# Resource Adequacy Assessment

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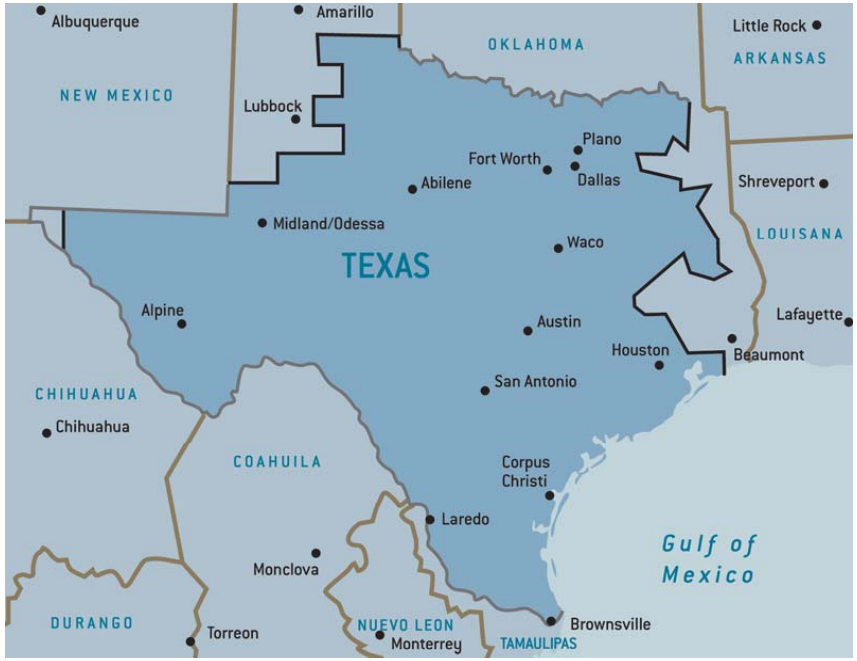
# What is ERCOT?

## What do we do?

The Texas Legislature restructured the Texas electric market in 1999 by unbundling the investor-owned utilities and creating retail customer choice in those areas, and assigned ERCOT four primary responsibilities:

- System reliability – planning and operations
- Open access to transmission
- Retail switching process for customer choice
- Wholesale market settlement for electricity production and delivery.




## ERCOT FACTS

- 75% of Texas land
- 85% of Texas load
- More than 40,000 miles of transmission lines
- 550+ generation units
- 68,379 MW peak demand (set August 3, 2011)
- Physical assets are owned by transmission providers and generators

# New Records

## New Peak Demand Record: 68,379 megawatts

- 68,379 megawatts (MW), Aug. 3, 2011
- The 2010 peak demand – 65,776 MW, Aug. 23, 2010 – was broken 3 consecutive days:
  - Aug. 1, 2011 66,867 MW
  - Aug. 2, 2011 67,929 MW
  - Aug. 3, 2011 68,379 MW

## New Weekend Record

- 65,159 MW, Sunday, Aug. 28
  - 5 percent increase over 2010 previous record – 62,320 MW

## Winter Peak Record

- 57,282 MW (February 10, 2011)
  - 3 percent increase over 2010 previous record - 55,878 MW

