

## 9. Energy and Sustainability

### Introduction

**Energy use and sustainability have widely been recognized as playing an important role in shaping a community's future. Decisions about energy use made by public and private sectors can help determine, for example, whether a community is able to meet its current and future energy needs. Just as importantly, a community's financial stability largely depends on its ability to meet rising energy costs, and the health of its environment depends on its ability to reduce environmental pollution.**

This chapter will focus on energy use and sustainability in Sturbridge and highlight measures the Town has taken to reduce current levels of energy consumption. It will also outline challenges the Town faces in its effort to become more energy efficient and sustainable. By providing recommendations for reducing energy use and improving sustainability, this chapter will help the Town of Sturbridge meet future energy needs, reduce greenhouse gas emissions and cut energy costs.

### Energy and Sustainability Goals

- ▶ Work toward becoming a Green Community by meeting state criteria for the designation
- ▶ Promote sustainability in municipal and public operations, starting with a Sustainability Task Force that can advise and support sustainability efforts by Town departments
- ▶ Encourage energy efficiency, conservation, and sustainability in Sturbridge to reduce energy consumption and cost
- ▶ Establish best management practices and economically-viable technologies in future construction, renovation and maintenance of public buildings and facilities
- ▶ Reach out to the community as a whole to inform and educate residents and businesses regarding energy conservation, recycling and sustainability principles

### State Context

The Commonwealth of Massachusetts has recognized the importance of a sustainable energy policy for the continued prosperity of its 351 cities and towns. One of the most relevant policy initiatives is the Green Communities Act of 2008. The resulting Green Communities Division of the Office of Energy and Environmental Affairs is charged with providing resources to the cities and towns of Massachusetts enabling them to pursue a path towards energy efficiency, and the adoption of renewable energy sources. Some of the resources that the Green Communities Division provides are:

- ▶ Education about the benefits of energy efficiency and renewable energy
- ▶ Guidance and technical assistance through the energy management process

- ▶ Facilitation of informed decisions and actions
- ▶ Collaboration through shared best practices among cities and towns
- ▶ Local support from regional Green Communities coordinators
- ▶ Opportunities to fund energy improvements<sup>1</sup>

The adoption and utilization of statewide initiatives such as Green Communities will be a crucial part of Sturbridge's effort to increase energy efficiency and reduce dependence on non-renewable sources of energy. These initiatives not only provide opportunities for collaboration with the Commonwealth, but also provide necessary building codes and zoning bylaws which may be adopted by the town and are discussed in more detail later in this chapter.

### Energy Efficiency, Conservation and Sustainability

The Town of Sturbridge and Tantasqua Regional/School Union 61 Districts have taken several steps to promote energy efficiency and conservation. Energy efficiency refers to efforts to reduce or limit the amount of energy used to accomplish a goal, such as heating a building. Energy conservation, on the other hand, refers to the wise use or management of energy. Sustainability centers on the idea of meeting the needs of the present without compromising the ability to meet the needs of future generations.

#### Building Projects

Many of the strategies pursued in Sturbridge to reduce energy consumption have been through building projects. As mentioned in the Public Services and Facilities chapter, the Town is in the process of renovating and building an addition on Burgess Elementary School. The project, expected to be complete in 2013, will employ green building techniques and energy efficiency initiatives as the school building has been designed to meet Massachusetts Collaborative for High Performance Schools Criteria (MA – CHPS).<sup>2</sup> Initiatives will include rainwater collection, energy efficient electrical fixtures, automatic light shutoffs, and the use of recycled steel in construction.<sup>3</sup> In addition, photovoltaic panels will be installed on a small portion of the roof that faces south.

The Tantasqua Regional School District is also installing photovoltaic panels on the rooftops of its two regional schools.<sup>4</sup> This installation is expected to be the largest of any school district in the state. (Other renewable energy sources or projects have not been pursued in Sturbridge.)

<sup>1</sup> Executive Office of Energy and Environmental Affairs, 2010

<sup>2</sup> Charlie Blanchard, Burgess Elementary School Building Committee

<sup>3</sup> Energy and Sustainability Focus Group Issues Paper, based on interviews with Principal Daniel Carlson

<sup>4</sup> Chris Tanguay, "Tantasqua looks to Sun," Southbridge Evening News, June 13, 2010

The Town Hall project, completed in 2010, includes fewer energy efficiency or sustainable practices than the Burgess Elementary School project due largely to cost constraints. However, one example of an efficiency measure that was implemented was the use of motion-activated lighting, to reduce unnecessary electricity consumption.

