

Dear Governor Sununu,  
As an engineer concerned  
with energy, you may be  
interested in this comment  
for the updated NH Energy  
Strategy. Wind energy  
is now competitive with  
natural gas! (2016 Lagard  
Levelized Cost of Energy  
Analysis) L/R Fletcher  
10/29/17 MASON NH 03048

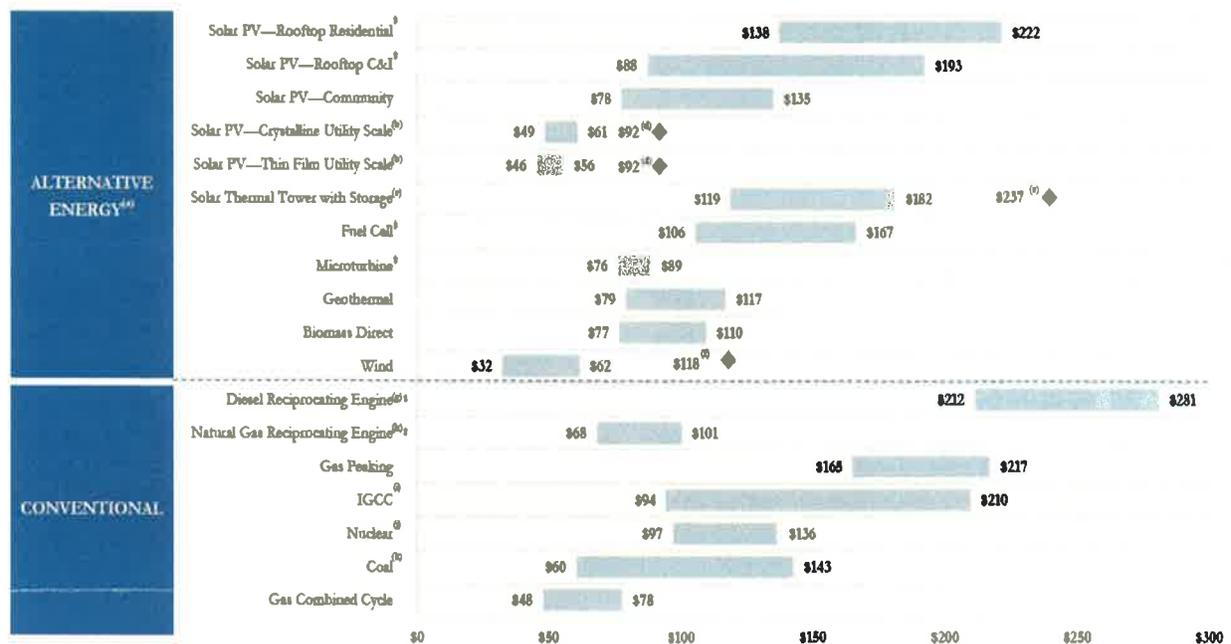
October 29, 2017

Office of Strategic Initiatives  
107 Pleasant St.  
Concord, NH 03301

Re: Comment on updates to NH 10 Year Energy Strategy

At the October 18<sup>th</sup> Public Comment Session in Dublin, there was impressive testimony from businesspeople and other citizens calling for the Strategy to focus strongly on improving energy efficiency and increasing renewable energy to strengthen NH's economy. Please make sure that these two goals are an integral part of the updated Strategy.

The era of fossil fuels is coming to an end. **Wind energy is now competitive with natural gas as a resource for electricity generation.** The financial services company Lazard reports in their 2016 Levelized Cost of Energy Analysis that wind energy is now one of the most affordable options. Lazard finds wind's unsubsidized levelized cost of energy (\$/MWh) is competitive with conventional generation in certain regions of the country, ranging from \$32/MWh to \$62/MWh in 2016, with pricing lowest in the Interior region of the country. Gas Combined Cycle Conventional Generation ranges from \$48/MWh to \$78/MWh. Clearly, wind energy is economically viable; the chart below shows Lazard's Levelized Cost of Energy Analysis results.



