Grid Operations and Planning Report

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Board of Directors Meeting
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ERCOT Public

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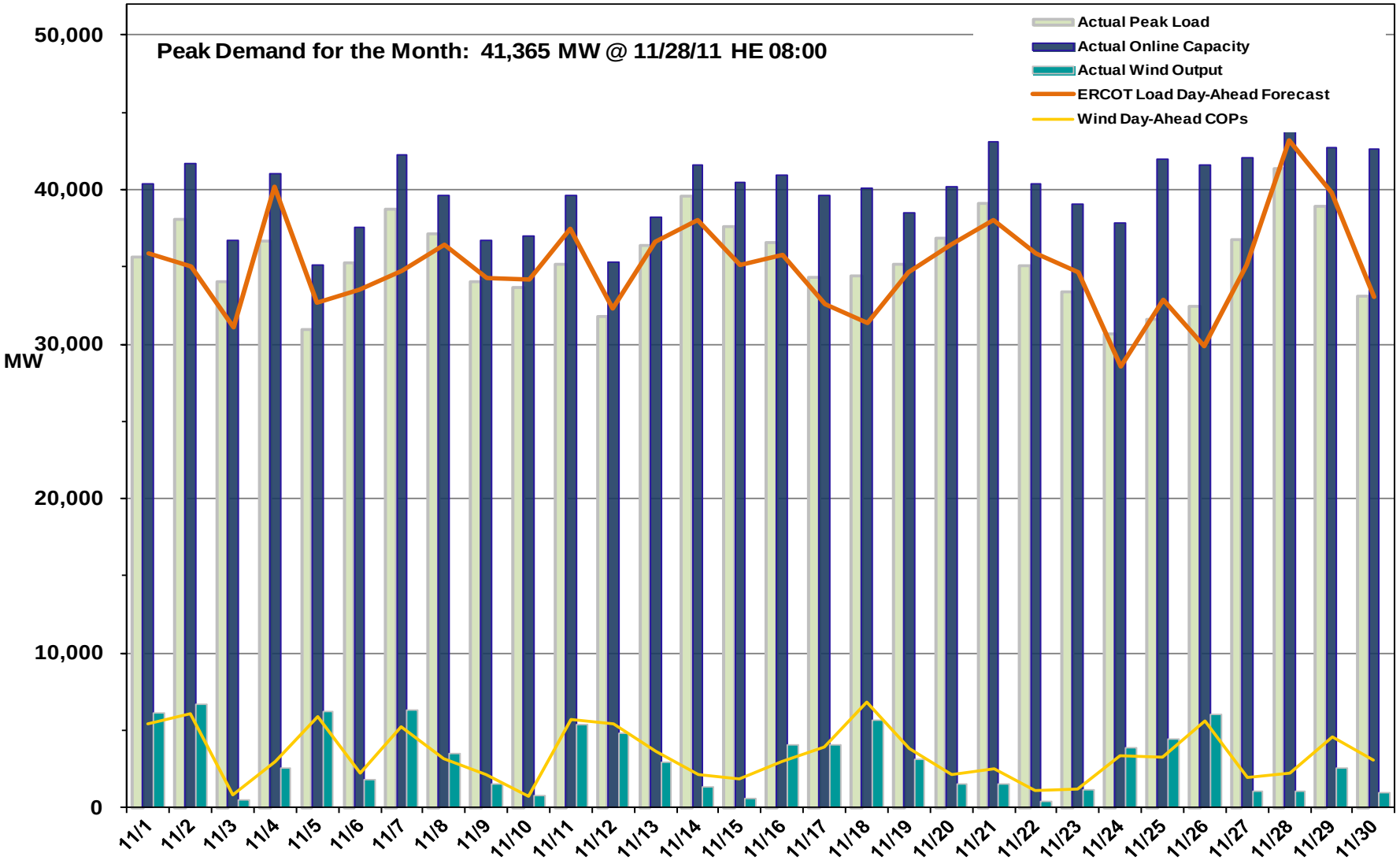
Summary

- **November 2011 Operations**
  - The peak demand of 41,365 MW on November 28 was less than the mid-term forecast peak of 43,160 MW and more than the October 2010 actual peak demand of 40,220 MW.
  - Day-ahead load forecast error for November was 3.38%.
  - Advisory for Physical Responsive Capability (PRC) below 3000 MW issued 4 days.
  - No Watches for PRC under 2500 MW issued.
  - No Energy Emergency Alert (EEA) events issued.

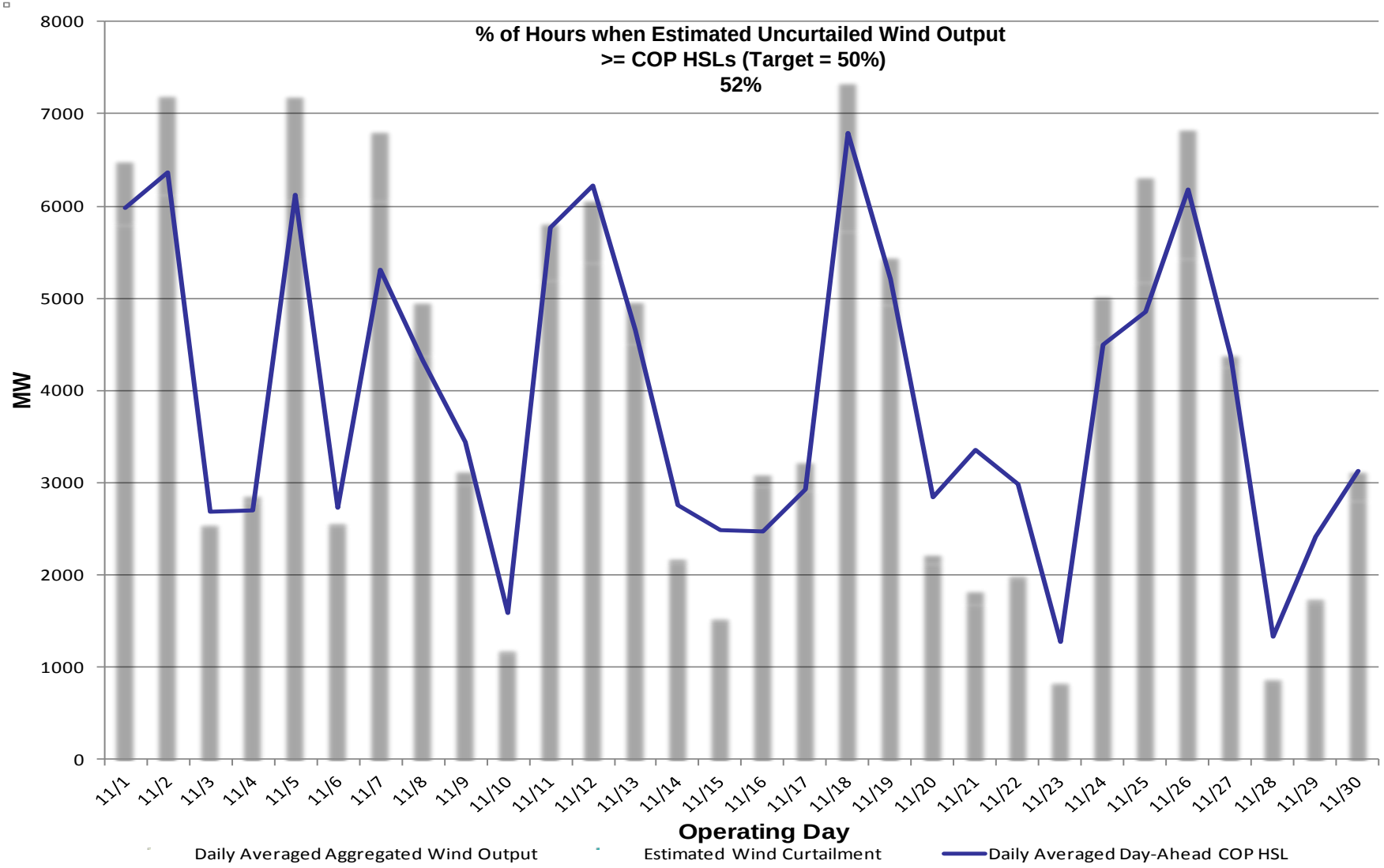
- **Planning Activities**
  - 136 active generation interconnect requests totaling over 38,000 MW as of November 30, 2011. Study has been suspended on 41 generation projects with a nameplate capacity totaling over 18,000 MW.
  - 9,604 MW wind capacity on line November 30, 2011.
  - 7,371 MW accounting for 18% of ERCOT gas fueled generation has fuel oil back-up capability going into the winter of 2011/2012.

