



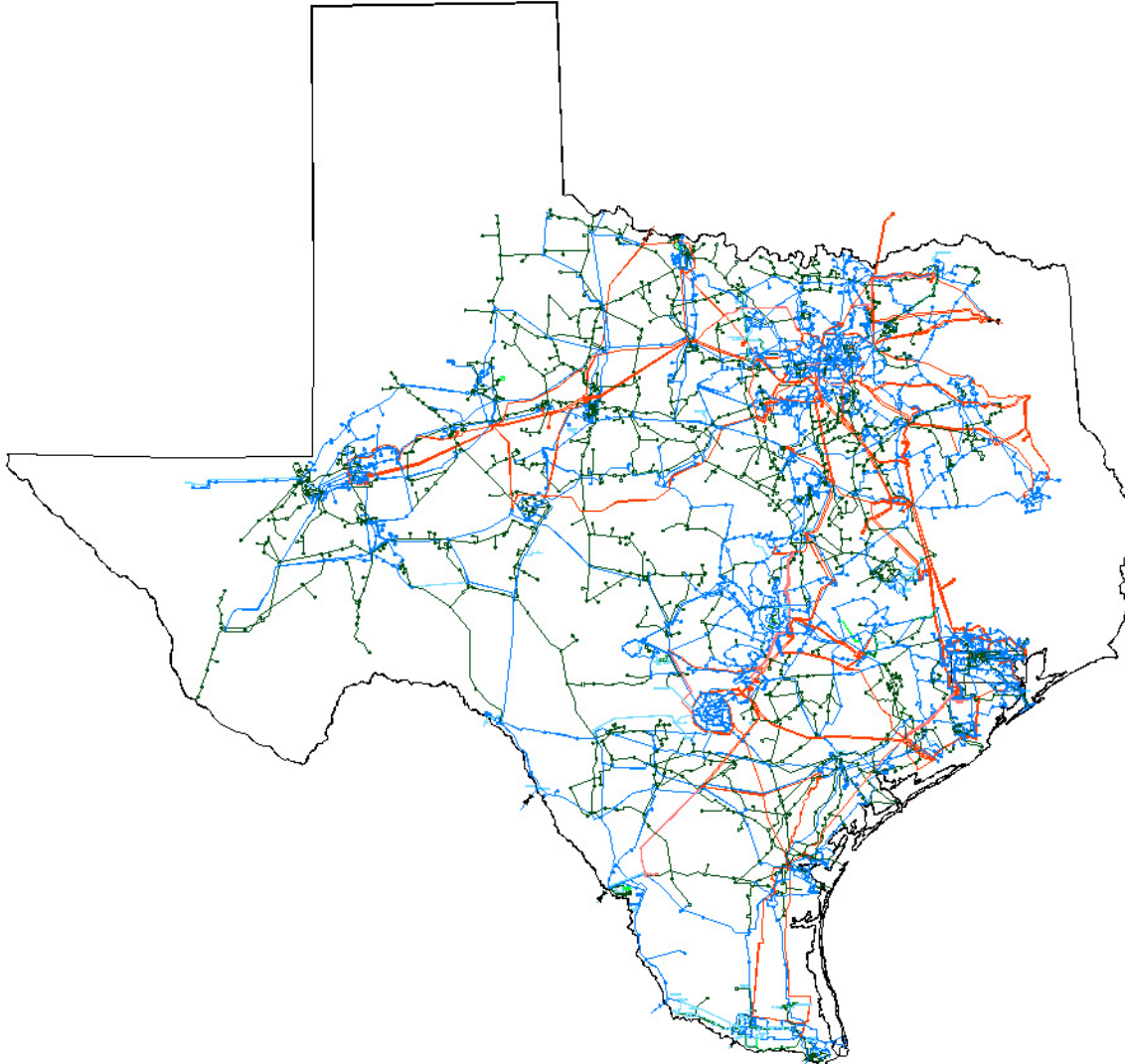
ERCOT Wind Experience

Michael G. Grable, General Counsel
Electric Reliability Council of Texas, Inc.