The cost of solar power is also coming down fast -- On Sept 12, 2017, the Department of Energy (DOE) [announced that utility-grade solar panels have hit cost targets set for 2020](#), three years ahead of schedule. Those targets reflect around \$1 per watt and 6¢ per kilowatt-hour in Kansas City, the department's mid-range yardstick for solar panel cost per unit of energy produced. Indeed, the National Renewable Energy Lab (NREL) reported that the first quarter in 2017 saw a 29-percent decline in installed cost for utility-scale solar, compared to the first quarter of 2016.

**The existing 2014 Energy Strategy calls for more use of in-state energy sources like solar, wind, and biomass to increase the resilience of our electric grid, reduce our dependency on the volatile fossil fuel market, and keep our energy dollars in the NH economy. This goal must be strongly re-emphasized!**

Wind and solar are becoming serious contenders for economic electricity generation. At present, NH is dependent on natural gas for more than half of its electricity. This situation is likely to continue for the near term. But to increase infrastructure investment in volatile-priced and dwindling gas while ignoring the growing economic potential of renewables would be a bad risk for NH electricity consumers.

At the Dublin session, John Kieley of Temple reported that Massachusetts has put out a Request for Proposals for renewable energy, and that many of the proposals received involve energy sites in NH. If our Energy Strategy fails to encourage the growth of renewables, NH will see our most productive sites used to send energy to Massachusetts.

The 2014 Energy Strategy found that NH lags behind surrounding states in realizing the benefits of energy efficiency, and called for establishing an Energy Efficiency Resource Standard (EERS). New Hampshire's EERS takes effect in January 2018 and sets a cumulative goal of 3.1 percent electric savings relative to 2014 kilowatt-hour sales. States that have implemented EERS have experienced three times the energy savings as states without an EERS.

NH is in dire need of increasing energy-saving investment. Our electrical energy efficiency efforts are falling behind those of other states in the ISO New England grid. ISO charges each state according to its percentage of the total New England electrical demand. At present NH uses 9.5% of the ISO generation. (Rep. Shepardson, Dublin session) As other New England states continue to increase their efficiency programs while we fail to act, NH's electric usage will become a growing proportion of the ISO grid. Our electric costs will rise accordingly.

**To protect NH's economic well-being and environmental health, the updated NH Energy Strategy must emphasize energy efficiency.** Implementing EERS will save NH consumers hundreds of millions of dollars at far lower cost than investing in big new energy infrastructure projects.

An excellent analysis of NH's electricity future was published in March 2017 (updated May 2017) by UNH Carsey School of Public Policy.

[scholars.unh.edu/cgi/viewcontent.cgi?article=1296&context=carsey](http://scholars.unh.edu/cgi/viewcontent.cgi?article=1296&context=carsey)

This analysis finds no immediate need for New Hampshire to expand natural gas pipeline infrastructure. Economic growth in New England no longer requires increased energy use. From 2005-2015, real state GDP in New England grew by 9.7% while energy use fell by 9.6%.

Given the fast-changing nature of regional and global energy markets, the Carsey School study warns against the "significant stranded cost risk to electric ratepayers for large infrastructure investments with uncertain return on investment. This includes publicly-funded expenditures for new natural gas capacity."

NH ratepayers are presently stuck with significant stranded costs for the huge cost over-runs on the Bow coal plant scrubber, and for the eventual decommissioning of the Seabrook nuclear plant. Adding additional gas pipeline infrastructure at this time of transition in the energy markets is a serious risk for more stranded costs.

Natural gas's higher risk relative to cost is clearly shown in the chart below from Ceres' Nov. 2014 update to their report *Practicing Risk-Aware Electricity Regulation: What Every State Regulator Needs to Know*. Ceres is a sustainability-focused nonprofit organization working with investors and companies to create sustainable solutions throughout the economy. The chart shows that energy efficiency and onshore wind are least-cost and least risk. Although natural gas is not much more costly than onshore wind, its investment risk is more than 3 times greater.

