Lower Makefield Township

Sustainability Action Plan

Cool Cities Committee
Environmental Advisory Council
September 2011

Table of Contents

Executive Summary

In the quest for sustainability, communities around the world are implementing sustainability action plans to reduce energy consumption and green house gas emissions. The Sierra Club, in conjunction with ICLEI – Local Governments for Sustainability, developed Cool Cities to encourage widespred action at the local level across the country. Communities in Pennsylvania who are participating include: Allentown, Bethlehem, Braddock, Easton, Erie, Forest Hills, Harrisburg, Kutztown, Mount Lebanon, Nether Providence, Oxford, Philadelphia, Pittsburgh, Reading, Scranton, Wilkes Barre, and York. Lower Makefield Township (LMT), in keeping with its continuing environmentally active orientation, has joined this enlightened group of communities. (Refer to Attachment A – LMT's endorsement of the Mayor's Climate Protection Agreement)

Our township has put into effect a series of progressive programs that have improved immeasurably the lives of our citizens. We have learned first-hand that sound environmental practices go hand in hand with positive economic benefits. Our pro-active role has also helped save considerable taxpayer dollars (e.g. Basin Naturalization and Recycling Programs to name but a couple), and this at a time when our economy is just emerging from a significant recession. This leadership role has also placed our community in the enviable position of becoming an environmental model for other communities to emulate, not only inside Pennsylvania, but within the entire Mid-Atlantic Region of the U.S. as well. And this positive role is well evidenced, not only by the numerous cutting edge programs and ordinances the township has adopted, but by the numerous National and State awards LMT has received as well. To single out just one, on Sept. 25, 2008 the U.S. EPA awarded LMT an award for the innovative and progressive programs recently adopted by the township. LMT was the only municipality so honored for this distinction in the entire Mid-Atlantic Region.

Over the last several years our towns environmental leadership role has resulted from a unique combination of factors that have serendipitously come together: an enthusiastic and highly talented EAC willing to work for their town, a progressive Board of Supervisors and an engaged citizenry. This leadership role has been borne out in many ways. Due to numerous requests for information regarding our initiatives, an active outreach program has been set up to explain our programs to other concerned communities inside and outside PA. In addition, we have seen many of these same communities adopting our programs and ordinances, the ultimate compliment for our town and a clear example of how local movements expand and become more meaningful to society at large,

The LMT Sustainability Plan is part of our Cool Cities commitment. It is a plan for the people, written by the people (refer to Attachment G). It is not meant to be a set of "feel good" principles paying lip service to the environmental movement, but rather a living document, a guide and pathway to environmental and economic sustainability. We will rely on the Board of Supervisors to help prioritize projects and, of course, before any projects are undertaken, the approval of that Board will be required.

The Environmental Advisory Council (EAC) of LMT conducted a greenhouse gas inventory by surveying and comparing LMT to other municipalities in the area. The EAC joined the environmental group, ICLEI- Local Governments for Sustainability in 2007 and

completed the inventory as part of ICLEI's five-milestone process. The inventory identified the sectors within the township that produce the most greenhouse gases. This establishes a benchmark from which to measure our progress.

As the result of a grant initiated by a neighboring municipality, Temple University,in early 2011 issued a Multi-Municipal Greenhouse Gas Emissions Inventory and Climate Change Action Plan (refer to Attachment H) than also encompases Lower Makefield Township. Though this report lacks the detail specific to our community it nevertheless, Includes sound information that will prove useful to LMT Cool Cities personnel in implematation of our Action Plan.

The carbon footprint for the Township totaled 376,046 tons of carbon dioxide equivalent (eCO_2). The largest percentge of eCO_2 was contributed by the residential sector at 47.6%, followed by transportation with 39%. The commercial sector contributed 9.7%, the governmental sector contributed 3.25% and waste contributed 0.4%.

The goals of this initiative are:

- Maintain and improve the environment of the township and the health of its residents.
- Provide opportunities for cost savings for the residents of the Township
- As part of the Sierra Club's Cool Cities campaign, LMT supports Bucks County's goal in reducing overall GHG emissions by 17% over the 2005 level by 2020.
- Improve the energy security in the Township and in turn nationally by reducing energy use and concomitant reliance on expensive (politically and financially) foreign energy sources

Specific Action Plans to reduce the GHG emissions are arranged in the following categories:

1. Buildings
2. Transportation
3. Land Use
4. Lighting
5. Waste and Recycling
6. Agriculture and Food
7. Community Outreach and Education
8. Procurement Practices
9. Other Measures

Introduction

In the quest for sustainability, communities around the world are implementing environmental action plans to reduce energy consumption and green house gas emissions. These efforts are driven by the catastrophic long-term impact of climate change and the rising cost of electricity and petroleum. The Sierra Club developed Cool Cities to encourage widespred action at the local level across the country. Communities in Pennsylvania who are participating include: Allentown, Bethlehem, Braddock, Easton, Erie, Forest Hills, Harrisburg, Kutztown, Mount Lebanon, Nether Providence, Oxford, Philadelphia, Pittsburgh, Reading, Scranton, Wilkes Barre, and York.

This local action plan is Lower Makefield Township's (LMT) response to the twin challenges posed by climate change, diminishing fossil fuel resources, and escalating energy costs.

Issues Addressed

Climate Change

The Intergovernmental Panel on Climate Change (IPCC) [1], a scientific body created by the World Meteorological Organization (WMO) and by the United Nations Environment Program (UNEP), has produced many reports on climate change over the last 20 years. . The IPCC is a panel of distinguished scientists that received the 2007 Nobel Peace Prize for their efforts to educate the world about climate change. In their latest report, "Climate Change 2007,[2] released to the public in 2007, IPCC scientists found that human activities are largely responsible for increasing concentrations of global warming pollutants and therefore climate change. The following three quotes from the report serve to outline its conclusions:

1) Global warming is real: "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level."

2) Global warming is caused by human activity: "Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic [resulting from human activity] green house gas concentrations."

3) Business as usual will result in accelerating global warming and climate change: "Continued green house gas emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century."

[1] www.IPCC.org

[2] Intergovernmental Panel on Climate Change. "Climate Change 2007: Synthesis Report, Summary for Policymakers." Cambridge University Press, 2007.

The IPCC report goes on to outline many potential impacts of climate change, which include increased frequency of heat waves, floods, droughts, and extreme weather events, and a significant rise in sea level. The report concludes that these impacts can be mitigated by a cooperative international effort to reduce green house gas emissions. This local Sustainability Action Plan details LMT's planned contributions to this important goal.

