Regulatory & Markets Update

The State of Regulatory Reforms & Electric Markets
&
Educating America About Energy
Coal Institute - Summer Trade Seminar

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Partner, Jackson Walker LLP
Director, Life:Powered
STATE OF THE ROLLBACK:

4 Best Days So Far

February 16, 2017: President Signs Congressional Review Act:
• Strikes down OSM Stream Protection Rule (threatened mining across US).

March 28, 2017: Energy Independence Executive Order:
• Reconsideration of EPA 111 Rules; Retraction of federal coal lease moratorium & Obama memos/Guidance re: climate; Review by agencies of burdens on energy.

February 9, 2018: Passage of the FUTURE Act to Expand CCUS Credits:
• Expanded, Extended, & Assignable 45Q Tax Credits (key for CCUS EOR projects).

June 19, 2019: EPA Finalizes Affordable Clean Energy (ACE) Rule:
• Rolls CPP back with inside-the-fence, state-led, and flexible rule.
• Excludes trading and launches parallel NSR reforms to encourage efficiency.
EPA has 12 months to Complete Review of State Plans After Determining they are Complete

Unit Compliance Must Start Within 24 months of State Plan Submittal (unless state extends schedule of compliance with increments of progress)

EPA has 6 months to Determine if State Plans are complete

State Plans Due No More Than 3 Years after Final ACE Rule is Published in Federal Register

Projected ACE Rule Review Timelines

July 8, 2019
Final ACE Rule Published in Federal Register

July 8, 2019
Final ACE Rule Published in Federal Register

Deadline for Petitions for Review (60 days)

Deadline to file Record (40 days after service)

Circuit to rule on Stay Motion (3 months)

SCOTUS to rule if Stay Motion is denied (1 month)

Estimated briefing merits schedule for 2 months

Oral argument (4-6 months after briefing complete)

Decision from Circuit (6 months to 1 year after argument)

Appeal to SCOTUS (Petition for Certiorari due 90 days after decision)

Brief in Opposition (if filed) due 30 days after Petition Filed.

Consideration for Cert Petition (1 to 2 months)

If Cert Petition Granted - Petitioner's brief due 45 days after petition granted

Response Brief due 30 days after Petitioner's brief is filed

Reply, if any, due 20 days after Respondent's brief is filed

Argument to be schedule approximately 1-2 months after briefing complete

Decision by June

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STATE OF THE ROLLBACK:
4 Key Hurdles Yet to Clear

Effluent Limit Guidelines (ELG) Rule
- EPA projects new rollback rule by Fall of 2020 (needed to avoid capex/retirements.)

Coal Combustion Residual (CCR) Rule
- 2015 Obama EPA CCR Rule struck down by DC Circuit in September (no appeal)
- Rule fix needed ASAP to preserve ability to rely upon clay/unlined impoundments.

Fine Particulate (PM$_{2.5}$) National Ambient Air Quality Standard (NAAQS)
- Staff call to lower (current standard of 12 ppm is already most stringent in the world).

Lingering Risk of GHG Regulation Under Section 111 of the Clean Air Act
- Push by states for “non-significant contribution” Assessment
- This is a back-up plan in case DC Circuit strikes down ACE.
Factual Context for Assessing Whether EGUs “Contribute Significantly to Endangerment” (using IPCC Model & EIA Data)

2050 IMPACT OF DECARBONIZING ELECTRICITY:
• NO COAL FLEET = 2.06 ppm (0.4%) reduction in CO₂ concentration.
• NO FOSSIL FLEET = 3.3 ppm (0.7%) reduction in CO₂ concentration.
• Modeled global temperature reduced by a mere 0.016°C.

2050 IMPACT OF DECARBONIZING ENTIRE U.S.:
• 10.4 ppm (2.2%) reduction in CO₂ concentration.
• Modeled global temperature reduced by 0.053°C.

<table>
<thead>
<tr>
<th>Emissions</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>2050</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>30,834</td>
<td>34,972</td>
<td>36,398</td>
<td>39,317</td>
<td>42,771</td>
<td>+38.7%</td>
</tr>
<tr>
<td>U.S.</td>
<td>5,571</td>
<td>5,260</td>
<td>4,839</td>
<td>4,867</td>
<td>5,071</td>
<td>-8.9%</td>
</tr>
</tbody>
</table>

The Problem With Power Markets: 

There is No TRANSPARENCY!

1. The premise of American “green” energy moving the needle is fundamentally flawed.
   - .4-.7% of global concentration of CO2
   - Expensive energy = energy deprivation = deadly.

