



Grid Operations and Planning Report

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Board of Directors Meeting

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- **December 2011 Operations**

- The peak demand of 50,088 MW on December 7 was greater than the mid-term forecast peak of 49,424 MW and more than the December 2010 actual peak demand of 44,716 MW.
- Day-ahead load forecast error for December was 2.99%
- Advisory for Physical Responsive Capability (PRC) below 3000 MW was issued for 7 days
- One Watch for PRC under 2500 MW issued
- No Energy Emergency Alert (EEA) events

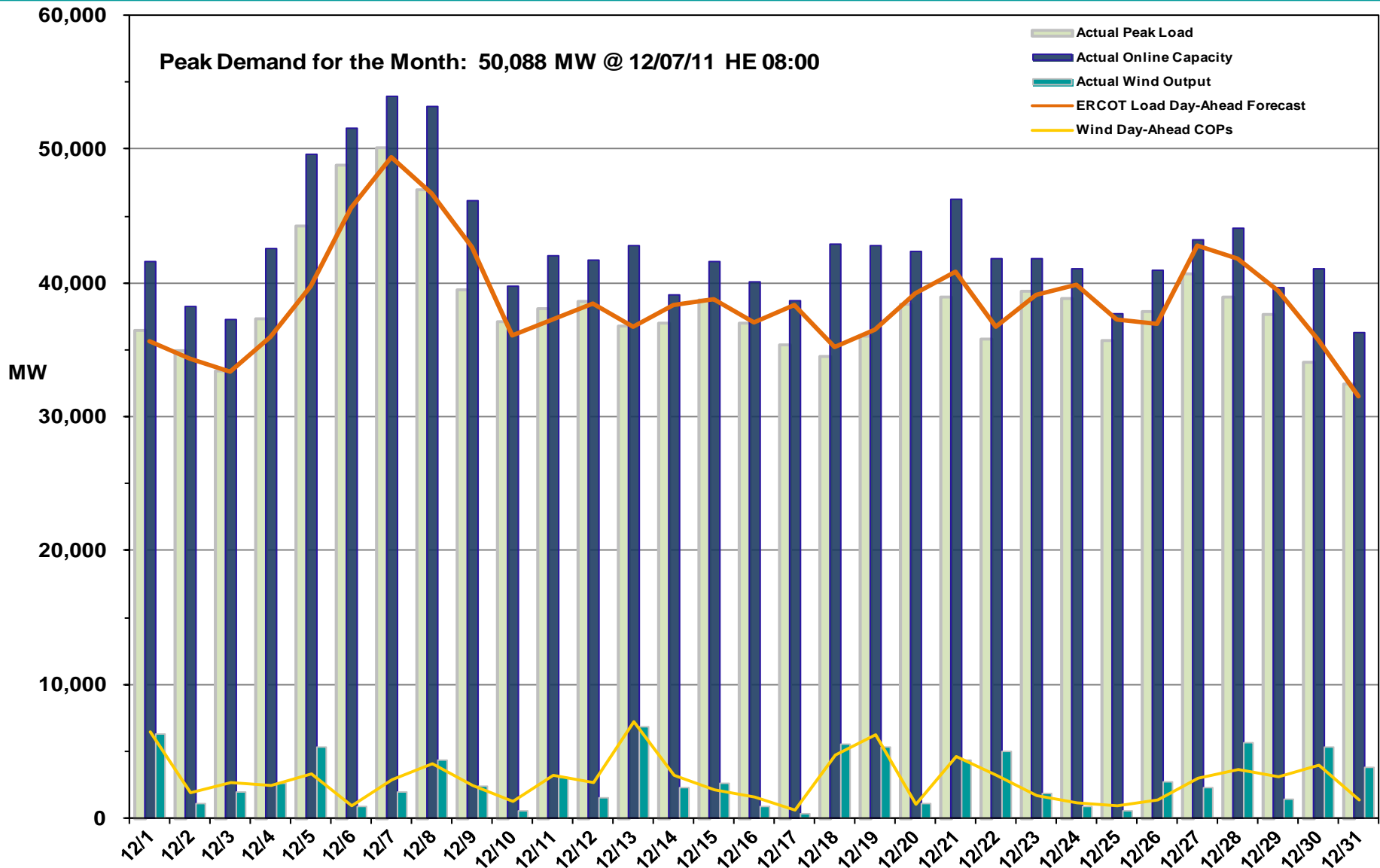
- **Planning Activities**

- 133 active generation interconnect requests totaling over 38,000 MW as of December 31, 2011. Three fewer requests than November 30.
- 9,604 MW wind capacity on line December 31, 2011. No change from November 30, 2011

