



RAP

Energy solutions
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Electric Sector Cap-and-Trade 2011: A RGGI Update for the Gund Institute for Ecological Economics, University of Vermont

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Topics to be Covered

- **RGGI News**
- **Background:**
 - **Emissions, Electricity, and Efficiency**
- **RGGI first steps:**
 - **“We did it with SO₂; we can do it with CO₂”**
- **Why RGGI is the right model and implications for Climate Regulation**



Current Events

Feb 22, 2011 – NH House Votes to Leave RGGI

Gov. John Lynch has opposed the withdrawal, saying it would cost New Hampshire \$12 million in revenue, while not lowering New Hampshire's electricity rates



Current Events cont.

We have learned that Gov Christie's budget ...does not include any revenue from the RGGI fund.

Last year, the budget raid on clean energy (RGGI and other programs) was \$400 million...RGGI was zeroed out as part of that. We fought that hard and made the Gov and the Legislature feel a lot of heat – especially from efficiency companies and renewable companies.

There are going to be huge cuts proposed this year, and the budget situation is almost as bad as last year, so definitely cause for celebration that the Gov is not going after the low-hanging fruit that is RGGI revenue and clean energy money!

We will still have to make sure the Legislature doesn't go after it as a way to restore other cuts...but at least we're starting off on the right foot this year.) – **NJ Environmental Advocate Feb 21, 2011**

Americans for Prosperity



“...committed to educating citizens about economic policy and mobilizing those citizens as advocates in the public policy process. AFP is an organization of grassroots leaders who engage citizens in the name of limited government and free markets on the local, state and federal levels.”