### Green Communities

The Town has applied for, and been selected to receive, Green Communities Planning Assistance from the Massachusetts Department of Energy Resources (DOER).<sup>5</sup> The assistance, which is expected to begin late in 2010, will help the Town meet the criteria for becoming a Green Community. The five criteria are as follows:<sup>6</sup>

- ▶ Provide as-of-right siting in designated locations for renewable/alternative energy generation, research and development, or manufacturing facilities
- ▶ Adopt an expedited application and permit process (1 year) for as-of-right energy facilities
- ▶ Establish benchmarks for energy use and develop a plan to reduce baseline by 20 percent within five years
- ▶ Purchase only fuel-efficient vehicles
- ▶ Require all new residential construction over 3,000 square feet and all new commercial and industrial real estate construction to minimize life-cycle costs

Sturbridge has made progress on some of these criteria. Specifically, Town Meeting adopted expedited permitting in accordance with Massachusetts General Laws Chapter 43D in April 2010.<sup>7</sup> One way to meet the last criteria listed above is the adoption of the Stretch Code. The Stretch Code is an appendix to the state building code which applies additional energy efficiency performance standards to residential buildings greater than 3,000 square feet and commercial buildings greater than 5,000 square feet. The Green Communities Planning Assistance will help the Town develop an action plan to meet the remaining criteria. Should the Town meet these criteria and be designated a Green Community, it will become eligible to receive grants for municipal renewable energy and energy efficiency projects.

### Energy Advisory Committee

The Town of Sturbridge formed an Energy Advisory Committee in 2010 to advise the Board of Selectmen on energy-related matters. The seven member committee, which first met in January, aims to identify strategies, funding sources and renewable energy opportunities to lower municipal, school and

5 Energy and Sustainability Focus Group Issues Paper

6 Green Communities Planning Assistance Program, [http://www.mass.gov/Eoeea/docs/doer/green\\_communities/grant\\_program/GC%20Planning%20Round%202%20Application.pdf](http://www.mass.gov/Eoeea/docs/doer/green_communities/grant_program/GC%20Planning%20Round%202%20Application.pdf)

7 Sturbridge Zoning Bylaws, [http://www.town.sturbridge.ma.us/Public\\_Documents/SturbridgeMA\\_PlanningDocuments/Zoning%20Bylaw%202010?FCItemID=S02B54AC5](http://www.town.sturbridge.ma.us/Public_Documents/SturbridgeMA_PlanningDocuments/Zoning%20Bylaw%202010?FCItemID=S02B54AC5)

community energy expenditures and reduce greenhouse emissions.<sup>8</sup> So far, the committee has largely focused on working toward the designation of Sturbridge as a Green Community. That has included the application for the Green Community Planning Assistance mentioned earlier. Going forward, the committee anticipates helping the Town meet the outstanding Green Communities criteria.<sup>9</sup> This could include assisting with an energy audit of municipal buildings, vehicles and street lighting.

### Recycling

The Town owns and operates a Recycling Center where residents can dispose of most household waste for free. They must remove certain items from their trash, however, including cans, glass, paper, plastic and metals. There is also a shed where residents can leave items for reuse by other people. As mentioned in Chapter 8, approximately 63 to 67 percent of everything that is brought to the Recycling Center and Landfill is recycled. (Additional information about the Recycling Center is provided in the Public Services and Facilities chapter.) There has been an increase in the number of people recycling at the Center in the last few years, and this trend could continue, particularly if the Town promotes the recycling program through education.

### Water Resources

As discussed in the Natural, Historic and Cultural Resources chapter, Sturbridge has many water bodies that are cherished by the community. Specifically, there are several large ponds and lakes that not only enhance the town's natural beauty but also provide residents and visitors with passive and active recreational opportunities. There have been efforts to monitor the water quality of these water resources, and those efforts should continue. The lakes and ponds should also continue to be protected from pollution and other potential negative impacts from development. (See the Natural, Historic and Cultural Resources chapter for more information and recommendations.)