- **Gas Curtailment Risk Study – Preliminary Findings**

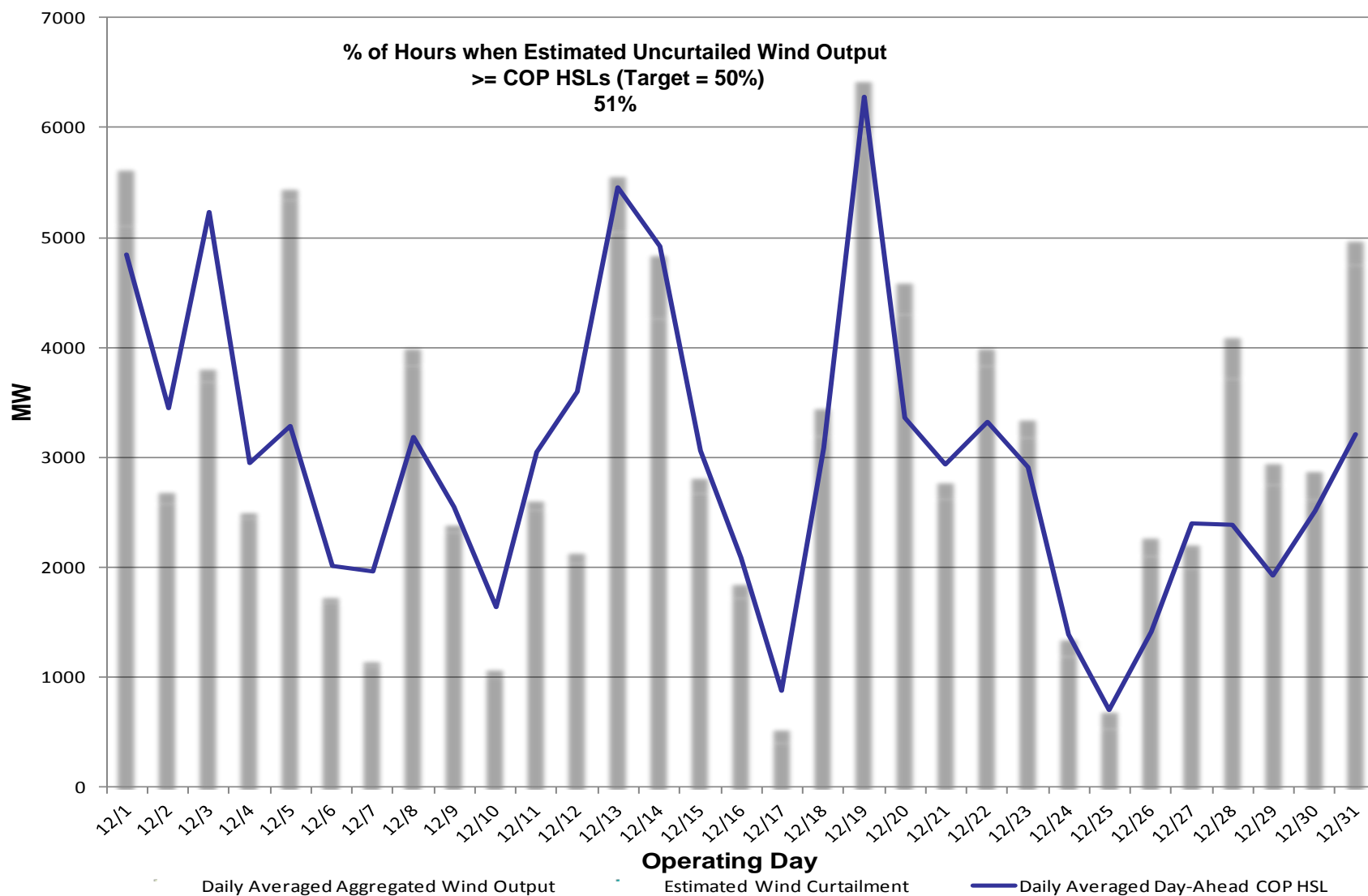
- Highest risk is due to freezing weather
- While risk may increase in the future, it appears to be currently manageable near term from an ERCOT system reliability standpoint

December 2011 Daily Peak Demand: Hourly Average Actual vs. Forecast, Wind Day-Ahead COPs & On-line Capacity at Peak



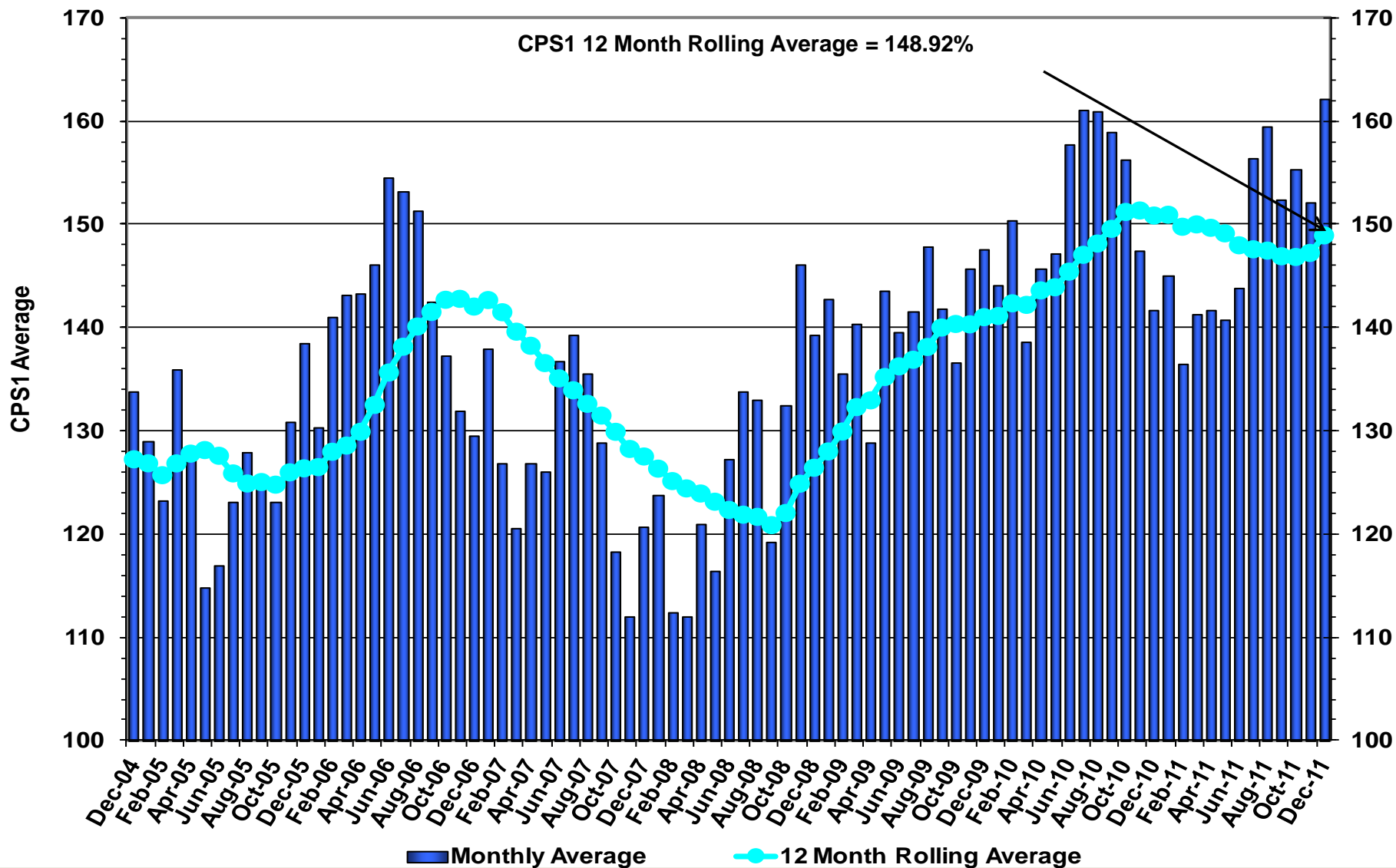
Note: All data are hourly averages during the peak load hour obtained from COPs, and EMMS.

