



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 on board to adopt broad regulations and strategies to reduce energy consumption and associated greenhouse gases.

Local governments have taken action to adopt these regulations and strategies 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. It is now appropriate to begin incorporating these principles into the daily operations of our town.

Global warming is expensive in many ways: 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.

The Environmental Commission has put together this set of guidelines for resource conservation and energy reduction that can provide substantial cost savings to the taxpayers in Long Hill Township. At the same time, we will be reducing pollution, reducing greenhouse gases, and preserving our natural heritage.

Reducing Energy Costs in Long Hill Township

Electricity

- Except where fixtures or specific lighting requirements make it impossible, all incandescent bulbs through Township facilities should be replaced with energy-efficient 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.
- The Township should consider replacing incandescent signs, traffic control and other such fixtures with low-cost light-emitting diode technology.
- 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, if feasible, should be turned off at the end of each workday subject to the after-hours maintenance or security needs of the network administrator.
- 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—probably more. Grants and other funding sources are currently available and likely to be increasing.
- Purchasing energy from clean, renewable sources can help make Long Hill Township a good global citizen. Utilities that generate power cleanly via wind, solar, or other low-impact, renewable technology currently cost a few percentage points more, but with additional demand, the technology will improve and prices will be reduced. Long Hill Township should monitor

these alternative sources and purchase clean energy whenever it can be accomplished without burdening our taxpayers.

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. State law prohibits idling for more than three minutes; that law should be enforced.
- 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.
- Encourage ride sharing, or carpooling, to drop off and pick up school children where busing is not available. An effective carpooling strategy requires the dissemination of trip origins to potential users. The Township can work with school officials to develop an inventory of school children who do not utilize bus transportation to facilitate the matching of potential ride share partners. In addition, the Safe Routes to Schools program (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. Purchases should be based on total cost over time¹. In the example

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
Expected lifetime (in miles) of vehicle	100,000	100,000
Expected miles per gallon	17 mpg	32 mpg
Fuel costs over lifetime at \$3.00 per gallon	\$17,647	\$ 9,375
Fuel costs over lifetime at \$4.00 per gallon	\$23,529	\$12,500
Fuel costs over lifetime at \$5.00 per gallon	\$29,411	\$15,625

illustrated in Footnote 1, operating costs become a much more important consideration as projected increases in fuel costs are considered.

- The state of repair of a vehicle corresponds to the pollution output of that vehicle. Vehicles that are poorly maintained emit higher levels of pollutants, reduce fuel economy and leak fluids that contribute to groundwater and stormwater contamination. Thus, each Township department should undertake a review of its vehicle maintenance procedures to ensure that the maintenance schedule and repairs are performed in accordance with manufacturer specifications with greater emphasis on those repairs that improve fuel economy and eliminate toxic emissions. .
- The provision of bicycle facilities on municipal and school properties is a low cost, maintenance-free option that provides both health and financial benefits to employees, citizens, and the municipality by reducing auto traffic.

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.
- Lawns and lawn maintenance are often large contributors of environmental degradation. The standard lawn, monoculture, supports only grass and a small amount of species diversity. Fertilizers, pesticides, watering and frequent mowing are the typical methods of maintenance. However, all these methods contribute to poor air and water quality. Instead, municipal lawns, where feasible, should be maintained in a more natural state that should include use of drought resistant turf grass, more trees, shrubs and wildflowers. These natural-state lawns conserve water, reduce pollution, and tend to discourage Canada geese.
- Invasive species are plants and other organisms that aggressively migrate into environments where they do not live under normal conditions. They displace native plants and disrupt natural processes and can be very costly to remove effectively. Examples include Norway maple, Japanese honey suckle, Tree-of-Heaven, cow vetch and Japanese knotweed.² The Township should undertake an education campaign to limit the planting of known invasive plants on municipal, residential, and commercial properties. Numerous non-invasive horticultural species, both native and non-native and many sources of information to help landowners choose plantings wisely are available.
- Curb cuts and other retrofit methods should be used to infiltrate runoff into groundwater.

