ERCOT'S CAPACITY RESERVE MARGIN

PRESENTATION TO SENATE COMMITTEE ON NATURAL RESOURCES

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ERCOT Market Design

- ERCOT has an “Energy-only Market” wholesale market design. Owners of generation are only paid for the electricity they actually put out on the grid, unlike the other restructured markets in the United States.
- The only exception to this rule are the capacity payments that are part of the daily bids to provide ancillary services, the reliability and operational resources that ERCOT uses to maintain grid stability and beginning June 1, 2014, payments from the Operating Reserve Demand Curve.

Problems with a Mandatory Capacity Reserve Margin

- Currently ERCOT has a 13.75% *"target"* capacity reserve margin.
- Why is the *nature* of ERCOT's capacity reserve margin important?
  - If ERCOT retains a "*target*" capacity reserve margin it is of relatively lower importance because it only is a signal to generation investors of when to build. It is also the reason that ERCOT's load forecasts have not, until recently, received much scrutiny.
  - If ERCOT adopts a "*mandatory*" minimum capacity reserve margin, it becomes very important because it drives the amount of generation procured either in forward capacity auctions or some other process and translates into dollars imposed on consumers.
- A mandatory capacity reserve margin will result in billions of unnecessary, unavoidable and largely un-hedgeable costs to customers, without guaranteeing rolling blackouts will not occur.

Problems with a Mandatory Capacity Reserve Margin: Likely to Lead to Unrealistic Expectations

- ERCOT has NEVER experienced a grid collapse, unlike many other parts of the country.
- There have been two ERCOT involuntary rotating load-shed events to avoid grid collapse:
  - April 2006:
    - Had a 16.4% capacity reserve margin;
    - A heat related event;
    - A large number of generation units were down for planned maintenance; and
    - Wind dropped off unexpectedly.
  - Feb. 2011:
    - Had between 15.9% and 17.5% capacity reserve margin;
    - A cold weather event.
- And, in the **winter of 1989**, before ERCOT was the balancing authority, and local vertically integrated electric utilities were their own balancing authority Houston Power and Light had to initiate rolling blackouts to maintain their system because of weather related gas curtailments and generation outages, even though they had a **capacity reserve margin of over 30%.**