The Union of Concerned Scientists (UCS) with the help of a team of more than 50 experts has conducted the Northeast Climate Impacts Assessment (NECIA). According to the NECIA, over the next several decades (2010-2039), compared with the historic period 1961-1990, the average temperatures across Pennsylvania are projected to increase by 2.5^{o} . The climate may change more severely in future decades unless appropriate actions are taken now. With just the projected climate change, Pennsylvania is expected to experience extreme temperatures, greater susceptibility to drought and diminished air quality.

Oil Supply

A related issue raised by geologists, physicists, and petroleum industry veterans is the probability that we are nearing peak global oil production.[3] This prediction was initially developed by noted Shell geologist M. King Hubbert, who correctly predicted peak US oil production in 1970. Consistent with this view, global oil production has been flat since 2005, in spite of price increases. The oil supply will be increasingly unable to meet the rapid demand increases from China, India, and other developing economies. It is essential to prepare for future oil supply shortages and increasing oil costs by reducing consumption and increasing use of alternatives such as solar and wind energy. Specific goals for reducing energy consumption and implementing alternative energy sources by LMT are described in this action plan.

Sustainability

A sustainable community strives to give back as much or more than they've taken from the natural earth. The term sustainable development was coined by Gro Harlem Brundtland, the former Prime Minister of Norway and the Chairperson of the World Commission on Environment and Development informally known as the Brundtland Commission. The Commission was established by the UN in 1983 and reported on "Our Common Future" in 1987. The definition of sustainable development in "Our Common Future" is as follows:

> "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." [4]

Benefits of pursuing Sustainability Initiatives for Lower Makefield

1. Saves considerable amounts of money**:** Methods that reduce fuel and electricity use also reduce both green house gas emissions and, energy costs for residents, businesses and the municipality.

[3] K. S. Deffeyes. "Hubbert's Peak: The Impending World Oil Shortage." Princeton University Press, 2001. D. Goodstein. "Out of Gas: The End of the Age of Oil." W. W. Norton & Co., 2004.

[4] www.un-documents.net/wced-ocf.htm

Air Quality and Public Health: Reducing greenhouse gas emissions through fossil fuel reduction will lessen air pollution. Air pollution is responsible for many health concerns such as asthma and other respiratory illnesses. In the long term, reducing greenhouse gases will slow climate change and prevent associated new sicknesses not typical for this area.
Community Livability: Initiatives to become more sustainable and reduce green house gasses will reduce traffic congestion, reduce air pollution, and contribute to the construction of more efficient homes, offices, and large meeting areas. This will improve the quality of life for the entire community.
Community Involvement: Becoming sustainable includes improving the longevity of the complex systems that run within LMT. This must include active participation of the residents of the Township. Involving the community in environmental education and encouraging them to take measures at home to reduce greenhouse gases will unite LMT residents by giving them a common purpose.
Local Economy: Local businesses and firms who choose to implement new "green" technologies will have a competitive edge. Not only will they save money, but they will help reduce greenhouse gases, create local job openings, improve the environment and stimulate the local economy.

Steps Leading to the Action Plan

Environmental Advisory Council background

In late 2006, LMT was the first community in Bucks County to join the Smart Power Program, which committed the community to using 20% alternative energy by the year 2010. On March 21, 2007, LMT signed the Mayor's Climate Agreement and the Sierra Club's Cool Cities Program which embrace initiatives that combat climate change by reducing a community's carbon footprint. In May 2007, the EAC held the first of three annual daylong global warming conferences, featuring knowledgeable and well-known speakers, in order to educate the public on this critical issue.

The EAC helped start a farmers market in 2007 that has successfully attracted many residents to buy and sell local goods. More recently, the EAC proposed and the Township approved a Green Building Code Ordinance that stipulated that any new or renovated Township buildings must be certified to the standards of the Leadership in Energy and Environmental Design (LEED) green building rating system. With the creation of the Action Plan, the EAC and the Cool Cities Committee wil move LMT forward to become a more sustainabile community. LMT has already done significant work in support of sustainability. The Cool Cities Greenhouse Gas Inventory (2008), the LMT Open Space Plan Update (2009), the Low-Impact Development Ordinance (2006), the Native Plants Ordinance(2007), the Green Building Code (2009), and the continuing educational efforts of the LMT Environmental Advisory Council. provide notable examples of our town's commitment.

By working with ICLEI and calculating LMT's carbon footprint, the areas that create the most greenhouse gases can be isolated and measures can be taken to reduce them. Decreasing greenhouse gas emissions will take LMT one step closer to an environment that is more self-sustaining. Involving the entire community and working within the LMT

municipality, will assure that future generations will be able to more easily meet their own needs.

ICLEI- Local Governments for Sustainability

In April 2007, the EAC of Lower Makefield Township joined ICLEI (International Council on Local Environmental Initiatives) - Local Governments for Sustainability[5]. ICLEI is an international association comprised of local government organizations that have committed to sustainability. By joining ICLEI, LMT acknowledges the negative impact on the earth from greenhouse gas production and the need to reduce that impact. The township recognizes that climate change is real and already in progress. ICLEI has provided the township with consulting, training, information and support in the implementation of the Township's goal to become a more sustainable community.

ICLEI is comprised of thousands of cities, towns, and counties, committed to sustainable development, worldwide. They believe that local sustainability initiatives can provide an efficient and cost-effective way to achieve local, national, and global sustainability objectives. Local governments in our area that are also members of ICLEI include Philadelphia, Haverford, Radnor, Upper Dublin and West Chester.

ICLEI's Five-Milestone process provides a framework for local communities to identify and reduce greenhouse gas emissions. The Five Milestones are:

1) Conduct a baseline emissions inventory and forecast for all municipal operations and the entire community.
2) Set an emissions reduction target.
3) Develop a local action plan that describes policies and measures the city intends to take in order to reach its emissions reductions target.
4) Implement the policies in the action plan.
5) Monitor and verify results.

Baseline Energy Audit

On Nov. 17, 2007 at the behest of the EAC and with LMT's approval, SunTechnics performed a detailed energy audit of all major township owned facilities. Its report also included an alternative energy solar proposal for the township. The audit report represented LMT's completion of a portion of the first step in ICLEI's five-point framework: calculating the township's carbon footprint. A carbon footprint is a measure of the impact that human activities have on the environment in terms of the amount of greenhouse gases produced, measured in equivalent units of carbon dioxide (eCO2).

Data for the community inventory, using the 2005-07 period as the base, was gathered during the summer of 2008 and entered into software provided by ICLEI. Data for the government sector came from the energy audit, mentopned above, created for the Township buildings by SunTechnics. Data provided by PECO energy and the Delaware Valley Regional Planning Commission (DVRPC) were used in calculations involving GHG emissions from generation of electric power and the burning of natural gas and fuel oil for residential and commercial use. Because the Pennsbury School District encompasses LMT and Falls Township, only the school buildings in LMT

[5] www.ICLEI.org

were included in the inventory. Township employees and administrators also aided in gathering the necessary data. The completed Inventory was presented to the LMT Supervisors in November of 2008

The carbon footprint for the Township totaled 376,046 tons of eCO_2. In order to offset this quantity of carbon dioxide, to put this in perspective, it would be necessary to plant 77,553 acres of pine or fir forests.