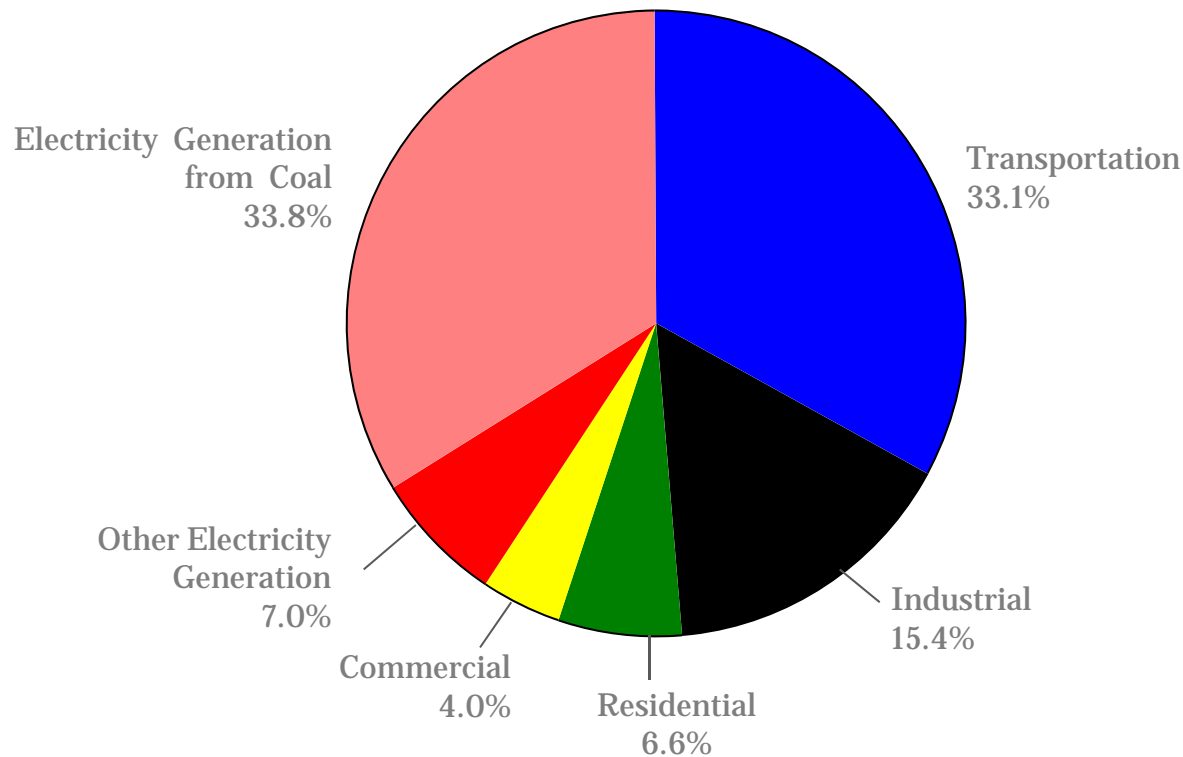
Current Events – California’s AB-32

Now, one opposition group is attempting to repeal [AB32](#) before it kicks in by means of a ballot measure proposed for this fall’s election – an effort they call the “[California Jobs Initiative](#).” The measure would suspend AB32 until California’s recession-rattled unemployment rate dips to 5.5 percent, however long that takes. But something funny was revealed today: [The New York Times reports](#) that, as of now, the only financial backers of the initiative are very likely Texas-based oil companies Valero and Tesoro.

<http://www.triplepundit.com/2010/03/tesoro-valero-ab32/>

Background: Power Sector 40% of CO₂

Sources of U.S. Energy Related CO₂ emissions in 2004



Source: EPA 2006

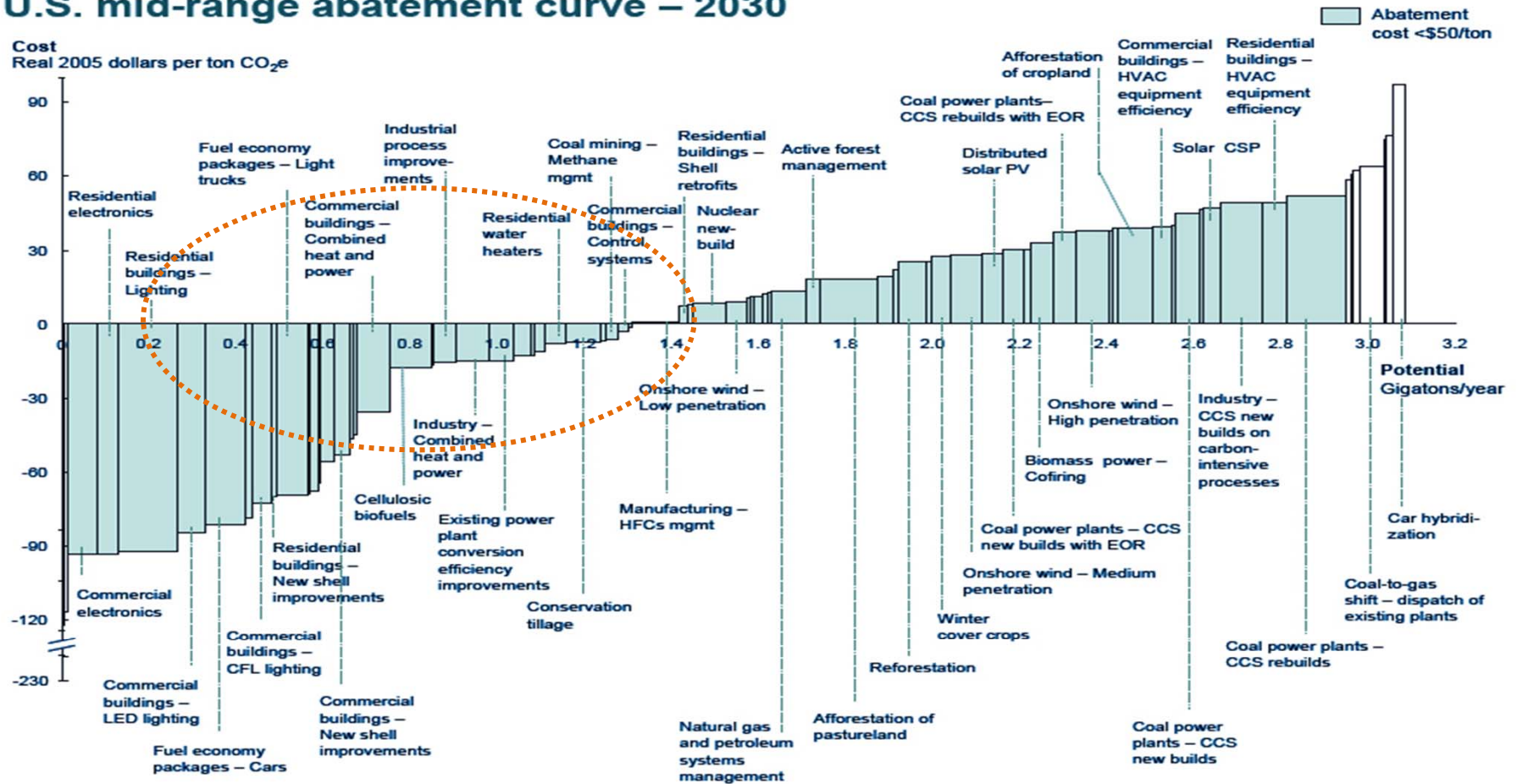
Background: Reducing Electric Sector Emissions

Power-sector CO₂ emissions can be significantly reduced in three ways:

- Reducing consumption (EE);
- Re-dispatching the existing fleet; and
- Lowering the emissions profile of new generation (including repowering existing generation).

