Clean Power Plan Model Rules: Pathways for Implementation

The Energy Policy Seminar Series
February 29, 2016 | Harvard Kennedy School
Why am I still doing this presentation?
“Make no mistake – this is a great victory for West Virginia,” Patrick Morrisey, W. Va. AG.

“The states that have frantically been trying to figure out how to comply certainly put their pens down tonight,” Jeff Holmstead, Bracewell & Giuliani.
The Stay Votes

Credit: Steve Petteway
Fits and Starts of other CAA Rules

March 2005 – EPA finalizes CAIR (NO\textsubscript{x}, SO\textsubscript{2} trading program for 28 states, WDC)

July 2008 – D.C. Circuit vacates the CAIR rule

Dec. 2008 – D.C. Circuit reverses itself, reinstates rule and remands to EPA

July 2011 – EPA finalizes a new transport rule (CSAPR)
Fits and Starts of Other CAA Rules

Dec. 2011 – D.C. Circuit stays CSAPR
Aug. 2012 – D.C. Circuit vacates and remands CSAPR
April 2014 – Supreme Court reverses D.C. Circuit
October 2014 – D.C. Circuit lifts stay, tolls compliance deadlines by 3 years
July 2015 – DC. Circuit rejects some of EPA’s state budgets and remands
Nov. 2015 – EPA proposes updated CSAPR
Speaking of other CAA Rules . . .

State Clean Air Act Deadlines, 2016-2021

- December 2015 Infrastructure Transport SIP Due
- July 2016 Description of Air Quality Approach Due
- September 2016 Initial State Plan or Extension Request Due
- November 2016 SIP Revision Due
- December 2016 SIP Attainment Due
- September 2017 Progress Update for States with Extensions
- July 2018 Comprehensive Planning SIP Due
- October 2018 Infrastructure and Transport SIP Revision Due
- October 2019 Emissions Inventory SIP Revision Due
- March 2020 Quality Assured Data Due
- July 2021 Potential New Comprehensive Planning SIP Due Date

- 2016
  - April 2016 Designation Modification Info Due
  - July 2016 Moderate Attainment Plans and Demonstrations Due
- 2017
  - October 2016 Attainment Plans Due
  - October 2016 State Designation Recommendations Due
- 2018
  - January 2017 Analysis of Modeled Sources Due
  - July 2018 Moderate Area Attainment Due
- 2019
  - September 2018 Final State Plan Due for States with Extensions
- 2020
  - 2020-2021 Attainment Plans Due
- 2021
  - July 2021 Milestone Status Report

Symbols:
- Red: Startup, Shutdown & Malfunction State Implementation Plan (SIP) Call
- Green: Sulfur Dioxide National Ambient Air Quality Standards (NAAQS)
- Blue: 2008 Ozone NAAQS
- Orange: Regional Haze
- Purple: Clean Power Plan
- Black: 2012 Fine Particulate Matter NAAQS
- Cyan: 2015 Ozone NAAQS
- Lead NAAQS
State Responses to CPP Stay

E&E's
POWER PLAN HUB

Continuing Planning: 20 states
Assessing Planning: 9 states
Suspending Planning: 18 states
Exempt: 4 states
The Clean Power Plan
Gas and Coal-Fired Generation
§7411. Standards of performance for new stationary sources

(a) Definitions
For purposes of this section:
(1) The term “standard of performance” means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.
The Clean Power Plan

Method for setting the standard:

- Aggregate baseline rates in each interconnection
- Apply reductions achievable through 3 “building blocks”
- Apply the least stringent interconnection rate across the country
# Rate Targets: Options

<table>
<thead>
<tr>
<th>OPTION ONE:</th>
<th>Apply Specific Rates</th>
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<tbody>
<tr>
<td>Steam Rate</td>
<td>NGCC Rate</td>
</tr>
<tr>
<td>1,305 lbs CO₂ / net MWh</td>
<td>771 lbs CO₂ / net MWh</td>
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</table>