Source	Equiv. CO_2 Emissions (tons)	% of Total Equiv. CO_2 Emissions	Energy (MMBtu)
Government	11,998	3.2	115,210
Residential	178,846	47.6	1,690,542
Commercial	36,316	9.7	272,711
Transportation	147,290	39	1,709,585
Waste	1,596	0.4	unknown
Total	376,046	100	3,788,048

In the baseline inventory year LMT's 11,833 households used 183,246,140 kWh of electricity which averages 15,486 kWh per household annually, considerably higher than the national average of 8,900 kWh. This could be an area where savings could be substantial depending on how the average household is using the power. Many LMT homes are all electric which could explain this higher number.

In the ICLEI software the government GHG inventory is included in the total Community inventory as a subset. Included in the government inventory are buildings owned and operated by LMT as well as the Pennsbury Schools located in the Township, including the busses that service the students. The Government category also includes street and traffic lights, Township vehicles, and wastewater pumping. The total government eCO_2 emissions were 11,998 tons, which represents just 3.2% of the total community figure.

Goals

Maintain and improve the environment of the Township and the health of its residents

Provide opportunities for cost savings for the residents of the Township

As part of the Sierra Club's Cool Cities campaign, LMT supports Bucks County's goal in reducing overall GHG emissions by 20% over 2005 level by 2020

Improve the energy security in the Township and in turn nationally by reducing energy use and therefore reducing reliance on expensive (politically and financially) foreign energy sources

The Action Plan recognizes that any initiative to reduce GHG is worthwhile no matter how small. The logic is compelling, however, that we must establish priorities so our action plan focuses on areas that will produce the greatest overall reductions. In the LMT inventory the largest producers of eCO_2 are in the residential component (47.6%), namely electrical use and combustion of natural gas and fuel oil for heating and cooking, and transportation (39%) using gasoline and diesel fuel. Efficiency measures could make a big impact on these sources of GHG, but efficiency alone will not produce the needed reduction.

Climate scientists and the Federal Government are recommending a reduction of GHG of 80% from 1990 levels by 2050. This longer range goal cannot be accomplished with efficiency alone. Much of the energy now derived from fossil fuels such as coal, oil and gas will need to be replaced by energy sources that do not emit GHG's.

The major focus of LMT's Action Plan is the reduction of GHG's through energy conservation. And these reductions go hand in hand with the driving force of sustainability. The Action Plan projects have been broken down into the following major categories:

1. Buildings
2. Transportation
3. Land use
4. Lighting
5. Waste and Recycling
6. Agriculture and Food
7. Community Outreach and Education
8. Procurement Procedures
9. Other Measures

Within each category, the proposed actions are divided into end user groups: A: Residential; B: Commercial; C: Municipal (local government); and D. Educational Institutions.

With this Sustainability Action Plan, LMT joins thousands of communities worldwide as part of the Cities for Climate Protection (CCP) campaign of the International Council on Local Environmental Initiatives.

The completion of this plan marks the completion of the first three milestones of the CCP campaign. From here we move on to the 4^{th} and 5^{th} milestones in our process: Implementation and Verification. If we are successful, the resulting reductions in energy consumption within LMT will help prepare our community for rising energy costs. The emissions reductions will also improve local air quality and will contribute to global efforts to mitigate climate change, helping ensure that subsequent generations enjoy a livable world.

1. Buildings

Introduction

Buildings are a major consumer of energy and electricity in this country and contribute significantly to global CO_2 emissions. High efficiency or green buildings can reduce energy use by 20-50%; CO_2 emissions by 30-39%; water use by 40% and solid waste generation during construction, by 70%.

Buildings are not just about energy consumption, as people spend, on average, 90% of their time indoors. Health and productivity are important factors as well as we evaluate the importance of high efficiency green buildings. Green buildings typically have better indoor air quality and better lighting and as a result green building occupants are healthier and more productive.

Benefits Associated to Green Buildings

8-9% Decrease in operating costs
7.5% Increase in building value
3.5% Occupancy ratio increases
3% Rent ratio increases

Existing building stock (as compared to new building opportunities) presents the largest opportunity to reduce energy usage and improve occupant comfort, indoor air quality and occupant health and productivity. With this fact in mind, this plan will address both existing and new buildings.

The Lower Makefield GHG inventory (November 2008) revealed that 3.2% of the GHG was produced in the government sector, including Township buildings and the Pennsbury School buildings within LMT. Residential buildings in the community inventory were responsible for 47.6% of the total and commercial buildings accounted for about 10%. In combination, buildings are producing approximately 60.8% of total GHG emissions produced in the Township.

Residences will be given priority over other buildings because of their major impact on the GHG emissions in the Township. It is recognized that any efforts made by residents will be purely voluntary and must be recognized as such. In addressing GHG emissions from residential buildings, the following approaches will be proposed by the Plan:

- Energy conservation or the modification of existing buildings and systems will be the primary vehicle in reducing energy use in the township's residences.

- Energy efficiency due to the purchase of higher efficiency equipment replacements will also be incorporated in the strategy to reduce energy use.

- It is recognized that new building construction needs to be energy efficient and the Township will be urged to enact building codes that will reduce energy costs for the residents.

ACTIONS

A. Residential Buildings

1. Promote financial and other incentives for building permit applications to the Township that incorporate renewable energy sources or Leadership in Energy, Environment, and Design (LEED) standards.

2. Make changes in building codes to encourage greener building practices.

3. Provide training for builders and building inspectors in green building practices to accommodate the changes in building codes.

A list of certified builders, home inspectors, and home energy auditors who are familiar with green building practices should be maintained and made available to the public in the LMT main building.

Seek grant funding to subsidize home energy audits. For more information about energy audits, see Attachment D.

The Township should provide information for homeowners regarding what is currently available to them, in terms of State and Federal incentives designed to encourage homeowners to undertake initiatives to reduce emissions, such as smart electric meters, energy star appliances, CFLs, and behavior changes in energy use.

The corner stone of the energy conservation strategy and therefore the energy reduction plan for the Township is the participation of its residents. A sample homeowner pledge aimed at codifying the commitment to participation is attached as Attachment B.

B. Commercial Buildings

1. Consider large internal energy projects such as photovoltaic (PV) systems where state or federal grant money is available or where lease arrangements are viable.

2. Promote incentives for properties to include LEED standards, or Energy Star new construction and retrofits in building and zoning codes.