December 2011: Actual Wind Output plus Curtailments vs. Wind Day-Ahead COPs for All Hours

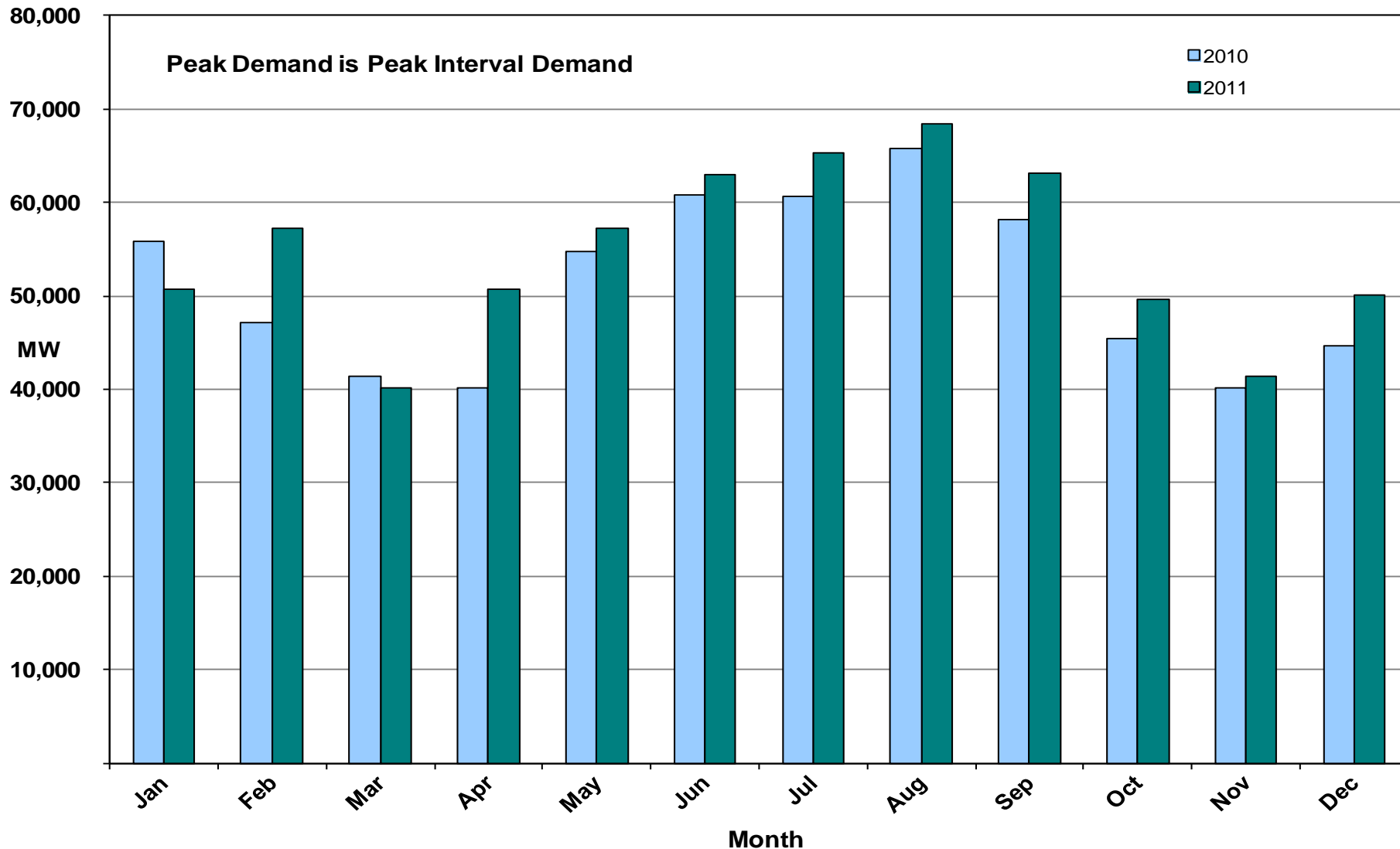


Note: QSEs must use the AWST 50% probability of exceedance forecast as the HSL in their COPs

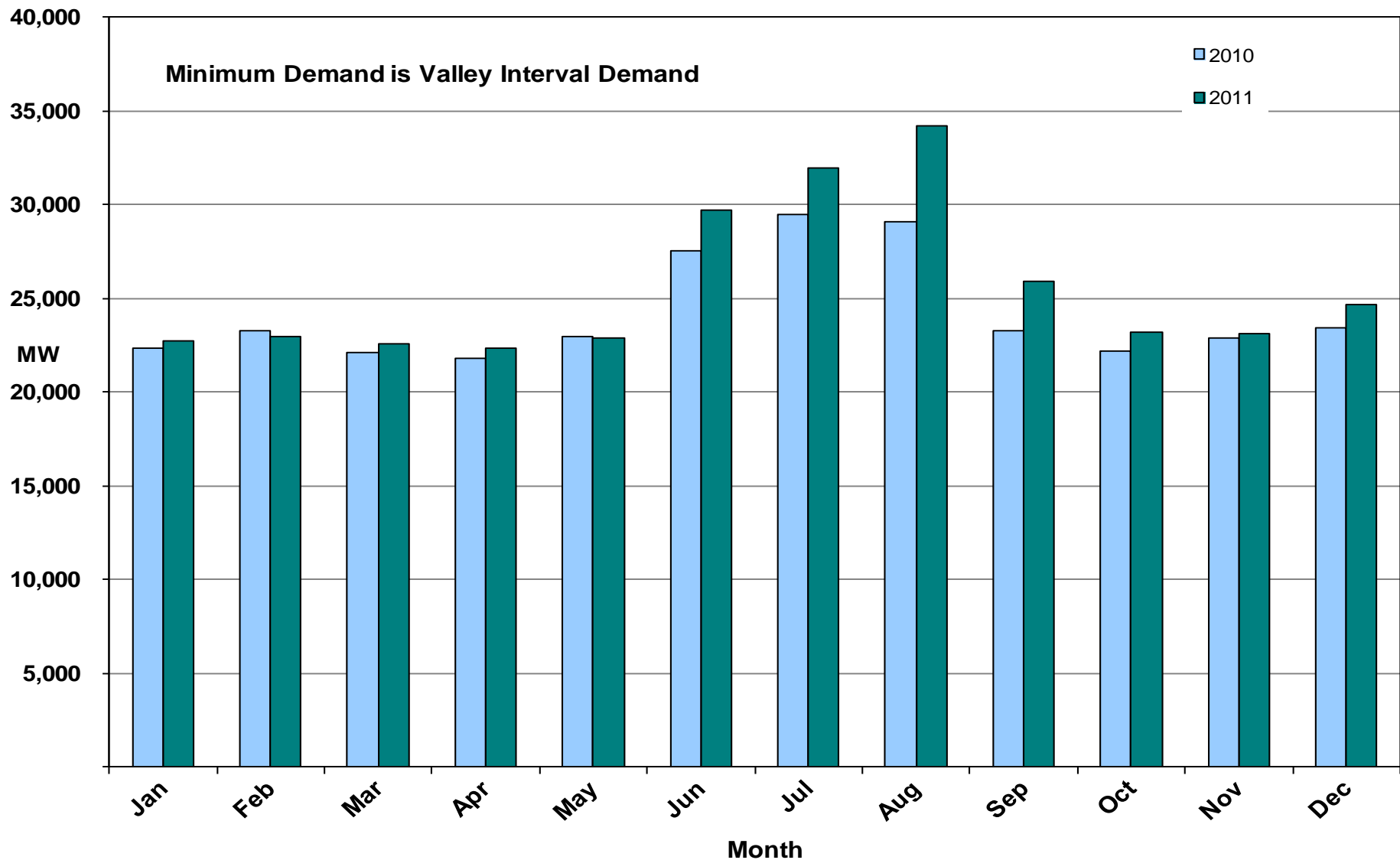
December 2011 ERCOT's CPS1 Monthly Performance



