

13. ENERGY

Like most Vermonters, the lives and lifestyles of Essex residents are heavily dependent on the use of conventional (oil, coal, natural gas, hydro) energy sources. This long-standing practice is under threat from several fronts. Rising fuel costs, limited resources and adverse impacts on health, quality of life and the environment are of concern. Thus, the conservation, cost and efficient use of energy is becoming ever more important. The use of alternative, renewable energy sources (such as sun and wind) must be explored, while minimizing negative visual and environmental impacts associated with capturing and using any form of energy.

As part of a serious commitment to reduce greenhouse gas emission, some Vermont municipalities have voted to take the “Ten Percent Challenge” of reducing emission of greenhouse gasses by 10 percent over the coming decade. While the focus of the “Ten Percent Challenge” is global climate change, strategies for meeting the challenge also result in a reduced energy “footprint” for the town. Other towns have voted to become a “Transition Town”. Such towns make a conscious effort to create more localized and sustainable communities that depend less on fossil fuels.

13.1 Energy

Energy sources and consumption are issues of growing importance for all Vermont municipalities. As the cost of electricity and prices for petroleum products such as gasoline, diesel and heating fuel continue to increase, Town government must consider ways to ease the impact of such trends on its residents.

First, the Town can institute energy conservation measures in its own buildings and practices to reduce consumption and thus reduce the costs it has to pass on to taxpayers. Second, through its planning and regulatory authority, the Town can encourage energy conservation measures by property owners. In this plan, the Town of Essex chooses to pursue a non-regulatory approach; instead taking steps to enable energy efficient development, employing energy saving modes of transportation, and pursuing opportunities for generating and utilizing alternative energy sources.

Finally, the Town can influence the way energy is generated and transmitted, especially electricity, through its own regulations and through participation in the Public Service Board’s Section 248 process. As discussed in Chapter 11, it is imperative that the Town consider the impact that land use has on energy use, and vice versa. The Town has chartered an Energy committee with the responsibilities to track municipal energy use to make energy-related recommendations to the Selectboard. It has also been chartered to recommend funding opportunities for renewable energy and energy efficiency, as well as to develop community energy-related education programs.

It is challenging to locate useful, Town-level information on energy resources or consumption. The US Census Bureau collects basic data on what fuel people use to heat their residences. While these data are subject to all the caveats associated with the decennial census (for example, they are drawn from a sample of households which is now 10 years old), they do provide some sense of change. It is also very important to note that the following data are for residential uses only. The Census does not include any data on commercial or industrial use. The 2010 Census data was not available for the 2011 Town Plan update. Efforts were made to obtain interim data, where possible. However,

the 2000 Census data had to be relied on for home heating data. Table 13-1 illustrates how residents in Essex heated their homes in 1990 and 2000.

Fuel Type Used	Number of Housing Units 1990	Number of Housing Units 2000*
Utility gas	1930	3399
Bottled, tank or LP gas	248	511
Electricity	1136	367
Fuel oil, kerosene, etc	2357	2564
Coal or coke	19	40
Wood	346	107
Solar energy	0	0
Other fuel	0	16
No fuel used	10	9
Total	6046	7013
Source: US Census Bureau, 2000 Census *Updated data not available		

Clearly the table suggests a very significant shift away from electric heat during the 1990s, not a surprising change given Vermont electric rates. The large increase in the number of housing units that used “utility gas” for heat reflects both the large number of new units built in areas served by Vermont Gas Systems, Inc. and the expansion of those service areas to include many existing homes. Electricity demand continues to rise due to other factors. Town residents need to be aware that continued increase will result in the need to add future electrical grid infrastructure in Town.

Map 2, *Utilities*, shows the location of main electrical transmission lines and substations in Essex, as well as the areas serviced by Vermont Gas.

