NH CleanTech Council
Response to Draft State Energy Strategy
July 25, 2014

Statement of Need

New Hampshire is not prepared for the energy changes that are already happening. Our aging infrastructure, market mechanisms, and policy uncertainties do not easily invite an energy future based upon maximum efficiency and local renewable resources. NH cannot afford to miss the economic opportunities offered by a robust clean energy economy. All around us, efficiency is being considered as a first-tier resource, utility revenue models are better aligning customer interests with shareholder interests, jobs are flowing to states with stable policies and innovative financing, and businesses are prospering from economic growth opportunities in the clean energy and technology sectors. New Hampshire needs a bold energy strategy that looks decisively to the future and keeps our state competitive by removing policy, regulatory, and market barriers to clean energy investments and the economic wealth that is retained *and* generated by the clean energy sector, both directly and indirectly.

NH needs a competitive ten-year energy strategy built around a measurable goal that will not only direct future energy policy, but will form the foundation for a robust and innovative economic development strategy. NH's energy strategy should be bold, with concrete actionable items, against which progress can be verified and evaluated in the context of a measurable goal. We can't avoid decisions about how to retain our energy wealth, address aging infrastructure, empower consumers and unleash pent-up demand for cleaner and localized fuels, and better control volatile fossil fuel prices. OEP's and Navigant's work have given much baseline data and technical/economic potential data: We know what path we are on. The strategy must also state precisely where we want to be headed, who are the actors that will lead us there, and what are the specific, actionable strategies that will ensure that NH is indeed on that pathway.

While the draft Vision does offer a laudable future and provides critical data and analysis, the NH Clean Tech Council is concerned that without a clear and compelling goal, and specific delegated responsibilities for concrete near-term actions, the strategy will fail to inspire the leadership necessary to make the transformational changes in how NH uses energy, where that energy comes from, and thereby miss significant economic development, public health, and wealth retention opportunities.

Goal

It is important to consider that NH is highly dependent on fossil fuels (as measured in the baseline portion of the draft), importing vast amounts of heating oil, coal, natural gas, propane, and gasoline. In fact,

> *"New Hampshire citizens, businesses, and industries spend over $6 billion on energy each year; two-thirds of these expenditures leave the state entirely to pay for imported fuels. This export of nearly $4 billion dollars is a significant drain on the state economy, equal to nearly 7 percent of annual Gross State Product."*[1]

[1] Vermont Energy Investment Corporation et al. September 30, 2011. *Independent Study of Energy Policy Issues.*

In view of the foregoing, the New Hampshire State Energy Strategy goal should be to reduce the export of energy dollars from 66%, to 50% by 2023, retaining over $1 billion of economic wealth each year in New Hampshire.[2]

This sets a clear and ambitious goal against which progress can be evaluated on an annual basis. It predicates the energy strategy on a goal around which all New Hampshire citizens and businesses can rally. It is easy to understand, compelling, and achievable. It will take substantial investments, in the range of $5-10 billion over the next decade, to retain this level of wealth—a level that will require significant private investment, public policy stability and leverage minimal public dollars, leadership on all levels, and coordination.

Retention of wealth by the reduction in importation of fossils fuel for electricity, heating and transportation will have multiple economic, environmental and societal benefits, including:

- Greater disposable income for NH homeowners and businesses
- Increased energy reliability and decreased price volatility
- Investment of retained wealth in NH-based economic development, including local and renewable energy sources and services
- Reduction in consumption of high carbon intensity fuels with lower carbon intensity fuels and technologies, with associated climate benefits
- Catalyzation of a major economic transformation with significant new job growth

How will NH retain this amount of exported energy dollars over the next ten years? The NHCTC proposes three primary strategies to accomplish this goal:

1. **Significantly ramp up energy efficiency and conservation through system wide efficiency investments (customer-side and utility/supplier-side), to reduce overall energy use;**

2. **Replace imported fossil fuel use with locally produced renewable energy, with an emphasis on:**
    a. **distributed generation**
    b. **utility-scale generation**
    c. **thermal and electric fuel switching for heating, cooling, and transportation needs; and**

3. **Unleash the private market to finance the infrastructure by minimizing policy risk, sending clear market signals, and leveraging available public funds.**

Action

Each of the actions that the NH CleanTech Council will detail herein flow from the economic wealth retention goal—a goal that reinforces the current draft vision— and the three priorities highlighted