December 2011: Monthly Peak Actual Demand



December 2011: Monthly Minimum Actual Demand

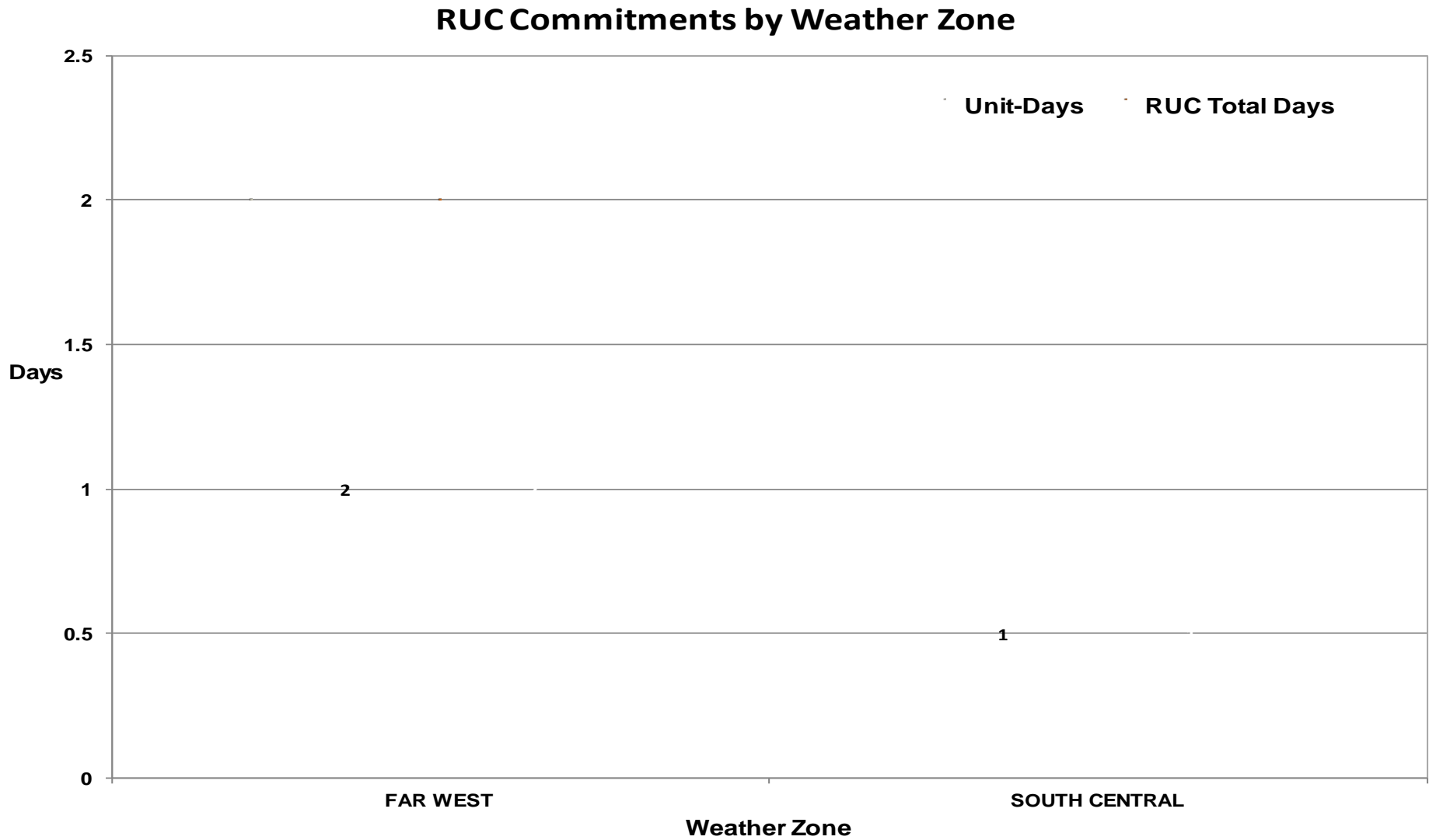


Day-Ahead Load Forecast Performance in December 2011

**Mean Absolute Percent Error (MAPE) for ERCOT Mid-Term Load Forecast (MTLF)
Run at 14:00 Day Ahead**

	2008 MAPE	2009 MAPE	2010 MAPE	2011 MAPE	December 2011 MAPE	
Average Annual MAPE	3.30	3.11	2.83	2.83	2.99	
Lowest Monthly MAPE	2.45	1.93	2.24	1.63	Lowest Daily MAPE	1.50 Dec – 20
Highest Monthly MAPE	4.99	4.11	3.79	3.55	Highest Daily MAPE	6.56 Dec – 05

Reliability Unit Commitment (RUC) Capacity by weather zone in December 2011



December 2011: Generic Transmission Limits (GTLs)

GTLs	Dec 10 Days GTLs	Oct 11 Days GTLs	Nov 11 Days GTLs	Dec 11 Days GTLs	Last 12 Months Total Days (Dec10 – Dec11)
North – Houston	0	0	0	0	1
West – North	25	20	20	18 Dec(1-5,7-8,13-14,18-21,27-31)	253
Valley Import	1	0	0	0	15

GTL: A transmission flow limit more constraining than a Transmission Element's normal limit established to constrain flow between geographic areas of the ERCOT Transmission System that is used to enforce stability and voltage constraints that cannot be modeled directly in ERCOT's transmission security analysis applications.

