

Debunking Post-Election Myths About Coal-Fired Power Plants

TAMU Law School
Energy Law Symposium
March 23, 2017



NAME THAT PRESIDENT: Who said:

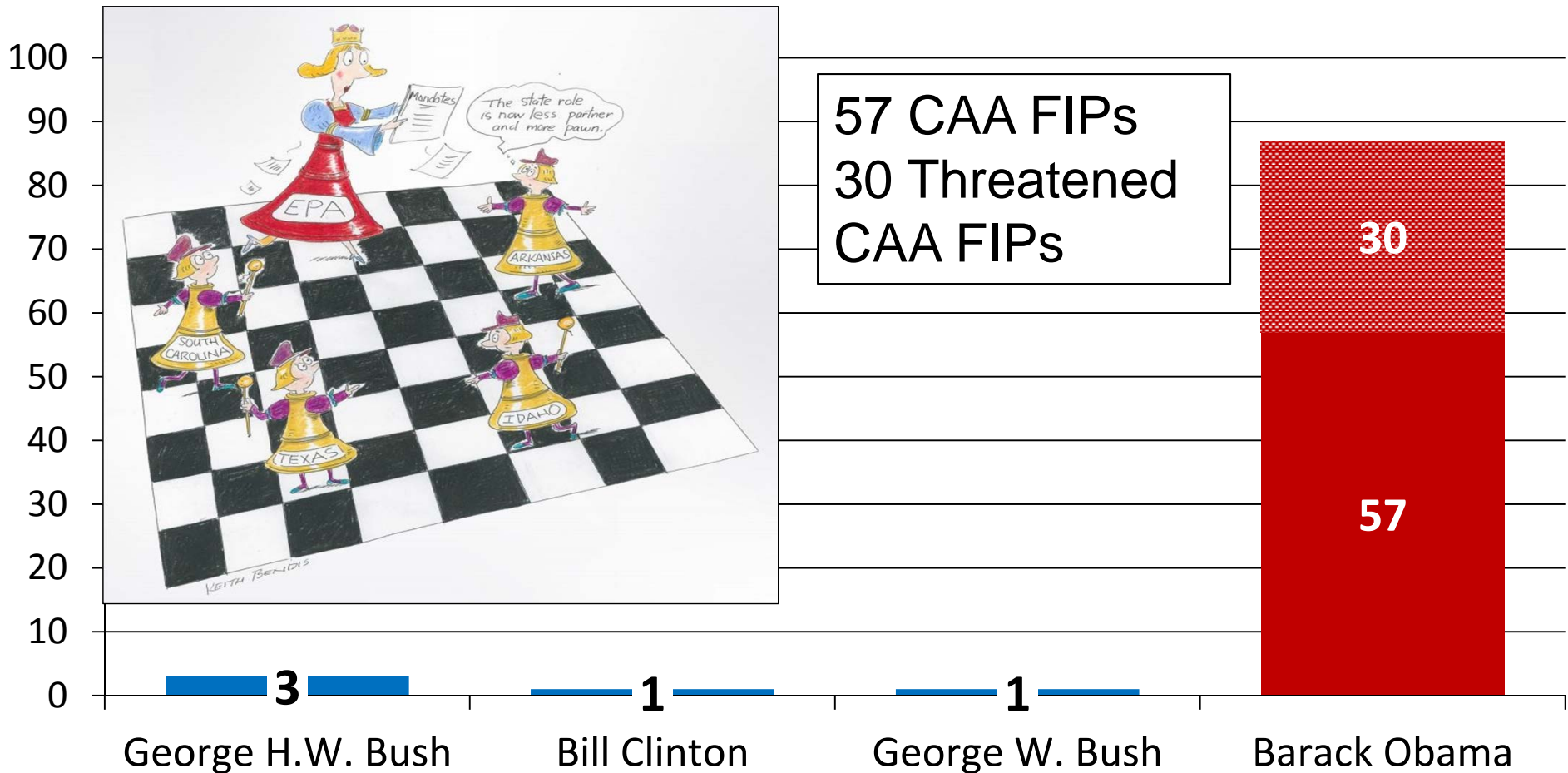
- *“Coal is our nation's greatest energy resource.”*
- *It must play a decisive role in America's energy future...*
- *We must increase our use of coal. . . and provide employment where jobs are needed the most.*
- *We must lead the Western World in developing a program for increased use of coal in Europe, Japan, and the developing nations.”*



Answer: Jimmy Carter
(Quote from Democratic Party Platform, Aug. 11, 1980)



All President Trump Has to Do to Succeed on Energy: End The Age of Coercive Federalism



Source: Karen Harbert, Institute for 21st Century Energy, citing to Competitive Enterprise Institute.



Back to the Basics: Restoring Cooperative Federalism

- Clean Air Act: “*air pollution prevention...at its source **is the primary responsibility of States and local governments.***”
- Clean Water Act: “*It is the policy of the Congress to recognize, preserve, and protect **the primary responsibilities and rights of States** to prevent, reduce, and eliminate pollution.*”



Myth #1: The CPP is Legal & Provides States Flexibility



Truth:

- CPP does not heed Supreme Court warning that EPA must have express statutory authority when economic stakes are high.
- CPP bypasses structure of the Clean Air Act and prohibition against double-regulation.
- EPA-imposed mandates are hard-wired with "Outside the Fence" assumptions that FERC could not enforce, let alone EPA.
- State options are extremely limited by EPA hard-wired budgets.
- Many states will be forced to depend heavily on other states because they lack wind or solar resources and/or key infrastructure.



'When a Robber says: 'your money or your life,' it is neither legal nor flexible just because he says 'you can pay with cash, credit, or Bitcoin.'

Four Textual Arguments

#1 - 112
Exclusion
Language

FCAA Section 111(d)

(1) The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 7410 of this title under which each State shall submit to the Administrator a plan which

(A) establishes standards of performance for any existing source for any air pollutant

(i) for which air quality criteria [for pervasive pollutants] have not been issued or which is not included on a list published under section 7408 (a) of this title or emitted from a source category which is regulated under section 7412 of this title but

(ii) to which a standard of performance under this section would apply if such existing source were a new source, and

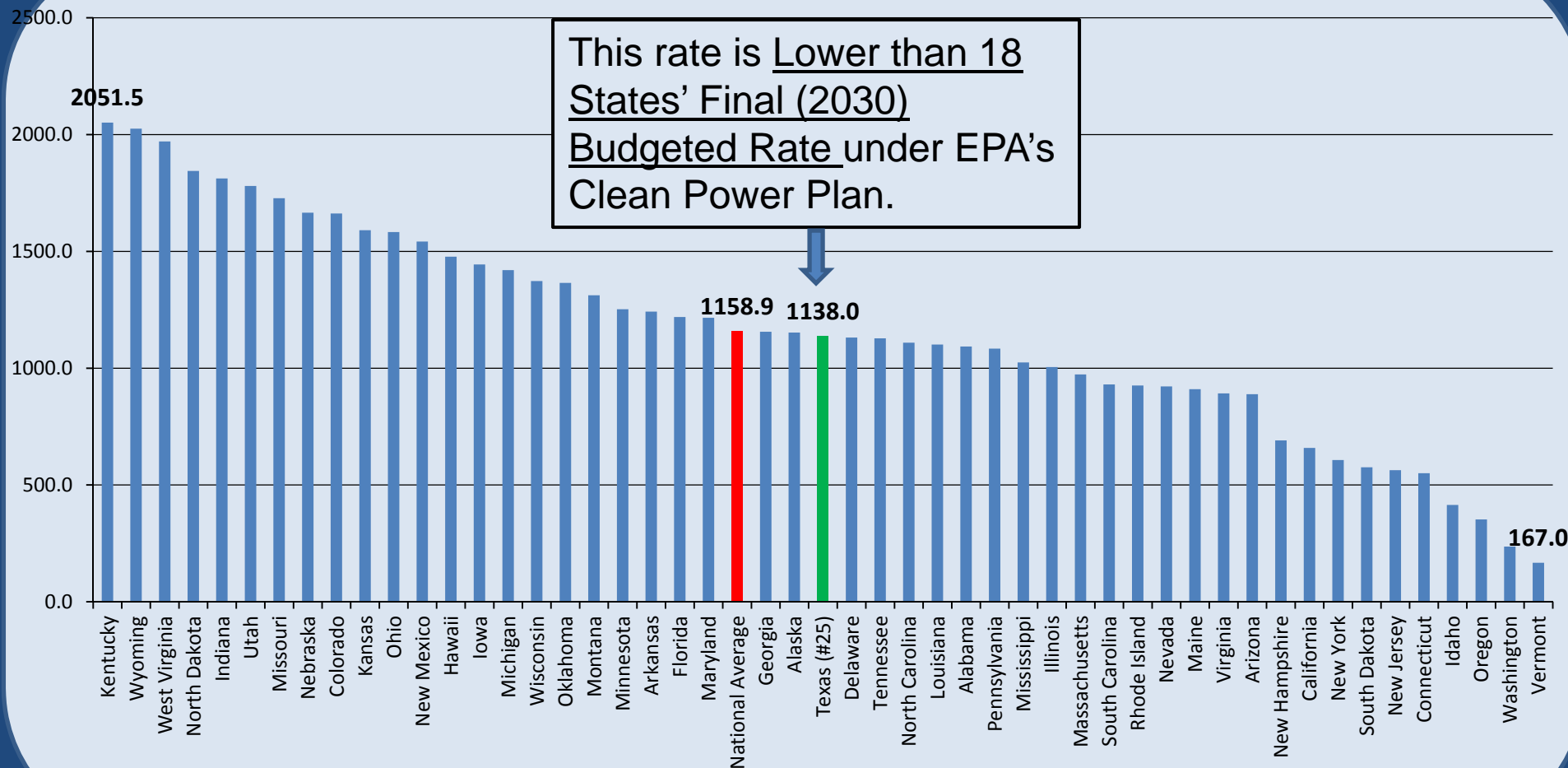
(B) provides for the implementation and enforcement of such standards of performance. Regulations of the Administrator under this paragraph shall permit the State in applying a standard of performance to any particular source under a plan submitted under this paragraph to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies.

