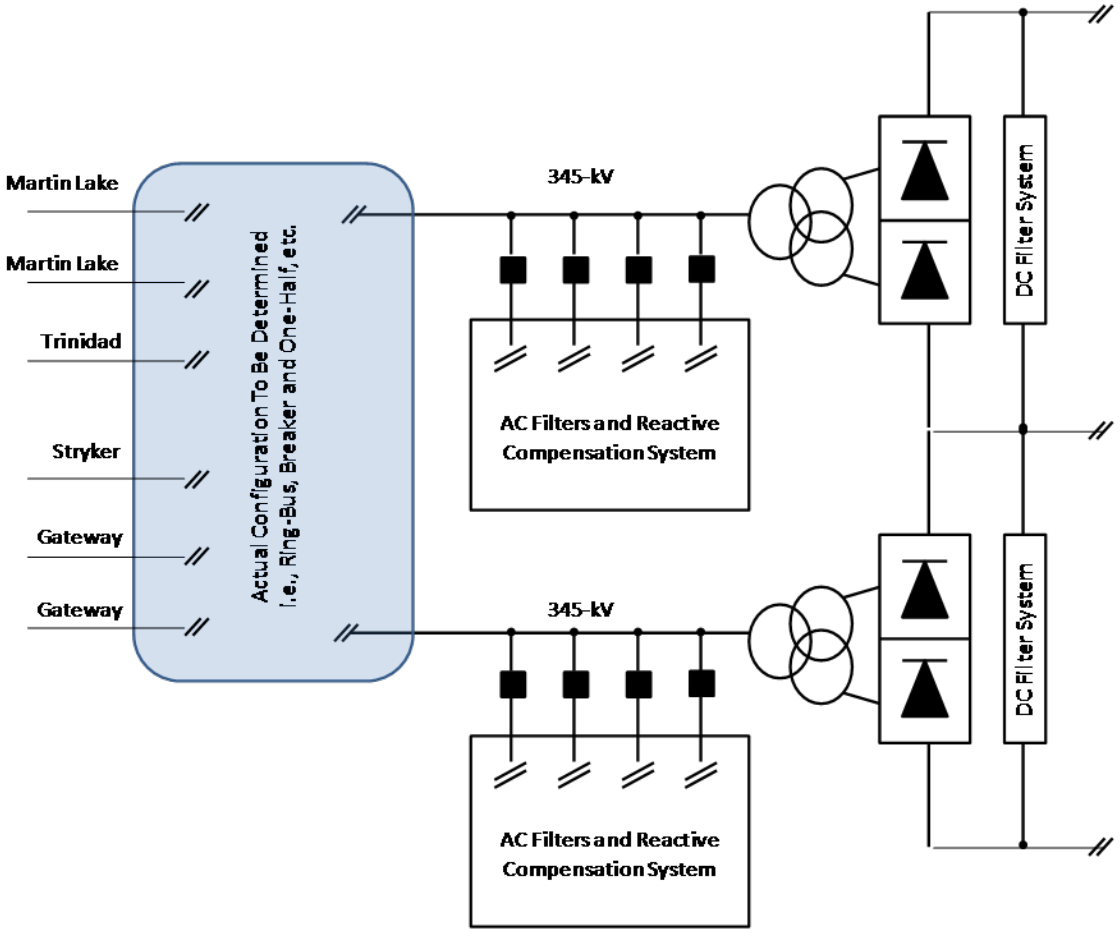
Connection to Three 345-kV Lines Near Martin Lake



