

THE SUSTAINABLE ENERGY ELEMENT

Introduction

Energy is indisputably a critical resource, and it is important to all of the other traditional comprehensive plan elements: e.g., housing, economic development, natural features and environment, and public facilities and services. For example, providing public transportation choices can reduce transportation-related energy use by single-occupancy vehicles. Energy conservation and energy efficiency are integral to any discussion on sustainable development, and there are many compelling reasons for including a sustainable energy element in a community master plan. For one, energy costs have been increasing, primarily over the last decade (See figure X). When local governments, schools, households and businesses reduce energy use and associated costs, they have more disposable income to spend on other priorities. For example, schools can spend more money on education instead of heating or lighting costs. Because energy use can have negative impacts on air quality and other natural resources, energy issues are also environmental quality issues.

Figure X. Crude Oil Prices (Source: EIA, 2011a)



This chapter will focus on sustainable energy in Seekonk and highlight some of the current formative issues for local sustainable energy. At the end of the chapter, a list of recommended actions is provided.

Formative Issues and Goals

Lead by example and reduce municipal energy use

On average, municipal energy use typically accounts for about one to two percent of a municipality's budget (ICLEI, 2008). When municipalities are able to decrease the amount they spend on energy, they are able to divert those funds toward other goals and priorities. Reducing municipal energy use also creates the opportunity to demonstrate leadership in energy efficiency and conservation and allows local governments to “lead by example,” so that households, businesses, industry, and institutions can learn how to cut energy use.

One way to start assessing municipal energy use and planning for reduction is to create a municipal energy use baseline inventory for all municipal energy use, including buildings, vehicles, and street and traffic lights. This inventory will inform the Town of its starting point so that it can determine a goal for reduction. This inventory will also help the Town to target areas of least efficiency or greatest waste.

The State of Massachusetts Department of Energy Resources (MA DOER) has developed a web-based spreadsheet tool, called MassEnergyInsight (MEI), for developing an energy use baseline. The MEI tool is capable of automatically downloading utility data for all Town accounts. This would enable easier tracking of energy-use trends over time. After determining a baseline inventory, the next step for the Town would be to implement municipal energy efficiency plans and policies in order to meet the energy reduction goals.

The MA DOER Green Communities Division runs a state-wide initiative, the Green Communities Designation and Grant Program, and works with municipalities toward qualification as a Green Community and provides funding to qualified municipalities for energy efficiency and renewable energy initiatives. By meeting five rigorous qualification criteria, a designated Green Community demonstrates a commitment to reducing energy consumption, pursuing clean renewable and alternative energy projects, and providing economic development in the clean energy sector. Achieving these criteria, of which one is the development of a municipal energy use baseline and reduction plan, would help the Town achieve its energy goals as well as help qualify for grant funding. The Town has already achieved two of the five criteria through the adoption of a large-scale ground-mounted solar overlay zoning district in 2010.

Reduce community-wide energy use in buildings

Although it is important to reduce municipal energy use, this typically only makes up about five percent of the community's total energy use (Lerch, 2010). To reduce the remaining 95% of the community's energy use, it is important to target initiatives towards reducing energy use in residential, commercial and industrial buildings, which typically make up the majority of a community's energy use (EIA, 2011b). This can be more difficult, particularly in New England communities like Seekonk that have older building stock. Older buildings tend to be more inefficient, and it is more difficult to retrofit older buildings to make them more energy efficient than it is to construct new energy efficient buildings. It can also be more challenging to reduce energy use in privately-owned buildings versus public buildings since, beyond the building code, there is little that a community can do to require more stringent energy efficiency measures.

