

# Energy and Utilities Sector Report

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## INTRODUCTION

The Energy/Utilities breakout group consisted of seventeen people who met over the course of three sessions. The group was comprised of:

- five utility or environmental regulators
- four academics
- three utility representatives
- two policy agency representatives
- two environmental organization representatives
- one New Hampshire state legislator

The Energy/Utilities group discussed and developed responses to the four questions posed to each work group. Our discussion focused mainly on utilities and energy suppliers, and to some extent on the transportation sector. We first developed a list of current concerns relating to the region's energy/utility sector. A cross-cutting issue is the opportunity for greenhouse gas reductions by more aggressively pursuing "climate sensitive technologies" such as encouraging development of hydrogen as a fuel, promoting fuel cell technologies, etc.

Given the nature of our subject area, we took a somewhat different approach to Question 2 than the other workgroups. The question seemed to be more applicable to the area of natural resources and how natural resources will be stressed with increasing climate change. We decided to answer it in the context of the current day conditions—current stresses that did not consider climate change as a factor. We concluded that virtually all the stresses included under this question would be exacerbated by climate change, with the one probably positive impact being the impetus for renewable energy sources.

Question 3 led us to identify a need to collect and organize data that already exists but is not collected in a single place where it can be easily accessed. Collecting the data into one location would mean that it could be used as a common source database for residents of upstate New York and New England to evaluate and decide what steps to take, including gathering additional data to fill information in gaps.

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Our consideration of Question 4 led us to articulate some statements about what needs to be done to mitigate greenhouse gas emissions and, in the longer term, to move to zero CO<sub>2</sub>-emitting resources for new energy sources as existing sources are eventually replaced. These were grouped into six major strategy areas:

- Energy efficiency and conservation actions
- Internalizing full costs in the price of energy
- Cleaner energy sources and increased reliance on renewable sources
- Transportation measures
- Public information and education about global warming science, greenhouse gas emissions and their impacts
- Other policies and actions

These strategies require new planning approaches, assessment of a broader scope of potential options and emerging technologies, and inclusion of costs that have previously been left to the states and society. A bold new approach is necessary to change the ways we produce and use energy and to begin to take control of greenhouse gas emissions.

## SPECIAL CHARACTERISTICS OF THE REGION AND IMPORTANT DRIVERS

The uniqueness of New England as an energy region can be characterized as follows:

1. New England has no significant indigenous, carbon-releasing, fossil fuel resources. While this means we import most of our energy resources, it also leaves the region relatively less burdened by vested energy industry interests in development of its energy portfolio.
2. The region's energy costs are among the highest in the United States.
3. Most of the population is highly concentrated in metropolitan or relatively small urban/suburban geographical areas.
4. New England is at the end of the "energy pipeline." This is literally true of natural gas, which arrives by pipeline from distant gas

fields in Louisiana, Texas, Oklahoma, and Alberta. It is figuratively true of coal, oil, and nuclear fuel, which are all shipped to New England from coal mines, oil refineries, and processing plants in distant states and foreign nations.

5. The region has renewable resource potential in hydropower, solar, wind and biomass. Improved economics and policy incentives are key drivers to greater use of all of these resources.
6. Fuel cell technology offers promise as an energy efficiency measure and is just starting to make commercial inroads into energy use.
7. States in the region are well along in the process of restructuring the electric utility industry, providing opportunities to shape our energy future and thereby reduce greenhouse gas emissions now and in the coming years. Some key features of a restructured electric industry are: the generation and wholesale and retail sale components of the electric utility industry could be opened to allow greater customer choice and competition among service providers; utilities could be required to divest their power plants; transmission and distribution components will continue to be regulated.
8. In the New England region, the transportation sector contributes significantly to greenhouse gas emissions—roughly 30-40% of total current emissions. Greenhouse gas emissions produced by the transportation sector are projected to increase dramatically in the near future, growing at a disproportionate rate compared to other sectors.
9. Since more than 90% of our CO<sub>2</sub> greenhouse gas contribution comes from the combustion of fossil fuels, the energy/utilities and transportation areas are critical to any strategy to reduce greenhouse gas emissions.

