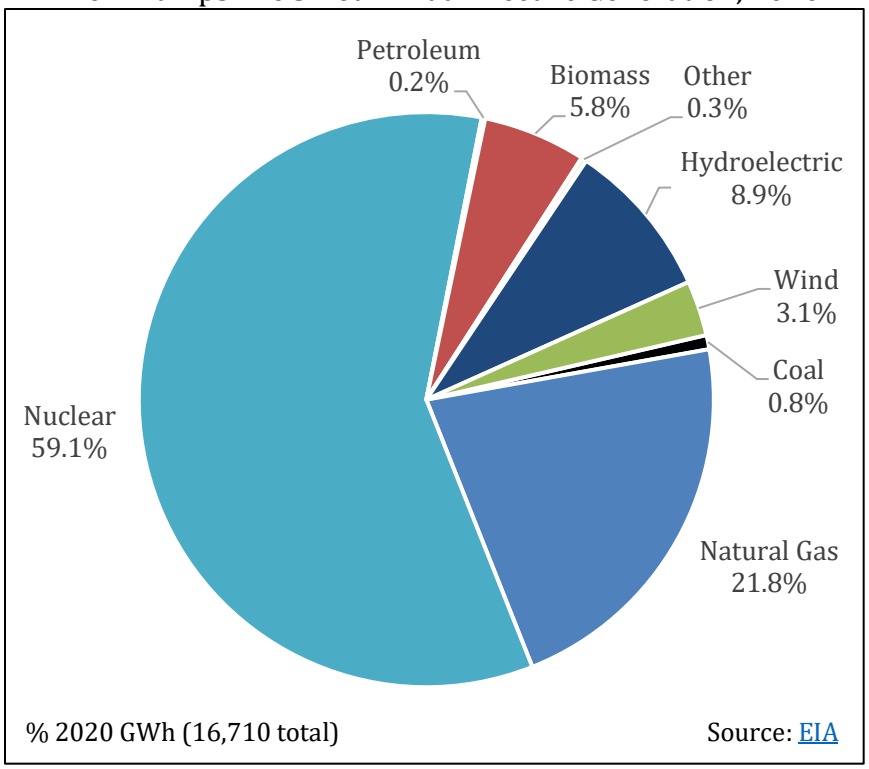
State Brief: New Hampshire

BACKGROUND

The largest source of New Hampshire's net electricity generation is nuclear, contributing nearly 60% of the state's net generation. New Hampshire is home to New England's largest nuclear power reactor. Natural gas accounts for the second largest source of net-electricity generation, and the two resources supply over 80% of New Hampshire's electricity generation. Coal has been a historically minor contributor to the state's electricity mix, and in 2016 wind generation exceeded that from coal for the first time. New Hampshire continues to add wind capacity, but the bulk of the state's renewable energy capacity is supplied by biomass and hydroelectric resources. New Hampshire generates more electricity than it consumes and exports its excess capacity to neighboring states and Canada.

New Hampshire's Net Annual Electric Generation, 2020



As of mid-2021, New Hampshire has 140.46 megawatts (MW) of installed solar capacity. In 2020, the Solar Energy Industries Association (SEIA) ranked New Hampshire 42nd in the nation for projected solar energy capacity growth over five years at 351.43 MW. The 2020 U.S. Energy and Employment Report found that the Granite State has 10,812 traditional energy workers (1.6% of total state employment). In 2020, the state ranked 37th nationwide for clean energy jobs (including jobs in energy efficiency and solar) and the industry employed 15,322 New Hampshirites.[1]

The three members of the New Hampshire Public Utilities Commission (PUC) are appointed by the Governor. Two commissioners were appointed by the current governor, Governor Chris Sununu, a republican. The other was appointed by former Governor Margret Hassan, a democrat. In April 2021, Dan Goldner was nominated by Governor Sununu to fill the seat to be vacated by Kate Bailey when her term ends on June 30, 2021. The PUC has full authority over the state's investor-owned utilities (IOUs), but no authority over municipal utilities. The state's electric cooperatives can choose to opt in or out of PUC oversight. Republicans control both chambers of the New Hampshire General Court.

