

The NRG logo is positioned in the upper left of the graphic area. To its right is a decorative graphic composed of various colored squares and crosses in yellow, magenta, and blue, arranged in a pattern that suggests energy or a grid.

nrg®

February 19<sup>th</sup>, 2015

# Environmental & Economic Conflict UT Energy Week

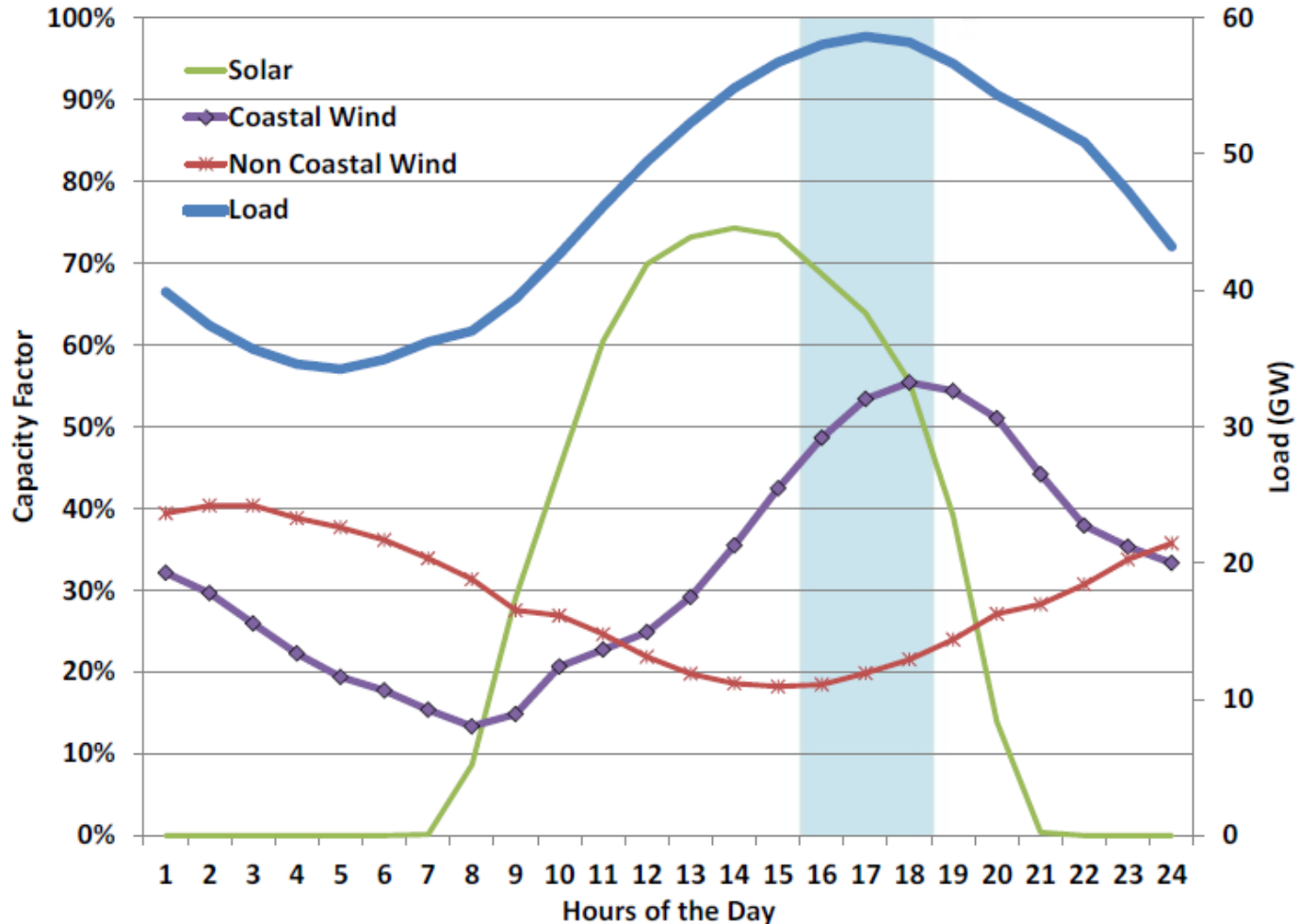
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Bill Barnes, Director of Regulatory Affairs, NRG Energy Inc.

- Efficient market design and performance ensures the lowest cost for the consumer
- Addressing climate change is important
- Climate friendly resources have not typically been market friendly
  - Subsidies distort pricing outcomes
  - Variable output disconnected from demand; Dispatch
  - Measurement & Verification (does it really exist?)
- How do we achieve our environmental objectives and maintain efficient markets?

