

Grid Operations and Planning Report

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ERCOT Board of Directors January 19, 2010

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- Summary
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- Wind Capacity
- RMR units
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Summary

November and December 2009 Operations

- The peak demand of 36,840 MW on November 30th was more than the long term forecast peak of 35,755 MW. The peak demand of 46,240 MW on December 10th was less than the long term forecast peak of 47,406 MW.
- Day-ahead load forecast error for November was 1.93%, December was 3.70%.
- Advisories for Adjusted Responsive Reserve (ARR) below 3000 MW
 - November 15; December 14
- Watches for ARR under 2500 MW
 - November 0; December 4
- No Energy Emergency Alert (EEA) events either month
- Transmission Watches
 - November 0; December 4
- 229 active generation interconnect requests totaling over 77,000 MW as of December 31, 2009. One request more but 1,000 MW less than November 30
- 8,916 MW wind capacity on line December 31, 2009. No increase from November
- Reliability Must Run (RMR) agreements for Permian Basin Units 5 and 6 were extended for a term of January 1 to December 1, 2010.
- December CDR update shows reserve margin below 12.5% in 2014 & 2015



November 2009 Daily Peak Demand: Hourly Average Actual vs Forecast, Resource Plan & On-line Capacity at Peak



December 2009: Daily Peak Demand: Hourly Average Actual vs Forecast, Resource Plan & On-line Capacity at Peak



Resource Plans, and EMMS.



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ERCOT Public

November 2009 Actual Wind Output w/ Curtailment Added Back Vs Wind Day-Ahead Resource Plan Based on AWS Forecast for All Hours



Note: QSEs must use AWST 80% probability of exceedence forecast for Day-Ahead Resource Plans

FRCO

December 2009: Actual Wind Output w/ Curtailment Added Back Vs Wind Day-Ahead Resource Plan Based on AWS Forecast for All Hours



Note: QSEs must use AWST 80% probability of exceedence forecast for Day-Ahead Resource Plans

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FRCO

December 2009 Actual Wind Output as a Percentage of the Total Installed Wind Capacity at Peak



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Monthly Peak Demand: Actual





Monthly Minimum Demand: Actual



Day-Ahead Load Forecast Performance

	Mean Absolute Percent Error (MAPE) for ERCOT Mid-Term Load Forecast (MTLF) Run at 16:00 Day Ahead							
	2006 MAPE	2007 MAPE	2008 MAPE	2009 MAPE	December 2009 MAPE			
Average Annual MAPE	3.79	3.55	3.30	3.11	November – 1.93 December - 3.70			



Capacity Purchases of RMR, OOMC & RPRS to Manage Local Congestion in November 2009





Capacity Purchases of RMR, OOMC & RPRS to Manage Local Congestion in December 2009



CSC	Nov 08 Days	Sept 09 Days	Oct 09 Days	Nov 09 Days	Last 12 Months Total Days (Nov 08 –Nov 09)
North – Houston	1	8	7	1 Nov – 15	52
North – West	1	0	0	0	4
West – North	17	5	7	2 Nov- 15, 16	169
South – North	0	1	0	0	7
North - South	0	2	0	2 Nov- 12, 15	38



CSC	Dec 08 Days	Oct 09 Days	Nov 09 Days	Dec 09 Days	Last 12 Months Total Days (Dec 08 – Dec 09)
North – Houston	0	7	1	0	51
North – West	0	0	0	0	3
West – North	22	7	2	9 Dec– 8, 13, 14, 21-24, 20, 31	161
South – North	0	0	0	3 Dec- 7-9	10
North - South	0	0	2	1 Dec- 5	39



