



Independent Study of Energy Policy Issues



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Key Findings and Recommendations

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All photos from New Hampshire, courtesy of Jeffrey H. Taylor & Associates, Inc.



1. Introduction

Energy is the lifeblood of the economy, and all citizens in New Hampshire depend on energy to carry out their work and conduct their lives. As a northern New England state with cold winters, warm summers, and a rural and semi-rural landscape in most locations, the state's residents and visitors need space heat in the winter, cooling in the summer, and electricity and transportation fuels year round. As such, 10 to 50% of the income of many New Hampshire households goes to paying energy bills, and energy is a significant expense for businesses, industries, and government as well.¹

The importance of a reliable and affordable supply of energy to the economic well-being of New Hampshire and its citizens cannot be underestimated. In times of economic downturn, this becomes even more important as low income households and those living on fixed incomes find themselves making difficult choices between food, housing, heating, transportation, and medical care.

Presented below are the key findings and recommendations from the **New Hampshire Independent Study of Energy Policy Issues** conducted for the New Hampshire Public Utilities Commission (NH PUC) at the direction of the New Hampshire Legislature. The recommendations focus on the seven most important next steps (or actions) that would have a significant and lasting difference on energy efficiency and sustainable energy market development in New Hampshire including:

- **Refocusing and clarifying the state's energy policy direction;**
- **Developing clearer regulatory guidance in support of the energy policy direction;**
- **Improving the regulatory process and modifying performance incentives;**
- **Increasing program coordination and further streamlining administration;**
- **Using public policy, funding, and scaled program structures to attract and leverage private investment;**
- **Creating a home for energy efficiency and sustainable energy implementation support and oversight in State Government; and**
- **Encouraging State and Local Governments to lead by example.**

These recommendations and the assessment leading up to them are summarized below and discussed in more detail in the full report resulting from the study. Once approved by the New Hampshire Public Utilities Commission, the full report will be posted on the website of the New Hampshire Energy Efficiency and Sustainable Energy (EESE) Board: <http://www.puc.nh.gov/eese.htm>. The views expressed in this document are those of the study authors, consistent with the commissioning of this work as an independent study.

¹ Home Energy Affordability Gap analysis by Fisher, Sheehan & Colton, State Fact Sheets, 2010 information released April 2011 http://www.homeenergyaffordabilitygap.com/05_Current_State_Data2.html

New Hampshire Legislation Leading to This Study

An ongoing interest in energy efficiency and sustainable energy and the link to economic development and other important issues led the New Hampshire Legislature to pass a bill in 2010 (referred to as “SB 323”) which directed the New Hampshire Public Utilities Commission (PUC) to:

“...Contract for an independent study, through means of a non-adjudicative investigation utilizing a broad collaborative process, regarding legislative, regulatory, and market-based policy options, to address the following issues:

- **Comprehensive review and analysis of energy efficiency, conservation, demand response, and sustainable energy programs and incentives...and recommendations for possible improvements to maximize their effectiveness and increase coordination;**
- **The appropriate role of regulated energy utilities, providers of energy and energy efficiency, and others ... to achieve the state’s energy efficiency potential for all fuels...;**
- **The effectiveness and sustainability of all funds available to stimulate investments in EE and clean energy to advance the state’s energy goals...;**
- **Policy changes that may be necessary...to achieve the state’s EE and SE goals and to create the most cost-effective delivery systems to ensure optimum use of state funds, initiatives, and programs...”²**

This report is the result of the nine-month study conducted in response to this legislation. Results of the study provide an independent, third party assessment of key energy policy issues, programs, and funding mechanisms in New Hampshire, and recommendations for enhancements moving forward.

Stakeholder Outreach and Engagement in the Study

The study included outreach to a variety of stakeholders in New Hampshire including:

- **Policy makers, legislators, and regulators;**
- **Electric and gas utility program managers and administrators, state personnel, and non-profit organization leaders and staff** involved in the design and delivery of energy efficiency, weatherization, and sustainable energy programs;
- **Contractors, installers, vendors, fuel dealers, and other trade allies** involved in the provision of energy efficiency, weatherization, and sustainable energy products and services;
- **Bankers and Energy Service Company (ESCO) representatives** involved in energy loan, finance, and performance contracting programs; and
- **Ratepayers and the general citizenry** (through use of an electronic survey).

Overall, personal interviews were completed with more than 50 stakeholders throughout the state (most of which were conducted in person); program offerings from more than 25 State, regional, and local agencies and organizations were reviewed and assessed; and more than 750 citizens responded to an online survey about energy issues. Insights and perspectives from this outreach informed the research and analysis done for the study, and the policy options and program design and implementation enhancements recommended by the study team.

² Chapter 335 of the NH laws of 2010 (Senate Bill 323).

