



ERCOT in 2016: Challenge & Opportunity

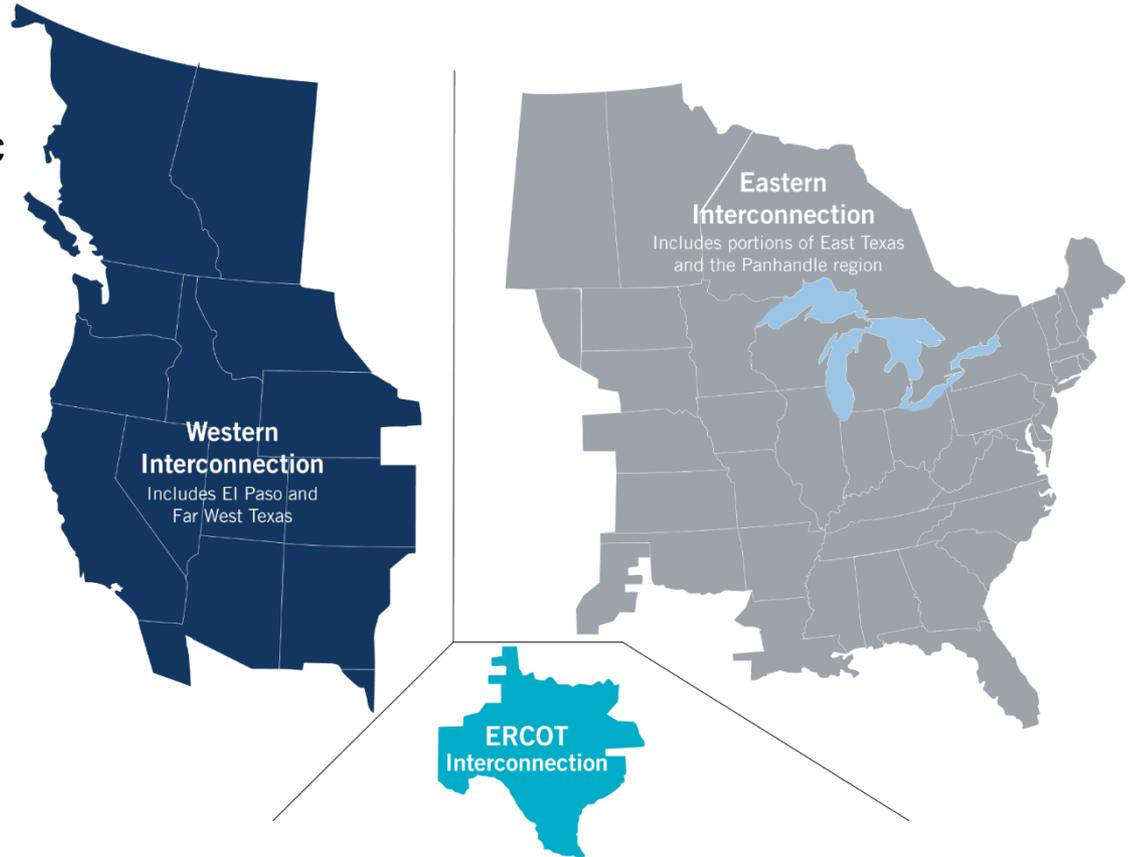
Bill Magness
President & CEO
ERCOT

2016 Energy Summit and Fair
July 23, 2016

What is ERCOT?

The Texas Legislature restructured the Texas electric market in 1999 and assigned ERCOT four primary responsibilities:

- **System Reliability**
- **Competitive Wholesale Market**
- **Open Access to Transmission**
- **Competitive Retail Market**

