

Introduction

As New Hampshire's demand for energy continues to grow on a parallel, if not accelerated, track to New Hampshire's population growth, our state's dependence on fossil fuels will continue to pose challenges to the state's environment, economic health, and security.

Coal, oil and gas have long been the primary sources of energy in New Hampshire. Yet New Hampshire's traditional approach to energy policy may need to be revisited in order to protect the state's environment, public health, and consumers in coming decades. The burning of coal is increasingly recognized as an unacceptable threat to air quality and human health, and the burning fossil fuels is becoming more closely linked with global climate change. Supplies of oil and natural gas are shrinking quickly, according to new assessments of global reserves. Plus, these reserves are in increasingly unstable or war-torn parts of the globe.

Another widely used source of power in New Hampshire, nuclear fission, is dangerous to public health and its abundant radioactive waste is impossible to reliably and safely store or contain, and remains hazardous for thousands of years. Nuclear power also magnifies the threat of terrorism at home and nuclear arms proliferation around the world.

New Hampshire consumers, too, feel the effects of energy policy decisions. Last winter's increased fuel costs threaten low- and middle-income citizens' ability to heat their homes. Meanwhile, global-warming induced high summer temperatures have increased summer cooling demands, putting an increased strain on the electricity grid. New Hampshire citizens are also paying the price for steadily rising gas prices, which are expected to continue increasing despite periodic price drops. Compounding the gas prices problem is the increasing number of miles that New Hampshire citizens are traveling in part due to the explosion of "exurban" residential development and the growing number of "stretch communities" outside of urban centers.

In the meantime, New Hampshire has a promising set of opportunities to stave off and satisfy our demand for energy. Renewable energy technologies have advanced to the point where they are now ready for wide-scale development. State policies could help to support existing indigenous renewable generation, encourage investments in new renewable power generation, stimulate increased grid reliability, and deliver economic benefits for New Hampshire, while simultaneously increasing our energy security and reducing our dependence on oil.

Further, utilizing energy efficiency as a valuable, domestic energy resource will help New Hampshire meet its environmental goals, help reduce peak electricity demand and save money for business and residential consumers.

The state has taken some encouraging first steps in pushing New Hampshire to meet this energy potential, beginning in 2001 with Governor Shaheen's call for a 10-year energy plan. Since completion of the plan, the state legislature, state agencies, and energy

industries have partnered to take some promising steps, such as programs to increase energy efficiency in homes and businesses and to offer cost rebates on efficient appliances. State agencies, some of New Hampshire's largest energy consumers, have taken a lead in conserving energy, from replacing over 1000 inefficient incandescent light bulbs in the State House with ones that use 75 percent less energy, to including more fuel efficient vehicles in state fleets. More recently, Governor Lynch has called for the state to invest in its energy future, calling for the state to get 25 percent of its energy from clean, renewable energy sources by 2025.¹

Over the next decade, New Hampshire has the opportunity to move towards a smarter, cleaner energy policy. The consideration of redirecting New Hampshire's energy policy triggers debate on related issues of prime concern to state decision-makers. Among those are air and water pollution, climate change, public health, transportation infrastructure, sprawling development, the health of our forests, the cost of electricity, economic development, and the biannual debate over state spending and the state budget.

New Hampshire has the technological know-how and resources to create a new energy future that will retain our security, economic vigor and environmental health. We must begin by tapping our state's supplies of homegrown, environmentally friendly energy sources and our ingenuity and advanced technology to use energy more efficiently in our homes and businesses. Achieving this future will require New Hampshire to set clear goals to guide our energy policies and mobilize scientific, economic and political resources we need to meet them.

This paper presents a sketch of what such a new energy future might look like for New Hampshire and suggests plausible pathways by which our state could:

- Reduce our use of energy in our homes, businesses and industry;
- Decrease our over-dependence on oil; and
- Harness clean, renewable, homegrown energy sources.