Significant System Incidents

- November 2nd
 - Held Real-time Balancing deployments for interval ending 23:00. Resumed with interval ending 23:30 deployments.
- November 9th
 - Market Emergency Notice issued for 15 minute A/S market delay.
- November 10th
 - Simultaneous loss of five 138 kV lines in Alvin/Friendswood area. The lines were radial due to a maintenance outage and a problem with microwave communications to relaying caused the event. Service lost to 102 MW load for 1 hour 18 minutes.
- November 16th
 - Market Emergency Notice issued for 44 minute RPRS market delay.
- November 24th
 - The primary EMS servers ERPEMSB and ERPEMSA locked-up (Discussed in the IT Report at the December Board meeting)
- December 31st
 - Held Real-time Balancing deployments for interval ending 24:00. Resumed with interval ending 00:15 deployments



Advisories and Watches

- Advisories issued for Adjusted Responsive Reserve (ARR) below 3000 MW.
 - Issued 15 Days in November
 - Issued 14 days in December
- Watches issued for Adjusted Responsive Reserve (ARR) below 2500 MW
 - None in November
 - Issued 4 days in December

• Transmission Watches

- None in November
- Four in December
 - December 4th and 5th: Due to the loss of a generating unit, the loss of Dilley Switch -San Miguel Switch 138KV overloads Derby - Pearsall 69KV. ERCOT received emergency energy from CFE across the Laredo VFT and Railroad DC Ties.
 - December 9th: Due to the forced outage of one Sweeney Cogen West Columbia Main 138KV, the contingency loss of the other Sweeney Cogen - West Columbia Main 138KV overloads Old Ocean - Sweeney 69KV.
 - December 16th : Due to the forced outage of Laurels Port Isabel 138KV line, the loss of La Palma - Military Highway 138KV overloads La Palma - Loma Alta 138KV.
 - December 23rd and 24th : ERCOT initiated a Block Load Transfer (BLT) at Presidio Substation transferring up to 2 MW of ERCOT load to CFE due to a local outage.
- No EEA's in November or December 2009



- ERCOT is currently tracking 229 active generation interconnection requests totaling almost 77,000 MW. This includes almost 46,000 MW of wind generation.
- Regional Planning is currently reviewing proposed transmission improvements with a total of \$798.0 Million
- Transmission Projects approved in 2009 total \$405.1 Million
- All projects (in engineering, routing, licensing and construction) total approximately \$9.5 Billion
- Transmission Projects energized in 2009 total about \$538.6 million



County Location of Planned Generation with Interconnection Requests (all fuels) December 2009



MW under Interconnection Agreements



County Location of Planned Generation with Interconnection Requests (Wind) December 2009





Generation Interconnection Activity by Fuel





Generation Interconnection Activity by Project Phase





Wind Generation



(as of December 31, 2009)



RMR Units

 Pursuant to Protocol Section 6.5.9.1(9), ERCOT is required to give Notice to the ERCOT Board after it has signed Reliability Must-Run (RMR) Agreements. ERCOT entered into a continuation of RMR Agreements for Permian Basin Units 5 and 6 for a term of January 1, 2010 to December 1, 2010. ERCOT previously provided the ERCOT Board with its exit strategy for these RMR Agreements and other requirements back at the May 20, 2009 Board meeting



Reserve Margin – December 2009 Update

2009 Report on the Capacity, Demand, and Reserves in the ERCOT Region

Summer Summary (December Update)