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



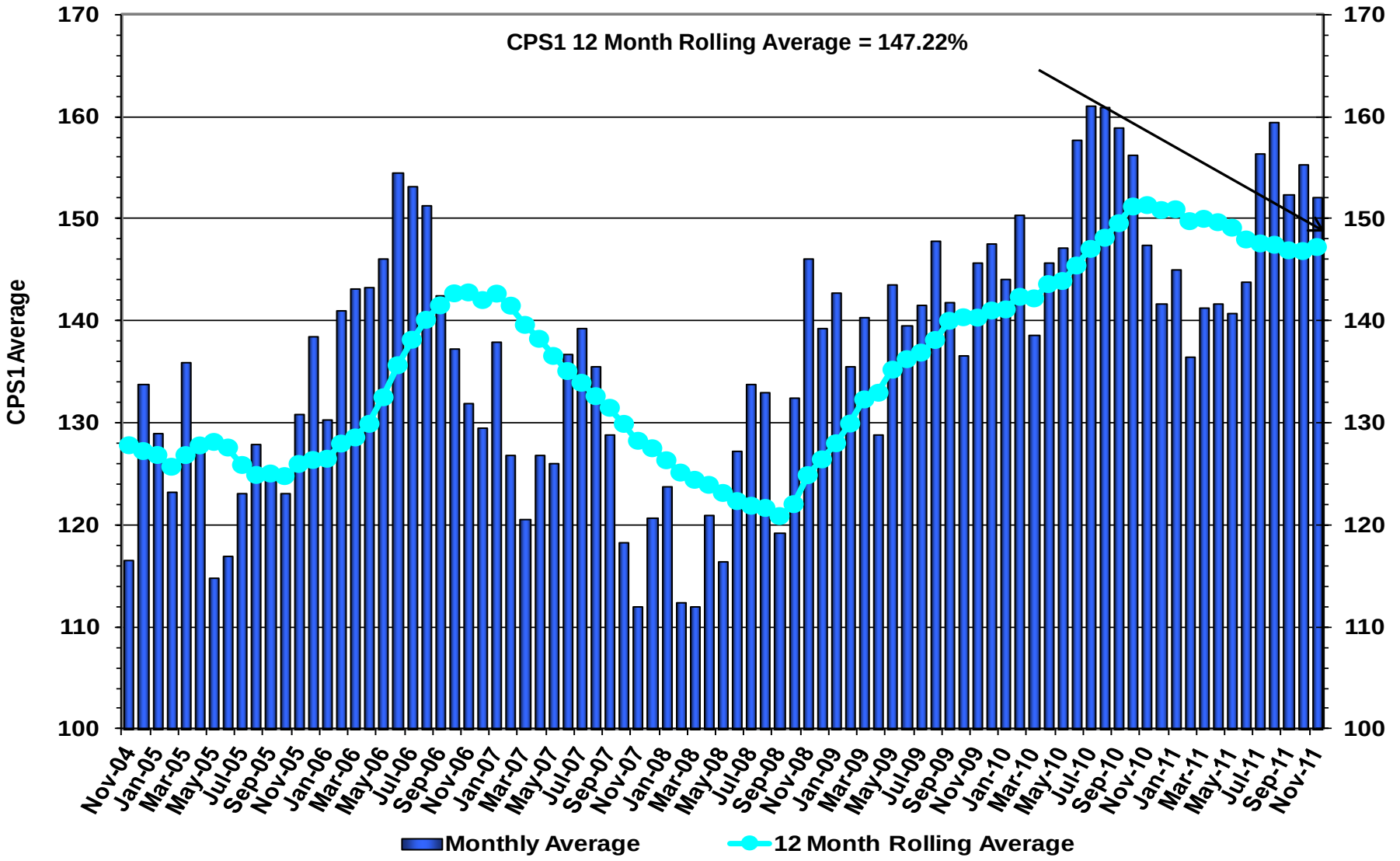
Note: All data are hourly averages during the peak load hour obtained from COPs, and EMMS.