POLICY STRENGTHS AND OPPORTUNITIES

The National Renewable Energy Laboratory (NREL) developed the notion of "policy stacking,"[2] an important framework for policymakers to consider. The basic idea behind policy stacking is that there is an interdependency and sequencing of state policy that, when done effectively, can yield greater market certainty, private sector investment, and likelihood of achieving stated public policy objectives.

In theory, but not always in practice, clean energy policies can be categorized into one of three tiers of the policy stack. Tier 1, market preparation policies, remove technical, legal, regulatory, and infrastructure-related barriers to

[1] This is in addition to the number of traditional energy jobs in the state.

[2] V.A. Krasko and E. Doris, *National Renewable Energy Laboratory*, 2012. Strategic Sequencing for State Distributed PV Policies: A Quantitative Analysis of Policy Impacts and Interactions. http://www.nrel.gov/docs/fy13osti/56428.pdf.

clean energy technology adoption. Tier 2, market creation policies, create a market and/or signal state support for clean energy technologies. Tier 3, market expansion policies, create incentives and other programs to expand an existing clean energy market by encouraging or facilitating technology uptake by additional market participants.

For example, before financial incentives for combined heat and power (CHP) will be successful, two key considerations for deployment are having clear interconnection standards and favorable stand-by rates for customers who opt to add CHP. In this example, states should adopt policies to address interconnection and stand-by rates before adopting financial incentive programs.

GRID MODERNIZATION

Digital technologies have enabled utilities to better manage the grid and provide opportunities for consumers to customize their services to fit their priorities. These technologies allow a two-way flow of information between the electric grid and grid operators and between utilities and their customers.

Emerging technologies improve system reliability and resiliency by enabling better tracking and management of resources. These technologies allow grid operators to incorporate central and distributed energy resources, energy storage technologies, electric vehicles, and assist in addressing the challenges associated with planning, congestion, asset utilization, and energy and system efficiency.

On the customer's side of the meter, dynamic pricing, advanced metering infrastructure, and other technologies allow an exchange of information and electricity between a consumer and their electric provider. Grid modernization is associated with greater consumer choice by allowing customers to meet their energy priorities by producing their own energy or through contracting innovative clean energy services from different providers.

Grid modernization will require a suite of state and federal policy changes to support advancements in grid technologies, grid management, and utility regulation.

In 2019, Governor Sununu signed Senate Bill 284 establishing a statewide online energy data platform. The bill requires data be secured through the Green Button Connect program. Also in 2019, the PUC released a report outlining recommendations on how to implement grid modernization across the state. New Hampshire has been active in promoting grid modernization efforts. To remain a leader, there are supportive policies that New Hampshire's policymakers can adopt to support and advance in-state modernization efforts.

1. States can require that utilities develop and propose a grid modernization plan to the public utilities commission within a specified timeframe. Utilities would then be required to implement that plan within another specified timeframe. Strategies and/or plans should outline a clear set of grid modernization goals and describe methods to measure, report, verify, and enforce progress towards those goals. States might also provide incentives or cost recovery mechanisms for utilities that meet grid modernization goals.

2. Grid modernization plans and strategies can incorporate consideration of the impacts of electric vehicles (EVs) on the grid. Providing for EV charging rates and incentives, and planning for increased adoption can help control the impact of these vehicles on grid operations.

3. State departments of workforce services or their equivalent can be directed to work with utilities and other stakeholders to develop training programs for grid technicians and engineers. With new grid technology and distributed energy systems coming online, a new generation of workers can be trained to meet evolving needs, which will keep jobs local, and contribute to economic development.[3]

The adoption of incentives for or a requirement to integrate a certain amount of energy storage on the grid alongside enhancing renewable energy policies can support modernization efforts and improve the chances of successful grid modernization.

[3] For a discussion of specific workforce needs that states might explore see: GridWise Alliance and U.S. Department of Energy. 2020. "Grid Modernization Index Insights into a Transformation: Principles for the Next Decade of Progress."