## SIGNIFICANT FINDINGS AND RECOMMENDATIONS

The Energy and Utilities group developed the following findings and recommendations:

- Renewable energy resources can and should play a significantly greater role in New England's (and the nation's) energy future.
- As policy, energy efficiency should receive much greater emphasis with a strong commitment by the federal and state governments. Economically viable energy efficiency investments that also reduce greenhouse gas emissions, so called "no regrets" measures, should be vigorously pursued by all sectors. Fully

competitive generation and retail sale of electricity under utility restructuring could mean a significant decline in utility energy efficiency expenditures unless state legislators and regulators incorporate continued support for those investments in the language of the statutes and rules of restructuring. In addition, there is a need to put in place transparent, valid, and verifiable disclosure and labeling of electricity sources for electricity consumers of all types, as supported by the New England governors.

- Internalizing full costs in the price of energy is an essential step toward making the operation of the marketplace more efficient. Additionally, this would send clear and accurate cost signals to consumers as they make energy use decisions.
- There is a need for a greater broad regional and national funding commitment to research, develop and implement new low/zero carbon technologies for the production of electricity, transportation, and the residential, industrial and commercial energy sectors.
- The electric and transportation industries, in conjunction with government support, need to develop constructive options for dealing with climate change, both new low/zero emitting carbon technologies and broad economic incentives (e.g., domestic and international "joint implementation" initiatives).<sup>2</sup> New ways are needed to influence the public's participation using economic incentives, such as free or low cost, clean transportation options.
- We need to assemble a foundation of information that provides a solid base for informed decision making on policies and greenhouse gas emission reduction strategies. EPA and other federal agencies should support this comprehensive climate change information clearing house.

## THE FOUR QUESTIONS ADDRESSED

### 1. What are the current concerns and stresses facing regional stakeholders in the energy and utilities sector?

The lack of indigenous fossil fuel sources has plagued New England utilities and other energy suppliers both in the past and in the present, except for some wood and a small portion of hydroelectric

<sup>2</sup> "Joint Implementation" (JI) is a market-based approach for addressing global climate change that uses international partnerships to achieve low-cost reductions in greenhouse gases. Under JI, a company in the United States invests in a project that reduces emissions in another country and uses those reductions as a less expensive means of meeting its own target. The U.S. has proposed that credit for JI projects be part of a new climate change agreement.

power generation, New England must import most of its energy. We have high energy costs and are vulnerable to supply fluctuations and price shocks. Additional stresses relate to the need to provide electricity service to low income households: will state restructuring plans include ways to address these needs? Furthermore, as aging nuclear plants are phased out, the region will need extensive new energy sources.

Pollution control requirements exert a high burden on the region's energy users because of transport of airborne pollutants from energy production elsewhere in the country, especially from the mid-west. Pollution from fossil fuels include ozone precursors (NO and hydrocarbons), fine particulates, acid rain precursors (SO and NO), mercury and other toxic metals. Our region has invested heavily in pollution controls on fossil electric generating plants, but in New England we are downwind of large sources of these contaminants. The uncertainty of future environmental laws and regulations and the current lack of regulations for CO<sub>2</sub> emissions adds to the concerns.

Restructuring the electric industry is considered a window of opportunity for increasing the adoption of renewable and sustainable energy for New England and for making New England a leader in the nation in promoting cleaner, less carbon intensive technologies. The viability in the region of biomass as an energy source needs further examination. Some believe restructuring may pose a risk to environmental quality and sustainability if it results in greater use and longer life for coal burning plants, within the region and those upwind. Cost-cutting concerns may lead to reduced commitment to energy efficiency programs and to less investment in demand side management (DSM) and renewable energy sources, if state regulators no longer require such programs. The extent to which restructuring helps or hinders progress towards an environmentally sustainable energy system will depend upon the provisions that are crafted into the statutes and rules of restructuring by the state legislators and regulators.

In the transportation sector, increasing demand, partially from increased tourism, exerts substantial stresses. These include:

- air and water pollution resulting from automobile travel;
- lack of viable and convenient alternatives to the use of cars (lack of mass transit);
- growing popularity of low gas mileage vehicles for use as passenger vehicles, such as sport utility vehicles, minivans, and light pick-up

trucks, which are not subject to the same fuel economy standards (CAFE) as other passenger vehicles;

- continuing suburban sprawl and the corresponding impacts on the environment and landuse.