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

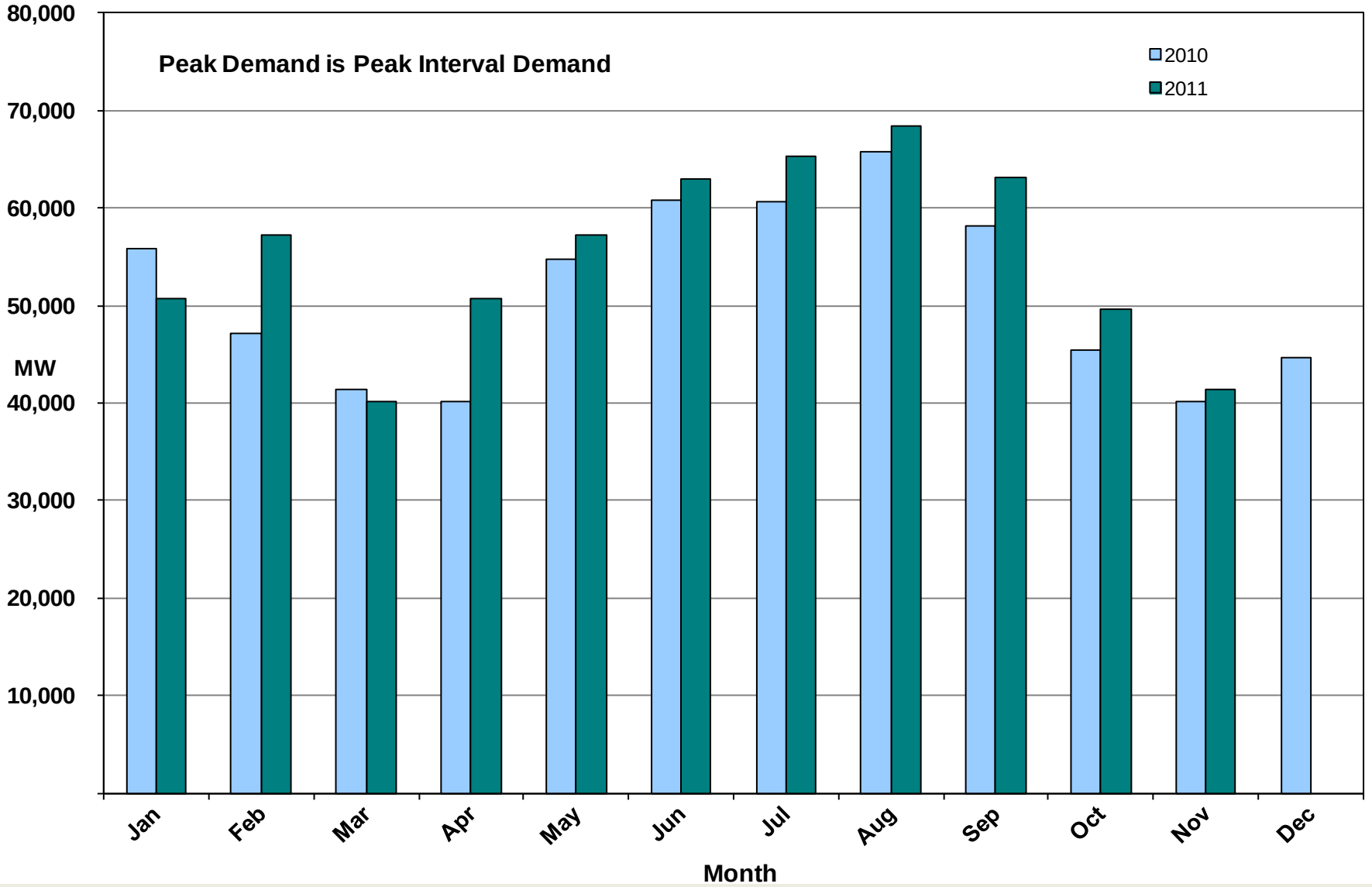


Note: QSEs must use the AWST 50% probability of exceedance forecast as the HSL in their COPs

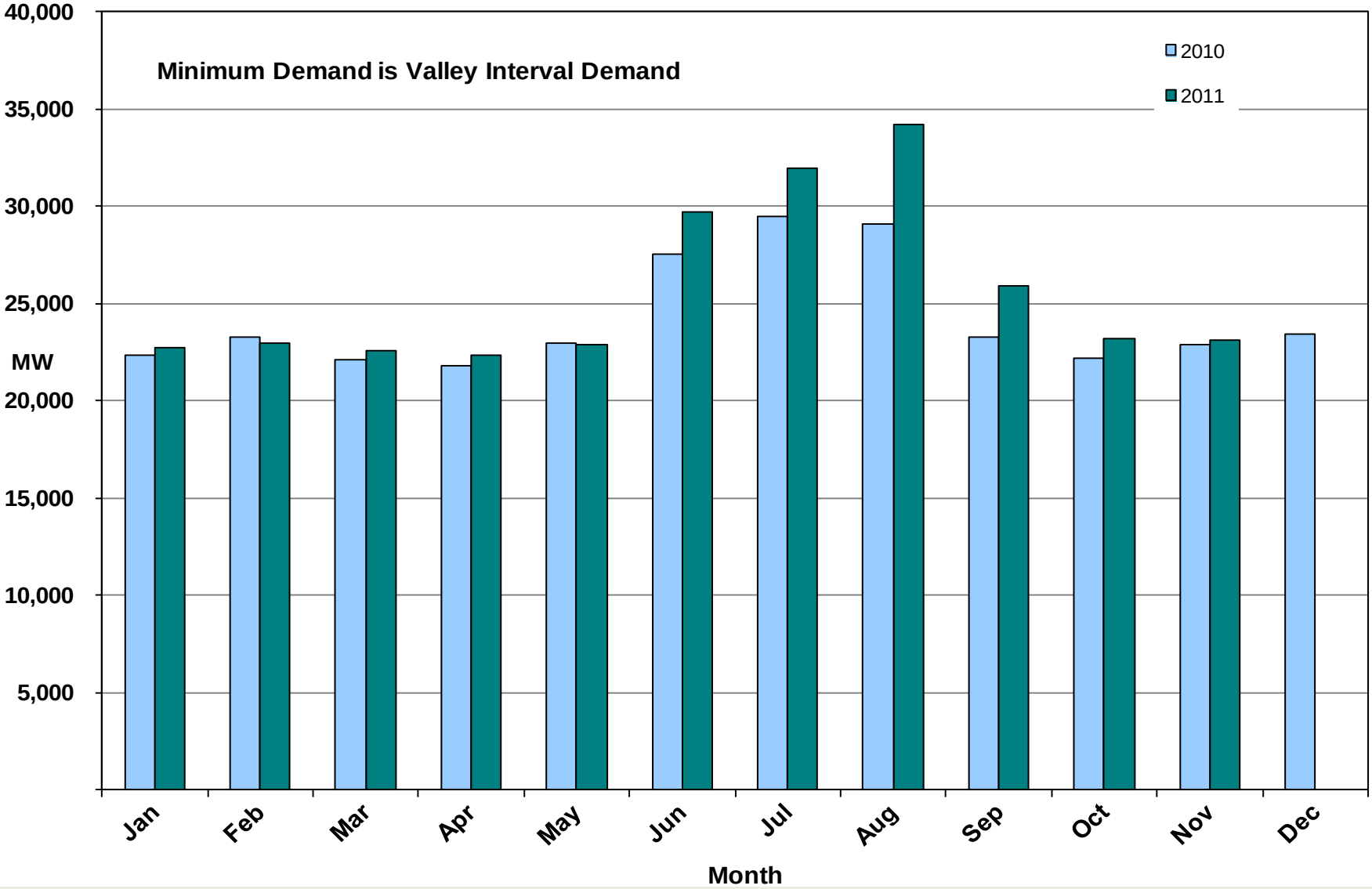
November 2011 ERCOT's CPS1 Monthly Performance



