



ERCOT Update

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President & CEO
ERCOT

GCPA Fall Annual Conference
October 1, 2014

Peak Demand Statistics – As of September 24, 2014

All-time Peak Demand Record:

68,305 MW, August 3, 2011

All-time Winter Peak Record:

57,265 MW, February 10, 2011

2014 statistics:

March:

54,549 MW on March 3, 2014 — compared to previous all-time March record of 43,033 MW on March 4, 2002

Summer:

59,786 MW, June 30

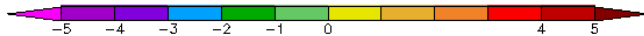
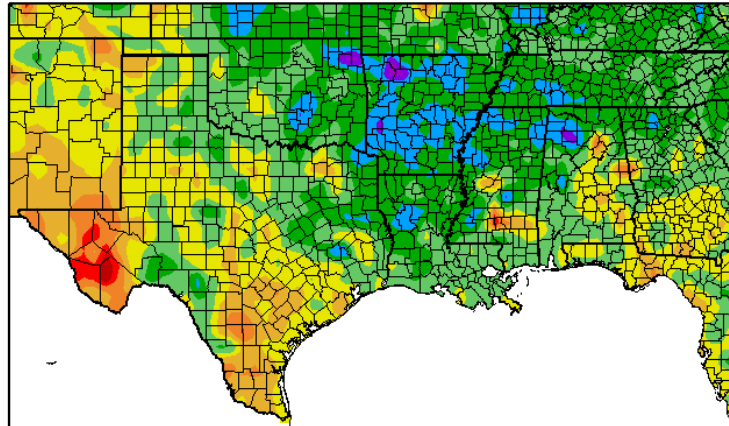
63,532 MW, July 21

66,427 MW, August 25

No new records

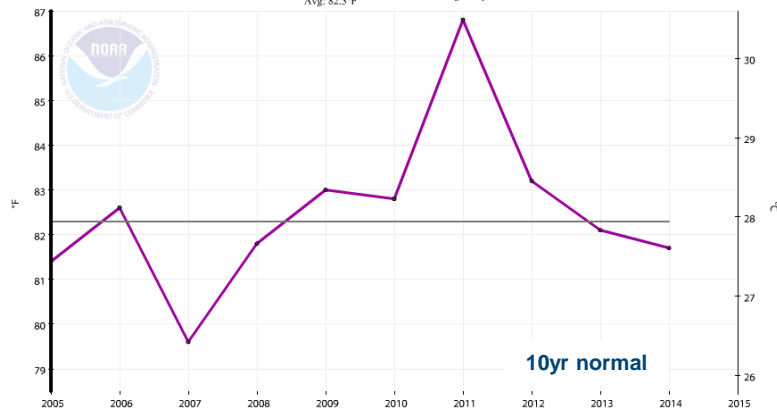
Summer 2014 Texas Temperatures

Departure from Normal Temperature (F)
6/1/2014 - 8/31/2014



Generated 9/11/2014 at HPRCC using provisional data. Regional Climate Centers

Texas, Average Temperature, June-August
2004-2013
Avg: 82.3°F



81.7° average state temperature.
0.4° above the 30-year normal
and 0.6° below the 10-year
normal.

Of the past 10 years, summer
2014 ranked as the 3rd coolest
(coolest since 2007).

2014's 1615 CDD's were the least
since 2007

Clean Power Plan Proposal

- **The EPA's proposed state goals are based on four possible strategies for reducing carbon dioxide emissions.**
 - Increase generation from renewable resources and maintain nuclear output
 - Market-based dispatch solutions
 - Increase resource efficiency
 - Expand energy efficiency programs