2. The Economic Impacts of Energy Use and Supply in New Hampshire

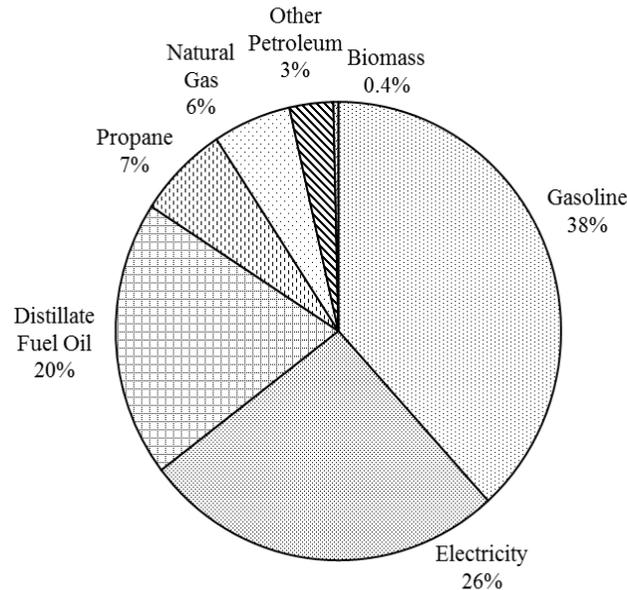


Figure 1: New Hampshire Energy Expenditures in 2008³

As shown in Figure 1, gasoline accounted for 38% of total energy expenditures in New Hampshire in 2008, electricity accounted for 26%, fuel oil accounted for 20%, propane accounted for 7%, natural gas accounted for 6%, other petroleum accounted for 3%,⁴ and biomass accounted for less than 1%. When apportioned by end use sector, residential energy use accounted for 30% of energy expenditures in 2008, commercial and industrial energy use accounted for 30%, and transportation accounted for 40%.⁵ In this study, emphasis is placed on assessing opportunities for increasing energy efficiency and sustainable energy use for non-transportation purposes, consistent with the way in which the study was commissioned by the state.

According to the New Hampshire Office of Energy and Planning (NH OEP), New Hampshire citizens, businesses, and industries spent over \$6 billion on energy in 2008.⁶ Of this, \$4.1 billion (or 78%) left the state immediately (and in many cases left the country) to pay for imported fossil and nuclear fuels.⁷ This outflow of energy dollars serves as a drain on the state and national economy, and represents nearly 7% of New Hampshire's annual Gross Domestic Product (GDP). Of this, \$2.3 billion was for gasoline, \$1.6 billion for electricity, \$1.4 billion for heating oil and other petroleum, \$406 million for propane, \$346

³ Energy Information Administration, State Energy Data System, "Table ET2 Total End-Use Energy Price and Expenditure Estimates, 1970-2009, New Hampshire,"

http://www.eia.gov/state/seds/hf.jsp?incfile=sep_prices/tx/pr_tx_NH.html&mstate=New%20Hampshire.

⁴ Including jet fuel, residual fuel oil, asphalt oil, and lubricants.

⁵ Energy Information Administration, State Energy Data System, "Table F28 Total Energy Price, Consumption, and Expenditure Estimates, 2009," http://www.eia.gov/state/seds/hf.jsp?incfile=sep_fuel/html/fuel_te.html.

⁶ New Hampshire Office of Energy and Planning, "2007 New Hampshire Energy Facts,"

<http://www.nh.gov/oep/programs/energy/nhenergyfacts/2007/introduction.htm>. Energy Information Administration, State Energy Data System, "Table ET2 Total End-Use Energy Price and Expenditure Estimates, 1970-2009, New Hampshire,"

http://www.eia.gov/state/seds/hf.jsp?incfile=sep_prices/tx/pr_tx_NH.html&mstate=New%20Hampshire.

⁷ Ibid.

million for natural gas, and \$22 million for biomass.⁸ New Hampshire's current mix of energy supply is a dramatic departure from a century ago when the state was largely self-sufficient in energy supply, and residents and business owners had substantial control over their energy future.

New Hampshire residents and business owners could benefit significantly from additional investments in energy efficiency and sustainable energy that reduce (or stabilize) future energy bills, increase reliance on local energy resources, and stimulate the state economy. According to a study of energy efficiency opportunity in New Hampshire, if all households in the state were improved to the level of energy efficiency that is cost-effective (as defined for purposes of regulated energy efficiency programs), residents would save \$309 million per year.⁹ Cost-effective efficiency investments in commercial and industrial buildings could keep another \$220 million per year in the state.¹⁰ That money would continue to circulate in the local economy, and would have a multiplier effect of two to three times the initial energy savings.¹¹ While the investment to achieve such savings could be nearly \$2 billion,¹² the savings would offset the investment in less than four years.