Many Efficiency Resources are Low-Cost

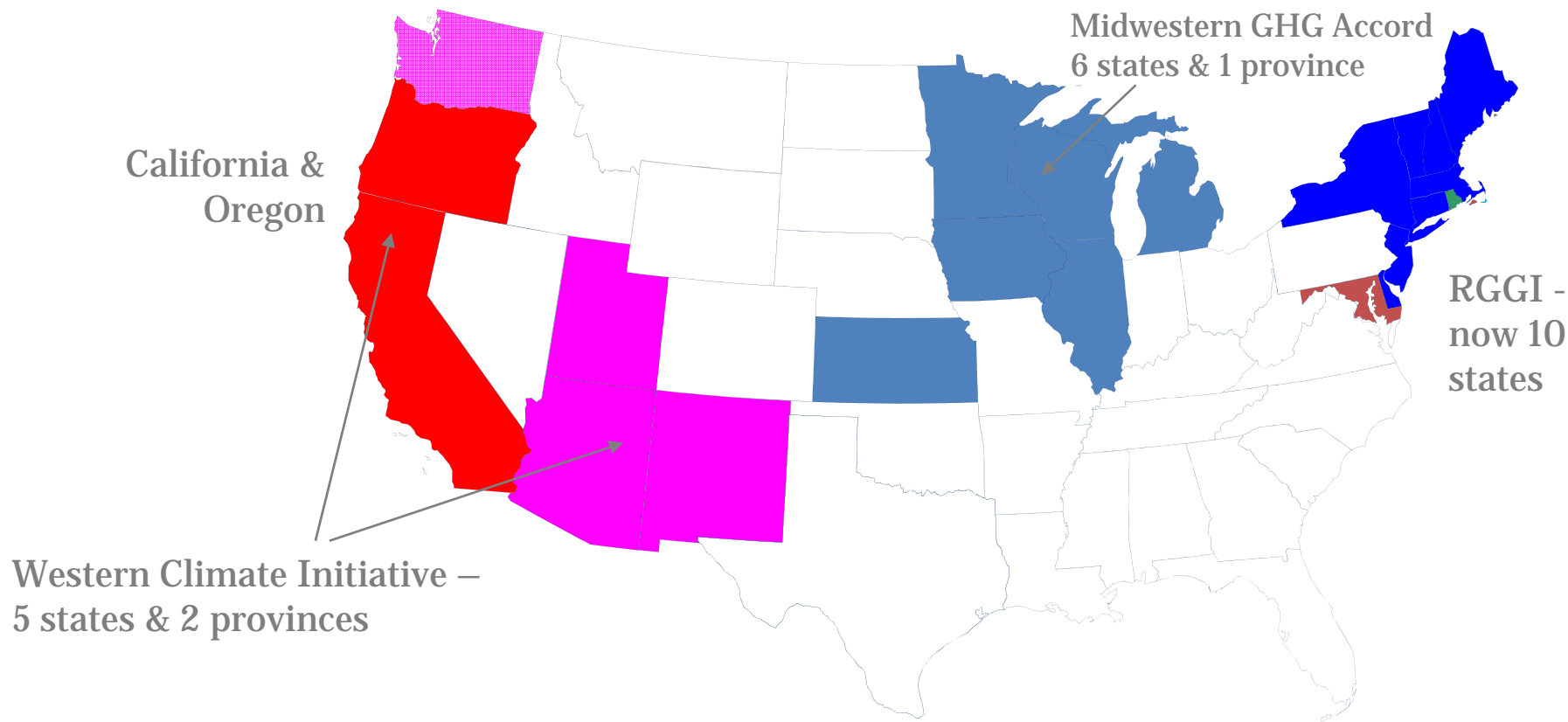
U.S. mid-range abatement curve – 2030



Source: Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?, Executive Report, McKinsey & Company, December 2007