<table>
<thead>
<tr>
<th>OPTION TWO:</th>
<th>Apply State-wide Average Rate</th>
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<tbody>
<tr>
<td>STATE</td>
<td>2030-31 average RATE</td>
</tr>
<tr>
<td>CA</td>
<td>828</td>
</tr>
<tr>
<td>MA</td>
<td>824</td>
</tr>
<tr>
<td>NJ</td>
<td>812</td>
</tr>
<tr>
<td>PA</td>
<td>1,095</td>
</tr>
<tr>
<td>WA</td>
<td>983</td>
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Mass Targets: Options

<table>
<thead>
<tr>
<th>STATE</th>
<th>OPTION ONE: 2030-31 aEGU CAP</th>
<th>OPTION TWO: 2030-31 aEGU and new NGCC CAP</th>
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<tbody>
<tr>
<td>CA</td>
<td>96,820,240</td>
<td>105,647,270</td>
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<td>MA</td>
<td>24,088,128</td>
<td>24,606,744</td>
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<td>WA</td>
<td>21,478,344</td>
<td>23,127,324</td>
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</table>

Why, thank you.
Examples of Mass Budgets

- [3] New Source Complement
- [2] Additional MWh x 2030 State Rate
- [1] 2012 aEGU MWh x 2030 State Rate
Clean Power Plan Model Rules

- Mass-Based Model Trading Rule
- Rate-Based Model Trading Rule
- “presumptively approvable” by EPA
- One will provide the basis for a Federal Plan
- Finalized this year???
The Clean Power Plan

Additional Design Options:
- Performance Standards or State Measures
- Linkages to other States
- Leakage provisions (mass)
- Allocation decisions (mass)
- Monetary incentives for NGCC, RE, nuclear
The Decision-Making Environment
The Decision-Making Environment
The Decision-Making Environment

Status of Electricity Restructuring by State

Date as of: September 2010
Next Release Date: None

- The map below shows information on the electric industry restructuring. Click on a State for details.
- Restructuring means that a monopoly system of electric utilities has been replaced with competing sellers.
Merchant generators recover costs through bilateral contracts (primarily South and West) or in wholesale markets run by RTOs.

Municipal power, cooperatives, and federal authorities (e.g., TVA) have rates set based on board decisions or in some states, by PUCs.

Vertically integrated IOUs face cost-of-service regulation with rates set by state PUCs. Different rules, accounting methods may be used.
The Decision-Making Environment

Generating capacity retirements and additions in 2015 (through September)

<table>
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<tr>
<th>retirements</th>
<th>additions</th>
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</thead>
<tbody>
<tr>
<td>natural gas</td>
<td>coal</td>
</tr>
<tr>
<td>wind</td>
<td>hydro</td>
</tr>
<tr>
<td>solar</td>
<td>other</td>
</tr>
</tbody>
</table>

megawatts

0 4,000 8,000 12,000
The Decision-Making Environment

Existing State Authority to:

- Allocate allowances?
- Auction allowances?
- Require or encourage consignment auctions?
- Spend revenue raised by auctions?
- Cap new sources?
- Administer ERCs?
The Decision-Making Environment
State Pathways
GHG cap-and-trade program began in 10 states in 2009.
Program includes all EGUs over 25 MW (new and existing)
New cap in 2014 (91 m short tons); cap declines 2.5% annually, 2015-2020.
Offsets, CCR may have to change.
Linkage Options

- File jointly with other states; or
- File alone and reference other states.
- States may join more than one plan or allow a subset of aEGUs to engage in interstate trading.
- Rate-based states with “materially consistent” plans can jointly issue ERCs.
- File a mass or rate “trading-ready” plan.
“Trading Ready” Plans

Conditions:

- Accept ERCs/allowances from other states;
- Measure the commodity the same way (ex. short tons v. metric tons of CO₂); and
- Agree to use an EPA administered or approved platform.
“Trading Ready” Plans

Customized design features that accommodate linkage:

- Capping new Sources
- Different compliance timelines
- Auctions and different allocations
- Banking rules
- Allowance price collars (ex. RGGI, AB32)
- Different ERC eligibility rules
“Trading Ready” Plans

Customized design features that could bar linkage:

- Rejecting or conditioning acceptance of allowances from other states (constitutional concerns?)
- Running a trading program that includes sources other than the affected EGUs in the CPP
- Trading zones, restrictions to address local pollution (“hot spot”) concerns
RGGI and Linkage

2016 Program Review

- Post-2020 cap
- Changes to RGGI to comply with the CPP (cost containment reserve, offsets)

Conditions for accepting non-RGGI allowances?

