State Carbon Dioxide Emission Reductions: Implications for Future Electricity Process

A presentation by Henry Lee to the Harvard Electricity Policy Group

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What is RGGI?

- Seven states in the Northeast have agreed to develop a cap and trade program to stabilize carbon dioxide emissions from electricity generators until 2015 and to then reduce emissions 10% between 2015-2018

- States are allocated allowances based on several factors, including actual emissions (2000-2004), electricity consumption, and population

- States have the flexibility to decide how they will allocate those permits. Most states will distribute 75% to “the industry” and the public sector will sell the other 25%
What is RGGI? (con)

• The proceeds from the sale of the 25% will be used to fund strategic energy programs, such as energy efficiency program, the development of new energy technologies, and payments to certain ratepayers.

• Limited offsets allowed for predetermined categories of projects within the region and under certain circumstances, for a larger menu of opportunities outside the region.

• Cost safety valve thresholds trigger more generous access to offsets and longer compliance periods.
Benefits - Explicit

• Put states ahead of others that will have to do more later

• Implementing Carbon dioxide reductions today will avoid having to take more expensive measures later

• Promote energy efficiency, renewables and new technologies

• Offer an opportunity to experiment with procedures and initiatives that might be considered in a national program
Benefits - Implicit

• Will put additional pressure on the White House and the Congress to act
Cost Projections

• The proponents claim that the costs will be negligible – 0.3%-0.6% increase in rates by 2015 or no more than a $16 increase for homeowners.

• In both California and in the RGGI states, proponents argue that economic growth will increase and thousands of jobs will be created.
Costs will depend on fuel mix and design of program

• For the Northeast, fluctuations in natural gas prices will dwarf any economic or ratepayer effect from the RGGI program

• Impacts will depend on two key variables
  – The method by which allowances are allocated
  – The degree of competition in the region
Allocating the allowances

• Three options
  – Grandfathering - historical emissions
  – Generation performance standards
  – Auction with revenues recycled by the government

• What part of the industry must hold the allowances – generators or load serving entities?

• Will allocation be updated periodically?
Competition

• The Northeast has basically embraced wholesale competition and, for larger sources, retail competition. The marginal price sets the market and for most of the year that price is driven by natural gas costs.

• In a competitive electricity market, carbon allowances become a valuable asset. The market value of these assets will be much greater than the cost of compliance.
Choice of Allocation Method has large distributional impacts

- Value of an allowance to a generator is its opportunity cost minus the liability of the cost of reducing emissions

- In a competitive market in which the marginal cost sets the clearing price, firms will attempt to charge customers for the value of the allowances, as they would any other opportunity cost. Hence grandfathering involves a large distributional shift from consumers to producers

- Competition will not always allow firms to pass through the entire asset value of the allowance
Auctioning the allowances

• RFF studies show that electricity prices will be higher under an auction approach, but the efficiency gains will be significantly greater relative to grandfathering

• Auctions will raise significant revenue and how this revenue is used will determine the net economic impact of the program
New Generation

- Allowances will serve as subsidies to low or non-emitting sources, hence, all other factors being equal, one should expect more renewables, gas-fired facilities, and nuclear power plants. (However the latter is unlikely for other reasons)

- Two problems will emerge: leakage and lack of fuel diversity
Leakage

• “If there are no transmission constraints and all other factors are neutral, new generating plants will locate outside the RGGI states” (RFF)

• This could theoretically lead to the anomaly of the RGGI states foregoing building a gas-fired facility and purchasing power from a new Midwest coal facility – thereby increasing carbon emissions

• Renewable facilities would be an exception, especially if states made them eligible for allowances. However, siting large scale renewables seems to be a challenge in densely populated areas

• Imported power from Canada will increase. RGGI will be only one of several factors pushing the Northeast states in this direction
Lack of Fuel Diversity

• High natural gas prices have caused retail electricity prices in the RGGI states to increase dramatically

• Under RGGI, the region may find it difficult to attract investment in options other than natural gas, renewables and imported power. As a result, regional wholesale electricity prices may become even less competitive
Other

• What will be the impact of RGGI on the availability of ancillary power?
• Will RGGI effect merit order dispatch?
• Will RGGI be able to integrate seamlessly into a national program, if and when one occurs?
Summary

• How one designs a regional carbon trading regime will have a significant effect on both its economic cost and its distributional impact

• Leakage will be a major problem for any regional climate reduction program

• There will be benefits but only a small portion of them will be captured by the ratepayers in the implementing states