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Background: Other State and Regional Carbon Initiatives



Together, their carbon profiles exceed most nations

RGGI: a General Description

- Ten Different State Programs
- Coverage: Fossil fuel-fired electric power plants 25 megawatts or greater in size (approximately 225 facilities region-wide)
- Cap: 188 million tons for the ten states (corresponds to budget, i.e., total allowances)
- RGGI Effective Date: January 1, 2009
- The RGGI Memorandum of Understanding (MOU) sets out the essential elements of a proposed model rule, adopted by each participating state.
- But each state conducted its own rulemakings

See <http://www.rggi.org/about/documents>

RGGI: a General Description (Cont.)

- Allowance Auctions: Quarterly, beginning with pre-compliance auctions in September and December 2008
 - +/- \$.86 billion in revenues
 - 86% used for public benefit
- Timing of Reductions:
 - 2009-2014, cap stabilizes emissions
 - 2015-2018, cap reduces by 2.5 percent each year
- Total Reduction in Emissions Cap: 10 percent below 2009 levels by 2018
- Compliance Period: Three years, first compliance period 2009 – 2011
- Use of Offsets: Greenhouse gas reduction projects outside the electricity generation sector will enable power plants to meet part of their compliance obligation—6 categories

Compare with Other Programs

Cap & Trade Programs	Sector	Affected Parties	Compliance Period	Allocations	Other features
SO ₂ (Acid Rain)	Electricity & other Industry	≥25 MW	1 year	Freely allocated	Allowance tracking system– COATS CEMs
EU ETS	Electricity & other Industry	20 MW	1 year	Phases I, II Freely allocated, Phase III partial auction (utility sector)	
RGGI	Electricity	≥25 MW	3 year	86% Auctioned	Allowance tracking system--COATS Mkt. Monitor Model Rule (NOx SIP Call) CEMs

RGGI States Determined that Price Alone does not Achieve Goals.

- Extensive modeling of end-use energy efficiency found:
 - Carbon credit prices drop 25%
 - Need for new fossil capacity drops 33%
 - Customer bills drop 5%(Industrial) to 12%(Residential)
 - And – even greater EE investments (quite attainable) would yield greater savings



Variation on Clean Air Act Sulfur Dioxide Cap-and-Trade Model

- New approach to allowance allocation:
 - States auction allowances and use revenue to reduce electricity demand and moderate allowance prices

See circular diagram below



Why is this Important?

- It is not about the price per ton; it is about how you spend the money:
 - Yes a cap creates a price signal: i.e., it imposes costs on emissions, (and, thereby, creates value in emissions reductions)
 - But RGGI addresses barriers to clean energy development through programmatic investment (traditionally state-led activity)