3. The Current Energy Policy Framework in New Hampshire

Given the importance of energy to the comfort and safety of New Hampshire citizens and to the viability to the state's economy, it is not surprising there is a long history of energy policies, programs, and initiatives in the state. The current policy framework includes a variety of legislation and statutes that articulate New Hampshire's desire to move towards greater energy efficiency and use of sustainable energy resources. Examples include (among others) the:

- **Energy Policy Act** requiring each electric utility to file a least cost integrated resource plan (IRP) at least biannually. The Act also notes that the energy needs of the state should be met at the lowest reasonable cost.¹³
- **Electric Utility Restructuring Act** creating the goal of developing a competitive marketplace for wholesale and retail electricity based upon the principles of system reliability, customer choice, unbundled services and rates, open access to transmission and distribution (T&D), universal service for all customers, etc.¹⁴
- **Renewable Portfolio Standard** requiring each supplier of electricity in New Hampshire to obtain 24% of their electricity from renewable energy resources by 2025.¹⁵
- **Net Metering Statute** providing standard tariffs for customer-sited renewable energy.¹⁶

⁸ Op cit.

⁹ This represents energy savings of around 20%, as defined as cost-effective in the study *Additional Opportunities for Energy Efficiency in New Hampshire*, Final Report to the New Hampshire Public Utilities Commission, GDS Associates, Inc., 2009

¹⁰ Ibid.

¹¹ Ibid.

¹² Based on estimated costs to obtain maximum achievable cost effective 2018 annual savings; *Additional Opportunities for Energy Efficiency in New Hampshire*, Final Report to the New Hampshire Public Utilities Commission, GDS Associates, Inc., 2009 (p.7)

¹³ RSA 378:37, New Hampshire Energy Policy, 1990. It is important to note this legislation supports least cost integrated resource planning but does not require least cost procurement which is a foundational element in other states with well-developed energy efficiency markets.

¹⁴ RSA 374-F: Electric Utility Restructuring, 1996.

¹⁵ RSA 362-F: Electric Renewable Portfolio Standard, 2007.

¹⁶ RSA 362-A: Limited Electrical Energy Producers Act, Net Energy Metering, 1998, 2007.

- **Distributed Energy Resources Statute** aiming to stimulate utility investments in distributed generation.¹⁷
- **Greenhouse Gas (GHG) Emissions Reduction Fund** providing financial support for energy efficiency, conservation, and demand response programs that reduce greenhouse gas emissions.¹⁸
- **“Smart Growth” Statute** establishing key principles for economic growth, resource protection, and planning that ensure “... clean water and air; productive mountain, forest, and agricultural open space land,” and that impact directly land use development and transportation patterns that greatly affect energy use.¹⁹
- **Energy Commissions Statute** enabling municipalities to create or endorse existing groups to serve as Local Energy Commissions to assess local energy use and cost, and make recommendations regarding energy conservation, energy efficiency, energy generation, and zoning practices.²⁰

In tandem with the legislation and statutes is a variety of energy efficiency and sustainable energy programs offered by: federal, state, and municipal government; electric and gas utilities; industry trade associations; non-profit and community organizations; and banks and other financing authorities throughout the state. These programs have resulted in millions of dollars of investment in energy efficiency and sustainable energy in both the public and private sectors, reductions in energy use due to efficiency improvements, and production of thermal and electrical energy using sustainable, renewable resources.

That said, New Hampshire has a long way to go to achieve the full energy efficiency and sustainable energy potential in the state, and to realize the economic benefits associated with increased energy efficiency and reliance on local, indigenous resources. Simply pursuing business as usual, with the type and scale of policies, programs, and initiatives already underway (and the legislation and statutes that helped inspire them) will not lead to the extent of market development needed to achieve New Hampshire’s full energy efficiency and sustainable energy potential, and the associated economic benefits.

4. Current Energy Efficiency and Sustainable Energy Use in New Hampshire

The energy policies, programs, and initiatives developed thus far through the hard work, creativity, and initiative of the New Hampshire Legislature, the Executive Branch, state planners and regulators, utility managers, industry and business leaders, and an engaged citizenry have begun the process of increasing energy efficiency and sustainable energy use in the state, and provide a foundation for further progress towards meeting state energy policies and goals in the future. The accomplishments to date are many and include (among others):

¹⁷ RSA 374-G: Electric Utility Investment in Distributed Energy Resources, 2008.

¹⁸ RSA 125-O: Regional Greenhouse Gas Initiative; Greenhouse Gas Emissions Reduction Fund, 2008.

¹⁹ RSA 9-B: State Economic Growth, Resource Protection, and Planning Policy, 2000.

²⁰ RSA 38-D: Energy Commissions, 2009.