## Wind Record

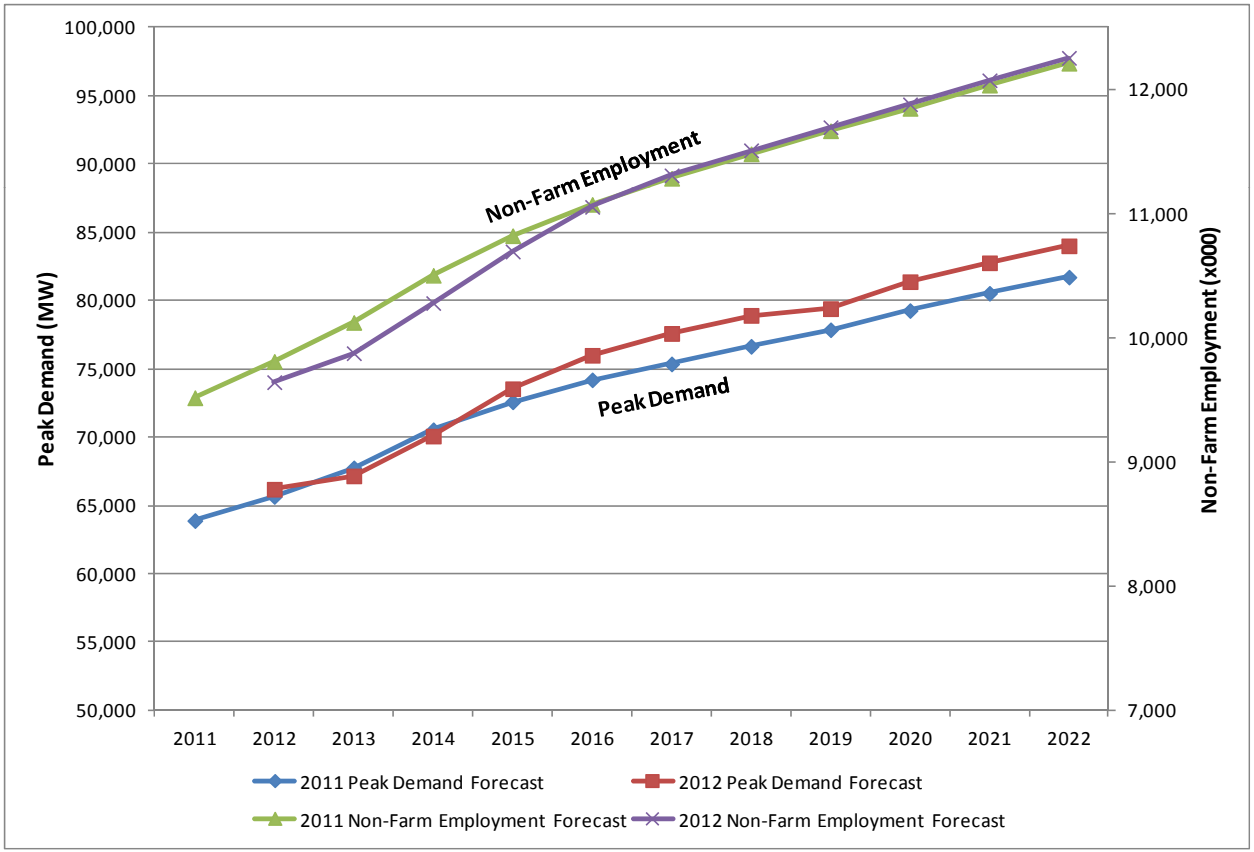
- A new wind record of 7,400 MW occurred on Oct. 7, 2011 at 15:06. This instantaneous value surpassed the previous value of 7,355 MW from June 19, 2011.
  - Non-Coastal Wind = 6,433 MW (78.3% of installed capacity)
  - Coastal Wind = 967 MW (79.5% of installed capacity)
  - Wind was supplying 15.18% of the 48,733 MW load

# Resource Adequacy – Context

- Capacity, Demand and Reserves (CDR) Report typically released in December and May
- Analysis of peak days this summer noted differences between May CDR inputs / assumptions and actual reserve availability during August 2011
- ERCOT proposed several improvements to the CDR, as well as the creation of a new report – the *Seasonal Assessment of Resource Adequacy* (SARA) – to facilitate understanding of near-term risks
  - SARA would be based on most-current available projections of inputs
  - Inputs to SARA would be deterministic ranges; comparison would not be made to target reserve margin
- These concepts have continued to evolve over last two months, through discussions with the Generation Adequacy Task Force, the Regional Planning Group, and during the formulation of the reports

# 2012 CDR – Load Forecast

- **Updated economic forecast from Moody's**
  - Slower growth in near-term
- **Updated assessment of normal weather profile**