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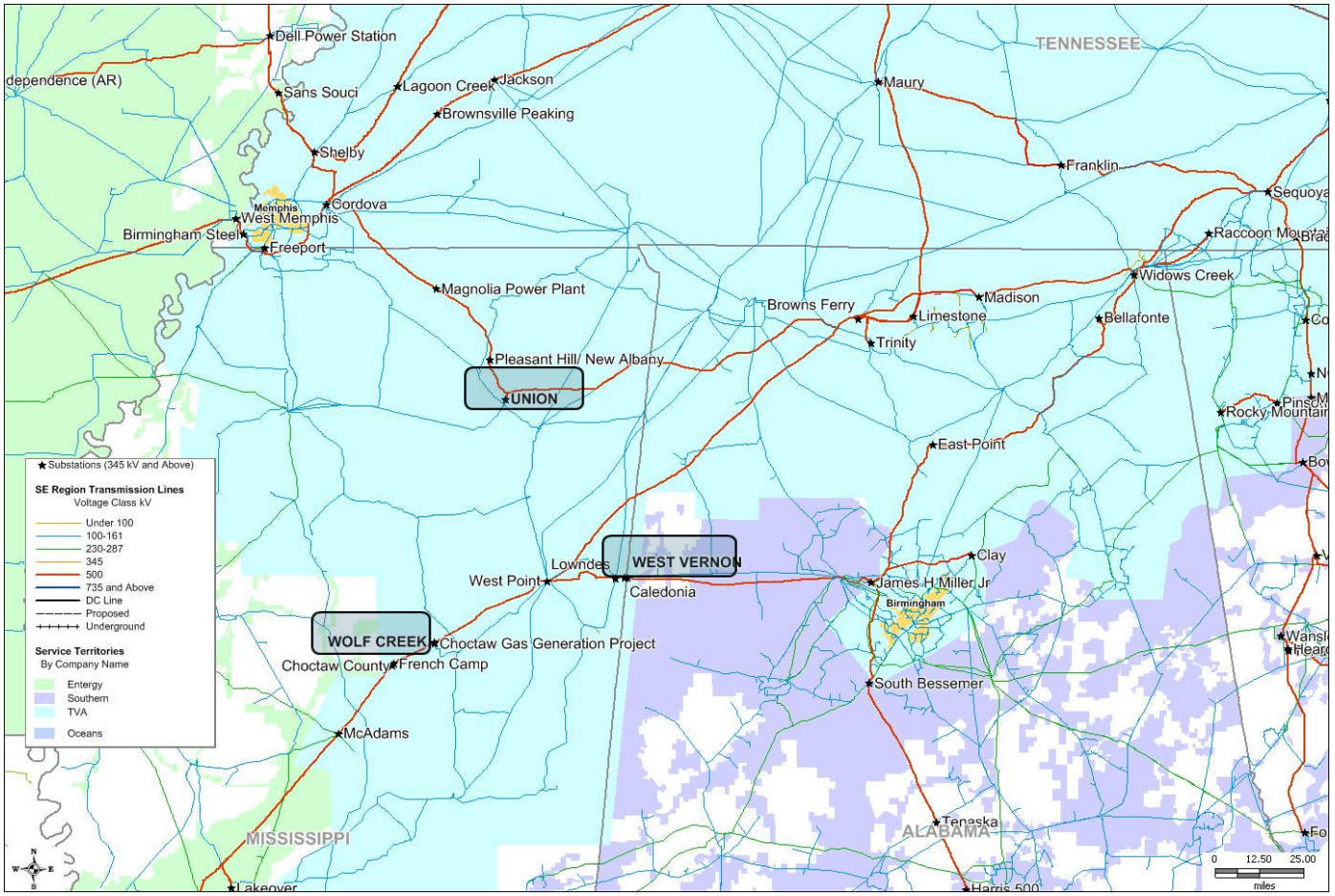
Proposed SERC Points of Interconnection



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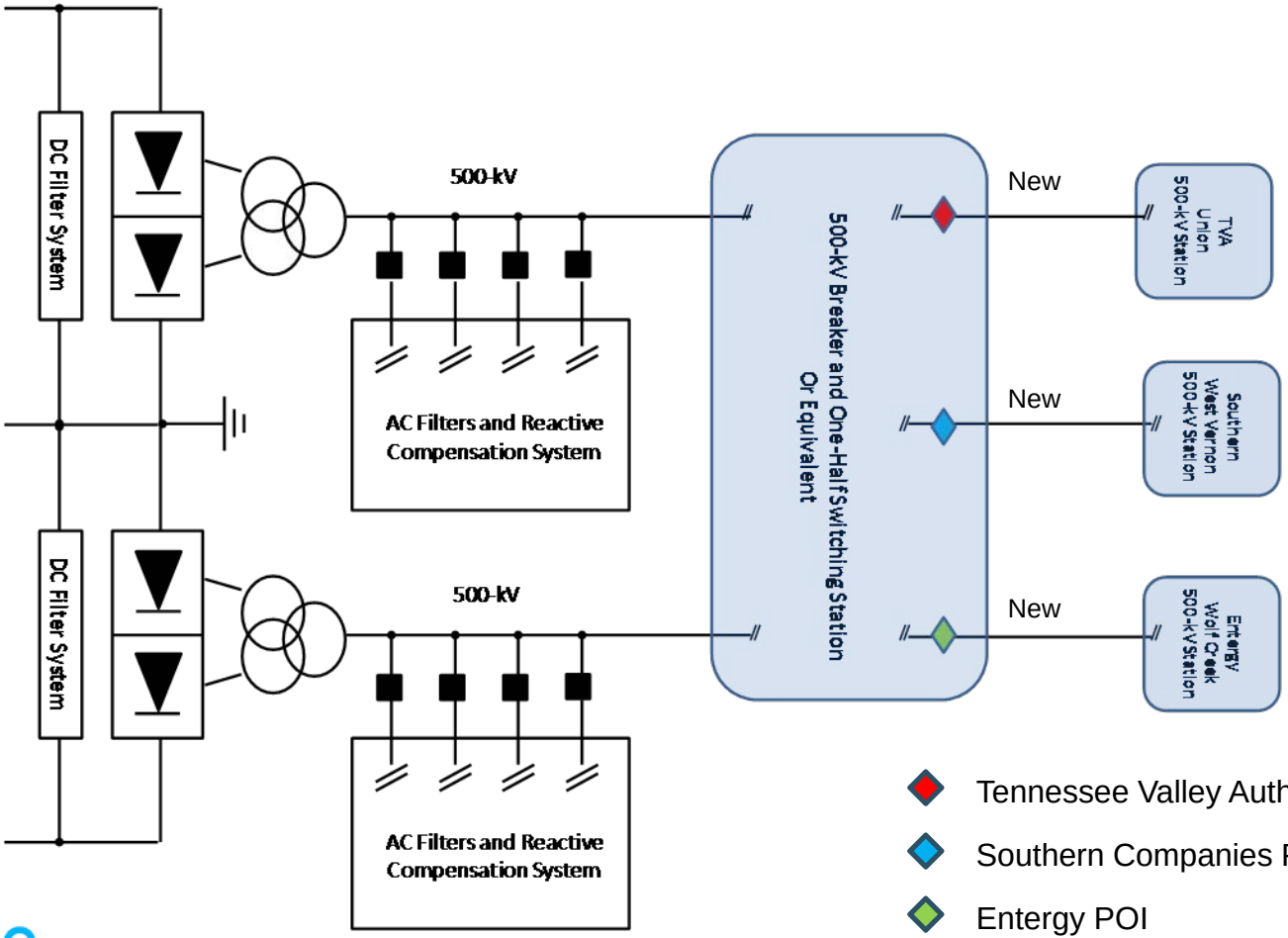