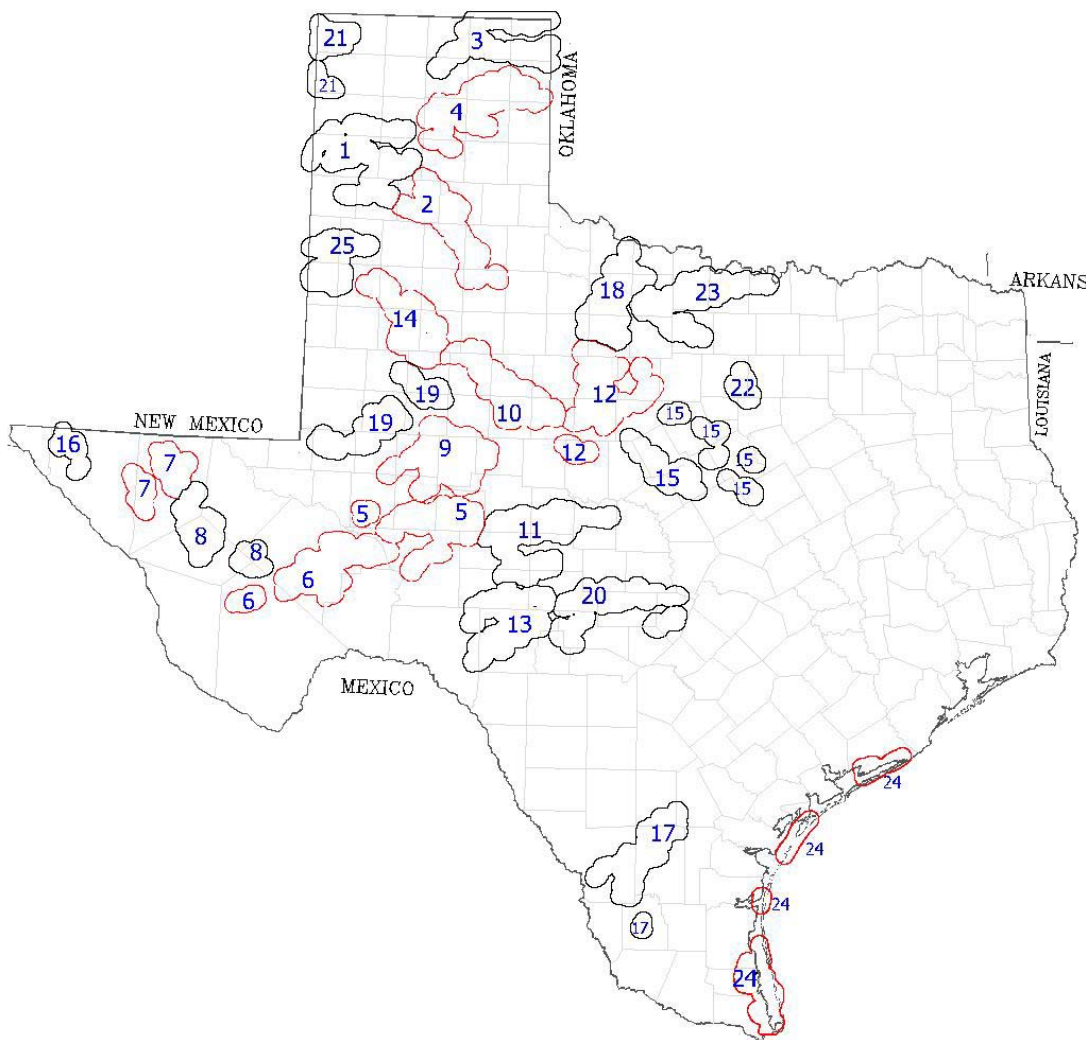
Congressional Staff Briefing
The Texas Experience: Planning, Operating and
Managing Wind Integration

16 July 2009

There are 38,000 miles of transmission lines in Texas...