#4 – “for”
and “to” a
“source”

#2 - 111(b) Predicate
Language

#3 – State Lead & Premature Retirement Protection

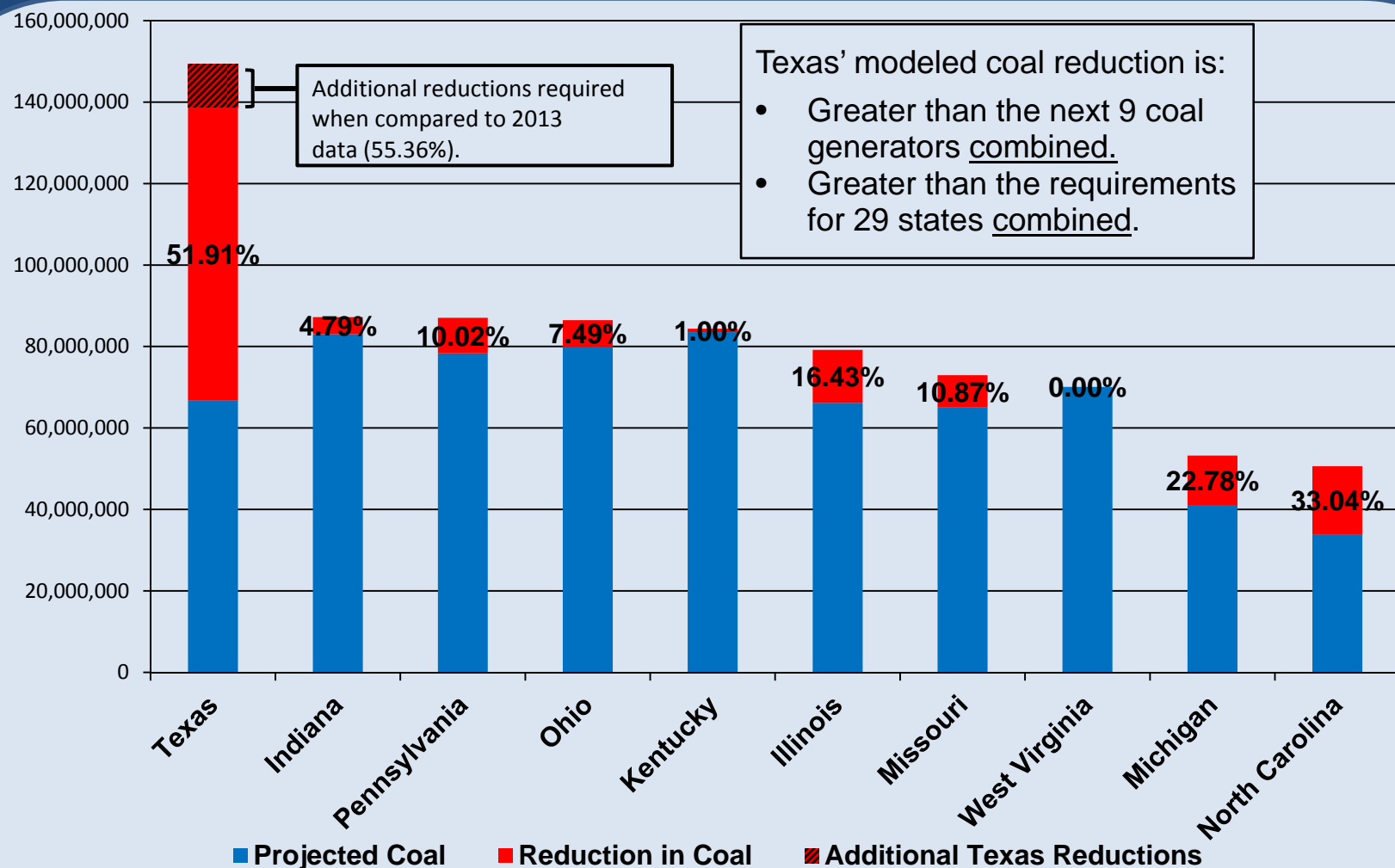
Comparison of Raw State CO₂ Emission Rates (lbs/MWh)



Source: EPA Data File - 2012 Unit-Level Data Using the eGRID Methodology; Includes Vermont, which is not subject to Existing-Source GHG Rule.

EPA's Modeled Reductions in Coal Generation

Top 10 Generators of Coal Electricity – Final 2030 Target

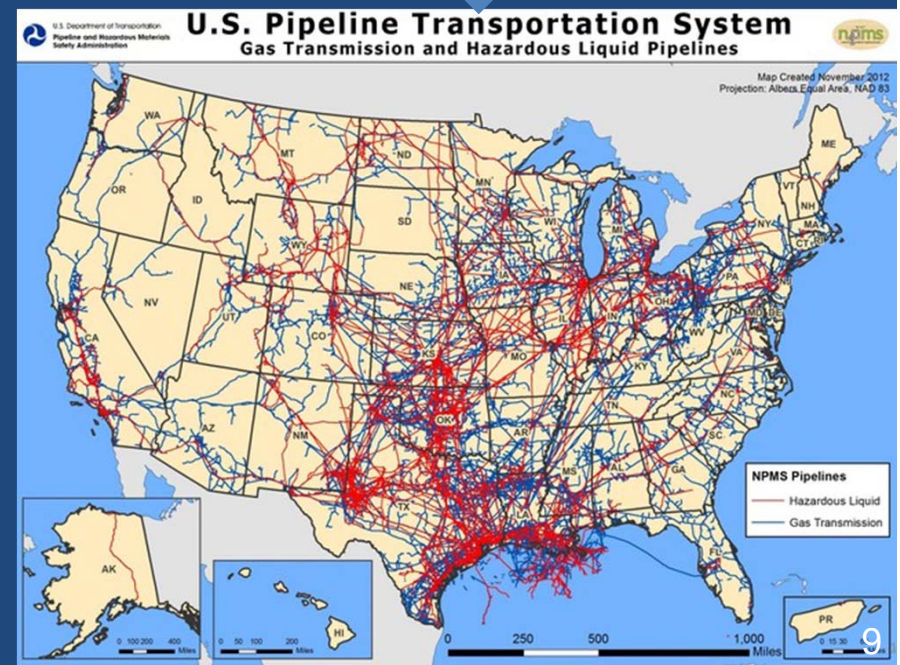
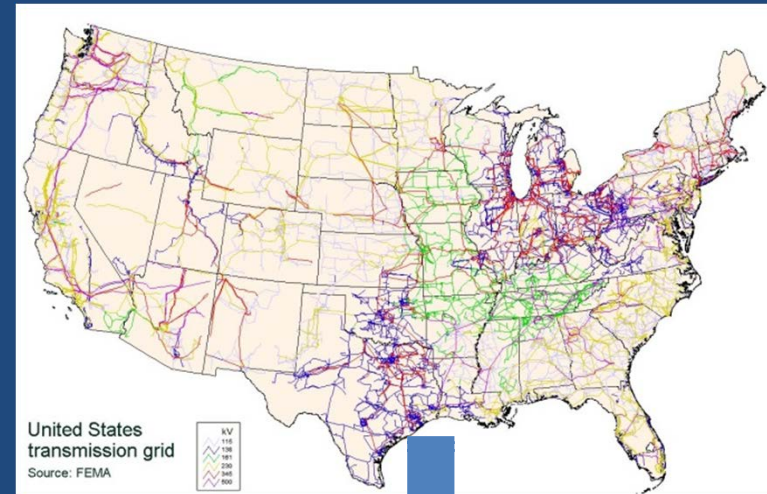


Modeled reductions are shown in megawatt-hours (MWh), comparing 2012 data to EPA's projected 2030 target. In 2013, Texas coal generation actually reached 149,404,244 MWh, which would result in a difference of 82,706,011 (55.36%) to meet EPA's 2030 target. Source: EPA Data File, Goal Computation, Appendix 1.

Myth #2: Oil & Gas States Should Like the Clean Power Plan Because it will Help Gas

Truth:

1. CPP BSER precedent is very dangerous for Oil/Gas /Petrochemical source categories because pipes could = "System."
2. Existing simple cycle gas plants would be forced to retire if plants are regulated for GHGs by EPA.
3. New NGCC are being suppressed by market distortions due to renewable-forcing policies.
4. Electric prices will increase – which hurts oil and gas E&P, refining and petrochemicals.





Obama CPP Statement About New Gas Power



“Emission reductions achieved through the use of new NGCC capacity require the construction of additional CO₂-emitting generating capacity, a consequence that is inconsistent with the long-term need to continue reducing CO₂ emissions beyond the reductions that will be achieved through this rule.”

Myth #3: CPP was about Climate Change.

