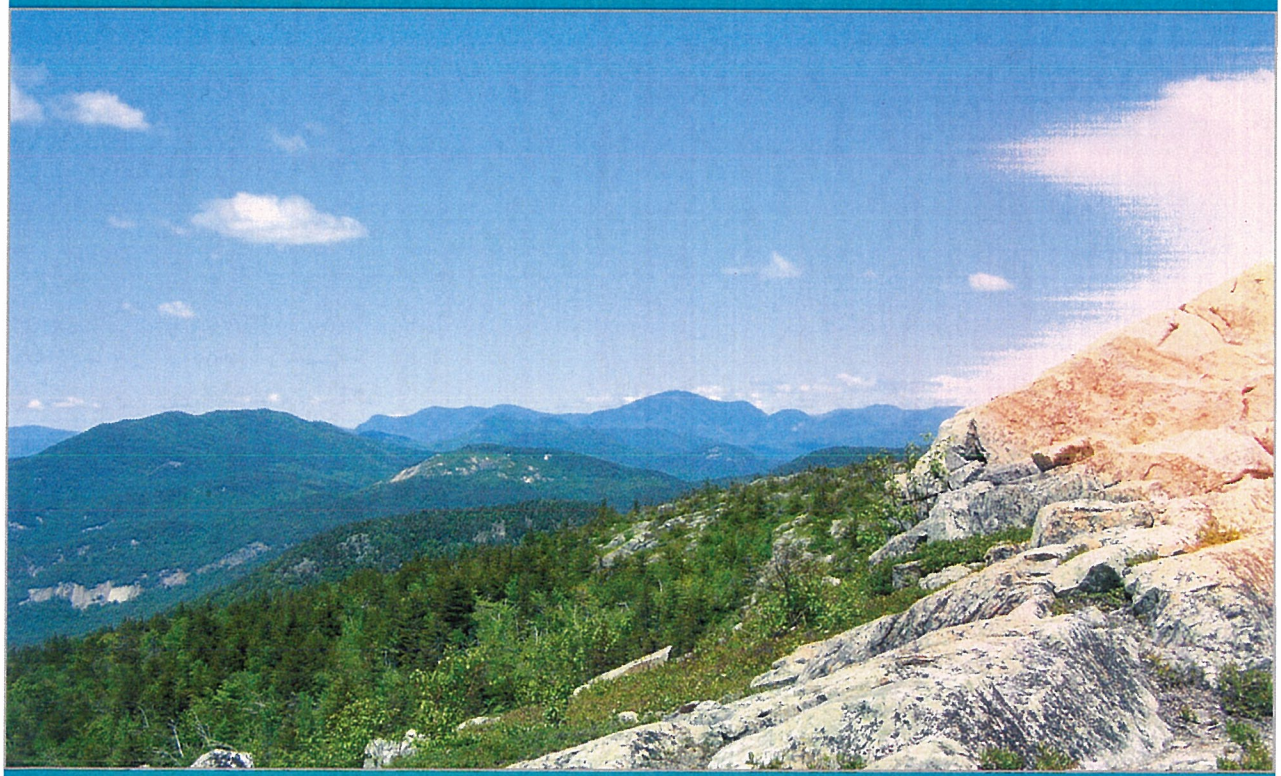
DE 12-262
#10
Rebecca Ohler

FILE

New Hampshire Climate Change Policy Task Force

The New Hampshire Climate Action Plan

A Plan for New Hampshire's Energy, Environmental and Economic Development Future



Prepared by NH Department of Environmental Services

March 2009

The New Hampshire Climate Action Plan

A Plan for New Hampshire's Energy, Environmental and Economic Development Future

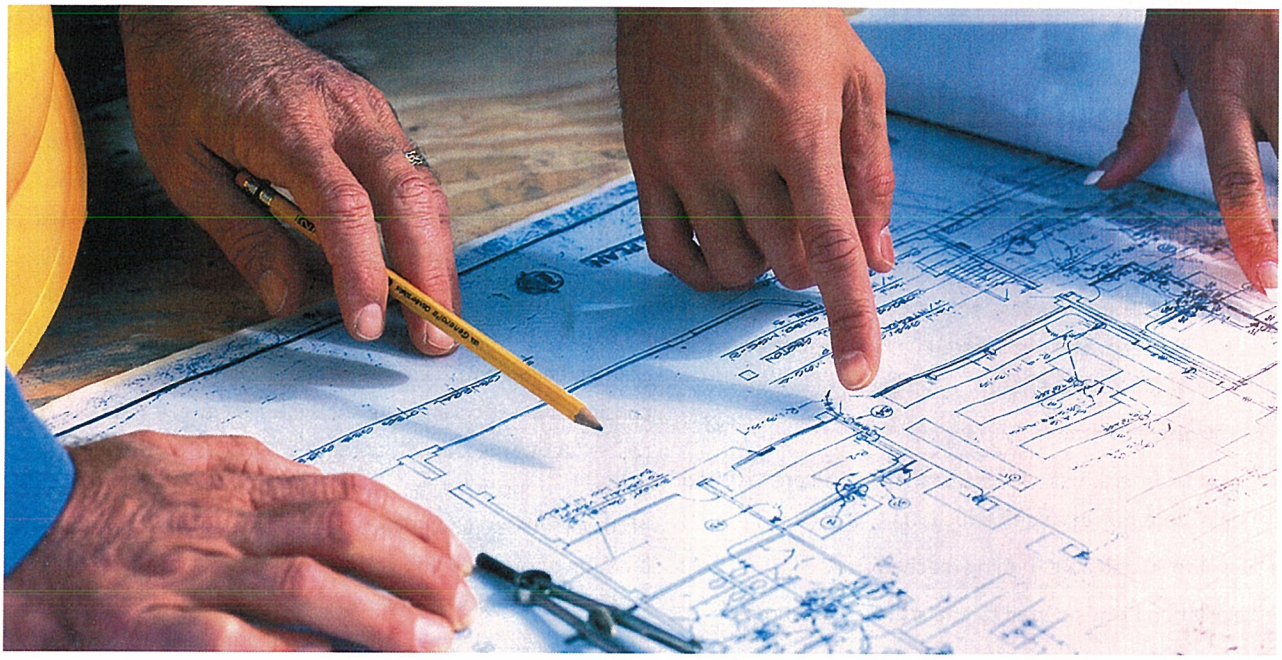
March 2009

The Honorable John Lynch
Governor

Prepared by the
New Hampshire Climate Change Policy Task Force

Thomas S. Burack, Chair
Commissioner
N.H. Department of Environmental Services

Chapter 5: Summary of Actions



Each action recommended by the Task Force to support the 10 overarching strategies is summarized below including an overview of short-term and mid-term implementation steps. It is clear from these summaries that a significant amount of resources will be required to develop these recommended actions and to coordinate the various parties involved in implementation. The first steps in this development process will be to determine those parties responsible for coordinating the implementation of the entire plan and its individual recommendations and to obtain the resources necessary to support this process. This broader implementation process is detailed in Chapter 6, and, as can be observed from the recommended actions below, will require the collaborative effort of government, business, non-profit and educational entities.

OVERARCHING STRATEGY 1: MAXIMIZE ENERGY EFFICIENCY IN BUILDINGS

Actions recommended by the Task Force:

◆ ***Maximize Efficiency in New Construction (RCI Action 1.1)***