ENERGY STORAGE

Energy storage offers a unique opportunity to manage supply and demand dynamically while also maximizing the value of grid resources. By deploying storage to strategic locations, utilities can more effectively manage their energy portfolios. First, storage allows utilities to manage intermittent demand – helping reduce peak demand requirements. Because the generation resources that provide peak power are the system's most expensive, reducing peak demand can save consumers money. Second, the responsiveness of energy storage can allow utilities to implement voltage regulation and other ancillary services, which are useful for improving system efficiency. Third, because storage technologies can both store and dispatch power, storage enables better integration of intermittent power generation resources like renewable energy to the grid. Finally, energy storage can help the commercial sector avoid costly demand charges. As utilities around the country consider implementing or extending demand charges to other sectors, energy storage will become more relevant as a customer cost-saving investment.

The flexibility of battery storage, combined with advanced metering infrastructure, allows customers to control, for instance, how and when they use energy from the grid or from solar panels installed on their home or business. In most cases, this can provide greater cost savings than standalone solar systems. Combined with time-varying rates or real-time pricing programs, state policy can further support customer choice and open a new market for energy services. Prices that better reflect the time-varying and location-dependent costs of producing and delivering electricity can lead to several economic and environmental gains.

Two major trends have enabled increased deployment of energy storage: declining costs and technological advances. State policies can help maximize these benefits by establishing both a framework for easy integration of energy storage resources onto the grid and a marketplace that monetizes the benefits of energy storage for cost-effective investment.

Enacted in 2019, House Bill 464, allows municipalities to adopt property tax exemptions for energy storage systems. Also in 2019, the PUC issued Order No. 26,209 which created a pilot program allowing utilities to install and own energy storage systems located on residential customers' property. The pilot program is intended to allow a study of the benefits provided by distributed storage infrastructure. There are several policy opportunities to take advantage of the growing technological advances in and declining costs of energy storage. The recommendations here draw heavily from the Interstate Renewable Energy Council's (IREC) 2017 report, "Charging Ahead – An Energy Storage Guide for Policymakers." Policymakers in New Hampshire could consider the following:

1. Amend existing interconnection and net metering policies to ensure that storage can connect to the grid through a transparent and simple process. IREC has produced a series of interconnection protocols that states can adopt. States can establish best practices for interconnection in statute, or legislation can provide an instruction to the utilities commission to implement these best practices. In conference committee at the time of this writing, Senate Bill 91 would direct the PUC to adopt rules clarifying policy for the interconnection of energy storage. The bill incorporates several best practices to ensure a simple, transparent, and reasonable process for interconnecting storage systems.

2. Clarify the classification of energy storage as an energy management technology and not as "generation" to encourage utility investment in restructured markets. Most states that have restructured utility markets exclude utility ownership of generation.

3. Enacted in 2020, House Bill 715 directs the PUC to open an investigation into compensating energy storage projects for avoided transmission and distribution costs while allowing participation in wholesale markets. The report to the legislature is due within two years of the date the proceeding is opened. The legislature might also instruct the PUC to evaluate the value of energy storage in multiple strategic locations across the utility system and consider a requirement to deploy storage where it is cost-effective or identify the price point at which it will be cost-effective. Cost-effectiveness calculations might be required to include all of the benefits storage can deliver to the system, including frequency regulation and avoided investments in additional infrastructure.

4. Require the inclusion of energy storage as a critical piece of the energy system as both a demand and supply management resource. Some states have required that utilities evaluate the cost effectiveness of non-wires

alternatives (NWAs) to large transmission and generation investments. States can require that utilities evaluate energy storage in their integrated or long-term resource plans. Alternatively, states can require utilities to develop a distribution investment plan that identifies the locations on the distribution system where energy storage or other distributed resources would offer the greatest value.

5. Consider creating a mandatory energy storage procurement target or requirement for energy storage with a documented process for periodic review of progress towards that goal. Procurement targets can include provisions limiting the amount of utility owned storage to be procured, requiring that a certain percent of the storage procurement goal be targeted to low-income customers, and creating carve-outs for specific amounts of storage to be procured at the transmission, distribution, and customer levels. Procurement targets can jump-start market creation, spur fast learning, and guide the development of a regulatory framework.

6. Add energy storage as an eligible technology under existing clean energy policies like renewable portfolio standards or energy efficiency programs. Massachusetts became the first state in the nation to include energy storage in its three-year energy efficiency plan in 2019.