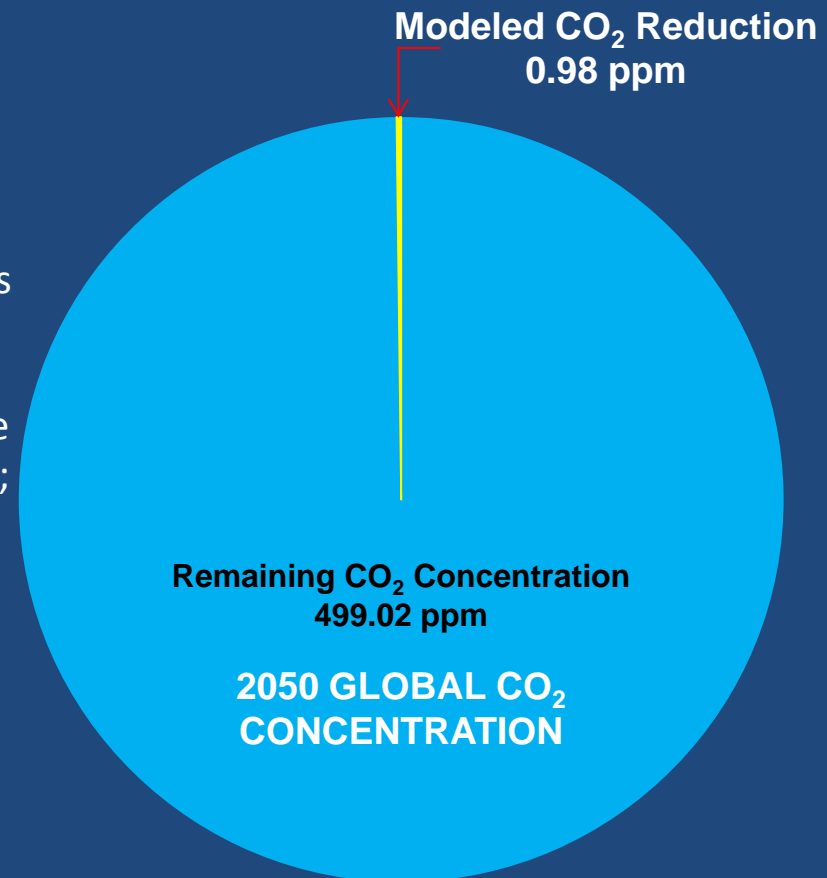
Truth: IT WAS ALL PAIN, NO GAIN

U.S. & TEXAS PAIN

- \$220 to \$292 billion increase in energy sector expenditures between 2022 and 2033
- Annual energy sector expenditures increase between \$29 to \$39 billion per year
- Double-digit electricity price increases in 40 states
- Households will have \$64 to \$79 billion less to spend
- 47,000 megawatts of power plants forced to close
- ERCOT: 39% increase in locational marginal prices; 44% increase w/Regional Haze Rule

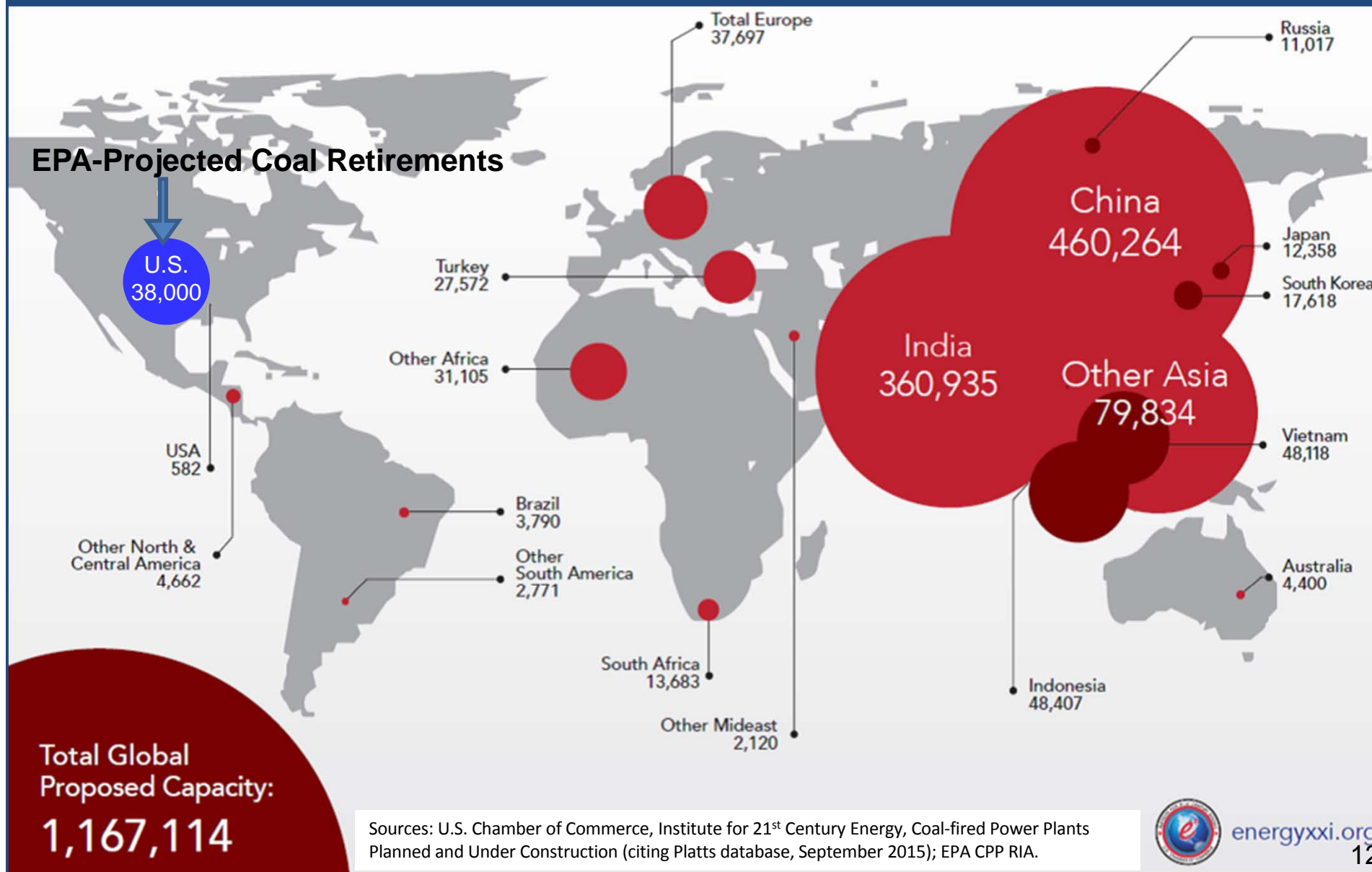
WORLD GAIN

- 0.2% reduction in CO₂ concentration (see pie chart)
- Global temperature increase reduced by 0.01° F
- Sea level rise reduced by less than 1/100th of an inch (less than the thickness of 2 sheets of paper or 1 or 2 human hairs)
- In 2025, total annual US reductions will be offset by approximately **3 weeks of Chinese emissions**



“Pain” Sources: NERA Economic Consulting, Energy and Consumer Impacts of EPA’s Clean Power Plan, November 7, 2015; ERCOT Analysis of the Impacts of the Clean Power Plan, Final Rule Update, October 16, 2015 (based on CO₂ Price assessment). “Gain” Sources: “Climate Effects” of EPA’s Final Clean Power Plan, ACCCE, August 2015 (Intergovernmental Panel on Climate Change (IPCC) projected concentrations of CO₂ in 2050 from 450 to 600 ppm); Statement of Karen Harbert, U.S. Chamber of Commerce, U.S. House of Representatives Comm. on Science, Space, & Technology, April 15, 2015; National Centers for Environmental Information, NOAA, Global Analysis – Annual 2014.

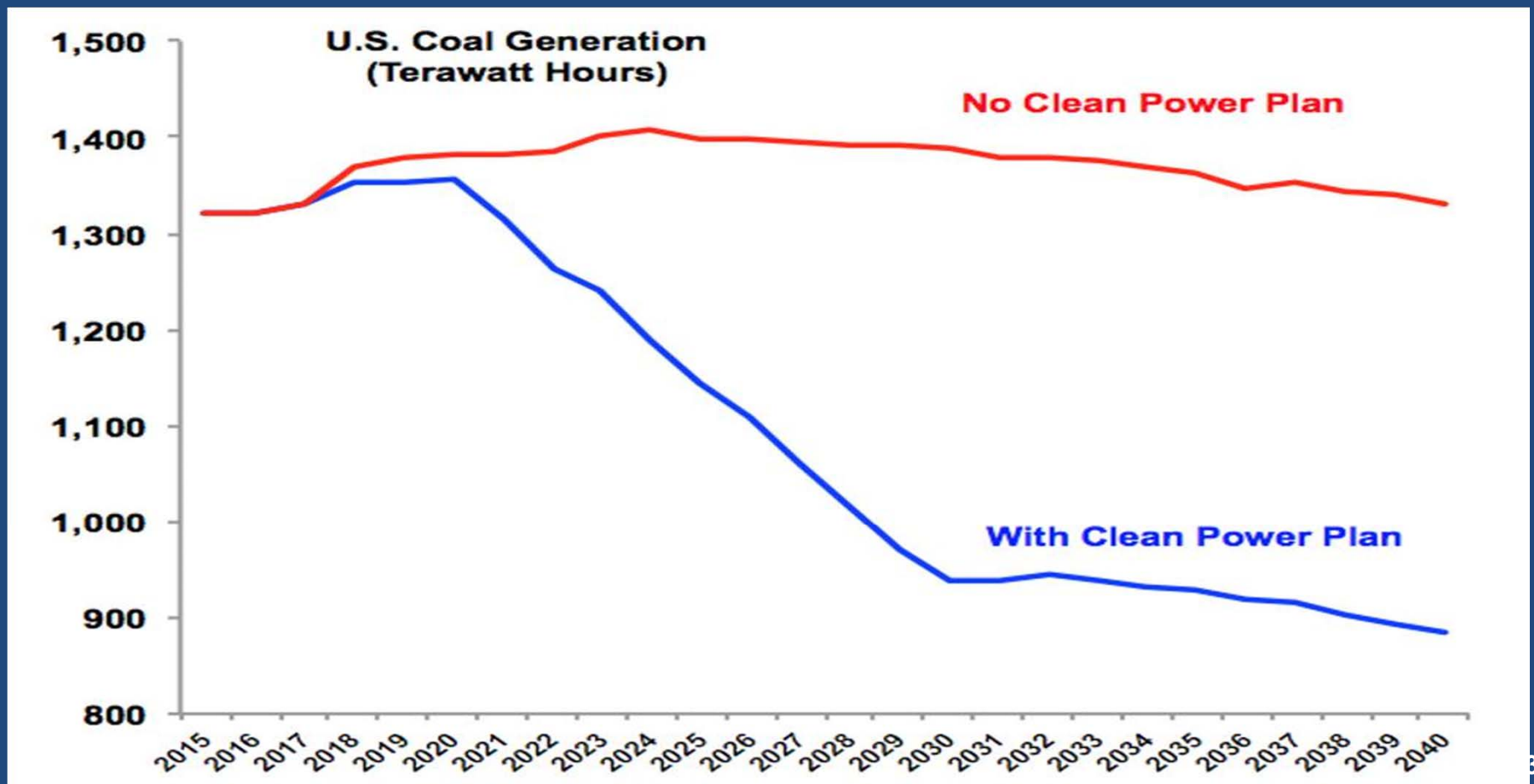
For every coal plant EPA predicted CPP would shut down: ...31 more are *already* planned or being built across the globe!



