

Energy and Cost Saving Opportunities in Municipal Street Lighting

Streetlights are one of the highest electric users and expenses for most municipalities. Most town streetlights are old, inefficient, expensive, polluting and do a poor job of streetlighting, offering municipalities many savings opportunities. The following information has been compiled by Sustainable Energy Resource Group (SERG) through its work with Thetford on a street lighting project. Please feel free to use this following information and to contact SERG (below) if you need help with your project.

Action 1 – Streetlight Inventory and Assessment

- Get a copy of your town's electric bills, with a breakdown for streetlighting from your town clerk. **More than 1/2 of Thetford's municipal electric expenditures are for streetlighting!**
- Ask your electric utility to send list of all lights, age, type, and wattage of each, with a map and their location.
- Ask your utility for the depreciation schedule and value of each light and what their policy is on town ownership of streetlights.

Action 2 – Removing Unneeded Streetlights - The biggest and quickest savings on streetlighting come from removing unneeded lights. Thetford removed 1/4 of streetlights determined as unnecessary by Selectboard.

Steps:

- Discuss issue of removing selected streetlights with Selectboard, Town Manager or other Municipal agent.
- Tour streetlights at night with a map noting their location, looking for lights that might be removed, upgraded or placed on photocell timers (below).
- Present draft list of lights recommended for removal to Municipal decision makers – edit list.
- Present edited list to community and seek feedback via community letter, forum, letter to the editor, survey, etc.
- Trial Outage – Based on community feedback, edit list with Municipal decision makers and ask electric utility to temporarily turn off selected lights for a given period of time.
- Seek community input on trial outage and make final decisions with Municipal leaders.
- Ask utility to remove unwanted lights and to turn others back on.

Issues and considerations in determining where streetlights are needed: Streetlights are most helpful in high pedestrian and vehicular traffic areas, at pedestrian cross walks and major traffic intersections. They can serve to indicate central business or residential areas. Some residents prefer darkness, while others may want streetlighting for safety and security. Should town pay for lighting for private concerns? Motion detectors on private property lights may better serve these purposes. Might towns save money by offering, as Thetford did, to install motion detectors on private property for specific concerned residents where most landowners wanted the removed light? Can sidewalks be lit instead of streets?

Liability – The directors of the liability insurance program for the Vermont League of Cities and Towns say that removing or turning off streetlights in the middle of the night in areas where there is little traffic or safety hazard and where there would be no reasonable expectation of those areas being permanently lit, would result in little increased risk of liability, especially in smaller, more rural towns. They were not aware of any case where a town had been successfully sued for having lights off.

Action 3 – Decide on Leasing vs. Town Ownership of Streetlights

Some electric utilities allow towns to purchase their own streetlights for placement on utility poles; others do not. Ownership gives towns greater choice in lights, fixtures and controls and potential cost savings, however, the town accepts greater responsibility. The town must buy electricity from the utility, as well as lights, fixtures and controls and contract out operation and maintenance to the utility, private contractors or town maintenance crews.

Plainfield Case – Plainfield, Vt. purchased its own streetlights for placement on Green Mountain Power poles in 2005. Plainfield negotiated a fee contract with GMP to install their new, efficient High Pressure Sodium (HPS) lights and fixtures and hired GMP to perform operation and maintenance. Plainfield estimates that after they have paid off their lights, within four years, their annual street lighting bill will decrease from \$6,700 to about \$3,600.

Thetford Case – Central Vermont Public Service Corp. does not allow towns to purchase their own streetlights for placement on CVPS poles. SERG has been assisting the Town of Thetford since 2005 in its case before the Public Service Board seeking a new CVPS streetlight tariff that permits town ownership and the use of photocell timers. The Vermont Legislature will be considering a bill requiring all utilities to allow towns to purchase their streetlights during the 2008 session.

Action 4 – Install Efficient Lights, Fixtures and Controls - Have the municipality or utility install different types of trial lights, fixtures and controls. Gather community feedback. Decide which models to use.

Streetlight Efficiency & Lighting Characteristics

- **Mercury Vapor (MV)** - old, inefficient technology street lighting, used for the past 40 years. 100W MV's emit approximately 3,000 lumens of white light and have a life expectancy of 24,000 hours.
- **High Pressure Sodium lamps (HPS)** - give off a yellow to pinkish light that is less likely to attract insects and their predators and interferes less with astronomical observation because it is easily filtered. 70W HPS's emit approximately 5450 lumens and have a life expectancy of 24,000 hours, but have poor visibility due to their color spectrum.
- **Metal Halide lamps (MH)** produce a very white light, resulting in improved visibility at lower wattage (50W) and lumens (3,500) than HPS. But these reduced operating costs are offset by increased replacement costs due to shorter life expectancy (about 10,000 hours), making costs of operating MH lights similar HPS lamps.

- **Induction lights (IND)** at 55-Watts and a mean of 2800 lumens, produce a white light, similar to MH. IND lights have a life expectancy of 100,000 hours, which may result in the least maintenance and most cost-effective choice. But IND lights have a higher initial cost, so currently make most sense in hard to access and maintain areas, like on bridges and in tunnels.
- **Other Efficient Technologies - Light Emitting Diodes (LED's) & Compact Fluorescent Lights (CFL's)** are making technological advances and may soon be the preferred efficient and cost-effective options.

Fixtures

- "Drop Down" lenses - old, inefficient models that cast light sideways, illuminating the night sky
- "Full Cut Off" or "Flat Lens" fixtures - better option that prevent light spillage/dark sky light pollution and focus light downward.

Photocells – Turn lights on at dusk and off at dawn.

Photocell Timers – Shut lights off in the middle of the night when not needed, cutting electric use in half.

Streetlight Consultants and Contactors

The following may be helpful to you in your efforts to improve streetlighting in your municipality.

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Streetlight Project Thank You's

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For more information or to get on our list to receive periodic project updates and energy saving information, contact Sustainable Energy Resource Group at: 802-785-4126, SERG@valley.net or www.SERG-info.org

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