3. Promote switching to lower carbon content fuels for buildings. Working with the area heating gas and oil providers and other potential providers, develop marketing programs to increase the penetration into the commercial building markets of heating fuels that have lower carbon content. Support the installation of higher-efficiency heating equipment as part of fuel switching programs will even further reduce GHG emissions.

C.) Municipal/Schools

1. Require that all new public buildings and major renovations/additions be designed and constructed to the LEED Silver standard of the U.S. Green Building Council [Municipal Code enacted in the Fall of 2009]. Promote incentives for properties to

include LEED, or Energy Star new construction and retrofits in private commercial and residential building and zoning codes

2. Streamline or provide low cost permits for commercial building owners who are willing to undertake energy efficiency remodels or installation of alternative energy systems.

Provide green building training to LMT building inspectors and provide incentives for builders who also undergo such training.

4. Install sub-metering equipment in municipal buildings. Sub metering can provide knowledge to the township about where the electricity is being used throughout the various buildings and departments. This knowledge can then be put to use to determine additional opportunities for conservation as a routine practice.

5. Consider large, alternative energy projects such as PV Systems where state or federal grant money is available or where lease arrangements are viable.

6. Municipal Pool: Evaluate the array of opportunities identified in the SunTechnics report, including a pool cover, heating and pump equipment and lighting.

7. Replace all safety “Exit” signs with highly efficient models at municipal buildings. (Low voltage LED lights work well).

8. Replace all older fluorescent lights, especially the T12 variety, with efficient T8 models.

9. Turn off all computers and monitors at night.

10. Unplug unused battery chargers, power adapters, and other “parasitic” devices that created “phantom” energy loads.

11. Install occupancy sensors where appropriate. Discourage “breaker panel” lighting controls and use switching devices where occupancy sensors are not appropriate.

12 Switch to lower carbon content fuels for buildings and install higher-efficiency heating equipment whenever possible.

13.Consider using white roofing materials. A white roof will reduce the energy required to air condition the building.

14. Establish a procurement policy that mandates the purchase of Energy Star appliances and equipment.

2. Transportation

A.) Residential

1. Promote use of fuel-efficient vehicles for township residents

2. Encourage residents to walk, bike and use public transportation

3. Create compact development zoning ordinance similar to Edgewood Village overlay ordinance – Contiguous services reduce automotive travel

4. Explore the possibility of participating in a car-sharing program similar to Zipcar or Philly Car Share

5. Build more bike paths throughout the township

B.) Commercial

1. Encourage people who work in the township to walk, bike and use public transportation and carpools.

2. Provide bike racks at all commercial sites throughout the township.

3. Set up and promote anti-idling campaign throughout the township – e.g. New Ordinance, Contracts with suppliers.

C.) Municipal

1. Develop program to retire older, less efficient vehicles and replace with more fuel-efficient vehicles - e.g. Gas-Electric Hybrids

2. Set up and promote anti-idling campaign throughout the township.

3. Undertake policies to encourage LMT municipal departments to eliminate unnessary driving in Township vehicles to reduce their carbon-related footprint.

4. Optimize traffic signal timing throughout the township.

5. Implement a carpool program for township employees.

6. Provide bike racks at all municipal buildings, recreational facilities and parks.

7. Encourage flexible working hours for township employees.

8. Promote the continued existence of the LMT Farmer's Market – Buying local saves food transportation costs.

9. Research the commuting patterns of Township residents, including commute destination and distance, time of day of commute, and number of people in the

vehicle. Consider supporting programs based on the results of the research, such as energy conserving busses to pick up commuters at their homes and deliver them to public transportation stops on a regular schedule.

D.) Educational Institutions

1. Set up liaison with school system as an advocate for energy saving transportation projects such as more efficient bus routes and less bus idling.

3. Land Use

Introduction

- LMT has a land area of approximately 18 square miles, or about 11,500 acres. More than 2,000 acres (17.2%) is already permanently preserved as open space. There are only 1,292 acres still available for development.

- LMT is a desirable bedroom community for residents who commute to Philadelphia, New Jersey and New York for work. In addition to the GHG emissions produced through the use of commuters' cars, the extensive LMT road network increases storm water runoff and heat island effects. LMT has limited public transportation and 81.6% of the residents drive alone to work. There is a little bus service. LMT is close to a SEPTA train station in Yardley that connects the residents to Philadelphia and the AMTRAK/NJ Transit System in Trenton that connects residents to New York City.

Strategies

Green Infrastructure

- Support GHG reduction and wildlife health by developing greenways and purchasing open space

- Support tree planting and the use of native plants

Reduction of vehicle use

- Develop network of walk and bike paths throughout the township

- Use zoning and incentives to develop land use patterns supportive of walking and biking.

- Support and incentivise vehicle sharing, taxis, and public transportation

Manage fragile land and open space

- Restrict new construction in flood planes along the Delaware

- Increase protected open space following the recommendations of the LMT Open Space Plan Updated 2009

- Where appropriate, work within the Delaware Valley Regional Planning Commission's *Long Range Sustainability Plan* (2009)

Actions

A.) Residential

1. Promote tree planting and use of native plants on private residential properties.

2. Promote edible gardens on private residential properties.

3, Encourage the use of pervious pavement where possible in new construction.

B.) Commercial

1. Promote tree planting and use of native plants on commercial properties.

2. Develop incentives for removing impervious cover in parking lots and replace with pervious materials. Also provide incentives for converting extraneous paved areas to native plant growing areas.

C.) Municipal

1. Modify zoning code to allow infill and high-density development in designated areas. Concentrate growth in high-density development in specified areas and keep as open space the area that would have become sprawl.

2. Modify zoning code to reduce parking requirements and allowances.

3. Modify zoning code to permit mixed use development in targeted areas. Permit small business, retail, residential, etc. in same area.

4. Develop density bonuses and incentives for high-density, infill, and transit-oriented development. Concentrate incentives along the border with Yardley Borough, near the train station, near shopping areas, and around and in Edgewood Village or other designated areas.

5. Develop mechanisms to control development in the areas of the Township identified as part of the Greenspace Network and the Conservation Focus Areas. (see DVRPC Long Range Sustainability Plan) Review existing walking and bike paths and connect them to create a network of paths throughout the township. Prioritize projects so that higher demand areas are addressed first. For example, shopping areas should be reachable safely by foot or bicycle along the logical pathways.

6. Develop a network of walking and biking paths which would provide uninterrupted safe access throughout the township, especially along major roads (Big Oak Road, Stony Hill Road, Heacock, Edgewood, etc.)

7. Promote tree planting on residential, commercial and public land. Develop connected greenways, as described in the DVRPC Sustainability Plan.

8. Evaluate the demand for a township “Rideboard” (where residents can post the need for or availability of ride sharing arrangements), additional bus service, and other methods for reducing automobile usage.