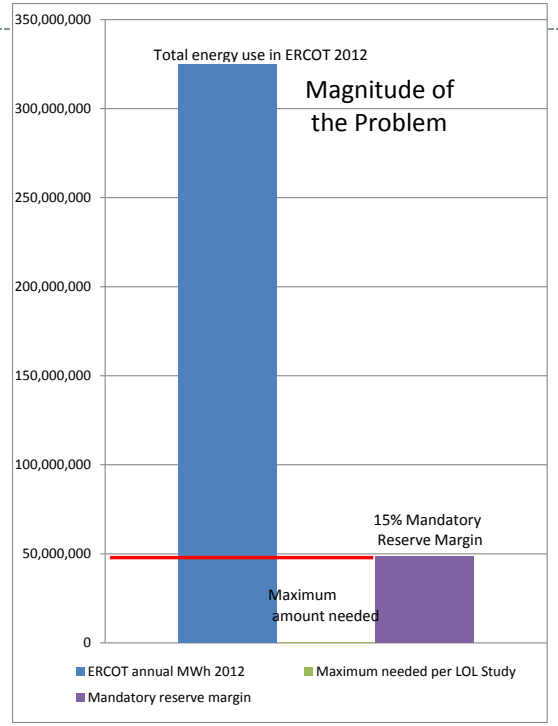
Points to Consider

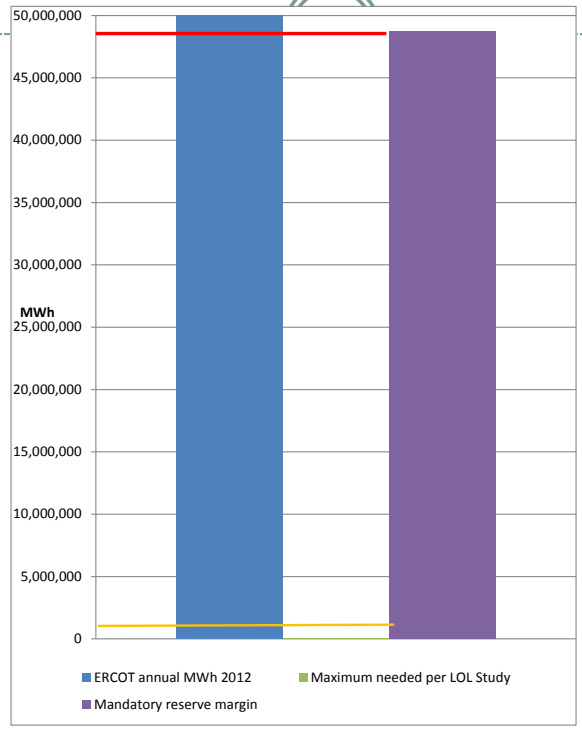
- Tight reserve margins more than 3 years out are to be expected in an efficient Energy-Only market that exists in a state or region that is experiencing continued economic growth and increased electricity consumption.
- It is VERY important to remember that normal system planning and the resulting installed capacity reserve margins do not avoid the risk of rolling blackouts from 'black swan' events – events that occur outside of reasonable planning criteria.
- If we adopt a mandatory reserve margin there is the danger of creating unrealistic expectations; particularly if we were to go to a centralized forward capacity market (CFCM) construct.

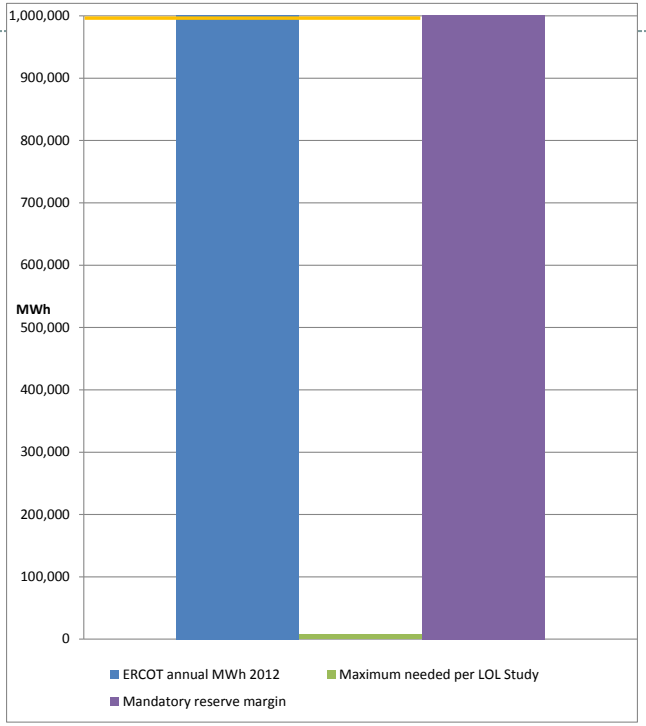
ERCOT Has Seen Forecasted Tight Capacity Reserve Margins Before

- Summer of 1998. Very hot, tight summer. Severe concerns about reserves.
- June 2005 Report on Capacity, Demand and Reserves in the ERCOT Region (CDR) showed inadequate reserves by 2010.
- June 2006 CDR showed inadequate reserves by 2008.
- May 2008 CDR showed inadequate reserves by 2013.
- May 2009 and 2010 CDRs showed adequate reserves through at least 2014.
- An efficient energy-only market with growing consumption should always show a capacity reserve margin shortfall 4-5 years out.