MAINSTREAMING RENEWABLES

As the renewable energy industry matured, technology improved, and global production of generating equipment increased. Renewable energy is increasingly seen as the least cost and lowest risk form of energy (excluding energy efficiency). A 2021 Energy Information Administration report predicts that the share of the United States' electricity generation mix supplied by renewable energy resources will increase from 21% in 2020 to 42% by 2050. With increased deployment, utilities are learning more about how to integrate renewables effectively, investors are becoming more comfortable with the technologies, and building code officials are recognizing common standards and best practices. For these reasons, it is in the interest of policymakers to ensure that their states are well positioned to benefit from the transition to clean and sustainable energy resources.

To reduce barriers to customer and utility participation in the renewable energy market, New Hampshire might consider several policy options.

Customer-Oriented Policies

1. **Interconnection, Net Metering, and Streamlined Permitting –** – In general, customers want a clear, streamlined, affordable, and predictable system for connecting renewable energy systems to the grid. To ensure this, New Hampshire's policymakers could consider adopting IREC's model interconnection procedures, crediting customer generators at the full retail rate, removing net metering system size limitations and the aggregate capacity limit. The state might also consider building on existing standards to establish statewide standards for streamlined permitting of small solar and storage systems. Alternatively, the state might adopt incentives to support local governments that voluntarily implement a streamlined program as Lebanon has done. State incentives, such as tax credits, financial incentives, or loans can be tied to systems that are established within a designated streamlined permitting jurisdiction.

2. **Shared Renewables –** Low credit ratings often deter participation in renewable energy markets; this can affect low- and moderate-income (LMI) households' adoption of renewable energy solutions. Supportive policies for shared renewables can be designed to encourage participation by LMI households; this can increase adoption of renewable technologies and reduce energy costs. Low-income participation can be encouraged either through a percentage mandate for the overall annual contracted capacity, or by offering a higher rate of payment for the portion of shared solar capacity attributed to low-income customers. States that have a shared renewable program may want to coordinate this program with implementation of the federal Weatherization Assistance Program (WAP) to provide recipients of assistance with participation in a shared renewable system. Since 2010, New Hampshire has received $15 million from WAP and $3.9 million from the State Energy Program (SEP) which has helped to fund a number of energy initiatives in the state.

   There are several additional policy options that New Hampshire might consider to promote renewable energy uptake by LMI consumers. Generally, successful state policies should be tailored to these customers, be cost-effective and financially sustainable, have measurable performance indicators, and be flexible enough to allow later changes in design.

3. **Corporate Procurement –** Many Fortune 100 and 500 companies have established either climate goals or commitments to purchase renewable energy. Since 2016, nearly 31 gigawatts (GW) of renewable contracts have been announced by corporate entities. In 2020 alone, corporations signed 100 agreements for over 10 GW of renewable energy. New Hampshire was ranked 21st overall in the Retail Industry Leaders Association's 2020 rankings of state corporate procurement policies. While electric retail choice is available in New Hampshire, the state might work to ensure that state policy meets all six of the Corporate Renewable Energy Buyers' Principles. In addition, it is prudent to incorporate corporate renewable purchase commitments into the integrated resource plans (IRP) that utilities submit to regulators to plan for resource needs over multiple decades. By integrating these renewable purchase commitments into the IRP process, regulators can avoid over-building resources and stranding generation assets.

Utility-Oriented Policies

Some states have created programs that aim to reduce greenhouse gas emissions and increase investments in clean energy resources. New Hampshire has a mandatory RPS of 25.2% by 2025. New Hampshire is a member of the Regional Greenhouse Gas Initiative (RGGI), an emissions trading scheme that reduces the region's carbon emissions and incentivizes the development of energy efficiency measures and renewable energy projects. One of the advantages of a market-based program is that it is designed to reduce emissions in the most economically efficient manner possible. Such a standard can also address other concerns such as environmental justice or water use.

To further increase utility adoption of clean energy technologies, New Hampshire's policymakers might consider the following:

1. **Accelerating and Amending Renewable Portfolio Standards –** States can revisit existing RPS policies to increase targets and/or accelerate target dates to continue to spur the development of renewable resources and save ratepayers money. Additionally, states might add one or more carve-outs to further incentivize the development of distributed generation and offshore resources. Embedding an RPS within broader clean electricity or emissions standard can allow technological flexibility.