2. Subsidies hidden from consumers in tax bills.

3. All fuels receive subsidies but massive disparity in Return on Investment (in $/MW).

4. Direct/Indirect Subsidies Distorting Markets:
   - Transmission socialized across entire markets.
   - Growing costs of balancing wind & solar.
   - Stranded costs & lack of market signals for capacity.

CALL TO ACTION: 
The Lack of Transparency in American Power Markets Leads to “Grid Parity” Claims & and “100% Renewable” Mandates that Mislead Ratepayers & Endanger Grid Resilience.
# Price of Renewables - Hidden in our Tax Bills

## Table 3-5. Fiscal Year 2013 Electricity Production Subsidies and Support

<table>
<thead>
<tr>
<th>Beneficiary</th>
<th>Direct Expenditures</th>
<th>Tax Expenditures</th>
<th>Research and Development</th>
<th>Federal and RUS Electricity</th>
<th>Total</th>
<th>Share of Total Subsidies and Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewables</td>
<td>7,408</td>
<td>3,373</td>
<td>722</td>
<td>176</td>
<td>11,678</td>
<td>72%</td>
</tr>
<tr>
<td>Biomass</td>
<td>62</td>
<td>9</td>
<td>47</td>
<td>-</td>
<td>118</td>
<td>1%</td>
</tr>
<tr>
<td>Geothermal</td>
<td>221</td>
<td>22</td>
<td>2</td>
<td>-</td>
<td>245</td>
<td>2%</td>
</tr>
<tr>
<td>Hydropower</td>
<td>194</td>
<td>17</td>
<td>10</td>
<td>171</td>
<td>392</td>
<td>2%</td>
</tr>
<tr>
<td>Solar</td>
<td>2,448</td>
<td>1,712</td>
<td>234</td>
<td>-</td>
<td>4,393</td>
<td>27%</td>
</tr>
<tr>
<td>Wind</td>
<td>4,274</td>
<td>1,614</td>
<td>49</td>
<td>-</td>
<td>5,936</td>
<td>37%</td>
</tr>
</tbody>
</table>

**DOE (2018):**

- **Federal Tax Expenditures for Wind (2016-2020):** 23,700,000,000.00
- **Federal Tax Expenditures for Solar (2016-2020):** 12,300,000,000.00

*Sources: EIA Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2016 (Table 1) (April 2018); DOE Grid Study (Table 3-5)(2017); JT. COMM. ON TAXATION 2016 REPORT.*
Comparing the ROI of Federal Energy “Subsidies”

Many claim that all forms of energy receive “subsidies,” but wind & solar deliver far less return on investment (ROI).

Production tax credit subsidies for existing renewable energy technologies do not promote innovation.

Subsidies per Unit of Electricity Generated (2017 USD/MWh, 2003 - 2017 Average)

Sources: Office of Management and Budget, Analytical Perspectives; Joint Committee on Taxation, Estimates of Federal Tax Expenditures; Department of Energy, Statistical Tables by Appropriation; Census Bureau, Consolidated Federal Funds Report; Department of the Treasury, Section 1603 List of Awards; Energy Information Administration, Electricity Data Browser
Renewable Subsidies Have Distorted Markets:

“Negative Pricing” = When wholesale price of power actually is LESS THAN ZERO (i.e. generators have to pay to stay online and generating!)

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
Erosive Effect of Negative Pricing on Texas Market - Failing to Attract New Power Plants – Gas Too (this is NOT just about Coal & Nuclear)

Sources: EIA-860M, October 2017. Installed capacities. Includes Electric Utility, IPP CHP, and IPP Non-CHP units; excludes industrial and commercial gen.
Indirect Subsidies Explored

Current Regulatory Frameworks Hiding Costs:

• Multi-billion renewable-driven transmission projects socialized across entire markets.

• Growing costs for ancillary services (to balance wind & solar) not factored into RE prices.

• Costs of premature retirements (driven by market distortions) borne primarily by utilities in deregulated markets & ratepayers elsewhere.
Transmission Costs of Integrating Renewables

Case Study: ERCOT

83% increase in regulated charges (T&D)
16% decrease in competitive charges (energy)
Off-Peak Exuberance vs. On-Peak Reality:

**OFF-PEAK EXUBERANCE:**
Houston Chronicle headline, “Texas wind generation breaks record, ERCOT reports”
(19,168 MW Wind on 12/14/18 when entire grid needed only 36,760)

**ON-PEAK REALITY:**
Wind underperformance from 7/10-7/13/19 on & off peak.

- **Installed Wind:**
  ~24,000 MW

- **Average from 12 to 6 PM:**
  2,704 MW (11% capacity factor)
NEWS FLASH: Renewable Energy Means Expensive Power