Myth #4: “Coal is Dead and President Trump Cannot Bring it Back.”

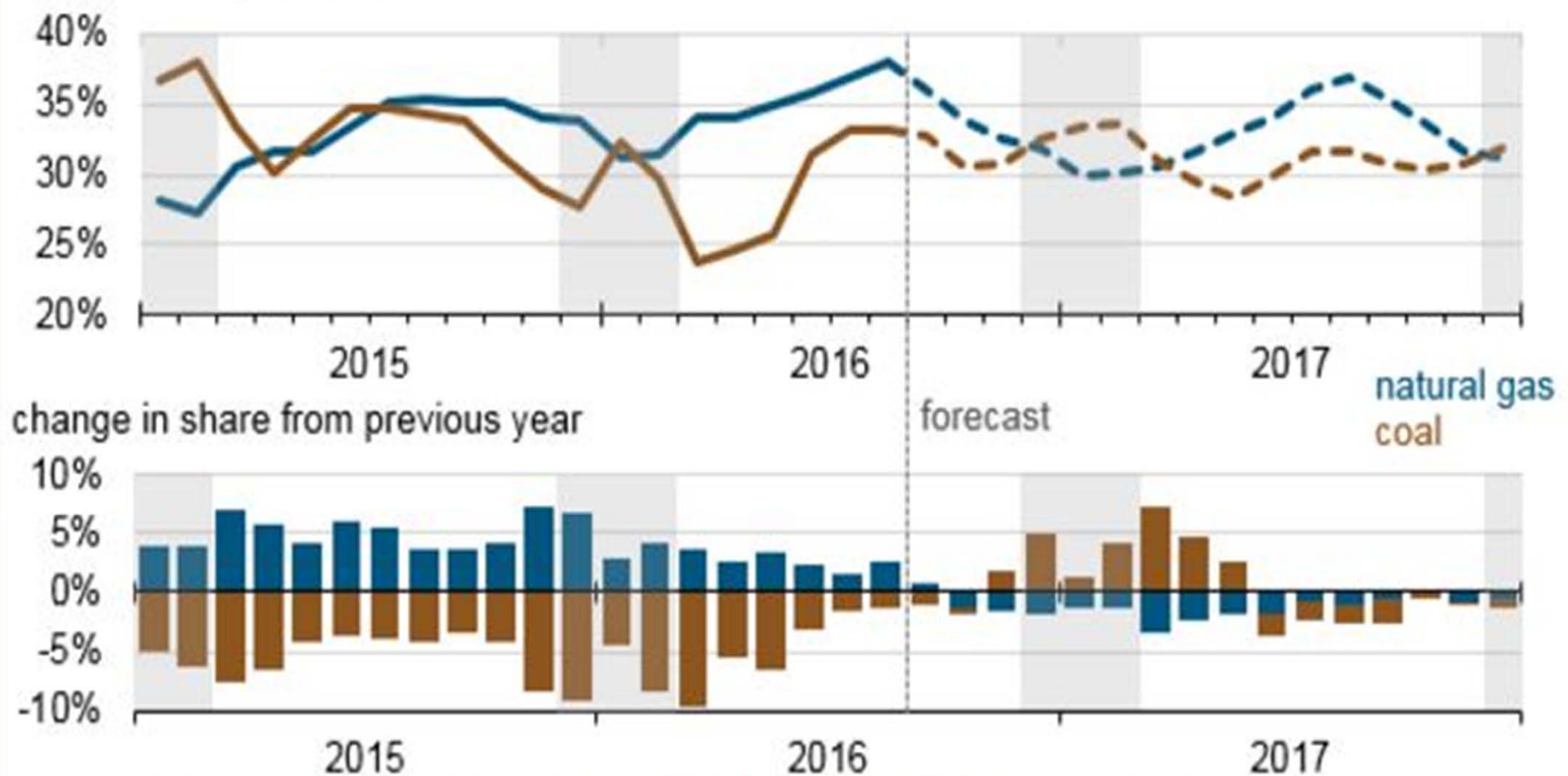
Truth:

1. Without CPP, current (surviving) coal fleet expected to last well into 2030-2040.
2. Global energy demand will REQUIRE an “All of the Above” Energy Portfolio



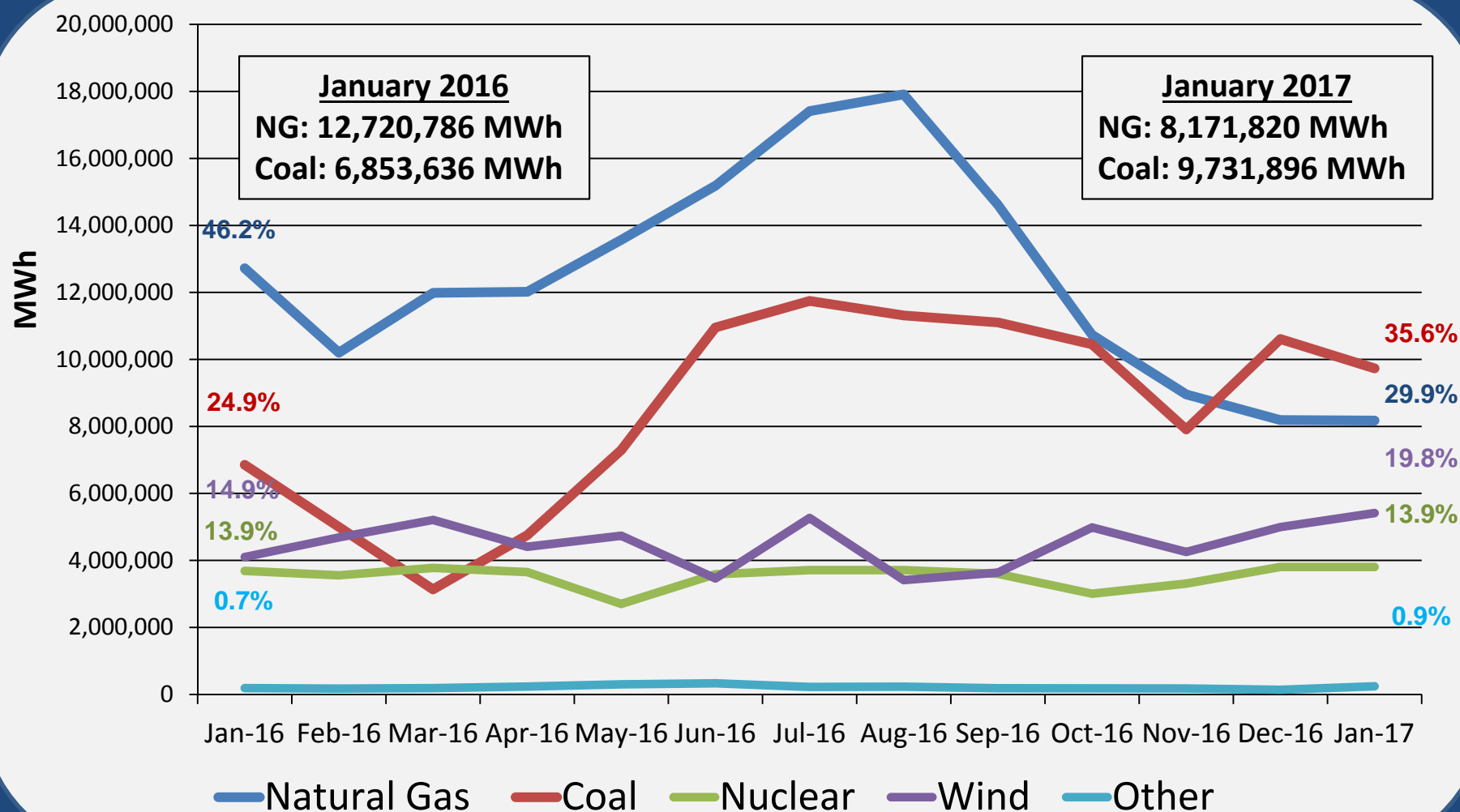


U.S. electricity generation fueled by coal and natural gas
share of total generation



Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, November 2016

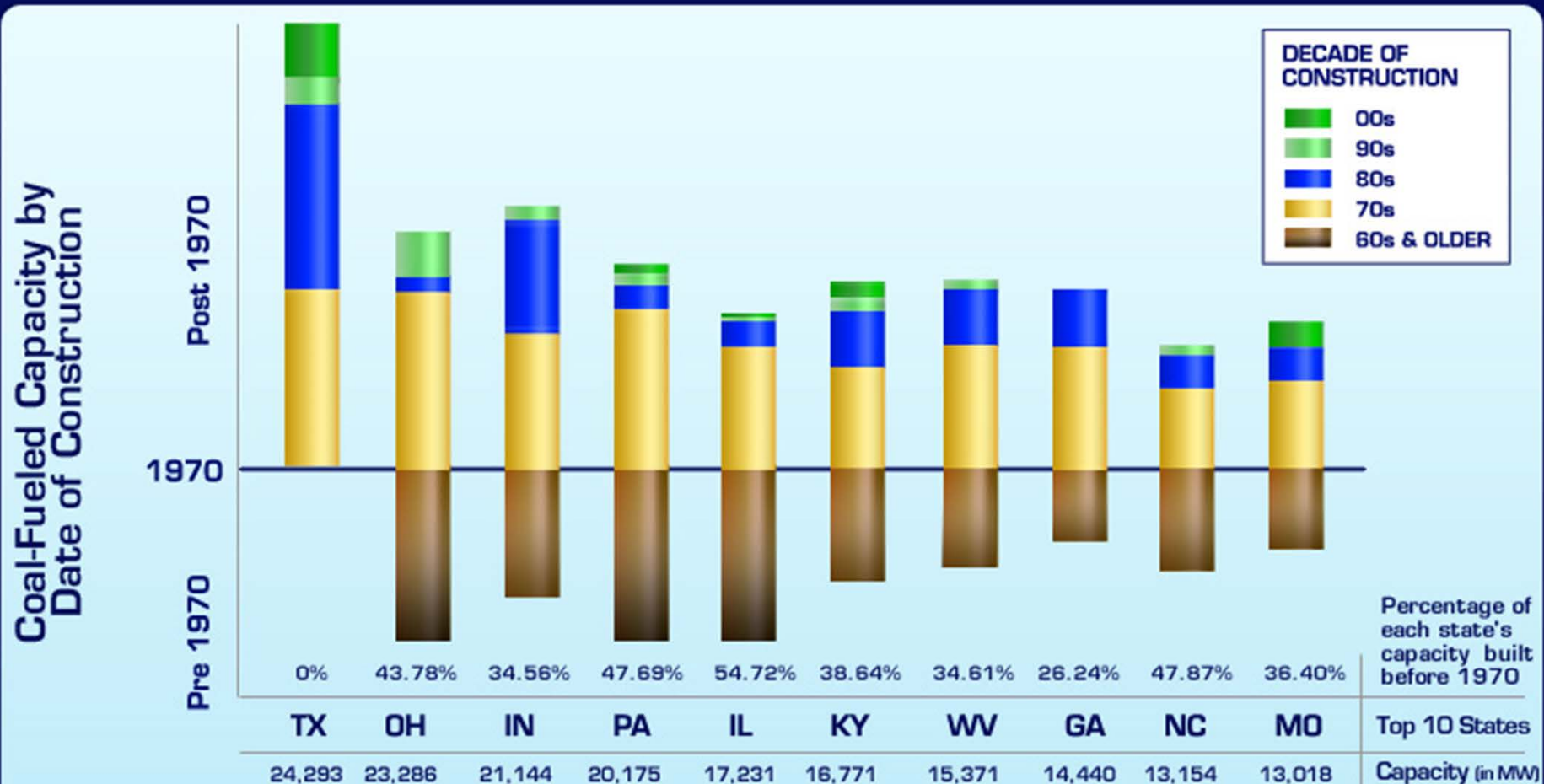
Texas Case Study: Coal Rebounds as Gas Recovers



Source: ERCOT, 2016 and 2017 Demand and Energy Reports. "Other" includes Solar, Water, and Other generation sources, but excludes Net DC/BLT; percentages are rounded.

Comparing the Age of Coal Fleets

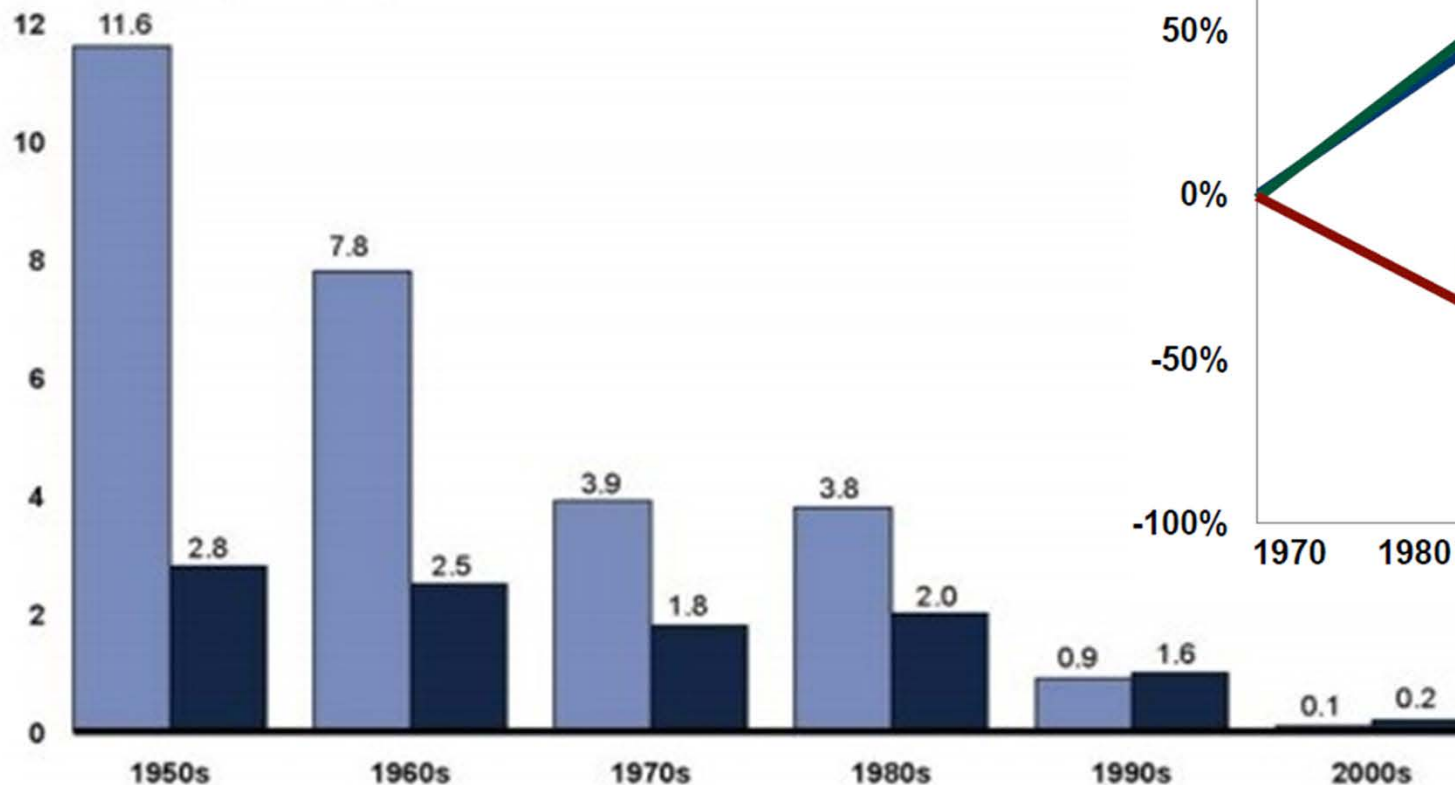
Top 10 States by Total Coal-Fueled Capacity



* Based on data from U.S. Energy Information Administration, Form EIA-860-Annual Electric Generator Report, 2009

Young Coal = Cleaner Coal

Emissions rate (in lbs/MWh)



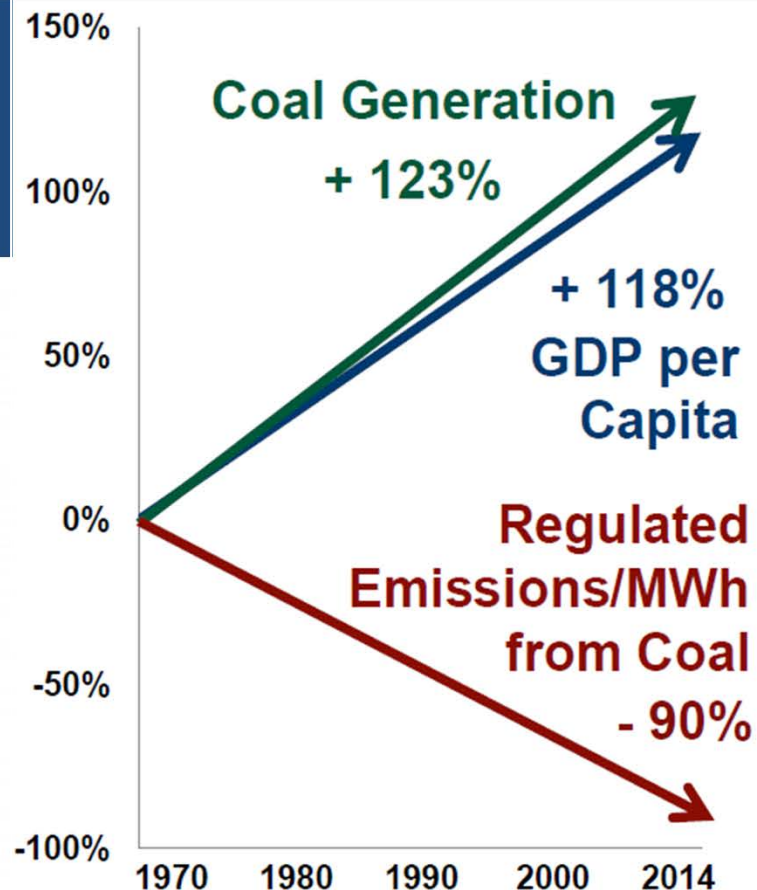
Age of unit (decade unit began operating)

