Policy Flexibility and Durability and the Role of Complementary Policies in the North American Trading Programs

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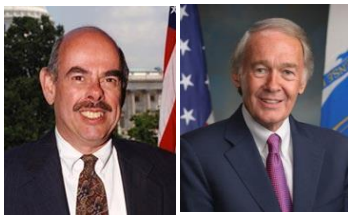
Timeline of US GHG Regulation



Waxman-Markey passed in the US House of Representatives

Obama's Climate Action Plan foreshadows EPA's Clean Power Plan for existing power plants.

Final Clean Power Plan; Proposed Model Rules for States

2007 — Jun 2009 — Jul 2010 — Jan 2011 — Jun 2013 — Jun 2014 — Aug 2015

Supreme Court affirmed in *Massachusetts v. EPA* that greenhouse gases are covered by the Clean Air Act definition of air pollutant

Senate failed to take up WM climate bill

Cap and trade was declared dead

EPA issues new standards for motor vehicles and pre-construction permitting

EPA Proposed Clean Power Plan under the Clean Air Act 111(d)

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The Proximate Mirror

Change in US Policy from national cap and trade mirrors shifts seen in international climate negotiations.

- Move from top-down to bottom-up
- Countries publicly propose intended nationally determined contributions (INDCs) and specific measures for achieving them
- New hope for an agreement internationally
- Can this approach work within the US electric sector?

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Background on the Clean Power Plan

- **Policy is implemented by the States**
  - EPA's technical findings determine state requirements and identifies *best system of emissions reductions (BSER).*
  - State declaration of intent in 2016; final plans due in 2018
  - Compliance in 2022
- **Multiple pathways for States**
  - States choose *rate-based*, *mass-based* policies or other
  - State plans must show environmental equivalence to BSER
  - Coordination and strategic issues are challenging
- **States encouraged to work together**
  - EPA proposed "trade ready" model plans for rate and mass

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An Economic Question

Should ya dance with the one who brought ya?

- Under *cooperative federalism*, federal policy requires support and cooperation from the states.
- Two conflicting views frame the debate:
  - ❑ "Meet or exceed" *versus* "Preemption" ??!!
- In the U.S.
  - 10 states have cap and trade
  - 29 states have renewable energy policies
  - 24 states have funded energy efficiency programs
- EPA uses these state policies as a measure of *best practice*
- Indeed,… the national-level emission mitigation regulations we have are due to the initiative of states: *Mass. v. EPA, 2007*

State (complimentary) policies moved public policy. What is their role under national policy?

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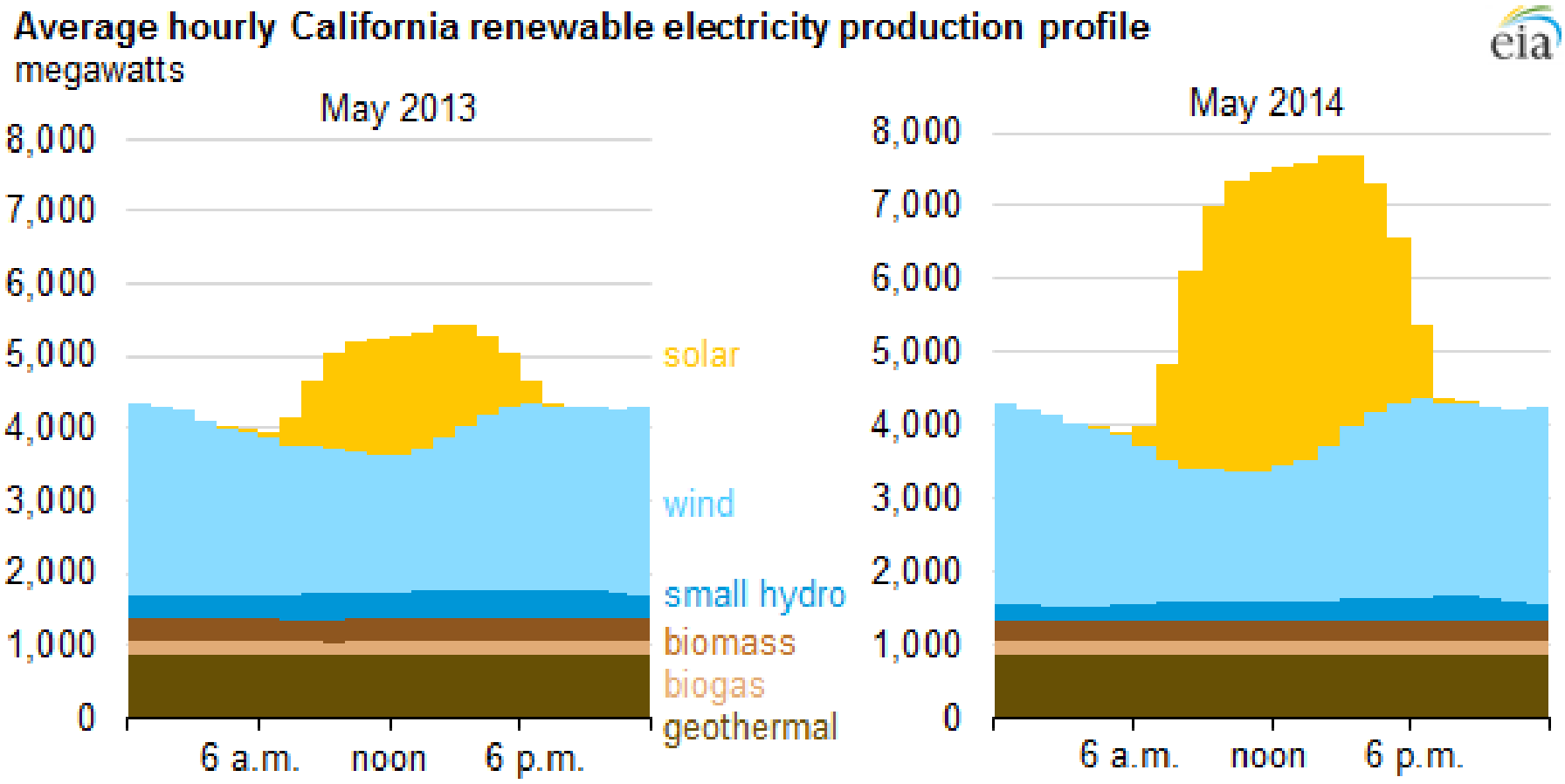
Technology Policy



Total renewables will expand by 50% more by 2020 (33% of total consumption). Most will come from solar.