- **More than a decade of experience offering energy efficiency and weatherization services** which help New Hampshire residents, businesses, and industries use energy more efficiently and reduce their energy costs as they do so. The provision of energy efficiency services to residences, businesses, and industries throughout New Hampshire has:
 - **Reduced electricity use by more than 70,000 MWh annually**, which is equivalent to approximately 0.6-0.8% of retail sales of electricity in New Hampshire, depending on the year;²¹
 - **Reduced use of natural gas and other non-electric heating fuels** by 1,300,000 MMBtu in 2010;²²
 - **Provided \$90 million worth of benefits annually** through electric and gas efficiency programs, including reduced energy bills, reduced capacity requirements; and other benefits;²³
 - **Provided new business opportunities** for energy efficiency and weatherization contractors, remodelers, and product suppliers in New Hampshire;
 - **Helped reduce demand on the electrical grid** and offset or deferred the need for new generation capability and/or transmission and distribution upgrades; and
 - **Helped preserve finite energy resources** (such as heating oil, natural gas, and propane) for future generations.
- **A long-lived tradition of using local, indigenous resources for energy** as evidenced first by the use of biomass for heating and hydropower for mechanical energy in the 18th, 19th, and 20th centuries, and then more recently for electricity production. This tradition is expanding to include use of the wind, sun, landfill gas, and other sustainable energy resources to produce energy. The use of sustainable, renewable energy in New Hampshire has:
 - **Resulted in 16% of total electricity use in the state,²⁴ and 10% of all energy inputs** coming from hydropower, biomass, solar electricity, solar space and water heating, wind energy, landfill gas, farm methane, and geothermal;²⁵
 - Led to the **creation of new sustainable energy businesses;**

²¹ Based on first year savings as reported in the 2008-2010 electric and gas annual efficiency program filings.

²² Based on information in 2010 electric and gas annual efficiency program filings.

²³ Present value of total benefits as reported in Attachment D-G and Exhibit B of the 2011-2012 Core Electric Energy Efficiency and Natural Gas Efficiency Programs. Includes customer savings, avoided generation, transmission and distribution costs, quantifiable resource costs (e.g. water and electricity), and an adder for other non-quantified benefits (e.g. environmental and other benefits).

²⁴ New Hampshire Office of Energy and Planning, Energy Facts 2008;

<http://www.nh.gov/oep/programs/energy/nhenergyfacts/index.htm>

²⁵ Share of gross renewable energy inputs of total gross energy input.

- **Helped diversify the portfolio of energy sources** relied upon in the state, thereby helping to address over reliance on any one energy source’s pricing and availability in the future; and
- **Continued the long-held respect for independence and self-sufficiency in New Hampshire** as more citizens take control of their energy use and supply by relying on local, in-state resources.

5. Current Employment Impacts of Energy Efficiency and Sustainable Energy

The energy efficiency and sustainable energy policies, programs, and initiatives developed thus far in New Hampshire bring important employment benefits to the state including (among others):

- **The creation of new jobs in New Hampshire.** According to a national study of clean jobs (defined as the sector of the economy that produces goods and services with an environmental benefit), there were nearly 13,000 clean jobs in New Hampshire in 2010. These clean jobs represent about 2% of all jobs in the state. Of these, 5,000 jobs (or 40%) were energy efficiency and sustainable energy jobs, which represents just under 1% of New Hampshire’s jobs.²⁶
- **Faster growth in clean jobs in New Hampshire than in the nation overall.** As shown in Figure 2, the growth in clean jobs occurred at a faster rate in New Hampshire than in the nation overall. Between 2003 and 2010, clean jobs in New Hampshire grew by 5.3% annually.²⁷

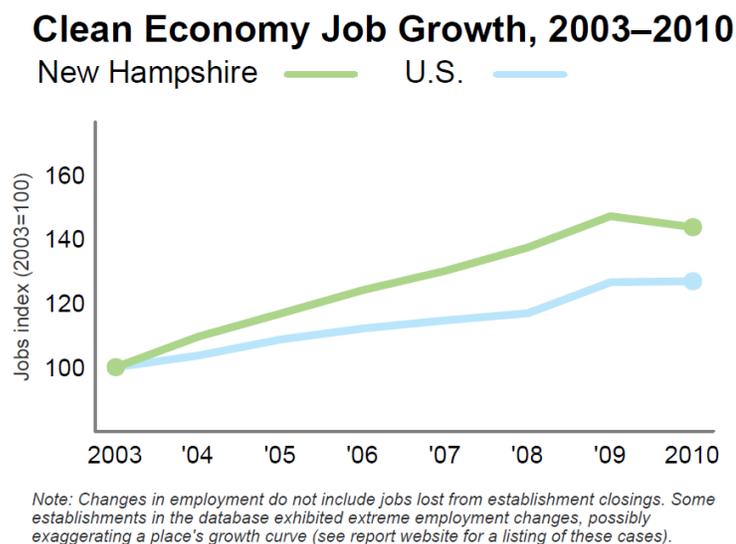


Figure 2. Clean Jobs in New Hampshire²⁸

²⁶ Data analysis of Brookings-Battelle Clean Economy data available at http://www.brookings.edu/metro/clean_economy. Energy & Resource Efficiency include: Appliances, Battery Technologies, Energy-saving Building Materials, Green Architecture and Construction Services, HVAC and Building Control Systems, Lighting, Professional Energy Services, Public Mass Transit; Renewable Energy includes: Biofuels/Biomass, Hydropower, Renewable Energy Services, Solar Photovoltaic, Solar Thermal. No data was provided for New Hampshire for geothermal, waste to energy, wave/ocean power, and wind power.