9. Expand the township’s program to minimize the mowing of storm water retention basins, and explore options which would allow additional reduction of mowing on municipal properties.

D.) Educational Institutions

1. Develop Adult Education programs on topics such as native plants, edible gardens,and transportation efficiencies.

2. Encourage use of municipal and educational facilities by local residents during times when they are not being used by the institutions.

4. Lighting

A.) Residential

1. Incorporate information on energy consumption, environmental impact, and cost benefits of compact fluorescent (CFL) and LED (light-emiting diode) lighting as part of comprehensive outreach program to LMT residents and businesses. Include information on safe cleanup of broken CFL bulbs and the importance of appropriate recycling due to mercury content

B.) Commercial

1. Incorporate information on energy consumption, environmental impact, and cost benefits of compact fluorescent and LED lighting as part of comprehensive outreach program to LMT residents and businesses. Include information on safe cleanup of broken CFL bulbs and the importance of recycling due to mercury content.

C.) Municipal

1. In line with LMT's municipal energy audit (November 2008) implement alternate lighting strategies where appropriate, improve task lighting, install occupancy sensors and lighting controls where appropriate.

2. Streetlights - Evaluate public safety necessity and lamp type of existing streetlights. Remove unnecessary lights and install the highest efficiency lamps in the remaining lights. Avoid spillover of light to areas where it is not needed, including into the night sky.

3. Install LED lights in traffic signals and pedestrian signals at crosswalks in LMT**. [This project was completed during the final editing phase of the development of this plan.]**

4. Investigate possible alternatives to existing lights on athletic fields, including LEDs to reduce power requirements, and solar photovoltaic power to supplement grid power.

D.) Educational Institutions

1. Encourage the use of LED lighting and CFL's throughout the Pennsbury School System.

5. Waste and recycling

A.) Residential

1. Encourage the Township residents to participate in Bucks County's annual Hazardous Waste collection events, which are held throughout the county.

2. Develop seminars, with incentives, on need for, how to, and where to recycle

3. Develop seminars, with incentives, on composting, both its value and how to do it.

B.) Commercial

1. Provide incentives (such as awards) for businesses that recycle and/or use recycled products.

2. Develop seminars on need for, how to, and where to recycle

C.) Municipal

1. Increase the number of recycling containers in public spaces throughout the Township.

2. Develop seminars on need for, how to, and where to recycle

3. Ensure there are additional recycling containers available at municipal parks during large sporting events such as the Mothers' Day and Columbus Day weekend soccer tournaments and the Fathers' Day weekend softball tournament.

D.) Educational Institutions

1. Start composting program at local schools.

2. Increase recycling at public schools, including sporting events and other extra-curricular events.

3. Develop seminars on need for, how to, and where to recycle

6. Food & Agriculture

America's current food system has been based on a low cost, plentiful fuel and energy model for the last 50 years. Limited non-renewable sources of energy are likely to make the cost significantly higher in the future. Cheap energy allowed the creation of energy intensive, industrial-scale food production that is centralized and dependent on long distance transportation to reach consumers across the nation and the world. This type of system also consumes substantial resources to process, package, transport, and provide temperature-controlled storage for the food we depend on. From a global perspective, the world also has to prepare for a future that will challenge us to feed a growing population from our limited resources, the most fundamental being high quality soil for agriculture.

According to the U.S. Department of Agriculture, the solutions to these challenges will largely be addressed by reestablishing our food system on more local and regional models and making informed food choices. The success of food system restructuring will require the cooperation of consumers, producers, government, and institutions. While the average citizen may take their food for granted, the fact remains that we are all dependent on a current food system that is vulnerable to severe weather events, accidental contamination, malicious attack, and rising energy costs. Looking forward, we will have to take action to keep our food affordable, accessible, safe and sustainable. Key areas to take action include: public education, resource protection, food production, food accessibility, and food system energy efficiency.

These five areas are discussed here in terms of a goal and the important actions needed to achieve that goal.

EDUCATION GOAL: Increase LMT's "food literacy" quotient by educating the community about the food system and the importance of sustainable food choices.

Food literacy is defined as the understanding of food production, nutrition, food preparation and the role of food in society. Since very few of us gain in-depth knowledge and skills in these areas in school or in our jobs, education is critically important to establish a foundation for individuals to make sustainable food choices.

ACTIONS:

A.) Education

1.. Promote the development and implementation of a school curriculum regarding food literacy and sustainability as well as practical, hands-on skills.(Berkley model)
   a. Interface with local schools, both public and private, primary and secondary, to develop appropriate school curricula.
   b, Provide resources (such as speakers, seeds, tools, etc) to support food/gardening curricula.
   c, Communicate with parents via pamphlets, etc. regarding courses and curricula.

d, Solicit volunteers to accomplish the above actions. Work with teachers' groups to develop certified continuing education curriculum for food and agriculture education.

2. Develop educational resources for both general and practical, "how-to" information.
    a. Design a website with info on and with links to general information on sustainable food systems. The site should also have info on and provide links to specific "how-to" sites/topics such as nutrition, composting, gardening, food safety, etc.
    b. Develop a list of local food resources and food advocacy groups, with appropriate links.
    c. Develop monthly newsletter that contains upcoming events, a monthly education topic, relevant and pertinent local news, etc. One option would be to expand the EAC electronic newsletter to include all of these entries.
    d. Include information in the LMT printed newsletter mailed to all residents and work with the BCCT and Yardley News to write regular articles on the subject.

3. Learning/Skill building— develop and support a series of local, hands- on education seminars/classes using local volunteer resources.
    a. Plan a whole calendar year of practical, hands-on classes for individual, household gardeners/food preparers.
    b. Find volunteers within the local community to support such educational efforts.
    c. Work with existing organizations and groups that provide food education
    c. Establish one or more "teaching / demonstration gardens" on township grounds which receive large numbers of visitors such as the athletic fields.

B. <u>RESOURCE PROTECTION GOAL: Protect our soil and water resources</u>

Productive soil and clean water are essential to food production and should be diligently protected in Lower Makefield. According to American Farmland Trust, only about 20% of the nation's soil is well suited for food production. Lower Makefield has prime agricultural soils in significant parts of its remaining publicly and privately owned farmland. The township should make farmland preservation a priority.

1. Research mechanisms to stop the loss of productive farmland to non-farm uses
2. Soil Building / Protection program for non-farm residents
    a. Promote Chemical Free Lawns with workshops and information available on the website and at the township
    b. Develope and distribute New Residents Packets: Information on Composting, Community Garden, Chemical Free Lawn Care, etc.
3. Water protection and conservation
    a. Promote efficient irrigation systems for food production on all scales
    b. Educate public on protecting water from contamination
    c. Revise stormwater ordinances to incorporate requirements that improve the water quality of stormwater runoff.
    d. Encourage the use of rain barrels to collect water for gardens and the development of rain gardens to confine rain water to the property where it fell.