Nonetheless, there are measures – both voluntary and mandatory – that a local government like Seekonk can implement to reduce community-wide energy use. Similar to reducing municipal energy use, the first step would be to develop a baseline energy use inventory in order to determine a starting point, and analyze the different community sectors, such as residential, commercial, industrial and transportation. Once this baseline is identified, the Town can then use these data to identify strategies to reduce energy use. For example, one strategy to reduce residential energy use for heating homes may be to provide a weatherization program to Seekonk homeowners to help alleviate the costs of weatherizing a home. The Town could also investigate the implementation of an online rewards program, similar to that being implemented in other communities. For example, in Richmond, Virginia, households track their energy usage online and earn points for reducing energy consumption. The rewards program would teach residents how to be more energy efficient. For the program in Richmond, households can use their

rewards points for discounts and offers at local businesses. This type of program would also support local economic development.

Reduce transportation-related energy use

Transportation-related energy use makes up roughly 30% of the nation's energy use (EIA, 2011b). There are a few different approaches to reducing transportation-related energy use, such as reducing the total number of vehicles on the road (e.g. through encouraging public transportation), reducing the amount of fuel used by each vehicle per mile driven (e.g. by promoting more fuel-efficient vehicles), and reducing the total amount traveled by each vehicle (e.g. through smart growth development techniques). Local governments can reduce their own transportation-related energy use through programs and policies aimed at their own vehicle fleets (e.g., through the adoption of a fuel efficient vehicle policy). The MA DOER Green Communities program requires the adoption of such policy as one of their criteria for designation as a Green Community in the Massachusetts program.

Streetscape and parking improvements

Reducing community-wide transportation-related energy use can be a little more challenging, however. Proper street and parking design standards are one way that a community can promote a reduction in transportation related energy use. Unnecessarily wide streets, for example, encourage higher traffic speeds, and discourage bike and pedestrian travel. Appropriate street widths along with bike and pedestrian amenities can encourage multi-modal transport along the corridor. Poor connectivity also discourages alternative modes of transportation and can require motorists to travel longer distances to reach their destinations. Street grid networks can alleviate this problem.

In addition to street and parking design, incentives can be provided for energy efficient vehicles and carpooling/vanpooling. These could include better parking spaces, free parking, or other incentives. Many communities have also started to consider promoting electric vehicle charging stations to encourage the use of electric vehicles.

The Land Use Planning Connection

The local government can help reduce community-wide transportation-related energy use through land use planning. The way in which land uses are sited and developed is important to the overall energy demand of a community. Locating stores, restaurants, schools, recreation, homes and other land uses near to each other reduces dependence on the automobile, and encourages alternative modes of transportation. With more people being able to choose to bike or walk to destinations instead of taking a personal vehicle, the number of vehicle miles traveled can be reduced thereby reducing the number gallons of gasoline consumed.

In the community Master Plan survey, current perceptions of mixed use development were divided, with about half believing that the Town should continue to encourage mixed use, and the other half thinking that the town should discourage mixed use developments. Community perceptions of village centers, however, are generally positive. In the Master Plan community survey, about 70% of residents agreed that the Town should encourage the development of small-scale village centers to serve as areas for future growth. Infill and redevelopment in village centers prevents sprawl, which reduces transportation-related energy use, and also allows for development utilizing existing infrastructure. Compact and

cluster development patterns also reduce energy use while protecting open space. In addition to shortening vehicle trips, they also reduce infrastructures needs, and reduce heating and cooling energy needs.

Significant savings in both transportation and heating and cooling related energy use can also be achieved with higher density residential development. Despite this, residents' attitudes toward higher density residential development in Seekonk are not all that positive. According to the community Master Plan survey, currently, over 60% of residents feel that the Town should plan new neighborhoods with larger lots to provide each house with ample space, even if it means more land will be used to build these neighborhoods.

There are also many non-energy related benefits of mixed use development and higher density residential development, such as conservation of open space and preservation of community character. Because of all of these community benefits, the Town should continue to consider promoting attractive, traditional mixed use development. Additionally, education and outreach are important to explain the costs and benefits to different types of development choices.

Public Transportation

Another opportunity to reduce transportation related energy use is through encouraging public transportation. In the community Master Plan survey, over half of residents felt that current conditions of alternative transportation, including public transportation as well as bike paths and sidewalks, were not adequate to handle the Town's current and future needs.