Some Barriers to Delivering Efficiency

Market barriers

Lack of information

Upfront costs

Payback periods - high implicit discount rate

Consumer inertia: Hassle factor, timing mismatches

Split incentives – eg,
Builder/buyer
Tenant/landlord

Unpriced external costs

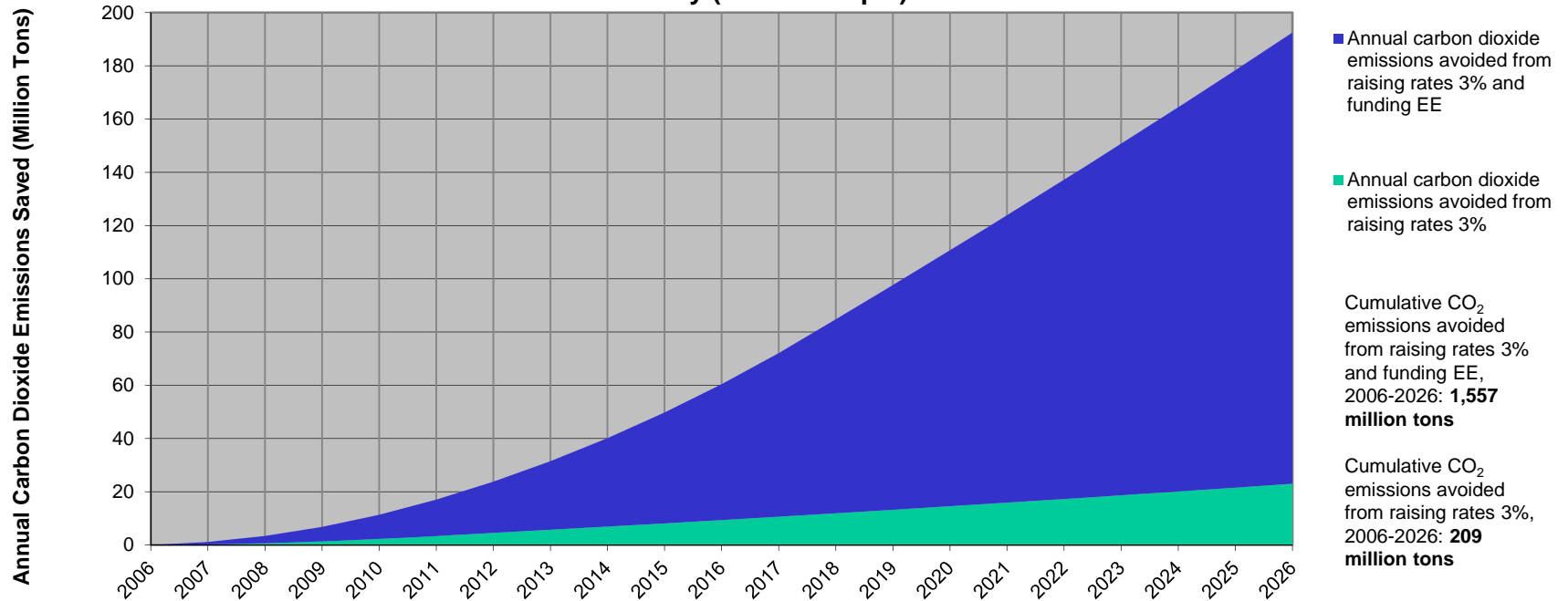
Uncompensated benefits –eg,
system reliability

Lessons:

- The barriers are the same in both traditional utility systems and in restructured, liberalized markets (US has both)
- Single-barrier attempts don't work (audits alone, financing alone, etc.)
- Cheap measures now, more later creates lost opportunities
- Utility-system charges & carbon \$\$ can leverage private capital

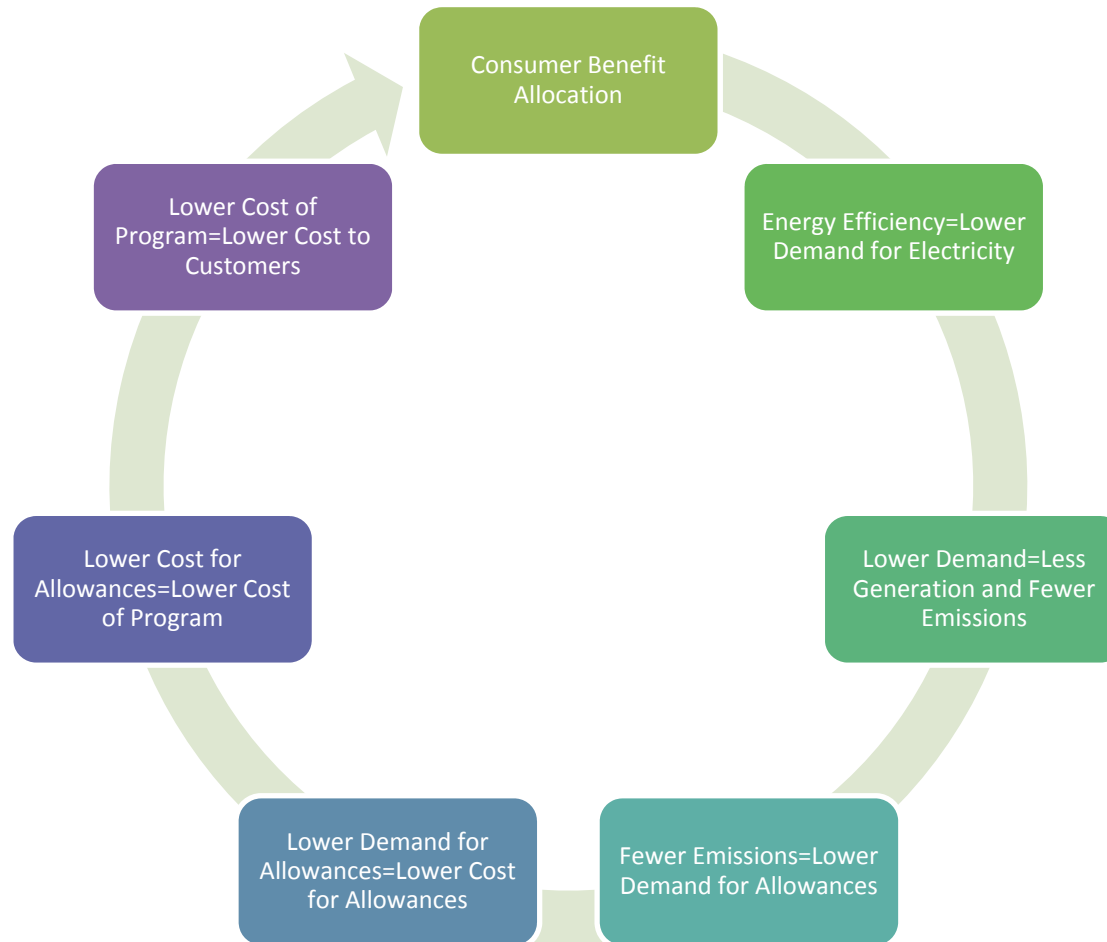
Efficiency programs can save 7x more carbon per consumer \$ than carbon taxes or prices

