Debunking Post-Election Myths About Coal-Fired Power Plants

TAMU Law School
Energy Law Symposium
March 23, 2017
“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

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.'"
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.

#1 - 112 Exclusion Language

#2 - 111(b) Predicate Language

#3 – State Lead & Premature Retirement Protection

#4 – “for” and “to” a “source”
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

Texas’ modeled coal reduction is:
- Greater than the next 9 coal generators combined.
- Greater than the requirements for 29 states combined.

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.
“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 CO$_2$ 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**

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

Sources: U.S. Chamber of Commerce, Institute for 21st Century Energy, Coal-fired Power Plants Planned and Under Construction (citing Platts database, September 2015); EPA CPP RIA.
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.
The Market is a Challenge – But Markets Change

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

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>24,293</td>
<td>0%</td>
<td>43.78%</td>
<td>56.22%</td>
</tr>
<tr>
<td>OH</td>
<td>23,286</td>
<td>43.78%</td>
<td>34.56%</td>
<td>21.66%</td>
</tr>
<tr>
<td>IN</td>
<td>21,144</td>
<td>34.56%</td>
<td>47.69%</td>
<td>7.75%</td>
</tr>
<tr>
<td>PA</td>
<td>20,175</td>
<td>47.69%</td>
<td>54.72%</td>
<td>3.69%</td>
</tr>
<tr>
<td>IL</td>
<td>17,231</td>
<td>54.72%</td>
<td>38.64%</td>
<td>6.64%</td>
</tr>
<tr>
<td>KY</td>
<td>16,771</td>
<td>38.64%</td>
<td>34.61%</td>
<td>16.76%</td>
</tr>
<tr>
<td>WV</td>
<td>15,371</td>
<td>34.61%</td>
<td>26.24%</td>
<td>37.15%</td>
</tr>
<tr>
<td>GA</td>
<td>14,440</td>
<td>26.24%</td>
<td>47.87%</td>
<td>25.89%</td>
</tr>
<tr>
<td>NC</td>
<td>13,154</td>
<td>47.87%</td>
<td>36.40%</td>
<td>15.73%</td>
</tr>
<tr>
<td>MO</td>
<td>13,018</td>
<td>36.40%</td>
<td>38.64%</td>
<td>25%</td>
</tr>
</tbody>
</table>

DECADE OF CONSTRUCTION:
- 00s
- 90s
- 80s
- 70s
- 60s & OLDER

* 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

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
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

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

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)

There were more negative price hours in the first quarter of 2016 than all of 2015.

*Wholesale Prices in ERCOT in Q4 2016 ($18/MWhr) and Q1 2016 ($17/MWhr) are less than what the Federal PTC subsidy pays wind to dispatch energy into the market ($23/MWhr)

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

**Competitive Renewable Energy Zone (CREZ):** $7 billion in transmission capacity; 16 GW of wind in Texas.

**Unknown:** How much more CREZ capacity would have been needed to build the 104 GW of wind EPA’s Clean Power Plan assumes Texas would build from 2022-2030?

For Context: Federal Subsidy is $23/MWhr

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

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

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

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

Democratic Senators Up in Mid-term
QUESTIONS?