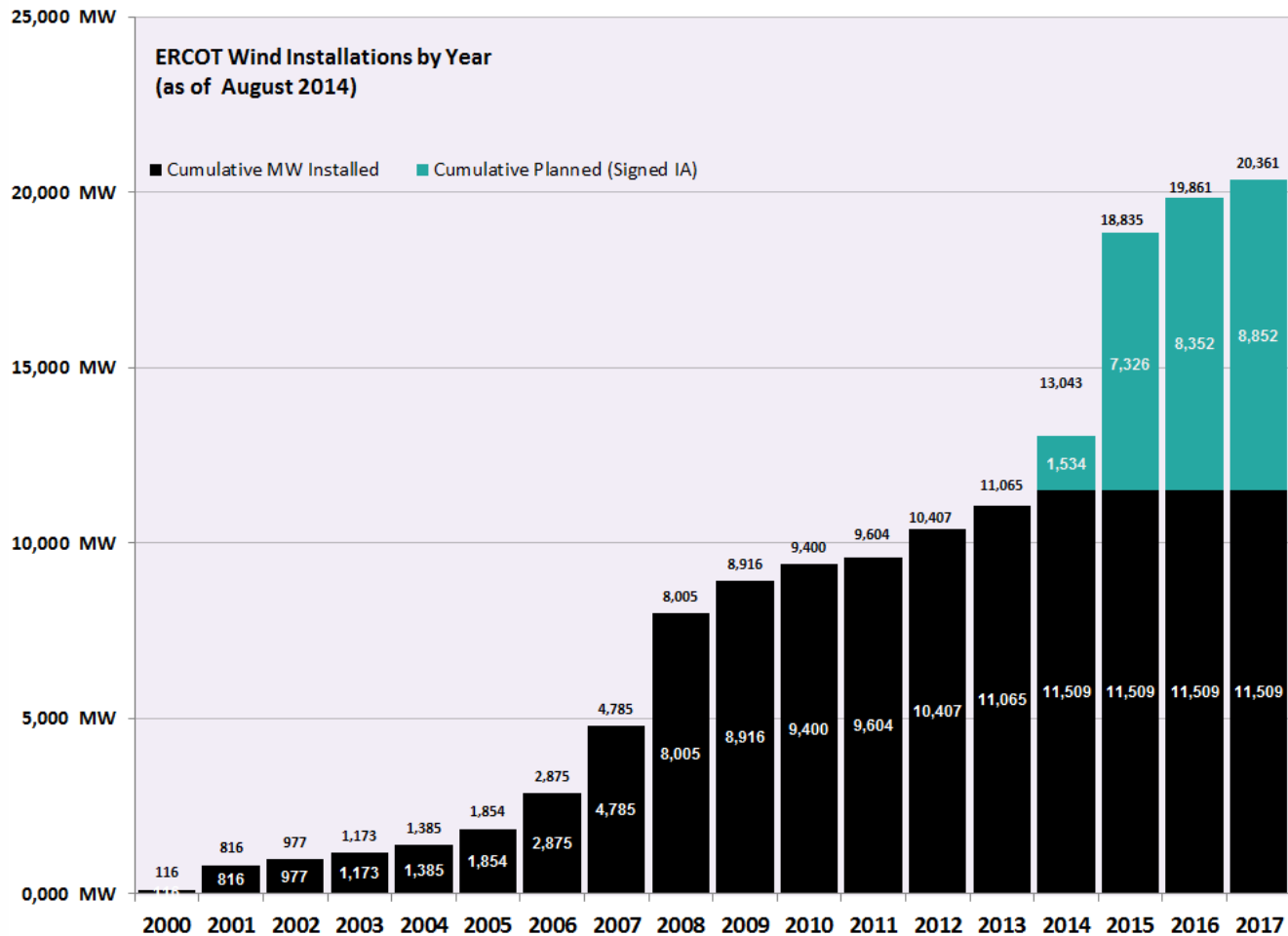
- At a high level, a successful implementation plan will include a combination of measures that reduce carbon dioxide emissions from the generating fleet and decrease the growth of future energy demand.

Clean Power Plan Proposal

Within the ERCOT competitive market, Texas already does many of these things very well

- Our market drives generation providers to operate their plants efficiently
- Texas continues to lead the nation in wind power generation – Current capacity is well ahead of the Renewable Portfolio Standard set by the Texas Legislature

Wind Generation Development in ERCOT



Current ERCOT Wind Generation Records

10,296 MW, on March 26, 2014, at 8:48 p.m.

- Non-Coastal Wind Output = 8,863 MW
- Coastal Wind Output = 1,433 MW
- Wind gen. supplied 28.78% of the 35,768 MW Load

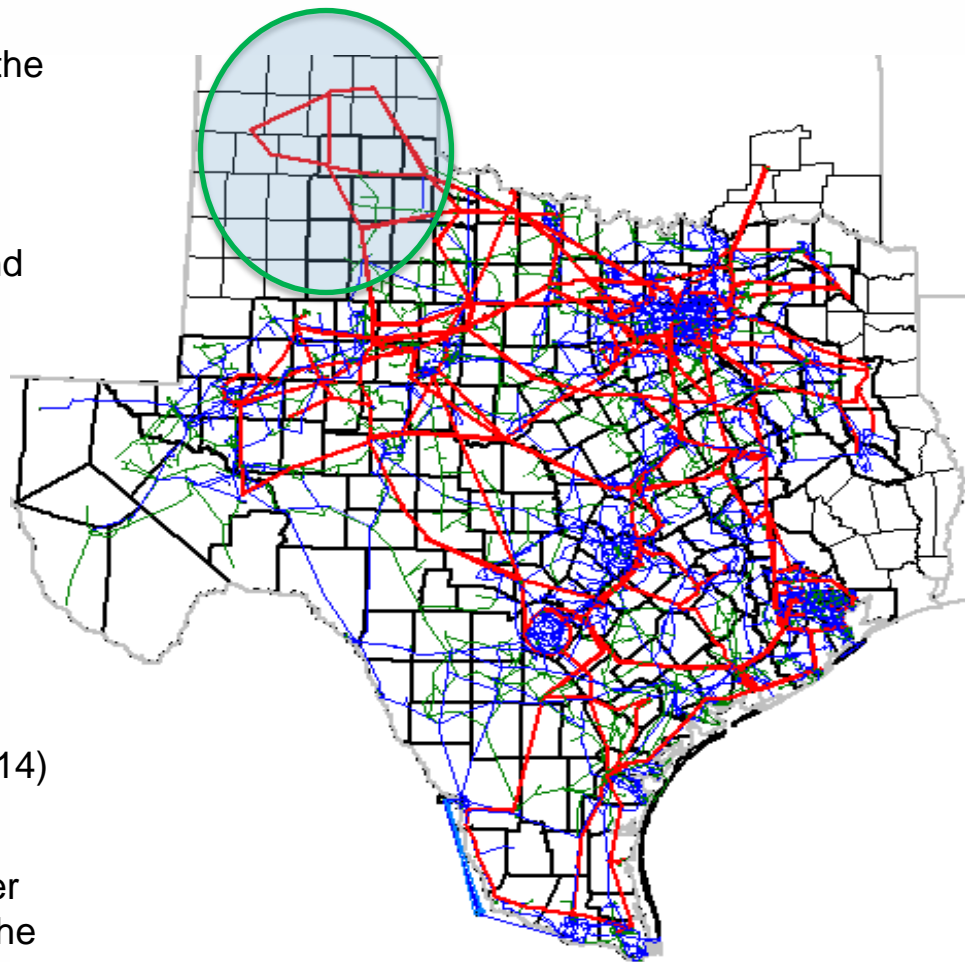
39.40% Wind Penetration, on March 31, 2014, at 2:12 a.m.