The chart illustrates the trend of electricity costs (¢ per kilowatt hour) in various countries as a function of installed capacity, renewables (watts/capita). The trend line shows that as the installed capacity increases, the electricity costs also tend to increase. The equation for the trend line is:

\[ \text{Trend} = 0.02\text{¢}/\text{kilowatt hour per additional kW of capacity} \]
Energy Density = Environmental Stewardship

### Density of U.S. Energy Resources

<table>
<thead>
<tr>
<th>Power Source</th>
<th>W/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>307</td>
</tr>
<tr>
<td>Coal</td>
<td>182</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>101</td>
</tr>
<tr>
<td>Crude Oil</td>
<td>22</td>
</tr>
<tr>
<td>Solar</td>
<td>8</td>
</tr>
<tr>
<td>Hydroelectric</td>
<td>1.7</td>
</tr>
<tr>
<td>Wind</td>
<td>1.0</td>
</tr>
<tr>
<td>Ethanol</td>
<td>0.3</td>
</tr>
</tbody>
</table>


### Land Requirements for a 1000 MW Power Plant

- **Nuclear**: 1 mi²
- **Coal**: 2 mi²
- **Natural Gas**: 3 mi²
- **Solar**: 27 mi²
- **Wind**: 115 mi²


Amount of land required for 5,000 GWh of annual production, assuming 60% capacity factor for nuclear, coal, and natural gas, 20% for solar, and 34% for wind. Land requirements for wind include spacing between turbines. Values for wind and solar do not include land for transmission lines or energy storage to ensure equal reliability to dispatchable power.
“Do you guys on Wall Street have something in your desk that makes steel?”

“Are planes going to fly through the sky based on some number you put on your spreadsheet.”
To focus the national conversation about energy resources on the importance of reliable, abundant, affordable energy to the American quality of life and the advancement of the human condition.

EXCITING NEW ENERGY EDUCATION CAMPAIGN! www.LifePowered.org
“100 % Renewable Isn’t Doable” Video
https://youtu.be/fwaZ7-9CxiI

“Wind Power Isn’t Reliable” Video
https://youtu.be/Vjcp0llz32o
Expensive Energy Hurts the Poor the Worst
Civil Rights Suit Exposes California’s Regressive Green Energy Agenda

“California’s climate change policies ... have caused and will cause unconstitutional and unlawful disparate impacts to California’s minority populations ...”

“Since most of the world’s energy is still produced from fossil fuels, energy consumption is still highly correlated to economic productivity and per capita incomes ...”

“... the “net zero” GHG threshold would operate unconstitutionally so as to disproportionately disadvantage low income minorities in need of affordable housing relative to wealthier, whiter homeowners who currently occupy the limited existing housing stock...”

“CARB’s VMT reduction scheme and its ongoing efforts to intentionally increase congestion are an assault on the transportation mobility of people, which disparately harm minority workers...”
BERNIE DID NOT GET THE MEMO . . .

“Climate change is directly related to the growth of terrorism.”
DNC debate, November 2015

“Climate change is not just an environmental issue. It is a racial justice issue.”
Twitter, May 2019
WHILE WE ARE FACT CHECKING CLIMATE CATASTROPHISTS, LET’S TAKE A LOOK AT PAST PREDICTIONS. . .

WHATEVER HAPPENED TO THE “ONE LIE RULE?”
Noel Brown

“Entire nations could be wiped off the face of the earth by rising sea levels if global warming is not reversed by the year 2000.”

Mostafa Tolba

“The world faces an ecological disaster as final as nuclear war within a couple of decades unless governments act now.”
UN Meeting - May 11, 1982
“Unless drastic measures to reduce greenhouse gases are taken within the next 10 years, the world will reach a point of no return.”

Premiere of “An Inconvenient Truth”, 2006

“The entire North ‘polarized’ cap will disappear in 5 years.”

Event with German scientists, December 13, 2008
AND THEN THERE IS . . .
Alexandria Ocasio-Cortez ("AOC")

“The world is going to end in 12 years if we don’t address climate change and your biggest issue is how are we gonna pay for it? This is the war; this is our World War II.”

MLK day event, January 2019
America Leads the World in Cleaning the Air Video

https://youtu.be/htosc7929oA
We Have Made our Air Safe with Technology, Not Ideology

Sources: Environmental Protection Agency, Air Trends Report 2018; Energy Information Administration, Total Energy Data Browser
“Energy Poverty” Video

https://youtu.be/nEovKjVkUpc
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QUESTIONS?

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