

Reducing Carbon Dioxide from Power Plants Benefits & Costs of the Regional Greenhouse Gas Initiative

SB 125 Committee Meeting

September 12, 2017

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NEW HAMPSHIRE
DEPARTMENT OF
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Services**

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Presentation Outline

- How does the current RGGI program work? - a Market-based approach
- Environmental & Economic Benefits
- 2016 Program Review Recommendation for post-2020
- Projected bill impacts



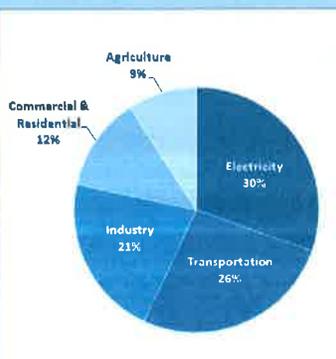
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Regardless, Better to be in RGGI than Out

- If NH drops out of RGGI, ratepayers will continue to see all costs associated with RGGI reflected in the regional wholesale price of electricity
 - NH would not receive auction revenues
 - Ratepayers would not receive rebates
 - No energy efficiency investments



Greenhouse Gases 2014 U.S. Emissions by Sector



NOTE: As EVs & heat pumps penetrate the market, transportation & heating emissions will shift to the electricity sector



NH's 2009 Climate Action Plan for Reducing Greenhouse Gas (GHG) Emissions

- Developed by 29 diverse members over a year, engaged >125 stakeholders & received input from >200 citizens
- Aim: achieve the greatest feasible GHG reductions & the greatest possible long-term economic benefits to citizens
- The Task Force recommended that NH strive to achieve long-term GHG reductions of 80% by 2050

– Implement RGGI



What Are the Benefits of a Cap and Trade Approach?

- Certainty that a specific **regional** level of emissions will be achieved and maintained over time (even with economic growth)
- More regulatory certainty, more compliance flexibility, and lower administrative requirements and costs
- Drives down compliance costs, making further reductions more cost effective
- Complements other Clean Air Act provisions (e.g., NAAQS) to help protect local air quality

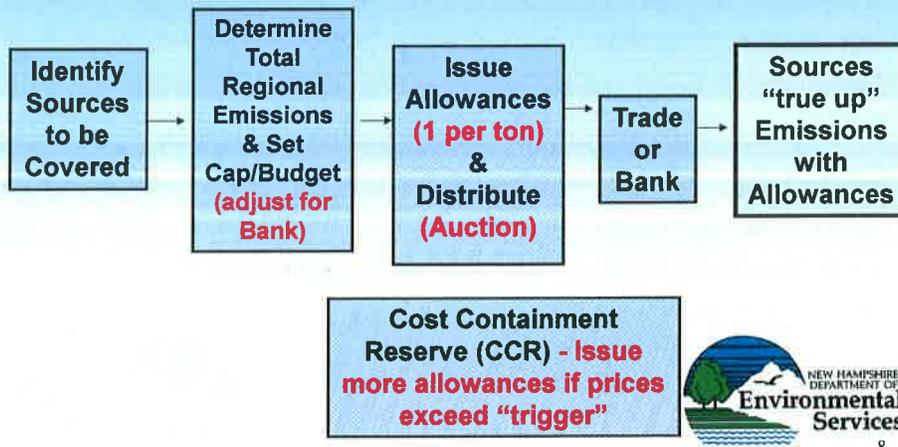


The Acid Rain Experience

- EPA Acid Rain Program = Title IV of the Clean Air Act Amendments of 1990
 - Bipartisan during Pres. George H. W. Bush admin
- If no cap-and-trade program, national SO₂ emissions would have increased by 20% (higher demand) from 1990 to 2000-2002
 - Emissions at all plants are lower than they otherwise would have been
 - Higher emitters reduced first
- Actual emissions decreased by 32%



