Regional Greenhouse Gas Initiative and Leakage

Marissa Paslick Gillett
Senior Advisor to the Chairman
Maryland Public Service Commission

November 8, 2015
NARUC Subcommittee on Clean Coal and Carbon Management
Northeast and Mid-Atlantic states cap and reduce carbon dioxide emissions from the power sector

- Power plants 25 MW or greater to hold one CO\textsubscript{2} allowance for each ton of CO\textsubscript{2}
- 2015 first year of interim compliance

CO\textsubscript{2} Cap: 88.7 million short tons in 2015, and declines 2.5 percent each year until 2020

- Two interim adjustments to the cap (2014-2020) to account for banked allowances
- 2015 RGGI adjusted cap is 66.8 million short tons
- Cost containment reserve (CCR) of 10 million allowances

www.rggi.org
Quarterly regional CO$_2$ allowance auctions
- CO$_2$ allowances are issued by each state
- Compliance occurs at the state level
- One tradable CO$_2$ allowance market - CO$_2$ allowances are fungible across the multi-state region
- CO$_2$ allowances issued by any participating state can be used for compliance in any of the participating states

Auction proceeds strategically invested by the states

Centralized allowance tracking and emissions tracking platform (RGGI COATS)

Market monitoring of CO$_2$ allowance market

Limited use (3.3%) of offsets
RGGI’s Efficient Market-Based System

- RGGI states have distributed approximately 90% of allowances by auction
- More than $2 billion in auction proceeds through 29 auctions
- Invested more than $1 billion of auction proceeds in range of energy efficiency, clean and renewable energy, direct bill assistance, GHG abatement programs

![Chart 1: RGGI Investments by Category](chart.png)
Defining “Leakage”

- Generation Leakage (EPA Clean Power Plan):
  - risk of generation shifts to new fossil fuel-fired sources

- Emissions Leakage:
  - the concept that compliance with the RGGI CO2 Budget Trading Program, and the incorporation of related CO2 compliance costs by electric generators that are subject to the program, could result in a shift of electricity generation and emissions from CO2-emitting sources that are subject to RGGI to CO2-emitting sources that are not subject to RGGI.
(a) Units. Any unit that, at any time on or after January 1, 2005, serves an electricity generator with a nameplate capacity equal to or greater than 25 MWe shall be a CO2 budget unit, and any source that includes one or more such units shall be a CO2 budget source, subject to the requirements of this Part.
RGGI Experience: Environmental Benefits

RGGI Power Sector Pollution Reductions

- CO₂ Emissions (9 states)
- GDP (9 states)
RGGI Experience: Total Generation Mix

Total generation mix in RGGI states

- **2005**
  - Coal: 11%
  - Gas: 27%
  - Petroleum: 12%
  - Nuclear: 22%
  - Hydro: 3%
  - Non-Hydro Renewable: 3%

- **2013**
  - Coal: 12%
  - Gas: 33%
  - Petroleum: 6%
  - Nuclear: 1%
  - Hydro: 9%
  - Non-Hydro Renewable: 39%
## Age of the RGGI Region’s Coal Fleet (2012)

<table>
<thead>
<tr>
<th>Total Coal Summer Capacity (MW)</th>
<th>1-10 Years</th>
<th>11-20 Years</th>
<th>21-30 Years</th>
<th>31-40 Years</th>
<th>41-50 Years</th>
<th>51+ Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of RGGI Region Coal Capacity</td>
<td>0.00%</td>
<td>1.72%</td>
<td>19.26%</td>
<td>3.77%</td>
<td>39.42%</td>
<td>35.83%</td>
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<tr>
<td>Total Coal Summer Capacity (MW)</td>
<td></td>
<td>180.00</td>
<td>2,015.20</td>
<td>395.00</td>
<td>4,125.30</td>
<td>3,750.10</td>
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</tbody>
</table>
Maryland Summer Capacity (MW)

2005

- Coal: 14%
- Gas and Oil: 41%
- Nuclear: 4%
- Hydroelectric: 4%
- Other and Renewables: 1%

2014

- Coal: 38%
- Gas: 17%
- Oil: 3%
- Nuclear: 5%
- Hydroelectric: 23%
- Other and Renewables: 17%
Maryland In-State Generation Profile