### Challenges

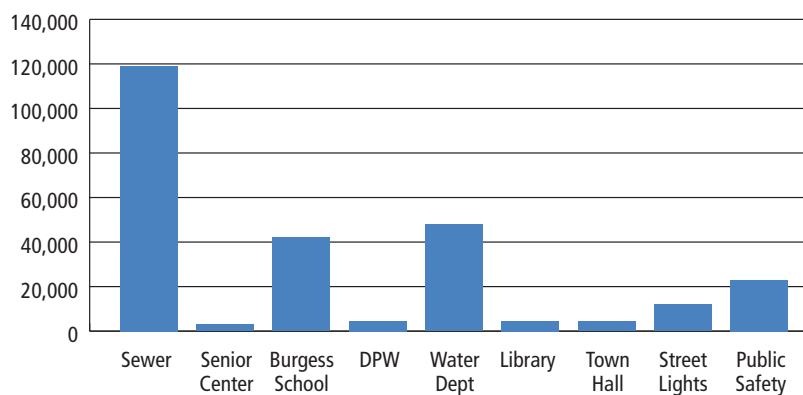
There are several challenges to increasing energy efficiency and reducing emissions in Sturbridge, and they should be addressed if the Town hopes to make gains going forward. First, the Town does not have an energy use baseline against which it can establish goals for reducing energy consumption and promoting sustainability. In 2009, the Hampshire Council of Governments analyzed municipal energy usage in Sturbridge in order to determine how much money the Town could save if it purchased electricity from its Hampshire Power program. (The Town subsequently switched its electricity supplier to Hampshire Power.<sup>10</sup>) That data has been summarized in Figure 9.1. The chart shows that among municipal properties, the Town's sewer facilities used the most energy on average per month. While noteworthy, this information would be more useful if annual trends could be determined and tracked.

8 Kenneth Elkinson, Energy Advisory Committee member

9 John Schneider, Energy Advisory Committee chair

10 Geoff Rogers, Hampshire Power

**Figure 9.1 Average Monthly Energy Usage by Municipal Property\***



\*Includes months between November 2008 and October 2009. Does not include municipal properties that average less than 600 kWh/month. Source: Hampshire Power and Sturbridge Town Accountant

In addition to lacking a baseline, the Town does not have any established goals for energy usage, waste reduction or recycling.<sup>11</sup> Similarly, the Town does not have a process for undergoing annual energy audits. Such audits would help determine how effective and efficient the Town's energy usage is and if progress is being made toward energy goals. Burgess Elementary School, for example, has conducted energy audits in the past, the most recent one occurring several years ago.<sup>12</sup> As a result of the last audit, the school replaced its fluorescent lighting with more energy efficient lighting. The school also made other improvements, which have lowered its energy bills.

Currently, the Town uses its budgeting process as its primary way to review and potentially reduce energy use and costs. Recognizing that other, more effective means exist, the Town has signed up to use MassEnergyInsight, a free, web-based tool that provides cities and town with energy use information for municipally owned and operated buildings, streetlights, and vehicles.<sup>13</sup> The information can be used to develop an energy use baseline, monitor ongoing usage and show results of energy efficiency investments.

Overall, there is wide support among Sturbridge officials, including the Board of Selectmen, to assess energy usage and enhance energy policies.<sup>14</sup> However, there are limited resources—both in terms of money and manpower—available to pursue these goals. As noted by the Energy and Sustainability focus group, the Town does not have a designated employee responsible for overseeing and monitoring energy usage in Sturbridge. The recent formation of the Energy Advisory Committee, though, is a laudable first step. This Committee will likely be involved in the future implementation of strategies to increase energy efficiency and promote sustainability in Sturbridge.

11 Energy and Sustainability Focus Group Issues Paper

12 Ibid (Principal Daniel Carlson)

13 Energy and Sustainability Focus Group Issues Paper

14 Ibid.

## Resources

The Massachusetts Executive Office of Energy and Environmental Affairs provides numerous resources to help cities, towns, businesses and residents to become more energy efficient.<sup>15</sup> For example, the state's website offers information about the Green Communities Grant Program for municipalities, tax incentives for homeowners to invest in energy efficiency upgrades, and Energy Feasibility Audits for businesses and institutions. Mass Save, an initiative sponsored by gas and electric companies in Massachusetts, also provides information about numerous services, incentives and trainings available in the state.<sup>16</sup> Its website is [www.masssave.com](http://www.masssave.com).

National Grid offers a variety of programs that can help residents and businesses learn more about energy efficiency and minimize their energy consumption. The company provides everything from energy saving tips to a heating system comparison calculator. These resources can be found on National Grid's websites, [www.myenergytips.com](http://www.myenergytips.com) and [www.nationalgridus.com/masselectric/home/energyeff/energyeff.asp](http://www.nationalgridus.com/masselectric/home/energyeff/energyeff.asp). The company is also asking customers to reduce their energy by 3 percent a year for the next 10 years as part of its "3% Less Initiative."

