

Reducing Heat-Trapping Emissions

IN THE NORTHEAST



Global warming is under way and poised to have a substantial impact on the Northeast—a nine-state region extending from Maine to New Jersey. Some climate changes are now unavoidable, but the extent of these changes and the specific effects they have on our region depend largely on the emissions choices we make today—in the Northeast and worldwide.

While actions to reduce emissions in the Northeast alone will not stem global warming, the region is a global leader in technology, policy, finance, and innovation, and a major source of emissions of carbon dioxide, the most important heat-trapping gas. Thus, the Northeast is well positioned to be a technology and policy leader in reducing these emissions, and can drive the national and international progress essential to providing our children and grandchildren with a healthy future climate.

The Northeast, which accounted for 13.6 percent of the United States' energy-related carbon dioxide emissions in 2001, represents the world's seventh largest source of such emissions when compared with



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entire nations (see the figure). The transportation sector is the Northeast's largest emissions source (35 percent), followed by the electric power sector (30 percent), buildings (22 percent), and industry (13 percent).

To the Northeast's credit, it has been one of this country's leading innovators in early efforts to reduce heat-trapping emissions. Examples of the region's leadership include:

- The Regional Greenhouse Gas Initiative (RGGI), the first U.S. multi-state cap on carbon emissions, which will require the electric power sector to decrease its emissions 10 percent below current levels by 2019.
- Many state-level actions including policies to promote energy efficiency and renewable energy, clean cars, climate action plans, and efforts to reduce emissions from state government.
- Emissions reduction strategies being implemented by many municipalities, corporations, and universities.

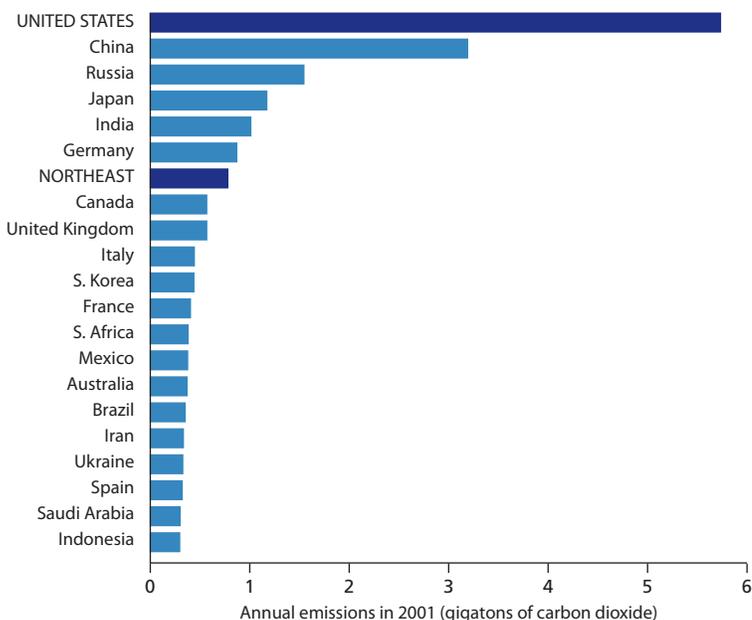
In 2001, the New England Governors and the Eastern Canadian Premiers (NEG/ECP) adopted a long-term goal of reducing regional heat-trapping emissions 75 to 85 percent below then-current levels. If the Northeast and the industrialized world follow such a pathway, and developing nations follow a relatively low-emissions pathway as well, the world will be on track to avoid the more severe consequences of climate change.

Key Opportunities

A lower-emissions pathway could combine high economic growth with a shift toward less fossil fuel-intensive power production and the introduction of clean and resource-efficient buildings and technologies. Reductions in heat-trapping emissions of just three percent per year on average would enable the Northeast to meet the NEG/ECP goal by mid-century.

A rich array of options is available to the Northeast to help us pursue a low-emissions pathway and continue our leadership in policy and technology innovation. Examples in the key carbon-emitting sectors include:

- **Transportation**—Cost-effective technologies available today—such as better transmissions, improved tires and aerodynamics, and stronger but lighter frames—could reduce emissions by roughly one-third over the next decade and save consumers money at the pump. Gasoline-electric hybrids could eliminate



Energy-related carbon dioxide emissions in the Northeast, compared with the major carbon-emitting nations of the world. U.S. emissions include the Northeast.

Source: Emissions data for 2001 from Energy Information Administration (EIA), *International energy annual* (2003), and EIA, *Emissions of greenhouse gases in the United States* (2004).

more than half of the heat-trapping emissions from light-duty vehicles. Policies could encourage reductions in the total number of miles people drive, and low-carbon alternatives to petroleum could ultimately eliminate transportation as a major source of heat-trapping emissions.