Capacity Market Advocates Say Buy the Purple to Cover the Green





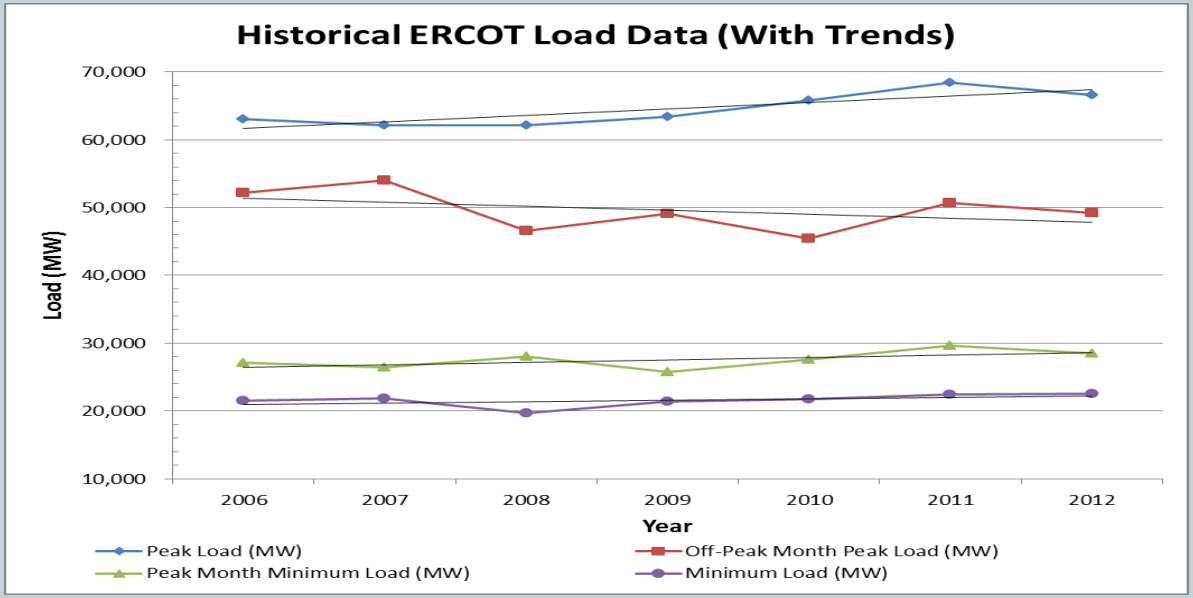


These graphs show how small the problem is relative to how much generation capacity market advocates say must be purchased to increase reliability 0.00219%. The graphs zoom in from left to right, note the common marking lines. The first slide shows how many MWh were consumed in ERCOT in 2012, what the mandatory reserve margin would be at 15%, and in the center column, the maximum amount of incremental generation capacity that would be required in 2016. Setting a mandatory reserve margin at 15% would require the purchase of the purple column, in order to cover *possible* outages of the green column. If we use the capacity payment from the PJM market in 2012 of $6.02/MWh (total consumed), the total cost would have been $6.02/MWh x 324.859 million MWh (total consumed in ERCOT) = $1.956 billion/year. Requiring a mandatory reserve margin of 15% in 2012 would have resulted in the $1.956 billion purchase of 48.73 million MWh extra (the purple column) in order to protect against the *possible* outage of 1,500 MW for 4.73 hours spread out over the *entire* year (the green column).

If in the remote possibility that the capacity shortfall represented by the green column were to occur in 2016, ERCOT's reliability would still be 99.998%. The capacity market advocates say we need to spend $1.956 billion annually to solve a *potential* 0.00219% reliability problem.

The REAL Scope of the Problem: ERCOT *does not* need more Base Load Generation

- ERCOT's high low load trend is relatively flat, so ERCOT has sufficient base load generation.



- ERCOT's Resource Adequacy "problem" actually is only an issue of 160 hours during the summer, out of 8760 total hours per year. (< 2% of the time)
  - 4 hours per day x 5 days per week x 8 weeks per year.
  - And this is probably an inflated number, the real problem likely is less than 80 hours a year.
  - In July 2011, there were no intervals where reserves dropped below 2000 MW.
  - In August 2011, there were a total, but non-continuous, 4.68 hours when reserves fell to a level just above involuntary load curtailment. No load was involuntarily curtailed.