Resource Adequacy in ERCOT: The Latest Outlook

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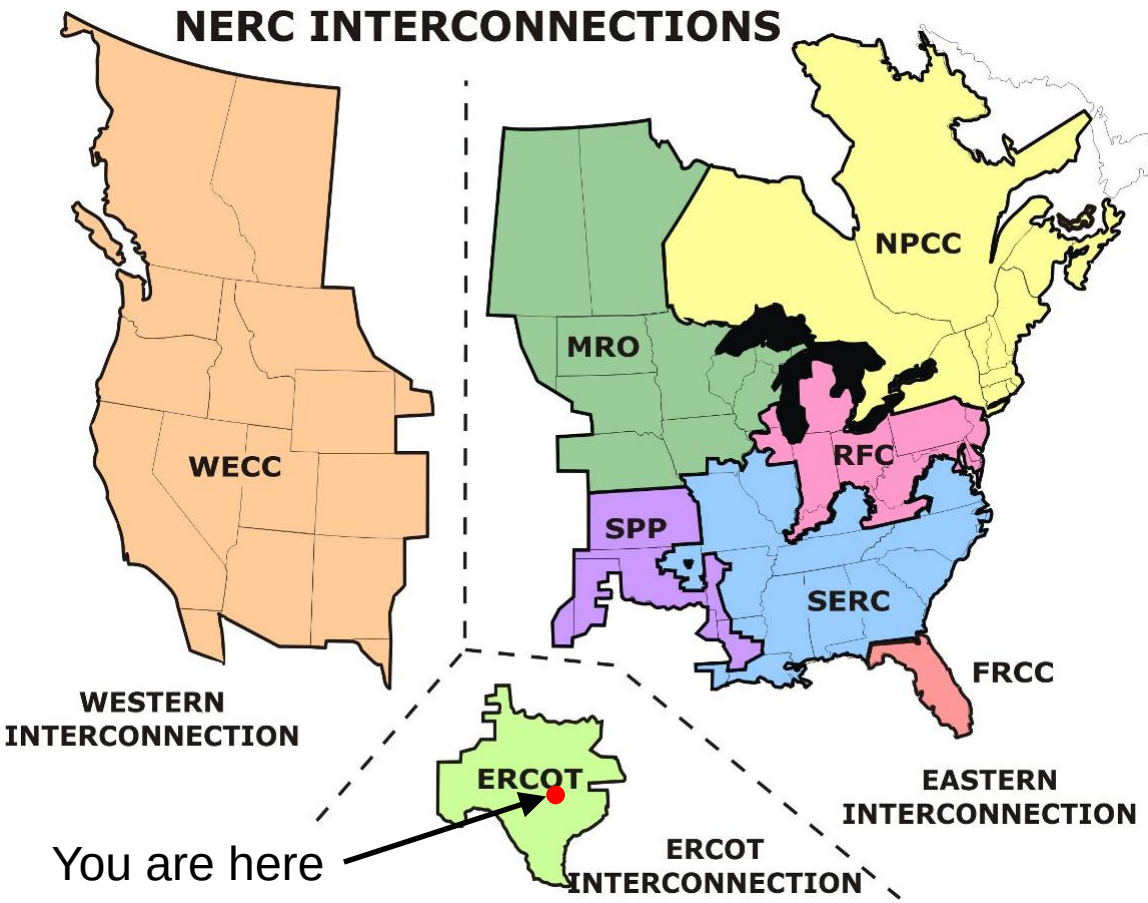
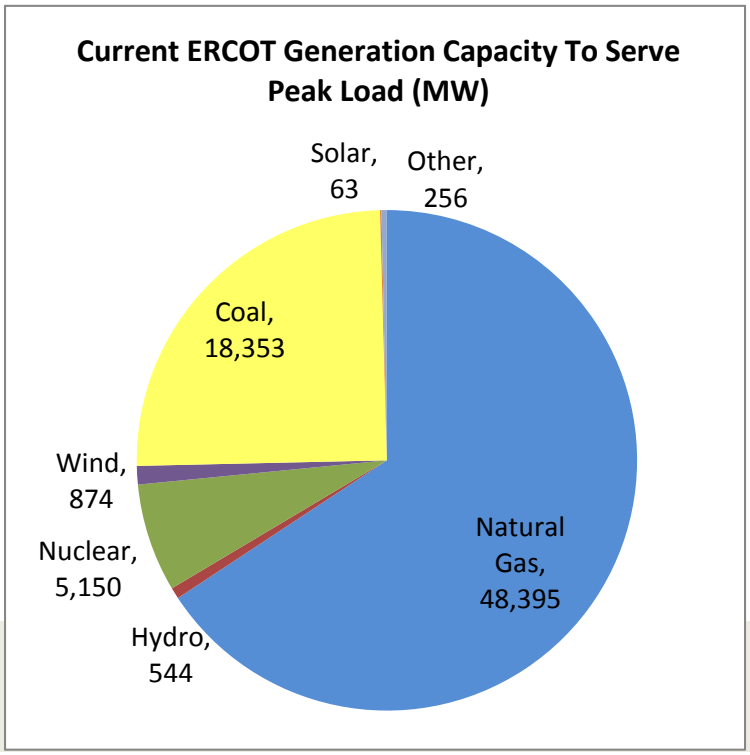
The ERCOT Region



The ERCOT Region is one of 3 interconnections in North America.