Annual CO₂ Emissions Saved by: Increasing Rates 3%; and Increasing Rates 3% to Fund Energy Efficiency (Ohio Example)



Assumptions: Electricity use increases by 1.7% per year; Retail electric sales increase by 3%; Price elasticity is -0.25 (-0.75 for a 3% increase), distributed over 5 years; Carbon dioxide emissions are 0.915 tons per MWh in Ohio; Cost of EE is 3 cents per kWh; Average EE measure life is 12 years

Effects of Efficiency Investment in a Carbon Cap-and-Trade Program



Examples of how States Auction and use Revenues

- Maine:
 - Auctions 88%, freely allocates 10% CHP, 2% set-aside for voluntary clean energy
 - Revenues: approx. 85% electric efficiency, 5% all fuels EE
- New Hampshire:
 - Auctions minimum 69%
 - Revenues: 90% efficiency, 10% low-income EE
- Vermont:
 - Auctions 99%, allocates 1% set-aside for voluntary clean energy
 - Revenues: approx. 95% all fuels EE

RGGI: Observations

- Criticisms include:
 - Over-allocation, i.e., the cap set too high?
 - Limited geographic scope -- leakage
 - Raises prices of electricity
 - Doesn't raise prices enough
 - Disruptive of the economy
- Pros:
 - Modest model for correct design of a future national program
 - Links energy and environmental regulation
 - Demonstrates that carbon regulation will not result in economic disruption
 - Designed to promote new and cleaner resources that, over time, will result in a different resource profile in the electric sector

