

# Regional Greenhouse Gas Initiative:

## Incentives for Energy Efficiency and Technological Innovation Can Reduce Costs for Consumers

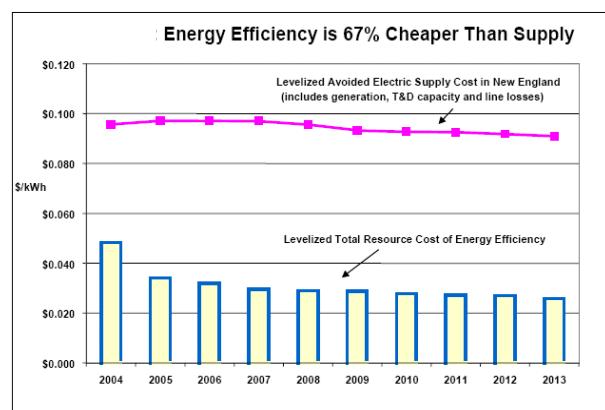
Nine northeastern states have committed to slow global warming through development of the **Regional Greenhouse Gas Initiative (RGGI)**. The goal of RGGI is to collectively reduce carbon dioxide emissions from electric utilities through a flexible, market-based “cap-and-trade” system. If designed properly, RGGI could serve as a model for a national global warming policy. Thus, *it is crucial that RGGI set meaningful emissions reduction targets while simultaneously providing benefits for energy consumers.* Further implementation of proven, cost-effective energy efficiency practices and technological innovation are expected to reduce the overall cost of the program. However, the full potential of these savings can only be realized if there are incentives within RGGI by means of allowances for the direct investment in energy efficiency. State agency heads have the power to develop the program responsibly by *reducing the costs incurred by consumers.*



RGGI includes CT, DE, MA, ME, NH, NJ, NY, RI, & VT.  
PA & MD are observers

### The Cheapest and Cleanest Watt of Energy is the One Not Generated

Energy efficiency is the biggest single step we can take to reduce carbon dioxide emissions and to reduce the cost of implementing RGGI.



Source: Economically Achievable Energy Efficiency Potential in New England. May 2005. Prepared for Northeast Energy Efficiency Partnerships, Inc. by Optimal Energy, Inc.

- **Cost-effective:** a recent study found that saving electricity costs 67% less than supplying it<sup>1</sup>.
- **Proven:** businesses and industries that have taken voluntary energy efficiency measures to reduce greenhouse gas emissions have seen increased productivity and lower operating costs. For example, a Gillette facility in Andover, MA switched to energy efficient lighting, saving 1,384,433 kWh and \$110,755 per year<sup>2</sup>.
- **Untapped Resources:** many studies show that only a fraction of the economically achievable energy efficiency potential is currently realized. Continuing current energy efficiency programs in New England states will only capture 17% of the cost-effective energy efficiency by 2013<sup>1</sup>.

As a region, the northeast is a leader in energy efficiency strategies. States in the RGGI region have implemented ratepayer funding (called Systems Benefit Charges or SBC) to fund the design and delivery of energy efficiency services to residents, businesses, and commercial and industrial energy users.

Despite this effort, regional studies indicate that there is a substantial amount of cost-effective energy efficiency opportunities that have not been employed<sup>1,3</sup>. The Intergovernmental Panel on Climate Change Third Assessment confirmed this as a larger trend, finding that the potential for efficiency improvements and conversion technology are far from exhausted<sup>4</sup>. Many economists and policy-analysts believe that the full economic potential for energy efficiency improvements is not likely to be captured unless specific policies are adapted to ensure that it happens<sup>5</sup>.

As the architecture of RGGI comes to completion, state agency heads CAN ensure that RGGI includes incentives that capture that potential and simultaneously lower the costs of the program for consumers. By allocating funding to improve energy efficiency, rather than letting the generators pass the costs onto the consumer, the cost of the program will decrease by reducing energy consumption. This incentive to invest in greater energy efficiency will offset forecasted load growth and beyond and also help to stimulate and identify options previously overlooked.

# Regional Greenhouse Gas Initiative:

## Incentives for Energy Efficiency and Technological Innovation Can Reduce Costs for Consumers

If only the 6 New England states pursued the total economically achievable energy efficiency potential, power plants would reduce 22,994,000 tons of CO<sub>2</sub> emissions by 2013, which exceeds the 9 state RGGI target by about 6,600,000 tons in 7 (or 12?) years earlier.

### **Induced Technological Change Will Reduce Costs**

Along with further implementation of energy efficiency improvements, a carefully designed policy will reduce costs to consumers by planning for an increase in *technological innovation*. Technological changes in the energy sector (including innovation in energy efficiency, renewable energy, and low carbon technologies, as well as other yet unknown innovations) are very likely to be critical in meeting future energy needs and addressing climate change. Historically, technological changes have enabled significant pollution reductions within the energy sector with considerably less than anticipated costs.

#### **Policies Induce Technological Change**

In absence of carbon reducing policies, the inherent progress of technological change will continue to occur. However, this is not the major driver for improved energy efficiency and reduced energy intensity in the electricity sector. Climate policies, such as RGGI, can lead to *induced technological change*, which refers to the additional technological change stimulated by policy. Empirical evidence and sensitive modeling show that technological change induced by climate policies lowers the overall costs of achieving the targeted CO<sub>2</sub> emissions reductions.

#### **Traditional Modeling Doesn't Capture Savings**

Traditional policy-evaluation models neglect induced technological change and instead treat it as an autonomous factor. This results in seriously *overestimated policy costs* and an underestimate of the rate of carbon-saving innovation. Similar assumptions were incorporated into RGGI modeling. RGGI modeling predicts costs that don't factor in technological innovation or substantial increases in energy efficiency. Thus, we can expect that the projected cost of RGGI is an overestimate of the actual cost.

#### **Case Study: The Acid Rain Program**

The Acid Rain Program is a national cap-and-trade system that sets a cap on the total amount of sulfur dioxide (SO<sub>2</sub>) that can be emitted from electric power plants. In nearly ten years of existence, the SO<sub>2</sub> allowance trading program has resulted in 100% compliance and significantly less than expected costs. Low costs have been attributed largely to induced technological change, including increased efficiency and reliability of scrubbers that remove SO<sub>2</sub>. In 2003, the Office of Management and Budget Office found that:

- The price of allowances has been far lower than predicted in 1990 before the program began.
- The Acid Rain Program costs just \$1 to \$2 billion per year, or one-quarter of original estimates.
- Benefits of the Acid Rain Program (over \$70 billion dollars annually) exceed costs by more than 40:1.
- Incentives were provided to reward innovation and improved efficiency technology.

### **Induced Technological Change Will Reduce Costs**

The costs of inaction on climate change are too high to ignore. RGGI will set precedent as the first effort in the U.S. to mandatory limit carbon dioxide on a regional basis. Flexible, market-based cap-and-trade systems have proven to be a cost-effective technique to reduce pollution from power plants. However, the costs of RGGI to consumers can be significantly reduced through incentives for technological innovation and allowances for direct investment in energy efficiency. It should be implemented with these features in order to ensure the most cost-effective solution with the greatest emissions reductions.