November 2011: Monthly Peak Actual Demand



November 2011: Monthly Minimum Actual Demand

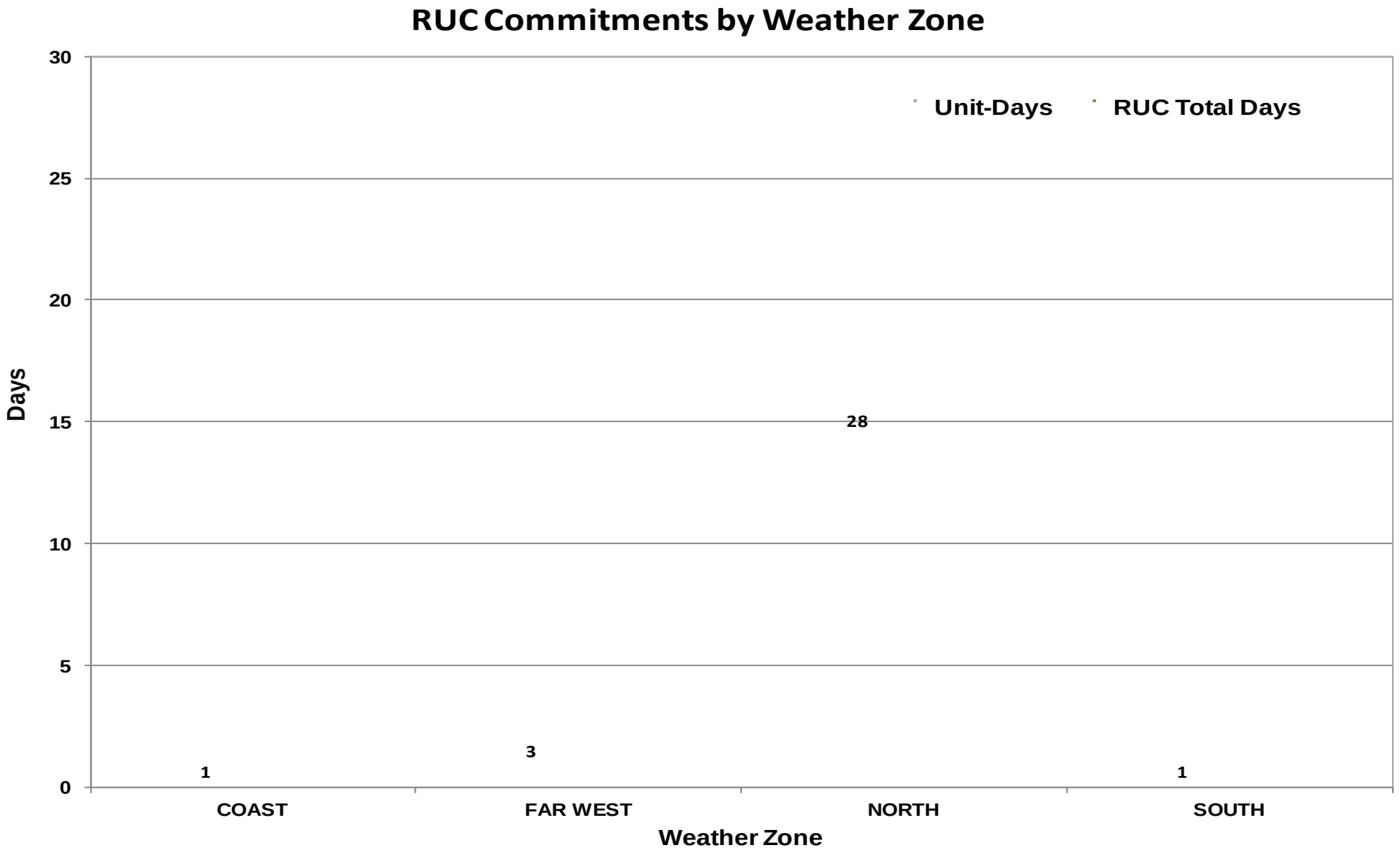


Day-Ahead Load Forecast Performance in November 2011

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	November 2011 MAPE	
Average Annual MAPE	3.30	3.11	2.83	**2.82**	**3.38**	
Lowest Monthly MAPE	2.45	1.93	2.24	1.63	**Lowest Daily MAPE**	1.57 Nov – 30
Highest Monthly MAPE	4.99	4.11	3.79	3.55	**Highest Daily MAPE**	6.76 Nov – 24

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



November 2011: Generic Transmission Limits (GTLs)

GTLs	Nov 10 Days CSC	Sep 11 Days GTLs	Oct 11 Days GTLs	Nov 11 Days GTLs	Last 12 Months Total Days (Oct 10 – Oct 11)
North – Houston	6	0	0	0	20
West – North	27	11	20	20 Nov (1-2,4-5,7-14,16-19,25-27,30)	262
Valley Import	0	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.

