

# Resource Adequacy in ERCOT

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PUBLIC UTILITY COMMISSION OF TEXAS

# Introduction

- Since the spring of 2011, the Commission has been exploring the issues surrounding resource adequacy in ERCOT
- In the face of continued load growth and investment challenges, the PUCT has been and continues to explore enhancements to ERCOT's energy-only market design
- The PUCT is taking steps to ensure that the ERCOT market provides sufficiently strong forward pricing signals to incent new generation
- The PUCT has and will continue to remove inefficiencies and distortions in ERCOT's pricing mechanisms so that ERCOT's scarcity pricing signals are clear and strong

# Our biggest challenge? Tight reserve margins.

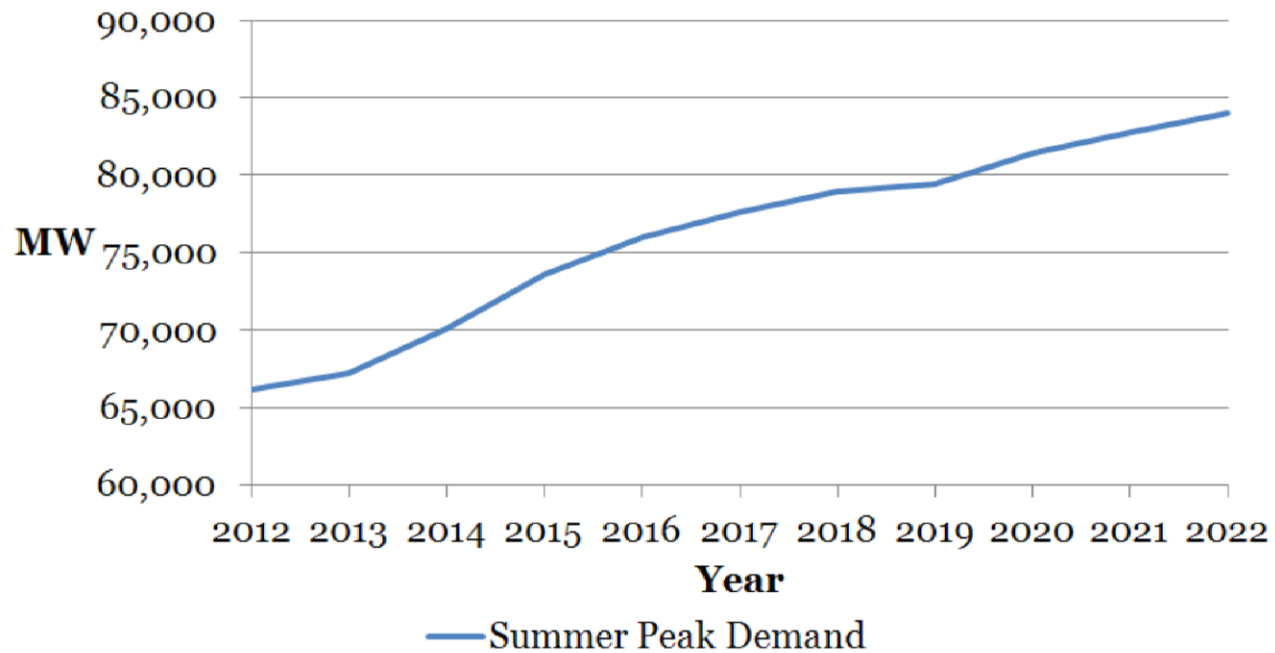
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- **TIGHT OUT YEAR RESERVE MARGINS ARE AN EXPECTED OUTCOME IN AN EFFICIENT MARKET**
- **ERCOT NEEDS MORE PEAKING GENERATION IN THE NEAR FUTURE**
- **AND...**
  - We currently find ourselves in a low natural gas, low margin period
  - Margins driven down by low/zero, even negative, cost energy injected into system off-peak by wind
  - Texas has substantially higher demand growth than anywhere else in the country (over 2% compared to less than zero in many parts of the US)

