

# 10 ENERGY



## TOPICS INCLUDE:

Pembroke's Energy Activities

Challenges & opportunities  
going forward

*Energy and its impact on communities in areas such as municipal expenditures, economic development, land use planning, and transportation are increasingly of interest to residents, local officials and business owners. Addressing energy-related issues in a master plan is an important first step towards establishing best management practices and policies that support conservation and energy efficiency in land use development, building construction, maintenance and renovation. This chapter presents a framework that can be used to support town efforts in energy use, efficiencies and planning.*

**Pembroke is...**  
 a community that continues to pursue energy efficiency initiatives that will generate reductions in municipal expenditures and supports development that promotes the concept of energy conservation, efficiency and renewable energy generation.

## WHAT THE COMMUNITY SAID...

The community survey results showed that Pembroke residents have a strong interest in energy sustainability and renewables. Over 70% of residents felt it is important/somewhat important for Pembroke to expand and invest in renewable energy and over 74% supported ordinances that would encourage renewable energy options, including solar, electric and wind. On another question, 88% rated the improvement of energy efficiency of municipal buildings as important/somewhat important.

One example of this is Pembroke's efforts to replace existing street lights with LED technology. This results in a cost savings with less energy use and maintenance for the fixtures. There is also an Energy Efficiency Capital Reserve Fund that is contributed to yearly by residents at town meeting that can be used for various building and facility needs. See the Community and Recreational Facilities with Utilities Chapter for more detailed information.

## PEMBROKE'S ENERGY ACTIVITIES

Energy conservation is a theme that continues to evolve and can help residents and businesses alike with efficiencies in expenditures. Energy conservation can mean a number of things, from reducing the amount of fossil fuel one uses to using sustainable building and development practices.

The Pembroke Energy Committee was established at the March 2007 Town Meeting. The primary focus of the Committee is to evaluate municipal energy usage. The Energy Committee's goals include:

1. Seek grants to purchase new equipment and vehicles and implement programs that will save energy costs and reduce air pollution;
2. Complete full energy audits/retrofits for municipal buildings and develop an energy policy for municipal operations for review and approval by the Board of Selectmen; and