C. PRODUCTION GOAL: Increase the quantity and diversity of food produced locally

Lower Makefield Township has eight privately owned, working farms/market gardens totaling about 550 acres and several township owned farmland properties totaling 311 acres. Food production consists mainly of seasonal produce and grain. There is a small amount of beef, poultry and eggs currently produced in the township. One community garden exists for residents. An unknown number of residents raise food in home gardens. This working group is not aware of any current food production by schools, non-farm businesses or institutions.

It is estimated that it takes a minimum of 10,000 square feet (about a ¼ acre) to produce food to feed one American for a year, using current modern mechanized methods of agriculture. Based on this estimate, our farms alone may only be able to feed about 3,400 - 3,700 people. LMT's population is above 30,000. Using labor intensive, advanced techniques on a garden scale, about 2100 square feet can produce enough food to feed a person for a year. Residential and institution property in the township is **severely** under utilized for food production. Increasing the number of residential and institutional food gardens could have a significant impact in advancing LMT's food sustainability.

1. Stop the loss of productive farmland to non-farm uses
2. Create an inventory of the land in the twp. that can produce food & estimate current food production vs. potential
3. Increase the availability of community food gardens (Ex. Religious organizations offering part of their grounds for gardens to members)
4, Increase private property food gardens (Neighborhood food garden challenge with a Pledge & Recognition program)
5. Increase school & institution gardens (Pledge & Recognition program)
6. Increase the use of season extension techniques on farms and in gardens

D. ACCESSIBILITY GOAL: Facilitate the connection of local food to local consumers

Access to food can be very energy intensive. Making local food accessible to residents in Lower Makefield will reduce transportation contributing to the carbon footprint. It is also important that access to fresh nutritious food be affordable.

1. Educate consumers and growers about direct marketing options, such as Local Food Co-ops, Year Round Farmer's Markets, and CSAs (Community Supported Agriculture).
2. Establish a "Pledge and Recognition" program for food retailers and local restaurants to carry locally produced food.
3. Establish a local seed exchange club at the LMT Library for growers and gardeners to share seeds.
4. Research the establishment of a Community Kitchen for local growers to produce value added products.
5. Create a map of key food access options for residents emphasizing sustainable choices

E. ENERGY EFFICIENCY GOAL: Encourage the adoption of energy efficient techniques and use of renewable energy sources for food production, handling, and distribution

According to a 2008 study on food and energy by Cornell Professor David Pimental's, about 19% of the total fossil fuel used in the U.S. goes into the food system. His research found that to produce the typical American diet requires the equivalent of about 500 gallons of oil per year, per person. This includes production, transportation, packing, processing and storage of food. With the rising cost of oil, plus the security and stability concerns about our nation's dependence on foreign oil sources, taking action to reduce oil consumption in our food system is a vital to our sustainability.

1. Encourage the consumption of more locally produced food, with no or minimal processing or packaging
2. Educate the public on how to compare food choice based on energy conversion
3. Make sure that there are no ordinances or municipal obstacles to prevent farmers and food producers from establishing renewable energy infrastructure on their property

7. Community Outreach and Education

Building a Sustainability Action Movement

In the end, the Community Outreach & Education work is about more than developing a Sustainability Action Plan. It is about building a sustainability action movement.

A movement starts with leading edge, early adopters and builds toward a critical mass. As a result of ongoing outreach efforts by community-based organizations, Township staff and elected officials, and powerful forces outside our community such as Mr. Gore's *Inconvenient Truth*, more and more residents in Lower Makefield and beyond are beginning to heed the call to action.

Lower Makefield Township believes it is important to involve all sectors in the local climate protection effort, including those who may be historically left out or less oriented to action. Lower Makefield will achieve its GHG reduction goals only when the entire community plays a role.

Actions

The actions proposed in this section build on existing outreach, education, and empowerment efforts in the community. Our collective efforts will contribute to building a critical mass of Lower Makefield citizens and businesses engaged in achieving a community-wide goal of environmental sustainability and resilience.

A. Goal: Mobilize the community at large to turn the Sustainability Plan into sustainability action

Significant ongoing outreach efforts are already underway in Lower Makefield. These include: recycling education in area public schools and with scout troops, tree planting, and green certification business training. Church officials and area residents are conducting energy audits and installing insulation and other measures to lower fuel use. The Township building installed solar panels. The Township government, in cooperation with local residents, business leaders, and regional and local agencies, should work to enhance these efforts and further align them with the council-mandated goal of achieving aggressive greenhouse gas emissions reductions.

1. Plan: Establish an implementation framework that enables the Township to more efficiently and effectively distribute information and resources to a wide range of community partners and to report progress on achieving the goals outlined in this plan

Implementing Actions:

a. Design a sustainability action "stakeholder database" that identifies the many stakeholders that are playing or will play a role in implementing local sustainability strategies. Essentially serving as a contacts management database, the application will be searchable and include given stakeholders' contact information and areas of focus or expertise (e.g., green jobs development, energy services, recycling, economic development, etc.). The main goal of the database is to enable the efficient distribution of information and

resources to a wide range of entities. For example, the database could be queried to consolidate the contact information of organizations that have expertise in water resource management. Such information would be useful when designing a community outreach effort to conserve water. The Township will take the lead on developing the database, with the goal of eventually making it available on-line so as to be utilized by the broader community.

b. Establish community working groups that take ownership for mobilizing a given group of individuals or sector of the community or for promoting a given climate protection program. One example may be a "Low Carbon Diet" working group, composed of various community members that take responsibility for building participation in the Low Carbon Diet (LCD) program. The Low Carbon Diet is a program based on a workbook that walks people through simple steps for reducing household GHG emissions.

c. Launch and maintain a web-based portal that enables community members, including individuals, households, and businesses, to quantify their own emissions baseline, pledge to achieve GHG emissions reductions, report actions taken to reduce GHG emissions, and report progress toward individual goals; and enables the Township to track and report progress toward achieving the goals outlined in the Sustainability Action Plan in a transparent and engaging way

d. Provide an annual report to Board of Supervisors that highlights community sustainability actions and progress toward the Cool Cities goals.

2. Plan: Launch a coordinated outreach and education campaign, utilizing a range of tools, programs and partnerships, to mobilize and educate residents

A sustainability action outreach and education campaign must be designed to effectively communicate the urgency of addressing the climate crisis and other sustainability issues while also empowering individuals, businesses, and institutions to be a part of the solution. An effective outreach campaign will benefit from the perspectives of many Township departments and community agencies with expertise in community engagement. LMT is in regular contact with several types of community groups that will be impacted by climate change but that may not list the environment as their main focus. Such groups include youth and youth organizations; faith-based organizations; food, nutrition, and cultural organizations; and advocacy groups for low-income and other vulnerable populations. Such groups must be included in community outreach efforts to ensure broad input and participation in turning the plan into action.