Load Porecast: 2010 2011 2012 2013 2014 2013 Total Summer Peak Demand, MW 64,056 65,494 67,394 66,399 70,837 72,172 less LaaRs Serving as Non-Spinning Reserve, MW 1,115	Lood Ferroact	2040	0044	0040	0040	204.4	2045
Total Summer Peak Demand, MW 64,056 65,494 67,394 69,399 70,837 72,172 less LaaRs Serving as Responsive Reserve, MW 1,115		2010	2011	2012	2013	2014	2015
less LaaRs Serving as Responsive Reserve, MW 1,115 1,15 1,15 1,15	Total Summer Peak Demand, MW	64,056	65,494	67,394	69,399	70,837	72,172
less LaaRs Serving as Non-Spinning Reserve, MW 0 <t< td=""><td>less LaaRs Serving as Responsive Reserve, MW</td><td>1,115</td><td>1,115</td><td>1,115</td><td>1,115</td><td>1,115</td><td>1,115</td></t<>	less LaaRs Serving as Responsive Reserve, MW	1,115	1,115	1,115	1,115	1,115	1,115
less BULs, MW 0 0 0 0 0 0 0 0 less Energy Efficiency Programs (per HB3693) 242<	less LaaRs Serving as Non-Spinning Reserve, MW	0	0	0	0	0	0
less Energy Efficiency Programs (per HB3693) 242 66,037 68,042 69,480 70,815 Resources: 2010 2011 2012 2013 2014 2014 2014 Installed Capacity, MW 64,940 64 64 2014 2014 </td <td>less BULs, MW</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	less BULs, MW	0	0	0	0	0	0
Firm Load Forecast, MW 62,699 64,137 66,037 68,042 69,480 70,815 Resources: 2010 2011 2012 2013 2014 2014 Installed Capacity, MW 64,940	less Energy Efficiency Programs (per HB3693)	242	242	242	242	242	242
Resources: 2010 2011 2012 2013 2014 2014 Installed Capacity, MW 64,940 64,9	Firm Load Forecast, MW	62,699	64,137	66,037	68,042	69,480	70,815
Resources: 2010 2011 2012 2013 2014 2014 Installed Capacity, MW 64,940 64,9							
Installed Capacity, MW 64,940 64 6	Resources:	2010	2011	2012	2013	2014	2014
Capacity from Private Use Networks, MW 5,318 5,343 <td>Installed Capacity, MW</td> <td>64,940</td> <td>64,940</td> <td>64,940</td> <td>64,940</td> <td>64,940</td> <td>64,940</td>	Installed Capacity, MW	64,940	64,940	64,940	64,940	64,940	64,940
Effective Load-Carrying Capability (ELCC) of Wind Generation, MW 776 7776	Capacity from Private Use Networks, MW	5,318	5,343	5,343	5,343	5,343	5,343
RMR Units to be under Contract, MW 627 0 0 0 0 0 Operational Generation, MW 71,660 71,058 71,057 75,77 75,77 75,77 <td< td=""><td>Effective Load-Carrying Capability (ELCC) of Wind Generation, MW</td><td>776</td><td>776</td><td>776</td><td>776</td><td>776</td><td>776</td></td<>	Effective Load-Carrying Capability (ELCC) of Wind Generation, MW	776	776	776	776	776	776
Operational Generation, MW 71,660 71,058 753 553	RMR Units to be under Contract, MW	627	0	0	0	0	0
50% of DC-Ties, MW 553 553 553 553 553 Switchable Resources, MW 2,848	Operational Generation, MW	71,660	71,058	71,058	71,058	71,058	71,058
50% of DC-Ties, MW 553 553 553 553 553 553 553 Switchable Resources, MW 2,848 2,84							
Switchable Resources, MW 2,848 157 157 157 157 157 157 157 157 157 3,237 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,017 78,	50% of DC-Ties, MW	553	553	553	553	553	553
Available Mothballed Generation , MW 104 157 157 157 157 157 Planned Units (not wind) with Signed IA and Air Permit, MW 1,329 2,212 3,237 3,237 3,237 3,237 ELCC of Planned Wind Units with Signed IA, MW 26 69 142 164 164 164 Total Resources, MW 76,521 76,897 77,995 78,017 78,017 78,017 less Switchable Resources Unavailable to ERCOT, MW 158 0 0 0 0 0 less Retiring Units, MW 76,363 76,897 77,995 78,017 78,017 78,017 Resources, MW 158 0 0 0 0 0 0 0 (Resources, MW 158 76,363 76,897 77,995 78,017 78,017 78,017 Reserve Margin (Resources - Firm Load Forecast)/Firm Load Forecast 21.8% 19.9% 18.1% 14.7% 12.3% 10.2%	Switchable Resources, MW	2,848	2,848	2,848	2,848	2,848	2,848