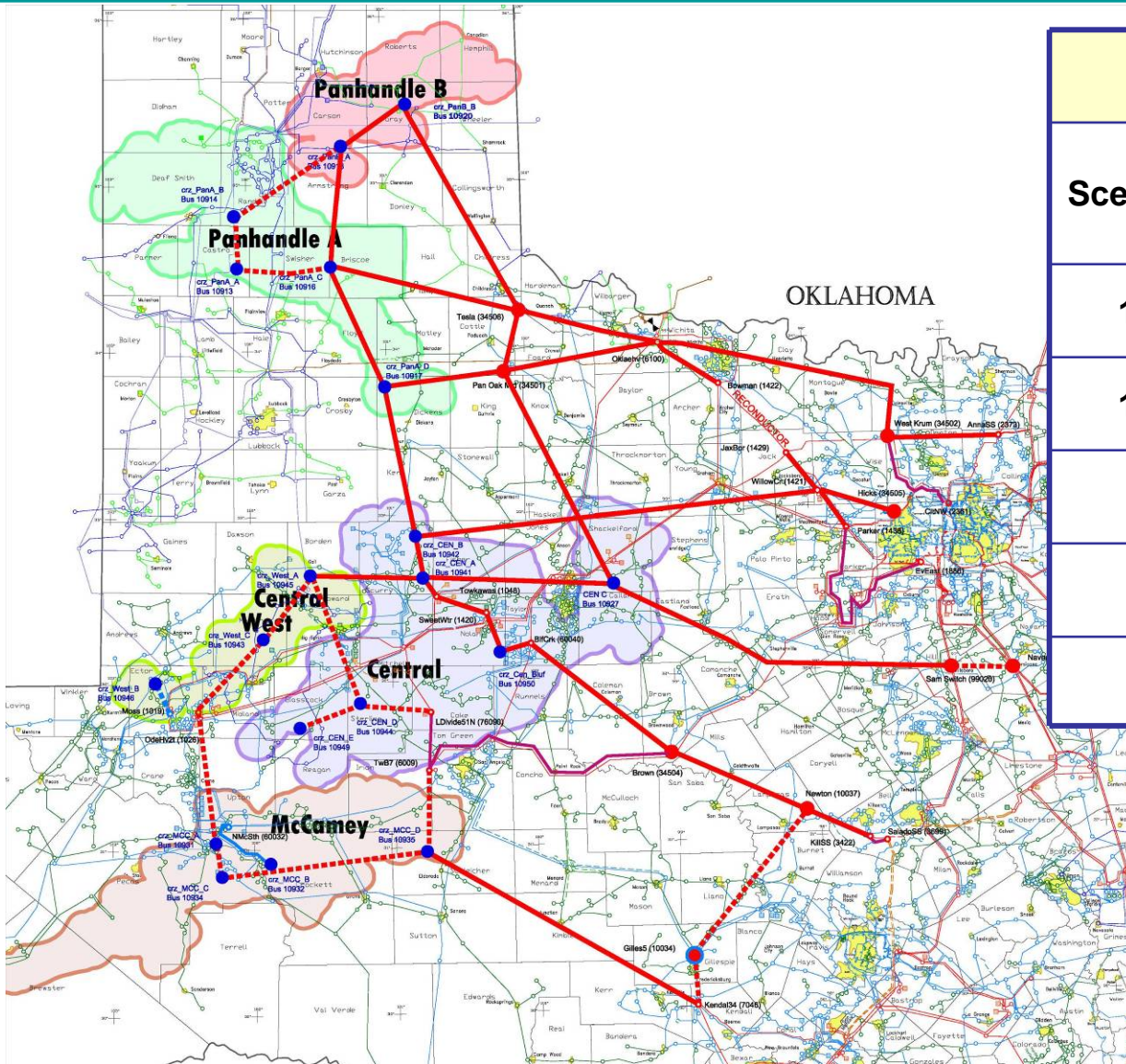


- 8,000 miles of 345 kV lines
- 16,000 miles of 138 kV lines
- 6,593 circuit miles of transmission built since 1999
- 2,888 circuit miles of transmission under study
- \$4.4 billion investment in transmission placed in service since 1999
- \$3 billion under development (independent of CREZ transmission)



- **ERCOT led study during 2006 to support PUCT determination**
 - Hired AWS Truewind to identify best wind resource sites and provide expected characteristics of wind generation
 - Developed transmission plans through open stakeholder process to accommodate many of the potential zones in various combinations
 - Filed results with PUCT in December 2006