Actual TVA-Union, Southern-West Vernon, and Entergy-Wolf Creek 500-kV Substation Breaker Arrangements To Be Determined

- Tennessee Valley Authority POI
- Southern Companies POI
- Entergy POI

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Benefits to ERCOT from the Southern Cross Project

- Project allows Texas to expand its traditional role as an energy supplier, adding wind energy to its portfolio of major exports
- Economic development of incremental wind investment in Texas
- Cost of HVDC line will not be included in ERCOT transmission rates
- Reduction in transmission costs to ERCOT customers due to export charges paid by Southern Cross shippers and better utilization of CREZ transmission investment
- The bi-directional HVDC connection between the two markets allows for optimal economic dispatch of the two markets, resulting in net benefits for consumers
- Interconnection to SERC provides ERCOT with another “generation resource” that is primarily coal, nuclear and hydro based, thus increasing diversity and reliability of supply and ancillary services potential
- Project will obtain a FERC disclaimer of jurisdiction to ensure regulatory status quo is protected

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Benefits to SERC from the Southern Cross Project

- SERC can gain access to the highest capacity factor wind resources in the country
- Interconnection with ERCOT provides closest and most robust path for delivery of renewable energy
- Delivered cost of renewable power through Southern Cross will be materially lower than local renewable options, and will be competitive with conventional generation options
- Significant economic development in Louisiana and Mississippi from HVDC line and converter stations
- Cost of the Project will be funded through bilateral contracts and not broad region-wide ratepayers
- The bi-directional HVDC connection between the two markets allows for optimal economic dispatch of the two markets, resulting in net benefits for consumers
- Interconnection to ERCOT provides SERC with another “generation resource” that is primarily gas based, thus increasing diversity and reliability of supply

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Southern Cross Project Development Status

Development Status – General

- Conducted technical evaluation and selected configuration, technology (HVDC) and endpoints
- Selected optimal project sizing based on evaluation of available technologies and scale efficiencies
- Selected primary and alternate route corridors after comprehensive corridor study
- Completed project cost estimates, economic studies, proforma and indicative commercial proposals for delivery of renewable energy to SERC and confirmed economic viability
- Developed feasible target schedule based on permitting, land acquisition, and construction constraints
- Met with individual stakeholders throughout Texas and the Southeast
- Reviewed project with FERC and now preparing 210/211 and tariff filings
- Ongoing discussions with southeastern offtakers / shippers

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Development Status – Transmission Planning

- Completed steady state load-flow analyses through Burns & McDonnell
  - ERCOT and SERC
  - Bi-directional (load and generation)
  - Several source and sink points
  - Several model scenarios
- Solicited ERCOT and SERC utility feedback on project concept
- Initiated interconnection process with TVA, Southern, and Entergy (SPP ICT)
- Initiated feasibility study with TVA

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RPG Proposed Path Forward

- August 13 – Project Overview Presentation
- August 27 – Formal RPG Submittal by Pattern
  - Project overview
  - Prior load flow study results
  - Proposed economic study scope
- Solicit stakeholder feedback - 21 day comment period
- September – Commence nodal economic benefit study (Resero/LCG)
- Fall - Initiate necessary reliability studies

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Conclusions

- Texas wind resources are abundant and ERCOT is uniquely positioned to benefit from its proximity to SERC
- SERC has inadequate economic renewable resources to fully meet an even modest local or national RES
- Delivered cost of renewable power through Southern Cross will be materially lower than local renewable options, and will be competitive with conventional generation options
- We propose to use RPG as a forum for broad stakeholder input in the project and welcome all input as we work together to develop this project

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