ENERGY EFFICIENCY AND SUSTAINABLE ENERGY BOARD

RSA 125-O:5-a
21 South Fruit Street, Suite 10
Concord, N.H. 03301-2429

FINAL Comments on 2021 State Energy Strategy
June 18, 2021

Members Voting "Yes": Rebecca Ohler (NH DES); Pradip Chattopadhyay (NH OCA); Tonia Chase (Business and Industry Association); Raymond Burke (NH Legal Assistance); Rep. Kat McGhee (NH House of Representatives); Ryan Clouthier (Southern NH Services); Bruce Clendenning (The Nature Conservancy); Philip Biron (NH State Fire Marshal)
Members Abstaining: Karen Cramton (NH PUC)
Members Voting "No": N/A
Members Not Present To Vote: Rep. Michael Vose (NH House of Representatives); Mark Sanborn (NH OSI); Taylor Caswell (NH BEA); Theresa Swanick (NH Municipal Association); Scott Emond (Home Builders Association); Donald Perrin (NH DAS); Jack Ruderman (NH Housing Finance Authority)

Introduction

The Energy Efficiency and Sustainable Energy (EESE) Board was established in 2008 to "*promote and coordinate energy efficiency, demand response, and sustainable energy programs in the state*"[1] and has a diverse membership including representatives of state agencies, business and industry, municipalities, community action agencies, entities supporting low-income community interests, electric and gas utilities, and the legislature. Throughout its existence the EESE Board has kept abreast of market and policy developments relative to energy efficiency, and sustainable and renewable-energy resources. The EESE Board has historically weighed in on state policy where consensus can be reached among its members. The EESE Board is pleased to submit these comments regarding the 2021 update to the State Energy Strategy.

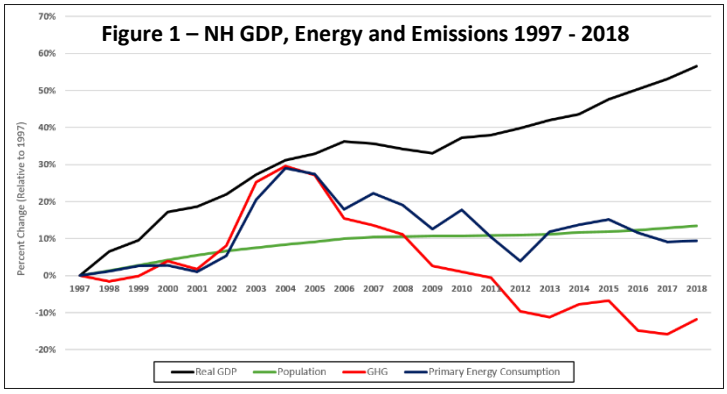
The EESE Board notes that reducing overall energy use and diversifying New Hampshire's energy portfolio can help to remove price uncertainty caused by over-dependence on any single energy resource. New Hampshire has experienced a net economic, public health, and environmental benefit as greenhouse gas (GHG) emissions have fallen. The State Energy Strategy should include benchmarks and tangible goals to enable the General Court to better develop and define policies to meet those goals.

Background/Context

[1] NH RSA 125-O:5-a Energy Efficiency and Sustainable Energy Board, http://www.gencourt.state.nh.us/rsa/html/x/125-o/125-o-5-a.htm.