Note: This table lists how many times a constraint has been activated to avoid exceeding a GTL limit, it does not imply an exceedance of the GTL occurred.

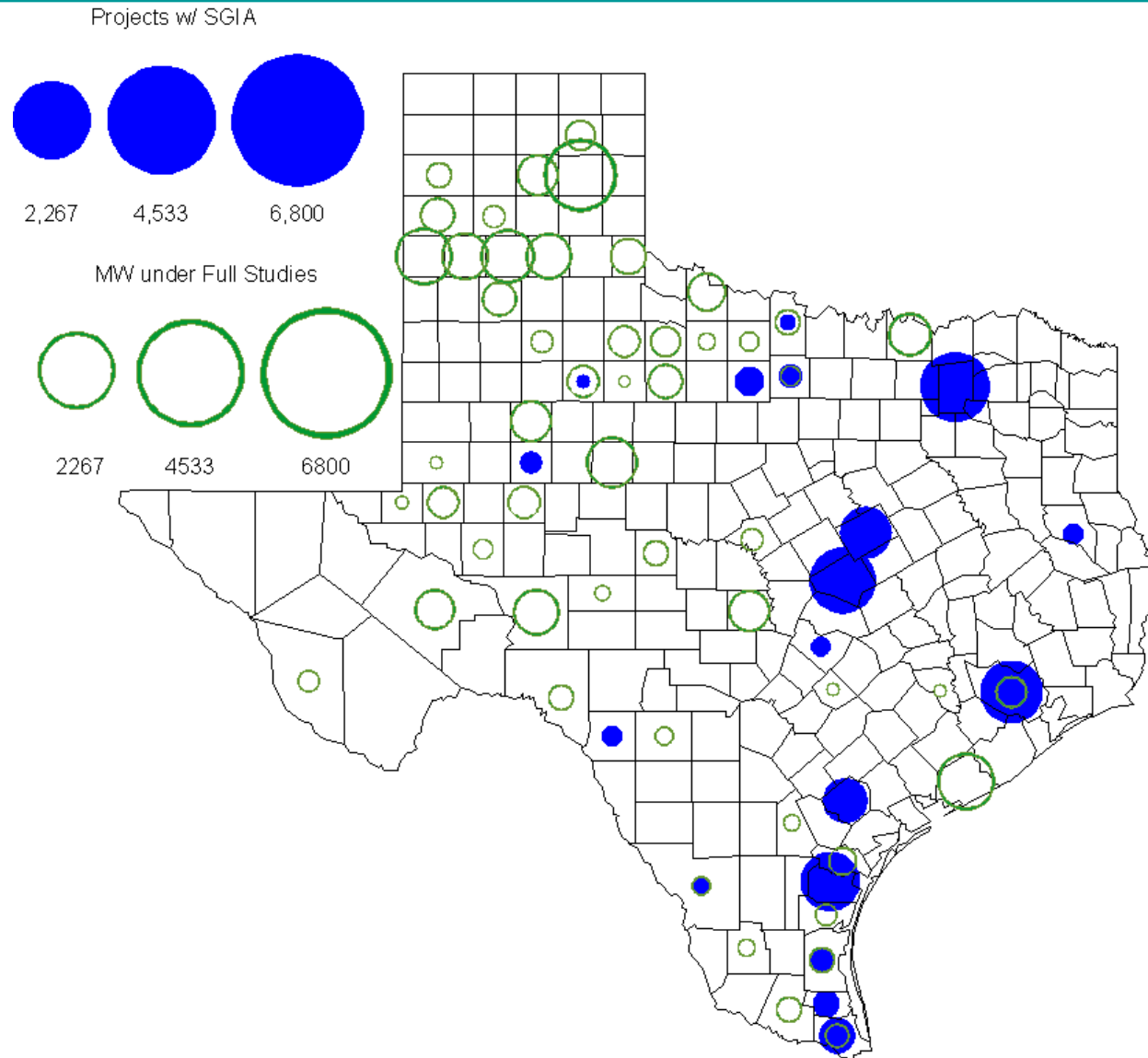
Advisories and Watches in December 2011

- **Advisories issued for Physical Responsive Capability (PRC) below 3000 MW.**
 - Issued 7 Days
- **Watches issued for Physical Responsive Capability (PRC) below 2500 MW.**
 - Issued 1 Day
- **Transmission Watches**
 - None
- **Energy Emergency Alerts**
 - None