The ERCOT grid:

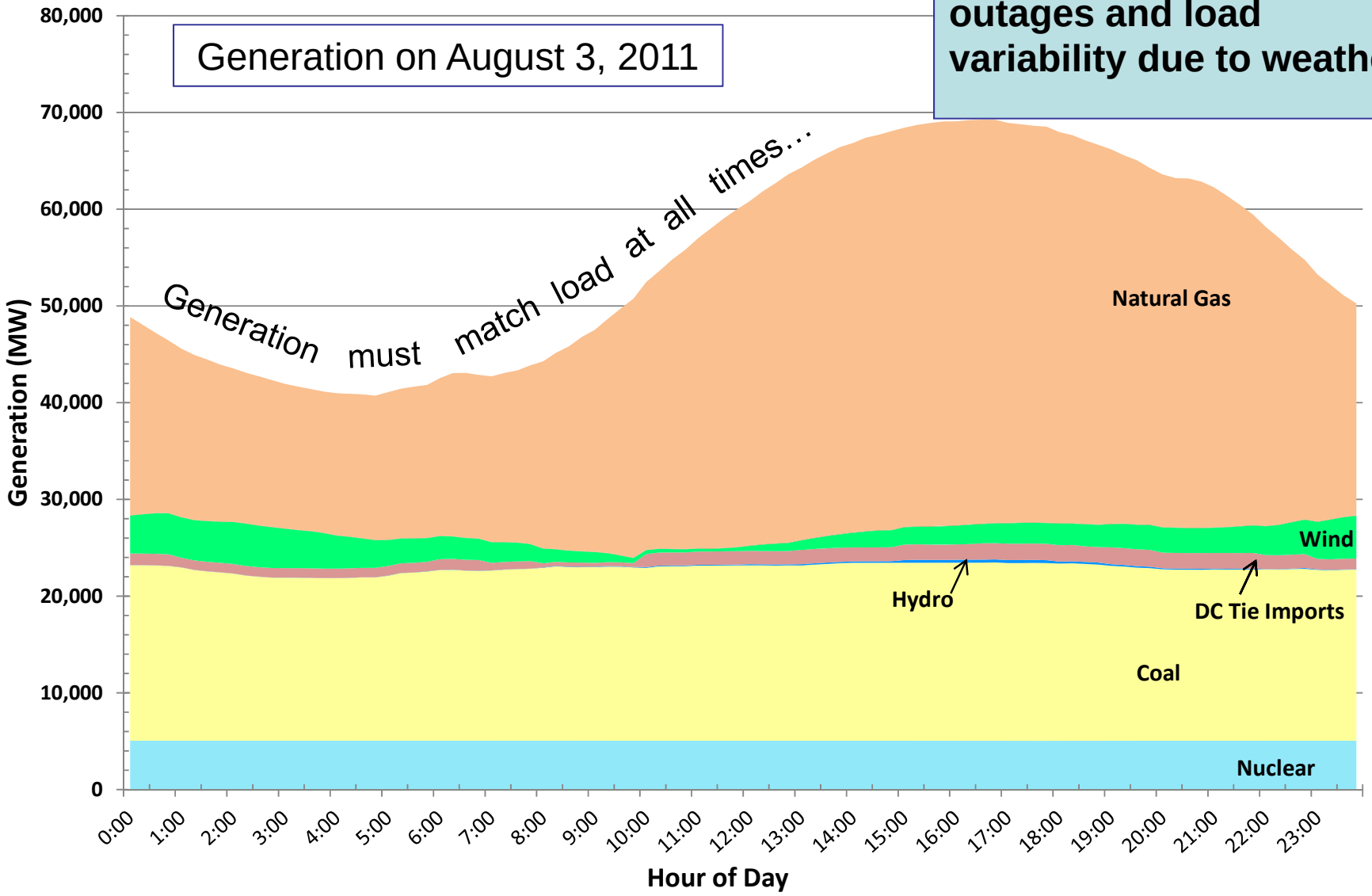
- -75% of Texas land
- -85% of Texas load
- -38,000 miles of transmission lines
- -550+ generation units
- -68,379 MW peak demand (set 8/3/2011)



Regional Import Capacity: 1,106 MW of Asynchronous Tie Capacity (820 MW with Eastern Interconnection)

Peak Day Generation Output

Generation reserves are necessary due to unit outages and load variability due to weather



Resource Adequacy Assessments

- **Capacity, Demand and Reserves (CDR) Report**
  - Published twice every year (May, December)
  - Provides a long-term view of expected resource adequacy
  - Peak load forecast is based on long-term (15-year) average weather conditions
  - Includes future generating units that have signed contracts for transmission service and air permits (if needed)
  - Long-term reserves can be compared to the target reserve margin
- **Seasonal Assessment of Resource Adequacy (SARA)**
  - A deterministic view of near-term resource adequacy
  - Incorporates the latest available information regarding weather conditions, unit outages, and other impacts to expected loads and generation
  - Illustrates a range of likely resource adequacy outcomes