- Total Wind Output = 9,699 MW
- Total Load = 24,618 MW

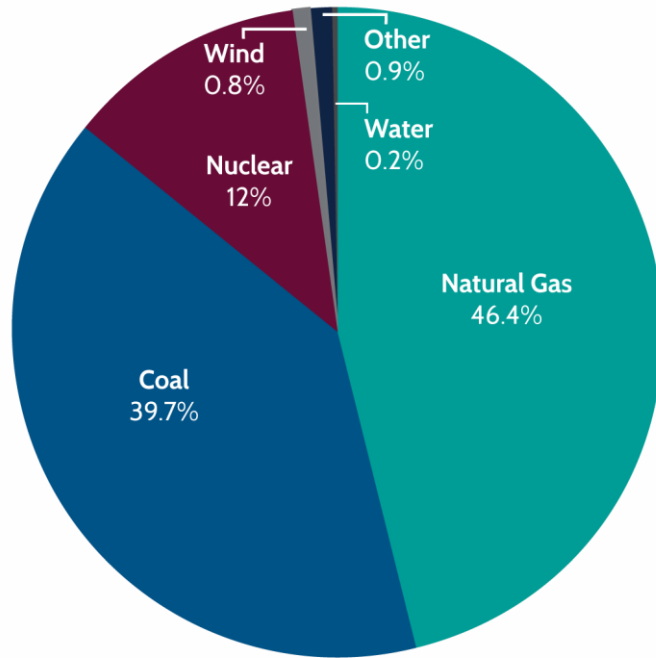


Wind Integration in the ERCOT Panhandle

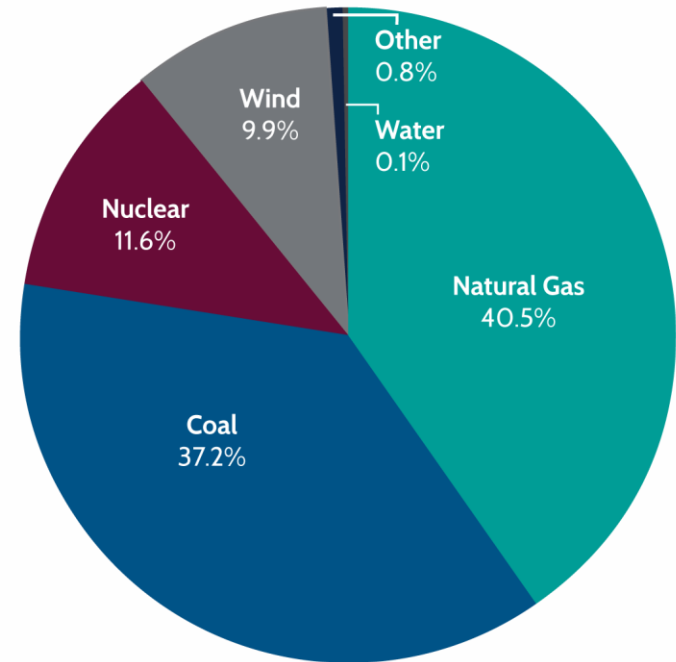
- Minimal nearby synchronous generation in the Panhandle region
- No local load
- These conditions lead to voltage stability and grid strength challenges
- Current Panhandle wind generation development:
 - >3.1 GW of wind capacity currently in transmission planning models
 - >6.2 GW of wind generation with signed interconnection agreements
- ERCOT has completed a study of potential transmission projects to support additional wind generation in the Panhandle (April, 2014)
- An additional ~300 MW of Panhandle wind generation in the planning models will trigger RPG (Regional Planning Group) review of the first set of proposed upgrades.