# 2012 CDR – Resource Changes June to Dec 2011

**The Peak Demand forecast has been updated (increase in Firm Load Forecast of 738 MW for 2012)**

-1% reserve margin impact

| **Additional Mothballed Units** | **Capacity (MW)** |
|---|---|
| Greens Bayou 5 | -406 |
| Midlothian 5 | -225 |
| Monticello 1 | -565 |
| Monticello 2 | -565 |
| Sam Bertron 3 | -230 |
| Sam Bertron 4 | -230 |
| Sam Bertron T2 | -13 |
| Change in Prob. Of Return %s | 717 |
| | **-1517** |

| **Mothballed Units Returned to Service** | |
|---|---|
| Spencer 4 | 61 |
| Spencer 5 | 61 |
| Sam Bertron 1 | 174 |
| Sam Bertron 2 | 174 |
| | **470** |

| **Planned Units** | | |
|---|---|---|
| 09INR0001-Sandy Creek 1 | -925 | Delayed |
| 09INR0029-CFB Power Plant Units 11&12 | -260 | In-service, but zero net capacity to grid |
| 11INR0086-RRE Austin Solar | -60 | Delayed |
| 08INR0011-Senate Wind Project | -13 | Delayed 150 MW Unit at 8.7% |
| Misc DG Units | 25 | New |
| | **-1234** | |

| **Changes to Unit Maximum Sustainable Limits reported in RARFs** | |
|---|---|
| Net Change | **339** |

| **Change to PUN Available Generation based on Aug 2011 Actuals** | | |
|---|---|---|
| Net Change | **-681** | Based on Aug 2011 Actual Output |

| **Total Change in Resources Available** | **-2623** |
|---|---|

-4% reserve margin impact

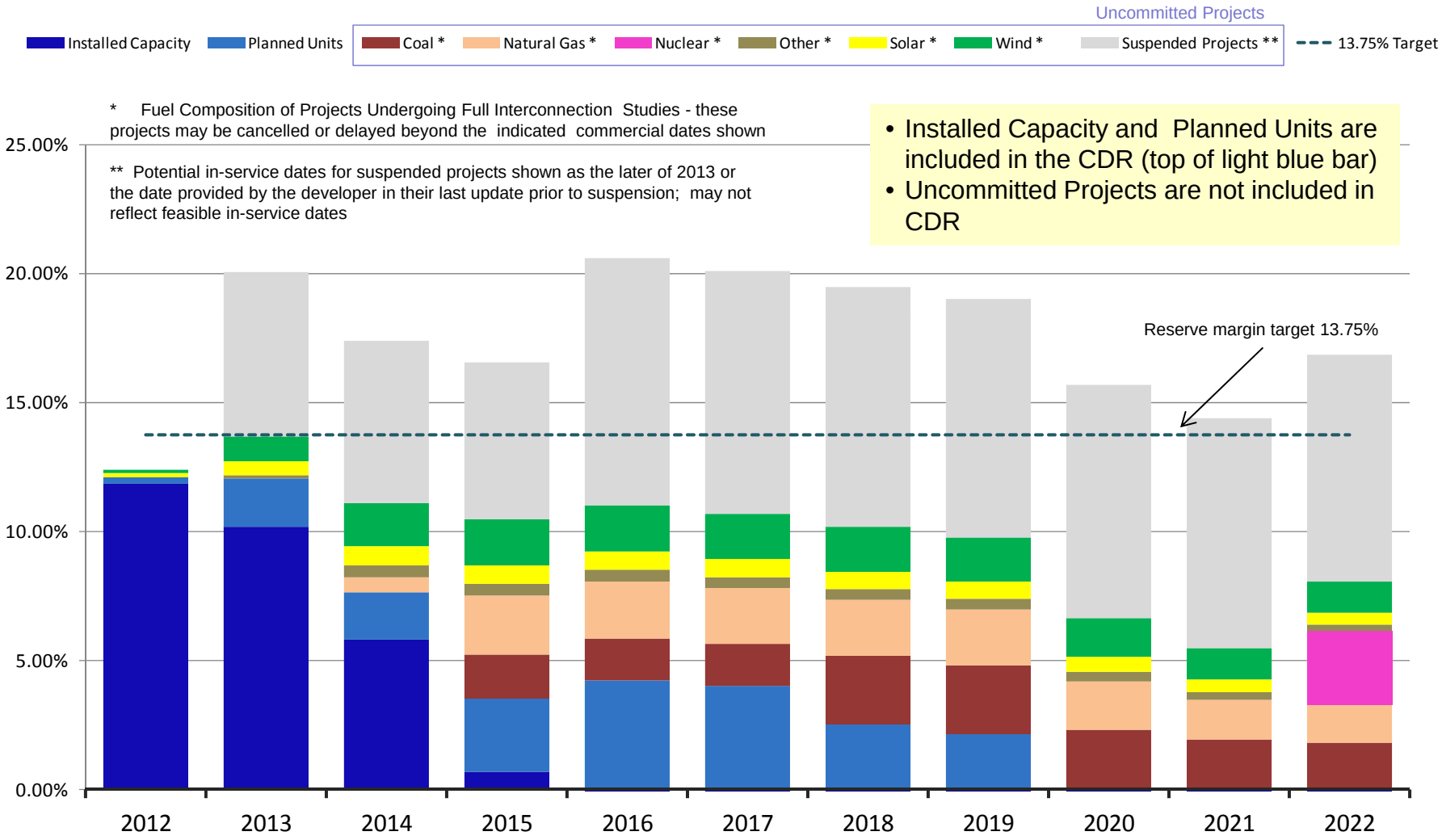
*Jack County 2 (565MW) and Sherbino Mesa Wind 2 (150MW with ELCC of 13MW) moved from Planned to Installed*