## Land Use

The issue of sustainability has been a growing concern in land use planning in recent years. As municipalities experience increased growth, especially on more marginal land, there has been an increasing awareness of the long-term ramifications of our growth patterns on the environment. In other words, as stated in the American Planning Association (APA) Policy Guide on Planning for Sustainability, planners should worry about "whether the Earth's resources will be able to meet the demands of a growing human population that has rising aspirations for consumption and quality of life, while maintaining the rich diversity of the natural environment or biosphere." The patterns of human development, whether they are physical, social, and economic, affect sustainability at the local and the global level. The very nature of planning is "integrally related to defining how, where, and when human development occurs, which affects resource use."<sup>17</sup>

Using the principles listed in Appendix 5 as a guide, this Plan and other actions taken by the Town can help to move Sturbridge towards a policy of promoting sustainability.

## Recommendations

To make gains in energy efficiency and sustainability, the Town must pursue strategies on multiple fronts. For example, the Town should look into new renewable energy sources while striving to reduce energy consumption in existing buildings. Recommendations related to water resources have been included in the Natural, Historic and Cultural Resources chapter.

<sup>15</sup> Massachusetts Executive Office of Energy and Environmental Affairs, <http://www.mas.gov/?pageID=eoasubtopic&L=3&LO=Home&L1=Energy,+Utilities+27+Clean+Technologies&L2=Energy+Efficiency&sid=Eeea>

<sup>16</sup> Mass Save, <http://www.masssave.com/>

<sup>17</sup> American Planning Association, Policy Guide on Planning for Sustainability, April 2000 (<http://www.planning.org/policy/guides/adopted/sustainability.htm>)

## Municipal Operations

- ▶ The Energy Advisory Committee should establish a long-range plan for energy efficiency in Sturbridge and work to prioritize projects necessary to achieve that goal.
- ▶ Conduct a detailed energy audit of all properties in Sturbridge owned by the Town and Regional School District. This includes examining the Town's vehicle fleet to determine where more fuel efficient vehicles can be bought and looking at street lights to identify where more efficient lighting can be used. (Examining energy use by department would allow the Town to better understand and compare consumption across departments.)
- ▶ Develop a schedule and process for conducting these audits on an annual basis.
- ▶ Identify Town employees who will be responsible for this task. The Energy Advisory Committee could provide support.
- ▶ Use the energy audit to establish a baseline for municipal energy use.
- ▶ Establish goals for reducing municipal energy use, and develop a long-range energy reduction plan to meet these goals. This plan should include a list of prioritized projects for municipal buildings and the Town's vehicle fleet. (The Green Communities criteria call for developing a plan to reduce the baseline by 20 percent within five years.)
- ▶ Pursue funding sources to make energy efficiency improvements.
- ▶ Lead by example in government operations:
  - Employ energy conservation and efficiency policies and standards when practicable such as LEED building standards and Energy Star equipment and system purchases.
  - Employ renewable energy sources where and when practicable.
- ▶ Among the other tools that can be used by municipalities to track energy consumption is the Energy Star Portfolio Manager, which is a free energy and water consumption tracking software program available on the Energy Star website.<sup>18</sup> Consumption can be tracked in individual buildings as well as a combination of numerous buildings. Another is available at no charge to members of the International Council for Local Environmental Initiatives (ICLEI)—the Clean Air and Climate Protection (CACP) Software. This tool can calculate and track emissions of criteria air pollutants and reductions in greenhouse gases. It can assess buildings, vehicle fleets, waste, wastewater treatment, and street and traffic signals.<sup>19</sup>
- ▶ In order to implement these recommendations, the Town should consider establishing a dedicated staff position for addressing energy efficiency and sustainability.

18 See [http://www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager)

19 See <http://www.icleiusa.org/action-center/tools/cacp-software>

**Sustainability Task Force**

- ▶ The Town should establish a Sustainability Task Force by developing a mission statement and bylaws that will enable the Task Force to carry out the specific recommendations set out in this Plan.
- ▶ Working with the Energy Advisory Committee, develop a Sustainability Strategic Plan for Sturbridge. Include staff and officials from all departments in development of the plan and subsequent training on its recommendations.
- ▶ Within the Sustainability Strategic Plan, develop a set of sustainability principles, including but not limited to energy and water conservation, green building materials, use of alternative energy sources, and minimizing waste, which can be incorporated into Town operations such as requests for proposals, area plans, and maintenance contracts.
- ▶ Working with the Planning Board and Town departments, review and evaluate the Town's current bylaws and policies for sustainability issues such as water, energy, materials, and waste, and identify steps to improve or amend these over time.
- ▶ Seek grant funds to complete other innovative projects that increase public awareness and support municipal leadership on sustainability issues.