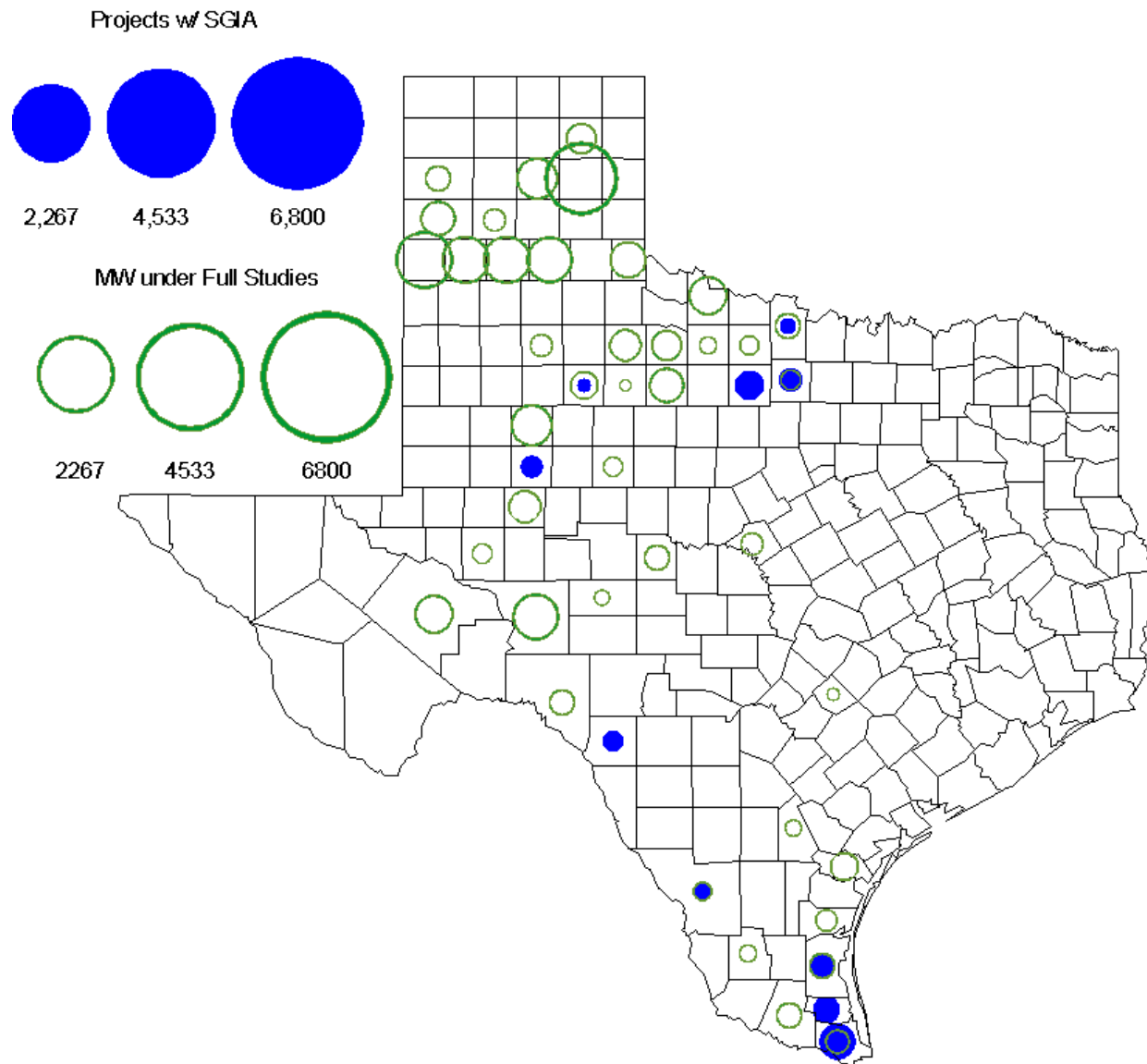
Planning Summary

- **ERCOT is currently tracking 133 active generation interconnection requests totaling over 38,000 MW. This includes over 19,000 MW of wind generation.**
- **ERCOT is currently reviewing proposed transmission improvements with a total cost of \$334.9 Million**
- **Transmission Projects endorsed in 2011 total \$674.7 Million**
- **All projects (in engineering, routing, licensing and construction) total approximately \$9.8 Billion**
- **Transmission Projects energized in 2011 total about \$694.8 million**

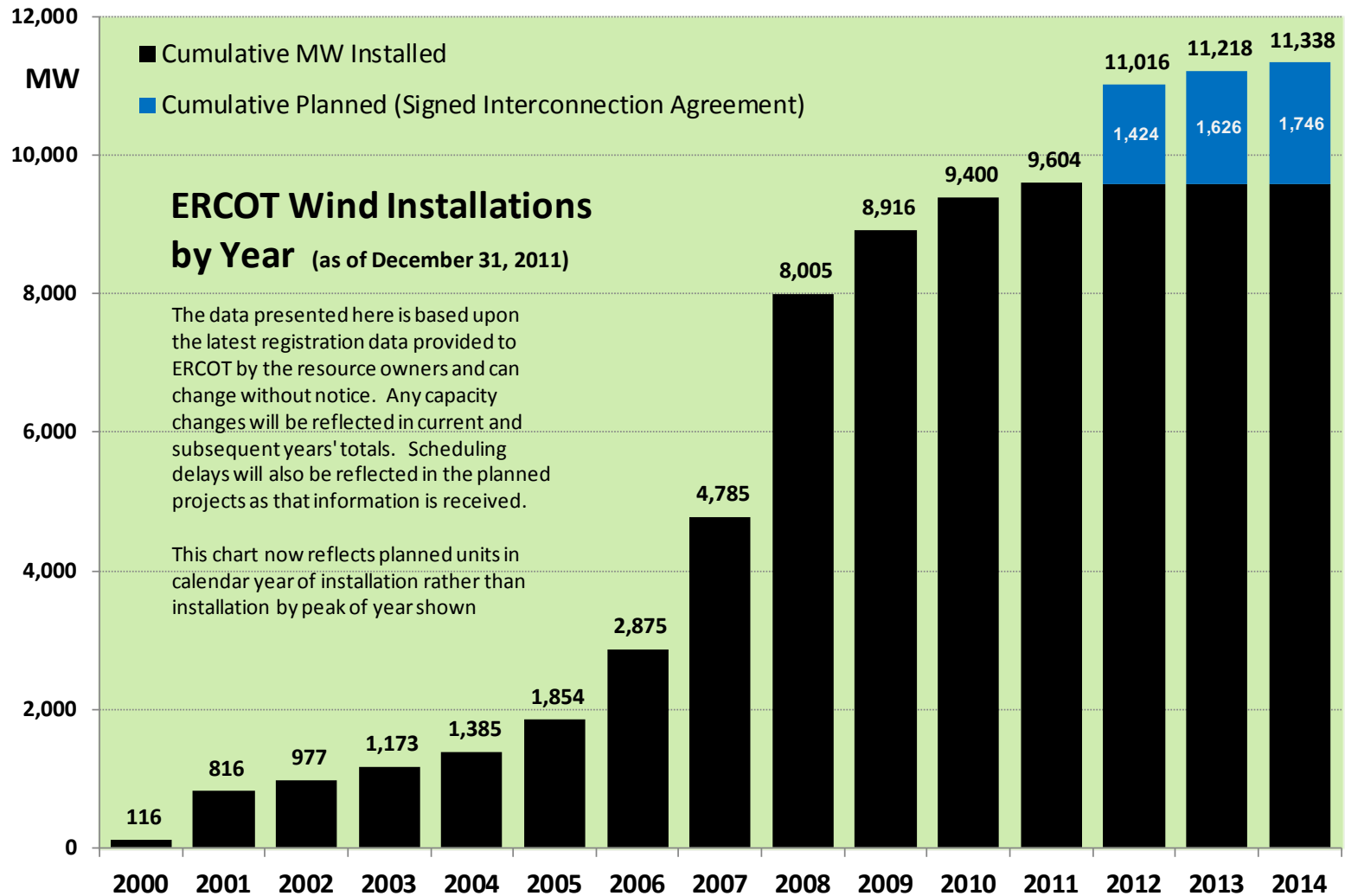
County Location of Planned Generation with Interconnection Requests (all fuels) December 2011



