Advancing the Clean Energy Future

State and Regional Action on Climate and Clean Energy: Policy, Progress and Defense in the Northeast

State Climate Policy in the Trump Era: California and Beyond

Symposium of the Emmett Institute on Climate Change and the Environment

Daniel L. Sosland | May 22, 2017
Acadia Center: About Us

- **Mission:** Acadia Center is a non-profit research and advocacy organization working to advance a clean energy economy by developing solutions to the climate crisis that empower consumers and communities and encourages economic improvement.

- **Approach:** Data analysis and research applied to policy development and implementation through legislation, regulatory proceedings and public engagement with a staff trained in law, economics, environmental policy and data analysis.

- **Programs:** 6 coordinated programs: Energy Efficiency; Clean Energy and Carbon Markets; Power Grid Modernization; Electrification of Transportation and Buildings; Public Engagement; and Climate & Energy Analysis Center.

- **Street Cred:**
  - Ranked in the top 1% of charities evaluated by Charity Navigator
  - One of 28 non-profits New York Magazine identified as “particularly timely” to donate to after the Nov. 2016 election
  - ACEEE Champion of Efficiency and US EPA Environmental Achievement awards
Emergence of Northeast State Climate Coordination

• NEG-ECP
  • 2001 Declaration by 6 states and 5 Canadian Provinces
    • 80% GHG Reduction by 2050
    • Signed by Republic and Democratic Governors

• State Climate Statutes
  • Setting GHG Limits
  • State Climate Action Plans and Stakeholder Processes
  • Adoption of New State Laws Promoting Clean Energy

• Multistate Emissions Cap
  • 2003: NY Gov. Pataki Initiated RGGI Discussion
Development of a Carbon Market in the Northeast: RGGI

• RGGI: Initiated by Gov. Pataki (R-NY) letter 2003
  • Reduce dependence on imported fuels; Improve local air quality; Stem the growth of greenhouse gas emissions.
• 2005: 7 State Memorandum of Understanding (CT, DE, ME, NH, NJ, NY, VT)
• 2007: MA, MD and RI join
• 2008-2020 Initial Period
• 2009: Compliance begins
• 2011: NJ withdraws; 9 States
**RGGI Model: Cap and Invest**

- Emissions Cap is negotiated by states, each with its own allowance budget; with Program Review Periods
- Covers electric generating units over 25 MW: “compliance entities”: 167 plants
- Initial Cap Set at 2005 Levels with 2.5% annual declines to 2020
- Power Generators Purchase one allowance/ton CO2
  - 1 ton CO2 emissions (so coal is 2xs natural gas)
  - Sends a price signal that increases dirtier generation
  - Allowance Auctions: held quarterly since September 2008
- $2.68 billion raised for reinvestment to-date
  - Funds are invested mostly in efficiency and clean energy
  - Efficiency investments reduce electricity generation and save $$
- ~ 45% emissions reductions have occurred over RGGI time frame
  - CPP would have had no emissions impact in RGGI states
Basis for setting initial cap

Actual 2016 emissions of 79.2m tons fell 8% below the current cap and 40% below 2008 emissions.

Data Source: RGGI, Inc.
# RGGEI Re-Investment Benefits

## Table 2: Benefits of RGGEI Investments

<table>
<thead>
<tr>
<th>Category</th>
<th>Cumulative (2008-2014)</th>
<th>Lifetime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participating Households</td>
<td>4.6 million</td>
<td>N/A</td>
</tr>
<tr>
<td>Participating Businesses</td>
<td>21,400</td>
<td>N/A</td>
</tr>
<tr>
<td>Workers Trained</td>
<td>7,200</td>
<td>N/A</td>
</tr>
<tr>
<td>Short Tons CO₂ Avoided</td>
<td>1.7 million</td>
<td>15.4 million</td>
</tr>
<tr>
<td>Equiv. Cars Off Road</td>
<td>319,000</td>
<td>2.9 million</td>
</tr>
<tr>
<td>Megawatt-Hours Saved</td>
<td>2.4 million MWh</td>
<td>20.6 million MWh</td>
</tr>
<tr>
<td>MMBtu Saved</td>
<td>5.3 million MMBtu</td>
<td>76.1 million MMBtu</td>
</tr>
<tr>
<td>Energy Bill Savings</td>
<td>$618.1 million</td>
<td>$4.67 billion</td>
</tr>
</tbody>
</table>