# Projected Load

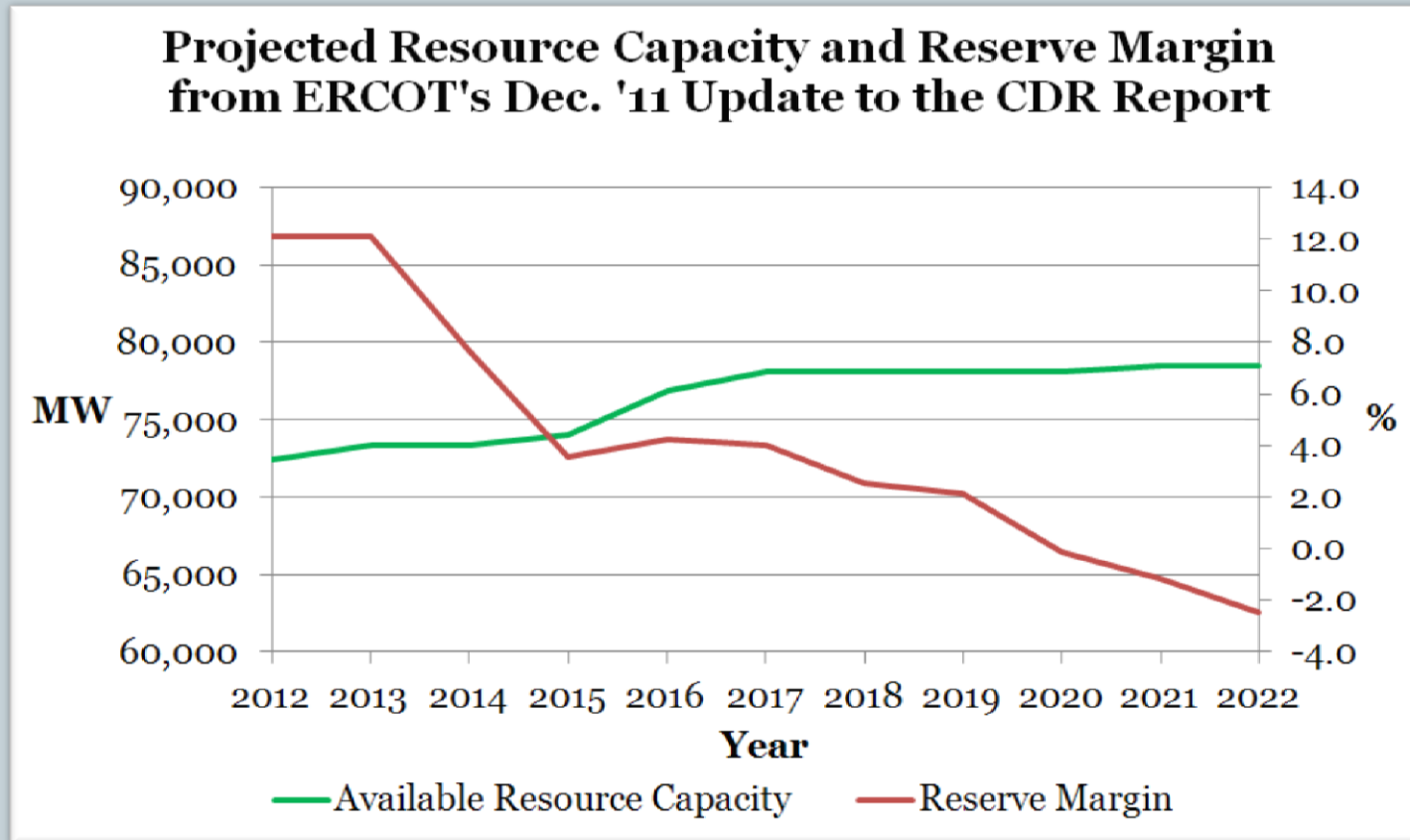
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## Projected Summer Peak Demand from ERCOT's Dec. '11 Update to the CDR Report