■ Sulfur dioxide emissions rate

■ Nitrogen oxides emissions rate

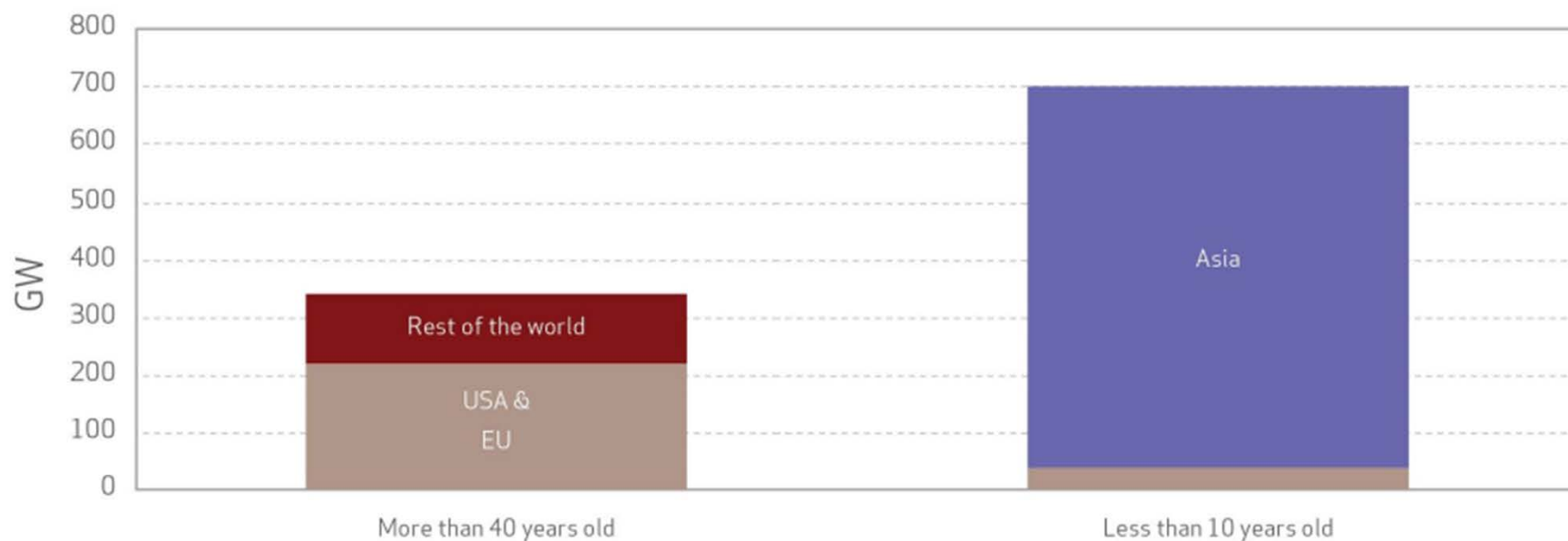
Legend: lbs/MWh = pounds per megawatt-hour

Source: GAO analysis of Ventyx data.



And Global Coal is Even Younger

Age of coal plants globally



Source: International Energy Agency, Laszlo Varro, Chief Economist, 2016

World Energy Demand Ensures Coal's Future

- Over Last 20 Years: 830 Million Get First Electricity
- Now: 1.3 Billion Still Living with no Access to Electricity



Sources: International Energy Agency, World Energy Outlook 2014; Robert Bryce, "Not Beyond Coal," October 2014.

PUDONG (Shanghai) in 1990

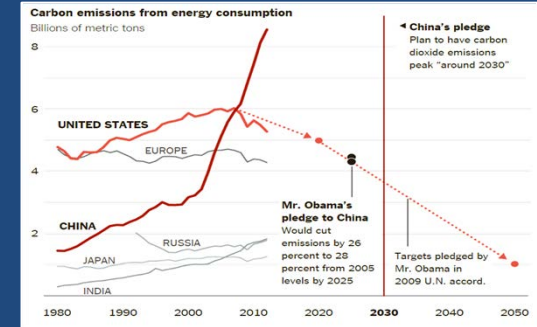


PUDONG (Shanghai) Today





So What About Paris?



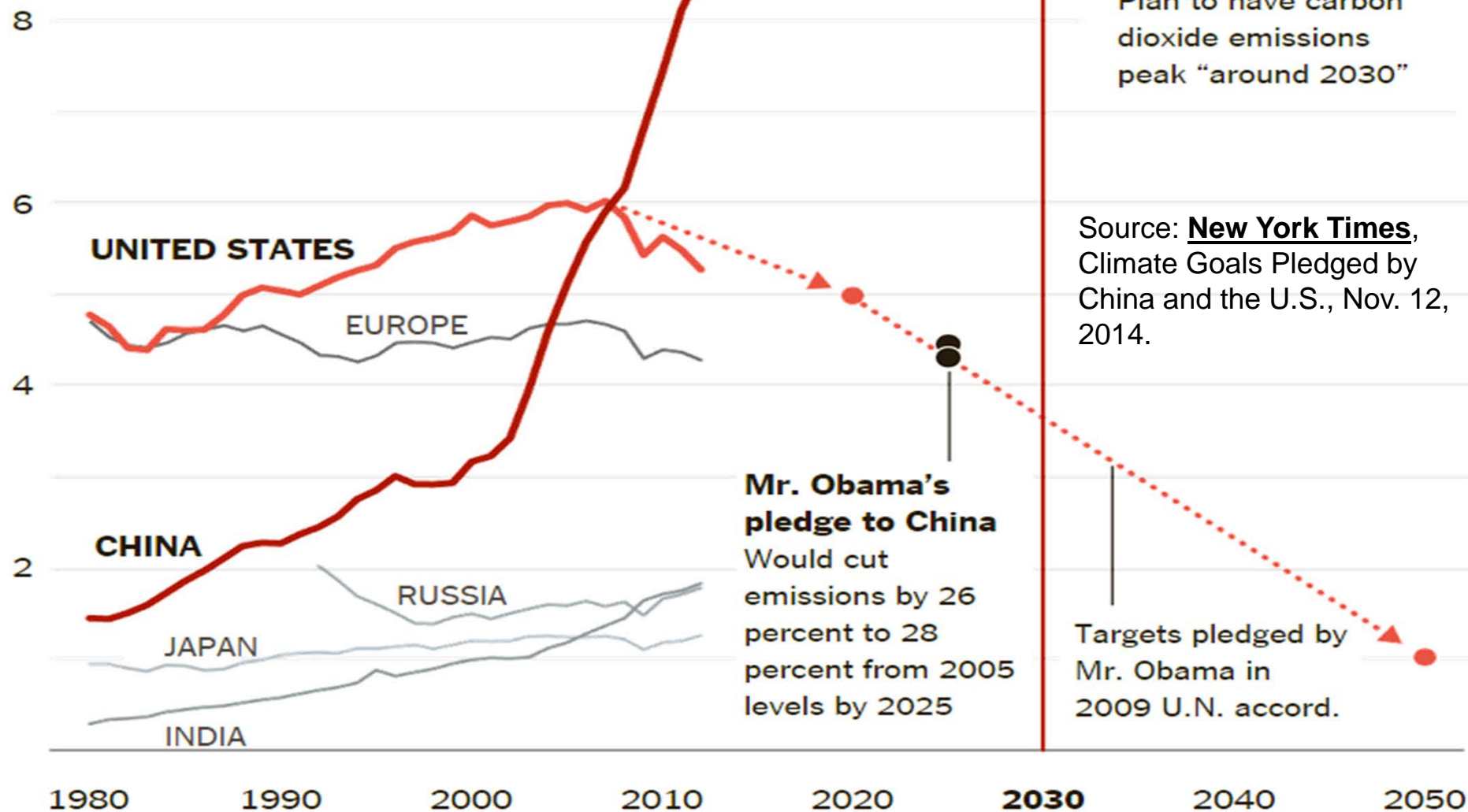
- CHINA “carbon intensity” will “peak around 2030” and (they have already announced 765 coal plants before then).
- INDIA has announced that it plans to **double coal production by 2020** but has aspirations for solar buildout.
- RUSSIA has “committed” to **increase** emissions up to 40%.
- President Trump has promised to “cancel” Paris. Unclear if that means complete withdrawal, a revised commitment, or something else.

Since 2005, U.S. emissions have fallen by 13 percent while China’s have grown by 69 percent and India’s by 53 percent.