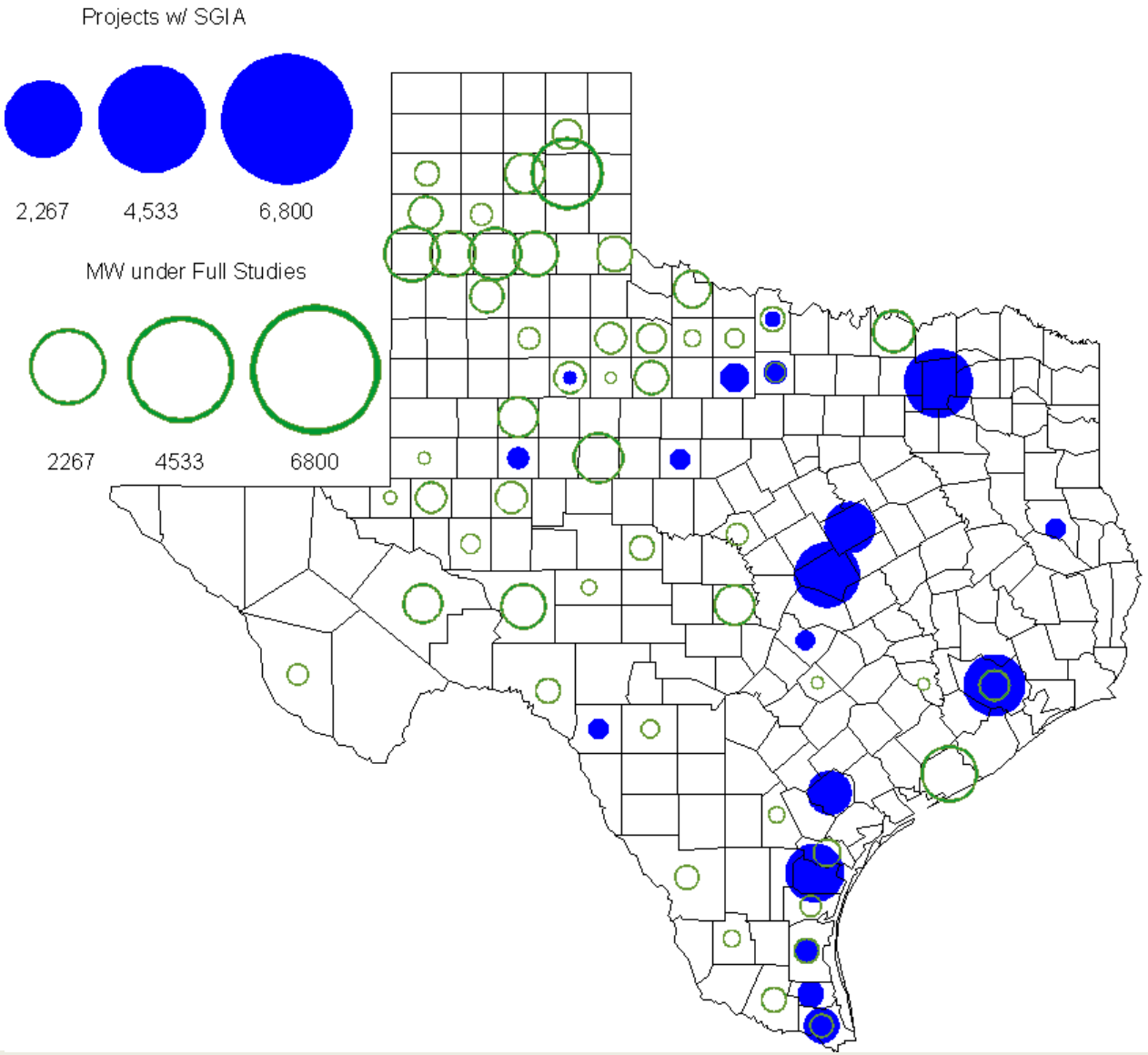
Advisories and Watches in November 2011

- **Advisories issued for Physical Responsive Capability (PRC) below 3000 MW.**
  - Issued 4 Days
- **Watches issued for Physical Responsive Capability (PRC) below 2500 MW.**
  - None
- **Transmission Watches**
  - November 23th ERCOT issued a Transmission Watch for Wilbarger County for voltage stability due to the outage of the Bowman Switch – Fisher road 345 KV line.
  - November 28th ERCOT issued a Transmission Watch due to a large change in the North – Houston interface limit due to the outage of the TH Wharton – Zenith 345 KV line.
- **Energy Emergency Alerts**
  - None

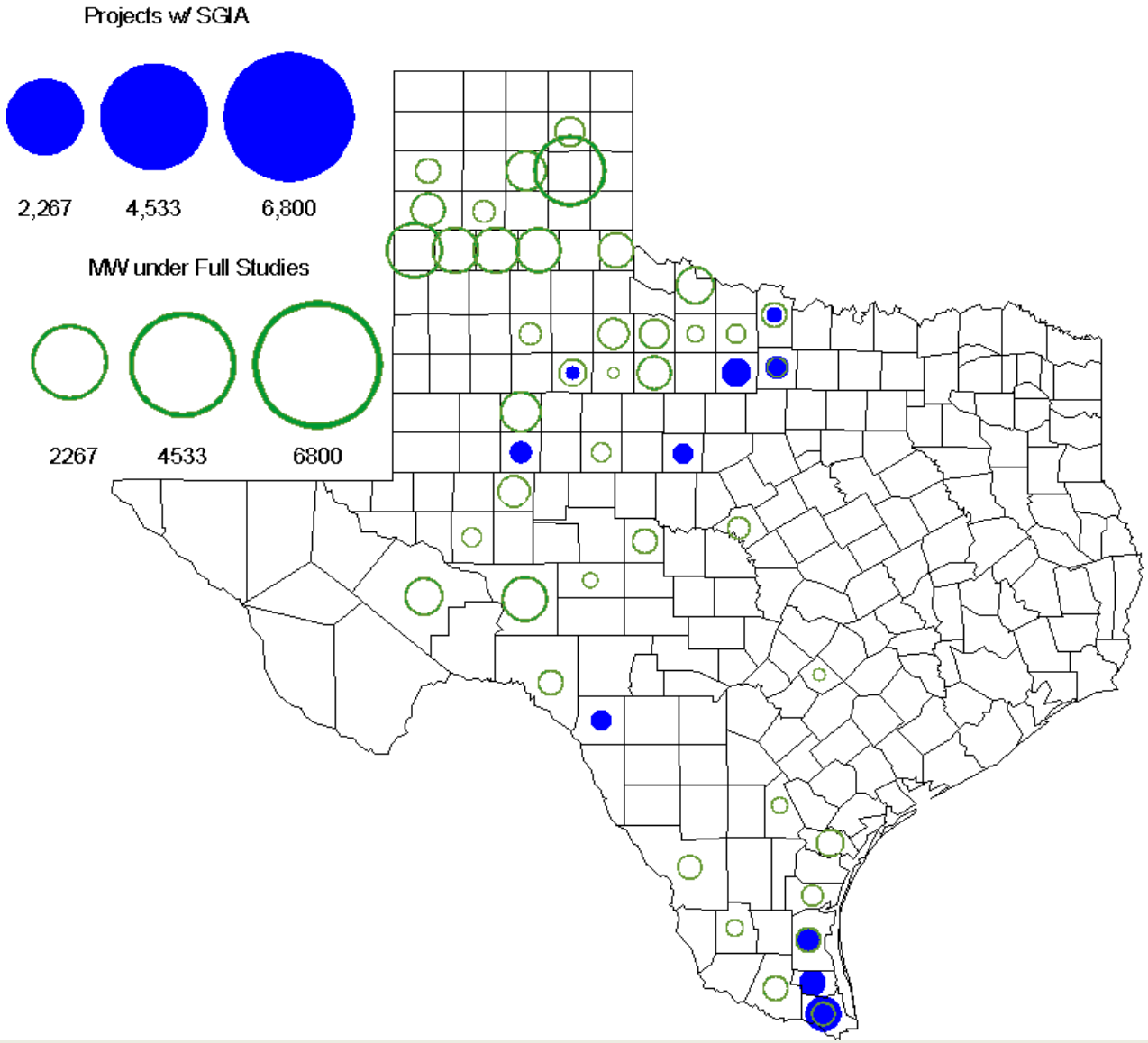
Planning Summary

- **A comprehensive review by Transmission Service Providers of the status of each of their assigned generation interconnection studies has been completed. ERCOT has incorporated the results of this review into this month's report.**
- **The details of this review will be covered as part of the CDR/SARA presentation.**
- **ERCOT is currently tracking 136 active generation interconnection requests totaling over 38,000 MW. This includes over 19,000 MW of wind generation.**
- **Study has been suspended on 41 generation projects with a nameplate capacity totaling over 18,000 MW.**
- **ERCOT is currently reviewing proposed transmission improvements with a total cost of $162.5 Million.**
- **Transmission Projects endorsed in 2011 total $594.9 Million.**