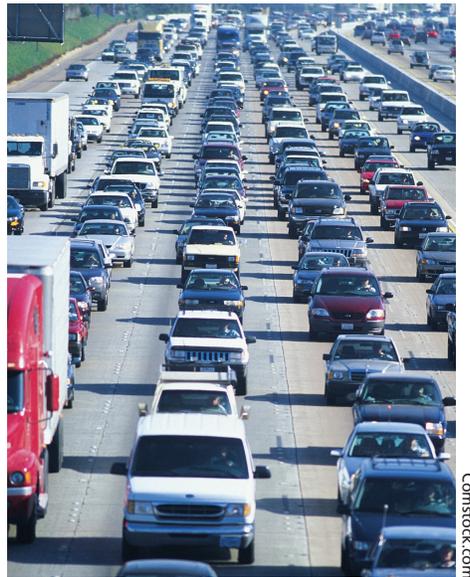
- **Electric power**—More efficient lighting and other technologies could cost-effectively offset the Northeast's projected growth in electricity demand over the next decade. Widely available wind energy and other renewable resources, clean distributed small-scale energy systems, and combined heat and power could then displace a significant amount of current fossil fuel generation. For example, wind has the technical potential to satisfy about half of our annual energy consumption in the Northeast, and the potential for offshore wind appears even greater.

- **Buildings**—Energy-efficient design of walls, windows, roofs, heating and cooling systems, and lighting and appliances would also help reduce emissions while saving on energy costs.

- **Industry**—Innovative new energy-efficient plant design combined with new low-emissions technologies would make a major contribution to this effort.

Recommended Actions

A combination of policies, programs, and individual actions can put the Northeast on the pathway to a three percent average reduction in annual emissions. Policy makers at all levels of government must put appropriate policies in place and implement them fully, provide incentives that will drive markets, and support innovation. Government, industry, and academia can lead by example, raising public awareness of the consequences of climate change and the availability of feasible solutions. Individuals can act through their purchasing decisions, lifestyle choices, and the political pressure they can bring to bear on elected officials.



Promising actions in the key carbon-emitting sectors include:

- **Transportation**—States can encourage sales of low-emissions vehicles through emissions standards for heat-trapping gases, sales and excise taxes, carbon-based vehicle fees, alternative-fuel policies, and policies to reduce urban sprawl and expand public transportation. Institutions and individuals can buy more fuel-efficient vehicles and save money. Reducing the average miles driven can be achieved through improved public transportation, telecommuting, smart growth development, and similar strategies.

- **Electric power**—States can implement a strong mandatory “cap-and-trade” program for carbon emissions (such as RGGI) that also lowers costs for consumers by incorporating energy efficiency, renewable energy development, and combined heat and power. States can also adopt and strengthen efficiency and renewable energy standards and purchasing practices, and work toward full implementation of existing policies. Institutions and individuals can purchase efficient compact fluorescent lighting and Energy Star appliances, and choose renewable power options from their electricity supplier.

- **Buildings**—States can substantially improve building energy codes and adopt policies that foster low-emissions purchasing and renovation decisions. For example, applying Energy Star standards to new construction and renovations would reduce emissions for each building 20 to 30 percent, with little or no extra cost. Much greater reductions are technically and economically feasible. States, cities, and institutions can all set an example of high-efficiency, low-emissions building design and renovation. Tax benefits can encourage individuals to add insulation, upgrade heating and cooling systems, and replace inefficient lighting and appliances to reduce their bills as well as their heat-trapping emissions.

- **Industry**—State tax and regulatory incentives can encourage industry to use renewable energy and combined heat and power, and to continuously increase production efficiency.

One key to a low-emissions pathway lies in forward-thinking personal and institutional choices. We need not be “penny-wise and pound foolish” when it comes to energy decisions. Each time we purchase equipment, vehicles, or buildings we contribute to our long-term emissions and energy costs. A true transformation of our economy and infrastructure to a lower-emissions future will require that we make wise energy choices.

A comprehensive and concerted effort can make the Northeast a global leader in the policy and technology innovation needed to avoid excessive climate change. At the same time, the states, private sector, and individuals would also benefit from energy and economic security, job creation, clean air, and a sustainable economy in a region that has relatively few energy resources. The Northeast has the technical resources, experience, and leadership to build a low-emissions future and minimize the climate changes to which we must adapt; now we need to act.



**Union of
Concerned
Scientists**

Citizens and Scientists for Environmental Solutions

This summary was prepared by the Union of Concerned Scientists based on two reports of the Northeast Climate Impacts Assessment (NECIA): *Climate Change Mitigation Strategies and Policies for the Northeast United States* by W. Moomaw and L. Johnston (forthcoming) and *Climate Change in the U.S. Northeast* by K. Hayhoe, C. Wake, et al. (2006). The NECIA is a collaboration between the Union of Concerned Scientists and a team of independent experts to assess global warming impacts and solutions in the Northeast United States.

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For more information or to download a copy of the report *Climate Change in the U.S. Northeast*, visit www.climatechoices.org.