Flexible Regional Greenhouse Gas Initiative (RGGI) Cap-and-Trade Program

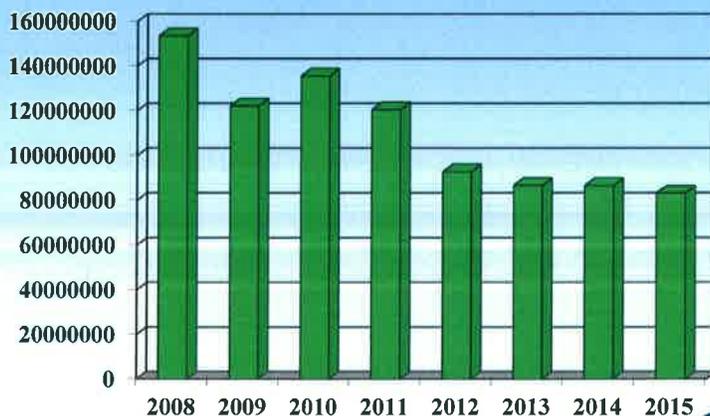


Benefits – RGGI Emissions Reductions

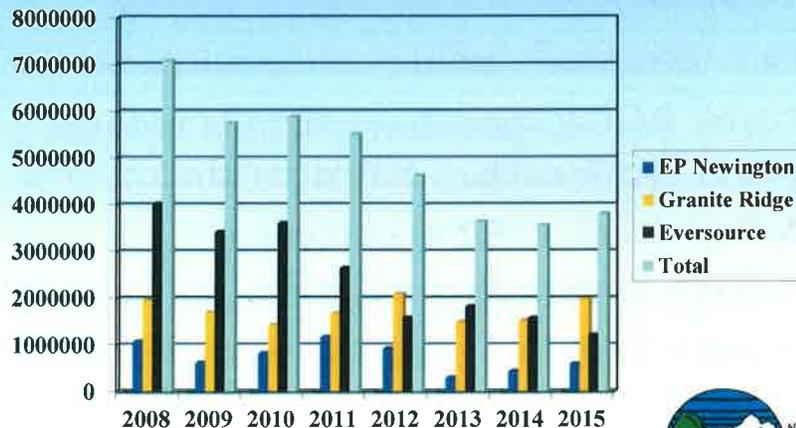
- **NH has kept pace with RGGI region; both successfully achieved reductions**
 - Under RGGI, states have already reduced power sector carbon emissions almost 50%
 - NH achieved a 55.7% reduction
 - NH's 2009 budget was 8,620,460 tons
 - NH's 2015 CO₂ emissions = 3,818,378 tons



CO₂ Emissions (tons) from Applicable Sources Regional Trends



CO₂ Emissions (tons) from New Hampshire Sources



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How were emissions reduced?

- Increased energy efficiency (see nhsaves.com), due in part to investment of RGGI funds
- Increased generation from non-emitting sources: Solar, Wind, Hydro, and Nuclear
- Fuel switching from oil and coal to natural gas due to:
 - relatively lower natural gas prices
 - RGGI cap



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Regional Economic Benefits of RGGI Investments

http://rggi.org/docs/ProceedsReport/RGGI_Proceeds_Report_2014.pdf

Category	Cumulative (2008 - 2014)	Lifetime
Participating		
Households	4.6 million	N/A
Participating Businesses	21,400	N/A
Workers Trained	7,200	N/A
Short Tons CO ₂ Avoided	1.7 million	15.4 million
Equiv. Cars Off Road	319,000	2.9 million
Megawatt-Hours Saved	2.4 million	20.6 million
MMBtu Saved	5.3 million	76.1 million
Energy Bill Savings	\$618.1 million	\$4.67 billion



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Regional Economic Benefits of RGGI Investments

"The Economic Impacts of the Regional Greenhouse Gas Initiative on Nine Northeastern and Mid-Atlantic States." Analysis Group. July 2015

"The Economic Impact of the Regional Greenhouse Gas Initiative on Ten Northeast and Mid-Atlantic States." Analysis Group. November 2011

- Independent reports from the Analysis Group have found that RGGI is creating jobs and generating significant economic benefits.
 - A 2015 report found that RGGI's second three-year period is creating \$1.3 billion in net overall economic benefit for the region, and generating benefits in every state.
 - This is in addition to \$1.6 billion that is being generated from RGGI's first three years.



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NH Benefits

Maintain tourism by:

- Reducing impacts of sea level rise
- Reducing impacts on Fall foliage
- Reducing impacts on ski industry
- Reducing impacts on maple sugaring
- Reducing impacts on forest industry
- Reducing impacts on fishing



Insurance Industry Estimated Benefits/Avoided Costs

- U.S. DOE Estimated Avoided Social Cost = \$35/metric ton
- During the 30 year period from 1972 to 2001, the state experienced 17 events, while during the next 14 years, between 2002 and 2015, the state experienced 29 events.
- U.S. Property & casualty insurers experienced an estimated \$44 billion in losses in 2011 from more frequent & severe natural disasters
- "From our industry's perspective, the footprints of climate change are around us and the trend of increasing damage to property and threat to lives is clear," - Franklin Nutter, president of the Reinsurance Assoc. of America
- *"Hurricane Harvey Starkly Exposes the Financial Burden of Climate Change on Economy, Environment and Human Health"*

http://www.csrwire.com/press_releases/40321-Hurricane-Harvey-Starkly-Exposes-Financial-Burden-of-Climate-Change-on-Economy-Environment-and-Human-Health



