“Resource Adequacy in ERCOT”

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ANALYSIS OF ERCOT’S CAPACITY RESERVE MARGIN
OCTOBER 31, 2012

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.
    - Note: For reliability purposes, ERCOT procures three types of operating reserves on a daily basis:
      - 2,800 MW of spinning reserves (half provided by loads),
      - Between 500 – 1,500 MW of non-spinning reserves (mostly quick start), and
      - Between 250 - 900 MW of regulation-up.
    - ERCOT's daily operating reserve procurements represent approximately 4.7%– 6.9% of ERCOT's total installed capacity.
  - 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.

A Mandatory Capacity Reserve Margin Likely Will Lead to Unrealistic Expectations

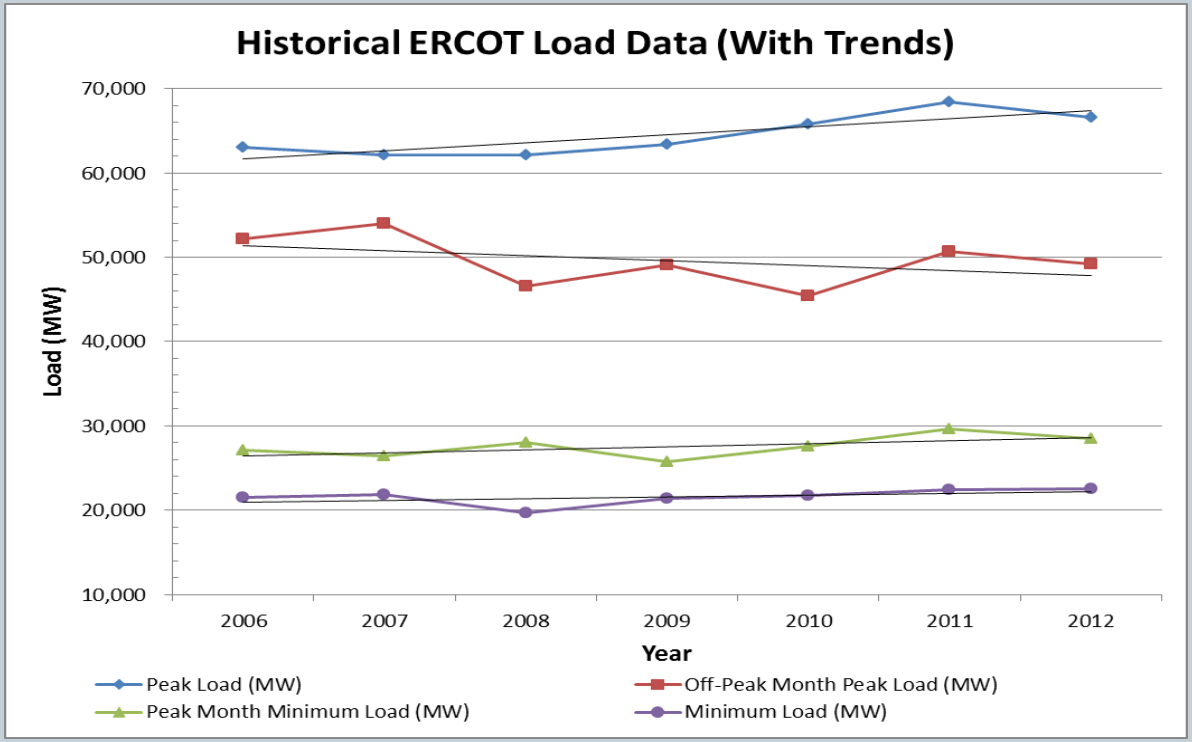
- ERCOT has NEVER experienced a grid collapse, unlike many other parts of the country.
- There have been two ERCOT involuntary rotating load-shed events to avoid grid collapse:
  - April 2006:
    - Had a 16.4% capacity reserve margin;
    - A heat related event;
    - A large number of generation units 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%.
- 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 the reasonable planning criteria.

ERCOT Has Seen 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 should always show a capacity reserve margin shortfall 4-5 years out.

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.

Since Jan. 1, 2012

- Market reforms begun in late 2011 were completed before May 1, 2012.
- Nearly 2,000 MW of mothballed generation voluntarily returned to service for the summer of 2012.
- The ERCOT market met all demand during the summer of 2012 without entering emergency operating conditions.
- 4,318 MW of new generation has been announced, or announced obtaining financing or otherwise moving forward in the trade press.
  - 2,277 MW that is in the May 2012 CDR, and has announced obtaining financing or begun construction and
  - 2,041 MW that is *not* in the May 2012 CDR, has been announced.
  - Note: 1,900 MW of new coal capacity expected in 2017-2018 may be taken out of the December 2012 CDR because of environmental difficulties. (Las Brisas and Coleto Creek, which are subtracted on "Attachment A")