Energy by Fuel Type

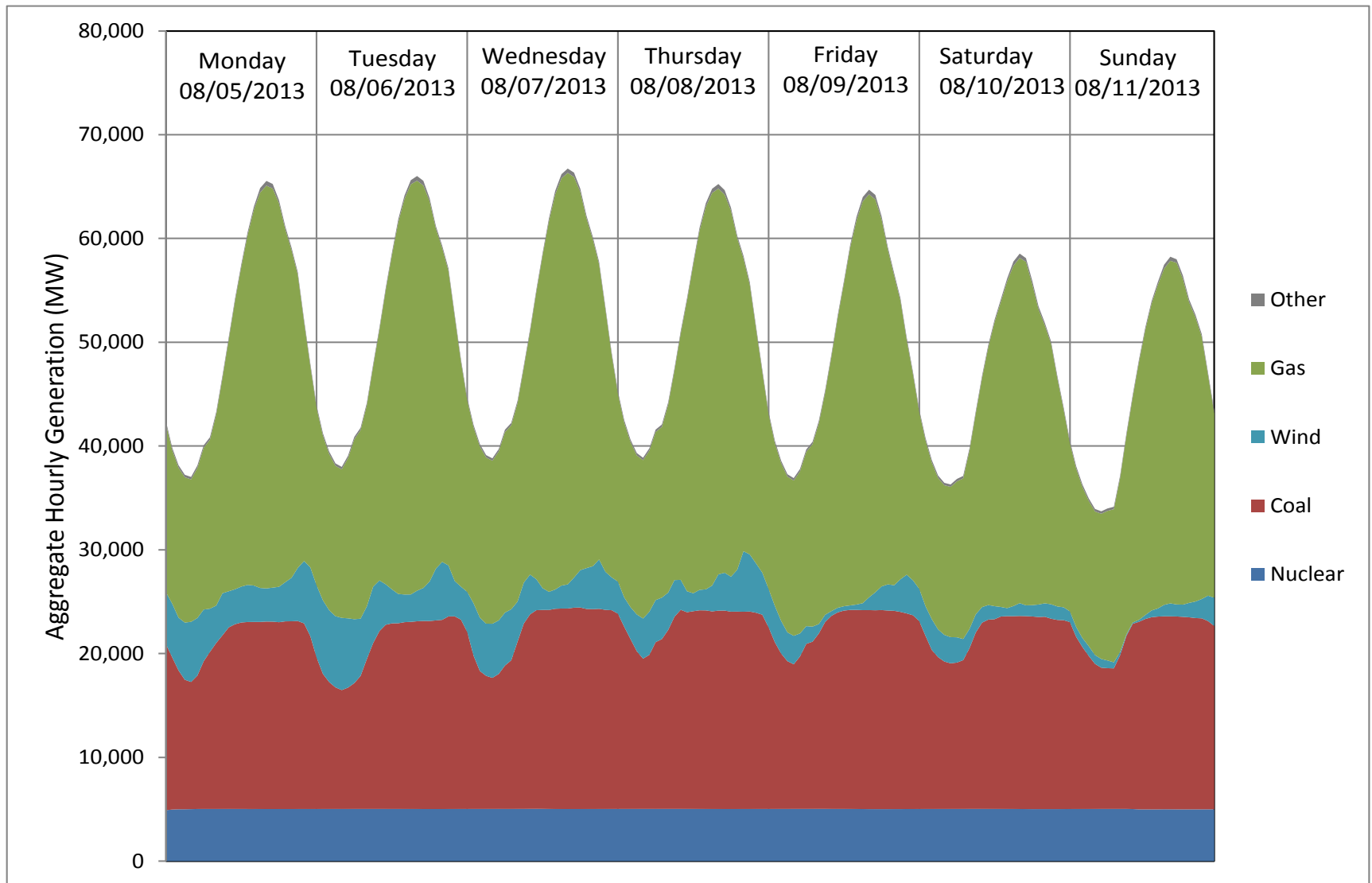


Energy Use 2003

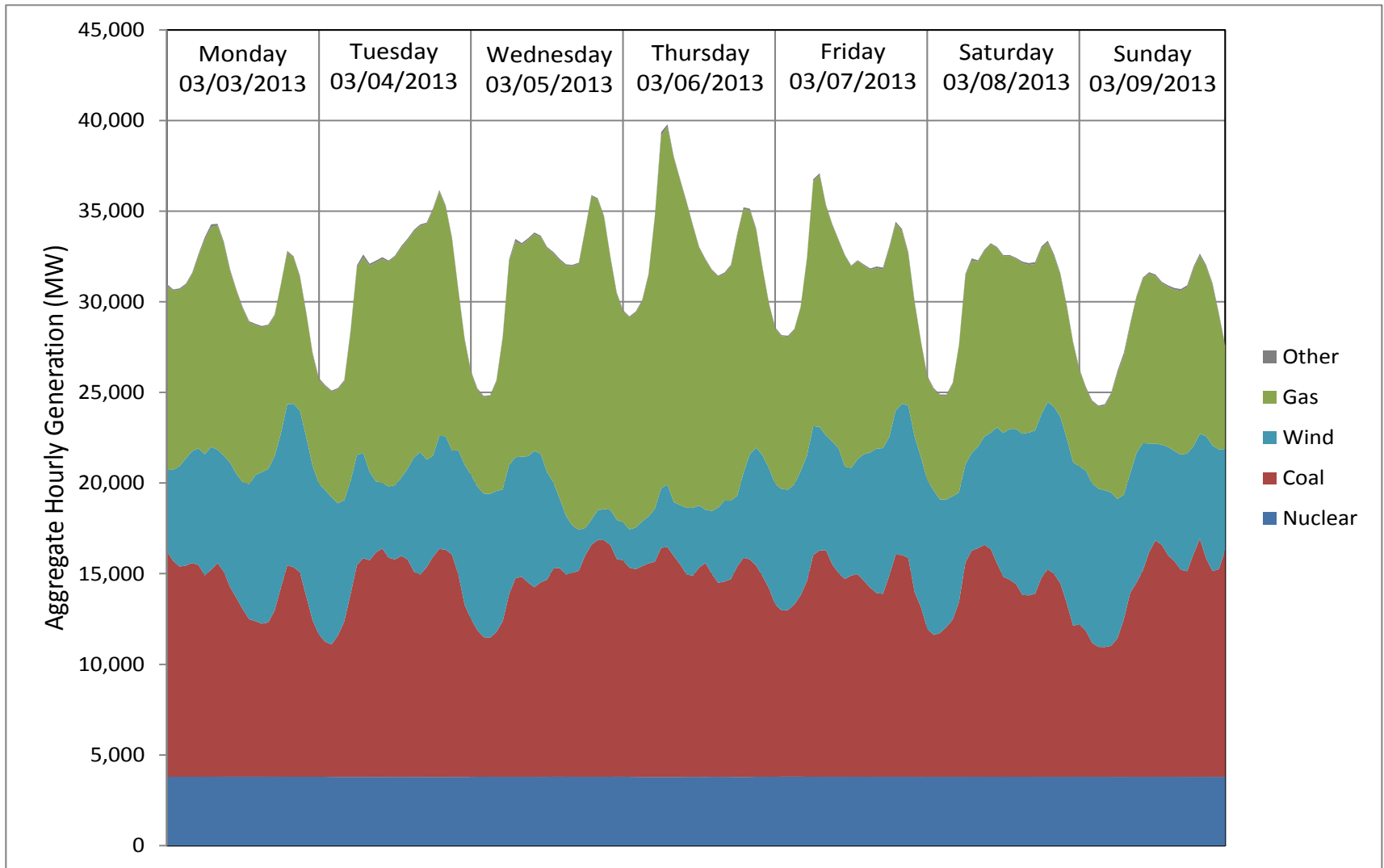


Energy Use 2013

Typical August Generation Output

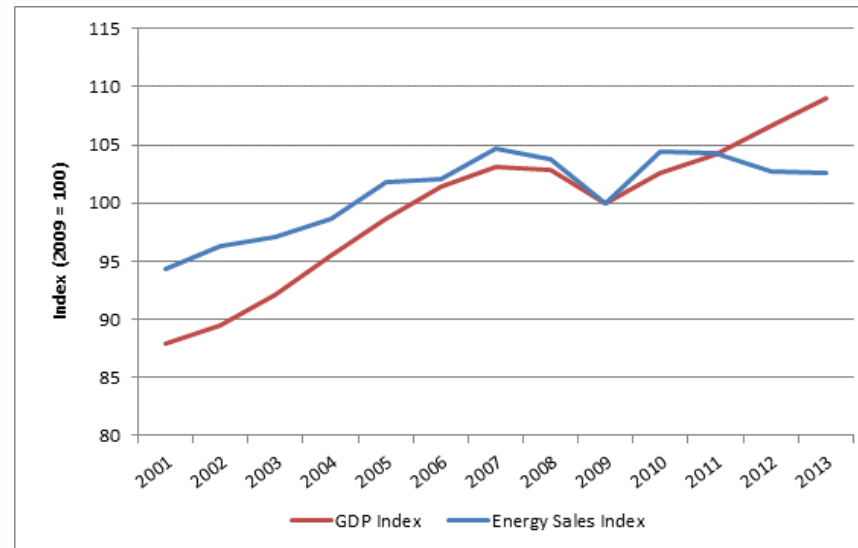


Typical March Generation Output



Performance of New Load Forecasting Methodology

- ERCOT began using new load forecasting methodology in 2014. While we have limited data, so far results indicate it tracks against experience more closely than previous model
- We expect the new model will be more accurate by 1,000 - 2,000MW over the long term
- New model reflects national trend of total energy growing at a different rate than peak demand (the CDR is based on peak demand estimates)