Insurance Industry Estimated Benefits/Avoided Costs

- Swiss Reinsurance Company Ltd. - weather-related insurance industry loss in the U.S. rose from about \$3 billion/year in the 1980s to about \$20 billion annually by the end of the past decade.
- "A warming climate will only add to this trend of increasing losses, which is why action is needed now," - Mark Way, Swiss Re's
- ["Big Insurance Companies Are Warning The U.S. To Prepare For Climate Change"](https://thinkprogress.org/big-insurance-companies-are-warning-the-u-s-to-prepare-for-climate-change-eb3fd22d674/)

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NH Co-Benefits

- **Cut tons of harmful particle pollution, sulfur dioxide and nitrogen oxides as a co-benefit reducing future health care costs**
 - **The Health Impact of RGGI**
<http://abtassociates.com/RGGI.aspx>
 - *From 2009 – 2014, reductions in harmful pollutants have saved NH \$66 - \$148 million in health costs from avoided asthma cases, heart attacks, infant & adult mortality, fewer hospital visits, & lost workdays*



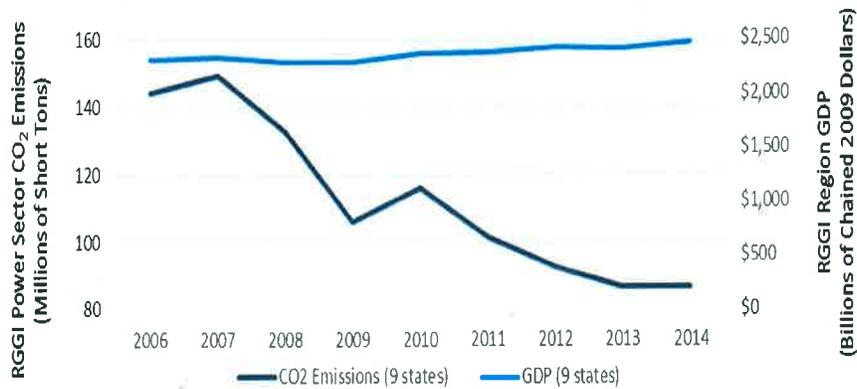
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Estimated Benefits of federal Clean Power Plan

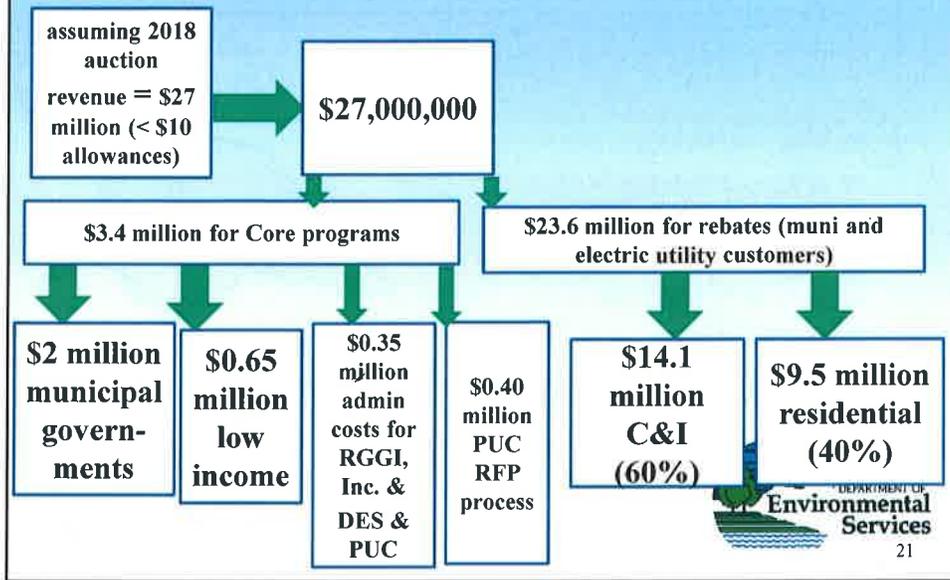
- **Each year, avoid an estimated:**
 - **3,600 premature deaths**
 - **1,700 heart attacks**
 - **90,000 asthma attacks**
 - **300,000 missed workdays & schooldays**
- **Lead to net health & climate benefits worth an estimated \$26 billion to \$45 billion in 2030**



