



# Transmission Planning in the ERCOT Interconnection

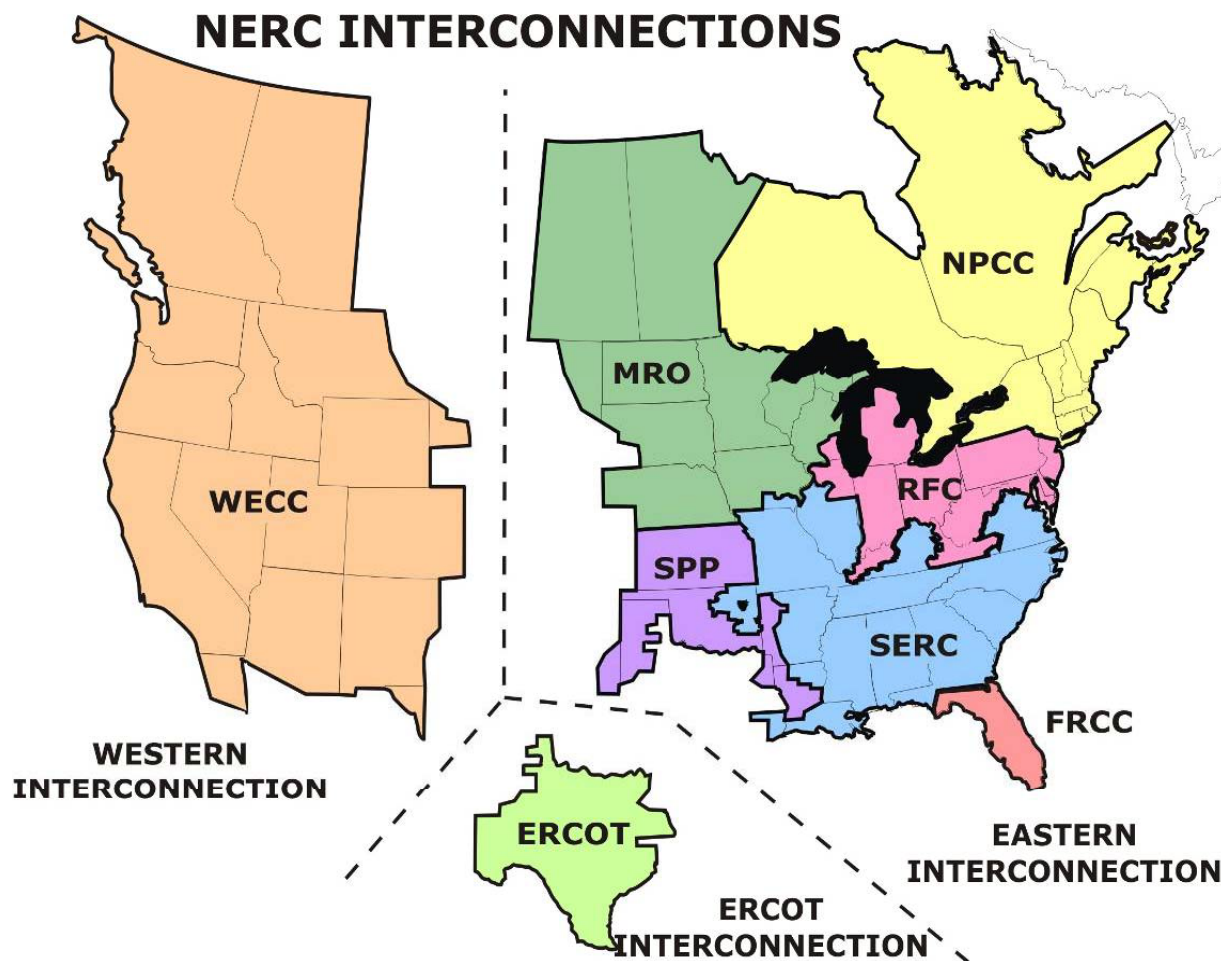
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NARUC Committee on Electricity

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# The ERCOT Interconnection



**The ERCOT Region is one of 3 NERC grid interconnections.**

**The ERCOT grid has:**

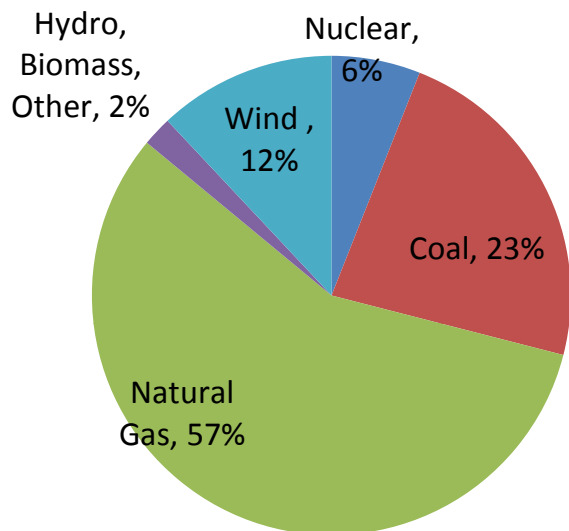
- 75% of Texas land
- 85% of Texas load
- 40,500 miles of transmission lines
- 550+ generation units
- 68,294 MW peak demand (set 8/3/2011)