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Complementary programs interact with cap and trade

- The public consistently expresses a preference for regulatory approaches (complementary policies) to emissions pricing.
- If complementary programs have an effect at all, it is to harvest additional emissions reduction opportunities.
- This pushes down the price of tradable emissions allowances.

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Cost Management in Trading Programs

Price Spikes are like Rougarou – the seldom seen mythical creature from France

Price Declines are the commonly observed phenomenon. Why?

- **Incentive based regulation (a carbon price) leads to innovation**
- **Program spending may complement emissions goals (RGGI)**
- **Complementary policies are common worldwide!**

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Reserve Price in an Auction

- RGGI's innovation– a price floor (like on eBay!)
  - Widely considered a good feature of auction design
- Appeared in Waxman-Markey
- Adopted in CA & Quebec
- In all three North American programs, the price floor has been triggered at least once. Subsequently, prices rose off the floor, and the program architecture led to further emissions reductions.

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The Clean Power Plan is a State-Based Process

- **Explicit role for public participation**
- **Consideration of multiple criteria**
  - Cost
  - Emissions
  - Emissions rates
  - Innovation
  - Remaining useful life of facilities
  - Other environmental outcomes
- **Over half of the economic benefits come from reductions in conventional pollutants!**
  - This local concern provides ongoing motivation for complimentary policies

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WHAT ARE CO-BENEFITS?

GLOBAL CLIMATE CHANGE

Carbon dioxide

EMISSIONS

Other pollutants:
Nitrogen oxides
Sulfur dioxide
Particulate matter

AIR QUALITY:
ground-level ozone, smog, fine particle pollution

HEALTH CO-BENEFITS:
Fewer premature deaths, heart attacks, hospitalizations

ECOSYTEM CO-BENEFITS:
Improved timber, crops, streams, visibility

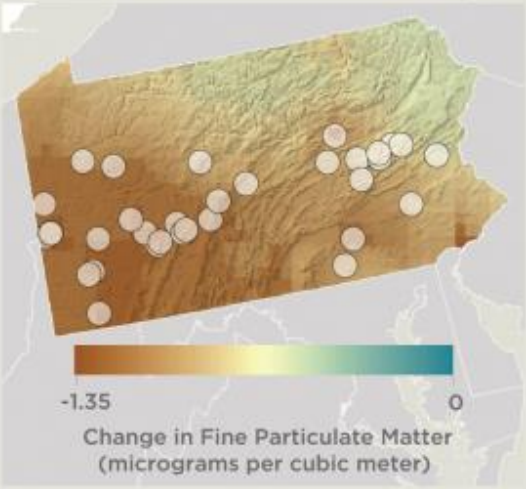
Co-benefits in Pennsylvania

PENNSYLVANIA: A Health Benefits Hotspot

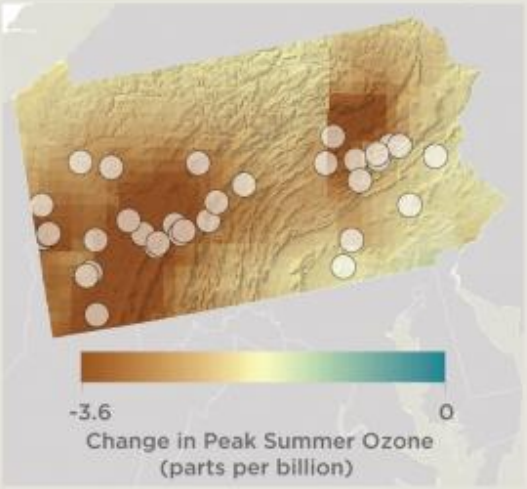
AIR QUALITY AND HEALTH BENEFITS OF A POWER PLANT CARBON STANDARD

PENNSYLVANIA'S AIR →

SOOT Reduced in 2020



SMOG Reduced in 2020



○ Operating Coal Plants

PENNSYLVANIA'S HEALTH →

Cumulative Lives Saved from 2020 to 2030

3300

Cumulative Hospitalizations Prevented from 2020 to 2030

710

Cumulative Heart Attacks Prevented from 2020 to 2030

190

THESE MAPS SHOW: Reductions in fine particulate matter and peak summer ozone, and the resulting health benefits under Policy Scenario 2 compared to the 2020 reference case. For soot and smog, negative values = lower pollution. The health benefits assume a linear increase from the 2020 annual estimate. By comparison, Scenario 1 resulted in 10 lives saved, and Scenario 3 resulted in 2600 lives saved. Source: *Health Co-benefits of Carbon Standards for Existing Power Plants*. www.chgeharvard.org/health-co-benefits.

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Carbon Standards Co-benefits Study, Driscoll et al. 2

Conclusions

1. Economists prefer a price on carbon. It is imperative.
2. The public prefers a regulatory approach, including complementary policies.
3. A price floor in the auction can reconcile these two approaches and provide a way to coordinate across policies, including cap and trade and a carbon tax.