## **2. How will climate variability and climate change modify the current concerns and stresses of the energy and utilities sector in the region?**

By any measure, energy is key to any discussion of climate change, for it is the major underlying contributor to carbon emissions, accounting for more than 90% of CO<sub>2</sub> emissions in New England. Climate change inevitably has impacts on the stressors in the energy/utility sector in virtually all dimensions. As a result, the group found that it was not useful to discuss this question in detail except to identify which of the current stresses from Question 1 will be exacerbated.

Non-transportation energy demand may increase if climate change leads to hotter summers; to an as yet indeterminable extent, this will be partially off-set by lower demand if warmer winters are experienced. We might expect an economic loss with the reduction of tourism (e.g., changes in the fall foliage and ski seasons due to climate change), unless it is replaced by new forms of tourism.

## **3. What information and data are needed by the energy and utilities sector to fully understand and address climate-related issues?**

Much of the data required from the energy production/energy use sectors of New England's economy already exists, albeit in a variety of different forms and locations, and of variable quality. In order for stakeholders and government officials in the region to make effective decisions regarding energy while considering climate change issues, there is clear need to assemble and critically analyze this data. Subsequently this information should be made available to stakeholders as well as the general public. This task is a high priority for funding in the near-term.

An IPCC-style, peer-reviewed document should be published to provide a summary and analysis of existing data on the utility, transportation, and commercial/industrial/residential sectors relating to energy sources, use, efficiencies, and policies in the region. Input of data for this document must be an open, but time-limited process, involving all relevant sources.

This data gathering/analysis should include at least the following information for the New En-

gland region. Many of these items should include a detailed description of the existing system.

- Cost/benefit data (graph) on cross-sector CO<sub>2</sub> reduction related to energy use;
- Cost/benefit data on impact of “bottom up” energy efficiency integrated design;
- Physical and technical potential for renewable energy production;
- Cost/benefit data on transportation alternatives (mass transit; alternative modes; more dense landuse);
- Potential CO<sub>2</sub> reduction benefits of more telecommuting;
- Implications of nuclear plant scenarios, i.e., earlier retirements, life extensions, new improved plant designs;
- Broad inventory of potential policy options and computer-modeled projections showing how CO<sub>2</sub> and greenhouse gas reduction targets could be met by implementing individual policies or selected sets of compatible policies;
- Economic impacts of adopting energy efficient technologies;
- Description of “external” costs of energy use and at least a qualitative (quantitative where possible) assessment of these costs.

An updated report on planning for future regional energy needs should be prepared, coordinating the efforts of the New England Energy Policy Council, New England Governors Conference, etc. In addition, effective communication methods and strategies must be developed and implemented for disseminating this information and providing an understanding of the issues and the available, effective technologies to all the New England states.

#### **4. What types of strategies and approaches are available for coping with, or mitigating, climate change stresses for this sector?**

The following areas are inter-related and can be seen as mutually reinforcing:

1. Energy efficiency and conservation actions;
2. Internalizing full costs in the price of energy;
3. Cleaner energy sources and increased reliance on renewable sources;
4. Transportation measures;
5. Public information and education about global warming science, greenhouse gas emissions and their impacts;
6. Other policies and actions.

### **Energy Efficiency and Conservation Actions**

At all levels and in all sectors, energy efficiency and conservation efforts must be increased. Wasting energy means needless release of greenhouse gases. A comprehensive set of programs and policies should be pursued vigorously in all sectors.

### **Internalizing Full Costs in the Price of Energy**

Some energy costs are now hidden from consumers and are not included in the price of fuel. These costs, such as environmental costs and others referred to as externalities, should be included in the price of fuel and electricity; currently consumers do not directly bear the full cost of environmental and other impacts resulting from energy use. Internalizing full costs in the price of energy gives a clear and accurate signal to consumers as they make choices about energy use.