Electricity in the Town outside the Village is supplied by Green Mountain Power, Central Vermont Public Service, and Vermont Electric Cooperative. As local demand for electricity grows, it may not be necessary to upgrade our infrastructure if we can curb our electricity use. With this in mind, Efficiency Vermont (EVT) designated Essex as one of their geo-targeted areas in 2007. At that time, the Town Energy Task Force worked with EVT to help educate the public about compact fluorescent light bulbs (CFLs) and reduce our demand for electricity, thereby extending the useful life of existing power equipment.

Table 13-1 shows that there has been a significant expansion in the number of households in Essex using Vermont Gas as the source of fuel to heat their homes.

Should electric or gas utilities need expansion in the future - despite our best efforts to conserve energy – the Town should work with Vermont Gas and other energy providers to facilitate service area expansion and to locate distribution lines in existing corridors in order to avoid an undue adverse impact on residents. The Town should also explore further opportunities for co-generation

of electricity. This process is already used at the wastewater treatment plant located in Essex Junction. The Town should also avail itself of the latest data, to help analyze and visualize renewable energy possibilities.

Given the significance of future energy supplies and costs to both residential and commercial customers, it would be in the best interest of the Town to undertake a comprehensive energy planning project in the very near future to explore in greater depth appropriate and productive Town involvement in this critical issue.

13.2 Goals, Objectives and Strategies

Goal 13.1: Develop a Comprehensive Energy Plan.

Objective 13.1.1: In accordance with 24 V.S.A § 4382, the Town should develop an energy plan which includes an analysis of energy resources, needs, scarcities, costs and problems within the municipality. The plan should also include a statement of policy on the conservation of energy, including programs, such as thermal integrity standards for buildings, to implement that policy; a statement of policy on the development of renewable energy resources; and a statement of policy on patterns and densities of land use likely to result in the conservation of energy. The plan should contain specific implementation strategies, along with timelines and cost estimates.

Nothing in this chapter is meant to suggest that the Town should not start on any of the below objectives and strategies before the official adoption of a Comprehensive Energy Plan.

Strategy 13.1.1.1: Solicit help from outside organizations to provide support for the development of a Comprehensive Energy Plan.

Strategy 13.1.1.2: Within one year of adoption of the Comprehensive Energy Plan, department heads should develop and submit a five-year plan, based on known projected lifespan of equipment and systems, for future energy saving improvements and cost-effective investments regarding systems and equipment.

Objective 13.2.1: As part of a Comprehensive Energy Plan, energy conservation should be promoted by municipal example and by encouragement of appropriate actions by other public and private entities. These actions should include, but not be limited to, the following:

Strategy 13.2.1.1: The Town should update the energy audits of all Town-owned buildings to determine what cost-effective improvements should be undertaken to reduce energy consumption and costs. Such measures should include consideration of insulation, the most cost efficient fuels for heating and cooling, energy efficient appliances, lighting, and office equipment.

Strategy 13.2.1.2: The Town Manager's Office should ensure that both a benefit-cost analysis and a life cycle cost analysis are carried out on all new Town buildings to determine the effectiveness of incorporating "green building" design, materials and technology.

Strategy 13.2.1.3: Evaluate steps to improve the energy efficiency and cost of lighting for streets, parking lots and other public spaces, and for traffic signals.

Strategy 13.2.1.4: Regularly update lighting, insulation, and other building requirements for new residential, commercial and governmental buildings to keep up with changing technologies.

Strategy 13.2.1.5: Implement municipal recycling and other solid waste reducing measures in all municipal and school buildings.

Strategy 13.2.1.6: The Town Public Works Department should establish and employ fuel efficiency standards as important considerations in acquisition of new vehicles.

Strategy 13.2.1.7: The Town Public Works Department should consider the cost-effectiveness of diverse fuel types, such as biodiesel, and innovative engines, such as gas-electric hybrids, when it purchases new vehicles.