²⁷ Sizing the Clean Economy, The Clean Economy in the State of New Hampshire, Brookings-Battelle Brookings-Battelle Clean Economy Database, http://www.brookings.edu/~media/Files/Programs/Metro/clean_economy/clean_economy_profiles/states/33.pdf

- **Higher median wage for clean jobs in New Hampshire.** The median wage of clean jobs in New Hampshire is \$40,773, which is higher than the average of \$38,657 for all jobs in the state. On average, each New Hampshire clean job produces \$14,449 in exports.²⁹
- **A new way to address unemployment.** Research published at a national level forecasts that investments in the clean economy in New Hampshire could result in a net increase of about \$650 million in investment revenue,³⁰ and an increase of 8,000 jobs, even after assuming a reduction in fossil fuel spending. The significance of this is substantial. For example, adding 8,000 jobs to the labor market in 2008 would have brought the state's unemployment rate down to 2.8% from its 2008 level of 3.8%.³¹

These accomplishments and their positive impacts on New Hampshire's economy and its citizenry provide an important foundation for further progress and success in stimulating even more energy efficiency and sustainable energy use in the future.

6. Market Barriers to Energy Efficiency and Sustainable Energy

National leaders in energy efficiency and sustainable energy program design and implementation have noted and documented for decades that many market barriers to energy efficiency and sustainable energy are a result of market failures that warrant public intervention to help markets work more effectively.³² It has been determined time and again that the energy marketplace often does not behave in a way that leads to energy efficiency and/or sustainable energy investments even when it is in a consumer's best interest financially to make such investments. This is true in many jurisdictions throughout the United States. In New Hampshire, key market barriers to energy efficiency and sustainable energy include:

- **Information overload** resulting from too much information coming from too many disparate entities, combined with uncertainty about whose information is accurate and can be trusted;
- **Transactional complexity** and a multitude of offerings, with many of the solutions seeming small and diffuse, and lacking in coordination – the opposite of one-stop shopping;
- **Lack of capital** to address upfront first costs and short return on investment (ROI) expectations by energy users; and

²⁸ Ibid.

²⁹ Ibid.

³⁰ Based on New Hampshire's share of a total of \$150 billion in clean energy investments estimated annually across the country in a report by Robert Pollin, professor of economics and co-director of the Political Economy Research Institute at the University of Massachusetts-Amherst, James Heintz, associate research professor and associate director for Political Economy Research Institute (PERI), Heidi Garrett-Peltier, PERI research fellow, http://images2.americanprogress.org/CAP/2009/06/factsheets/peri_nh.pdf

³¹ Robert Pollin, professor of economics and co-director of the Political Economy Research Institute at the University of Massachusetts-Amherst, James Heintz, associate research professor and associate director for Political Economy Research Institute (PERI), Heidi Garrett-Peltier, PERI research fellow, http://images2.americanprogress.org/CAP/2009/06/factsheets/peri_nh.pdf

³² For example, Market Barriers to Energy Efficiency: A Critical Reappraisal of the Rationale for Public Policies to Promote Energy Efficiency, William H. Golove, Joseph H. Eto, Lawrence Berkeley Laboratory, 1996, p. xi

- **Split incentives** which occur when the cost of a measure or technology are borne by one market participant while the savings benefit another. In such situations, the financial benefits for adopting a technology are “split” from the participant responsible for putting it in place.³³

Experience in jurisdictions with the highest levels of energy efficiency and sustainable energy use demonstrate that a long-term market-based approach is necessary that is informed by a commitment to true market transformation. Currently, many energy efficiency programs throughout the nation (including in New Hampshire) are essentially going out and “buying” a certain amount of energy efficiency and/or sustainable energy resource from customers, relying almost exclusively on incentives, without aggressively understanding the market and developing integrated strategies that address real market barriers and failures. While such programs may be cost-effective and yield benefits to customers (as they do in New Hampshire), the programs are not actually transforming the market over the longer-term. As such, the programs are not on a path that is likely to enable the programs to succeed in the future with reduced, or no, public subsidy or to use continued subsidy to achieve even deeper savings for broader audiences (for efficiency programs) or substantial new energy production (for sustainable energy programs).

7. New Hampshire’s Commitment to a Market-Based Approach

Legislation passed in New Hampshire during the 1990s while the utility industry was being restructured inspired the first round of regulated energy efficiency programs in the state, and articulated a clear commitment to a market-based approach. As noted in the legislation:

“Restructuring should be designed to reduce market barriers to investments in energy efficiency and provide incentives for appropriate demand-side management and not reduce cost-effective customer conservation. Utility sponsored energy efficiency programs should target cost-effective opportunities that may otherwise be lost due to market barriers.”³⁴

As New Hampshire completes its first decade (or more) of energy efficiency and sustainable energy program implementation, it is clear that continued success and realization of even more efficiency savings and new sustainable energy generation in the future will depend on careful attention to the market barriers that continue to exist today. A key question moving forward is:

“How can New Hampshire best utilize what was learned through the first generation of energy efficiency and sustainable energy programs to address the ongoing market barriers and failures that continue to limit market development and true market transformation in the state?”