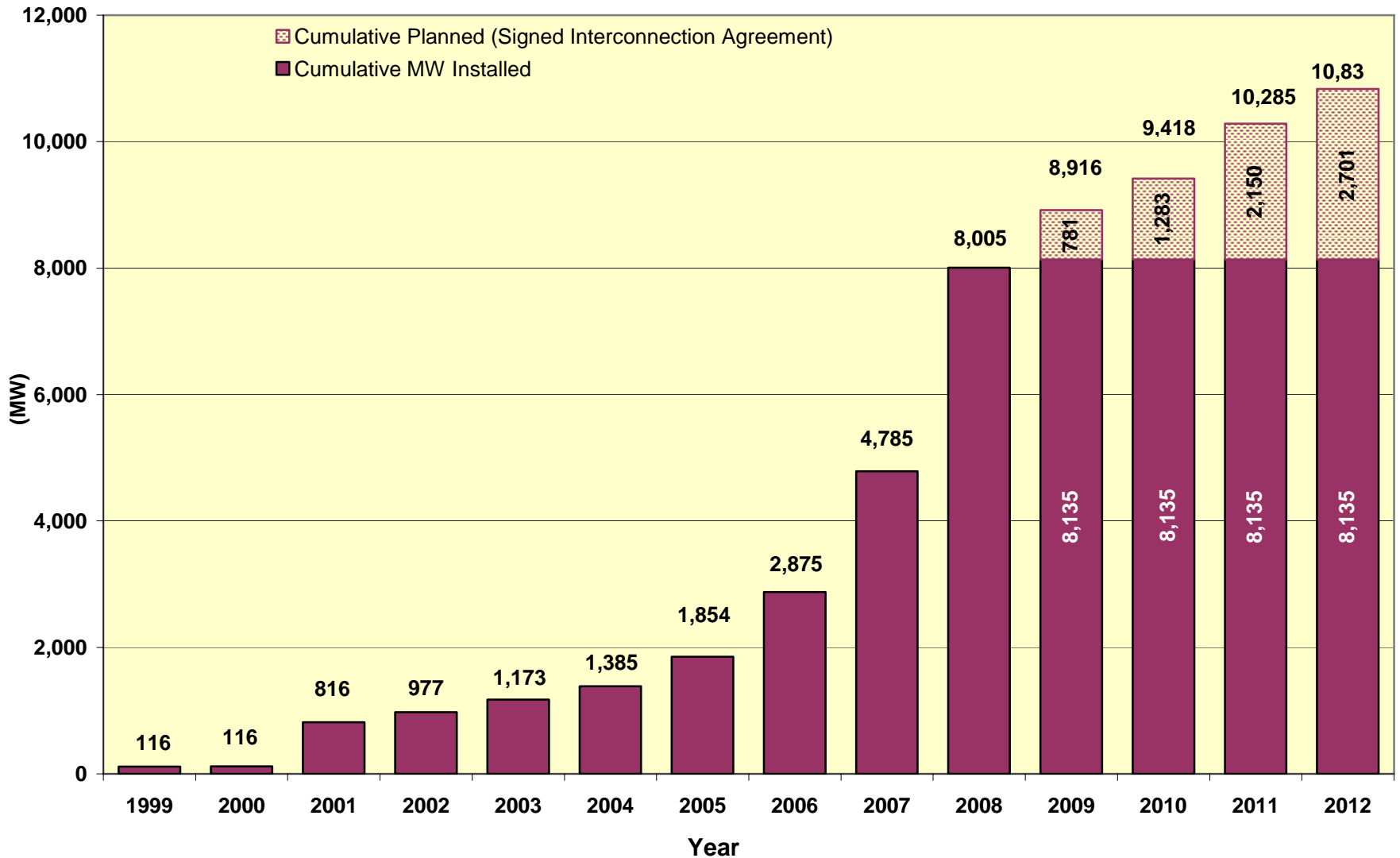
CREZ Study Results



CREZ Plans		
Scenario	Cost (\$B)	Miles of New ROW
1A	2.95	1,638
1B	3.78	1,831
2	4.93	2,376
3	6.38	3,036
4	5.75	2,489