Latest CDR Results – December 2011

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Load Forecast:											
Summer Peak Demand (Normal weather basis), MW	66,195	67,168	70,087	73,552	76,001	77,596	78,919	79,411	81,382	82,765	84,013
less Energy Efficiency Programs (per SB1125)	119	240	366	498	635	775	917	1,060	1,206	1,355	1,506
less LAARs Serving as Responsive Reserve, MW	1,038	1,038	1,038	1,038	1,038	1,038	1,038	1,038	1,038	1,038	1,038
less Emergency Interruptible Load Service	420	462	509	559	615	677	745	819	901	991	1,000
Firm Load Forecast, MW	64,618	65,428	68,174	71,457	73,713	75,106	76,219	76,494	78,237	79,381	80,469
Resources:											
Installed Capacity, MW	63,025	63,025	63,025	63,025	63,025	63,025	63,025	63,025	63,025	63,025	63,025
Capacity from Private Networks, MW	4,390	4,390	4,390	4,390	4,390	4,390	4,390	4,390	4,390	4,390	4,390
ELCC* of Wind Generation, MW	836	836	836	836	836	836	836	836	836	836	836
RMR Units to be under Contract, MW	-	-	-	-	-	-	-	-	-	-	-
Operational Generation, MW	68,251	68,251	68,251	68,251	68,251	68,251	68,251	68,251	68,251	68,251	68,251
Non-Synchronous Ties, MW	553	553	553	553	553	553	553	553	553	553	553
Switchable Units, MW	2,962	2,962	2,962	2,962	2,962	2,962	2,962	2,962	2,962	2,962	2,962
Available Mothballed Generation , MW	826	651	690	509	570	592	592	592	592	592	592
Planned Units (not wind) with IA and Air Permit, MW	130	1,115	1,115	1,895	4,675	5,955	5,955	5,955	5,955	5,955	5,955
ELCC* of Planned Wind Units with Signed IA, MW	39	112	129	140	140	140	140	140	140	140	140
Total Resources, MW	72,761	73,644	73,700	74,309	77,150	78,453	78,453	78,453	78,453	78,453	78,453
less Switchable Units Unavailable to ERCOT, MW	317	317	317	317	317	317	317	317	317	-	-
less future Unit Retirements, MW	-	-	-	-	-	-	-	-	-	-	-
Resources, MW	72,444	73,327	73,383	73,992	76,833	78,136	78,136	78,136	78,136	78,453	78,453
Reserve Margin (Resources - Firm Load Forecast)/Firm Load Forecast	12.11%	12.07%	7.64%	3.55%	4.23%	4.03%	2.51%	2.15%	-0.13%	-1.17%	-2.51%

Target Reserve Margin is 13.75%

Recent generation changes will increase reserves this year by about 2%

SARA for Summer 2012 - Reserves Calculations

Installed Capacity, MW	65,409
Planned Units (not wind) with Signed IA and Air Permit, MW	-
Capacity from Private Networks, MW	4,390
Switchable Units, MW	2,962
less Switchable Units Unavailable to ERCOT, MW	(317)
RMR Units to be under Contract, MW	-
Effective Load-Carrying Capability (ELCC) of Wind Generation, MW	874
ELCC of Planned Wind Units with Signed IA, MW	-
50% of Non-Synchronous Ties, MW	535
Total Resources, MW	**73,853**
Peak Demand, MW	**67,492**
Reserve Capacity (a -b), MW	**6,361**

SARA for Summer 2012 - Uses of Reserves

Reserve Capacity (a -b), MW	**6,361**		
	Base Case	**Extreme Load/ Typical Gen Outages**	**Extreme Load/Extreme Gen Outages**
Extreme Load Range		3,581	3,581
Typical Maintenance Outages	710	710	710
90th Percentile Maintenance Outages	-	-	-
Typical Forced Outages	3,080	3,080	3,080
90th Percentile Forced Outages		-	2,067
Forced Outages due to Drought (minimum)	-	-	-
Forced Outages due to Drought (maximum)	-		
Total Uses of Reserve Capacity	**3,790**	**7,371**	**9,438**
Capacity Available for Operating Reserves (c-d), MW	**2571**	**-1010**	**-3077**
Less than 2,300 MW indicates risk of EEA1			
Demand Adjustment during Scarcity *	750	750	750
Adjusted Capacity Available for Operating Reserves (e+f)	3321	-260	-2327

Three potential scenarios are provided

Emergency Conditions are likely if operating reserves fall below 2,300 MW

Summary

- Reserves this summer are expected to be tight but adequate
- Calls for energy conservation this summer are likely on the hottest days of July and August, but we do not expect to have to request rotating outages unless we have a repeat of last year's extremely hot conditions
- Current information indicates that long-term reserves are expected to fall well below the target reserve margin