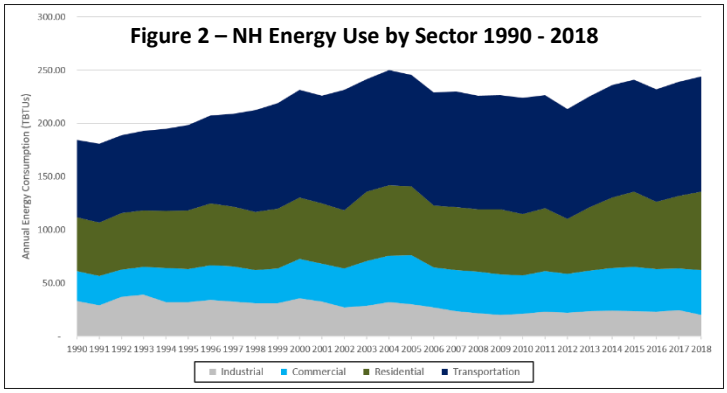
In addressing energy policy for the State of New Hampshire, it is important to recognize the critical role energy plays in the state's economy. In 2018, New Hampshire citizens, businesses, and industries spent over $5.8 billion on energy,[2] two-thirds of which left the state entirely to pay for imported fuels.[3]

New Hampshire Energy Status



NH has experienced a net economic, public health, and environmental benefit as energy-use and GHG emissions have fallen. Between 1997 and 2018, the longest period that consistent data is readily available, New Hampshire has seen its Gross Domestic Product (GDP) steadily rise, pausing only briefly during the 2008 Recession, and ultimately growing by almost 60 percent in two decades (Figure 1[4]). Across that same time period, the state's population grew by just over ten percent. Meanwhile, New Hampshire's total primary-energy consumption[5] and GHG emissions underwent much more extreme changes, rising quite rapidly to peak in 2004-2005 before falling through 2018.[6]

While NH's total primary-energy use fell between 2005 and 2018, the total end-use energy consumption across all sectors,[7] inclusive of retail-electricity consumption, was similar to the total increase in population compared to 1997. Despite that, the state's GHG emissions ended more than 10 percent BELOW 1997 levels by the end of 2018, primarily due to increasing use of natural gas to replace coal and oil for electric generation.



[2] Based on NHDES analysis of US DOE Energy Information Administration, State Energy Data System, Table ET2 Total End-Use Energy Price and Expenditure Estimates, 1970-2018 New Hampshire, https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_prices/tx/pr_tx_NH.html&sid=NH.

[3] Based on portion of spending that leaves the state, drawing upon information from the 2011 VEIC Study NH Independent Study of Energy Policy Issues, https://www.puc.nh.gov/sustainable%20energy/Reports/New%20Hampshire%20Independent%20Study%20of%20Energy%20Policy%20Issues%20Final%20Report_9-30-2011.pdf.

[4] Federal Reserve Economic Data, https://fred.stlouisfed.org/series/NHRGSP; US DOE EIA State Energy Data System (SEDS): NH 1960-2018, https://www.eia.gov/state/seds/seds-data-complete.php?sid=NH; and US Census Bureau; NHDES Analysis. Subject to revision. August 2020.

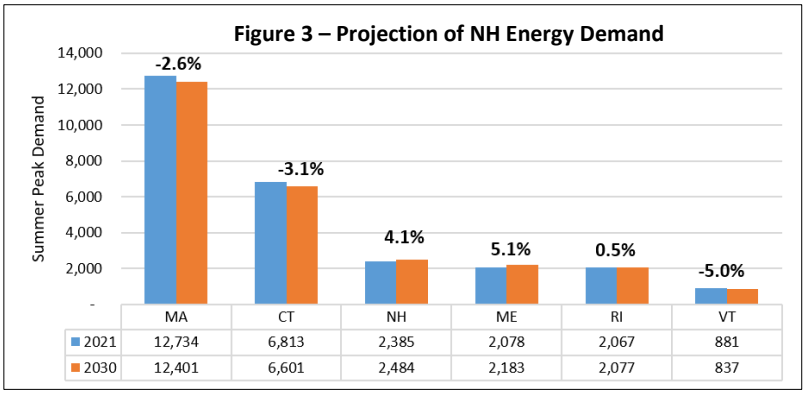
[5] Primary energy consumption refers to the fuels consumed at their first point of use rather than final point of use (i.e., accounts for nuclear and natural gas fuels consumed to generate electricity but not the electricity used by homes and businesses).