Using Energy More Efficiently in Our Homes and Businesses

The first step in achieving a new energy future for New Hampshire is to use energy more wisely. Opportunities to use energy more efficiently can be found virtually everywhere – from our homes to our office buildings to our industrial facilities. Policies targeting energy efficiency and conservation are some of the easiest and cheapest ways to decrease our use of fossil fuels and nuclear power, relieve congestion and pressure on the electricity grid, and curb air and water pollution.

State decision-makers have already begun acting on the potential of energy efficiency with the state’s “core” efficiency programs. The programs are offered to residential and commercial users across the state, including: rebates for energy efficient appliances, incentive offers for building energy efficient homes, and assistance retrofitting small businesses.

In addition, the state has taken a leadership role in promoting energy efficiency and conservation. One of the most successful examples is the Building Energy Conservation Initiative (BECI), a program that upgrades State buildings to improve energy and resource conservation and pays for the retrofits through savings on energy and water bills. BECI has already upgraded over 74 state buildings and is projected to save taxpayers \$1.2 million annually.²

The economic and environmental benefits of energy efficiency can and should be extended beyond these few programs, as highlighted by the policy recommendations below.

Policy Recommendations

- Renew the core energy efficiency programs with a cap on utilities’ administrative costs.
- Establish aggressive but achievable standards for appliances, residential furnaces, lighting and other products that consume significant amounts of energy. Though minimal efficiency standards would add slightly to the price of those appliances, consumers would recover that cost through energy savings almost immediately. Ultimately, those standards would put a significant dent in the state’s demand for power, save ratepayers some \$340 million by 2030 and keep nearly 54,000 metric tons of carbon pollution out of New Hampshire’s by 2020.³
- Adopt the updated International Energy Efficiency Code as the state’s building code to improve energy efficiency in new construction. New Hampshire’s existing code, adopted in 2002, is guided by the 2000 International Energy Conservation Code (IECC). The IECC has since updated its building code, and New Hampshire should follow suit by upgrading its state code.

- Leverage state aid to school construction as a way to encourage energy efficient design. On average, the state spends about \$165 million each year on school construction. Investing in energy efficiency today will lock in financial savings for our schools and our communities for years to come. As a condition of support, school projects should meet energy star standards, which go beyond the minimal state energy code⁴
- Require energy efficient design in new state construction projects. The failure to invest in an efficient design during construction often leads to higher long-term expenses; the state should incorporate lifetime energy costs into its budgeting, instead of just the initial cost of design and construction
- Expand the successful BECI (Building Energy and Conservation Initiative) program to include municipal and county buildings⁵
- Switch all of New Hampshire's traffic lights from incandescent bulbs to light emitting diode (LED) technology, using 85% less energy, reducing over 1000 pounds of carbon pollution per year and saving roughly \$58 dollars per light, each year⁶
- Support efforts by the Governor's Office of Energy and Planning and the Public Utilities Commission aimed at training local building inspectors to value and enforce the energy component of building codes. A 2001 study conducted by the Northeast Energy Efficiency Partnerships found that only 59 percent of New Hampshire's cities and towns have local officials responsible for compliance with the energy code. Clearly, without adequate enforcement, even the most efficient building code is ineffective.⁷

Reduce our state's over-dependence on oil

Our dependence on oil for transportation is one of New Hampshire's, and the nation's, biggest challenges to a secure energy future. And, because of the widespread use of heating oil, New Hampshire is even more reliant on oil than most of the rest of the nation.

New Hampshire can go a long way toward reducing its dependence on oil by reducing energy use in our homes and businesses with strong policies to promote energy conservation. But, , we must also tackle the fastest growing area of energy consumption, the use of oil for our transportation needs.