In this study, emphasis was placed on reviewing and assessing the variety of energy initiatives underway with a focus on their effectiveness in removing market barriers, addressing market failures, and developing and transforming energy efficiency and sustainable energy markets in the future. The study team drew upon VEIC’s direct experience designing, reviewing, and/or assessing energy efficiency and sustainable energy policies and programs in more than 35 states and VEIC’s direct implementation experience in the Midwest, New Jersey, Vermont, and Washington, D.C. VEIC’s program design and implementation work have resulted in mature, robust, well developed, and transformed markets in multiple jurisdictions. In Vermont, the success of VEIC’s energy efficiency market development work

³³ For example, <http://blogs.edf.org/innovation/2010/04/19/top-five-barriers-to-energy-efficiency-savings/>

³⁴ RSA 374-F:3.

has enabled the state to achieve increasingly aggressive levels of savings, often in hard to reach markets. In New Jersey, the success of VEIC's sustainable energy market development work has enabled the state to achieve the highest market penetration of solar electric generation in the nation and to do so with decreasing levels of public investment over time.

8. Keys to Successful Market Development and Market Transformation

When reviewing energy efficiency and sustainable energy initiatives in New Hampshire and the types and extent of market barriers still at play in the state, the study team kept several critical points in mind:

- **There is not a single market, there are many markets.** There is a tendency to approach market development within a jurisdiction as though the same approaches work for all types of measures and types of customers, and that once one approach has been implemented no further action is needed. This is not the case because new technologies and changes in prices, products, and markets all keep altering the pool of opportunities.³⁵ For example, while the market for screw-in bulbs might be transforming to compact fluorescent lights (CFLs), there is a new range of opportunities with light-emitting diode (LED) lighting. Refrigerators have more than tripled in efficiency while declining in cost, due in large part to coordinated regulatory and program strategies; but television set-top cable and other boxes still have a long way to go and are sold in a very different market structure. Often opportunities are changes in practices as well as changes in products. Building commissioning, air sealing, and improved system and building design are examples of practice changes. Such changes in practice are likely to require different approaches than changes in product lines.
- **There are a variety of ways to develop and transform markets.** Direct investment strategies should lead to deeper levels of product acceptance. Rebates are an important beginning, but should not be the end. Work on “market channels” such as the wholesale and manufacturer levels can help move markets to lower cost, new products, and wider acceptance. Certification processes, labeling, and training can all help move markets. Codes and standards can institutionalize and formalize advances as well.
- **Overcoming barriers and transforming markets requires intelligence, responsiveness, innovation, and persistence.** Each product or practice needs to be understood for its own version of how the current approaches are not doing all they can to help the market to develop and mature.

9. Building Blocks that Lead to Market Development and Market Transformation

Experience in multiple jurisdictions in which there is effective market development indicates that the following characteristics lead to the greatest success in developing and transforming markets. The study team kept these in mind while reviewing and assessing energy policies, programs, and initiatives in New Hampshire:

- **Clear policy direction.** It is essential to have a clear, consistent, comprehensive statement of the state's energy policy enacted as legislation. Although New Hampshire has a long list of

³⁵ This dynamic is not exclusive to energy efficiency. In natural gas markets, for instance, the estimate of available supply is not just a question of “gas in the ground,” it is just as much a question of what the market price is and what is recoverable by new technologies including horizontal drilling and recovery from shale, for example.

legislation, Executive Orders, and regulation that each, in their own way, address aspects of energy policy in the state, there is not a single, comprehensive piece of legislation that provides clear and unequivocal certain direction to state policy makers, planners, regulators, utilities, and stakeholders. Although legislation supports least cost planning, it does not mandate least cost procurement which is a prerequisite for ensuring a well-developed energy efficiency market.