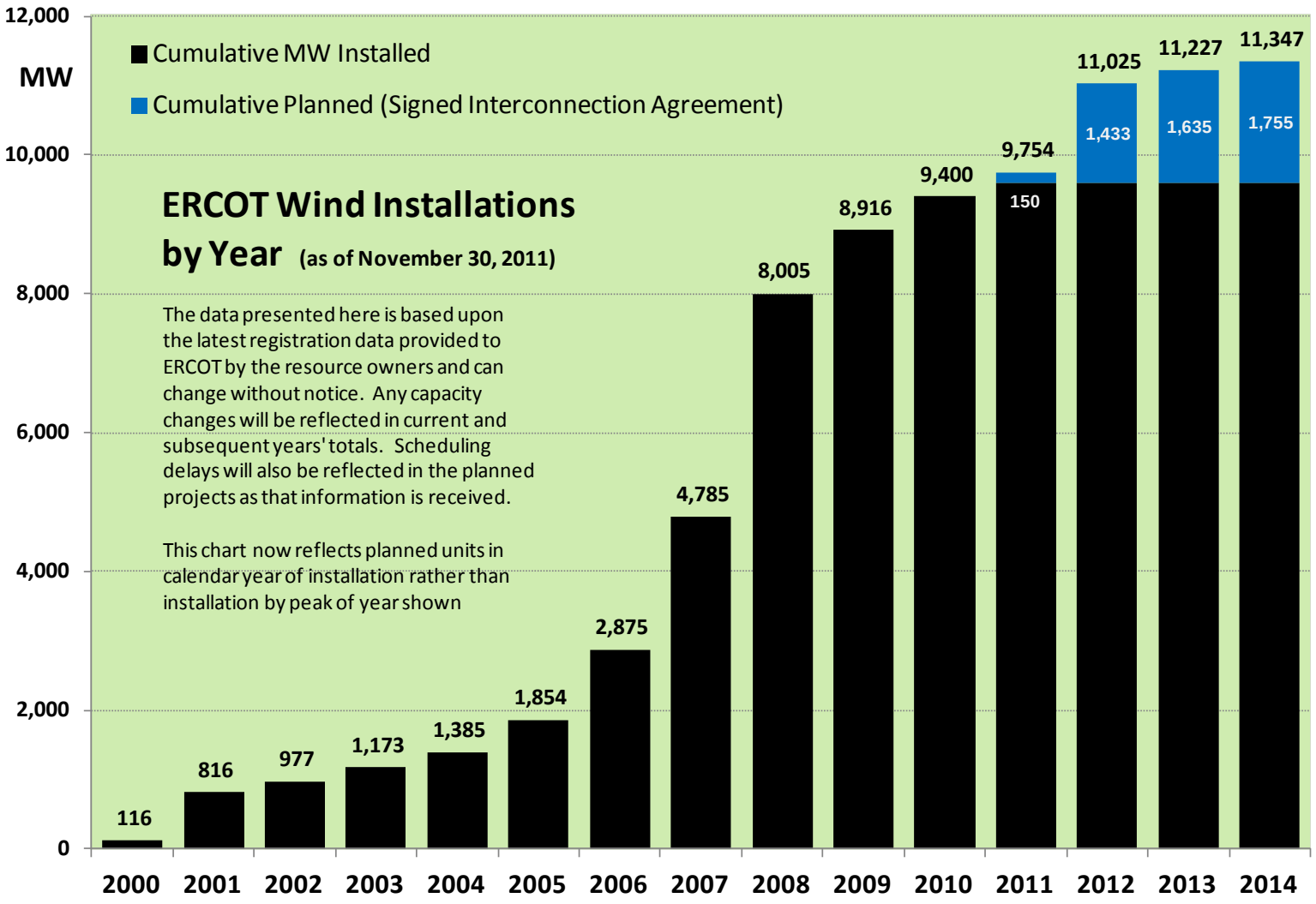
County Location of Planned Generation with Interconnection Requests (all fuels) November 2011



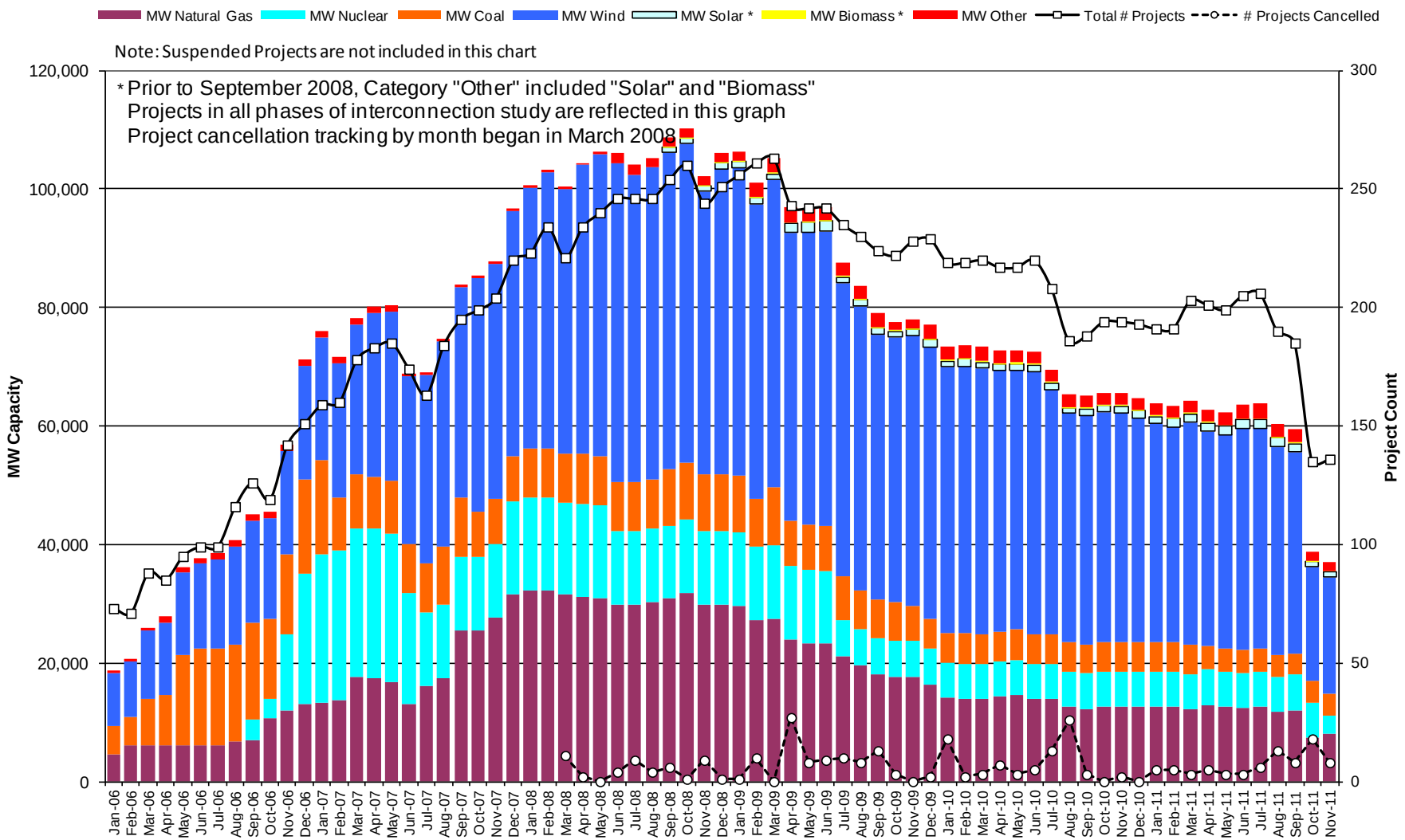
County Location of Planned Generation with Interconnection Requests (Wind) November 2011