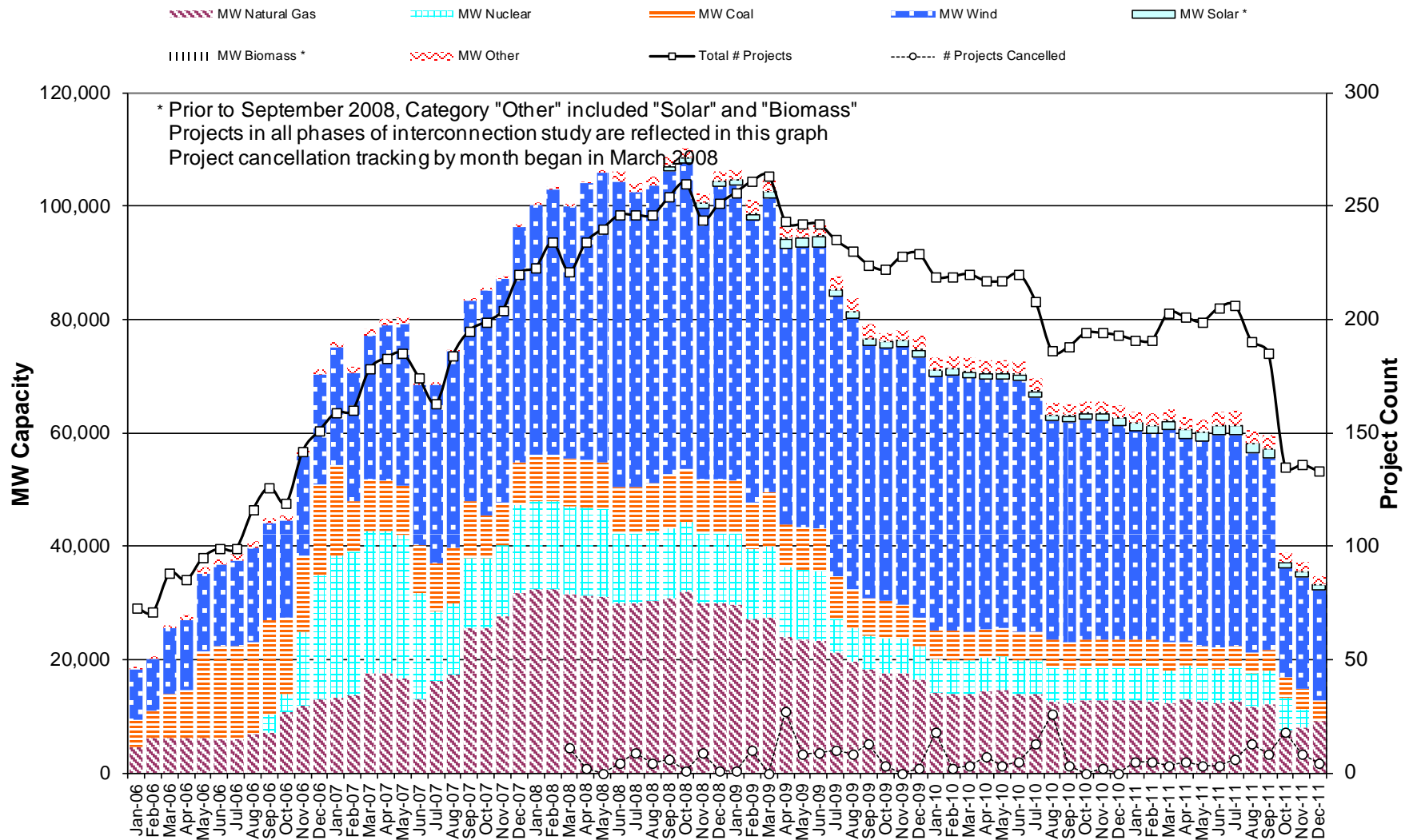
County Location of Planned Generation with Interconnection Requests (Wind) December 2011