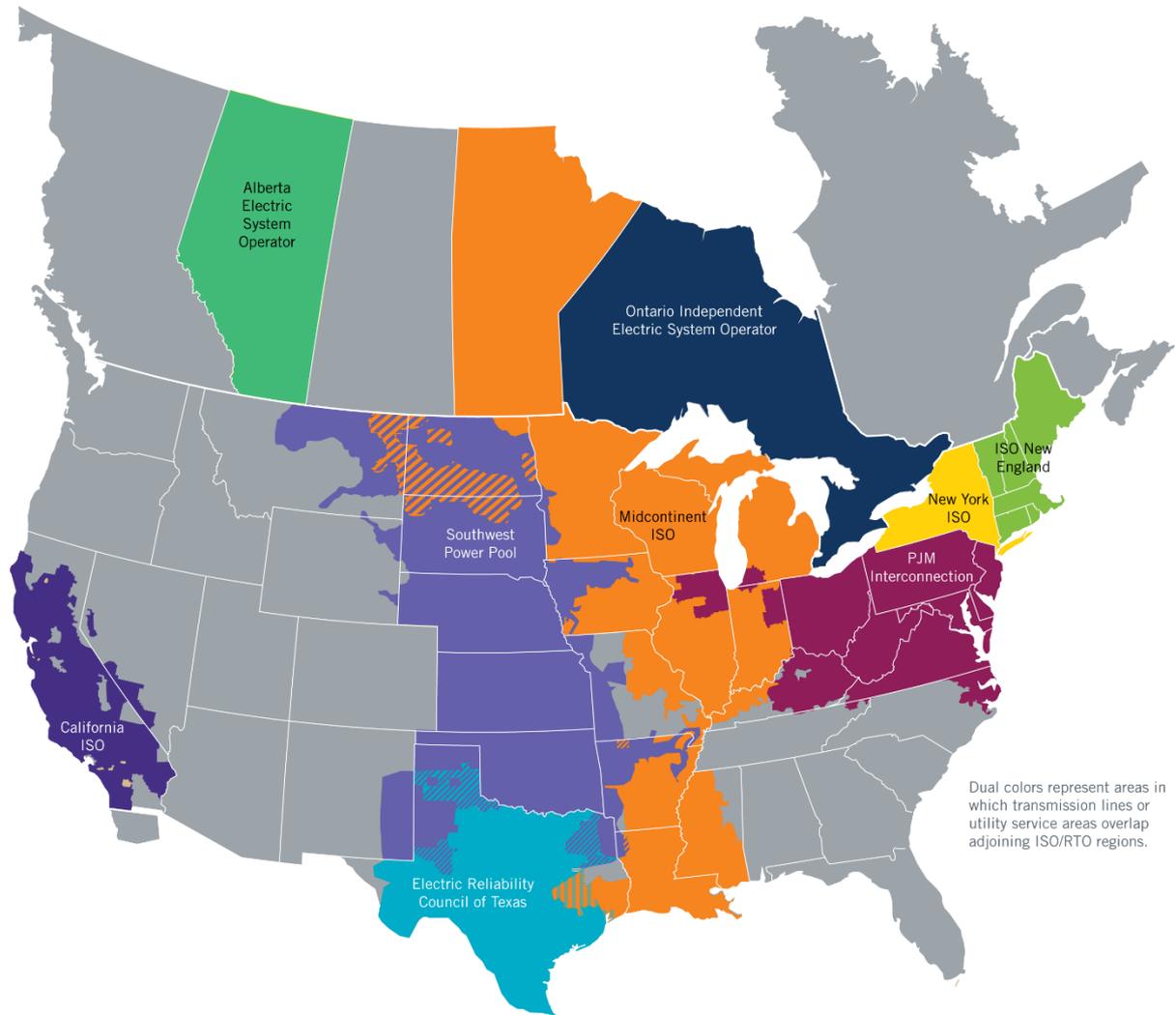


ERCOT is a nonprofit organization and regulated by the Public Utility Commission of Texas, with oversight by the Texas Legislature.

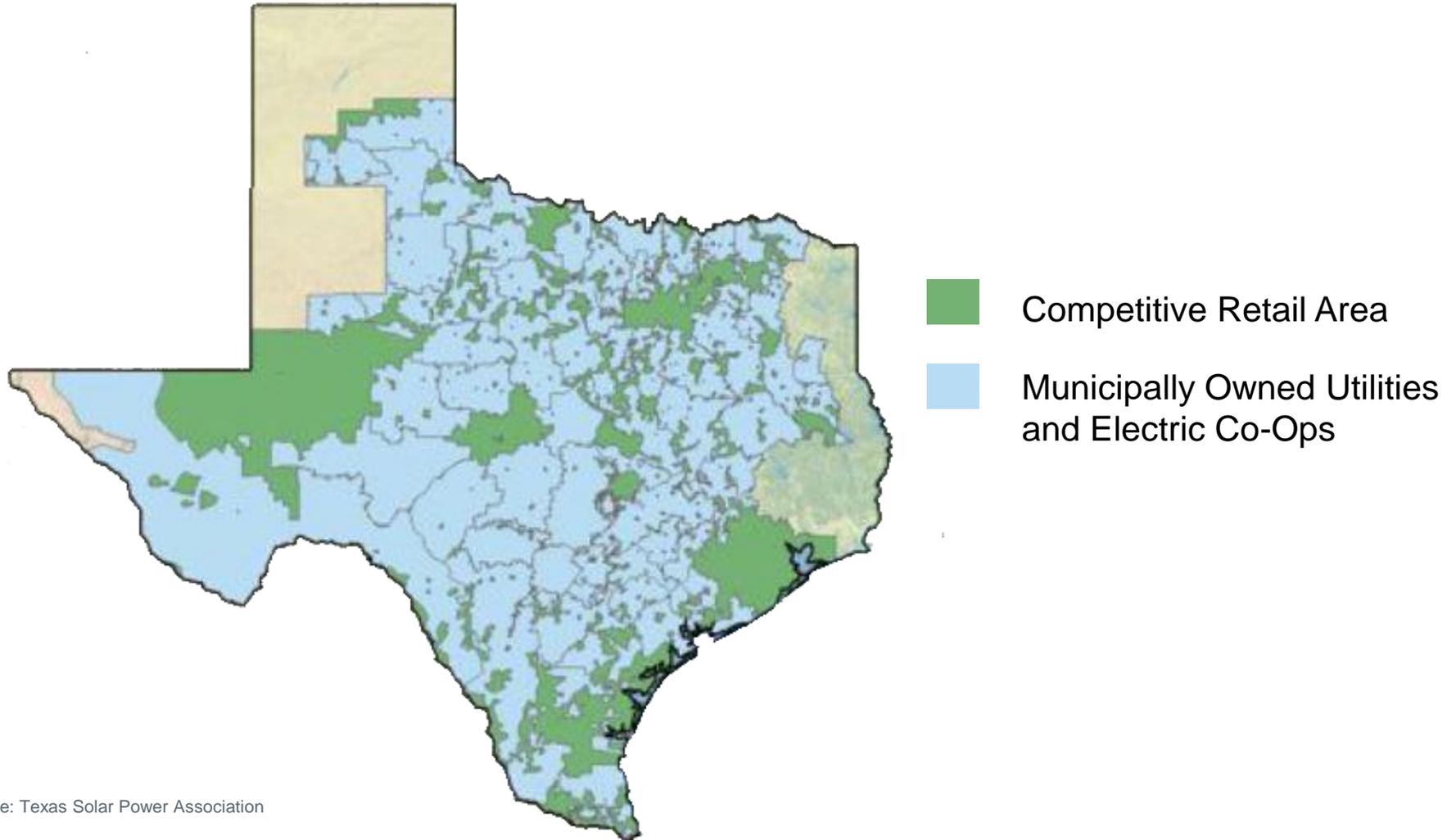
ERCOT is not a market participant and does not own generation or transmission/distribution wires.