Putting China's Commitment in Context

Carbon emissions from energy consumption

Billions of metric tons



Myth #5: Renewable Energy is at “Grid Parity” with Coal and Natural Gas

Truth:

1. Renewables are NOT less expensive than existing fossil power plants.
2. Direct subsidy costs of renewables are hidden in income tax rates instead of showing up in consumers' electric rates (so far).
3. Indirect costs of renewables (transmission, ancillary services, and market distortions) are currently masked by low natural gas prices.
4. Renewables cannot cover peak.

BOTTOM LINE:

**LET THE MARKET WORK!
THE FEDERAL GOVERNMENT
SHOULD NOT BE PART OF A
BUSINESS PLAN**

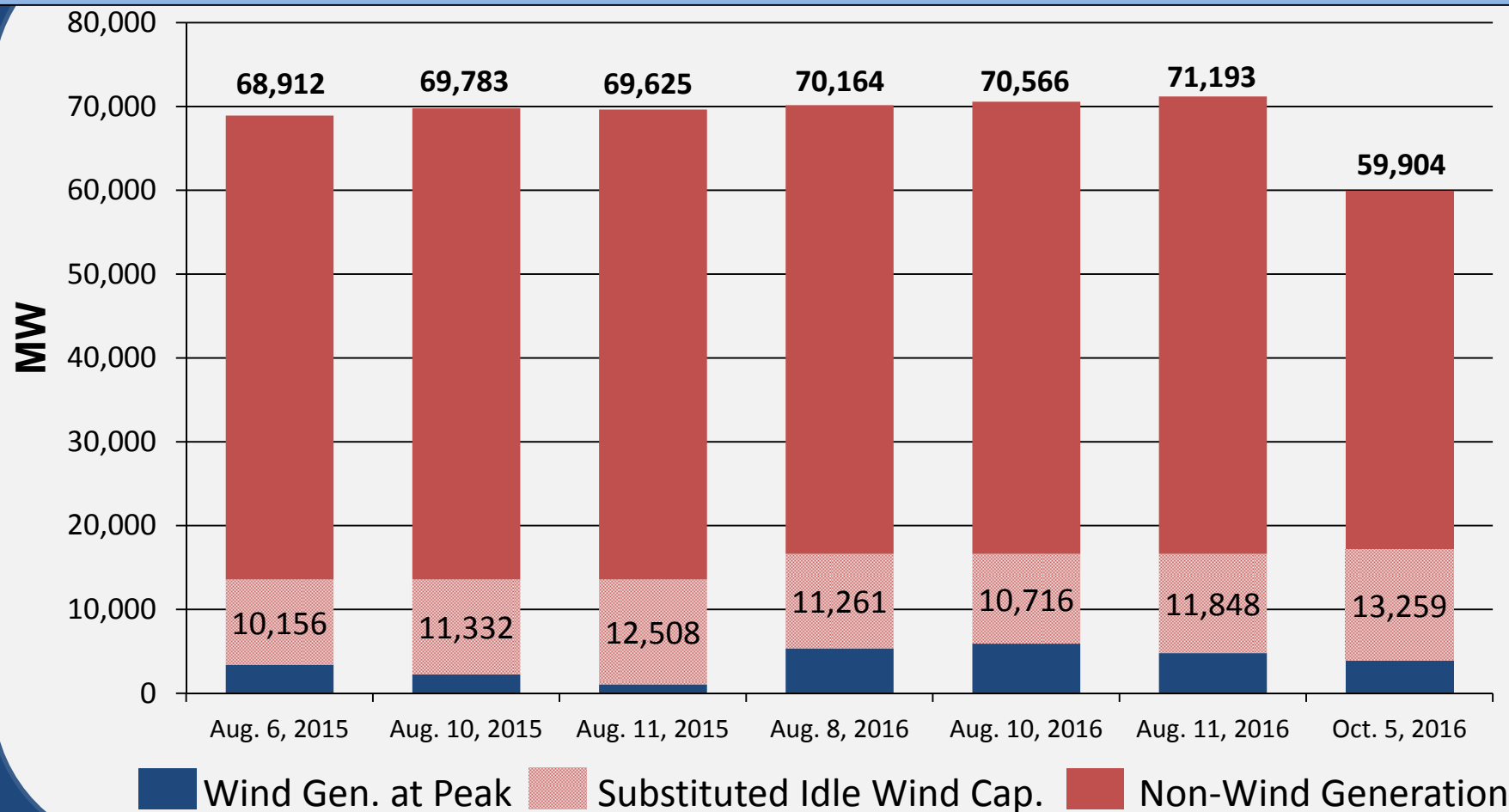
Cost of Electricity Source: Institute for Energy Research, “The Levelized Cost of Electricity from Existing Generating Resources,” June 2015.



Example: TX Fossil Plants Balance Grid When Wind Drops

ERCOT Top Three Demand Days 2015 & 2016; Oct. 2016 Record Peak

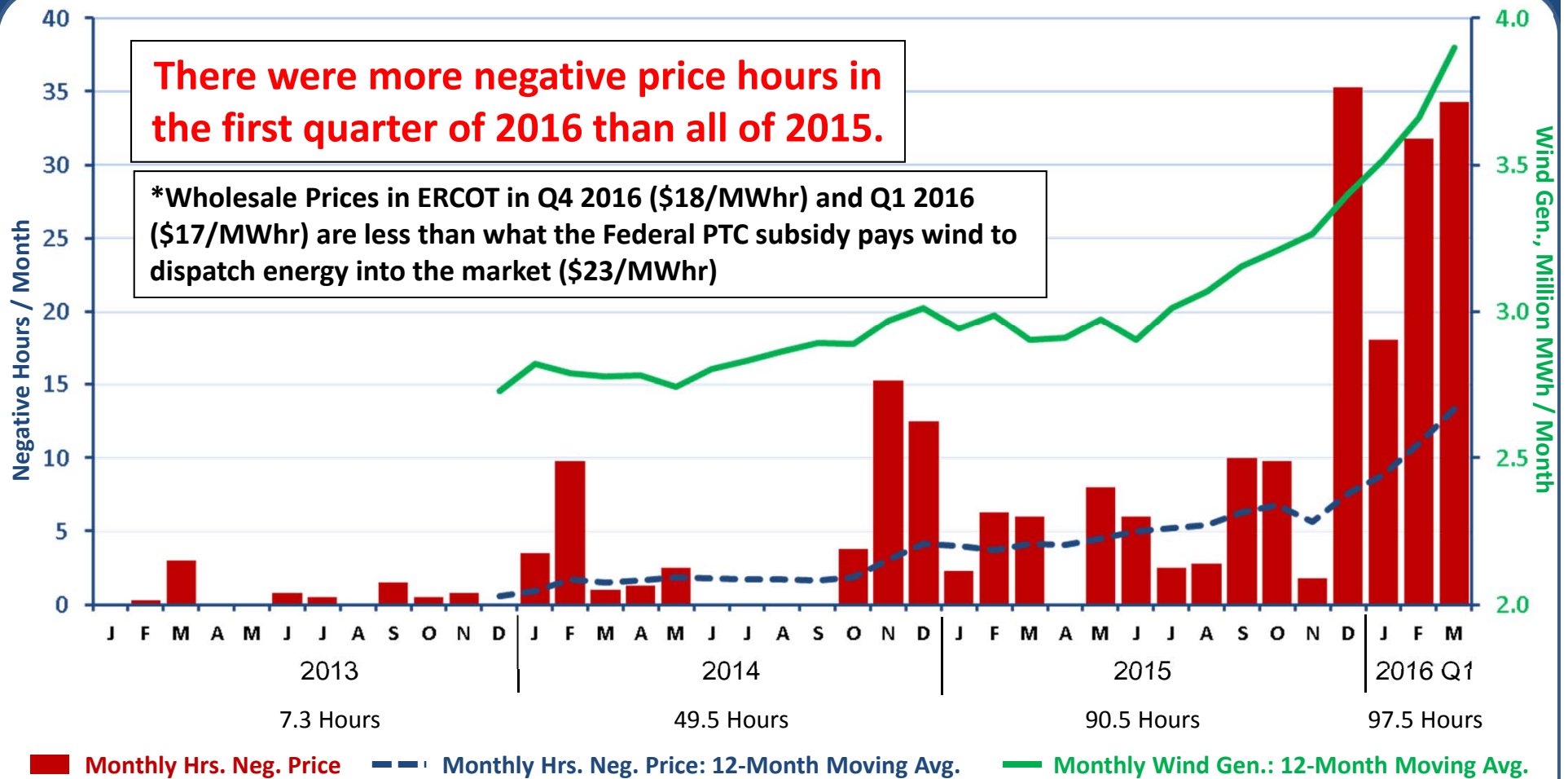
Between August and October 2016, the share of monthly generation dropped for natural gas from 49.1% to 36.7%. (Coal went from 31% to 35.7% & wind from 9% to 17%)



Sources: ERCOT, Daily Wind Integration Reports; ERCOT Generation Interconnection Status Reports, August 2015, August 2016, and October 2016.