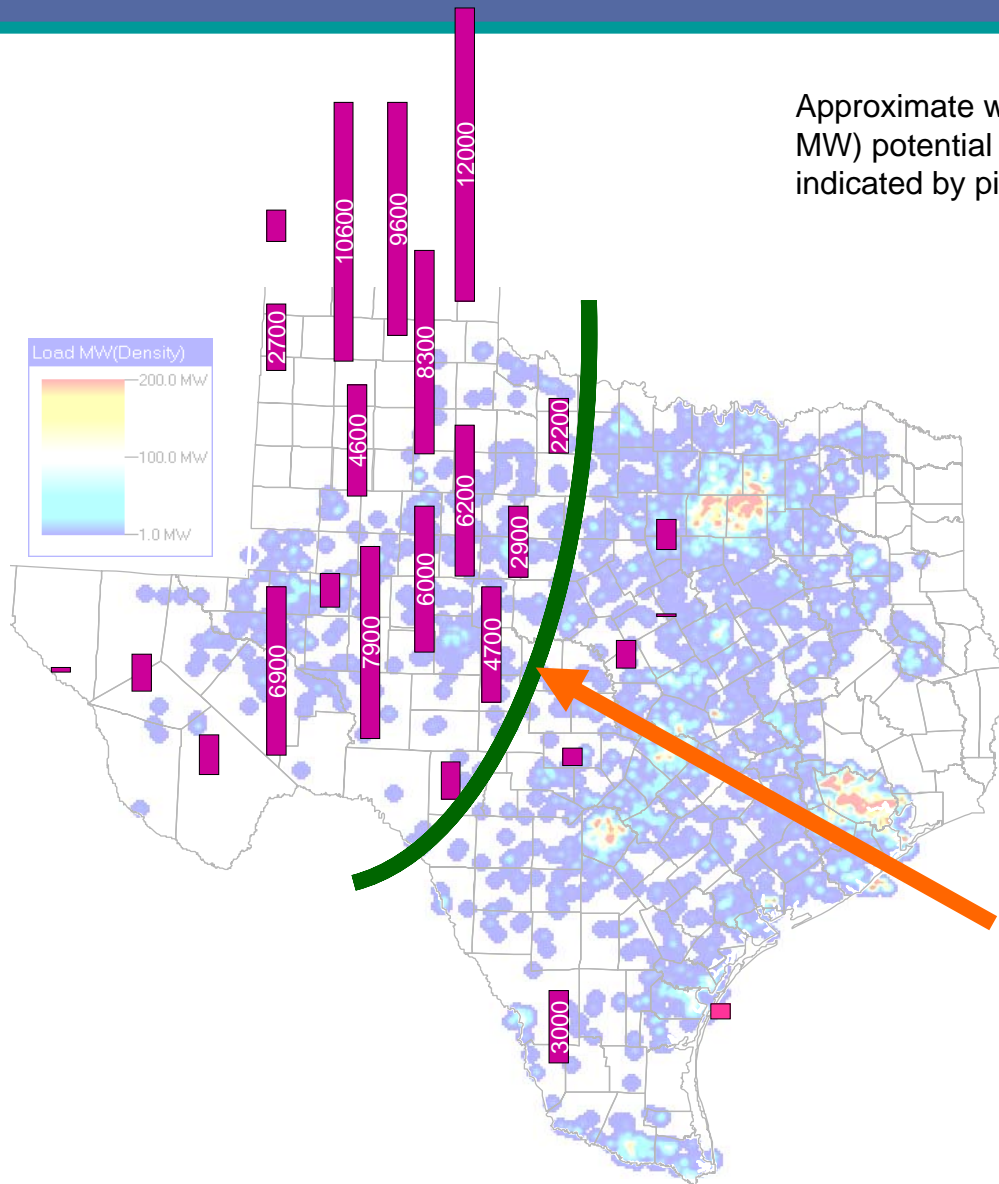
ERCOT Wind Capacity

Wind Capacity Installed by Year



(as of June 30, 2009)

Potential Wind Resource



Approximate wind capacity (in MW) potential in each area is indicated by pink bars

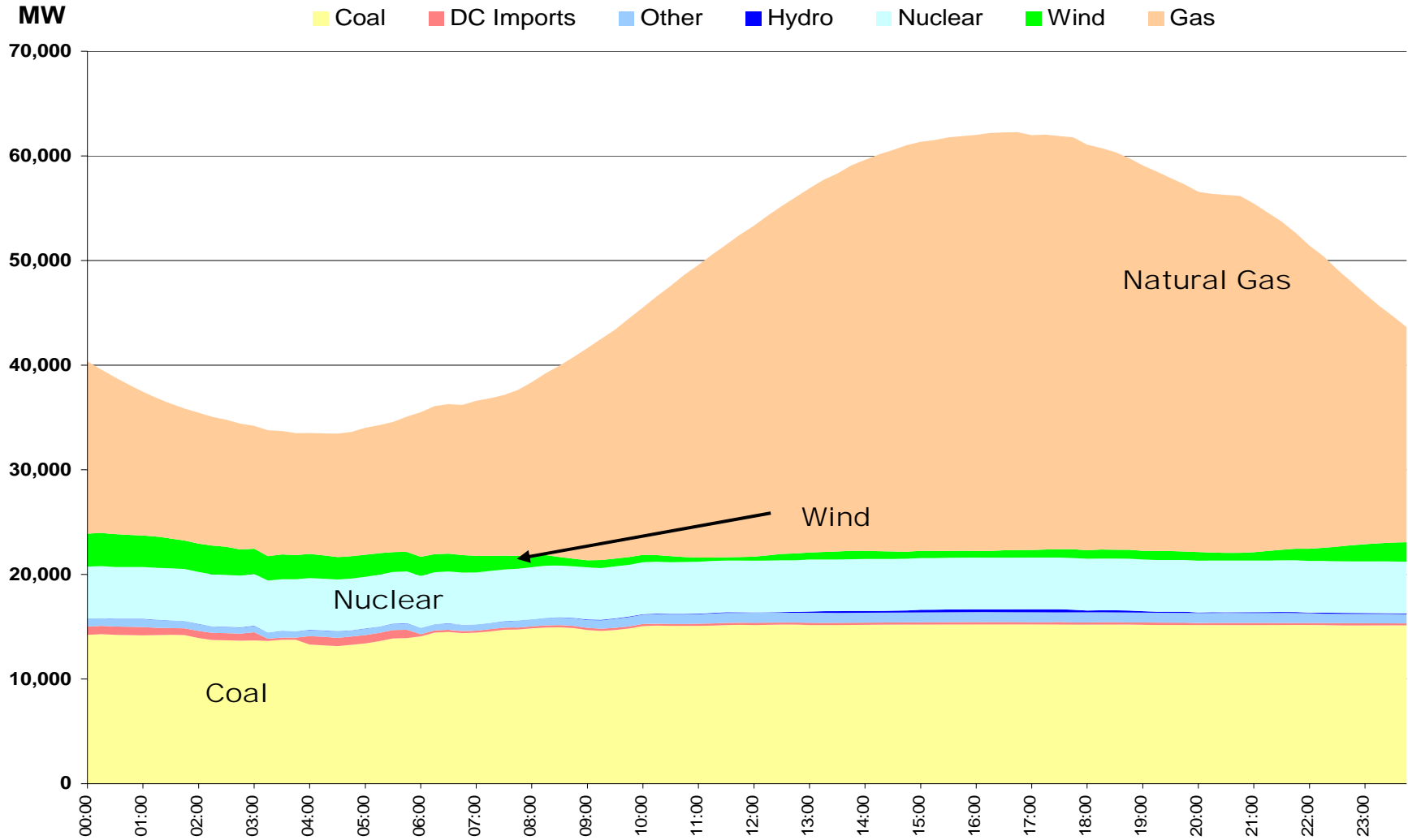
Nearly 100,000 MW above 35% capacity factor