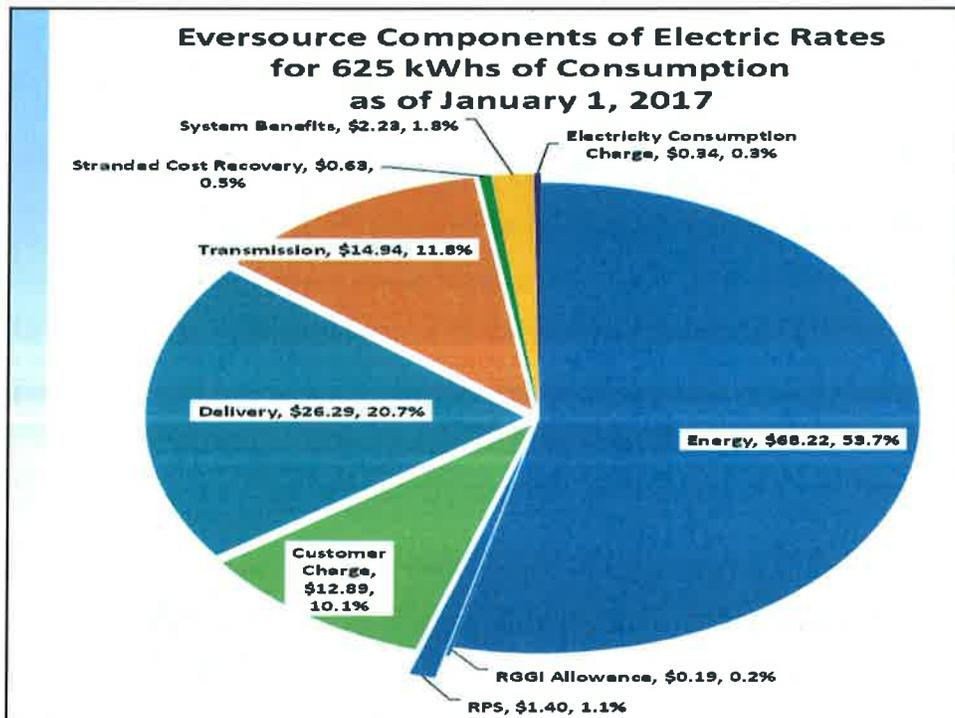
Chart 1: RGGI Power Sector Pollution Reductions



NH RGGI Revenue Allocation under Current Law



Eversource Components of Electric Rates for 625 kWhs of Consumption as of January 1, 2017



RGGI 2016 Program Review Recommendation for post-2020

- **Maintains similar glide-path**
 - 2.5% of 2014 cap
 - Annual cap reduction = 2,275,000 tons regionally
 - No changes before 2021
 - 7 states do more in 2021; NH & ME do no added reductions and no ECR



2021 Cap Stepdown

- **Current 2020 regional cap (78.2 million) minus annual decline (2.275 million) = 75.9 million**
- **Additional 825,215 reduction proposed for 2021 to accommodate NY's request for a 30% reduction 2020-2030**
- **NH (5.22% (unchanged) or 43 thousand) & ME (3.6% or 29 thousand) excluded (29.1% 10-year reduction)**
- **Proposed 2021 regional cap =**
 - 75,147,784; overall 30% reduction



Emissions Containment Reserve (ECR)

- **Increases emissions reductions, if costs are less than projected, by withholding allowances from auctions if prices fall below triggers**
- **Functions as a counterpart to the Cost Containment Reserve (CCR) which has been in effect since 2014.**
- **Proposed size = 10% of annual state budgets of states participating in ECR**
- **Trigger price = \$6.00 in 2021, and rises at 7% per year**
- **7 Participating states will demonstrate performance**
- **NH & ME can re-consider at next program review**
- **Supported by stakeholders & experts**



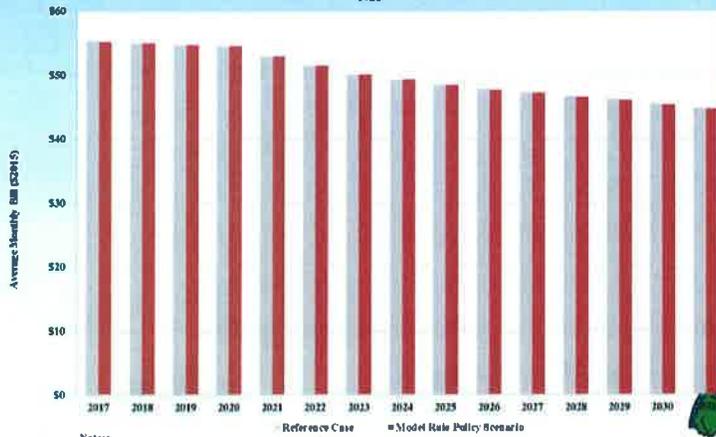
2016 Program Review Bills Impact Analysis