[6] The low is primary energy consumption did occur in 2012, however, this was primarily driven by very warm temperatures in March of 2012 which reduced and even eliminated heating load for a significant portion of the end of winter and beginning of spring.

[7] In contrast to primary energy, as defined above, total end-use energy does not include the energy consumed by the electric sector in New Hampshire, but instead factors in the retail electricity consumption in residential, commercial, industrial, and transportation sectors.

In looking at total end-use energy consumption by sector between 1990-2018 (Figure 2[8]), it can be seen that NH's total energy consumption, inclusive of electricity, had a similar peak in 2004 and 2005. However, rather than dropping through 2018, total energy use decrease slightly between 2004 and 2012, at which point it began rising, largely as a result of growth in the residential sector.[9]

As New Hampshire's peak summer demand has increased by 4.1 percent, over half the other New England states have seen their peak demand decline (Figure 3) due to investments in energy efficiency and behind-the-meter photovoltaic (PV) systems.[10]



In 2020 ISO-NE projected New Hampshire's share of the region's peak summer energy load would rise by 0.2 percent between 2021 and 2029.[11] However, ISO-NE released updated projections in April 2021 that projected that New Hampshire's share of the transmission load is now expected to rise by 0.5 percent, **more than double the increase estimated a year earlier.**[12] While this appears to be a modest increase, this increased share in transmission costs, which is determined by a state's electricity usage, represents a potential increase of $3.3 million in additional transmission costs for New Hampshire ratepayers between 2021 and 2024.[13]

Energy Policy and Programs in Surrounding States

The energy policies in other New England states that have resulted in a decline in their portion of the ISO-NE electricity use can generally be summarized as:

1. Pursue all cost-effective energy efficiency, conservation, and demand management in residential, commercial, and industrial sectors to reduce total energy consumption and peak demand.
2. Decarbonize the electric power sector by increasing the proportion of renewable electricity generation from distributed small scale behind the meter renewable energy systems, medium scale systems, and grid-tied utility scale systems.

[8] US DOE EIA State Energy Data System (SEDS): NH 1960-2018, https://www.eia.gov/state/seds/seds-data-complete.php?sid=NH. NHDES analysis. August 2020. Subject to revision.

[9] New Hampshire's total end-use energy consumption rose by 33 percent from 1990 to 2004, at which time it peaked. The transportation and commercial sectors increased had greatest contribution with each growing by nearly 50 percent over that time. From 2004 to 2012, New Hampshire's total end-use energy consumption fell 14 percent with industrial sector falling just over 30 percent and the commercial sector falling 22 percent while the transportation sector remained unchanged. From 2012 to 2018, total end-use energy consumption rose again, nearly reaching the level seen in 2004 with the residential sector seeing the greatest gain at 43 percent increase even as the transportation sector remained the same and the industrial sector fell another 8 percent.

[10] ISO-NE (2020). Capacity, Energy, Loads, and Transmission (CELT) Annual Report 2020, https://www.iso-ne.com/static-assets/documents/2020/04/2020_celt_report.xlsx, and ISO-NE (2021). Annual CELT Report 2021, https://www.iso-ne.com/static-assets/documents/2021/04/2021_celt_report.xlsx, NHDES analysis. Subject to revision. June 2021.

[11] ISO-NE (2020). CELT Annual Report 2020, https://www.iso-ne.com/static-assets/documents/2020/04/2020_celt_report.xlsx, NHDES analysis. Subject to revision. June 2021.

[12] ISO-NE (2020). CELT Annual Report 2020, https://www.iso-ne.com/static-assets/documents/2020/04/2020_celt_report.xlsx, and ISO-NE (2021). Annual CELT Report 2021, https://www.iso-ne.com/static-assets/documents/2021/04/2021_celt_report.xlsx, NHDES analysis. Subject to revision. June 2021.

[13] NHDES analysis of ISO-NE Annual CELT Report 2020, and ISO-NE Annual CELT Report 2021, in addition to data shared by ISO-NE (personal communication June 7, 2021).