## Relative Cost and Risk of New Generation Resources

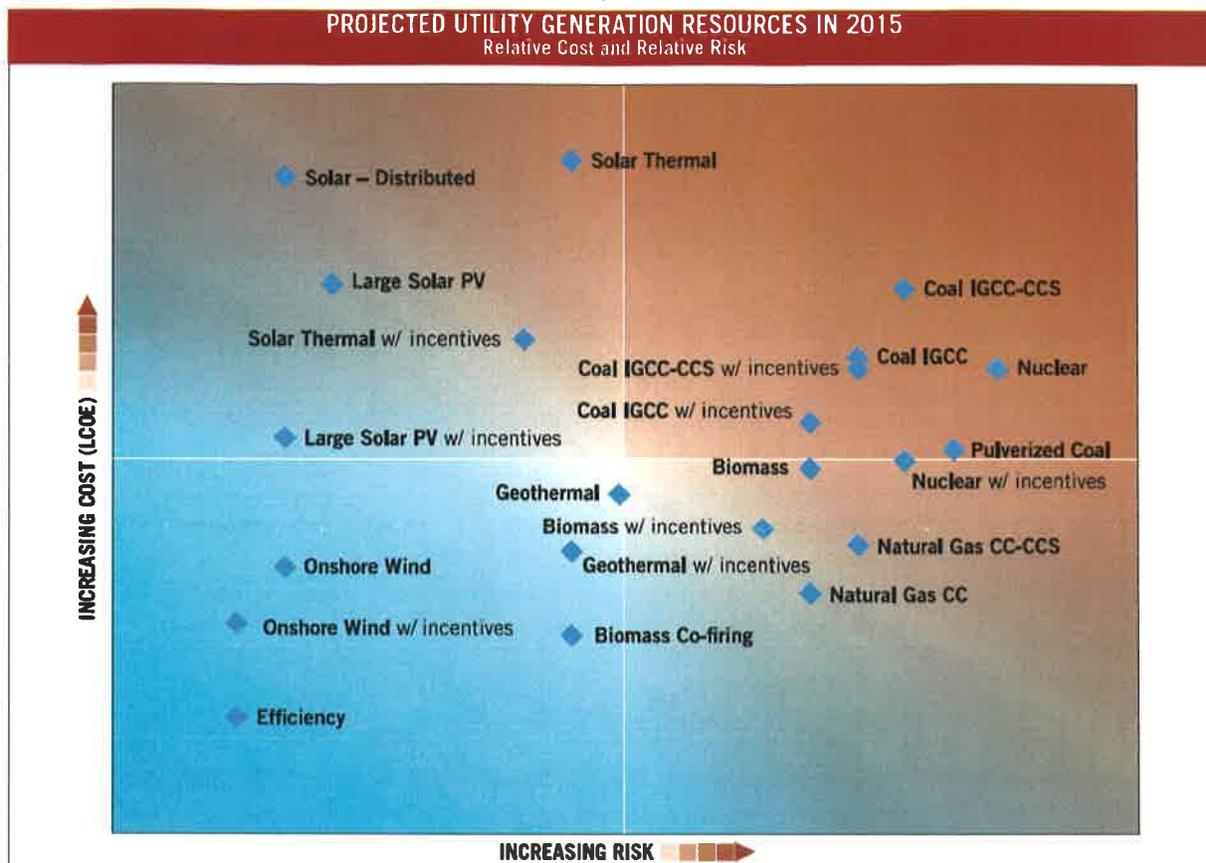


Chart Source: Ceres, *Practicing Risk-Aware Electricity Regulation*

For this reason, the Carsey School study calls for the state to do a rigorous analysis of system wide natural gas flows and prices prior to committing ratepayers to a multidecade natural gas contract. "This study should lead to an improved understanding of the difference between the technical and economic capacity of the existing system and explore opportunities to access more of the technical pipeline capacity in cost-effective ways." (Carsey School study, pp. 6,7)

**This Carsey School recommendation should be included in any updating done to the NH Energy Strategy, A system-wide analysis of natural gas flows and prices in NH must be completed before committing ratepayers to long-term natural gas contracts. This analysis should investigate the use of energy efficiency measures to reduce overall gas consumption and the use of existing LNG infrastructure to address peak demands.**

To consider any expansion of natural gas infrastructure in NH without completing such an analysis would be reckless disregard for the well-being of New Hampshire's people, environment, and economy. Thank you for considering my comments.