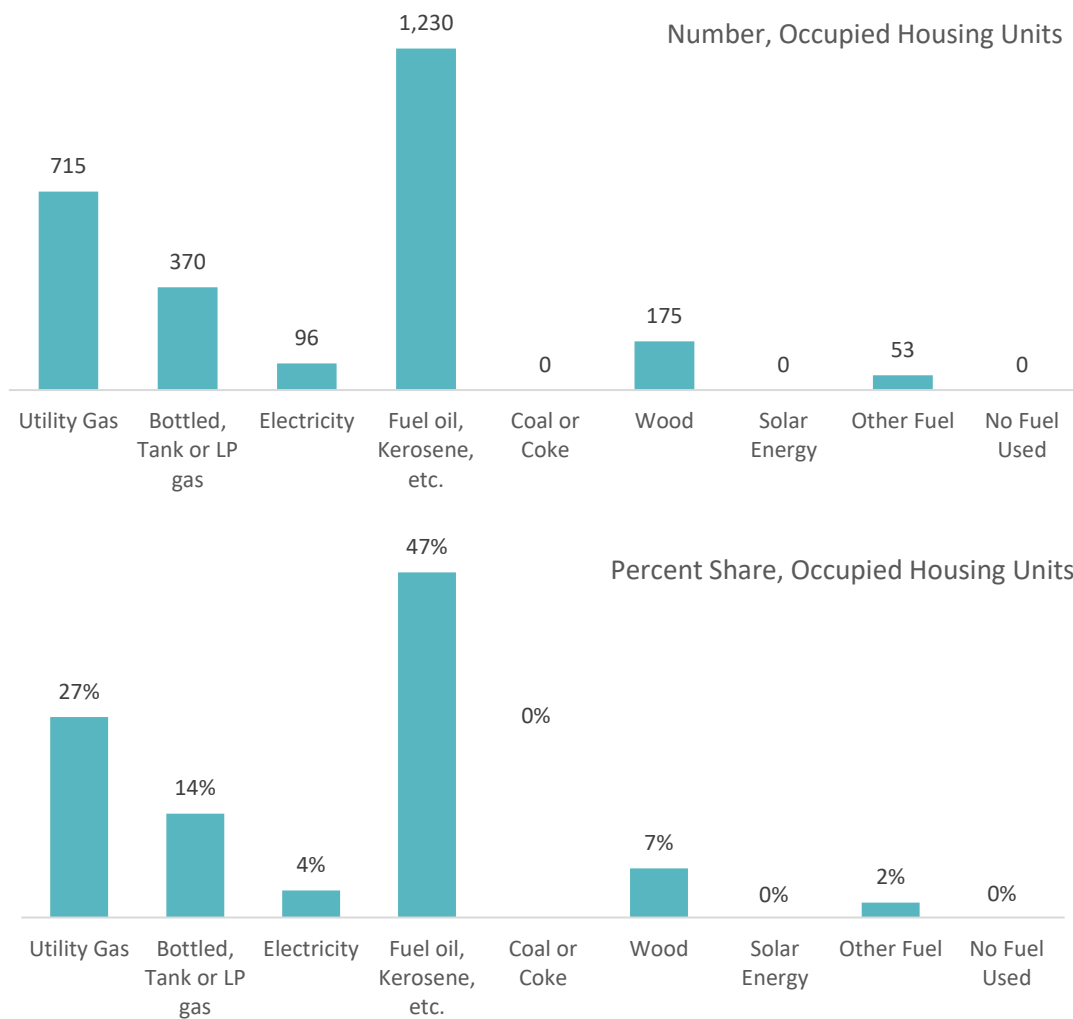
### PEMBROKE ENERGY COMMITTEE

The Pembroke Energy Committee has worked on a Street Lighting LED Conversion project, which included replacing overhead lighting with LED format. With the conversion now completed for the Suncook Village area and throughout the town, the committee continues to explore other energy efficiency and conservation projects that would benefit the town.

- 3. Explore feasibility of using new technology and renewable energy solutions, such as wind and solar power, to increase efficiency and conservation.

Data on Pembroke’s heating sources (see Figure 10.2) is provided in the following charts that show a typical Northeast profile of the heavy reliance on fuel oil for heating. Pembroke has a similar percentage at 47% for fuel oil as the state (46%).

**Figure 10.2: Pembroke House Heating Fuel, Occupied Housing Units, 2013-2017**  
By Number and Percent Share



Source: American Community Survey 2013-2017

## PEMBROKE SCHOOLS ENERGY PROJECTS

The Pembroke School District has implemented several energy efficiency projects. They have completed three phases of these projects with the last one finished in 2016-2017. Some of the initiatives that have been completed include:

- Low flow toilets;
- Building envelope upgrades: insulation, windows, roofing, roofing insulation;
- Direct Digital Control Computer (Heat/AC managing system for the district);
- Wood Chip boiler;
- Unit ventilator replacement;
- Electrical upgrades and LED lighting for 95% of district;
- High efficient heating and refrigeration motors;
- 260 Solar Panels; and
- High efficiency transformers.

Future projects over the next 10 years include replacement of heating units in Pembroke Academy's gym with gas fired units, upgrades to the hot water heater, district wide and continued replacement of roofs and roof insulation.



SOLAR PANELS INSTALLED AT PEMBROKE ACADEMY

To ensure building and facility needs are met, future and anticipated needs should be included in the town's Capital Improvement Program (CIP) and updated on an annual basis. This planning tool can assist in the town's process of financially preparing for large purchases in order to lessen the impact on the tax rate. Capital Reserve Funds can also be used in planning of future and anticipated facility needs. Currently, Pembroke has a Municipal Facilities Capital Reserve Fund and an Energy Efficiency Capital Reserve Fund that is contributed to yearly by residents at town meeting and can be used for various building and facility needs.