[2] With the multiplier effect, for every $1 billion we keep in the state and reinvest, that translates to a larger sum and a positive economic impact; approximately $2-$6 billion in total.

above. *All actions are underscored by the need for ongoing policy stability, support, and consistency that best enables businesses and consumers to plan, invest, and make informed decisions.* The actions described below (and summarized in Table 1.) would retain approximately $1.2 billion per year in the NH economy, require a raw up-front investment of approximately $6.8 billion (this does not include any public—federal or state—incentives), and would give a simple Return on Investment (ROI) of 5.7 years and an Internal Rate of Return (IRR) over ten years of 12%.[3]

Table 1.

Action	Scenario	Unsubsidized Up-Front Investment	Annual Savings (energy only)
Efficiency: electric & thermal	715 Million kWh/year savings equivalent*	$ 941,000,000	$ 195,000,000
Solar Electric			
residential/commercial	700 MW	$ 2,625,000,000	$ 176,400,000
utility-scale	400 MW	$ 1,200,000,000	$ 72,000,000
Wind	300 MW	$ 600,000,000	$ 61,200,000
Biomass thermal fuel switching (from heating oil to wood pellets)			
residential equivalent (bulk)	10 % conversion from heating oil	$ 375,000,000	$ 30,718,000
Transportation fuel efficiency (electric vehicle and hybrid conversions)	average fuel economy - from ~19/mpg to 47 mpg**	$ 1,100,000,000	$ 664,501,680
TOTAL		**$ 6,841,000,000**	**$ 1,199,819,680**

*From 2013 GDS EERS study

**From Navigant BAU and RP Studies - 28 MPG increase in fuel economy is the economic potential for Light Duty Vehicles

1. **Energy Efficiency Resource Standard:** NH has extensively studied the value of increasing investments in energy efficiency through having a clearly stated goal for efficiency. The energy strategy needs to clearly and coherently state that a strong energy efficiency resource standard, aka, buying efficiency and demand reductions that are cheaper than generation supply, is a primary policy measure that should be implemented in the immediate term. As detailed in a 2013 OEP directed study, an EERS that saves consumers $195 million per year requires an approximate investment of $914 million and generate 2,300 jobs, ultimately saving consumers $1.95 billion over ten years.

2. **Private-Public Financing**: Create a path to consolidate, maximize, and securitize limited public funding in order to bridge the transition to mainstream private financing.
    a. Clean Energy Finance Authority. Without creating a new state entity or expanding public dollars for capitalization, NH could enable a public-private authority to coordinate financing of clean energy resources and efficiency investments, conceptually similar to

[3] These approaches will generate demand savings but we have not included those here to clarify and simplify this approach. They will also transfer some annual costs from liquid fuels to electricity usage.

what Connecticut, New York, New Jersey, and other states have done, but with fewer public dollars.

3. **Fuel switching**: NH should move away from imported heating oil toward local renewable thermal fuels.
    a. Thermal: As detailed in Navigant's Resource Potential Study, there is significant economic potential to fuel switch from heating oil to biomass, bioheat, geothermal, and solar coupled with heat pumps, as well as some natural gas conversions where main lines already exist, particularly for the development of gas or biomass-fired cogeneration (CHP) resources. Focusing on the primary goal of wealth retention however, converting 10% of the 250,000 homes that currently use heating oil to use wood pellets would save consumers nearly $30.8 million dollars annually, requiring an initial investment of about $375 million dollars. Additional savings may be realized by industrial and commercial customers switching directly to biomass.

    b. Electric: Strengthened RPS and competitive NH REC price signals, e.g. raising the ACP levels to match regional ACP levels around New England.
        i. Solar photovoltaic costs have fallen nearly 75% since 2008, in part due to aggressive deployment policies in other states and countries, and from which New Hampshire can now benefit at much lower investment levels and creative financing mechanisms.[4] NH should pursue the large economic and technical potential of solar energy that is highlighted in the resource potential study, though a strengthened RPS, through public-private financing mechanisms, through expanded net metering or solar valuation tariffs, the active deployment of RSA 374-G, and through model zoning and permitting ordinances. Deploying 700 MW of distributed solar electric resources would require approximately $2.6 billion in investment capital, and save consumers $176 million annually in forgone electricity bill costs and grid value. The grid value to both consumers and the electrical system include decreased wholesale demand during peak coincident times and other reduced transmission and distribution needs, estimated by some to be a value of anywhere from 5-16 cents per kWh.[5] Deploying 400 MW of utility-scale solar would require an investment of approximately $1.2 billion and could retain approximately $72 million annually in the NH economy.
        ii. Supporting a healthy mix of utility-scale and customer-sited wind and renewable thermal, as well as environmentally-benign small scale hydroelectric resources, are also all critical to meeting the RPS targets. Deploying approximately 300 MW of wind resources over the next ten years is achievable given current installed costs, reasonable and deployable siting guidelines, finance and tax structures, environmental regulations, and the resource potential. 300 MW of new community-scale and utility-scale wind would require a private investment of