Develop a program to maximize energy efficiency and minimize net CO_2 output in new residential, commercial, institutional, and industrial building construction with a phased-in goal for new buildings to use produce as much energy as they consume. New construction should incorporate state-of-the art energy efficiency and renewable energy systems into the design of the building envelope, operating systems (e.g., heating, ventilating, and air conditioning (HVAC)), and energy consuming appliances and devices. This action could be developed in conjunction with the national level Architecture 2030 initiative, which targets similar energy use goals for new buildings.

Overall Implementation:

- Develop probable legislation for building codes, zoning regulations, and possible tax code incentives.
- Develop program details, create financial incentives, and begin state outreach and education.
- Develop sustainable funding mechanisms.

Timeframe:

- Implementation can begin immediately.
- Scaling up will continue into the future.

◈ Maximize Energy Efficiency in Existing Residential Buildings (RCI Action 1.2)

Develop a program to retrofit existing New Hampshire housing stock to minimize or eliminate net CO_2 output, and further, to ensure that current and future investments minimize embedded CO_2 output with a phased-in goal to retrofit 30,000 homes annually in order to reduce their net energy consumption by 60 percent. Program elements should include: 1) building shell and window upgrades, including instrumented air sealing and thermographic inspections; 2) space conditioning equipment upgrades/replacements, including ductwork and duct sealing; 3) domestic hot water system upgrades; 4) Energy Star lighting upgrades/replacements; 5) water saving measures; 6) Energy Star appliances upgrades/replacements; and 7) use of renewable energy systems.