Sincerely,

Liz Fletcher  
288 Marcel Road  
Mason NH 03048  
603-878-2539



Ms. Liz Fletcher  
288 Marcel Rd  
Mason, NH 03048

MANCHESTER NH 030

30 OCT 2017 PM 1 L



OCT 31 2017

Governor Chris Sununu  
State House  
107 North Main St  
Concord NH 03301

03301-499099





# SIERRA CLUB

NEW HAMPSHIRE

Governor Chris Sununu  
NH State House  
107 North Main Street  
Concord, NH

A Family Action Message

Governor Sununu,

Improve our schools, neighborhoods, water, businesses and air by strengthening the energy saving Regional Greenhouse Gas Initiative, access to renewable energy like solar and off-shore wind, and funding for weatherization for work force housing and residential in the Granite State.

Protect the future for kids!

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Governor Chris Sununu  
NH State House  
107 North Main Street  
Concord, NH



A Family Action Message

Governor Sununu,

Electric vehicles can address climate change and air pollution that hurts people with asthma and other chronic diseases like COPD and cystic fibrosis.

Please support choice in transportation by allowing more options to improve our air. School districts and municipalities can replace older vehicles with all-electric buses and vehicles for their fleets. Improving the electric charging network with Level II chargers will attract more business and build upon our tourism economy.

Your support for electric vehicles can help reduce air pollution and improve public health in the Granite State.

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(14)

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(H)

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CH

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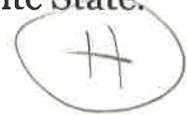
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NH State House  
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Governor Sununu,

Electric vehicles can address climate change and air pollution that hurts people with asthma and other chronic diseases like COPD and cystic fibrosis.

Please support choice in transportation by allowing more options to improve our air. School districts and municipalities can replace older vehicles with all-electric buses and vehicles for their fleets. Improving the electric charging network with Level II chargers will attract more business and build upon our tourism economy.

Your support for electric vehicles can help reduce air pollution and improve public health in the Granite State.

(H)

✓

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Email:	



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Email:	



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(H)

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HD

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✓

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Ⓢ

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(H)

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Protect the future for kids!

(H)

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Name:	Mary White
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Nissan Leaf

2014 414 miles

Dear Decision Maker:

Extracting and burning oil creates more than 40% of climate-disrupting emissions in the US while leading to health problems like asthma for millions of Americans.

A great next step to reduce our reliance on dirty fossil fuels is to electrify our transportation sector, including with zero emission buses.

Not only are battery electric or hydrogen fuel cell buses cleaner than diesel, hybrid, and compressed natural gas buses, but they're quieter and cheaper to maintain and fuel, too.

Zero emission buses are already in operation in many cities, including Tallahassee, FL; Seattle, WA; and Worcester, MA.

Thank you for considering making our area a leader in cleaner, safer technologies by investing in zero emission buses.

~~Ⓢ~~

FROM:

NAME (please print) Bob Sletten

ADDRESS 163 Bow Bog Road

CITY Bow

PHONE 603 224 5465

EMAIL Bob-S @ MyFairPoint.net

STATE NH ZIP 03304



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*AD*

FROM:

NAME (please print) Bruce Cooper (Solertia Force)

ADDRESS 11 Interga Dr Unit 14

CITY POWERS STATE WA ZIP 98301

PHONE \_\_\_\_\_ EMAIL TRADAR@HOSSTRADER.COM



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*(Handwritten initials)*

FROM:

NAME (please print)