Implementing Actions:

a. Promote the Lower Makefield Sustainability Action Pledge (Attachment B) as a means by which individuals can commit to reducing their own emissions. The pledge will be a non-binding means of securing individual commitments to achieving a collective goal. Individuals who sign the pledge periodically receive helpful action ideas via email for how to fulfill their commitment. The Township and its community partners should continue to promote the pledge and work to enhance the climate-related resources and information that individuals have access to once they have made their commitment.

b. Support local efforts to launch a "local carbon offset" project. The project would include a web-based carbon calculator that would enable local businesses and residents to track their GHG emissions over time and contribute to local carbon reduction projects (e.g., solar in schools) in order to “offset” those emissions.

c. In collaboration with community partners, develop and implement a public information strategy that serves to highlight climate-related information and resources in multiple mailings, newsletters and local media outlets, including radio, television and news publications. Examples include placing notices of upcoming events and sustainability action-related resources in local publications such as the Yardley Voice, LMT Newsletter, oneifbylandbuckscounty.org, Courier Times, The Trend, and others. A public information strategy would also include partnering with local radio stations, LMT public access cable channel, and newspapers to spotlight local community leadership and highlight opportunities for action.

d. Partner with Lower Makefield’s network of neighborhood associations to hold various community workshops and events focused on reducing GHG emissions at the neighborhood level.
   Residential Rentals: Polo Run, Yardley Crossing, Stonefield
   Residential Complexes with Homeowner Associations: Yardley Corners, Tanglewood, Palmer Farms. Makefield Glen

e. Promote the Low Carbon Diet program as means for helping households reduce their GHG emissions. The Low Carbon Diet is a “30-day program to lose 5,000 pounds” of CO_2. The foundation of the program is a workbook that walks individuals through a step-by-step process, from calculating one’s current carbon footprint, to implementing emissions saving measures, to tracking one’s progress along the way.

f. In collaboration with community partners, launch a “Green Neighborhood Challenge” and “Green Star Household” program. The challenge would utilize friendly competition and recognition as motivators for action. The Low Carbon Diet program could serve as the guide for neighborhood- level climate protection activities. The neighborhood that collectively reduces the most emissions through the Low Carbon Diet program wins. In combination with the “Green Neighborhood Challenge,” households that have significantly reduced their GHG emissions could be recognized as “Green Star Households.” Such recognition could serve as a source of pride for households that have made a conscious effort to achieve GHG reductions and contribute to a community-wide effort. Neighborhoods and households could track their progress on the web-based climate action portal outlined above.

g. Partner with a community partner to provide residents with monthly personalized energy consumption reports. The reports would include an analysis of a given household or business’s energy consumption patterns over time and resources and ideas for consuming less. Such “energy monitoring” reports have the potential to enhance the long-term value of the energy services outlined in the Building Energy Use chapter.

h. Educate Lower Makefield residents and Township employees about the significant environmental impact of air travel and about potential travel-mode alternatives. Per passenger mile, air travel is the most carbon-intensive form of travel. The Township can incorporate information about the impacts of air travel and alternatives into print and web-based outreach materials.

i. In partnership with the Lower Makefield realtors, design a "welcome package" for new homeowners and business owners that includes resources related to energy use, transportation choices, and waste diversion and reduction.

j. Hold speaker series' and other educational events at the Lower Makefield Public Library & Municipal Building. Given its educational mission and high volume of foot traffic, the library is an important resource for raising awareness about sustainability issues and empowering community members to take action.

k. Partner with the Artists of Yardley to encourage and fund art projects that serve to heighten awareness of sustainability issues. One example may be a GHG emissions reduction thermometer that tracks community progress toward achieving the emissions reduction goal. Another potential project is commissioning local artists to design “artful bike racks” – bike racks that are painted or designed to serve as public art.

l. Partner with naturalists and other scientists to raise awareness regarding the impact of climate change and other sustainability issues on local ecosystems. Network with area nature and environmental education centers (such as Silver Lake and Churchville Nature Center) to develop intergenerational programs.

B. Goal: Enhance outreach and incentives to the business community

Actions by Lower Makefield’s business community are already showing results: The GHG emissions that result from energy consumption in the commercial sector decreased by 13 percent between 2000 and 2005. Maintaining and building on this remarkable trend requires ongoing, collaborative efforts to showcase effective climate action and to engage additional local businesses in the climate protection effort.

. The Township and other organizations should continue to look to local business associations for ongoing leadership in the effort to achieve the Lower Makefield GHG reduction goal.

1. Plan: Continue to showcase effective climate protection efforts in the business community and to engage additional businesses in the local climate protection effort

Implementing Actions:

Develop a Green Business Program

a. Expand and promote the Buy Local Lower Makefield Campaign, started by the Foodshed Alliance and the Lower Makefield Farmers Market, along with the Economic Development Commission (EDC). The goal is to build a vibrant local economy by encouraging consumers and businesses to buy local. Shifting more

consumer purchases to local businesses has the potential to increase tax revenue for the Township, expand local investments in non-profits and local businesses, and create more local jobs while simultaneously reducing vehicle miles traveled.

b. Recognize and celebrate the environmental leadership of local businesses, business associations, and community groups. Start a Green Star business challenge, involving local store owners. Create a list of goals and recommendations, such as reducing energy consumption with CFL lighting, limiting hours of air conditioning, etc., reducing waste by recycling of bottles, cans, glass and paper, etc. Those businesses that participate will receive an emblem to post on their door or front window, and listing in the LMT Guide to Green Businesses.

Present this idea to the following organizations at upcoming meetings:

Lower Bucks County Chamber of Commerce
Bucks County Working Women's Network
Bucks County Professionals Network
Economic Development Commission
Rotary Club
American Association of University Women

Professional Buildings

Stony Hill Office Building (Township Line Road)
Makefield Executive Quarters (Property Manager: Continental Property Management)
Floral Vale Professional Center
Lower Makefield Corporate Center (Township Line & Stony Hill Roads
Medical Building at 680 Heacock Road

Shopping Centers

Oxford Oaks (Kohl's)
Edgewood Village (McCaffrey's)
Lower Makefield (Giant

C. Goal: Enhance sustainability education at local schools

Representatives from the Township and Pennsbury School District, among others, should identify opportunities for sharing resources that will help to increase climate awareness and education in local K – 12 schools and nearby post-secondary schools.