Overall Implementation:

- Develop program details, create financial incentives, and begin state outreach and education.
- Develop sustainable funding mechanisms.
- Legislation likely needed to enact these measures.

Timeframe:

- Implementation can begin immediately.
- Scaling up will continue into the future.

◈ Maximize Energy Efficiency in Existing Commercial, Industrial, and Municipal Buildings (RCI Action 1.3)

Develop a program to retrofit existing commercial, industrial, and municipal buildings in New Hampshire to minimize or eliminate net-CO_2 emissions, and further, to ensure that current and future retrofit projects maximize the use of the "embodied energy" in buildings with a phased-in goal to reduce existing buildings net energy consumption by 50 percent by 2030. Program elements should cover the following: 1) lighting; 2) heating, ventilating and air conditioning (HVAC) systems; 3) processes (e.g., air compressor equipment and variable frequency drives); 4) control equipment and technologies; 5) refrigeration equipment; 6) building shell and windows; 7) hot water systems; 8) water usage; and 9) renewable energy systems.

Overall Implementation:

- Develop program details, create financial incentives, and begin state outreach and education.
- Develop sustainable funding mechanisms.
- Legislation likely needed to enact these measures.

Timeframe:

- Implementation can begin immediately.
- Scaling up will continue into the future.

◈ Install Higher-Efficiency Equipment, Processes, and Systems (RCI Action 2.1)

Create incentives to increase the installation of higher-efficiency equipment and the adoption of higher-efficiency processes. Commercial, industrial, and municipal processes can reduce net-CO_2 output by properly designing process lines and using high-efficiency lighting and equipment. Currently, the CORE Programs offered by the electric utilities provide these services for electricity-saving measures, and the gas utilities have comparable services for reducing natural gas consumption. Programming should be expanded to cover all cost-effective measures that reduce CO_2 emissions regardless of fuel type, including the use of renewable generation and use of combined heat and power, also called cogeneration. A combination of targeted and comprehensive energy audits could be used to identify efficiency improvements and opportunities to reduce CO_2 emissions from manufacturing processes. Incentives could be offered to retrofit inefficient processes and equipment and to help offset the additional costs of premium efficiency equipment in new construction.

Overall Implementation:

- Develop program details, create financial incentives, and begin state outreach and education.
- Develop sustainable funding mechanisms.
- Legislation likely needed to enact these measures.

Timeframe:

- Implementation can begin immediately.
- Scaling up will continue into the future.

◈ Increase the Use of Combined Heat and Power (EGU Action 1.3)

Develop mechanisms to promote the use of combined heat and power (also known as CHP and cogeneration) systems for use as an on-site power plant or boiler to generate both electricity and useful heat simultaneously. This technology may be applicable where a thermal load (e.g., for space heating or

industrial process heat) already exists or is planned. Combined heat and power would be appropriate for new boilers and for retrofits of existing boilers using cleaner-burning fuels that are not already co-generating electricity. For consistency with the goal of reducing overall emissions, any program designed around combined heat and power would need to define the allowable emission limits and might also specify allowable fuels for program eligibility. Mechanisms could include regulatory changes, incentives and portfolio standards.

Overall Implementation:

- Consider incentives to promote voluntary development of combined heat and power installations.
- Consider implementing a renewable portfolio for combined heat and power (separate from the existing RPS – see EGU Action 2.1) requiring utilities to obtain a fraction of their energy supply from this technology, with flexibility to meet requirements through a market-based trading program.
- Determine eligibility requirements and necessary emission limits to ensure that the desired emission reductions would be achieved.
- Provide funding to establish and administer the program.
- Develop outreach, education and training programs required to support the integration of combined heat and power into siting and planning, building designs and operation.

Timeframe:

- Enactment could be as early as 2009 with implementation in 2010.