[Diagram showing in-state generation profile from 2005 to 2013, with data points for coal, nuclear, petroleum, natural gas, hydroelectric, other biomass, other gas, other, wood, solar, and wind.]
Maryland In-State Coal Generation

- **Coal Generation (MWh)**
- **% of Portfolio**

- **2005**
  - Generation (MWh)
  - % of Portfolio

- **2006**
  - Generation (MWh)
  - % of Portfolio

- **2007**
  - Generation (MWh)
  - % of Portfolio

- **2008**
  - Generation (MWh)
  - % of Portfolio

- **2009**
  - Generation (MWh)
  - % of Portfolio

- **2010**
  - Generation (MWh)
  - % of Portfolio

- **2011**
  - Generation (MWh)
  - % of Portfolio

- **2012**
  - Generation (MWh)
  - % of Portfolio

- **2013**
  - Generation (MWh)
  - % of Portfolio
CO$_2$ allowance auctions are open to all qualified applicants

After six years no evidence of anti-competitive conduct

29 quarterly auctions held since September 2008

- Total of 784 million CO$_2$ allowances sold

CO$_2$ allowance auction clearing prices have ranged from $1.86 to $6.02.
# RGGI Auction Clearing Prices Summary

## First Control Period Auctions

<table>
<thead>
<tr>
<th>AUCTION:</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
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</thead>
<tbody>
<tr>
<td>Clearing Price</td>
<td>$3.51</td>
<td>$3.23</td>
<td>$2.19</td>
<td>$2.05</td>
<td>$2.07</td>
<td>$1.88</td>
<td>$1.86</td>
<td>$1.86</td>
<td>$1.89</td>
<td>$1.89</td>
<td>$1.89</td>
<td>$1.89</td>
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<tr>
<td>Allowance Demand</td>
<td>2.5x</td>
<td>2.6x</td>
<td>2.5x</td>
<td>2.6x</td>
<td>2.3x</td>
<td>1.3x</td>
<td>0.75x</td>
<td>0.57x</td>
<td>1.1x</td>
<td>0.3x</td>
<td>0.18x</td>
<td>0.63x</td>
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## Second & Third Control Period Auctions

<table>
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<tr>
<th>AUCTION:</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
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<th>26</th>
<th>27</th>
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<tbody>
<tr>
<td>Clearing Price</td>
<td>$1.93</td>
<td>$1.93</td>
<td>$1.93</td>
<td>$1.93</td>
<td>$2.80</td>
<td>$3.21</td>
<td>$2.67</td>
<td>$3.00</td>
<td>$4.00</td>
<td>$5.02</td>
<td>$4.88</td>
<td>$5.21</td>
<td>$5.41</td>
<td>$5.50</td>
<td>$6.02</td>
</tr>
<tr>
<td>Allowance Demand</td>
<td>0.62x</td>
<td>0.57x</td>
<td>0.65x</td>
<td>0.53x</td>
<td>2.2X</td>
<td>2.1X</td>
<td>2.01X</td>
<td>2.7X</td>
<td>3.1X</td>
<td>2.9X</td>
<td>2.5X</td>
<td>2.5X</td>
<td>2.8X</td>
<td>3.1X</td>
<td>3.4X</td>
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| Allowance Demand with CCR supply | 2.5X | 2.1X |
Why Market-Based Multi-State Cap?

- Proven model
- Cost-effective
- Limit on emissions
- Provides economic benefits
- Closely aligns with the regional nature of the electricity grid
- Fosters regional cooperation
- Simple, transparent, and verifiable tracking and compliance system
Regular program review has been key to RGGI’s success

Upcoming (2016) program review will include meetings to gather stakeholder and expert input

- Topics may include program design and successes, the RGGI cap, program flexibility mechanisms, and other stakeholder considerations
- Also an opportunity to discuss considerations for potential Clean Power Plan compliance
- First public meeting scheduled for Nov. 17 in NY

Improvements implemented in previous (2012) program review included 45% reduction in the RGGI cap, interim cap adjustments, and the creation of the Cost Containment Reserve (CCR)