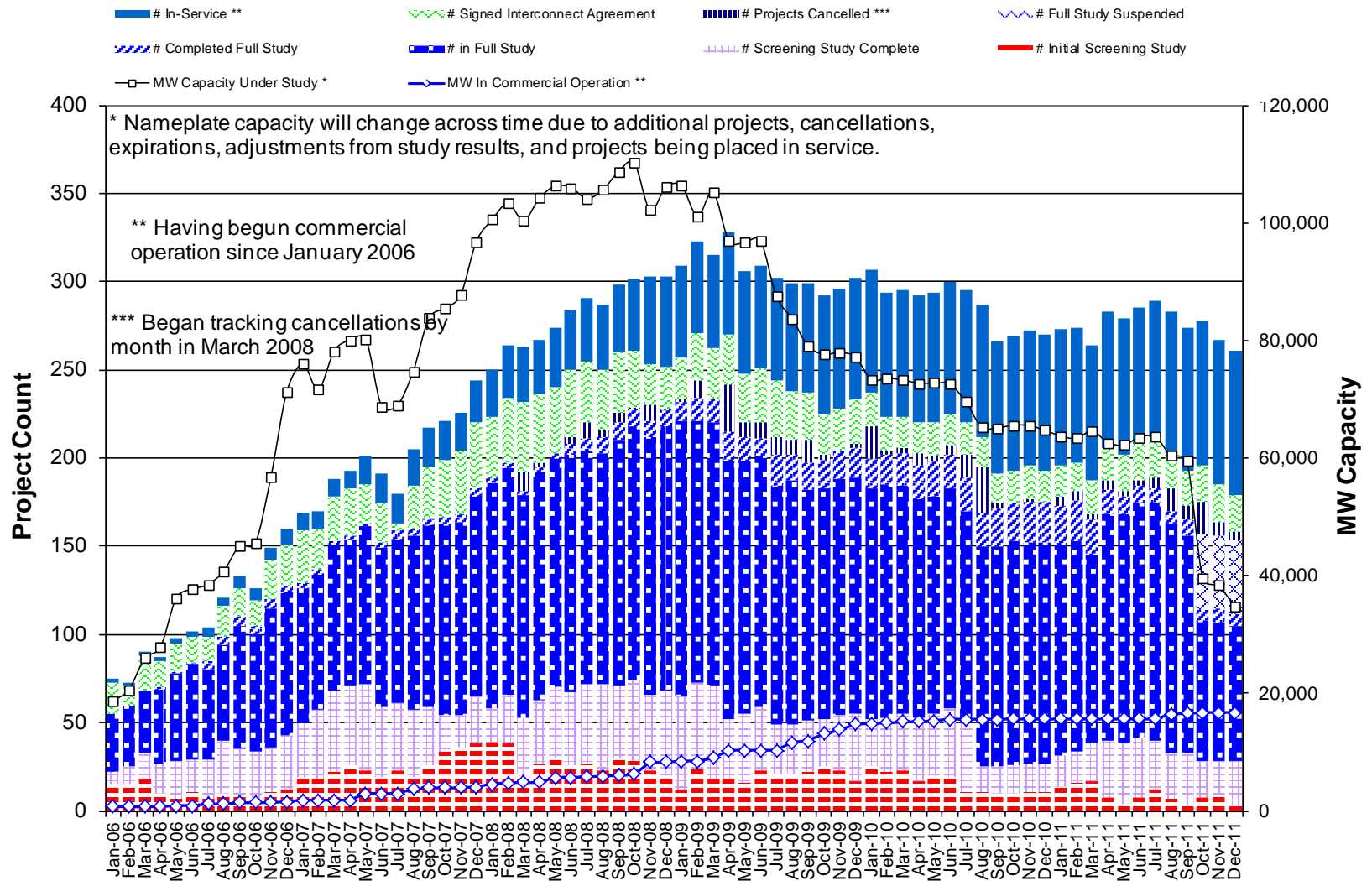
Wind Generation



Generation Interconnection Activity by Fuel



Generation Interconnection Activity by Project Phase



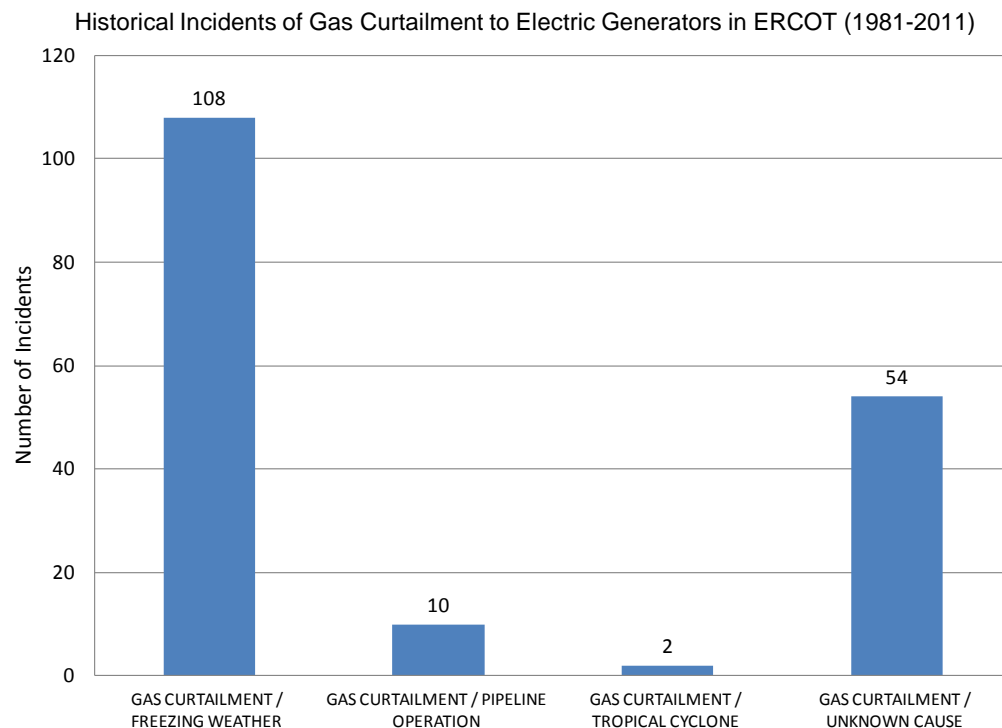
Gas Curtailment Risk Study Preliminary Findings

Natural Gas Curtailment Risk Study - Approach

- **Review of historical gas curtailment incidents**
 - Survey of electric generators on historical experience with gas curtailments
 - ERCOT Operator logs
 - Other sources of publicly available data – including National Energy Technology Labs, Railroad Commission etc.
- **Review of natural gas infrastructure**
 - Based on survey of electric generators and industry data
- **Identification of curtailment scenarios**
 - Shortlisted based on review of historical incidents – freezing weather, pipeline disruptions, tropical cyclones
- **Analysis of curtailment risk**
 - Compilation of data including curtailment and natural gas infrastructure
 - Probabilistic analysis
 - Fundamental analysis using a pipeline model

Freezing Weather, Pipeline Disruptions and Tropical Cyclones Were Risk Factors Identified for Analysis

- Review of historical curtailment data and Black & Veatch's analysis indicates that the principal risks of gas supply disruption to ERCOT's gas-fired electric generators are:
 1. Freezing weather – most important and subject to increase
 2. Pipeline infrastructure outages -- less important and level of risk unlikely to change
 3. Tropical cyclones – less important and level of risk unlikely to change



Source: Compilation of Historical Curtailment Incident Data; Black & Veatch Analysis

Gas Curtailment Risk Assessment Summary

- **Freezing weather represents the largest risk factor for gas supply curtailment**
 - Going forward, the risks for curtailments driven by freezing weather are expected to increase because:
 - More gas-fired generation capacity is built in ERCOT's service region so vulnerability to gas curtailments increases
 - ERCOT gas supplies become proportionately more dependent on onshore production which is vulnerable to wellhead freeze-offs
- **Pipeline disruptions were not found to be a significant risk factor leading to curtailment of gas supply to ERCOT power generators**
 - Likelihood of pipeline disruptions is expected to decline or stay flat over the 5-10 year time period
 - While the natural gas infrastructure is aging, there are significant regulatory initiatives underway that mandate greater emphasis and expenditure on pipeline safety
- **Tropical cyclones are not a significant risk factor leading to gas curtailment in ERCOT**
 - Loss of power-generation from Gulf of Mexico production shut-ins is a small risk compared with freezing-weather threats
 - As Gulf of Mexico production is expected to decline, and ERCOT is expected to receive proportionately greater gas supplies from onshore sources, gas curtailments from tropical cyclone threats to Gulf of Mexico production also should decline for ERCOT

- **Will provide MW probability of curtailment curves**
- **Preliminary data indicates a high probability potential curtailment amounts are manageable from an ERCOT system reliability standpoint near term**
- **Contractual risks (firm vs non-firm) still not clear**