**1,106 MW of Asynchronous Tie Capacity (820 MW with Eastern Interconnection)**

**2,877 MW of generation can switch between ERCOT and the Eastern interconnection**

# ERCOT Generation Resources

## Installed Capacity - 2010

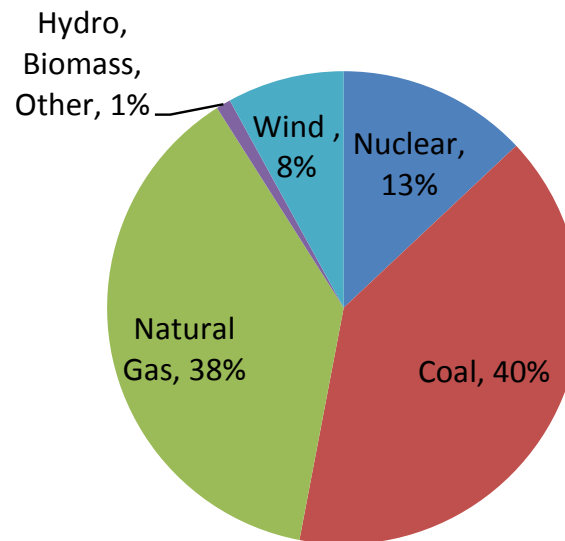


The ERCOT wholesale generation market is an “energy-only” market

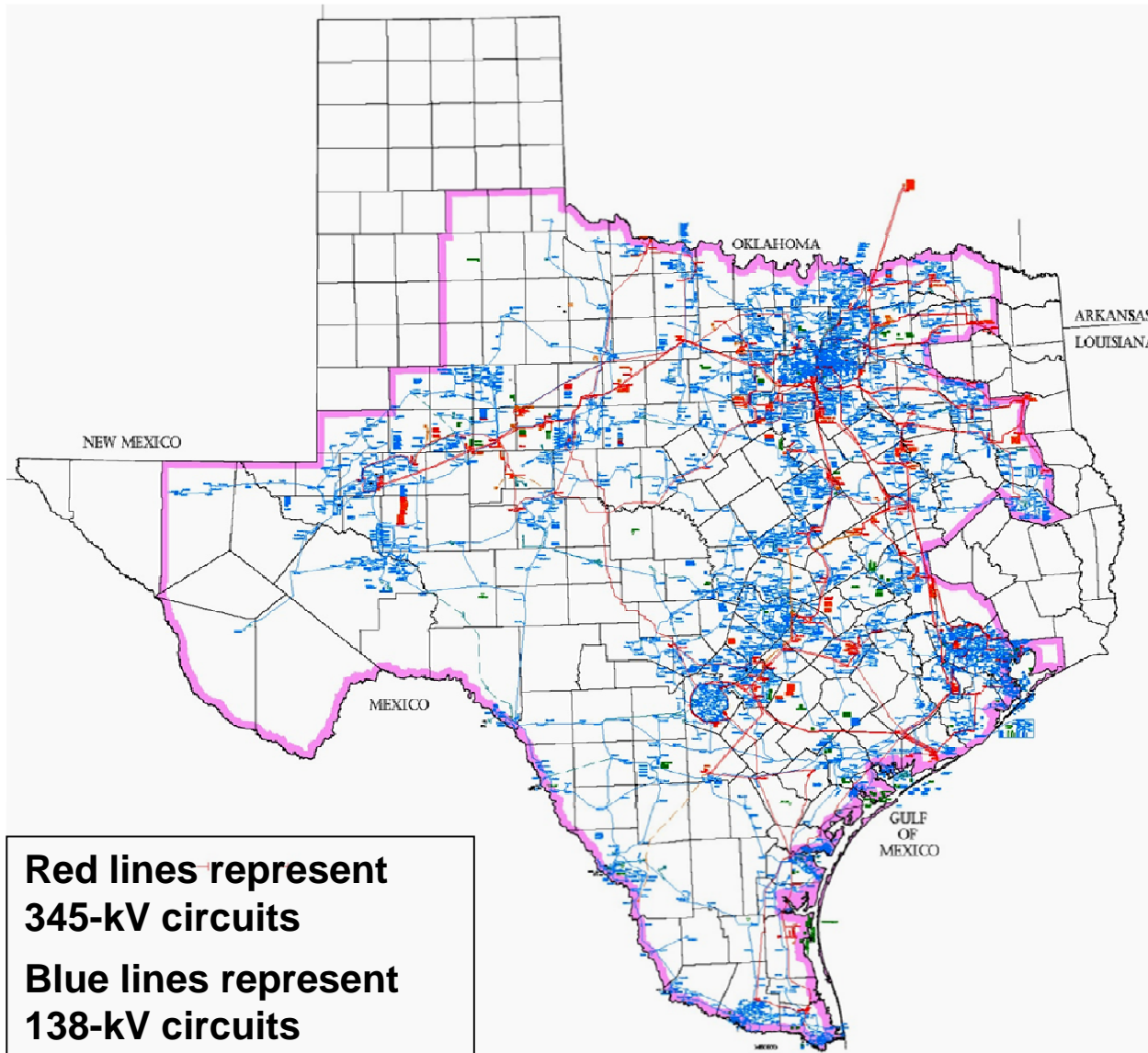
ERCOT administers day-ahead and real-time markets for energy and ancillary services