- **A single, trusted source of accurate information with a common portal to program offerings, even if programs are implemented by multiple entities.** The importance of this cannot be understated. While New Hampshire is blessed with a multitude of energy efficiency and sustainable energy programs and initiatives, there is no single and trusted source of information that is the “one-stop shopping” destination for those interested in exploring their options. NHSaves is partial progress towards this, but it is not used consistently for all program offerings, even within just the regulated energy efficiency programs.
- **High levels of coordination among service offerings.** If the goal is to institutionalize market development, then market actors, suppliers, implementers, and customers need a common set of program features. Those features (such as incentive levels or product offerings) must change in response to market conditions and opportunities, and the changes should be clear and uniform. Coordinated offerings work most effectively.
- **An emphasis on creating and expanding the market infrastructure.** Programs should focus on creating new business opportunities for key market actors including contractors, installers, designers, and vendors. Often training and certification help create, differentiate, and grow new businesses for these market actors.
- **Market development (and not simply resource acquisition) is rewarded.** While it is not appropriate to reward utilities for savings they had no part in securing, utilities should be allowed to claim some benefit for work they do that helps to develop markets, and helps to promote and support high-efficiency codes and standards. An interesting feature of well-run energy efficiency programs is that as market segments are transformed direct utility spending declines (as it should for the affected measures), but the benefits to consumers and the economy continue over time. The fact that utilities can no longer claim savings for such measures is appropriate in the long run, but utilities should not be penalized for success so significantly that their ongoing work to accomplish the next market transformation is jeopardized.
- **A sustained commitment to meeting goals and the willingness to increase goals over time.** It is a common failure of program design that energy efficiency targets, sustainable energy goals, and implementation budgets are arbitrarily limited, and that the focus becomes on spending available funds without an overall strategy for developing the market. This does not mean that there should be unrestricted funds available for energy efficiency and sustainable energy. Cost-effectiveness of programs, assessment of performance, and assessment of bill and economic impacts are vital components of effective performance. However, market development is not likely to succeed if programs are not designed to reach significant portions of the market. A common feature of programs that are not market development focused is that they tend to only manage to goals. If the goals are low, program implementers end up being as concerned about the regulatory risks of overspending as they are about meeting the targets. It is difficult for a program to help develop markets in a sustained, orderly way if the program is shut down half way through the year because it ran out of funds.

- **A regulatory process that removes disincentives for energy efficiency investments and rewards strong performance.** The system should be carefully designed to ensure that consumers retain most of the benefit of the investment and that implementing entities are held to strict performance levels and are rewarded appropriately for meeting strong goals. Performance incentives are a standard approach for implementing entities, including separate energy efficiency utilities (such as *Efficiency Vermont*) as well as for programs administered by utilities (including those in New Hampshire).
- **An ongoing system of evaluation, measurement, and verification (EM&V) conducted independently from the utilities being evaluated.** An amount in the range of 3-7% of energy efficiency program budgets should be dedicated to evaluation, measurement, and verification. The EM&V should be conducted by a third party evaluator working independently from the implementing entity. The EM&V should assess how well the programs incorporate an understanding of market dynamics as well as program effectiveness compared to goals. Outcomes of EM&V should feed back into program design and implementation enhancements for future programs.
- **A focus on performance combined with implementation flexibility for achieving performance goals.** Performance goals should not just be year-to-year, but should allow for ramp-up and innovation over at least a two-year period, with a clear feedback loop between program monitoring, evaluation, and verification and continuous program improvement. Performance incentives should be designed to reward implementers for innovation, responsiveness to shifting markets as well as energy savings and cost-effectiveness. Implementers should be able to change strategy, alter incentives, or make special offers as long as they are held to demanding savings goals.
- **An understanding of the importance of long term planning and for doing that planning through a collaborative process in a non-adjudicative setting.** Programs should be designed and planned for a minimum of two years (as was begun in New Hampshire for the 2011-2012 utility program filings.) Adjudicated regulatory proceedings are perhaps the least effective forum for contemplating program design changes, and reaching agreement on how effective they will be at market development and transformation. Instead, program design and planning should be done using a collaborative process in a non-adjudicative setting with the involvement of an independent, third party who has the expertise and resources to help ensure that both consumer and utility interests are aligned before program plans and budgets are submitted to regulators. Examples of states that have taken this approach include California, New Jersey, Rhode Island, and Vermont. When done well, this can streamline the regulatory process, reduce legal expenses for the parties, and result in more effective and innovative programs.

10. Seven Steps for Transforming Energy Markets in New Hampshire

Presented below are seven steps (or actions) recommended by the study team for New Hampshire. The seven steps represent the most important overarching policy-level recommendations resulting from this study for consideration by the Legislature, the Executive Branch, the Public Utilities Commission, and other state entities. The seven steps focus on areas of opportunity for improvement in energy policy that will make a significant and lasting difference to the citizens of New Hampshire, and to the state's energy future. The steps highlighted below draw upon numerous conclusions and recommendations made at a more detailed and program-level in the full report. While all of the recommendations in the report are important, the seven steps highlighted below are the foundational "must dos" that are the critical strategic steps required if New Hampshire is to be successful in developing and transforming energy efficiency and

sustainable energy markets in the state. For ease of reference, the Chapters in the report that address the steps are noted in the table. The other recommendations addressed in the report (but not repeated below) are also important, but are not necessarily high-level policy issues requiring the time and attention of state policy leaders. Instead, they are offered for consideration by program planners and administrators responsible for designing and implementing the array of programs and initiatives resulting from state energy policies.