² See Snyder, David and Sylvan R. Kaufman. 2004. An overview of nonindigenous plant species in New Jersey. New Jersey Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management, Natural Heritage Program, Trenton, NJ. 107 pages.

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.

Long-Term Goals

Conventional site plans, building design, construction, and operation methods can negatively affect the health of people who occupy the buildings and harm the environment. The awareness of this problem has led to the creation of new solutions that apply a “systems thinking” approach to environmental problems. “We can't solve problems by using the same kind of thinking we used when we created them.”³

The long-term solution to the problem of global warming is to reduce pollution—popularly referred to as reducing the carbon footprint. With energy costs spiraling upward, conservation measures will immediately translate into cost savings for the town. The reduction of greenhouse gases should be an integral part of budgetary planning. Based on national and international guidelines, reasonable targets for Long Hill Township would be to reduce global warming pollution by 50% by 2012 and 75% by 2020.

Getting Started

Long Hill has taken commendable steps toward becoming a more sustainable community, including passing a resolution in support of the principles of the Kyoto Protocol. This comprehensive set of recommendations provides additional key building blocks to continue meeting the challenge.

The Environmental Commission stands ready to assist in this important initiative. The collective experience and expertise of the Environmental Commissioners can provide some good initial input. We recommend that a sub-committee of Environmental Commissioners perform a cost-free walk-through of each 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. Thereafter, the Township should consider hiring a consulting firm to perform a more thorough analysis, which cost may be offset by the resulting energy savings.

21 March 2008

³ Albert Einstein.

Resolution 2008-XXX

A RESOLUTION ENCOURAGING SUSTAINABLE AND REGENERATIVE SITE DEVELOPMENT, WATER SAVINGS, ENERGY EFFICIENCY, NATURAL RESOURCE PROTECTION, AND ENVIRONMENTAL QUALITY

WHEREAS, Long Hill Township has adopted a resolution (Resolution 2006-XXX) in support of the Cool Cities initiative; and

WHEREAS, Long Hill Township has joined the Cities for Climate Protection Campaign which has a stated goal of reducing greenhouse emissions; and

WHEREAS, a fundamental goal of Long Hill Township's operations and services is to become a model of sustainable development practices; and

WHEREAS, the demolition, design, construction and maintenance of buildings and structures within the Township has a significant impact on the Township's environmental sustainability, resource usage and efficiency, greenhouse gas emissions, waste management, and the health and productivity of residents, workers, and visitors; and

WHEREAS, conventional site plans, building design, construction, and operation methods can negatively affect the health of people who occupy the buildings and harm the environment; and

WHEREAS, it is critical to both the economic and environmental health of Long Hill Township that the Township provide leadership, vision and commitment to creating sustainable community plans and programs to both the public and private sectors in the arena of energy efficiency and "green" construction; and

WHEREAS, it is also in the public interest to strongly support and promote the inclusion of green building strategies in private development projects through the adoption of ordinances that recognize the need for sustainable development and Best Practices and will encourage residents, local commercial businesses and industry to consider utilizing a "systems thinking" approach to environmental problems; and

WHEREAS, the most immediate and meaningful way to do this is for the Township to take a leadership role and include energy efficiency and green building elements in our public buildings and properties, and to encourage the adoption of energy efficient policies and procedures by the various municipal departments and agencies; and

WHEREAS, at the national level, the U.S. Green Building Council has taken the lead in promoting and guiding green building by developing the Leadership in Energy and Environmental Design (LEED) Rating System and Reference Guide:

NOW THEREFORE BE IT RESOLVED, that the Township Committee of the Township of Long Hill does hereby direct the Environmental Commission to research the availability of grants that support leadership, vision and commitment to creating sustainable community plans and programs; to further educate the residents, local commercial businesses and industry on the need for sustainable development and Best Practices; to advise the Planning Board and Township Administrator on methods to promote energy efficiency and green building elements in our public buildings and properties; to encourage the adoption of energy efficient policies and procedures by the various municipal departments and agencies; and to provide guidance to update the Long Hill Township Master Plan and Land Use Ordinance to reflect the above-delineated principles.