Generation is redispatched in the real-time market every 5 minutes by a centralized security-constrained economic dispatch (SCED) process

## Energy Produced - 2010



# The Current ERCOT Transmission System



**Transmission and distribution companies are regulated by the PUCT.**

**All transmission improvements (including generation interconnection projects) are paid for by loads based on their pro-rata share of peak loads**

# ERCOT Regional Planning Framework

## **Coordinated 5-Yr. Transmission Plan**

- Annual study of transmission needs of ERCOT system over next five years
- Projects identified by ERCOT in coordination with TOs with comment from stakeholders
- Projects included to meet all identified reliability requirements and congestion reduction projects that meet economic criteria
- Local and endorsed projects are included without review

## **Long-Term System Assessment**

- Study of long-term transmission needs of ERCOT system
- Includes scenario-based analysis of future resource investment by market participants and resulting transmission system needs
- Required by State law every other year and re-evaluated annually
- Provides directional vision to near-term decisions with goal of long-term efficiency in transmission plans

## **Transmission Owner Plans**

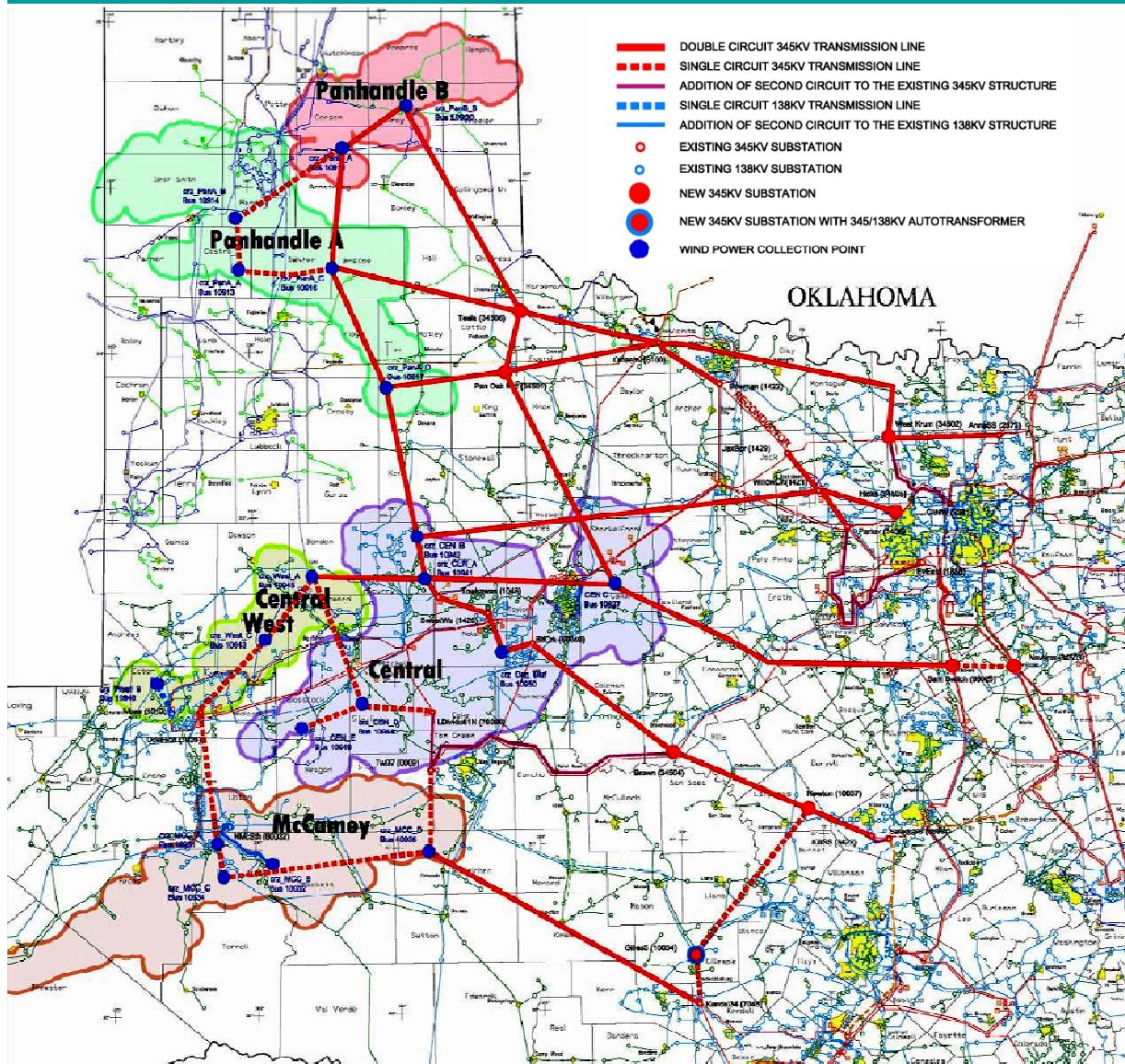
- Projects developed by each transmission owner
- Generally include projects that are “Local” (<\$15M) or “Neutral”
- Included in base powerflow cases