# 2012 CDR – Generation Interconnection Queue Update

- ERCOT requested each Transmission Service Provider (TSP) perform a comprehensive assessment/update of the current status of each of their assigned generation interconnection studies.
- Several studies had been cancelled, and others had been "suspended" by agreement between the TSP and the generation developer, but could be reactivated and completed by similar agreement.
- The table below shows the MW by fuel type of interconnection studies that were changed from "active" to either "cancelled" or "suspended" as a result of this survey:

| Fuel Type | Cancelled Studies (MW) | Suspended Studies (MW) |
|---|---|---|
| Gas-AllOther | | |
| Gas-CombinedCycle | 1,939 | 2,890 |
| Total Gas | 1,939 | 2,890 |
| Nuclear | | 2,700 |
| Coal | | |
| Wind | 4,525 | 12,554 |
| Solar | 236 | 353 |
| Biomass | | 50 |
| Other | 700 | |
| Grand Total | 7,400 | 18,547 |

# 2012 CDR – Reserve Margin, with Potential Resources from Queue



# Resource Adequacy – Jan 2012 Update

| Summer 2012 | 12/01/11 CDR for 2012 | 1/09/12 Current |
|---|---|---|
| Firm Load Forecast (MW) | 64,618 | 64,618 |
| Resources (MW) | 72,444 | *73,574 |
| Reserve Margin (Target = 13.75%) | 12.11% | 13.86% |

*

**Returned to Service (MW)**

Monticello 1&2 – 1130MW (as a result of a federal court's order to stay EPA's CSAPR)

# SARA Concept

- **The Seasonal Assessment of Resource Adequacy (SARA) report is a deterministic approach to considering resource adequacy for a near-term season**
  - Specific information may be available (such as seasonal climate forecasts or anticipated common-mode events such as drought) which can be considered in calculating the range of resource adequacy in a more deterministic manner – information that is not available for the long-term timeframe of the CDR.
- **The SARA report is intended to illustrate the range of resource adequacy outcomes that might occur. Sensitivity analyses are developed by varying the value of certain parameters that affect resource adequacy.**
  - The variation in these parameters is based on historic values of these parameters, adjusted by any known or expected change.

# SARA Calculation

- **Calculate available reserves based on available resources (excluding resources that are only used in EEA) and normal weather load forecast from CDR**
- **Evaluate range of uses of reserves in a deterministic manner**
  - Uses of reserves:
    - Higher peak demands due to above normal weather
    - Forced generation outages
    - Planned generation outages
    - Atypical issues like drought
    - Lower wind availability
- **Determine the extent by which reserves exceed the uses of reserves, in comparison to the 2300 MW level at which EEA would be declared**

# SARA Findings

- SARA concepts based on discussions with ERCOT stakeholder groups Generation Adequacy Task Force and Resource Planning Group
- Facilitates understanding of near-term risks
- Normal Conditions – No concerns
- Simultaneous extreme weather, extreme planned outages, and extreme forced outages – Potential for outages
- Monitoring drought impact on reserves