Strategy 13.2.1.8: The Town Public Works Department should implement a schedule of regular vehicle maintenance to minimize emissions in order to preserve air quality.

Objective 13.3.1: As part of a comprehensive energy plan, promote development of alternative energy resources.

Strategy 13.3.1.1: Encourage voluntary use of alternative fuels such as biodiesel for vehicles

Strategy 13.3.1.2: Through the Town's permit process, the Community Development Department should design incentives for voluntary use of solar energy, geothermal energy, and where appropriate wind energy, for heating, cooling, and generation of electricity for residential and commercial buildings.

Strategy 13.3.1.3: The Community Development Department and the School District should promote public education and information to illustrate the benefits of energy conservation and energy efficiency through cooperative programs with existing non-governmental organizations.

Objective 13.4.1: As part of a Comprehensive Energy Plan, encourage the development of new renewable energy sources, and the maintenance of such existing sources, taking into account cost effectiveness as well as environmental and social impacts.

Strategy 13.4.1.1: Encourage operational improvements for the continued use of the Winooski River Dam for hydroelectric power.

Strategy 13.4.1.2: Consider financing Property Assessed Clean Energy (per Act 45) to encourage residents to take advantage of local or state bonds to help finance longer-term renewable energy projects.

Strategy 13.4.1.3: In the zoning and subdivision regulations, amend site plan review standards to encourage the use of energy conservation measures and building siting techniques.

Objective 13.5.1.: As a part of a comprehensive energy plan, establish land use patterns and densities that should result in the conservation of energy.

Strategy 13.5.1.1: The Community Development Department should require private sector developers to utilize the Vermont's State Residential Building Energy Code as updated in 2005 and the 2001 Vermont Guidelines for Commercial Construction.

Strategy 13.5.1.2: The Community Development staff should propose amendments to the Town's Zoning and Subdivision Regulations to encourage (a) the construction of buildings with configurations that reduce overall energy requirements, (b) planting of trees that are the appropriate types and size to maximize cooling possibilities and wind protection so as to conserve energy, and (c) site plan design that maximizes solar access for building sites.

Strategy 13.5.1.3: Consider requiring that all new residential construction be certified as meeting Federal Energy Star requirements before issuing a Certificate of Occupancy.

Strategy 13.5.1.4: The Community Development Department should pursue developing regulatory incentives to achieve net zero (or negative) energy use and greenhouse gas emissions for new construction.

Objective 13.6.1.: As part of a Comprehensive Energy Plan, establish land use patterns and implement bylaws that should encourage use of non-automotive travel

Strategy 13.6.1.1: The Community Development staff should recommend, where appropriate infrastructure is available or planned, regulations that will encourage denser, mixed use development conducive to bicycle and pedestrian traffic.

Strategy 13.6.1.2: The Public Works Department should work with the Chittenden County Metropolitan Planning Organization (CCMPO) to plan for and support construction of park and ride facilities along key commuter corridors such as VT Route 15, VT Route 117, VT Route 2A and VT Route 128.

Strategy 13.6.1.3: The Town should encourage the School District to work with the CCMPO's "Safe Routes to School" program to encourage students to walk to school.

Strategy 13.6.1.4: The Public Works Department will consider working with the CCMPO to plan and construct bike paths and bike lanes throughout Essex to encourage non-vehicular traffic.

Strategy 13.6.1.5: The Community Development Department should work with utility companies to plan for the efficient location of energy distribution infrastructure necessary to support denser, mixed use land use patterns.

Objective 13.7.1: As part of a comprehensive energy plan, promote policies for efficient and environmentally sound solid waste disposal.

Strategy 13.7.1.1: Continue to work with the Chittenden Solid Waste District to promote regional solid waste programs.

Strategy 13.7.1.2: Encourage regional efforts to locate solid waste and hazardous waste disposal facilities, whether inside or outside of the county.

Strategy 13.7.1.3: Continue to expand efforts to encourage reuse and recycling.