Renewables Distorting Electric Markets

(Cost of Subsidies in Tax Rates, not Utility Rates)

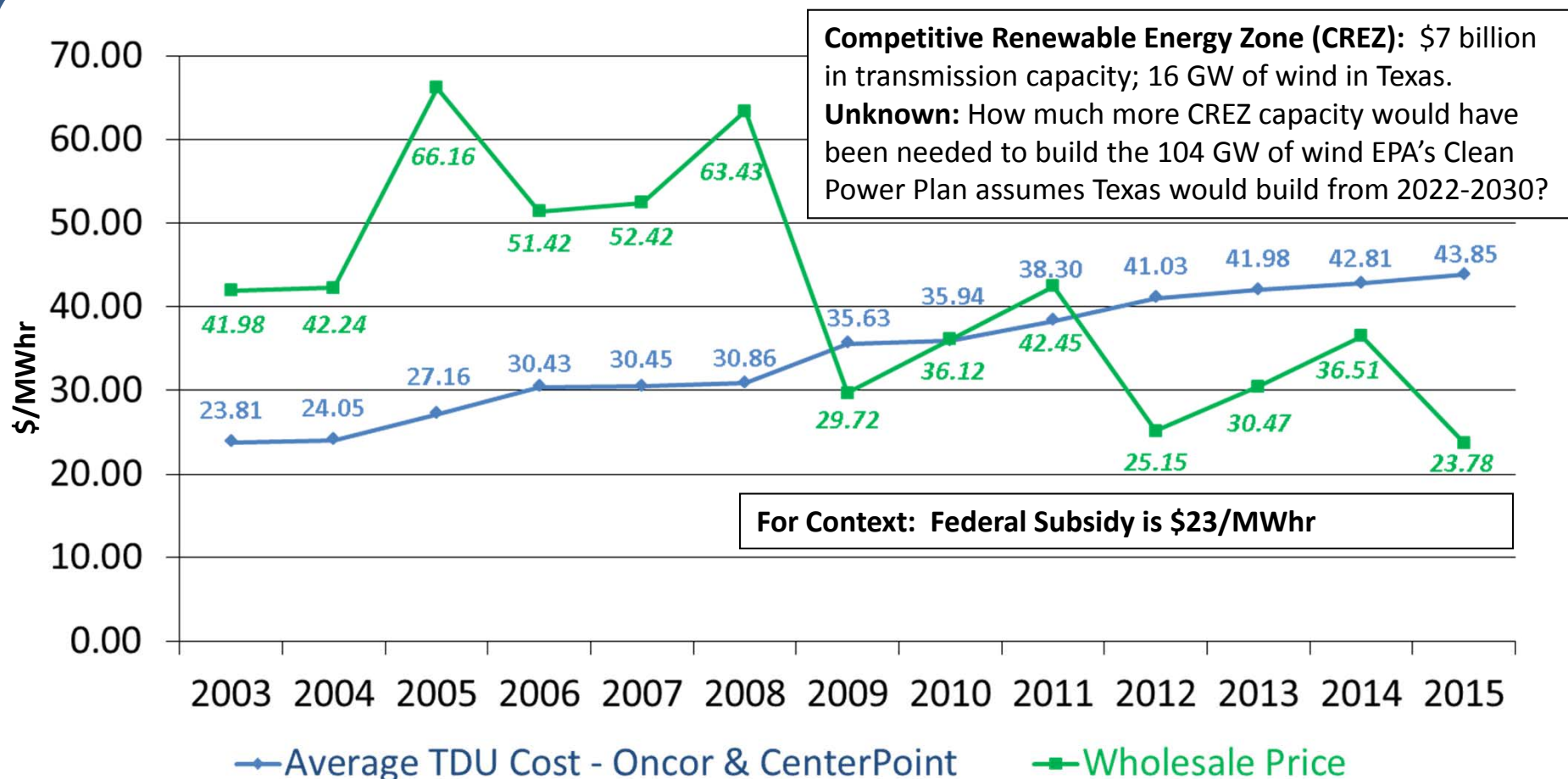


Note: Instances of negative pricing are based on occurrences in the ERCOT North Zone, a leading indicator of market-wide conditions.

Sources: ERCOT 15-Minute Settlement Data, North Zone, 2011-2016, sum of intervals in the month with negative settlement prices; 2011 – Mar. 2016 ERCOT Energy and Demand Reports; *ERCOT real time settlement data, north zone, 2015-2016

Cost of Renewable Integration Also Masked by Low NG Prices

First Wave of Transmission Costs Indicates Major Spike on the Horizon



* Oncor and CenterPoint are Texas' two largest electric delivery companies (83% of Texas load).

Note: Not all of Texas' renewable generation is connected to the grid via the CREZ system.

Source: Annual average of monthly averages of 15-Minute Settlement Data, ERCOT North Zone; Public Utility Commission of Texas, Archived TDU Rates Summaries; Business Council for Sustainable Energy, 2016 Factbook; ERCOT Quick Facts, March 2016; EPA's Best System of Emissions Reduction (BSER) model assumptions can be found in EPA, Clean Power Plan, Greenhouse Gas Mitigation Measures TSD.

Myth #6: States can “Save” Water By Prematurely Retiring Coal & Gas Plants

Truth: Straining the grid is BAD water policy.

- Closing an existing power plant under the theory that a new plant will be more water-efficient is like...
- ...destroying an existing surface water reservoir in Texas under the theory that a new project will be more water-efficient (e.g., less evaporation)



***NO MEGAWATTS OR ACRE
FEET TO SPARE!***





Case Study: Texas – Comparing Power Plant Water Consumption Rates

WATER COOLED POWER PLANT WATER CONSUMPTION RATES (gal/kWh)

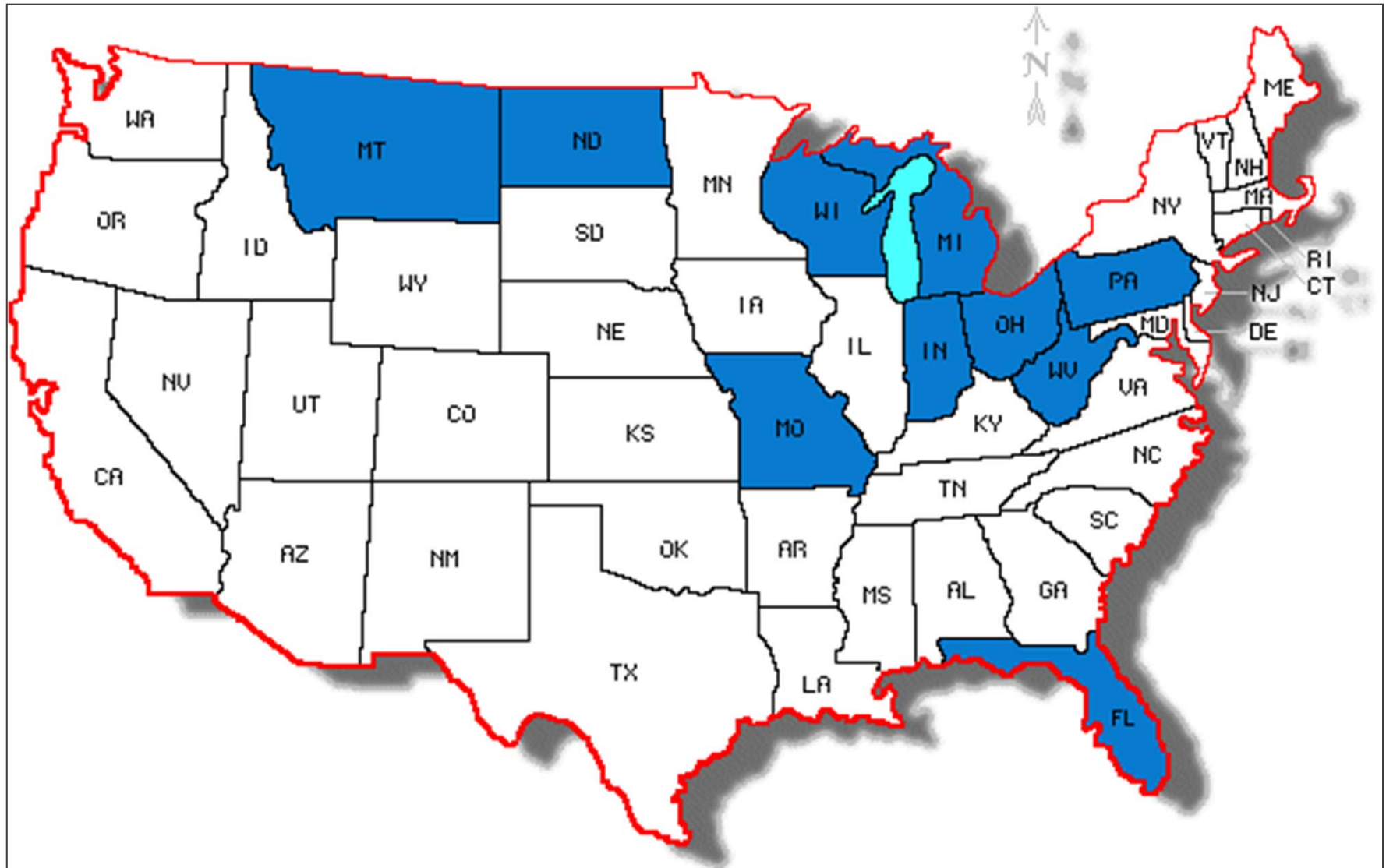
FUEL SOURCE	Cooling Tower	Once-Through	AVERAGE RATE OVER TEXAS FLEET
Coal	.60 - .66	.34 - .45	0.51
Natural Gas <i>(water cooled)</i>	Simple Cycle -.70 -1.03 Combined Cycle-.22-.23	Simple Cycle - .35-.37 Combined Cycle-.22-.23	0.73
Nuclear	.60	.60	0.67

Cherry-picking consumption rates to allege water “savings” is misleading.

BOTTOM LINE: Not enough water difference to warrant in-fighting.

Sources: Water Consumption and Withdrawal for Power Generation in Texas, TWDB, 2008, 2012.

Democratic Senators Up in Mid-term





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QUESTIONS?