Source: RGGEI, Inc.: The Investment of RGGEI Proceeds Through 2014
Best of Both Worlds? Northeast Cut Emissions and Enjoyed Growth, NYT

Breaking the Link: Emissions v. Growth in RGGI and Non-RGGI States

Acadia Center analysis of data from the Federal Reserve Bank of Philadelphia, RGGI, Inc., and EPA
Economics in RGGI

From 2008 (the year before RGGI began) to 2015:

• Electricity prices fell 3.4% in RGGI states, compared to a 7.2% increase in other states

• RGGI CO2 emissions declined 16% faster than in other states

• Economic growth in RGGI states outpaced other states by 3.6%
Regional health benefits: $5.7 billion

Avoided health effects:

- 300-830 premature adult deaths
- 420-510 cases of acute bronchitis
- 8,200-9,900 asthma exacerbations
- 39,000-47,000 lost work days

States Negotiating RGGI’s future:
- Emission cap levels: 2020-2030
- Other design elements

Despite bipartisan history, RGGI is political

Most states have switched parties and stayed in
- Switch in Gov.: 5R:4D
- NJ remains the lone dropout
- Maine example

Federal inaction and end to CPP brings increased importance to state & multistate emissions initiatives
### Northeast GHG: Long-Term Targets

All Northeast states have long-term, economy-wide greenhouse gas (GHG) reduction targets.

<table>
<thead>
<tr>
<th>RGGI State</th>
<th>2030 Economy-Wide GHG Target</th>
<th>2050 Economy-Wide GHG Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>35-45% below 1990</td>
<td>80% below 2001</td>
</tr>
<tr>
<td>Delaware</td>
<td>30% below 2008</td>
<td>-</td>
</tr>
<tr>
<td>Maine</td>
<td>35-45% below 1990</td>
<td>75-85% below 2003</td>
</tr>
<tr>
<td>Maryland</td>
<td>40% below 2006</td>
<td>90% below 2006</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>35-45% below 1990</td>
<td>80% below 1990</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>35-45% below 1990</td>
<td>80% below 1990</td>
</tr>
<tr>
<td>New York</td>
<td>40% below 1990</td>
<td>80% below 1990</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>35-45% below 1990</td>
<td>75-80% below 2002</td>
</tr>
<tr>
<td>Vermont</td>
<td>35-45% below 1990</td>
<td>75% below 1990</td>
</tr>
</tbody>
</table>
• MA, CT, RI have joined to procure clean energy
  Renewables, hydroelectricity, transmission to carry the
  low and no-carbon power
    • ~4GW of energy, 1.6GW set-aside for offshore wind
    • 1600MW of wind by 2027 one of the largest wind
      purchases
    • Nation’s first offshore wind project operating in RI

• Benefits of State Cooperation
  • Bulk purchasing discounts
  • Enable transmission for renewables
  • Diversify energy supply
    • New England approaching 60% reliance on natural gas)
Utilities and the Grid: An Abundance of PUC and Regulatory Dockets

- Power Grid Reform
  - Non-transmission Alternatives at State and Regional Levels: Local Clean Energy Solutions
- Utility Business Model, Incentives and Rates
  - NY REV
  - RI SIRI and Power Transition
- Solar Policy: Next Generation
  - NY, MA, NH …
- Vehicle Electrification
  - Promote Charging Station Infrastructure
  - Set proper regulatory structure (non-utility market player, rates)
- Clean Community Energy Pilots
  - Boothbay, Maine
Transportation Climate Policy Emerging

- Transportation largest share of emissions in Northeast (and U.S.)
- RI, CT, NY, VT, DE & DC committed (2015) to develop market-based policies to reduce transportation emissions
  - Gov. Baker (R-MA) Executive Order on Climate Change (2016) committed MA to collaborate on transportation climate policy
- “Transportation-first carbon pricing”
  - State DOTs facing revenue shortages
    - $35 billion reduction in transportation funding due to CAFE standards by 2030 in NE/Mid Atlantic
    - $41b-$45b from emissions pricing
  - No shortage of needed investments
    - Transit and Rail, Smart growth
    - EV incentives and charging infrastructure
- Advocacy required…
## EnergyVision 2030