- VA, PA positioned to link – will RGGI let them?

Control over other states using RGGI allowances?

- WA proposed economy-wide trading program wants access to RGGI allowances
CA is 12th biggest GHG emitting economy in the world.
Program includes non-utility emitters (refineries, mining operations, large universities)
Declining cap to 2020 (equivalent to 1990 emissions)
Limits on Economy-Wide Trading

- If 2 states link, “both plans would functionally be meeting an aggregated multi-state based CO2 goal . . . without formally aggregating the goal”.
- Compliance would be tracked by allowances held by sources in linked states, not by CEMs.
- Imported CO2 allowances “must be issued by a state with an emission budget trading program that only applies to aEGUs [and new NGCC]”.

Clean Power Plan, 80 Fed. Reg. at 64,893-94
Pennsylvania and Mass Plan Design

- Considering mass-based plan
- Restructured state
- PJM market
- 4th largest coal-producing state
- 3rd largest electricity producing state
- Neighbor to RGGI
Pennsylvania and Mass Plan Design

PA Legislature

- Democrats
- Republicans
- Vacancies
Independence property – Initial assignment of allowances generally will not affect market outcomes.

Questions for free allocation:

1. Basis for allocation (fuel, generation, emissions)?
2. Update based on changed conditions (i.e., be “forward” or “backward” looking)?

Free allocations may result in a windfall for utilities in deregulated markets
Auctions

- Auction: No allocation questions (market decides)
- State could require “consignment” auction by third party, or allocate to non-emitters.
- State can incorporate price collars, set-asides.
- Auctions might be phased in.
- Questions of statutory authority.
Allocations in Other Programs

- Acid Rain Program features free allocations, an allowance sale and consignment auction (3% of allowances), and RE/EE set-asides.
- VA auctioned NO$_x$ allowances for the SIP call.
- PA allocated CAIR allowances to RE/EE.
- RGGI states auction CO$_2$ allowances.
Allocation and Retirements

- Model Rule: Give allowances to EGUs for 2 years after shut down (plus years remaining in compliance period).

- Proposed Alternative Compliance Pathway: For EGUs retiring before 2030, states can take out of mass cap and give a permitted mass limit. Allowances are retired from the interim cap.
Question: Will cutting off allowances after a certain period of time encourage otherwise uneconomic plants to limp along to receive allowances?

Question: Will providing allowances in perpetuity create a windfall for owners of retired EGUs?

Model Rule: Allowances from shut down unit go to RE after two years. Effect of production subsidy?
New Jersey and Rate Plan Design

- Considering rate-based plan
- Restructured state
- PJM market
- Neighbor of RGGI (and former participant)
- Fossil fuel generation virtually all gas-fired
- Not a producer of coal, oil, or natural gas
- 80% of RPS met with out-of-state (in PJM) projects
Mass Benefits

- Well established and familiar
- Aligns with competitive electricity markets
- Reduces complexity/administrative burden*
- Clear environmental outcome (ton limits)
- More certainty with regards to supply of compliance instruments*
- May more easily expand to include other sectors.

* Advantage may be lost if using set-asides to address leakage to new NGCC.
Rate Benefits

- Utilities with diverse portfolios may determine they can comply entirely “in house”.
- Modeling suggests CO2 reductions could be greater under some rate-based scenarios.
- States may believe they can better attract new NGCC investment under a rate-based plan.
- States with strong RPS, lots of utility-scale RE, or new nuclear may be worried they are leaving dollars on the table under a mass-based program.
Eligible ERC Resources

Any Plan (Federal and State)
- NGCC*
- New nuclear capacity*
- Utility-scale hydro
- On-shore utility scale wind
- Utility-scale PV, concentrated solar
- Geothermal

State Plans Only
- Off-shore Wind
- Biomass*
- CHP*
- WTE*
- EE*

* Means must be located in a rate-based state
Questions?

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