◈ Consider Alternative Rate Design (EGU Action 1.1)

To the extent that it reduces or does not raise electricity costs and manages the risk to the utilities, consider identifying and implementing appropriate alternative rate designs (e.g., decoupling) for utilities in order to remove obstacles to increasing energy efficiency. Existing rate structures may conflict with the State's energy efficiency and alternative energy goals, in that traditional rate design is based upon "throughput" incentives for utilities to sell more energy (e.g., kWh, therms) in order to increase their annual profits. Advocates of alternative rate structures believe that these mechanisms are a necessary ingredient to obtain strong utility support for energy efficiency and would complement other demand side management programs. Consumer advocates have raised issues regarding rate impacts and the potential for customers unfairly bearing all risks related to providing electricity. New Hampshire should explore these issues and develop a fair approach to new rate mechanisms that protect consumers and provide appropriate incentives to utilities to promote energy efficiency.

Overall Implementation:

- Evaluate and establish an alternate rate design as part of the existing PUC open docket investigating decoupling and other rate mechanisms (DE 07-064).
- Alternative rate designs either as general policies, or on a utility-specific basis.

Timeframe:

- Consideration of possible mechanisms could be developed in the current PUC docket.
- Full implementation of a changed rate structure would likely take several years due to the complexity.

◈ Upgrade Building Energy Codes (RCI Action 1.4a)

Update New Hampshire's building energy code to require improved energy efficiency in new construction and building renovations. Building energy codes represent one of the more cost-effective ways to reduce energy use and related carbon emissions. The state should participate in the International Energy Conservation Code (IECC) update process, either on its own, or by providing input through other regional partners that do participate such as Northeast Energy Efficiency Partnerships (NEEP). There is considerable evidence that if New Hampshire is to achieve deeper greenhouse gas emission reductions, the state's building energy code should be more stringent than the current IECC. In addition to updating its mandatory building energy code, the state could define a preferred "stretch code" that sets even higher, but voluntary, "green" building energy performance standards to advance the state's policy objectives.

Overall Implementation:

- Adopt latest revision to IECC.
- Begin consideration of higher performance standards in the near term for either mandatory or "stretch" codes to support RCI Actions 1.1 – 1.3.
- Legislation likely needed to enact these measures.

Timeframe:

- The latest revision to the IECC may be available for adoption in January 2009.
- The code development community appears to have adopted a three-year cycle as reasonable for code updates.

◈ Increase Building Energy Code Compliance (RCI Action 1.4b)

Consider mechanisms that would result in stricter enforcement of energy codes. Building energy codes – either mandatory or voluntary – are among the more cost-effective ways to reduce energy use and related carbon emissions. Mandatory energy codes can be used to set minimum requirements for energy use in both new construction and major building renovations. However, any effort to capture savings from mandatory energy codes is only as good as compliance with the codes. Consideration should be given to creating a system to promote stricter enforcement of the state's building energy code to ensure compliance in all affected structures, including those in rural communities where resources are often lacking. Such programming could include required third party certification, the fee for which could be included as a cost of construction. The state should consider a formal certification process for inspectors beyond the current voluntary process offered through the International Code Council (ICC).

Overall Implementation:

- Evaluate current barriers to effective enforcement of building energy code; begin state outreach to municipalities to improve code compliance rates.
- Legislation likely needed to require mandatory training and certification of all municipal building inspectors on the state building energy code.
- Consider revenue sources to support the inspector certification program and local enforcement of the state's energy code.

Timeframe:

- Initiatives to enhance energy code compliance can begin immediately.

◈ Establish an Energy Properties Section in Real Estate Property Listings (RCI Action 1.5)

Establish an energy section in the Multiple Listing Service (MLS) real estate listings. This measure would create a specific, defined set of energy-related criteria/ratings for properties presented in the MLS listings. The concept behind an MLS energy section is to reinforce the fact that energy is a major factor in home buying and to provide the consumer with a means for comparing energy usage between homes. Presumably, properties that are energy-efficient would be favored, and market pricing would reflect this advantage.

Overall Implementation:

- Adopt building energy rating standards.
- Design and implement an energy section for MLS listings of New Hampshire properties.
- Perform outreach to build awareness of this new feature available to buyers and sellers.

Timeframe:

- Design and implementation of an energy section for MLS listings can begin immediately.