### Comparative Market Penetration of Selected Clean Energy Technologies, present to 2030

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Electric Vehicles (% of fleet)</td>
<td>&lt;1%</td>
<td>5%</td>
<td>17%</td>
<td>23%</td>
</tr>
<tr>
<td>Heat Pumps (% of residential heat)</td>
<td>&lt;1%</td>
<td>3%</td>
<td>13%</td>
<td>16%</td>
</tr>
<tr>
<td>Electric Generation (% renewable)</td>
<td>19%</td>
<td>44%</td>
<td>57%</td>
<td>66%</td>
</tr>
<tr>
<td>Wind and Solar</td>
<td>3%</td>
<td>24%</td>
<td>35%</td>
<td>45%</td>
</tr>
<tr>
<td>Hydro</td>
<td>13%</td>
<td>18%</td>
<td>20%</td>
<td>19%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
<td>3%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Electric Efficiency (average % annual savings)</td>
<td>1.4%</td>
<td>1%</td>
<td>2.5%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Emissions Reduction from 1990 Levels</td>
<td>18%</td>
<td>30%</td>
<td>45%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Components may not sum due to rounding.

- Expansion of Clean Tech Can Attain 2030 Target
- No Need for Additional Natural Gas
- Must Build on Current Progress and Double RE, Max EE, Etc.
State and Regional Climate Action: Defense, Progress and Momentum

- Assault on Federal Clean Energy and Climate Policies
  - Appliance Standards & EnergyStar
  - Clean Power Plan
  - CAFÉ standards & California ZEV?
  - Social Cost of Carbon
  - Slash EPA budget 31% to lowest level in 40 years

- Policy Shift: Feds → States/Regions
  - State Appliance Efficiency Standards
  - State action on Clean Energy (RPS), Distributed Energy
  - State Action on Emissions (RGGI, Carbon Pricing)
  - State and Local Action on Building Codes, Land Use
  - Power Grid Reform and Utility Business Model
  - Defense: e.g., CA ZEV and NE State Support

The Energy Future is in Our Homes, Businesses and Communities

States Have Important Jurisdictional Control Over Key Emission Sectors
Virginia: Emissions Policy

COMMONWEALTH of VIRGINIA
Executive Department

REDUCING CARBON DIOXIDE EMISSIONS FROM ELECTRIC POWER FACILITIES
AND GROWING VIRGINIA’S CLEAN ENERGY ECONOMY

There is no denying the science and the real-world evidence that climate change threatens
the Commonwealth of Virginia, from our homes and businesses to our critical military
installations and ports. Rising storm surges and flooding could impact as many as 420,000
properties along Virginia’s coast that would require $92 billion of reconstruction costs.

The challenges and costs of bolstering resilience and minimizing risk are too great for
any locality to bear alone. While the impacts are significant, there are technologies in the clean
energy sector that could help mitigate these impacts while simultaneously creating jobs in
twenty-first century industries. The number of solar jobs in Virginia has grown by 65 percent in
the last year alone, and Virginia is now the ninth fastest growing solar jobs market in the
country. Revenue for clean energy businesses in Virginia has increased from $300 million in
2014 to $1.5 billion in 2016. Through state leadership, Virginia can face the threats of climate
change head on and do so in a way that makes clean energy a pillar of our future economic
growth and a meaningful part of our economic portfolio.
May 17, 2017

The Honorable Rick Perry  
Secretary of Energy  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-1000

Dear Mr. Perry:

We, the Republican Governors of states that have taken a leadership role in combating climate change, write today to request the United States maintain the commitment to the Paris Climate Agreement.

Our states, working individually and in multi-state efforts, have already made tremendous progress in reducing our carbon emissions. The U.S. commitment of 26-28 percent below 2005 levels is achievable, but we need continued national leadership.

The impacts of climate change have already been felt in our states. We have seen the impacts of rising sea levels, increasingly severe flooding, heat waves, droughts, and decline in snow cover. These impacts threaten the people of our states and put an intense burden on our economies.