*Elizabeth Borystein*

ADDRESS

*50 Woodhill Hooksett Road*

CITY

*Bow*

STATE

*NH*

ZIP

*03304*

PHONE

*(603) 731-6984*

EMAIL

*bethsane@comcast.net*



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CH

**FROM:**

NAME (please print) Daniel Titus  
ADDRESS 3 Eastview Drive  
CITY Bow STATE NH ZIP 03304  
PHONE 603 224-1730 EMAIL \_\_\_\_\_



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*(Handwritten initials)*

**FROM:**

✓ NAME (please print) LINDA CASPINALI

ADDRESS 15 Pinyan Street

CITY Camden

STATE Nh

ZIP 03303

PHONE 603 288 5323

EMAIL



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Ⓜ

**FROM:**

NAME (please print) Debra Patton

ADDRESS 46 Warren St. Apt 183

CITY Concord

STATE N.H. ZIP 03301

PHONE 410 7707 EMAIL \_\_\_\_\_



Dear Decision Maker:

Extracting and burning oil creates more than 40% of climate-disrupting emissions in the US while leading to health problems like asthma for millions of Americans.

A great next step to reduce our reliance on dirty fossil fuels is to electrify our transportation sector, including with zero emission buses. Not only are battery electric or hydrogen fuel cell buses cleaner than diesel, hybrid, and compressed natural gas buses, but they're quieter and cheaper to maintain and fuel, too.

Zero emission buses are already in operation in many cities, including Tallahassee, FL; Seattle, WA; and Worcester, MA.

Thank you for considering making our area a leader in cleaner, safer technologies by investing in zero emission buses.

**FROM:**

NAME (please print) MARK BIRLOW  
ADDRESS 29 CILWAMON RIDGE RD  
CITY SOMERS WORTH STATE VT ZIP 03878  
PHONE 803-692-5840 EMAIL MARKBB@comcast.net





# SIERRA CLUB

NEW HAMPSHIRE

Governor Chris Sununu  
NH State House  
107 North Main Street  
Concord, NH

## A Family Action Message

Governor Sununu,

Electric vehicles can address climate change and air pollution that hurts people with asthma and other chronic diseases like COPD and cystic fibrosis.

Please support choice in transportation by allowing more options to improve our air. School districts and municipalities can replace older vehicles with all-electric buses and vehicles for their fleets. Improving the electric charging network with Level II chargers will attract more business and build upon our tourism economy.

Your support for electric vehicles can help reduce air pollution and improve public health in the Granite State.

(4)

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**FROM:**

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Name:	Mary Heslin
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(H)

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(H)

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OFFICE OF STRATEGIC  
INITIATIVES

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P. O. Box 330  
Manchester, NH 03105-0330

**William J. Quinlan**  
President, NH Electric Operations

603-634-2761  
william.quinlan@eversource.com

November 17, 2017

Mr. Joseph Doiron  
Deputy Director & State Energy Program Administrator  
Office of Strategic Initiatives  
107 Pleasant Street, Johnson Hall  
Concord, New Hampshire 03301

Dear Mr. Doiron,

Eversource Energy is pleased to submit these comments in response to the Office of Strategic Initiatives' (OSI) request, per RSA 4-E:1 to develop an updated energy strategy for the State of New Hampshire. Eversource believes that an effective long-term energy strategy should reflect the input of our customers with the goal of supporting business development and economic growth in New Hampshire over the next ten years.

We are committed to environmental sustainability, valuing clean energy as an important part of the energy mix in New England, while ensuring costs to customers remain reasonable and fair. As a result, we are committed to serving as an economic clean energy catalyst and leader in the region by pursuing utility-owned solar, energy storage and electric vehicle infrastructure in other New England states as well as bringing energy from hydropower and offshore wind into the region.

Continued input from our customers helps shape our planning process and for this reason, we believe that sharing the concerns and needs of our customers, both residential and industrial, ensures that the updated energy strategy is realistic and addresses the actual needs of end users. Since the state embarked on its last energy strategy, our leading commercial and industrial businesses have raised the level of concern about the availability of lower cost, efficient and reliable energy. Our comments reflect both our commitment to economic clean energy and input from our customers.