ISOs and RTOs

- ERCOT is one of nine **independent system operators** and **regional transmission organizations** in the U.S. and Canada.
- Together, ISO/RTOs serve about two-thirds of electric consumers in the U.S. and more than half of consumers in Canada.

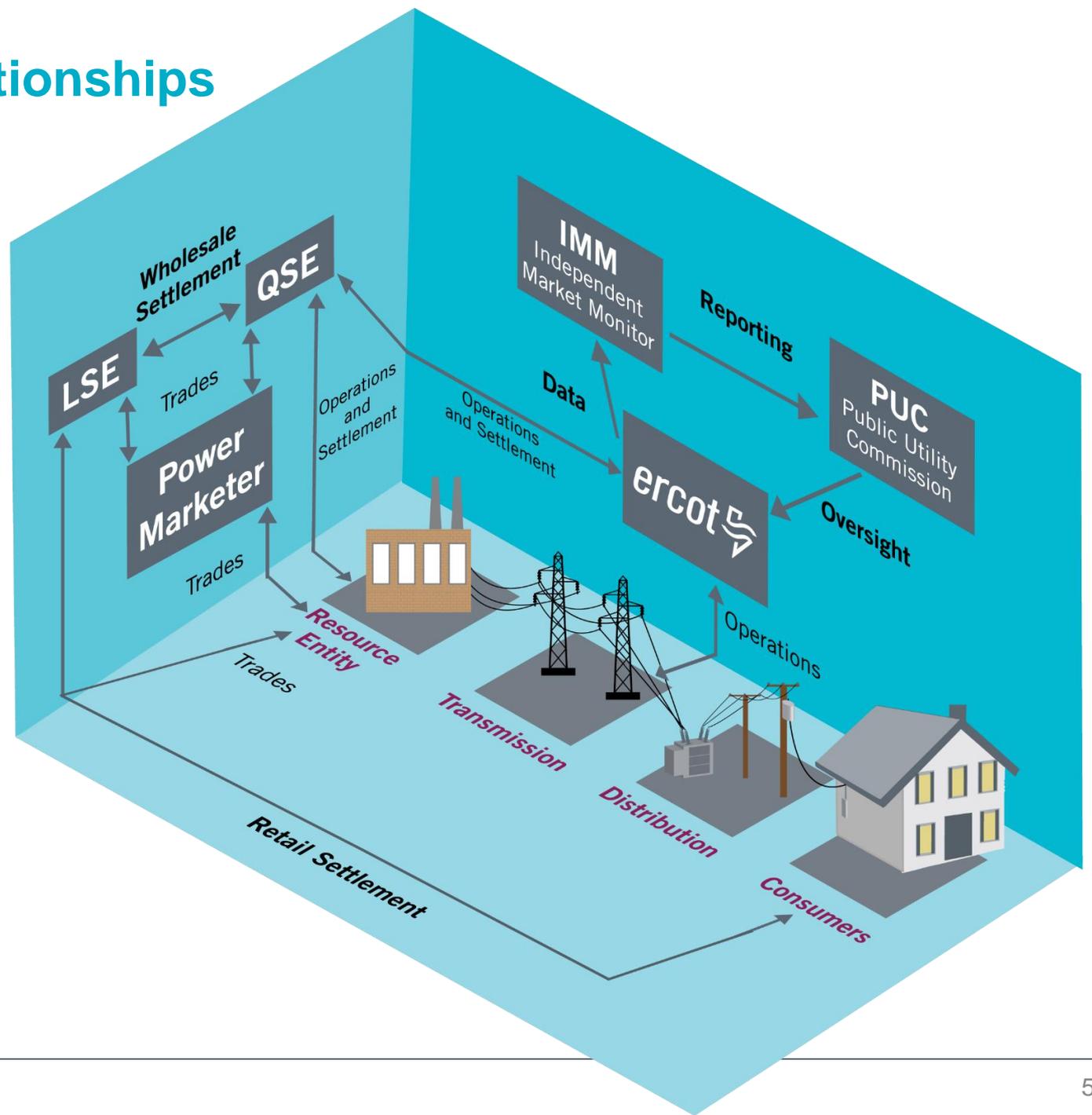