Concentrated in western half of state

Approximate west to east transfer capacity – 3200 MW

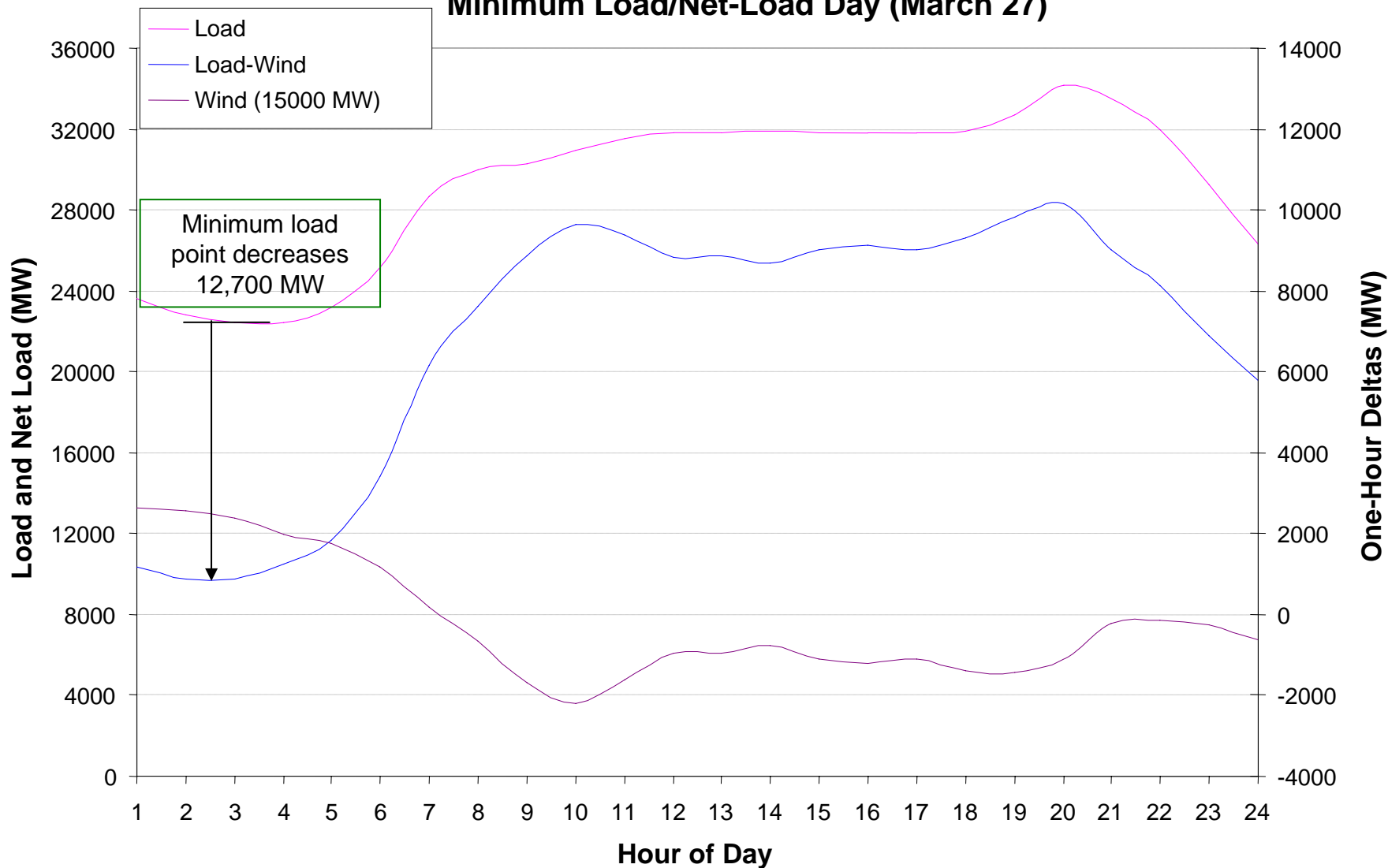
Summer Day Load Shape with Fuel Mix