2. **Clean Peak Standards (CPS) –** Clean Peak Standards aim to increase the share of clean energy resources used to meet peak demand and decrease energy bills over the long-term by reducing peak demand in the hours when energy costs are highest. These objectives can be met through different policy options, including planning and procurement that focuses on peak demand; a moratorium on the construction of new peaking units or a phase out of existing units; incentives – including carve-outs in states with RPSs – for clean energy resources delivered during peak times; and/or adopting a new clean peak standard that sets a target for clean energy deliveries during peak times.

ELECTRIFICATION OF THE TRANSPORTATION SECTOR

An estimated 58% of new car sales will be electric by 2040. Therefore, a key part of building a modernized grid involves designing infrastructure that will facilitate easy connection of electric vehicles (EVs) to the grid. One of the most important barriers to increased adoption of EVs is the consumer's awareness of the availability of EV charging stations. Ultimately, drivers want to be sure that their car will get them where they need to go. The good news is that both supportive policies for developing charging infrastructure and technological advancements have eased "range anxiety."

Enacted in 2018, Senate Bill 517, created an EV Charging Stations Infrastructure Commission to investigate ways to promote zero emission vehicles in the state. The commission was required to study many of the opportunities discussed below. The New Hampshire Electric Co-op currently offers a handful of incentives for EVs and charging stations, but the state does not offer such incentives. The American Council for an Energy-Efficient Economy (ACEEE) published a State Transportation Electrification Scorecard that evaluated states' progress in electrifying transportation in six key policy areas and offers policy recommendations. New Hampshire is unranked in the 2021 report, however the report does provide an overview of the current state of the state's EV policies and infrastructure.

There are opportunities to expand the market for EVs in New Hampshire:

1. **EV and EV Charging Equipment Financing and Financial Incentives –** Providing financial incentives and innovative financing options can help spur greater market penetration of EVs. Tax credits are one of the simplest methods for addressing high up-front costs of EVs and EV charging equipment. While federal sales tax credits are typically applied at the time of purchase, state property tax credits may do less to address upfront cost barriers as the credit is not applied at the time of purchase.[4] States have adopted other financial incentives including low-interest loans, grants, vouchers, and rebates. A handful of states qualify EV charging equipment under their property assessed clean energy (PACE) programs. A simple solution is to increase and expand existing tax credits to incentivize commercial, publicly available charging stations.

2. **Charging Infrastructure Plan –** Locating charging infrastructure is different from locating conventional fueling stations. While some drivers will need to charge more quickly, others will refuel when they are parked for longer periods of time, for example when shopping at the mall or going to work. Charging infrastructure plans should attempt to pair the appropriate level of charging (level 2 or direct current fast charging) with a reasonable amount of time a person will be at that location. Legislation could direct a state agency to develop an infrastructure plan through a stakeholder process.

   Regional collaborations around the US are emerging to coordinate the development of electric transportation infrastructure. New Hampshire is a member of the Transportation and Climate Initiative (TCI) of Northeast and Mid-Atlantic States, which is exploring regional policy options to reduce emissions from the transportation sector.

3. **Parking Infrastructure Requirements –** In tandem with the development of a statewide plan, legislation could set requirements for EV parking infrastructure. Some states have adopted permitting standards for parking lots, requiring, for instance, that for every 100 parking spaces, there must be at least one EV charging space. Legislation could also incentivize utilities to develop make-ready locations. These locations supply power to the point where a utility or third-party developer might install an EV charging station. New Hampshire's statewide building energy code could also be updated to include requirements for EV charging infrastructure.

NEWS

- July 7, 2021: Dover Explores Joining Community Power Coalition of NH. Here's How It Would Work
- June 29, 2021: Governor Chris Sununu Appoints Jared Chicoine as Department of Energy Interim Commissioner
- June 28, 2021: Will New Hampshire Finally Deliver on the Promise of Cheaper Electricity?
- June 16, 2021: In Win for N.H. Green Energy Advocates, Local Net Metering Expansion Moves Forward
- June 9, 2021: New Hampshire Could Soon Have Department of Energy
- June 2, 2021: As Offshore Wind Industry Nears N.H., Potential New Workers Show Interest
- May 19, 2021: Rhode Island, Maryland, New Hampshire: Battery Storage Emerges in US' Lesser-Heralded States
- May 17, 2021: NHEC, ENGIE North America Complete New Hampshire Battery Storage Project
- April 19, 2021: NextEra Energy Partners Acquires California, New Hampshire Wind Assets
- April 5, 2021: Unitil Seeks a Rate Increase for NH Customers to Fund Grid Modernization Plans
- February 17, 2021: New Hampshire Companies Call for Enhancing State's Energy-Efficiency Standard