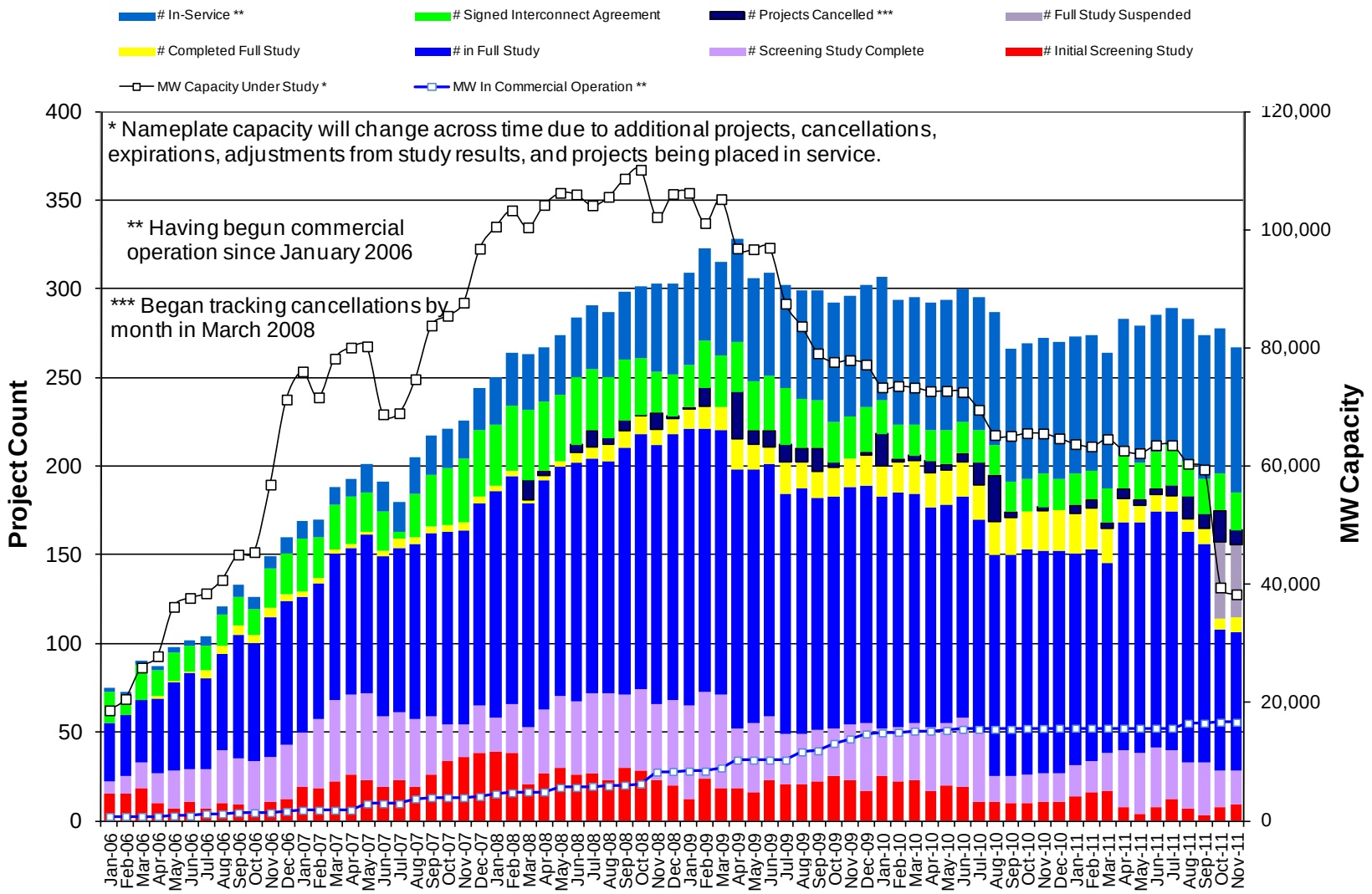
Wind Generation



Generation Interconnection Study Activity by Fuel



Generation Interconnection Study Activity by Project Phase



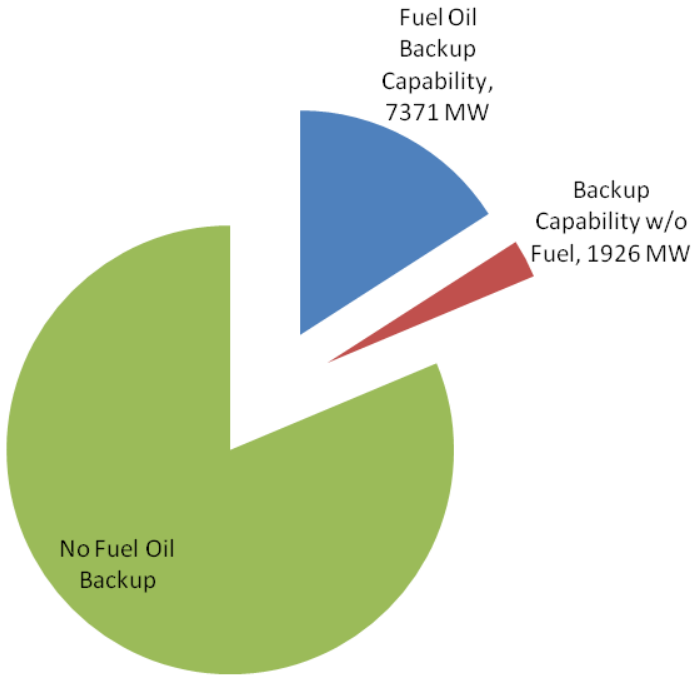
Winter Preparedness 2011

- **Fuel Oil Status:**
  - 49 units with 7,371 MW of generation have distillate or residual fuel oil stored for the upcoming winter (18% of gas generation).
  - 36 units with 3000 MW can operate on 100% fuel oil at maximum capacity for 2 days or more in case of Level 3 or total natural gas restrictions.

