



TOWNSHIP OF LONG HILL

Environmental Commission

COUNTY OF MORRIS

GILLETTE, HOMESTEAD PARK, MEYERSVILLE, MILLINGTON, STIRLING

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Toward a Comprehensive Energy and Resource Conservation Policy in Long Hill Township

Introduction

The effects of global warming are now well known and have become an important part of discussions among international governments. Policy agreements such as the Kyoto Protocol have achieved some success in getting the international community (with the notable exception of the United States) on board to adopt broad regulations to reduce energy consumption and associated greenhouse gases.

Local governments have become impatient with the slow progress being made at higher levels and have taken action to adopt these regulations for their own day-to-day operations. The mayor of Seattle launched the very successful Cool Cities project that asked municipal governments to sign onto the principles of the Kyoto Protocol.

Last year, the Long Hill Township Committee entered the first part of the Cool Cities initiative by passing a resolution in support of the principles of the Kyoto Protocol. Now, it is time to take the next step and work toward the implementation of these principles into the daily operations of our town.

Global warming is expensive in many ways: The destructive effects of higher average temperatures, extreme weather events, rising sea levels, and ecological disruption will exact tremendous costs to the worldwide community. Fortunately, most of the approaches toward reversing the global warming trends have direct cost *savings* associated with them. Implementing the proposals outlined below will benefit the environment by reducing pollution, reducing greenhouse gases, and preserving our natural resources. At the same time, this implementation will provide substantive direct cost savings to our taxpayers.

General Goals

The long-term solution to the problem of global warming is to reduce global warming pollution as close to zero as possible. This can be achieved through the integrated use of

clean energy sources such as wind and solar power and a reduction of energy use by greater efficiency and conservation. Not all of these can be accomplished locally and not all can be accomplished immediately, but the goal of Long Hill Township should be to reduce global warming pollution by 50% by 2012 and 100% by 2020.

One way to help achieve this goal is to purchase electrical power from utilities that generate the power cleanly via wind, solar, or other low-impact, renewable technology. Currently, these providers cost a few percentage points more, but with additional demand, the technology will improve and prices will be reduced. Long Hill Township should immediately purchase 20% of its electricity from clean and renewable sources and increase that by 20% each year to reach full usage within five years.

Purchasing energy from clean, renewable sources can help make Long Hill Township a good global citizen, but the Township also has a direct responsibility to its taxpaying residents. Any additional costs for purchasing clean energy can easily be offset by the energy saving approaches outlined below.

Energy-Saving Solutions

Electricity

- Except where fixtures or specific lighting requirements make it impossible, all incandescent bulbs through Township facilities should be replaced with energy-efficient compact fluorescent bulbs as replacements are needed. This may seem like a small step, but the energy savings can be as much as \$30 for every bulb replaced.
- All rooms that are used intermittently (rest rooms, lunch rooms, meeting rooms, storage rooms, equipment rooms, etc.) should be equipped with

motion sensors and timers to turn lights off when the rooms are not in use.

- Outdoor lighting of displays and landscaping should be either eliminated or reduced to minimum reasonable hours of operation. For example, during the winter months the lights at the front of Town Hall could be turned off. Since there are no leaves on the trees, the six 200-watt bulbs do not illuminate anything—the light just goes to the sky. Turning off these lights for four to five months would save about \$235 per year and increase the life span of the bulbs by 25 percent, thereby reducing replacement costs.
- Outdoor lighting of parking areas should be reduced to the minimum level practical and consistent with safety requirements. Energy efficient light sources should be used.
- All computers should be programmed to go into energy-saving mode when not being actively used and should be turned off at the end of each workday.
- Some electric motors can be retrofitted to run more efficiently when not operating under full-load conditions. This should be investigated for areas of high usage such as the sewage treatment plant and air handlers in municipal buildings.
- Standard electric water heaters should be replaced with tankless on-demand water heaters where practical.
- All new appliances and equipment should be Energy Star rated and selected on the basis of maximal energy efficiency. This may require changes in purchasing policies. Rather than simply seeking the lowest purchase price, items should be selected on the basis of total cost over time (i.e., $[\text{Purchase Price} + \text{Energy Operating Costs} + \text{Repair and Maintenance Costs}] / \text{Life Expectancy} = \text{Net Cost per Year}$). Energy efficient appliances can save up to seventy percent of total energy costs!
- Alternative energy sources such as solar power should be investigated. Rooftop installations on Town Hall and the Public Works Department could produce significant annual savings. Realistically, the Township would still need to purchase a majority of its electricity, but the savings could still be substantial, because the payback period for installation costs is seven to ten years, and the life expectancy is on the order of twenty years. Grants and other funding sources are currently available and likely to be increasing.