### **Cleaner Energy Sources and Increased Reliance on Renewable Sources**

There is a clear need to more aggressively develop and expand renewable and clean energy sources in New England and across the country. Renewable sources will help reduce our dependence on carbon-intensive fossil fuels, particularly coal and oil, and on electricity from aging, inefficient generating sources. Pursuing cleaner sources and replacing aging fossil fuel facilities with generation from renewables will reduce greenhouse gas emissions in New England and elsewhere in the nation.

Aggressive development of renewable and other clean electricity sources has already been mandated under electric utility restructuring in four New England states. Renewable retail electricity portfolio standards have been enacted in Maine, Vermont and Massachusetts. Restructuring legislation in Massachusetts and Rhode Island has also provided for funding renewable investments from a portion of non-bypassable system benefit/access charges. These options applied in other states (and nationally) could contribute to significant reductions in greenhouse gas emissions (CO<sub>2</sub> and nitrous oxide) compared to carbon intensive generating fuels. Encouraging cleaner technologies through government energy policies will have the added advantage of bringing new jobs and greater energy security to the region and the nation. Government can show leadership here with its own purchases of green power, such as the U.S. General Services Administration’s recent RFP for aggregated power and energy efficiency services purchases.

## Transportation Measures

State-developed greenhouse gas emission inventories have identified transportation as a major source, accounting for well over 30% of greenhouse gas emissions in the New England region. The emissions from this sector are expected to grow disproportionately in coming years. Some specific transportation-related strategies include the following:

- Increasing and broadening CAFE standards (corporate average fleet efficiency) is critical if the nation is serious about reducing greenhouse gas emissions. Gasoline miles per gallon standards must be dramatically increased, and their application must be broadened to include classes of motor vehicles such as vans, sport utility vehicles, and pick-up trucks. This is a federal government responsibility that, if the political will exists to exercise it, could have a dramatic and rapid effect on greenhouse gas emissions nationally.
- Multi-modal transportation systems must be explored and developed where appropriate. This should be accompanied by better anti-sprawl landuse planning. Additional national funding should be directed to this.
- Alternative fuel vehicles must be developed and promoted. Hybrids, electric vehicles, fuel cells, hydrogen, better battery and other energy storage systems (e.g., flywheels) must be supported with federal research and development funding.

## Public Information and Education

Educate the public on energy sources and energy use and their connections to climate change and other environmental and public health concerns. Informed consumer choice in electricity, transportation, and other behaviors is a critical area to address. This public information and education program should include regional, state and local elements that can present the message succinctly to citizens and public leaders. More attention and funding are essential, and national leadership is key.

## Other Policies and Actions

- There are important and serious questions to resolve concerning the role of nuclear power in the region. Issues include aging physical plants, maintenance, decommissioning, waste management, new nuclear technologies, and siting. While nuclear power can represent a

zero-carbon alternative, in the eyes of the public—as well as policy makers, decision makers and the financial community—there are serious questions to resolve before considering any role for nuclear power.

- Wherever feasible and appropriate, there should be cross-state and regional coordination of policies. Likewise, regional standards would be helpful (e.g., in electricity labeling, disclosure, and generation performance standards).
- It is important that environmental and other externalities of energy production and use be identified, quantified to the extent feasible, and publicized. Mechanisms should be evaluated that can apply those costs to the users of energy, perhaps through a revenue-neutral carbon or energy tax.
- All federal government fossil fuels subsidies should be removed as an important step toward reducing CO<sub>2</sub> emissions. Eliminating subsidies will allow fossil fuel prices to reflect their true costs rather than artificially encouraging greater use. Lower carbon energy sources will become more economically attractive, relative to current options. Removal of federal government supports for fossil fuels will also promote development and use of more efficient, renewable, and sustainable technologies that will reduce greenhouse gas emissions.
- Greenhouse gas budget and capping programs should be considered as policy measures in the context of a world system to encourage reductions and CO<sub>2</sub> trading on regional, national and international basis.
- Electric industry restructuring in New England and elsewhere offers immediate and significant one-time opportunities for actions that can result in reducing greenhouse gas emissions.
- Electric generation performance standards should be explored as a state, regional and national opportunity to reduce greenhouse gases.
- Put in place transparent, valid, and verifiable disclosure and labeling of electricity sources for electricity consumers of all types as supported by the New England Governors.