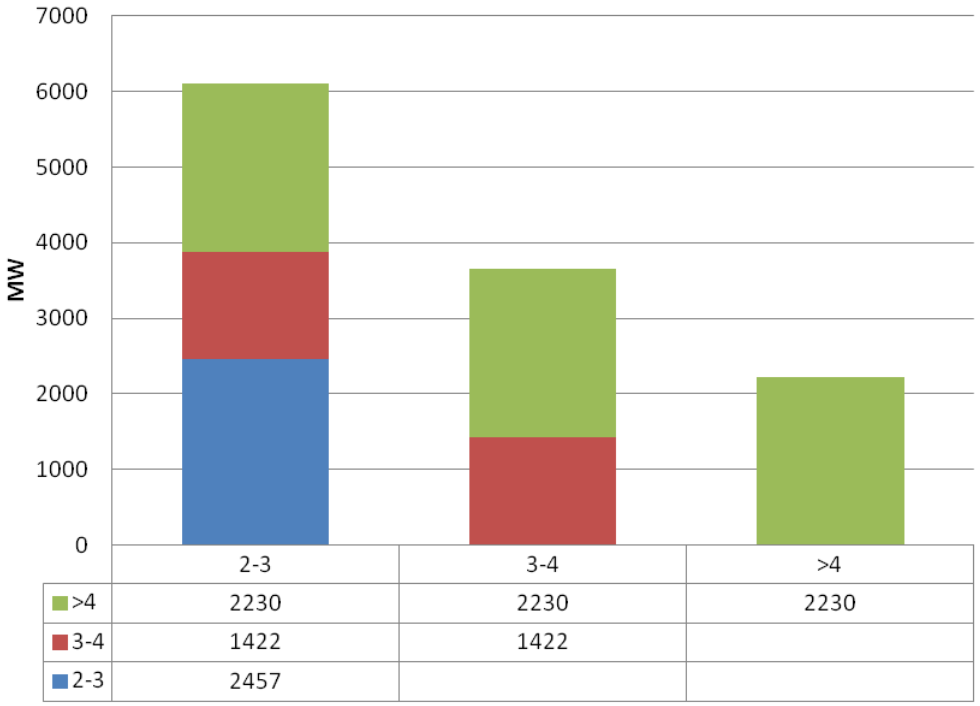
- **Winter 2011 preparations**
  - ERCOT has requested all generators provide an affidavit confirming completion of winter weatherization by December 1, 2011.
  - ERCOT has reviewed Emergency Operations Plans for resources including weatherization.
  - ERCOT has begin spot audits of winter preparedness and weatherization in which it will perform site visits to review preparation.
  - ERCOT winter storm drill was conducted November 30 – December 1st with 42 QSEs and 16 Transmission Operators participating, involving a scenario similar to the February 2nd 2011 freeze event.

Fuel Oil Backup – Winter 2011

Natural Gas Units with Backup Fuel



MW/Days of Fuel Oil Capacity



Status Update on Gas Curtailment Risk Study

Project Management	• Contracting completed on 9/23/2011 with project kick-off meeting on 9/26/11 • Ongoing interaction between ERCOT and Black & Veatch project teams on deliverables
Data Gathering & Research	• Majority of survey responses received from electric generators • Data requests to ERCOT and RRC completed • Research and analysis of curtailments and natural gas infrastructure completed • Scenarios for risk analysis have been reviewed with ERCOT • Modeling of scenarios within natural gas infrastructure model is ongoing
Deliverables	• Deliverable 1 (Database of historical natural gas curtailments) submitted to ERCOT • Deliverable 2 (Data summarizing Natural gas infrastructure serving electric generators) submitted to ERCOT
Next Steps	• Complete modeling of identified natural gas curtailment risk scenarios • Complete probabilistic analysis of risk of curtailment in defined scenarios • Delivery expected January 2012

Drought Effect on Generation Update

- **ERCOT has been periodically surveying generators during and since the summer to monitor the effect of drought on generation availability**

- **Based on most recent survey:**
  - Current unavailability due to drought is only 24 MW
  - If East Texas receives half of it's normal winter/spring rainfall, unavailability could go up to 434 MW by May
  - If no significant rainfall received, unavailability is estimated to be as much as 3,044 MW by May
  - Approximately 11,464 MW is dependent on water rights from sources at historically low levels

Follow-up on Drought Effects

- **Units which had informed ERCOT of concerns about drought impact upon operations have taken steps to improve physical access to water.**
- **TCEQ has notified ERCOT that it does not anticipate curtailing water rights to generation facilities.**
- **After discussion with TCEQ staff, ERCOT has concluded that additional analysis of physical limitations to surface water access for large power plants that are dependent upon surface water would be beneficial.**
- **ERCOT is preparing a second survey to gather information on generator water intake elevations, relevant lake elevations, etc. to perform basic projections of potential water access limitations for plants larger than 100 MW that utilize significant amounts of water.**

Black Start Service Resource Qualification Testing

- **Once selected as preliminary Black Start resource, each Black Start resource needs to perform and pass the test requirements outlined in Nodal Protocol Section 8.1.1.2.1.5.**
  - Verify control communication path performance;
  - Verify primary and alternate voice circuits for receipt instructions;
  - Perform the “Basic Starting Test” – ability of the BSS Resource to start itself without support from the ERCOT System; done annually
  - Perform the “Line-Energizing Test” – energizing transmission by the BSS Resource; test valid for 3 years
  - Perform the “Load-Carrying Test” – must be able to supply power to load and be stable for at least 30 minutes; done at least once every 5 years
  - Perform the “Next Start Resource Test” – ability to start up the next start unit’s largest motor while remaining stable; test is repeated if a new next start unit is selected

Black Start Service Resource On-going Testing

- Protocol Section 3.14.2(4) allows ERCOT to schedule random testing or simulation, or both, to verify BSS is operable according to the ERCOT System restoration plan. Testing and verification must be done under established qualification criteria.
- Recently approved PRR 369 allows ERCOT to perform a Black Start Resource Availability Test on a quarterly basis unless the Black Start Resource successfully started and operated at its LSL or higher for at least 4 consecutive Settlement Intervals during the quarter.
- Black Start Resources that fail a quarterly Black Start Resource Availability Test are required to immediately update Availability Plans to show zero availability and will not receive Hourly Standby Fees for BSS effective the date of the failed test.
- The Black Start Resource may schedule a second test subject to ERCOT approval. If the second test is passed payment resumes.
- If the second test is failed the Black Start Resource is disqualified and ERCOT shall claw-back payments made since the Black Start Resources last successful test.