# Renewable Output vs. Demand

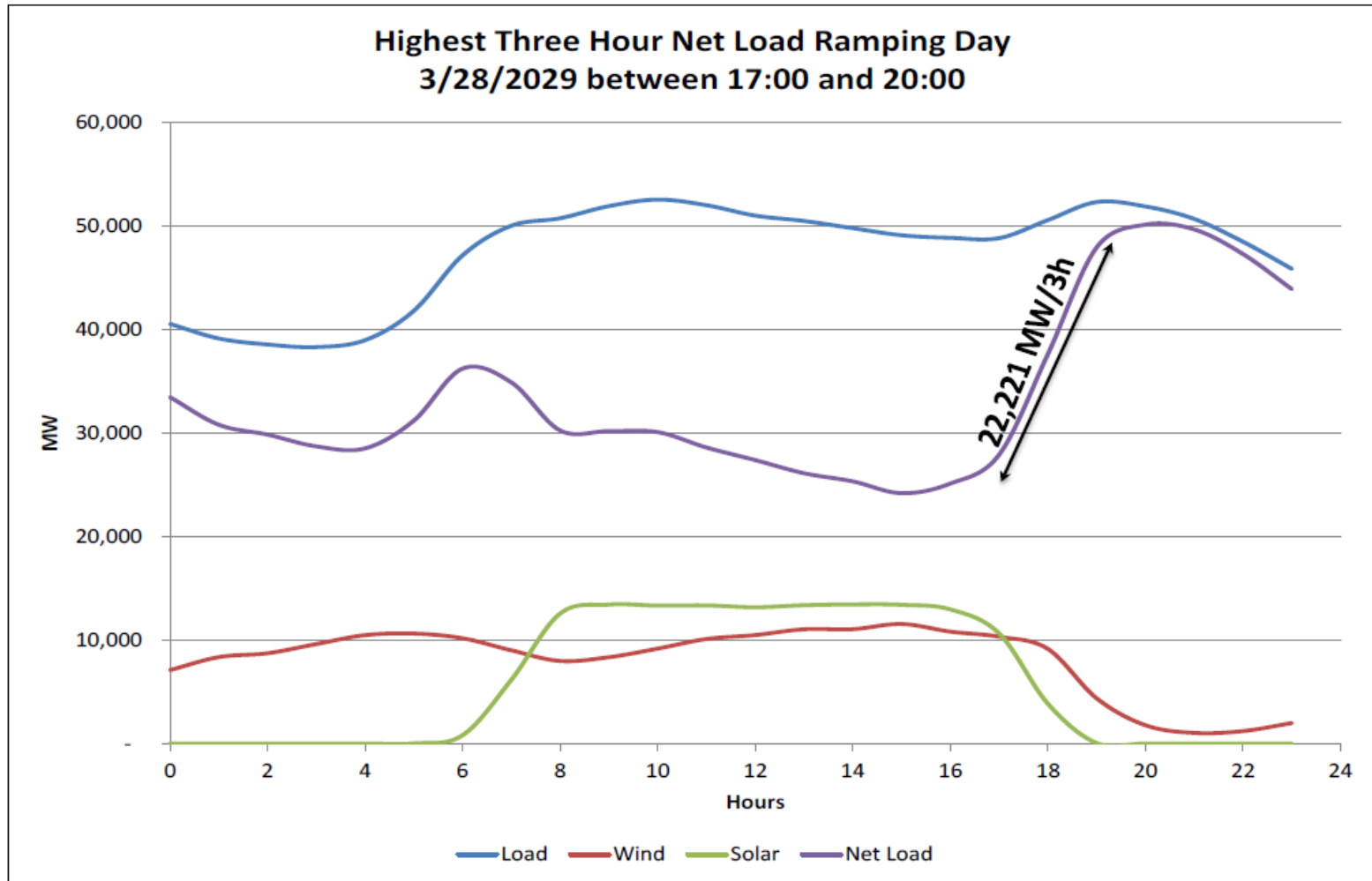
Figure 59: Summer Renewable Production



Source: 2013 State of the Market Report for the ERCOT Wholesale Electricity Markets, Potomac Economics, ERCOT Independent Market Monitor.



# Increasing Needs for Flexible Gas Capacity



**Figure 12: Highest Three Hour Net Load Ramping Day**



# Growth in Demand Response and Energy Efficiency

- ~7 Million Smart Meters recently installed in ERCOT
- Retail Electric Providers, like NRG, are now offering competitive products which compensate customers for demand response
- Customer adoption is growing significantly

Product (code)	ESI IDs 06/15/2013		ESI IDs 09/30/2014	
	Residential	C&I	Residential	C&I
Peak Rebate (PR)	2,410	58	410,675	30,236
Time of Use (TOU)	135,320	328	290,308	3,007
Other Load Control (OLC)	13,606	14	19,232	64
Real-Time Pricing (RTP)	288	4,358	1,001	9,700
Block & Index (BI)	-	23,928	-	6,796
Other Voluntary DR Product (OTH)	169	1,554	57	155
Four Coincident Peak Advisory (4CP)	-	35	-	247
<b>Total</b>	<b>151,793</b>	<b>30,275</b>	<b>721,273</b>	<b>50,205</b>



# Environmental Objectives vs. Efficient Markets

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- The balance between environmental objectives and efficient markets must be maintained
- Prefer the use of market structures to incentivize behavior to meet environmental objectives over use of regulation
- Proposed ERCOT market design changes:
  - Future Ancillary Services Market: Incentives for flexible technology
  - Real-time Co-optimization of Energy and Ancillary Services: Improved price formation and ancillary service value
  - Multi-Interval Real-time Market: Improved economic commitment of quick start resources and demand response
- Are these market structure reforms enough? Not likely