[4] 2 Bazilian et al. (2013); GTM Research and Solar Energy Industries Association (2012)
[5] For example, see *Minnesota Value of Solar: Methodology and Valuation,* here.

approximately $600 million and would save NH customers at least $61.2 million annually in electric energy costs.

4. **Smart transportation:** Electric Vehicle and charging infrastructure: NH is the only northeastern state that has not yet adopted the California Low or Zero Emissions Standard. This has compromised the state's ability to purchase hybrid electric and electric vehicles through lower availability and lower vehicle warranties. NH should adopt these nationally recognized standards, and by doing so, increase our average light duty vehicle fuel economy from an average of 19 miles per gallon (mpg) to an average of 47 mpg. This fuel economy gain alone, if half of the expected rate of turnover of light duty vehicle fleet was replaced with vehicles that realize this fuel efficiency gain, would save approximately $665 million per year on reduced gasoline purchases and would require an approximate $1.1 billion investment in vehicle replacements. Investments in charging infrastructure need to match the increase in electric vehicle ridership, both for residents and tourists, and to accommodate the flow of electricity to (and potentially from) these vehicles within our electric system.

5. **Revising the traditional utility business model, coupled with grid modernization efforts**: NH distribution utilities (including PSNH, with the assumption that they will likely divest in their remaining generation in the near future) should begin the transition to a new utility business model—one that is based upon better aligned incentives for both utilities and customers; one where the utility can continue to provide reliable power while better able to act as a full energy service provider, a smart system integrator, and better enable customers to use less overall and diversify their resources to renewable energy. A new utility model should be based on the careful implementation of some, or all, of the following:

    a. Decoupling and/or performance-based rate-making
    b. Time variable rate design (energy and demand charges)
    c. Smart grid investments: customer-facing and utility-side grid modernization investments
    d. Distributed generation accommodation and valuation: improved consumer empowerment whereby the utility acts as a service provider/enabler to customer-sited generation and conservation investments.
    e. Energy infrastructure investment incentives to support the interconnection of in-state renewable energy resources, both distributed generation, storage, and utility-scale generation.

Conclusion

The strategies above must be underscored and realized through strong leadership and management, and given a sense of immediacy by adoption of an ambitious *action* strategy. The strategy and the resulting actions must implicitly and explicitly create impacts that prove as resilient as possible through each biennial political shift. We recommend the following operational strategy for the first two years of the ten year strategy, which includes a legislative agenda, executive orders and private market action.

- Establish an Energy Efficiency Resource Standard, including the necessary regulatory pieces for decoupling, time-based rates, and grid modernization efforts that complement the full deployment of distributed resources.
- RPS housekeeping legislation to bring ACP rates up to comparable levels with the rest of the New England ISO-NEPOOL GIS territory, which would allow REC prices to send the appropriate

market signals, incent new generation, and thereby decrease the use of ACPs for RPS compliance.

- Executive and legislative leadership to support using 2014 new REF funds (beyond the allocated PUC budget of approximately $8 million) to enable a Clean Energy Finance Authority and private sector coordination/investment participation therein, while continuing to fund successful incentive programs.
- Executive leadership convening finance forums on clean energy financing and investment strategies.
- Legislative action to adopt CA-LEV and CA-ZEV standards.
- PUC-led coordination among DOT, PUC, DES, distribution utilities, and private entities to enable grid modernization efforts and electric vehicle charging infrastructure planning and construction.
- Issue a state-led RFP for projects for utility-invested (374-G) and developer-invested projects through a Governor's order or initiative, with a streamlined approval process for projects that meet a defined criteria list.

Thank you for the opportunity to comment.

Sincerely,

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