ERCOT includes Competitive, Municipal and Cooperative Service Areas



Source: Texas Solar Power Association

Market Relationships

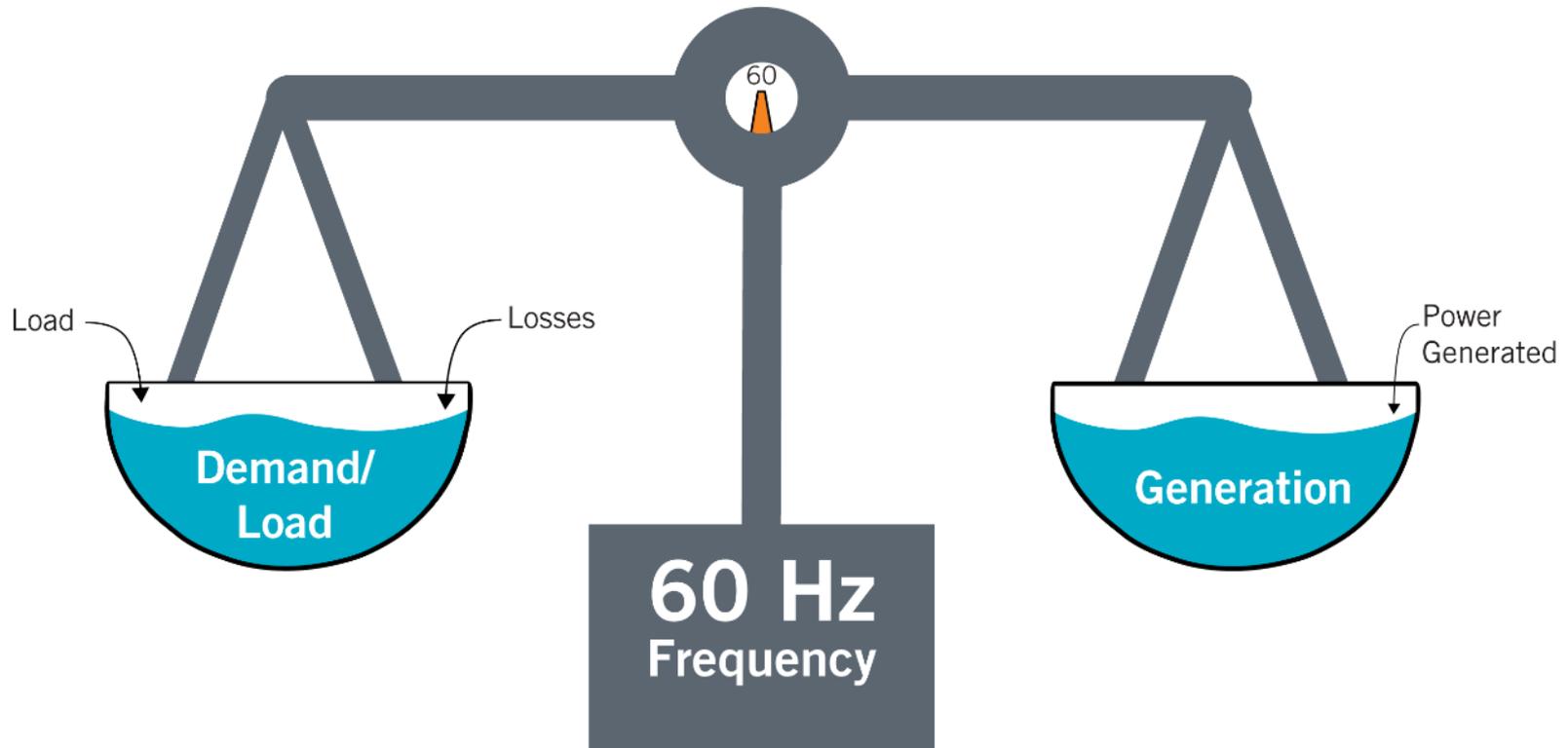




THE NEXT SLIDE IS
THE MOST
IMPORTANT ONE

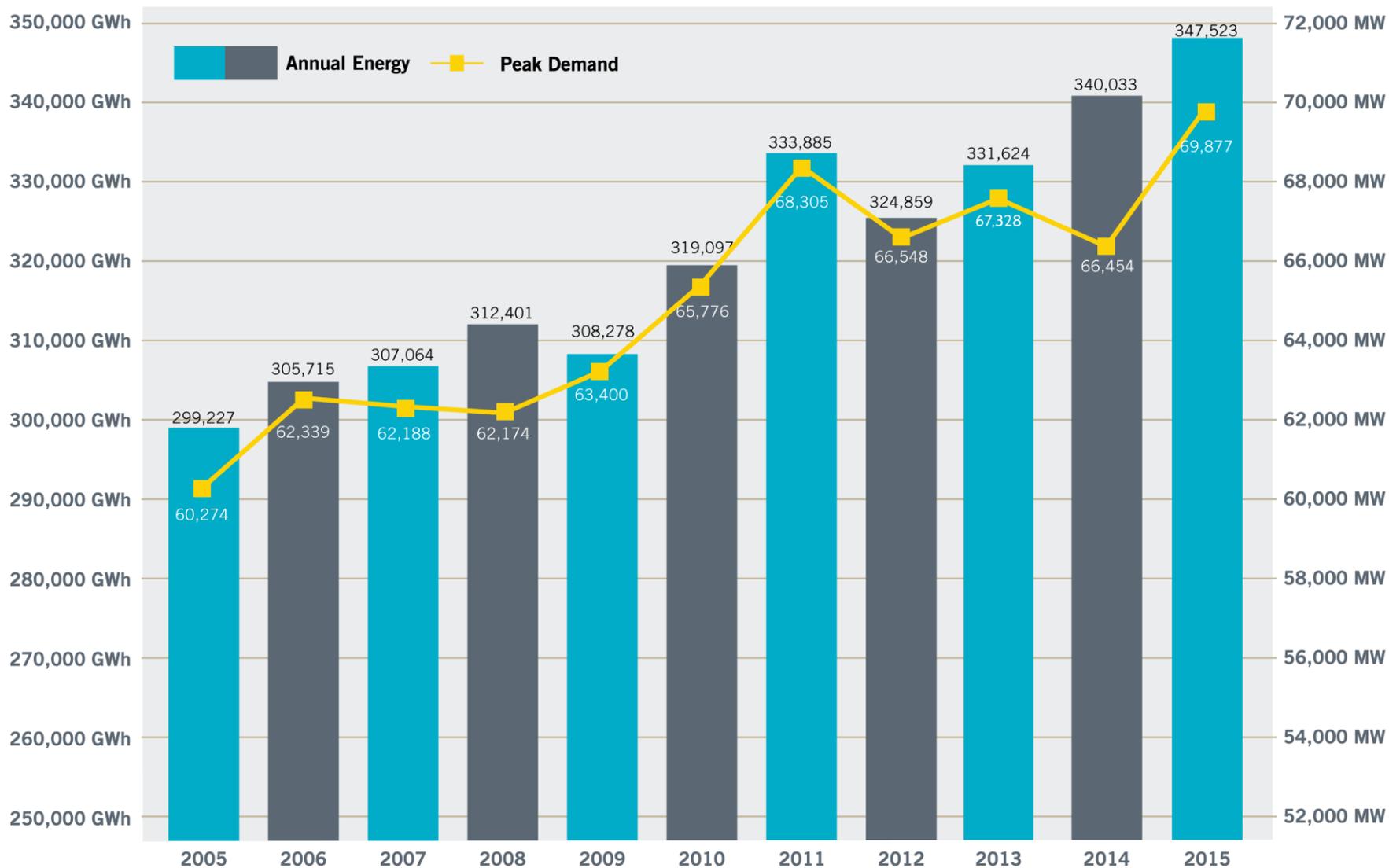
Power Supply (Generation) Must Match Load (Demand)