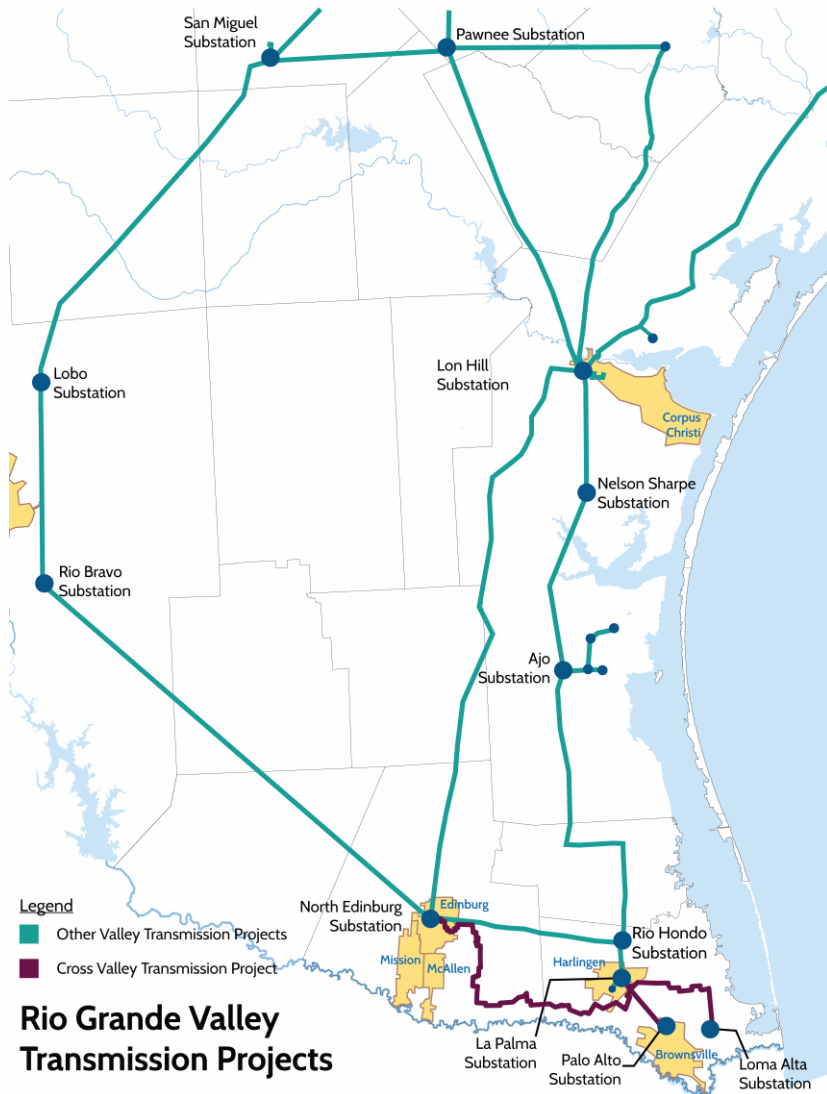
Generation Development in ERCOT

ERCOT interconnection queue as of September 2, 2014:

Fuel Type	Initial Screening Study Projects (MW)	Full Interconnection Study Projects (MW)	Interconnection Agreement Executed (MW)	Total (MW)
Natural Gas	9,517	16,252	6,792	32,561
Coal	0	0	270	270
Wind (ELCC 8.7%)	2,875	13,650	8,852	25,377
Solar	588	3,208	265	4,061
Storage	0	594	0	594
Total	12,980	33,704	16,179	62,863

Historically, approximately 15% of capacity under study reaches commercial operations.

Transmission Infrastructure Upgrades



ERCOT staff and stakeholders work together to address regional needs for new transmission infrastructure.

The Lower Rio Grande Valley project will upgrade and increase capacity of facilities that import power into the Valley from the Corpus Christi area and will provide a new circuit into the Valley from the Laredo area.

The Cross Valley project will provide a new circuit connecting facilities in Hidalgo County to the facilities at the Brownsville Ship Channel.

The ERCOT Regional Planning Group is evaluating a need for additional improvements to keep up with growth in the region.

Transmission Infrastructure Upgrades

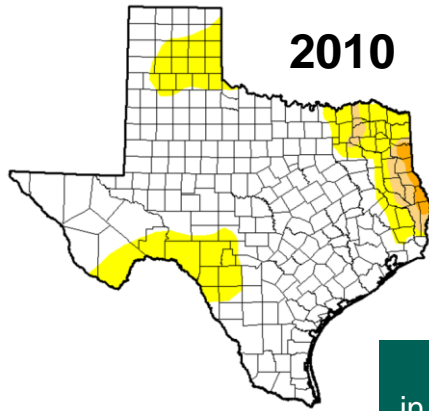


The Houston Import project will address both the near-term and long-term reliability needs in the Houston area.

The Houston Import project includes new Limestone-Gibbons Creek-Zenith 345 kV double-circuit lines.

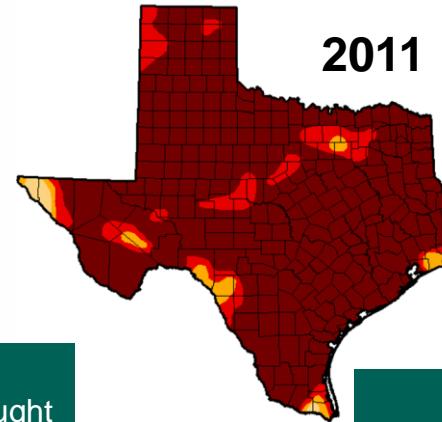
ERCOT Board of Directors endorsed the project in April 2014 and the new Limestone-Gibbons Creek-Zenith 345 kV double-circuit lines were deemed critical to reliability pursuant to Public Utility Commission of Texas Substantive Rule 25.101(b)(3)(D).