3. Strategically electrify homes, government facilities, businesses, and industrial applications as well as the transportation sector to take advantage of efficiencies associated with modern heat pump and motor technologies.

Each of the above approaches will continue to result in significant changes to energy use in terms of timing, total consumption and demand across the entire region and at different times of the year. This will have a cascade of impacts across the ISO-NE grid, including downward pressure on energy supply costs and potentially a reduced need for additional transmission and distribution investments. Reduced demand may not only result in less need for transmission and distribution upgrades, but may also reduce peak energy events, which is when the costliest sources of energy supply are dispatched. However, as these policies reduce electric use in other ISO-NE states, New Hampshire's relative share of total energy use, and, therefore, New Hampshire's relative share of the cost of the transmission system, will continue to increase absent implementation of similar demand reduction strategies.

EESE Board Recommended Outcomes

In light of the above considerations the EESE Board proposes that the State Energy Strategy include a set of desired outcomes that can be applied across multiple sectors and/or policies.

A. Minimize NH's regional cost share through NH investments.

New Hampshire's share of regional obligations for transmission costs is forecasted to increase absent investments in in-state behind the meter resources.[14] Lowering demand through energy efficiency, coupled with increased local, sustainable energy supply will help many NH ratepayers manage costs by addressing both supply and demand, as energy efficiency investments compound over time

B. Strive to achieve all cost-effective energy efficiency.

There is a great deal of cost-effective energy efficiency still available. Investing in efficiency reduces the state's reliance on imported fuels, provides a boost to the state's economy by creating in-state jobs, and reduces energy costs for consumers and businesses. This can be inclusive of not only the traditional electric and gas utility sector, but also new more highly efficient end-uses in the building and transportation sector such as heat pumps and electric vehicles, and building energy codes.

C. Expand fuel diversity and energy reliability.

New Hampshire imports all of the fossil fuels used in the state and has experienced considerable volatility in both price and supply. Diversifying the state's energy portfolio and end-use technologies[15] and increasing the use of in-state resources may help to reduce New Hampshire's vulnerability to price volatility and supply disruptions, leading to increased energy independence, and local economic development.

D. Support economic development by building local energy resources, businesses, and workforce.

New Hampshire's aging workforce, distance from fossil-fuel energy sources, and older building stock are often identified as liabilities for the state's economy, but properly planned for they can serve to grow the economy. Deep investments in cost-effective energy efficiency, workforce development, and support for in-state energy sources reduce the energy dollars exported from the state economy and provide local jobs. Transforming homes, businesses, local government buildings, and industrial facilities to be energy efficient will foster development of highly skilled tradespeople.

E. Incorporate resilience across all aspects of energy planning and policy.

[14] Based on NHDES analysis of the most recent ISO-NE CELT report, April 2021. It is noted that the Federal Energy Regulatory Commission's (FERC) Minimum Offer Price Rule (MOPR), and other policy changes at federal, regional, and state, may have additional impacts.

[15] These technologies are inclusive of electric vehicles, heat pumps, storage, and others.

In the last two decades, NH has experienced more presidentially-declared weather-related disasters than in the 50 years prior[16] and the most significant power outages have all occurred since 2008.[17] The severity and frequency of storms is projected to rise going forward. While NH utilities have modified their vegetative management programs, significantly reducing and shortening the power outages in the state, modernizing the grid to integrate storage and improve distribution intelligence,[18] and weatherizing homes to reduce the impact of extreme heat and cold during outages are critical to support public health and safety, as well as economic vitality.

EESE Board Recommendations

In addition to incorporating the set of overarching, interconnected outcomes listed above, the EESE Board recommends that the 2021 State Energy Strategy include tangible implementation measures that the legislature can use to define policies to meet those outcomes.