# ERCOT Reserve Margin Projections

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- Only units with signed interconnection agreements are included in the projected values

# 2011 Was a Year of Records

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- **Weather Records set in 2011**
  - February 2, 2011 coldest day in 22 years
  - 2011 was the hottest year in 110 years
    - ✦ New Monthly Heat Records in May, June, July, August and September
  - Driest 7-month span on record
- **Record peak demand of 68,379 MW on August 3, 2011**
  - Nearly 2,500 MW higher than actual 2010 peak demand
- **Wind generation record of 7,400 MW on October 8, 2011, 15% of total load**
- **Wind continues to set records:**
  - 7,403 MW on Tuesday, March 6, 2012 – 24% of load
  - 7,599 MW on Wednesday, March 7, 2012 - 22% of load
  - 7,917 MW on Sunday, March 18, 2012 – 24% of load

# Has ERCOT experienced tight reserve margins before? Yes.

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- Summer of 1998. Very hot, tight summer. Severe concerns about reserves
- 2005 Reserve Margin Report showed inadequate reserves by 2010
- 2006 Reserve Margin Report showed inadequate reserves by 2008
- 2008 Report showed inadequate reserves by 2013
- 2009 and 2010 Reports showed adequate reserves through at least 2014

# New Investment Challenges

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- Influx of wind has been very good in the short-term for electricity customers, but creates significant long-term challenges by creating a “peak-ier” system
  - Very low off-peak prices/low natural gas prices mean power plants make vast majority of margin in summer
  - Much of our wind power investment was driven by federal tax credits
- Incremental investment will only be made when developers see reasonable opportunity to recover investments at a market return
- Challenging financing environment since 2007 and potential impact of Dodd-Frank
- Environmental permitting/regulation challenges creates uncertainty in capital allocation plans



# Market Design Issues

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- When there is a scarcity of energy, prices must reflect that because it encourages generators to bring more supply, and motivates demand reduction
- As reserve margins decline, ERCOT is forced to use reserves more often
- Market rules were formerly structured such that deployment of those reserves (i.e. running out of energy) inadvertently resulted in prices dropping
- PUC directed ERCOT to make certain technical changes to the market rules to prevent this outcome

# PUCT's Resource Adequacy Recommendations

- Initial PUCT recommendations were outlined in a memo filed in Project No. 37897 on Dec. 7, 2011
  - Established three prioritized categories of action items
- Provided guidance to ERCOT and Staff at the December 8, 2011 open meeting:
  - ERCOT began working on the issues in the three prioritized categories over which it has control and filing status reports in Project No. 37897 prior to open meetings
  - Staff opened rulemakings to address the issues over which the Commission retains control
- Additional guidance was provided in memos filed on March 7, 2012 and March 21, 2012 in Project No. 37897

# Category One

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- **DONE** – Energy price floors for Non-Spinning Reserve Services (NSRS) established:
  - \$120 for online NSRS and
  - \$180 for offline NSRS
- **DONE** – Energy from Responsive Reserves and Up-Regulation priced at the System-Wide Offer Cap (SWOC)
- **DONE** - P.U.C. Subst. R. 25.504(c) “small fish swim free exemption”
  - A power generation company that controls less than 5% of the installed generation capacity in ERCOT, is deemed not to have ERCOT-wide market power
  - Commission clarified the 5% calculation by publishing the denominator in Oct. 2011 and again in Jan. 2012 (Project No. 39870)
  - The commission will probably update the denominator semi-annually (January and June)
  - The Commission will provide some bidding-strategy certainty for companies through Voluntary Mitigation Plans
  - The Commission will ask the Brattle Group to study its market power abuse rules
- **DONE** - Formalized a process for recalling mothballed Units with energy to be priced at the SWOC