- The fundamental concept behind ERCOT operations is that generation has to match load at all times

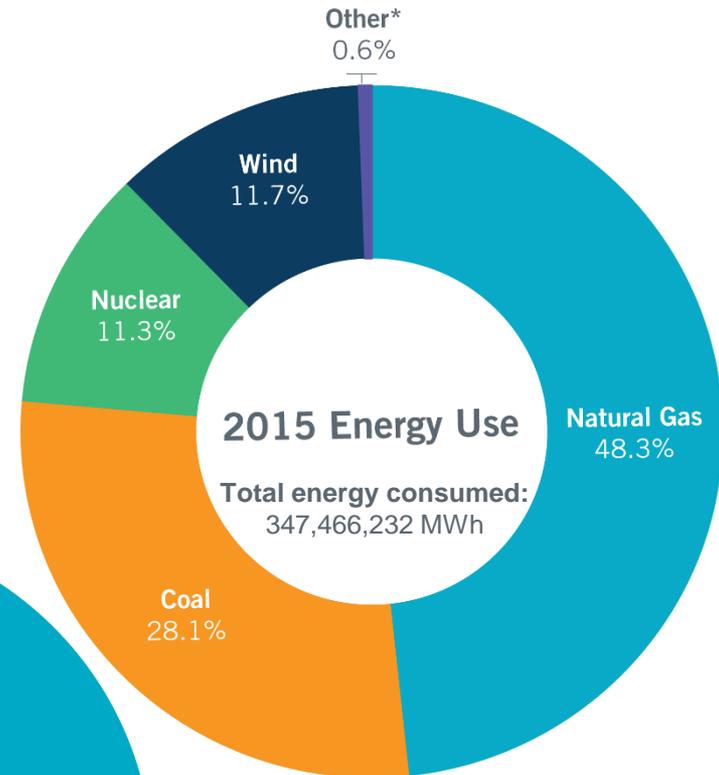
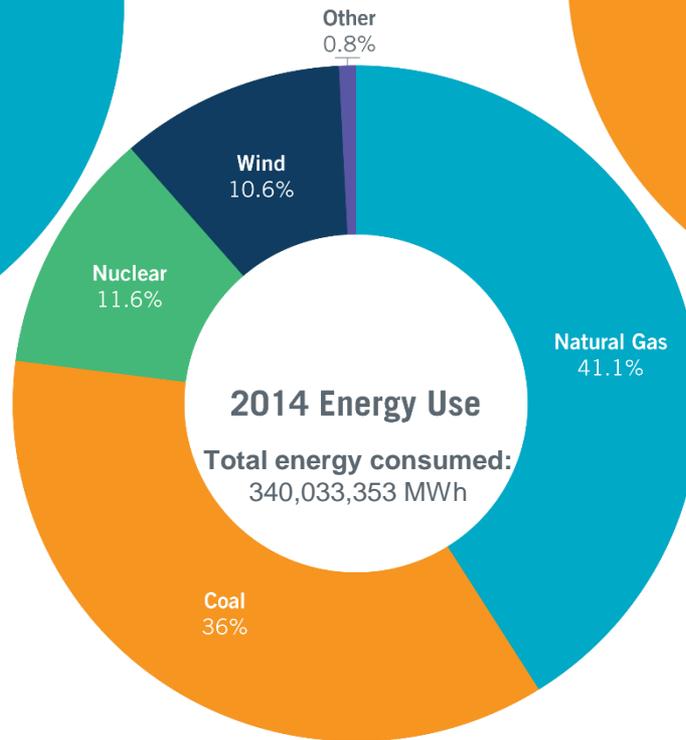
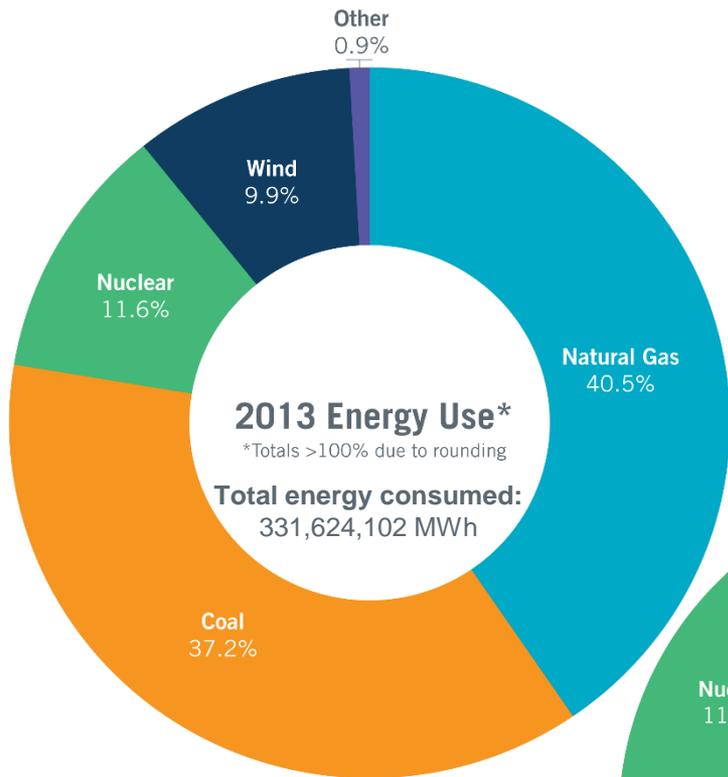