Problems with ERCOT's Capacity Reserve Margin Forecasts

- The May 2012 CDR shows ERCOT dropping below its 13.75% target reserve margin in **2014**.
- BUT, the May 2012 CDR projected capacity reserve margins for years 2014, 2015 and 2016:
  - Were based on Moody's high economic forecast, which resulted in expected load growth of 4.3%, 4.9% and 3.3% respectively, ***and***
  - Did not include:
    - All mothballed resources that can return to service in < 6 months, nor
    - All reliably anticipated new generation that had announced obtaining financing or otherwise moving forward in the trade press (2,041 MW).
- IMPORTANT: *A forecast that is too high goes right to the bottom line of the capacity reserve margin and impacts all subsequent years.*
- "**Attachment A**" to this presentation is my analysis of ERCOT's projected December 2012 CDR:
  - Is based on a lower and more realistic Moody's economic forecast (with which ERCOT agrees), which results in expected load growth of 3.8%, 4.4% and 2.8% in 2014, 2015 and 2016 respectively (which I believe probably is still too high), ***and***
  - Includes:
    - All mothballed generation that can be returned to service in less than 6 months and
    - All reliably anticipated new generation not included in the May 2012 CDR.
- CONCLUSION: ERCOT does not dip below its 13.75% target reserve margin until **2018, and then by less than .5%.** (See "Attachment A")

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2012 Report on the Capacity, Demand, and Reserves in the ERCOT Region
Summer Summary - Moody's Low Demand Forecast

Load Forecast:	2013	2014	2015	2016	2017	2018	
Firm Load Forecast, MW	64,660	67,009	69,848	71,679	72,602	73,286	reflects moody's low economic forecast - ERCOT 10/22/2012 filing
Annual Load Growth		2,349	2,839	1,831	923	684	
Annual % Demand Growth		3.6%	4.2%	2.6%	1.3%	0.9%	

		2013	2014	2015	2016	2017	2018	
	Total Existing Resources	**75,337**	**75,407**	**76,940**	**79,074**	**79,708**	**80,884**	
	less Switchable Units Unavailable to ERCOT, MW	-317	-317	-317	-317	0	0	moved to show explicitly
1	Calpine Unit expansions	0	520	520	520	520	520	public announcement, not in May 2012 CDR
2	CPS solar	25	43	95	148	200	200	public announcement, not in May 2012 CDR, assumed 50% ELCC
3	Austin Energy Sand Hill Peakers	0	0	0	0	200	200	referenced in Austin rate review documents posted on City of Austin website
4	LCRA Ferguson Plant	0	116	116	116	116	116	under construction, not in May 2012 CDR, System Planning Report
5	Summit Power - Net to Grid	0	0	0	240	240	240	System Planning Report, not in May 2012 CDR
6	STEC Peakers	0	0	200	200	200	200	referenced in Platts and other media, not in May 2012 CDR
7	minus coleto creek	0	0	0	0	-660	-660	in resources above, but cancelled per System Planning Report
8	minus las brisas	0	0	0	0	0	-1,240	in resources above, but cancelled per System Planning Report
9	GDF suez uprates	134	134	134	134	134	134	per recitation in Voluntary Mitigation Plan
10	Sharyland DC Tie expansion	0	75	75	75	75	75	50% per CDR methodology
11	NRG Peaker	75	75	75	75	75	75	public announcement
12	actual incremental Load Response seen in 2012	300	300	300	300	300	300	actual experience during 2012, above # reflects 2011 experience during EEA
13	additional wind	-35	5	62	62	62	62	System Planning Report, not in May 2012 CDR
14	Deeley Retirement by CPS Energy	0	0	0	0	0	0	included as reduced resources for 2019 in May 2012 CDR, made explicit here 2019)
15	Frontera TIAC uprate	45	45	45	45	45	45	public announcement - 10/4/2012
16	NoTrees Battery Storage	36	36	36	36	36	36	System Planning Report, not in May 2012 CDR
17	RRE Solar delay	-60	0	0	0	0	0	System Planning Report, in May 2012 CDR for 2013
	subtotal	203	1,032	1,341	1,633	1,543	303	
	Total Resources	**75,540**	**76,438**	**78,281**	**80,707**	**81,250**	**81,187**	
	Reserve Margin (May 2012 Report)	**14.3%**	**9.8%**	**6.9%**	**6.5%**	**5.8%**	**5.8%**	
	Reserve Margin (with above new resources)	**16.83%**	**14.07%**	**12.07%**	**12.60%**	**11.91%**	**10.78%**	
	Mothballed Capacity with return of less than 6 mos, MW	**1,786**	**1,786**	**1,786**	**1,786**	**1,786**	**1,786**	
	Reserve Margin (with above & mothballed with <6 mo return)	**19.59%**	**16.74%**	**14.63%**	**15.09%**	**14.37%**	**13.22%**	

Does not include Sargas Texas 250 MW project announced October 25, 2012 - possible operational date of 2015
Does not include 700 MW Brownsville power plant project in discussions for tax abatements

KWA REVISED PROJECTED CDR

ATTACHMENT A