A. Invest in Grid Modernization

While interrelated with each of the following topics, the EESE Board singles out the topic of grid modernization as it ultimately enables all other aspects of these comments to be enacted. Grid modernization refers to changes needed in the power grid to accommodate all the rapid technological changes happening in the generation, transmission and distribution of electric power, and is an essential foundation to being able to accommodate and incorporate many other objectives within New Hampshire's energy policy. NH's 10-year strategy should also encourage and enable investments in resiliency that account for the increase in extreme weather events experienced and predicted to occur in the coming decades.

Investments in grid modernization will serve to enable more distributed generation and other strategies to reduce overall demand, including shifting demand to non-peak periods. Grid modernization will also enable use of new energy sources such as offshore wind, innovative energy management efforts such as Community Power Aggregation, and other emerging technologies. Grid Modernization may also increase availability of real-time energy use data which is necessary for time-of-use (TOU) electricity pricing.

A modern, resilient and well-maintained distribution grid can readily enable the addition and interconnection of additional distributed generation and renewable energy, including solar and battery storage, the addition of ever increasing numbers of electric vehicles, and, when coupled with cost-effective energy efficiency, could reduce the need for additional generation, transmission and distribution investments.

B. Support Vehicle Electrification Across the State

New Hampshire should encourage and enable electrification of the transportation sector to reduce harmful emissions and, as the technology continues to grow, lower transportation costs.

Most vehicle manufacturers have committed to significant increases in availability of EV models within the current decade, with some manufacturers, including General Motors, already committing to solely selling zero-emission vehicles in the near future.[19] Within three years, electric vehicles (EV) purchase prices are projected to be at or below conventional vehicle price.[20] That, combined with the lower operating and maintenance costs of

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[16] FEMA (2021). Federal Emergency Management Agency (FEMA): Declared Disasters. https://www.fema.gov/disaster/declarations, NHDES analysis. Subject to revision. June 2021.

[17] PUC (2019). New Hampshire Historical Outages All Utilities For Wide Scale Storms, https://www.puc.nh.gov/Safety/Electrical%20Safety/Safety-Chart-Of-Historical-Storms.pdf.

[18] US DOE (2021). A Key Component Of Distribution Intelligence Is Outage Detection And Response, https://www.smartgrid.gov/the_smart_grid/distribution_intelligence.html.

[19] NY Times (2021). G.M. Will Sell Only Zero-Emission Vehicles by 2035, https://www.nytimes.com/2021/01/28/business/gm-zero-emission-vehicles.html; and CNN (2019). Mercedes-Benz's Aggressive Climate Pledge: All Cars Will Be Carbon-Neutral By 2039, https://www.cnn.com/2019/05/13/business/mercedes-benz-carbon-neutral-electric-vehicles/index.html.

[20] Bloomberg NEF (2021). Electric Vehicle Outlook Report 2021, https://about.bnef.com/electric-vehicle-outlook/.

EVs, will result in a significant increase in use of electricity for transportation. It is necessary to invest in appropriate infrastructure now to ensure the buildout of charging networks is enabled, but also to ensure it occurs in a manner that does not result in increased emissions. Additionally, policies should be in place to encouraged non-essential charging to occur during non-peak hours to help minimize any impact on electric rates.

As the transition to EVs is its infancy, New Hampshire's energy policy should be focused on spurring market adoption and the buildout of associated infrastructure to support and ease this transition and enable the increasing number of electric vehicles to be readily accommodated. This can occur by supporting utility "make-ready" investments where appropriate as well as by developing and offering EV charging rates that are appropriate for the level of market penetration that EVs have achieved. As these investments and rates are being made, costs should be appropriately distributed across the systems users.

C. Maximize Cost-Effective Energy Efficiency

Recognizing that energy efficiency is an effective tool to reduce energy costs, the state should continue to proactively pursue all cost-effective energy efficiency, and emphasize investments that benefit low- and moderate-income residents. The EESE Board continues to stand behind the long-term Energy Efficiency Resource Standard (EERS) policy objective of achieving all cost-effective energy efficiency inclusive of combined heat and power. These programs represent a true investment and because they are the lowest-cost method of satisfying incremental energy needs, are a crucial component in managing energy costs in New Hampshire.