## Gas Infrastructure

As older power plants in New England are retiring, there has been a major transition to natural gas as the predominant fuel source for the region's generation fleet.<sup>1</sup> This shift has created a new challenge in that the gas infrastructure system has not kept pace with the growing reliance on natural gas as a fuel source for New England's electric generating plants.

The lack of natural gas pipeline capacity to serve electric power plants in the region is threatening the reliability and affordability of power in New England during peak periods. The high demand coupled with lack of sufficient firm transportation capacity has led to, high prices for natural gas and electricity during the winter months, and greater greenhouse gas emissions. As noted by the New Hampshire Public Utilities Commission in its comments to FERC in Dockets AD13-7-000 and AD14-8-000:

“Without market reforms that encourage the use of firm natural gas supplies by generators, as natural gas prices spike in the winter months, fuel oil and LNG will increasingly become the fuels of choice for electricity production and wholesale and retail electricity prices will remain at elevated levels. In addition, because fuel oil has significantly dirtier emissions than natural gas, its increasing use risks reversing progress on reducing power plant emissions profiles in New England, an outcome that may make the permitting of back-up fuel oil facilities difficult if not impossible.”<sup>2</sup>

The state must be open to solutions and refrain from creating unnecessary barriers to an essential upgrade to the gas system infrastructure. Further, to increase the availability of supply of more diverse sources of generation, a review of the legislative and regulatory framework around new projects is needed.

No one state in the region can effectively address the issue of needed gas infrastructure. Therefore, it is vitally important that New Hampshire participate in identifying and implementing regional solutions to the challenge. Resolving the gas infrastructure challenge represents a significant opportunity to lower rates for our customers and to encourage growth of the state's economy. Removing unnecessary barriers to a gas solution is a critical first step, and will enable a cleaner energy future.

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<sup>1</sup> In 2000, 18% of New England's generating capacity was fired by natural gas. ISO-NE forecasts that 56% of the region's generating capacity will be natural gas fired by 2025. <https://www.iso-ne.com/about/key-stats/resource-mix>

<sup>2</sup> The NHPUC has more recently noted: “We acknowledge that the increased dependence on natural gas-fueled generation plants within the region and the constraints on gas capacity during peak periods of demand have resulted in electric price volatility.” Order No. 25,950, October 6, 2016.

### Baseload Fuel Diversity

With the region's growing reliance on natural gas to fuel its generating plants, it remains important to diversify baseload fuel resources.<sup>3</sup> A reliable system must have a diversified baseload portfolio to ensure against price spikes and single fuel interruptions. As noted above, in New England many older, less efficient power plants are retiring. It is highly unlikely that there will be an increase in baseload coal or nuclear power plants in New England to replace these retirements. For these reasons, the state should not create new barriers to developers interested in building infrastructure to allow the import of large scale hydropower. As identified in New Hampshire's climate action plan, importing baseload hydropower is a pillar of ensuring clean, stable, reliable and low cost power to New Hampshire's growing businesses.

Developing a diversified fuel mix is also reliant upon a balanced and efficient regulatory structure. The state's energy siting process should be reviewed to ensure there is a thorough regulatory review and ample public input, without creating unnecessary burdens on a potential developer.

### Renewable Energy

Eversource supports the state's desire to enhance the diversity of its energy sources. Promoting renewable energy through the state's Renewable Portfolio Standard (RPS) is one of many ways to meet that goal. Clean energy is an important part of the state's and the region's energy mix, but the approach to ensuring a sustainable renewable energy portfolio should be cost effective and should not foreclose opportunities to improve the environment in a less costly manner through larger scale development of these resources. To make renewable energy cost effective, it is important to see what others have done – don't recreate the expensive, inefficient options, but study what has worked elsewhere. Other states in the country are looking at ways to meet their renewable requirements through economies of scale. Some opportunities that could be reviewed for the potential to lower costs are large scale hydro, utility scale solar and offshore wind.