Table 1: Major Energy Policy Actions Recommended in New Hampshire

Step 1 - Refocus and Clarify the State’s Energy Policy Direction	<i>Chapters 1, 3, and 14</i>
<ul style="list-style-type: none"> Review multiple (and sometimes competing) energy policy statements developed over the years and enact a single, comprehensive, energy policy statement that provides clear policy direction for both energy efficiency and sustainable energy in the future. A sample policy is provided in the full report. 	
Step 2 - Develop Clearer Regulatory Guidance	<i>Chapters 3 and 14</i>
<ul style="list-style-type: none"> Adopt a new Energy Efficiency Resource Standard (EERS) that either sets specific efficiency targets for the state over multiple years or establishes a clear mandate for setting such targets on a recurring basis. 	
<ul style="list-style-type: none"> Enact a Least Cost Procurement (LCP) requirement that directs utilities to procure the least cost strategies for meeting customer energy needs, which is often energy efficiency. 	
<ul style="list-style-type: none"> Increase the System Benefits Charge to enable increased investment in energy efficiency in a manner that appropriately supports EERS and LCP implementation. Such investment has been proven to yield net positive economic impacts to the state and consumers. 	
<ul style="list-style-type: none"> Update New Hampshire’s Electric Renewable Portfolio Standard to support in-state market development. 	
<ul style="list-style-type: none"> Consider all mechanisms to support a fuel-neutral Renewable Portfolio Standard, and adopt such a mechanism to ensure the full range of renewable and sustainable energy sources are eligible for both electric and thermal energy production. 	
Step 3 - Improve the Regulatory Process and Modify Performance Incentives	<i>Chapters 3, 9, and 14</i>
<ul style="list-style-type: none"> Once an EERS and LCP are in place, carefully implement further decoupling of utility revenues to remove disincentives to utility investments in energy efficiency. 	
<ul style="list-style-type: none"> Establish an efficient, time-limited collaborative process for developing new program plans and goals using the knowledge and expertise of an independent third party that can help balance consumer and utility interests. Conduct the process in a non-adjudicative setting to minimize regulatory complexity and costs for all parties while increasing public input. 	
<ul style="list-style-type: none"> Ensure that program goals are aggressive and that there is a sustained commitment to meeting the goals and to increasing goals over time. 	
<ul style="list-style-type: none"> Strengthen the performance-based approach to implementation of energy efficiency programs by the regulated utilities, and ensure utilities have the proper incentives for meeting aggressive program and market development goals. 	
<ul style="list-style-type: none"> Allocate 3-7% of program budgets to evaluation, measurement, and verification (EM&V) and ensure EM&V is conducted by a third party evaluator operating independently of the party being evaluated. 	
<ul style="list-style-type: none"> Develop and require the use of standard and consistent reporting metrics for regulated programs to increase consistency and transparency when reporting program yields and impacts. 	

Step 4 – Increase Program Coordination and Further Streamline Administration*Chapters 3, 4, 5, and 6*

- **Continue efforts among utilities** to increase the consistency in offerings, rebate and incentive levels, eligible technologies, etc. across energy efficiency and sustainable energy program offerings.
- **Continue to strengthen and enhance coordination of low income weatherization services between the utilities and the New Hampshire Office of Energy and Planning**, and develop shared IT resources to strengthen program management.
- **Develop a trusted, single source of contact** for energy efficiency and sustainable energy programs and services, building upon and expanding the early efforts originally focused around NHSaves.

Step 5 – Use Public Policy, Funding, and Scaled Program Structures to Attract and Leverage Private Investment*Chapter 10*

- **Consolidate finance programs** into a single-administrator, coordinated statewide program, while adapting programs to be responsive to the unique needs of different market segments.
- Leverage New Hampshire Qualified Energy Conservation Bonds (QECBs) and state and federal grant dollars to **fund a statewide loan loss reserve fund**.
- **Use outreach, education, and audit programs to raise customers' awareness** of financing opportunities.
- **Evaluate and redesign marketing and messaging** for finance programs with different market sectors in mind.

Step 6 – Create a Home for Energy Efficiency and Sustainable Energy Implementation Support and Oversight in State Government*Chapter 14*

- **Designate a specific entity within state government responsible for ensuring implementation of state policies and goals regarding energy efficiency and sustainable energy.** Currently, a number of Commissions, agencies, departments, offices, and/or Boards each have a share of the responsibility, but no single entity is charged with ensuring state energy policies and goals are met.

Step 7 – Encourage State and Local Governments to Lead by Example*Chapters 11 and 13*

- Use the purchasing power of **state government as the largest energy consumer in New Hampshire** to stimulate and develop energy efficiency and sustainable energy markets.
- **Leverage the momentum of the more than 100 Local Energy Committees in New Hampshire**, the leadership of town government, and the roles of Regional Planning Commissions to stimulate and develop energy efficiency and sustainable energy markets.
- **Recognize the importance of land use planning and zoning** in the energy requirements needed for transportation, and better integrate land use planning and zoning issues in both state and local energy initiatives in the future.

These initiatives, as well as those addressed at the programmatic level in the full report, provide great opportunity for New Hampshire to build upon and continue to enhance the solid foundation of energy policies, programs, and initiatives already in place in the state. In doing so, the state can achieve important energy, economic, and environmental benefits for New Hampshire citizens and the industries and businesses located in the state.

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