◈ Conserve Embodied Energy in Existing Building Stock (RCI Action 1.8)

Develop state-wide policies and programs that recognize, quantify, and encourage the conservation of the energy embodied in the New Hampshire's older building stock. "Embodied energy is the total expenditure of energy involved in the creation of the building and its constituent materials,"[1] and the energy invested in it throughout its use. Embodied energy is a key component of life-cycle analysis, which examines the environmental impact of building materials and systems from raw materials, through use within a building, to demolition and disposal. A typical house in New Hampshire contains about 1.5 billion Btu of embodied energy, enough to power the family vehicle for about 25 years. When older buildings are preserved or reused their embodied energy is conserved, new material needs are minimized, and massive carbon emissions from new construction are avoided (in addition to the unspecified historical value that is retained). The concept of embodied energy is not widely recognized, even among professionals in the building and construction industries. If the potential energy savings and reductions in carbon emissions are to be realized, the proposed action will require education, research, and incentive programs.

Overall Implementation:

- Establish a technical committee to conduct research and quantify potential energy savings and emission reductions associated with the conservation of embodied energy in New Hampshire's building stock.

- Develop outreach and education to promote the concept of embodied energy conservation and to dispel myths about the use and reuse of materials.
- Prepare a list of best practices and implement demonstration projects.
- Consider creation of incentives at the state and local levels to preserve/reuse existing building stock.
- Provide funding to establish and administer the program.

Timeframe:

- A study commission could be created in the current legislative session.
- Research and education programs could be initiated at the same time.

OVERARCHING STRATEGY 2: INCREASE RENEWABLE AND LOW-CO_2-EMITTING RESOURCES IN A LONG-TERM SUSTAINABLE MANNER

Actions recommended by the Task Force:

◆ ***Promote Renewable Energy through the Electric Portfolio Standard (RPS) (EGU Action 2.1)***

Implement New Hampshire's Renewable Portfolio Standard, enacted in 2007, which mandates that 23.8 percent of retail electricity sales to in-state customers be provided by renewable energy sources by 2025. The potential renewable generation capacity in New Hampshire alone is 4,447 megawatts (MW) with a generation potential of 12,819,000 megawatt-hours (MWh) by that date. The Renewable Portfolio Standard would capture nearly 3.5 million MWh of this potential with the following mix of renewable sources of in-state retail electricity sales: existing small hydro, 1 percent; existing biomass and landfill methane, 6.5 percent; new solar, 0.3 percent; and new other (wind, geothermal, tidal, etc.), 16 percent.

Overall Implementation:

- Program development complete and ongoing.

Timeframe:

- Program has commenced and will run through 2025.

◆ ***Increase Renewable Energy and Low-CO_2-Emitting Thermal Energy Systems (RCI Action 3.1)***

Create an incentive program to promote the expanded use of renewable and low-CO_2-emitting thermal energy systems to reduce fossil fuel use and greenhouse gas emissions. In New Hampshire, the energy used for space heating, hot water, and process conditioning makes up about one-third of total energy consumption. This proposal would provide incentives and attractive financing for the use of cost-effective, renewable energy resources and high-efficiency/low-CO_2-emitting thermal systems. The incentive levels and financing would be directly tied to the magnitude of the efficiency improvements and energy savings. Other considerations would include the potential of particular new systems for market transformation and peak demand reduction.

Overall Implementation:

- Identify new thermal energy systems worthy of special consideration in this program.
- Evaluate potential current and new funding sources to support incentives and project financing.
- Develop incentive program details and create sustainable funding mechanisms.
- Legislation likely needed to establish stable funding streams.

Timeframe:

- Program could start ramping up in 2009.
- Incentives and financing could continue until maximum penetration of thermal renewable systems is achieved.

◆ ***Address Barriers to Low- and Non-CO_2-Emitting Electric Generation (EGU Action 2.4)***

Identify and remove obstacles to siting and constructing low- and non-CO_2-emitting energy facilities and transmission infrastructure in the state. These actions would better facilitate the development of new low- and non-CO_2-emitting facilities in the state, to enable the state to move away from carbon-based supply-side resources (i.e., fossil-fuel-fired power plants) while offsetting the impact of any potential load growth. The development of the new low-and non-CO_2-emitting facilities could enable older high-CO_2-emitting facilities to be gradually retired and facilitate the achievement of New Hampshire's Renewable Portfolio Standard targets and the goal to meet 25 percent of the state's energy from renewable power by 2025. However, to do so it is imperative that electrical transmission capability within the state also be enhanced to enable power to be exported from those areas where hydro, solar photovoltaic, wind, geothermal, tidal and biomass technologies could best be deployed in order to serve