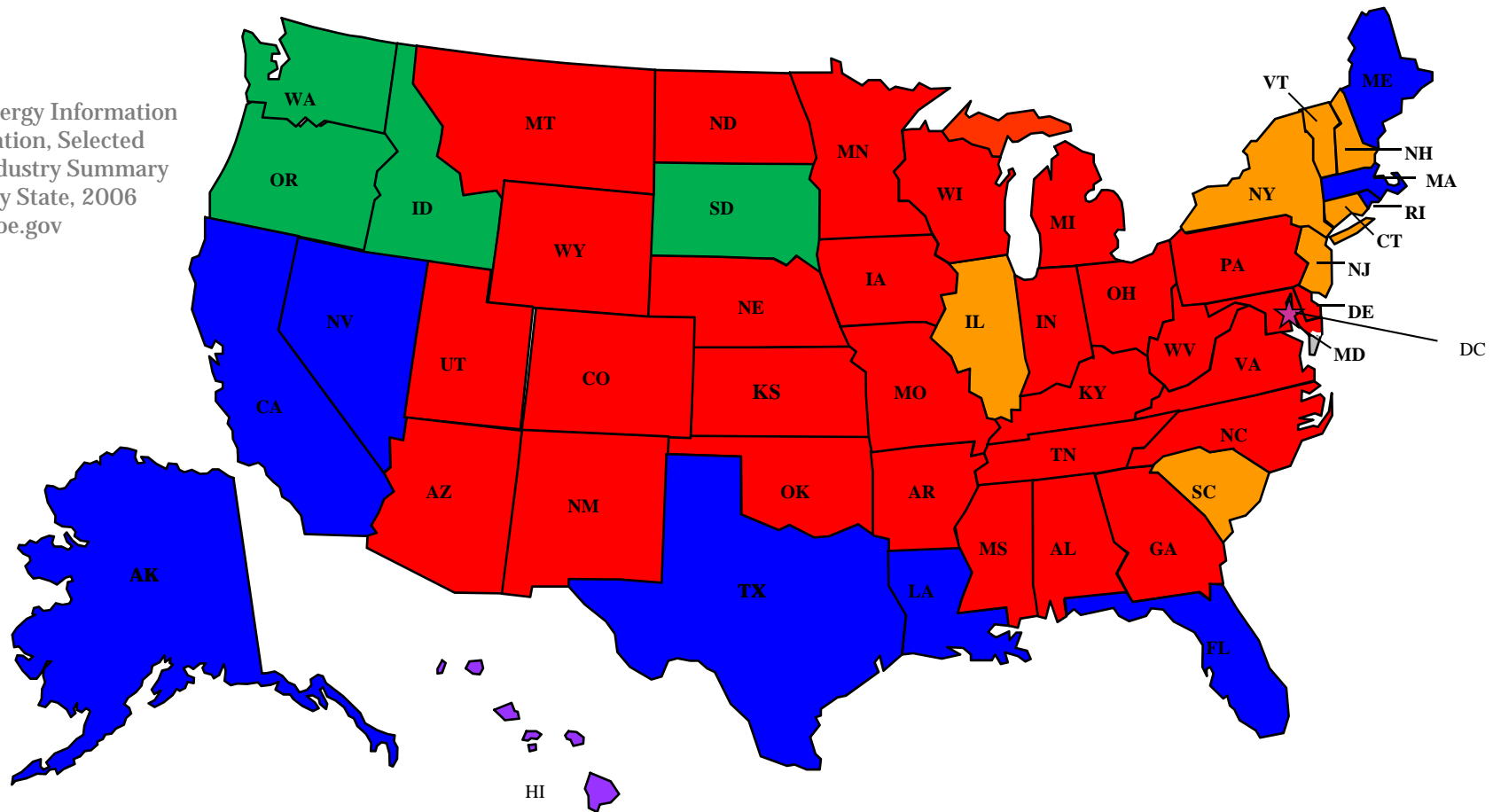
Put Cap-and-Trade in Context

- Along with other tools in the tool box, cap-and-trade can promote cleaner energy development and contribute to successful carbon management:
 - Efficiency programs,
 - Renewable Portfolio Standards, Feed-in Tariffs,
 - Integrated resource management (utility planning that includes externalities like a price for carbon),
 - An “all resource” forward capacity market (wholesale market that allows energy efficiency and other DSM to bid in as a resource),
 - Maybe new clean or cleaner capacity like CCS, and
 - Customer-owned distributed generation.

Any National Conversation on Climate

Primary Fuel Source by State; Note the Red Ones

Source: Energy Information Administration, Selected Electric Industry Summary Statistics by State, 2006
www.eia.doe.gov



Legend: Coal, Gas, Nuclear, Petroleum, Hydroelectric

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For More Information

- **Carbon Caps and Efficiency Resources: How Climate Legislation Can Mobilize Efficiency and Lower the Cost of Greenhouse Gas Emission Reduction**, Cowart (Vermont Law Review 2008)
- **Climate Issue Brief #4, State Clean Energy Policies: The Foundation for an Electric Sector Cap-and-Trade Program**, National Association of Regulatory Utility Commissioners, http://www.naruc.org/Publications/ClimateIssueBrief4_Jul2009.pdf
- **Images and How We Remember History**, Farnsworth http://www.huffingtonpost.com/david-farnsworth/images-and-how-we-remember_b_604784.html
- **Climate Policy and Affordability: Advocacy Opportunities in the Northeast**, Farnsworth, D'Antonio , and Pike-Biegunska http://www.raonline.org/docs/RAP_Farnsworth_ClimatePolicyinNortheast_2009_09_18.pdf
- **RGGI Allowance Allocations & Auction Proceeds Distribution Plans**, December 3, 2010, Environment Northeast, http://www.environmentnortheast.org/public/resources/pdf/ENE_Auction_Tracker_110203.pdf
- **Electricity Energy Efficiency Benefits of RGGI Proceeds: An Initial Analysis**, October 5, 2010, Chang, White, Johnston, and Bruce Biewald



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About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power and natural gas sectors. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raonline.org

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