Planned Units (not wind) with Signed IA and Air Permit, MW * 1,329 2,212 3,237 3,237 3,237 3,237 ELCC of Planned Wind Units with Signed IA, MW 26 69 142 164 164 164 Total Resources, MW 76,521 76,897 77,995 78,017 78,017 78,017 less Switchable Resources Unavailable to ERCOT, MW 158 0 0 0 0 0 less Retiring Units, MW 0 0 0 0 0 0 0 Resources, MW 76,363 76,897 77,995 78,017 78,017 78,017 Resources, MW 158 0 0 0 0 0 0 Resources, MW 26,363 76,897 77,995 78,017 78,017 78,017 Reserve Margin (Resources - Firm Load Forecast)/Firm Load Forecast 21.8% 19.9% 18.1% 14.7% 12.3% 10.2%	Available Mothballed Generation, MW	104	157	157	157	157	157
ELCC of Planned Wind Units with Signed IA, MW 26 69 142 164 164 164 Total Resources, MW 76,521 76,897 77,995 78,017 78,017 78,017 less Switchable Resources Unavailable to ERCOT, MW 158 0 0 0 0 0 less Retiring Units, MW 0 0 0 0 0 0 0 Resources, MW 76,363 76,897 77,995 78,017 78,017 78,017 Resources, MW 158 0 0 0 0 0 0 0 Resources, MW 158 14.7% 12.3% 10.2% 10.2% Reserve Margin (Resources - Firm Load Forecast)/Firm Load Forecast 21.8% 19.9% 18.1% 14.7% 12.3% 10.2%	Planned Units (not wind) with Signed IA and Air Permit, MW *	1.329	2.212	3.237	3.237	3.237	3.237
Less Switchable Resources Unavailable to ERCOT, MW 158 0 0 0 0 0 less Switchable Resources Unavailable to ERCOT, MW 158 0 0 0 0 0 0 0 Resources, MW 76,363 76,897 77,995 78,017 78,017 78,017 Resources, MW 158 0 0 0 0 0 0 0 Resources, MW 158 14.7% 12.3% 10.2% 10.2% 10.2% Resources - Firm Load Forecast)/Firm Load Forecast 21.8% 19.9% 18.1% 14.7% 12.3% 10.2%	ELCC of Planned Wind Units with Signed IA MW	26	_, 69	142	164	164	164
Iterativesources, MW Iterativesourceso		76 521	76 897	77 995	78 017	78 017	78 017
less Switchable Resources Unavailable to ERCOT, MW 158 0 0 0 0 0 less Retiring Units, MW 0 0 0 0 0 0 0 Resources, MW 76,363 76,897 77,995 78,017 78,017 78,017 Reserve Margin (Resources - Firm Load Forecast)/Firm Load Forecast 21.8% 19.9% 18.1% 14.7% 12.3% 10.2%		10,021	10,001	11,000	10,011	10,011	10,011
Icos of with labe recources of a valuable to Error 1, with Icos of a valuable to valuable to a valuable to a valuable to a v	less Switchable Resources Unavailable to ERCOT_MW	158	0	0	0	0	0
Resources, MW 76,363 76,897 77,995 78,017 78,017 78,017 Reserve Margin (Resources - Firm Load Forecast)/Firm Load Forecast 21.8% 19.9% 18.1% 14.7% 12.3% 10.2%	less Retiring Units MW	0	0	0	0	0	0
Reserve Margin (Resources - Firm Load Forecast)/Firm Load Forecast 21.8% 19.9% 18.1% 14.7% 12.3% 10.2%	Posourcos MW	76 363	76 807	77 005	78 017	78 017	79 017
Reserve Margin21.8%19.9%18.1%14.7%12.3%10.2%(Resources - Firm Load Forecast)/Firm Load Forecast		70,303	10,091	11,995	70,017	70,017	70,017
(Resources - Firm Load Forecast)/Firm Load Forecast	Reserve Margin	21 80/	10.0%	19 10/	1 / 70/	12 20/	10 20/
(Resources - Finn Load Forecast)/Finn Load Forecast	(Descurees Firm Load Forecast)/Firm Load Forecast	21.0/0	13.3/0	10.1/0	14.1 /0	12.3 /0	10.2 /0



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