OTHER RESOURCES

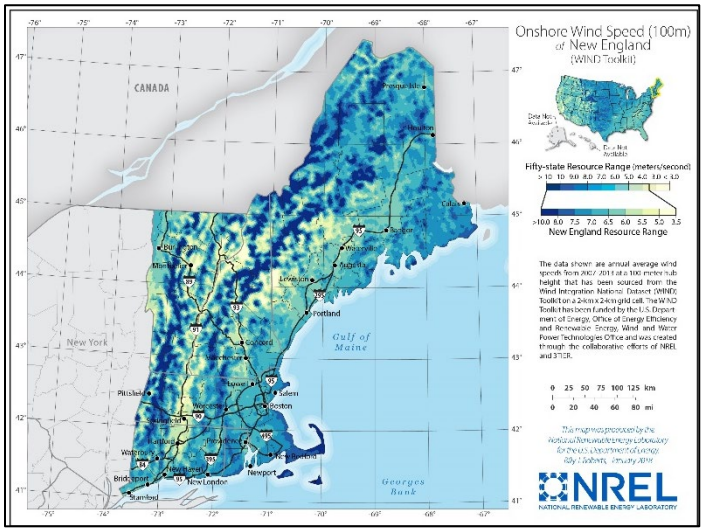
- New Hampshire Governor's Energy Office: https://www.nh.gov/osi/energy/index.htm
- American Wind Energy Association (AWEA): https://www.awea.org/resources/fact-sheets/state-facts-sheets
- The American Council for an Energy-Efficient Economy State and Local Policy Database, New Hampshire: https://database.aceee.org/state/new-hampshire
- The Database of State Incentives for Renewables and Efficiency, New Hampshire: https://programs.dsireusa.org/system/program?state=NH
- U.S. Department of Energy's Alternative Fuels Data Center, New Hampshire: https://afdc.energy.gov/states/nh

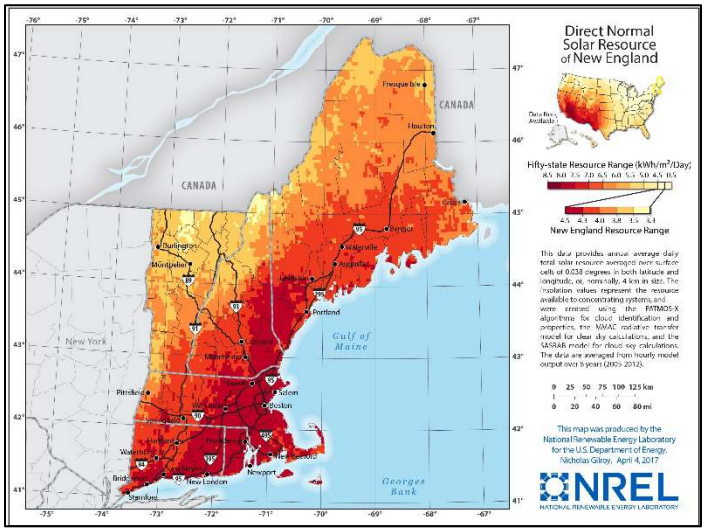
[4] A study by the Congressional Research Service suggests that tax credits are important tools for ensuring increased adoption of alternative-fueled vehicles.

- U.S. Energy Information Administration, New Hampshire: https://www.eia.gov/state/?sid=NH
- SPOT for Clean Energy, New Hampshire: https://spotforcleanenergy.org/state/new-hampshire/

NEW ENGLAND'S WIND AND SOLAR RESOURCES

WIND https://windexchange.energy.gov/states/NH





Our Resources

CNEE Homepage: https://cnee.colostate.edu/

The SPOT for Clean Energy: https://spotforcleanenergy.org/

The Advanced Energy Legislation (AEL) Tracker: https://www.aeltracker.org/

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