The NH legislature had enacted legislation that permits cities and towns to offer exemptions from local property taxes for certain renewable energy installations. These include solar systems (thermal and

photovoltaic), wind turbines, and central wood-fired heating systems. Woodstoves and fireplaces are not included. The goal of the exemption is to create a tax neutral policy within a municipality that neither increases an individual's property tax, nor decreases the municipality's property tax revenues. By implementing it as a tax neutral policy, homeowners do not have a disincentive of higher property taxes for installing a renewable energy system, and since there is no net reduction in municipal tax revenues, other taxpayers in a municipality are not affected. Pembroke adopted the solar exemption in 2015 for solar energy systems. The property tax exemption is in the amount equal to 100% of the assessed value of qualifying equipment under the statute.

## CHALLENGES AND OPPORTUNITIES

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### TRANSPORTATION & THE AGING POPULATION

As stated earlier in this Chapter, transportation is the leading source of energy use in the state. While it is possible to accomplish both compact design and maintaining rural character, there can be challenges that arise and need to be addressed.

There is also the increasing concern for the aging population at both the local, regional and state levels and its impacts on our abilities to reach destinations - for recreation, health care and social services. This has a direct correlation to the land use patterns and infrastructure of our communities and how we need to get from point A to point B. As New Hampshire's population continues to age, more compact development and transportation options become pressing critical needs in many of our communities. The link between energy efficiency and transportation is a strong one.

### FUNDING SOURCES FOR RENEWABLE ENERGY

As tax credits, rebates and other incentives continue to evolve and hopefully stabilize with a consistent funding stream, it is expected that renewable energy installations will become more prevalent. While there are certainly challenges that still need to be addressed, there are also opportunities to improve on the status quo. A wide range of financial and informational resources exist to help municipalities, business owners, and residents make positive changes in their energy consumption. Taken together, these actions will contribute to statewide energy reduction goals and increased energy independence, while creating economic and environmental benefits.

## CHAPTER OBJECTIVES & RECOMMENDATIONS

<p><b>OBJECTIVE 1</b></p> <p><b>Keep Pembroke residents and businesses informed on energy efficiency, conservation and renewable energy measures and where to find additional information and funding.</b></p>	<ul style="list-style-type: none"> <li>→ Maintain information and links on Pembroke’s website and at the library for residents and business owners on home energy saving strategies, renewable energy system installation, business energy programs, available financing, tax credits, green building design, etc.</li> <li>→ Sponsor and/or partner with others on workshops or events on energy conservation, efficiency, and renewable energy, and/or notify residents of regional events.</li> <li>→ Support Pembroke businesses in their efforts to reduce their energy bills, take advantage of renewable technologies, and improve their overall efficiency.</li> </ul>
<p><b>OBJECTIVE 2</b></p> <p><b>Encourage and support energy conscious development.</b></p>	<ul style="list-style-type: none"> <li>→ Continue to support an Energy Committee that advises the town on energy issues and provides resources to residents and business owners relating to energy improvements and development.</li> <li>→ Develop an “energy checklist” for any proposed projects that identifies energy efficiency considerations for homeowners, developers and municipal departments.</li> <li>→ Ensure that the land use regulations do not unduly restrict the use of alternative energy sources or sustainable construction techniques.</li> <li>→ Amend zoning, subdivision and site plan regulations that identify opportunities for renewable energy installations and address any potential impacts on surrounding properties.</li> <li>→ Regularly review amendments to the Energy Building Code and initiate any necessary amendments to ensure that Pembroke is proactive in addressing emerging energy efficient construction and practices.</li> </ul>
<p><b>OBJECTIVE 3</b></p> <p><b>To reduce municipal energy usage and costs and improve energy efficiency in municipal operations.</b></p>	<ul style="list-style-type: none"> <li>→ Actively monitor municipal energy usage and costs to track progress resulting from energy saving initiatives.</li> <li>→ Participate in public or private programs that educate and/or fund the retrofit of municipal buildings and infrastructure</li> <li>→ Continue to implement building energy improvement plans to increase the efficiency of municipal buildings, and incorporate planned improvements into the municipal budgeting process.</li> <li>→ Investigate options for renewable energy at municipal buildings.</li> </ul>