**Green Communities**

- ▶ Continue working to meet the criteria to be designated a Green Community. Planning Assistance from the DOER should facilitate this process.
- ▶ Pursue the adoption of the Stretch Code and other measures which encourage the construction of zero net energy buildings.

**Renewable Energy Sources**

- ▶ Pursue the use of photovoltaic panels and thermal systems in Town buildings where it is technically and economically feasible. Explore other locations which could be suitable for solar energy installations such as the capped landfill.
- ▶ Study the feasibility of developing wind energy and recommend sites that may be feasible for wind energy generation.
- ▶ Promote the use of solar power (thermal and photovoltaic) in new developments as well as in existing homes and educate residents of the resultant fiscal benefits. For new projects, this could be done through bylaws and incentives such as density bonuses or fee waivers as well as utilization of the Commonwealth's Chapter 40 A Section 9B.



### Recycling

- ▶ Establish goals for increasing recycling at the Town's Recycling Center. This could include a zero-waste goal, which would be measured by the amount of trash that went into the landfill each year.
- ▶ Promote recycling, composting and water collection by distributing educational material to households and businesses, placing recycling cans at strategic locations in commercial areas, putting composting bins and rain barrels at the Recycling Center, and expanding the "Take It or Leave It" shed at the Recycling Center.
- ▶ Consider purchasing composting bins and rain barrels in bulk and providing them to residents at discounted rates.

### Energy Efficiency and Conservation

- ▶ Develop and implement a municipal buying strategy whereby the Town commits to purchasing Energy Star equipment and eco-friendly office products as financially feasible.
- ▶ Establish outreach programs to encourage businesses and residents to follow suit in their purchase and use of energy-saving appliances and eco-friendly products.
- ▶ Provide software tools, instructional information and guidance to residential and non-residential energy users concerning energy conservation, efficiency and sustainability. Conduct education and outreach programs for the general public.
- ▶ Provide residents and businesses with information about tax incentives, grants, energy-saving programs and other services that promote energy efficiency and sustainability.

### Building Codes

- ▶ Require building owners to complete, and make available to tenants, annual "energy certificates" which track a building's annual energy consumption.
- ▶ Adopt the Commonwealth's Stretch Code.
- ▶ The Energy Advisory Committee should evaluate the costs and benefits associated with requiring new commercial construction to be solar ready and make recommendations as to the appropriateness of the Town of Sturbridge making such a standard mandatory.

### Zoning and Land Use

- ▶ Review the Zoning Bylaws and consider amendments that would encourage mixed-use and compact development which can reduce dependence upon the automobile.
- ▶ Adopt measures which invoke or utilize Chapter 40A Section 9B to protect "solar access" by regulating the orientation of new streets, building lots, as well as building height, and setback.

- ▶ Adopt zoning bylaws which address and reduce regulatory barriers to low energy homes, energy efficiency retrofits and renewable energy installations.
- ▶ Encourage the use of Energy Star, LEED and other green building standards in new residential and commercial projects as well as renovations. Incentives can be provided for encouraging the building of new developments that meet such standards.
- ▶ Provide incentives for new development to occur in areas where municipal services, roads and utilities are already available. Minimize development patterns that extend into undeveloped areas by maintaining a protected edge around neighborhoods and natural resources.

As illustrated by APA, planning for sustainability includes the following processes, practices and outcomes.

Planning processes include:

- ▶ Making planning decisions in a holistic and fully-informed manner that involves all segments of the community and the public and private sectors.
- ▶ Educating all age groups to raise public understanding of and regard for the future consequences of current planning decisions and ultimately change human behavior.

Planning practices include:

- ▶ Developing a future-oriented vision, which look beyond current needs and recognizes environmental limits to human development.
- ▶ Fostering projects/activities that promote economic development by: efficiently and equitably distributing resources and goods; minimizing, reusing and recycling waste; and protecting natural ecosystems.
- ▶ Upholding a widely held ethic of stewardship that strongly encourages individuals and organizations to take full responsibility for the economic, environmental, and social consequences of their actions, balancing individual needs and wants with nature and the public good.
- ▶ Taking leadership in the drafting and implementation of local, regional and state policies that support sustainability.

Planning outcomes include:

- ▶ Local and regional development patterns that expand choice and opportunity for all persons, recognizing a special responsibility to address the needs of those that are disadvantaged.
- ▶ Resilient, diverse, and self-sufficient local economies that meet the needs of residents and build on the unique characteristics of the community to the greatest extent possible.
- ▶ Communities with a healthy economy, environment and social climate that function in harmony with natural ecosystems and other species and allow people to lead healthy, productive and enjoyable lives.