Encourage renewable energy sources

Since the industrial revolution, the nation's annual energy consumption has been on a significant upward trend. Conventional energy sources, such as coal, oil, and gas, are finite and can be exhausted over time. Therefore, as we continue to become more dependent on the conveniences provided by energy, such as computers and cars, the search for renewable sources of energy will become more and more important. As a nation, we also depend on foreign countries - many of which are politically unstable - for the vast majority of our conventional energy sources, which furthers the case for encouraging alternative sources of energy. In addition, the byproducts of conventional energy generation, such as carbon dioxide, contribute to the degradation of the atmosphere and the environment.

Towns have the ability to promote the development of renewable sources of energy at a local scale through planning, zoning, and economic incentives. The Town of Seekonk has already utilized this ability through the adoption of a large-scale ground-mounted solar overlay zoning district, which allows the as-of-right development of these facilities within designated locations of the Town. The Town has also incorporated a solar array on the roof of one of its municipal buildings: the Department of Public Works (DPW) garage. The electricity for this DPW facility is almost entirely provided by its rooftop solar array.

Despite the work that the Town has already done regarding renewable energy development, there are many more opportunities for the Town to further encourage the development of renewable energy sources, such as economic and regulatory incentives.

OBJECTIVES AND ACTIONS

Objective SE-1: Reduce energy used in municipal buildings and operations.

Actions:

- a. Develop a public education and engagement campaign around energy efficiency and conservation.
- b. Form an energy committee made up of Town staff and volunteer members to support various energy efficiency initiatives.
- c. Sign up for the MassEnergyInsight program.
- d. Through the support of the energy committee, develop a municipal energy use baseline in MassEnergyInsight.
- e. Coordinate free energy audits at municipal buildings through the energy utilities.
- f. Commit to reducing municipal energy use by 20%, and through the support of the energy committee, develop a Green Communities compliant energy reduction plan.
- g. Coordinate a street lighting audit with the electric utility, and consider conversion to LED lights.

Objective SE-2: Reduce community-wide energy use in buildings.

Actions:

- a. With the support of the energy committee, develop a community energy use inventory and community-wide energy reduction strategy.
- b. Consider the implementation of a weatherization program.
- c. Provide education and outreach on energy efficiency and conservation, and promote energy audits.
- d. Consider implementation of a community energy efficiency competition or online rewards program in which residences are rewarded for energy savings.

Objective SE-3: Reduce transportation-related energy use.

Actions:

- a. Evaluate the current street and parking design standards, and determine options for improvement to promote multi-modal corridors.
- b. Prioritize projects to encourage multi-modal transportation along targeted roadways.
- c. Develop and provide regulatory incentives for developers that incorporate multi-modal design in their development applications.
- d. Inventory current bicycle and pedestrian paths and identify opportunities to upgrade them and create linkages.
- e. Prioritize municipal projects that provide direct connections and improve community connectivity.
- f. Continue to promote pedestrian activity by requiring projects to incorporate pedestrian and bicycle paths and amenities.
- g. Work with the state to improve public transportation opportunities in Seekonk.
- h. Inventory zoning obstacles to smart growth and mixed-use development, and address them accordingly with zoning revisions.
- i. Provide priority parking in public lots for energy efficient vehicles and for carpooling and vanpooling.

Objective SE-4: Encourage renewable energy sources.

Actions:

- a. Continue to investigate opportunities (including appropriate locations as well as funding sources) to incorporate renewable energy on municipal buildings and lands.
- b. Inventory zoning obstacles to renewable energy development, such as setback requirements, height standards, lot coverage requirements, and other standards that may impede development of renewable energy as a principal or accessory use, and develop revisions accordingly.
- c. Develop zoning and regulatory standards for renewable energy systems of different types and scales as appropriate to the community.
- d. Provide education and outreach on renewable energy sources, and how home-owners and businesses can integrate these systems into their homes and businesses.
- e. Provide regulatory incentives to developers that incorporate renewable energy sources in their site plans.

REFERENCES

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