The NH Utilities, PUC staff, OCA and other stakeholders should continue to work in close coordination to identify the best opportunities to achieve cost-effective energy efficiency and demand response in order to mitigate any upward pressure on electric rates.

D. Procure Additional Renewable Energy

The EESE Board acknowledges that sustainable renewable energy[21], including renewable thermal, has the ability to provide clean and reliable energy for residents and businesses. The continued advancements and development of technology has lowered the cost of many sources of renewable energy, making them competitive with fossil fuel sources. Further development of renewable energy in New Hampshire is not only possible, but warranted to continue to reduce GHG emissions and retain our energy dollars in the state.

Encouraging energy portfolio diversity, while being cognizant of existing energy sources, removes price uncertainty from over-dependence on any single energy resource.

E. Reduce Upfront Expense

Develop programing, policies, and approaches that will support the reduction of upfront costs for residents, business, local governments, and manufacturers to adopt energy efficiency and clean energy technologies.

F. Prepare for Changes to Grid Mix

The EESE Board recognizes that the state's electric power sector is at a turning point that requires careful consideration to ensure reliability, diversity, and economic development. The state has a diverse array of power generation facilities, which include hydro, nuclear, coal, oil, gas, solar, biomass, and wind. In the past 20 years, the mix of the fuels has changed dramatically as coal and oil use has declined and natural gas and nuclear have become the dominant energy sources. In the next two decades it is projected that large amounts of new renewable sources of generation will be added to the regional mix.[22] Questions remain about the long-term operation of other non-fossil baseload facilities such as nuclear and biomass. No energy source generates power

[21] Sustainable is inclusive of economic, social, environmental considerations, providing not only an economic benefit but is also appropriately sited in order to benefit the local community, while mitigating environmental impacts.

[22] ISO-NE (2020). A Queue And A Curve: Signs In New England Of A Greener Grid This Earth Day, ISO-NEWSWIRE, April 22, 2021, https://isonewswire.com/2021/04/22/a-queue-and-a-curve-signs-in-new-england-of-a-greener-grid-this-earth-day/.

without some environmental, social, or economic impact. As the state and region transition from one mix to another, policymakers should consider the implications for the various scenarios that may occur and plan accordingly to secure our economic, social, and environmental sustainability.

G. State Government Leadership by Example

The State of NH should continue to pursue cost-effective energy management strategies to reduce its overall energy consumption and costs, maximizing energy efficiency and utilizing in-state sources of energy. The State has already avoided more than $45 million in energy costs in state-owned buildings since 2009 through energy efficiency and switching to locally sourced renewable energy. Significant opportunities remain for further energy cost savings. The State should utilize recently passed legislation to invest in cost-effective energy projects and utilize a portion of the savings to pursue further reductions.

The State should also provide support to local governments, including municipalities, school systems, and regional planning commissions to assist in collecting and analyzing baseline data, developing energy plans, and setting energy targets, in order to achieve energy reductions and cost savings.[23]

[23] In 2020, the Governor signed Omnibus Bill House Bill (HB 1245) 1245, which included the language originally proposed in Senate Bill (SB) 462 (2020). The language in HB 1245 and SB 462 updated multiple RSAs related to the State of New Hampshire's management of energy within state-owned buildings and within the State's vehicle fleet. The language created a new source of funding for building energy projects, and enabled the State to utilize a broader range of financing mechanisms, as well as energy technologies. In addition, it also required the State to consider life-cycle costs across all building and fleet capital investments and leasing decisions. See HB 1245 (2020) Sections 37:53 through 37:60: http://www.gencourt.state.nh.us/bill_status/billText.aspx?sy=2020&id=1652&txtFormat=pdf&v=current.