- In other words, a 1 MW reduction in load has exactly the same effect on the grid as a 1 MW increase in generation.

Annual Energy and Peak Demand (2005-2015)



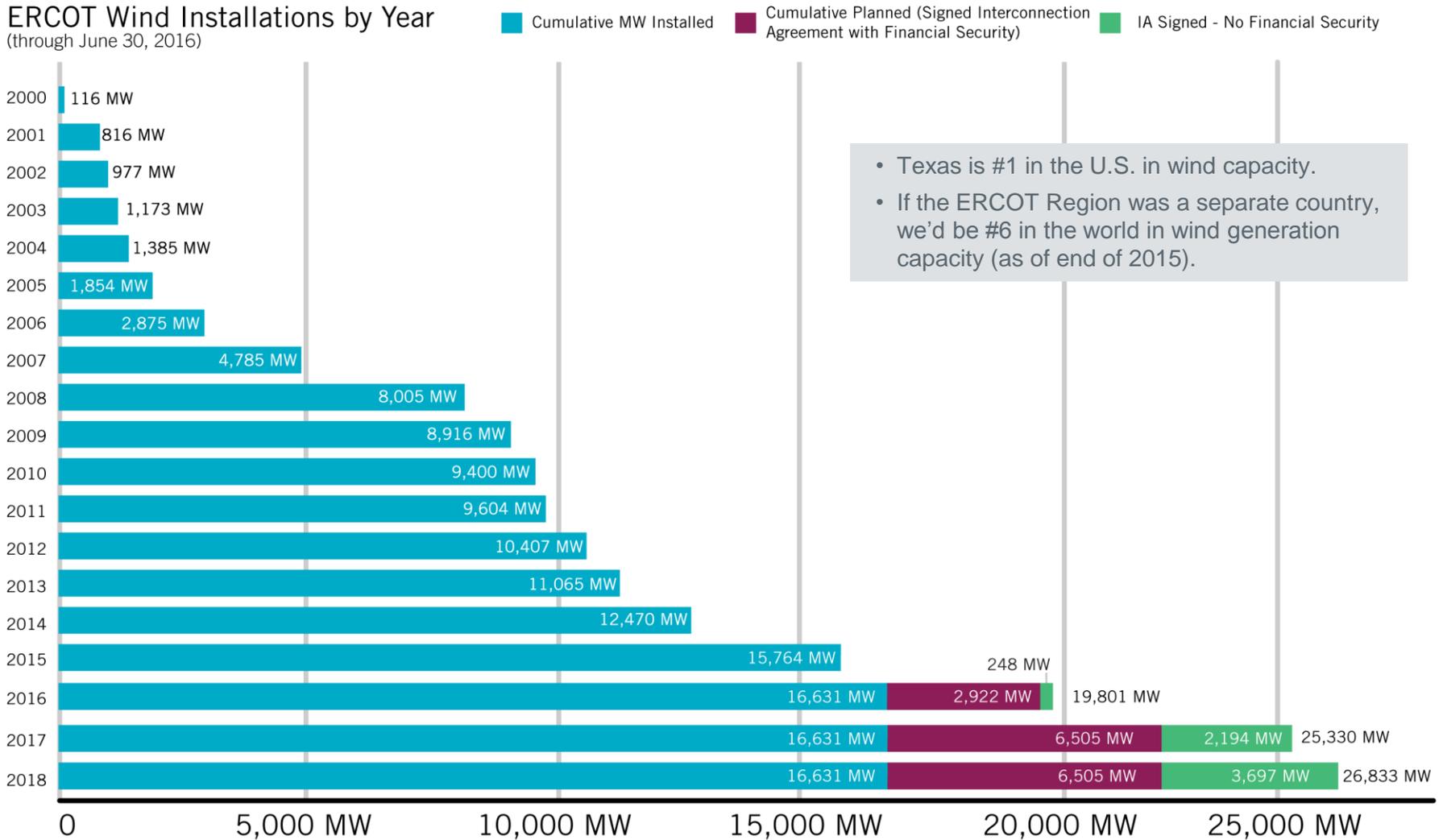
Energy Use Comparison



*Includes solar, hydro, petroleum coke, biomass, landfill gas, and DC Ties

Wind Generation – June 2016

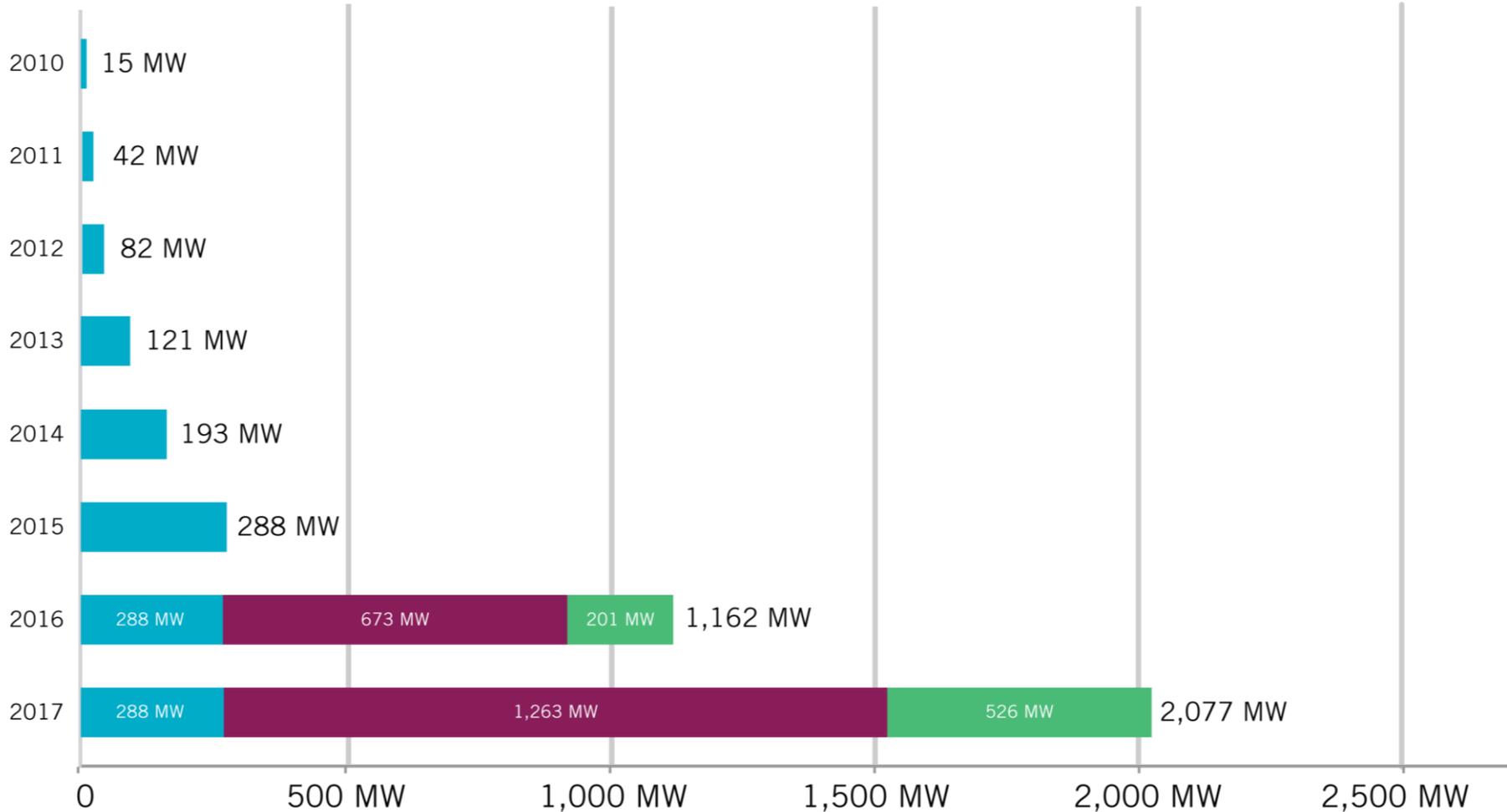
ERCOT Wind Installations by Year
(through June 30, 2016)



Utility Scale Solar Generation – June 2016

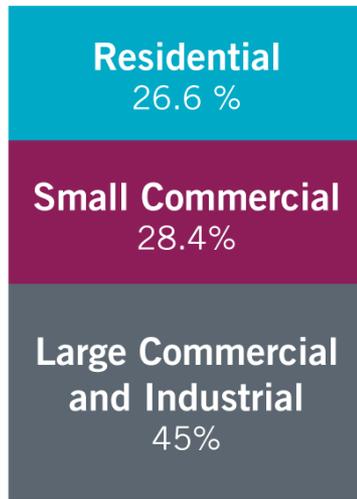
ERCOT Solar Installations by Year
(through June 30, 2016)

Cumulative MW Installed IA Signed - Financial Security Posted
IA Signed - No Financial Security



Weather Impacts on Load by Customer Type

Thursday,
March 12, 2015
5:00 PM
ERCOT Load: 32,955 MW
Temperature in Dallas: 69°