# Category Two

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- **DONE** - Expanded Responsive Reserves by 500MW, with corresponding reduction to NSRS
- **IN PROGRESS** – Power Balance Penalty Curve (PBPC) modifications
  - The cap on the PBPC may be raised higher than the SWOC, if so probably to \$4,500
  - This may require other adjustments to accommodate pricing changes for Responsive Reserves, Up-Regulation, RUC for Capacity and Involuntary RMR
- **MOSTLY DONE** – Established a price floor of the SWOC for energy from Reliability Unit Commitment (RUC) units
  - Revenue claw-back still under discussion at ERCOT

# Category Three

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- **RULE CHANGE** - Raising the SWOC
  - Draft rule to be presented at the April 12, 2012 open meeting
  - Proposed levels for the SWOC:
    - ✦ are contained in March 21<sup>st</sup> Commissioner Anderson memo and
    - ✦ will be evaluated by the Brattle Group
- **NPRR 444** - How to treat energy below the Low Sustained Limit (LSL)
  - Likely scenario: ERCOT will run Security Constrained Economic Dispatch (SCED) twice
    - ✦ once including energy below the LSL so that the grid can be properly balanced (with some generation constrained even if there is a price match) and
    - ✦ a second time as if the energy below the LSL were not online, to establish the proper price

# Category Three Con't

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- **NPRR 416** – Considering removal of the RUC revenue claw-back for resources, other than RMR units, if a reasonable bid is made into the day-ahead market (DAM)
  - If no bid into the DAM is made, the 100% claw-back would still apply
  - Might allow owners to buy back and offer their unit into the market rather than having ERCOT control it through the RUC process.
- **RULE CHANGE** – Modifying the Peaker Net Margin (PNM)
  - Draft rule to be presented at the April 12, 2012 open meeting
  - Trigger = \$262,500
  - LCAP = \$2,000
- **FUTURE** –
  - Whether ERCOT can substantially reduce or eliminate NSRS after full implementation of Look-Ahead SCED; including the full integration of quick-start resources into SCED and co-optimization of real-time energy and ancillary services

# March 22, 2012 Open Meeting

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- Directed Staff to bring a proposed rule to the April 12, 2012 Open Meeting that is based on and/or includes:
  - Case No.3 from Commissioner Anderson's March 21, 2012 memo in Project No. 37897
    - ✦ Raises the SWOC in steps from \$5,000 to \$9,000
    - ✦ Beginning in 2013, and ending in 3, 4 or 5 years
  - PNM proposal from Chairman Nelson's March 6, 2012 memo in Project No. 37897
  - Questions from the Commissioner Anderson March 21, 2012 memo, including specifically seeking comment on Cases 1 and 2 (raising the SWOC to \$6,000 and \$7,500 respectively over three years)
- Directed ERCOT to evaluate and report at the April 12, 2012 Open Meeting on the protocol changes that would be needed to implement an increased cap on the PBPC in 2012 and the appropriate bids for:
  - Responsive Reserves
  - Up-Regulation
  - RUC for Capacity
  - Involuntary RMR

# Rules in Progress

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- Project No. 37897 – Resource Adequacy (omnibus project)
- Project No. 39674 – Energy Efficiency (proposed rule expected in early April)
  - May allow load programs to be dispatched during system emergencies
- Project No. 39797 – Distributed Generation (adopted rule expected in late April)
  - Allows potentially wasted gas to produce electricity for the grid
- Project No. 39917 – Energy Storage (rule adopted at March 22, 2012 open meeting)
  - Will decrease barriers to entry for energy storage
- Project No. 39948 – Emergency Interruptible Load Service renamed Emergency Response Service (rule adopted at March 22, 2012 open meeting)
  - Adds Distributed Generation as a resource eligible to participate



# Conclusion

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- PUCT committed to an energy-only market design
- PUCT cannot eliminate all investment risk
- PUCT has and will continue to remove inefficiencies and distortions in ERCOT's pricing mechanisms so that ERCOT's scarcity pricing signals are clear and strong

# Contact Information

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