Heating and Air Conditioning

- Heating should be set to the minimum levels consistent with a comfortable working environment. If necessary, additional controls should be installed to regulate the temperature differently in different zones. Areas that are used intermittently could be kept at a lower temperature in winter, or perhaps not be heated at all.
- Alternative modes of heating should be investigated. For example, heat pumps or geothermal installations. Innovative approaches, for example, using the sewage treatment plant as a source of heat energy, should be investigated.
- Air conditioning should be set to the minimum levels consistent with a comfortable working environment. If necessary, additional controls should be installed to regulate the temperature differently in different zones. Areas that are used intermittently could be kept at a higher temperature in summer, or perhaps not be cooled at all.
- All new appliances and equipment should be selected on the basis of energy efficiency and total cost over time (see above).
- Insulation should be checked, repaired, replaced, or upgraded at points of heat loss.

Vehicle Fuels

- Each Township department should examine its operations with an eye toward reducing the amount of driving.
- Idling while parked should be prohibited on all Township and school properties for all vehicles.
- Driving intensive operations such as snow plowing and police patrols should study alternative approaches. For example, salt brining techniques can reduce both energy consumption of initial snow removal and the follow-up street sweeping costs. Computer modeling of routes could reduce the mileage driven by police cruisers without compromising neighborhood safety. Video cameras and remote sensing devices could also reduce the need for driving.
- Drop-off fees for school children would increase school bus riding, decrease parental car trips and provide an additional source of revenue. Safe Routes to Schools (grant funding is available) can provide healthful alternatives to driving.
- All replacement vehicles should be the most energy-efficient vehicles available consistent with

performance requirements. Again, purchases should be based on total cost over time¹. In the example illustrated in Footnote 1, the savings over the lifetime of an energy efficient vehicle is nearly seven thousand dollars. The change in the purchasing policy would essentially mean that for every four cars purchased, the fifth one would be paid for.

Water Conservation

- Signage should be placed at all municipal water taps to encourage conservation.
- Routine inspection and maintenance should be scheduled to repair leaks.
- Bathroom facilities should be retrofit with low-volume fixtures as replacement becomes necessary.
- Rooftop runoff should be infiltrated into groundwater via rain gardens or equivalent Best Management Practice.
- There should be no outdoor watering of plants or lawns, with the exception of new plantings.
- Curb cuts and other retrofit methods should be used to infiltrate runoff into groundwater.

Employee Incentives

Township employees should be encouraged to adopt a culture of conservation. If each employee inculcates an awareness of water use, heating, lighting, driving, and so forth, the cumulative impact of this can result in substantial energy and financial savings to the Township.

Township employees should be encouraged to offer ideas to conserve energy, with merit awards being given for the best ideas each year.

Finally, when Department Heads submit their annual budget requests, they should also include a section on energy saving strategies within their unit.

Recycling and Conservation

- A public awareness campaign should be launched to encourage residents to increase their efforts to recycle. Such efforts can significantly reduce tipping fees while conserving resources.
- Township offices and schools should communicate with residents electronically whenever possible to reduce the amount of paper used as well as printing and mailing costs.

Getting Started

This comprehensive set of recommendations may seem daunting at first. Energy consulting companies can be hired to do a thorough analysis across the board. Some of these even guarantee that the energy savings will equal the cost of their analysis.

Hiring a consulting firm is probably a good idea at some point, but the Township Committee may want to approach this in smaller steps. The collective experience and expertise of the Environmental Commissioners can provide some good initial input. We recommend a walk-through of all of our municipal facilities, perhaps with the Mayor and the Township Administrator to identify energy- and cost-saving opportunities within every building and every department.

The Environmental Commission stands ready to assist in this important initiative.

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¹ The analysis should determine the difference in cost between operating a standard vehicle versus a hybrid (or other energy-efficient vehicle). For example:

	Standard	Hybrid
The cost of the vehicle.	\$25,000	\$25,000
The estimated miles driven each year	15,000	15,000
Expected miles per gallon	17 mpg	32 mpg
The cost of gas per gallon	\$2.50	\$2.50
Expected lifetime (in miles) of vehicle	100,000	100,000
Fuel costs over lifetime	\$14,706	\$7,812
Cost of vehicle and fuel cost over lifetime	\$39,706	\$32,812
Total savings		\$6,894