Generation by Fuel - August 4, 2008



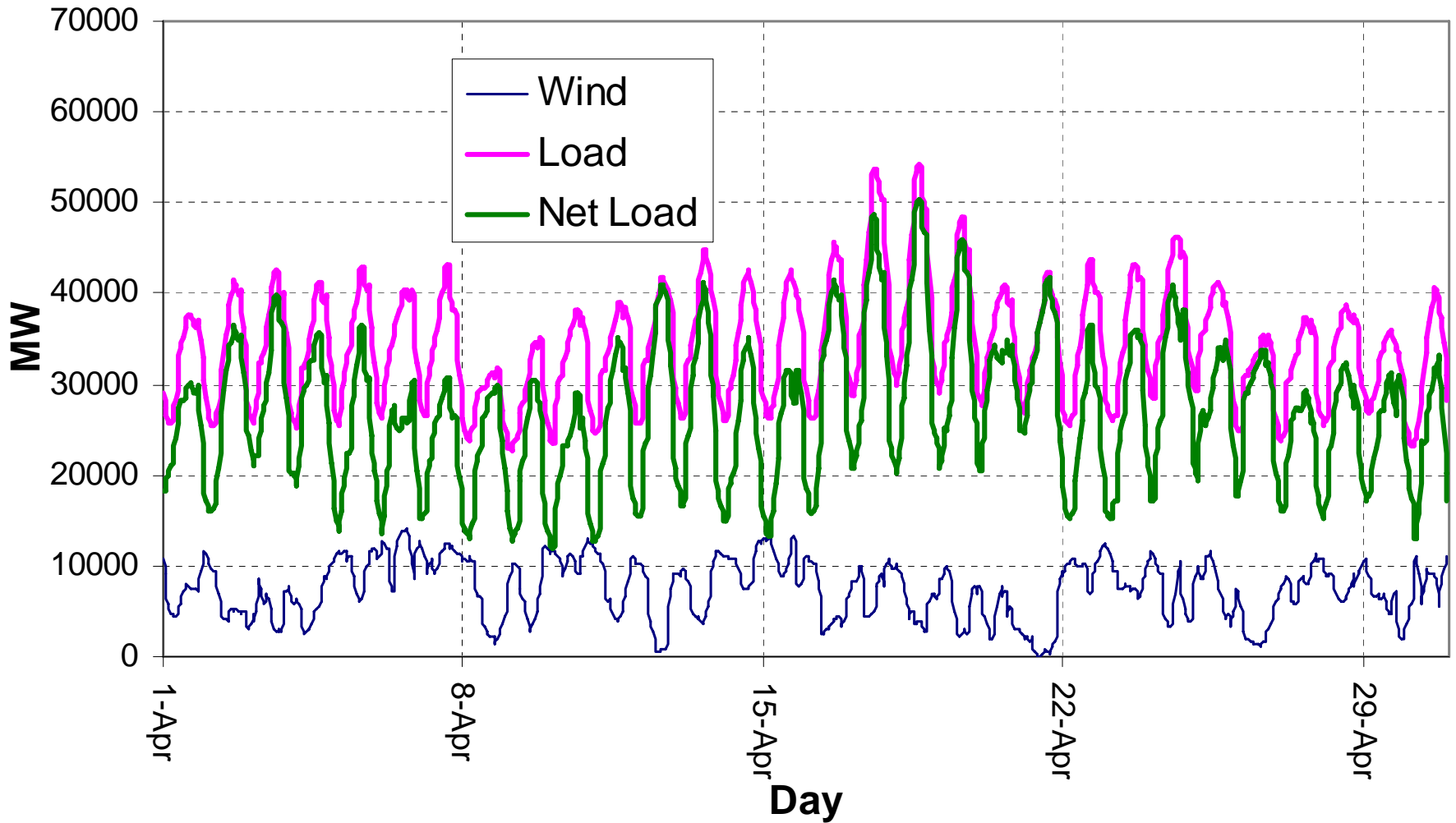
"Net Load" Example

Minimum Load/Net-Load Day (March 27)