## **Individual Project Reviews**

- Additional projects or studies can be proposed by any Market Participant, Transmission Owner or ERCOT Staff
- Individual projects included in 5-Yr. Transmission Plan also reviewed at appropriate time



# New Transmission for Renewable Energy



Following statute, the Public Utility Commission of Texas designated 5 Competitive Renewable Energy Zones (CREZs) and ordered construction of 2,376 circuit miles of new 345-kV transmission (to be completed by 12/31/2013)

ERCOT currently has 9,592 MW of wind generation

Peak instantaneous wind generation: 7,400 MW (October 7, 2011)

Peak instantaneous wind generation as a percentage of load: 25.8% (7,227 MW; December 11, 2010)

The CREZ circuits will accommodate ~18,500 MW of wind generation in west Texas. There are 33,921 MW of wind and 1,494 MW of solar projects currently being evaluated for interconnection in ERCOT

# DOE Funding for Long-Term Studies

**ERCOT received a grant in April, 2010 from the Department of Energy to improve our Long-Term Study process.**

- **Three primary study goals:**
  - To expand ERCOT long-term planning capabilities by developing new tools and processes that can be used in this and future studies
  - To enhance stakeholder involvement and input into the ERCOT long-range planning process in a manner that is consensus-seeking, sustainable and consistent with the established ERCOT stakeholder framework.
  - To review the role of long-range planning within the established ERCOT planning process.

# Project Timeline

Milestone	Kick-off Meetings	Draft Interim Report due to DOE	Interim Report due to DOE	LTSA for State Legislature	Draft Final Report	Final Report due to DOE
Timeline	April, 2010	June, 2011	August, 2011	December, 2012	April, 2013	June, 2013
Work Product	Initial Development Business as Usual Case (BAU) & Modeling		Alternative Scenario Development & Modeling		Final work product	
Stakeholder Process	Monthly introductory meetings		Quarterly LTS meetings with interim workgroup meetings			

## Activities To Date:

- Developed base tools to evaluate resource expansion and transmission needs
- Stakeholders have defined an initial future scenario (Business as Usual) and sensitivities (fuel price and PTC)
- Developed potential resource expansions for BAU and sensitivities
- Fostered participation in LTS by existing ERCOT stakeholder committees
- Work to-date is summarized in an Interim Project Report (<http://www.ercot.com/committees/other/lts/>)



# New Tools and Processes

ERCOT is using DOE funding to acquire or develop the following new planning capabilities:

- New processes to expand the long-term planning horizon from 10 years to 20 years (in progress)
- Transmission grid simplification tool to create different levels of model granularity (implemented)
- Software and associated processes to evaluate the market viability of resources within future scenario analysis (implemented)
- Wind and solar generation profiles tied to actual historical weather conditions (RFPs being developed)
- Analysis tools to evaluate the reliability needs of system operations independent of existing A/S products as part of resource scenario development (RFP being developed)

# Summary

ERCOT has an established interconnection-wide transmission planning process. One component of this process is a state-required biennial long-range study of interconnection-wide system needs.

ERCOT is using the DOE funding to enhance its toolset for conducting long-range transmission planning, and to increase stakeholder involvement in the long-range planning process.

These enhanced tools and processes will be vetted in the current study, and then will continue to be used in future planning studies.

**Questions?**