In New Hampshire, transportation consumes more energy than any other sector of energy use, and its appetite for energy is growing larger still. Residential transportation already accounts for the majority of all the energy used for transportation, and that share is expected to grow an additional 50 percent by 2020.⁸

While dependence on oil and rising gas prices dominate the transportation sector's list of concerns, New Hampshire's transportation picture is also tightly linked to the sprawling development that is changing the face of the state. The number of miles traveled on New Hampshire's roads nearly tripled from 1970 to 1999 – from 12 million miles to 32.5 million – in part because residential and commercial development has extended further and further into open space, putting more drivers on the road and more often. A sound energy policy must recognize that sprawling development – and the failure to build communities centered around rail and other forms of public transit – fuels the state's growing demand for energy used in transportation.⁹

Despite limited statewide policies focused on decreasing oil dependence, the New Hampshire state government has taken a successful lead. The Department of Environmental Services has secured and organized New Hampshire's participation in Clean Cities, a federal program to promote the use of alternative fuel vehicles and to build up an alternative fuel infrastructure around the state. The New Hampshire program has been held up as a model for other states, and is part of the department's effort to improve air quality and boost energy independence.

In addition, the state's vehicle fleet includes an increasing number of vehicles that rely on electric engines, burn compressed natural gas instead of gasoline, or are capable of running on a blend of ethanol and gasoline.

While those programs have required an impressive commitment of time and resources from state officials, more work is necessary in order to minimize New Hampshire's oil consumption – from all sectors. New Hampshire should set a goal for reducing our oil consumption and make reducing our dependence on oil a guiding principle in energy and transportation policy.

Policy Recommendations

- Adopt the state Clean Cars Standard already in place in every Northeast state from Pennsylvania to Maine. Adopting the Clean Cars Standard would clean up cars and put more fuel-saving hybrid cars on the road.
- Direct state investments in transportation and other infrastructure toward designated growth areas or existing population centers, not to rural areas where increased access will promote more sprawl.
- Reduce registration fees for hybrid vehicles and others that achieve 35 miles to the gallon and meet the strict LEV pollution standard. Increase registration fees for vehicles with poor miles per gallon performance.
- Make public transportation a long-term priority and leverage state spending on new construction to encourage communities build around rail or other forms of public transportation. This policy hinges on both inter-city transit as well as long-distance transportation alternatives.
- Promote small scale transit alternatives, including improving the geographic reach, quality and frequency of existing transit services, working to achieve low fares that maximize use of existing transit, expanding bikeway networks, implementing “traffic calming” techniques in town centers, and requiring sidewalks in new developments.
- Conduct feasibility studies by the Department of Transportation of larger-scale transportation options: regional rail improvements similar to or connecting to the existing Amtrak Downeaster train on the New Hampshire Seacoast and restoring commuter rail service from Manchester to Lawrence, MA.

Harness Clean, renewable, homegrown energy sources

New Hampshire has vast potential for renewable energy – from wind, water and energy provided by the sun. Taking advantage of our clean, renewable energy sources will require installing current technology – turbines to harness the wind and photovoltaic panels to capture the sun’s energy – while also developing new technology to safely create cellulosic biofuels from forest wastes and capture tidal power. If New Hampshire is going to break its dependence on fossil fuels, we will need to implement the technologies we already have to harness renewable energy, while remaining ready to embrace new and better technologies as they come along in the decades ahead.

The state has just begun to scratch the surface of its clean energy potential.

Plans to develop New Hampshire’s largest wind farm are currently undergoing public discussion. The wind farm would be a 25 MW project of 12 to 15 wind turbines placed on Lempster Mountain and would generate enough electricity for 12,000 homes.

Public Service Company of New Hampshire is nearing completion of its 50 MW wood-burning boiler at its Schiller Plant in Portsmouth that replaces the coal boiler with one to burn whole-tree wood chips and other low-grade wood materials to generate electricity. This project is further evidence that New Hampshire’s forest products industry could make a valuable contribution to clean energy in New Hampshire.