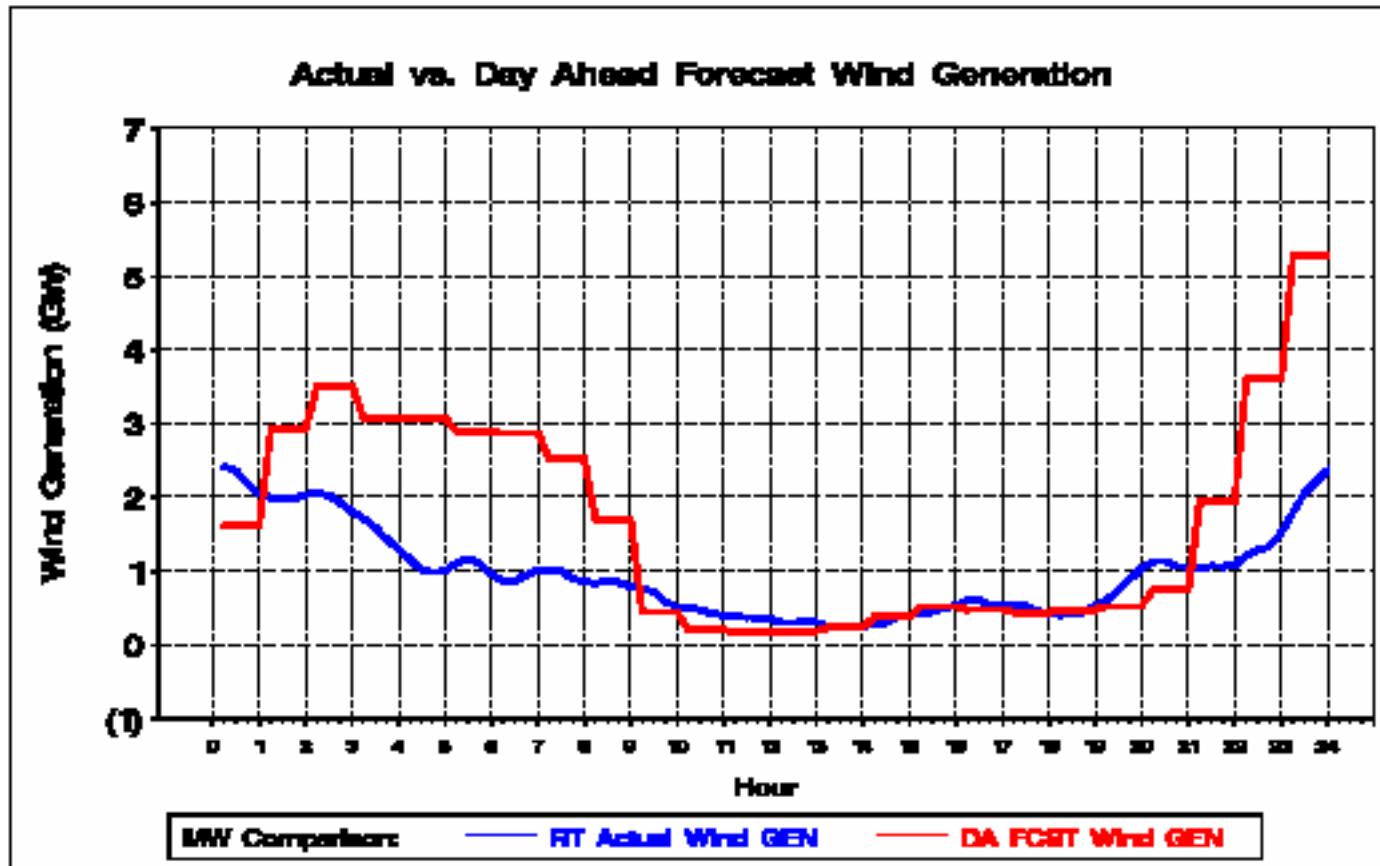
Wind Generation Alters Net Load Shape

Load-15,000 MW Wind - April Time Series Plot



Daily Snapshot

ERCOT Wholesale Markets
Operating Day: Wednesday, 2/26/2008



German Wind: Forecast vs. Actual

