An Energy Vision Statement for New Hampshire
Proposed by the NH CleanTech Council:

"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."[i]

Recognizing this, **the primary principle for a New Hampshire Energy vision should be to reduce the export of energy dollars from 66%, to 50% by 2023, keeping over $1 billion each year in New Hampshire.**[1]

This is a measurable goal that will not only guide energy policy, but will form the foundation for a robust and innovative economic development strategy.

1. *What does a secure and resilient energy system look like in 2023?*

A secure and resilient energy system is one that reduces New Hampshire's exposure to energy product shortages and price volatility by reducing our dependence on imported fuels through greater efficiency and expanded native energy production that comes from a variety of resources, including generation, storage, demand control, and conservation. Such an energy system will include a well-maintained and modernized and smart grid, with diverse resources distributed at the point of use. It will include the expanded use of native generation resources, as well as maximizing the deployment of energy efficiency as a supply resource. Such a system will send clear market signals to those who will invest in and facilitate our state's energy system and enable consumers to make informed choices about when, how, and what type of energy they produce and consume. This system will be supported by a regulatory and policy framework that is built upon a state government that is better tooled to adequately regulate a power infrastructure that includes multiple and complementing generation systems and recognizes its vital role in both enabling and helping guide this more modern power infrastructure.

2. *Is the electric grid stable and reliable during extreme weather events in 2023?*

While NH leaders cannot control the regional electric grid or stop the increasing number of severe, disruptive weather events alone, we must adapt – and we can benefit from leading. Distributed clean energy generation, at a variety of scales and sources, combined with efficiency and grid modernization is a recipe for much greater energy security, and strong economic growth – and it is within our reach.

[1] 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.

3. Is NH's grid vulnerable to security threats (cyber security and others) in 2023?

The national grid is extremely vulnerable to security threats. Once again, New Hampshire's best solution for minimizing these threats and the potential impact on our economy is by reducing its dependence on the regional electric grid (and the fossil energy extraction and distribution system) through greater efficiency and use of clean technology.

4. What effect does resource intermittency have on NH's energy system?

States across the nation have found that utility resistance to an expanded wind and solar generation presence on the grid is easily overcome in most cases when such generation systems are properly sited and modeled. All new generation systems must perform system impact studies that evaluate thermal, voltage, and stability impacts of the new generation, each of which should include, among many other things, anticipating the impact on intermittency. Studies across the country, and here in New England, have consistently shown that large amounts of intermittent renewable generation can safely and reliably be integrated into the grid at very significant levels.

Conversely, resource intermittency of natural gas clearly has a negative effect on NH's economy, as we have seen this winter with utilities being heavily dependent on natural gas for electric generation and at manufacturing facilities with no options other than to buy on a spot market whose prices are not within New Hampshire's control. Electric prices, as a result of gas supply constraints, have routinely been above $300/MWh this winter; these high spikes, which cost millions of dollars per hour, are substantially mitigated by renewable generation.

5. In 2023, where is NH ranked amongst its peers regarding energy efficiency, cost, or emissions?

NH is currently ranked lowest amongst its peers regarding energy efficiency, and in many cases, the cost of energy. Reducing New Hampshire's dependence on imported fossil fuels and keeping fuel dollars in the state through greater efficiency and use of clean technology will lower overall cost over time, and emissions in the short, medium, and long-term.

As a supply resource, energy efficiency is extremely cost effective. Efficiency improvements cost about $600/kW on average, whereas building new power generators costs $2,000-$3,000/kW. Efficiency investments also reduce consumer costs and emissions through reduced power usage. New Hampshire must develop policies that can spur and attract private investment in increased efficiency.

6. Do businesses and individuals actively seek to locate operations and settle in NH because of its energy policy in 2023?

Yes. By keeping $1 billion per year in the New Hampshire economy through a dedication to a clean energy economy, New Hampshire will attract new business. The greatest danger to this prospect of attracting new businesses and individuals to locate in NH is continuing price disparity between natural gas and heating oil in areas not served by natural gas pipelines. For example, if communities in the Upper Valley region are trying to attract businesses with thermal needs that can only be served by LPG or heating oil, their ability to be competitive with regions that have pipeline gas or renewable systems will be drastically impacted. Reducing costs and volatility while increasing reliability through dedication to efficiency and implementation of clean technologies

would present a New Hampshire economy and energy infrastructure that would be exceptionally appealing to many profitable businesses. With an updated and progressive energy policy developed by 2023, we foresee a strong clean tech sector that is supported by and directly participates in providing services and creativity needed to fuel this transition. This clean tech economy will in turn feed an economic engine that invests in and supports local jobs, entrepreneurship and keeps NH's energy dollars in state

7. Are consumers able to protect themselves from fuel price fluctuations?

Consumers are not adequately able, in 2014, to protect themselves from fuel price fluctuations, due to the relative inelasticity of energy demand and the over-reliance on a global, import-based, fuel market. In 2023, consumers will have greater opportunities to choose energy systems where the fuel is free, or locally available, and where they understand both the up-front and lifetime operating costs of a technology.

8. Are consumers empowered to manage their energy consumption?

Consumers are not currently empowered adequately enough to manage their energy consumption, particularly low-income consumers and businesses of all sizes. For example, many industrial and high-tech, precision operations require stable, constant energy inputs, and have load profiles that are well-suited to onsite generation of both heat and electricity, but they are not empowered to finance or choose the systems that are optimized to their needs.. Instead they remain reliant on a price/fuel system that obscures this opportunity. Many electric tariffs have tiered rates that decline with increased use. This is not an empowering rate structure to incent the necessary shift to clean, consumer-controlled, technologies. Electric rates, and thereby company and utility profits, need to be tied more directly to investments in conservation and efficiency, and decoupled away from increased consumption. Efficiency investment and mainstream clean thermal heating and cooling technologies need to be widely available to consumers and financed seamlessly as the purchase of a car.

9. Are natural resources including air, water, and the scenic vistas of the state adequately protected in 2023?

These resources need to be protected through deployment of greater system efficiency, clean energy, and economic stability. Businesses and citizens, and state leadership can best protect these resources by reducing pollution from fossil fuels and realizing the economic gains embedded in the clean energy and clean tech sectors. Aggressive investment in native, renewable generation, coupled with efficiency and grid upgrades is essential to ensuring protection of our air, water, and scenic resources. This economic advantage will give the state and communities the economic resources and security that they need in turn to adequately protect natural resources.

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[i] Vermont Energy Investment Corporation et al. September 30, 2011. *Independent Study of Energy Policy Issues.* http://www.puc.nh.gov/Sustainable%20Energy/Reports/New%20Hampshire%20Independent%20Study%20of%20Energy%20Policy%20Issues%20Final%20Report_9-30-2011.pdf