It is important to note that the Public Service project was initiated in response to clean energy standards, also known as renewable portfolio standards (RPSs), established in Massachusetts and Connecticut; power produced by burning wood at Schiller is intended to satisfy the clean energy requirements in neighboring states. Were a similar clean energy standard to be set for New Hampshire, it is likely that other comparable projects would surface in New Hampshire.

The 2002 New Hampshire Energy Plan, researched and compiled at the direction of the Legislature, concluded that an RPS should be considered to meet New Hampshire’s renewable energy goals “to help support existing indigenous renewable generation such as wood and hydro; to encourage investments in new renewable power generation in the state; and allow us to benefit from the diversity, reliability and economic benefits of clean power. Creating mechanisms to support renewable power also increases our energy security and reduces our dependence on foreign oil.”¹⁰

As of mid-2006, 22 states and the District of Columbia had implemented an RPS, with well over half of the American public now living in a state in which an RPS is in operation.¹¹

Policy Recommendations

- Establish a Clean Energy Standard (RPS) to require that all electricity providers in New Hampshire derive a portion of that electricity from clean, renewable sources. The standard should favor new renewable energy, increasing the portion of new, clean renewable required by one percent every year through at least 2020.
- Promote small installations of local power by raising the cap on net metering. Individuals who generate their own electricity through small wind turbines, solar panels or by harnessing other sources of energy are allowed under the state's "net metering" law to sell extra power back into the electricity grid. Right now there is a low limit of 25 kW on the amount of power an individual can sell back; that cap should be raised to at least 100 kW in the near-term and to 1MW in the long term.
- Establish rules for siting new clean energy facilities. The state has an established process, through its Siting Evaluation Committee, for issuing permits to many large energy projects. But the process is far murkier for "smaller projects, renewables, co-generation, and distributed generation." Giving renewable energy developers a clear understanding of the process for siting clean energy facilities in New Hampshire would remove one of the obstacles to developing our vast potential for renewable power. New Hampshire stakeholders should also determine definitively where renewable facilities are appropriate and where they are not.¹²
- Dramatically expand the installation of solar photovoltaic systems on homes and businesses through direct incentives, tax credits and new methods of financing.
- Establish a Utility Renewable Energy Development Program by which a portion of the state's system benefits charge would go towards renewable energy programs. This is similar to the systems benefit charge-funded energy efficiency programs that New Hampshire already takes advantage of.

Endnotes

- ¹ Downloaded from: <http://www.nh.gov/governor/news/082906energy.htm>
- ² Downloaded from: http://www.des.state.nh.us/joins_energy_star.htm
- ³ S. Nadel, A. deLaski, M. Eldridge, and J. Kleisch, Northeast Energy Efficiency Partnerships, “Leading the Way: Continued Opportunities for New State Appliance and Equipment Efficiency Standards,” March 2006. Available at: http://www.standardsasap.org/a062_nh.pdf.
- ⁴ NH Partnership for High Performance Schools, An Initiative of The Jordan Institute. Available at: <http://www.nhphps.org/>
- ⁵ New Hampshire Energy Plan, 10-2. Governor’s Office of Energy and Community Service. November 2002. Pursuant to NH Chapter 121 (2001).
- ⁶ NH Energy Plan, 10-14.
- ⁷ Northeast Energy Efficiency Partnerships, “2001 Survey of Knowledge, Practices and Needs of Energy Code Officials in New Hampshire and Rhode Island,” May 1, 2002. Available at: http://www.neep.org/files/2001_RI_NH_Officials_Survey_Report.pdf
- ⁸ NH Energy Plan, 8.2.4.
- ⁹ New Hampshire Department of Environmental Services, Air Resources Division, “Mobile Sources: General Information,” downloaded from www.des.state.nh.us/ard/mobilesources, 10 October, 2006.
- ¹⁰ NH Energy Plan, 8-30
- ¹¹ Union of Concerned Scientists. Available at: http://www.ucsusa.org/clean_energy/clean_energy_policies/state-clean-energy-maps-and-graphs.html.
- ¹² NH Energy Plan, 4-10.