March 12, 2015



August 10, 2015

← Mon., Aug. 10, 2015
5:00 PM
ERCOT Load: 69,659 MW
Temperature in Dallas: 107°

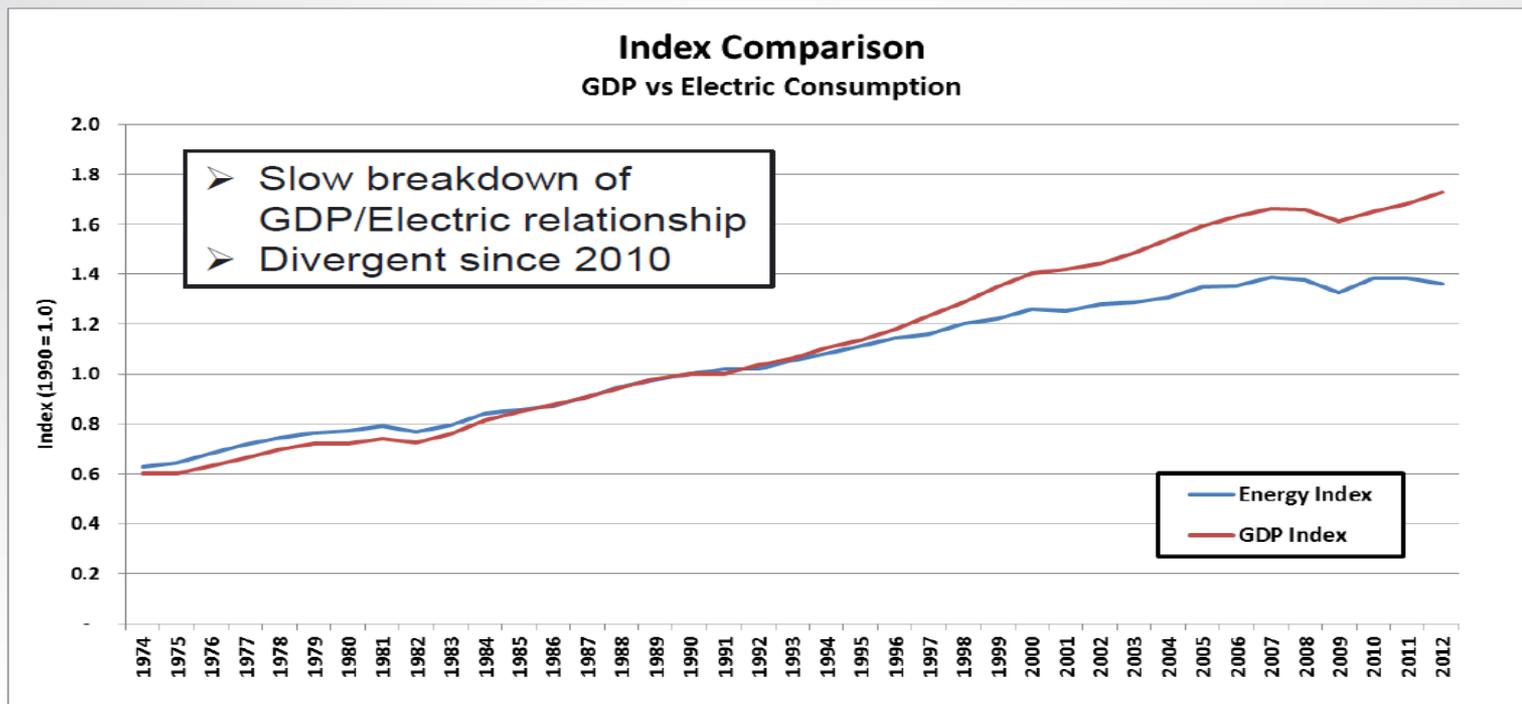


~37,000 MW of weather-sensitive load -- 53% of peak

- Customer class breakdown is for competitive choice areas; percentages are extrapolated for munis and co-ops to achieve region-wide estimate
- Large C&I are IDR Meter Required (>700kW)
- 15-minute settlement interval demand values

National Trends

GDP VS. ELECTRIC RELATIONSHIP



Source: Energy Trends Benchmarking Survey 2013, Mark Quan, November, 2013

Consumers Actively Reducing Energy Consumption



	LED	CFL	Incandescent
Watts Per Bulb	10	14	60
Annual kWh	11	15	65

- Lighting accounts for approximately 20% of annual residential electric use and almost 30% of commercial consumption.
- *Source: Customer Value and Utility Mindset, Martin Day, November, 2013*

Grid Security Collaboration

Federal/National:



US-CERT
UNITED STATES COMPUTER EMERGENCY READINESS TEAM



ICS-CERT
INDUSTRIAL CONTROL SYSTEMS CYBER EMERGENCY RESPONSE TEAM



**National Electric Sector
Cybersecurity Organization**



NERC
NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION



E-ISACTM
ELECTRICITY
INFORMATION SHARING AND ANALYSIS CENTER



State:



Industry:



- Critical Infrastructure Protection Working Group (CIPWG)
- Grid Resilience Working Group (GRWG)

National Labs:



**Pacific Northwest
NATIONAL
LABORATORY**



ERCOT Communication Channels

ERCOT website – www.ercot.com

- Today's Outlook and grid conditions
- Daily and seasonal weather
- Market information, prices and more



Social media – join us!

- Twitter: @ERCOT_ISO
- Facebook: Electric Reliability Council of Texas
- LinkedIn: ERCOT



ERCOT mobile app

- Real-time updates
- Wholesale pricing
- Information sharing