Tracking Mid-September Drought Conditions



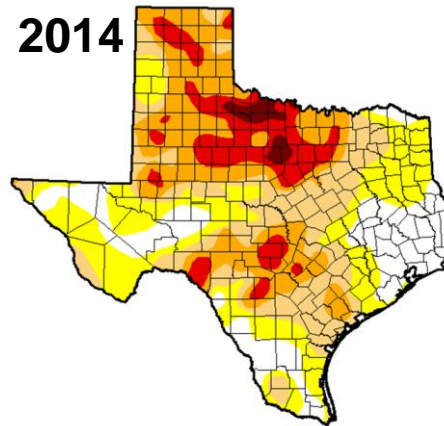
2010

3% of the state
in moderate or worse drought



2011

100% of the state
in moderate or worse drought

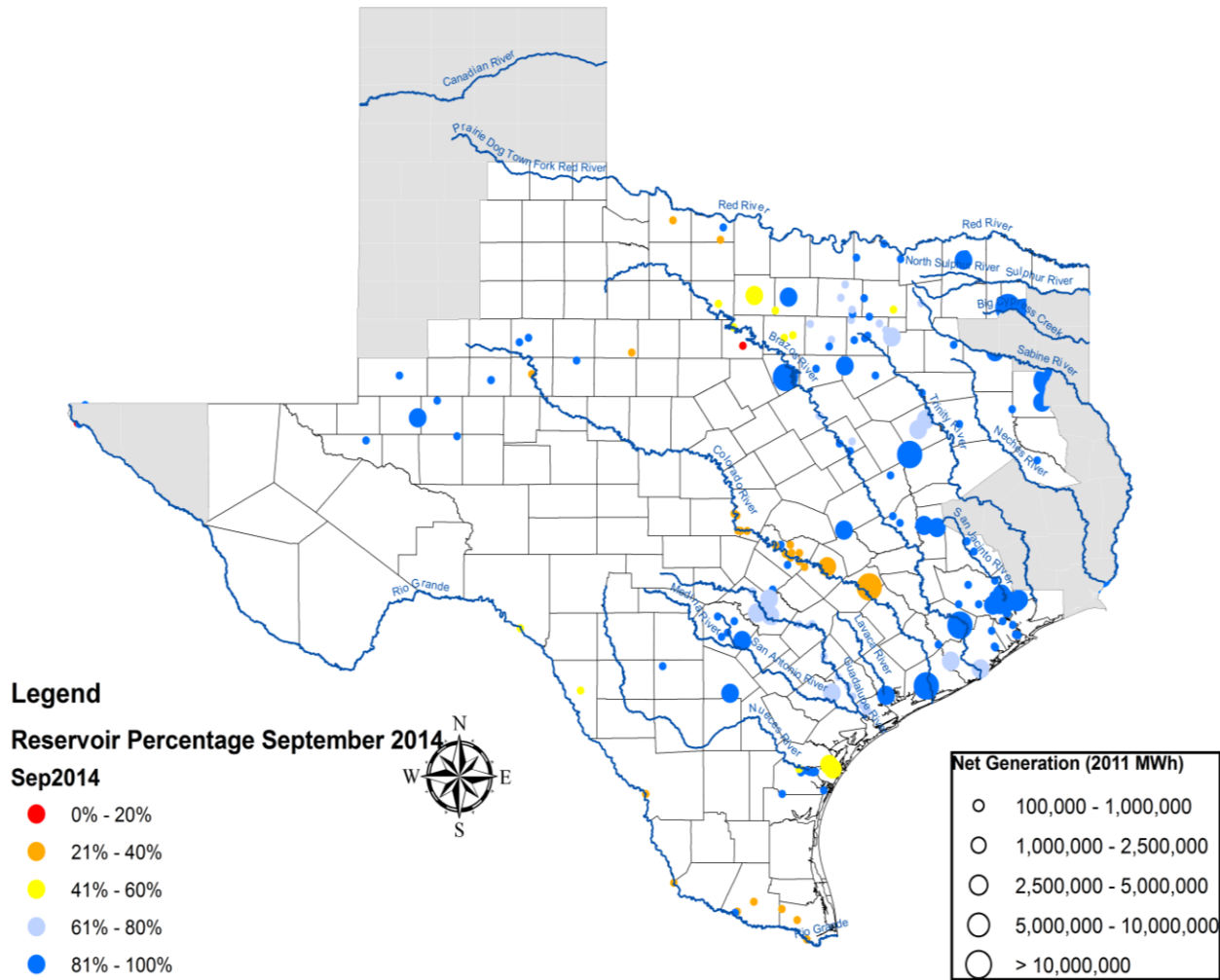


2014

57% of the state
in moderate or worse drought

Maps from National Drought Mitigation Center

Lake Levels Update – September 1, 2014



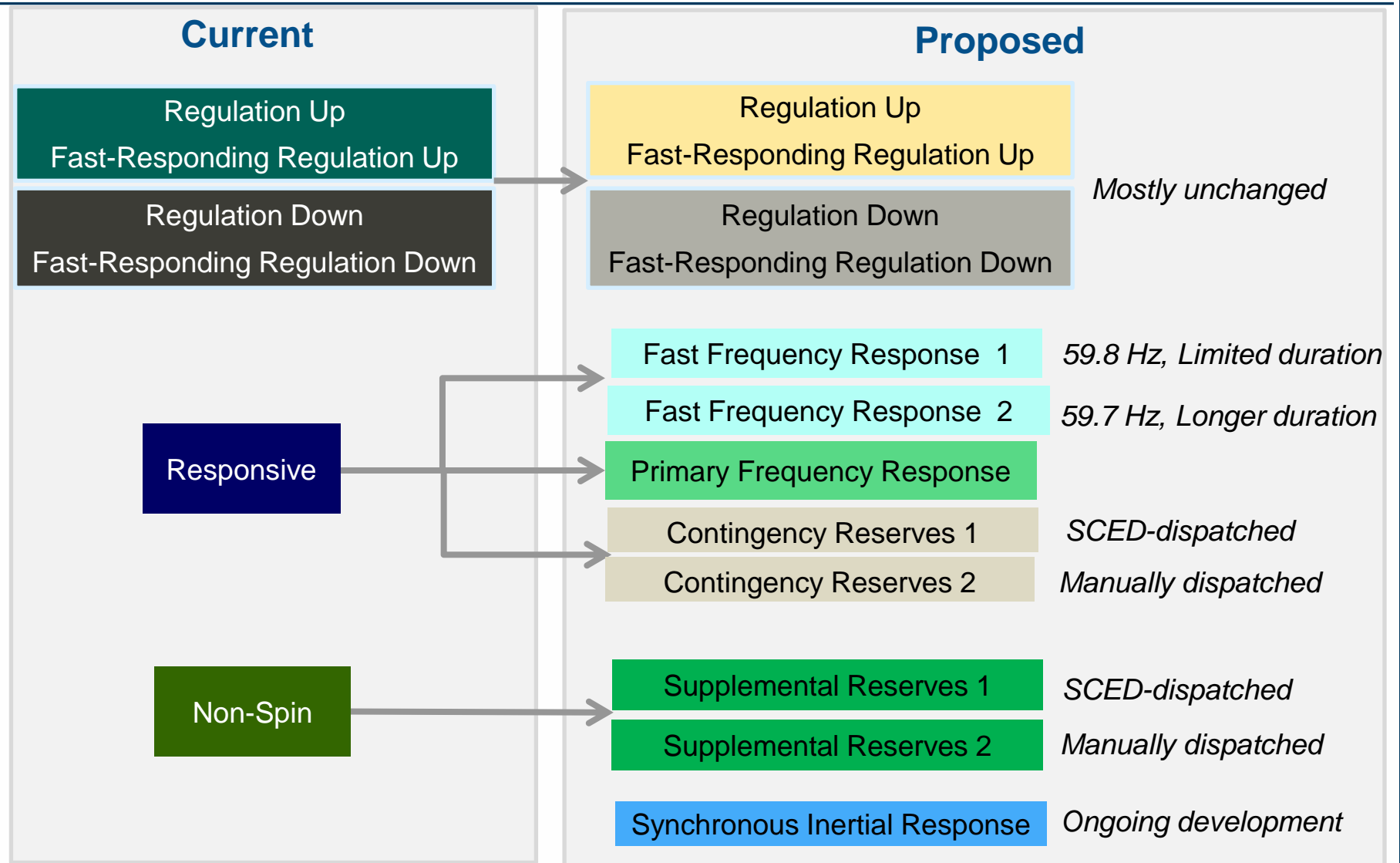
Drivers for New AS Framework

Current AS Framework has performed well.

However, declining synchronous inertia raises concerns for the future. To address these concerns ERCOT has reviewed the current AS products and has considered:

- Defining required AS products based on the system needs to maintain reliability and meet regulatory requirements (BAL-003).
- Un-bundling Responsive Reserve into a frequency responsive component and a ten minute ramp product. This will allow more Resources to be qualified to provide the individual services and increase liquidity.
- Specifying the requirements for each service clearly to allow different technologies the opportunity to compete.