- **All afore-mentioned benefits are excluded**
- **Only includes costs to ratepayers**
- **Even so, NH bills still will slightly decrease under new proposal**



Bills Impact Analysis

Average Electric Monthly Bills (\$2015)
Residential Customers
NH

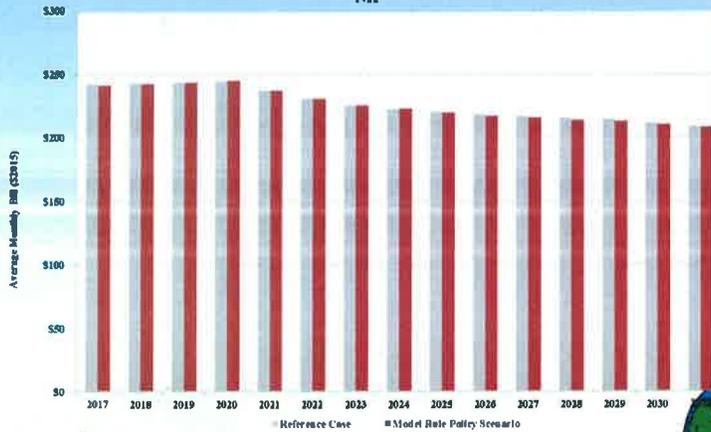


Notes:
[1] Usage and Delivery rates based on 5-year historical averages from EIA.
[2] Energy rates and avoided load totals based on ICF modeling.



Bills Impact Analysis

Average Electric Monthly Bills (\$2015)
Commercial Customers
NH

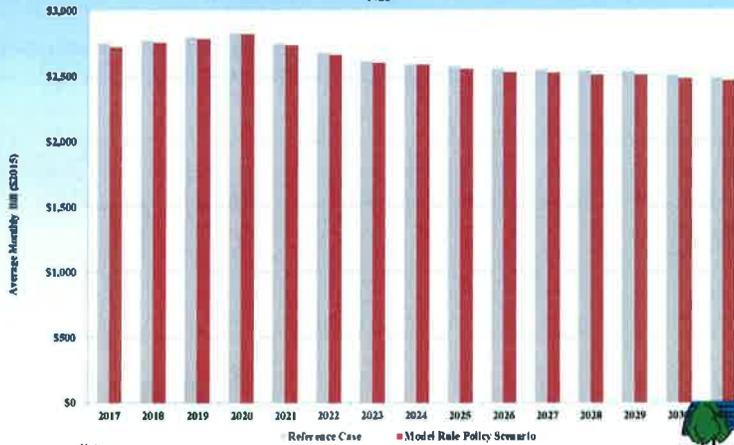


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Bills Impact Analysis

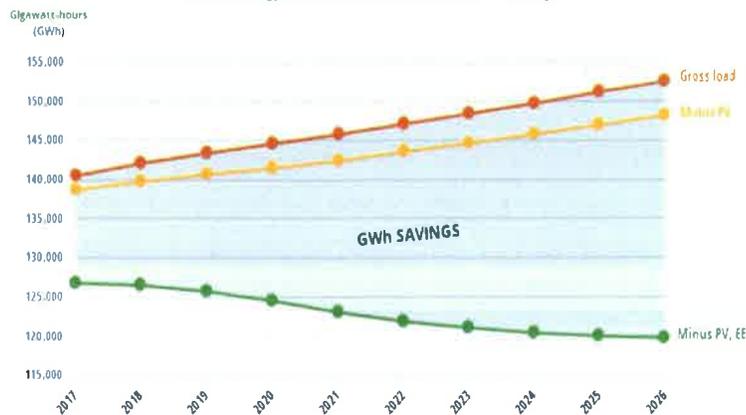
**Average Electric Monthly Bills (\$2015)
Industrial Customers
NH**



Notes:
[1] Usage and Delivery rates based on 5-year historical averages from FIA.
[2] Energy rates and avoided load totals based on ICF modeling.



Annual Energy Use With and Without EE and PV Savings



● The gross load forecast (projected regional energy use)
● The gross load forecast minus forecasted behind-the-meter (BTM) solar photovoltaic (PV) resources
● The gross load forecast minus forecasted BTM PV, minus energy efficiency (EE) resources in the Forward Capacity Market (FCM) 2017-2020 and forecasted EE 2021-2026



More info on RGGI Proposal

- 9/25 stakeholder webinar
http://rggi.org/docs/ProgramReview/2017/09-25-17/Meeting_Notification_09_25_17.pdf