### Transmission Grid Investment

The region's recent investments in the New England transmission system has helped eliminate over \$600 million per year in overmarket energy costs due to congestion and other special payments to generators. Much has been done over the years to relieve congestion and to lessen the need to pay generators for remaining available to run as a method of providing reliability. Overall, transmission improves reliability, increases the flexibility to run more efficient generation and ensures that the lower cost power plants are participating in the competitive energy market. All customers benefit when higher cost, out of market solutions are not the band-aid keeping the system reliable. Transmission planning

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<sup>3</sup> The importance of electric generating fuel diversity is already built into New Hampshire law. See RSA §§ 4-E:1, I,(c); 4-E:1, II; 162-I:1, VIII; 162-I:3-b, I ; 362-F:1; 374-G:1; 374-F:8; 378:7; 378:7-a.

and investment has become more important as base-load generating facilities retire and new renewable sources of electricity are sited in locations away from existing transmission infrastructure. A more thorough understanding of the benefits of transmission grid investment, including lower rates and access to clean energy, is critically important.

### Distribution Grid Modernization

Eversource has been committed to modernizing the state's electric system as it is essential to system stability and to lowering energy costs. Overall, we continue to believe that cost-effective modernization of the electric distribution system should focus on four primary objectives deemed critical to our customers: (1) to reduce the effects of outages; (2) to optimize demand, including reducing system and customer costs; (3) to integrate cost effective distributed resources; and, (4) to improve workforce and asset management. These four objectives will be beneficial as they target our customers' needs of today and into the future, while focusing on cost-effective solutions.

Here in New Hampshire and in the New England region as a whole, Eversource has been hard at work making significant upgrades in the "21<sup>st</sup> Century Electric System." New Hampshire's commercial and industrial customers have been clear that they rely on an updated and forward looking electric infrastructure to ensure business success, while still providing lower cost energy. Much like trying to attract a younger work force, attracting the industries of tomorrow to make New Hampshire their home requires a distribution network that is up-to-date, provides smart information to industry so they can make informed business decisions, and can reduce the duration of outages and impacts to the business community. Ensuring that utilities have opportunities to provide cost-effective technological advances with regulatory review is essential to keeping New Hampshire at the cutting edge of business opportunities.

### Energy Efficiency

Eversource is proud of its role in delivering robust, efficient and auditable energy efficiency programs throughout New England and especially in New Hampshire. As part of the NH Saves efficiency programs, Eversource and its utility partners have been recognized time and time again for delivering award-winning programs to very satisfied customers. Our solid relationships with our customers ensure success and allows us to continue to tailor the programs to meet specific customer needs.

Eversource encourages the state's review of the utility programs to ensure they are cost effective and are indeed the lowest cost solution. We believe they are and continue to believe that any energy strategy should include cost-effective energy efficiency programs to all customers.

### Technological Advances

Electric vehicles (EVs) could be an important part of the state's energy and transportation future. As more of our customers and tourists visiting the state begin driving EVs, there will be a need for available charging infrastructure. Should these vehicles indeed gain ground in the state and region, they could provide an opportunity to balance electricity load resulting in lower costs for our customers overall. Eversource would support a pilot program utilizing a major transportation corridor within the state to test the need for this infrastructure.

Exploring the merits of energy storage to avoid the potential for larger distribution and transmission investment should also be considered. There is much debate concerning the merits and costs of energy storage. Embarking on a pilot to provide solid information about the potential of energy storage would help inform this debate.

### Conclusion

In closing, Eversource thanks the OSI for the opportunity to provide input on the development of the next phase of the state's energy strategy. We have a strong commitment to providing reliable, affordable and clean energy to all of our New Hampshire customers. We welcome the opportunity to partner with OSI as the strategy is implemented.

Sincerely,

A handwritten signature in black ink, appearing to read "William J. Quinlan". The signature is fluid and cursive, with a large initial "W" and "Q".

William J. Quinlan