- Developing markets for products required for reliability that do not currently exist

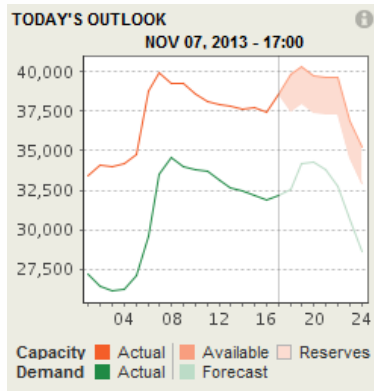
Transition to Future Ancillary Services



Real-Time Market Improvements: Concept Paper

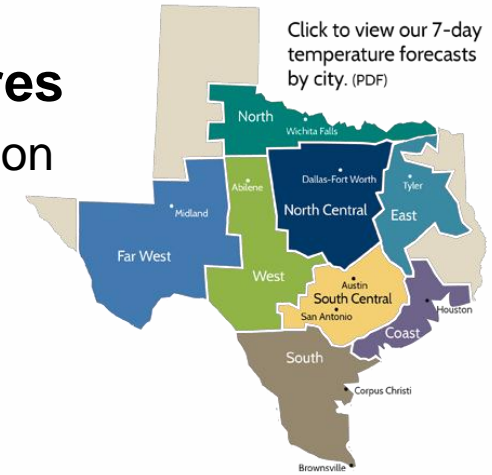
- **Concept Paper on Real-Time Market Improvements for consideration by stakeholders submitted to TAC on September 19, 2014**
- **Concept Paper presents two topics for improvement that can be implemented together or ‘a la carte’**
 - RT energy and AS Co-Optimization
 - RT Multi-Interval Market
- **The concept paper describes the functioning of each of these potential improvements and lists the issues that need to be discussed and resolved.**

Improving communications with consumers



ERCOT website – added features

- **Today's Outlook:** Hourly generation and load information
- **Weather page:** Daily, seasonal



Social media – join us!

- Twitter: 6,000+ followers
- Facebook: 1,500+ friends
- LinkedIn: 3,000+ followers

ERCOT Energy Saver mobile app

- System conditions – hourly and real-time updates
- Wholesale pricing information – Hubs and Load Zones
- Other improved features and information sharing