Schools to involve:

Pennsbury Schools
Charles Boehm Middle School (Terri Richie, Principal)
Makefield Elementary School (Donna McCormick-Miller, Principal)

Plan: Continue to showcase existing sustainability efforts in our schools and to expand opportunities students have to learn and take action on climate change

Implementing Actions:

a.. Integrate sustainability activities and education into the curriculum and existing after-school programs, environmental clubs and elective courses such as Environment & Ecology.

b. Partner with Parent Teacher Organizations (PTO) to promote programs such as the Low Carbon Diet and to integrate sustainability information into school gatherings and fairs.

c. In collaboration with Pennsbury School District, provide internships and educational programs to K – 12 students on topics related to climate science and on impacts of climate change on the community and local ecosystems.

d. Start a District-wide Environmental Science Fair.

D.) Goal: Increase awareness in the Township government

The Township government accounts for only one percent of our community's total greenhouse gas emissions. As a minor contributor to total emissions, actions in the Township government will have a limited impact on Lower Makefield's overall emissions levels. However, actions by Township government officials have symbolic value and demonstrate leadership that extends beyond the magnitude of actual emissions reduced.

Policy: Launch a sustained effort to increase awareness in the Township government regarding the climate issue and to provide training on how to achieve increased sustainability at home and in the workplace

Implementing Actions:

a. Hold regular "brown bag" events for each Township department on various topics related to the climate change issue and on actions employees can take to reduce their own GHG emissions.

b. Establish a "Sustainability at Work and at Home" class as part of the required Core Courses for Township employees. The class will cover existing sustainability related policies affecting employee duties, as well as training on how to increase resource efficiency throughout Township operations and at home.

c. Establish energy consumption reduction targets for each Township department and provide assistance in achieving those targets.

d. Establish recycling and composting systems in each Township building and recycling training for employees and maintenance staff.

LMT Community Resources & Contacts

LMT Environmental Advisory Council: (Rick Ewing, Joe Sundeen,Alan Dresser, Geoff Goll, Jim Bray, Laura Brandt, Gail Stringer)
Bucks County Performing Arts Center bcpac.org Nancy VanDerBas, pres.
Makefield Women's Association makefieldwomensassociation.org
Bucks County Women's Advocacy Coalition bcwf.org/bcwac.htm
Bucks County Neighbors (newcomer coffees, welcoming the stranger, neighborhood outreach foundation, contribute to housing authority, food banks buckscountyneighbors.com
League of Women Voters of Bucks County palwv.org/bucksco
Pennsbury Partners Program
Bucks Transition Group
County Hazardous Waste Day
Historical Society
Trees to Trails LM Recycling Yard
Habitat for Humanity of Bucks County habitatbucks.org
Friends of the Delaware Canal fodc.org
Bucks County Foodshed Alliance buckscountyfoodshedalliance.org
Bucks County Audubon Society
Bucks-Mont Organic Gardeners
Five Mile Woods (Friends of FMW, John Heilferty naturalist; John Lloyd; JLDL1702@aol.com
Bucks County Conservation District environmental educator (soil erosion, water pollution) bucksccd.org
Core Creek Park
Boy Scouts buckscountybsa.org
Girl Scouts gsep.org
Makefield Lakes Preservation Association, Harold Long, pres
Tyler State Park
Silver Lake, Bristol
Bowman's Hill Wildflower Preserve
Heritage Conservancy
Churchville Nature Center
Lower Bucks County Chamber of Commerce
Bucks County Conference & Visitors Bureau
LMT Seniors parks & rec office
Lower Bucks chapter of AARP
YWCA Bucks County, Shared Housing Program Meg Holben
PECO
LMT Recycling Education Committee

8. Procurement Practices

A.) Residential

1. Provide information for residents regarding smart purchasing decisions in products for the house and their impact on environmental sustainability. Possible communication methods could be the EAC email list and the EAC display in the LMT Building Lobby.

B.) Commercial

1. Foster the adoption of "Green" procurement policies patterned after those proposed for the LMT municipality.

C.) Municipal

Introduction

The Lower Makefield Township Green Procurement Policy will provide township personnel will information and technical assistance to help them identify, evaluate and purchase economical and effective environmentally preferable products and services.

Environmentally preferable procurement considers multiple product attributes such as toxicity, durability, emissions, recycled content and conservation of resources in addition to price, performance and availability.

Substantial cost saving can be realized through the implementation of these programs. However, the program success depends on identifying, educating and engaging the critical decision-makers in the municipality and supporting them with information that can help them make good decisions.

1. LMT Procurement Policy

a. Adopt a Green Purchasing ordinance. The ordinance should address:

Purchasing Policies to specify:

Products

- ✓ Energy efficiency standards in all purchasing and bid specs for office and heavy equipment, motors, lighting, appliances, etc.

Paper Products

- ✓ Recycled paper for tax statements, notifications, business cards and reports, etc.
- ✓ Remanufactured toner cartridges

Vehicular

- ✓ Re-refined antifreeze and motor oil
- ✓ Ultra-low sulfur diesel; biodiesel; bio-based oils
- ✓ Hybrid vehicles

Operations and Maintenance

- ✓ Plastic (recycled) lumber
- ✓ Compost
- ✓ Cleaners
- ✓ LED Solar Lights

- ✓ Compact Fluorescent Lights
- ✓ Porous Concrete (sidewalk/parking lot use)

Resource Recovery Services

- ✓ Electronics recycling
- ✓ Fluorescent bulb/lamp recycling
- ✓ Antifreeze recycling
- ✓ Office material recycling
- ✓ Carpet recycling

Interior Furnishings

- ✓ Furniture
- ✓ Carpeting
- ✓ Tile
- ✓ Paints
- ✓ Adhesives

Purchase “green Power” and specify renewable energy content for local government operations

D.) Educational Institutions

1. Foster the adoption of a “Green” procurement policy similar to that proposed for the LMT municipality.

9. Other Measures

A.) Residential

1. Street tree planting - Encourage residential tree planting - trees absorb CO_2 and reduce water runoff.

2. Encourage local residents to consider green alternatives to asphalt and concrete parking areas.

B.) Commercial

1. Street tree planting - Encourage commercial tree planting - trees absorb CO_2 and reduce water runoff.

2. Encourage commercial entities to consider green alternatives to asphalt and concrete parking areas.

C.) Municipal

1. Street tree planting - Encourage municipal tree planting - trees absorb CO_2 and reduce water runoff.

2. Encourage the municipality to consider green alternatives to asphalt and concrete parking areas.

3. Establish the position of Twp. Energy Coordinator. Duties would include, but not be limited to, maintaining an emissions inventory, promote and evaluate improvements in energy efficiency and public outreach

D.) Educational Institutions

1. Street tree planting - Encourage schools to plant trees - trees absorb CO_2 and reduce water runoff.

2. Encourage schools to consider green alternatives to asphalt and concrete parking areas.

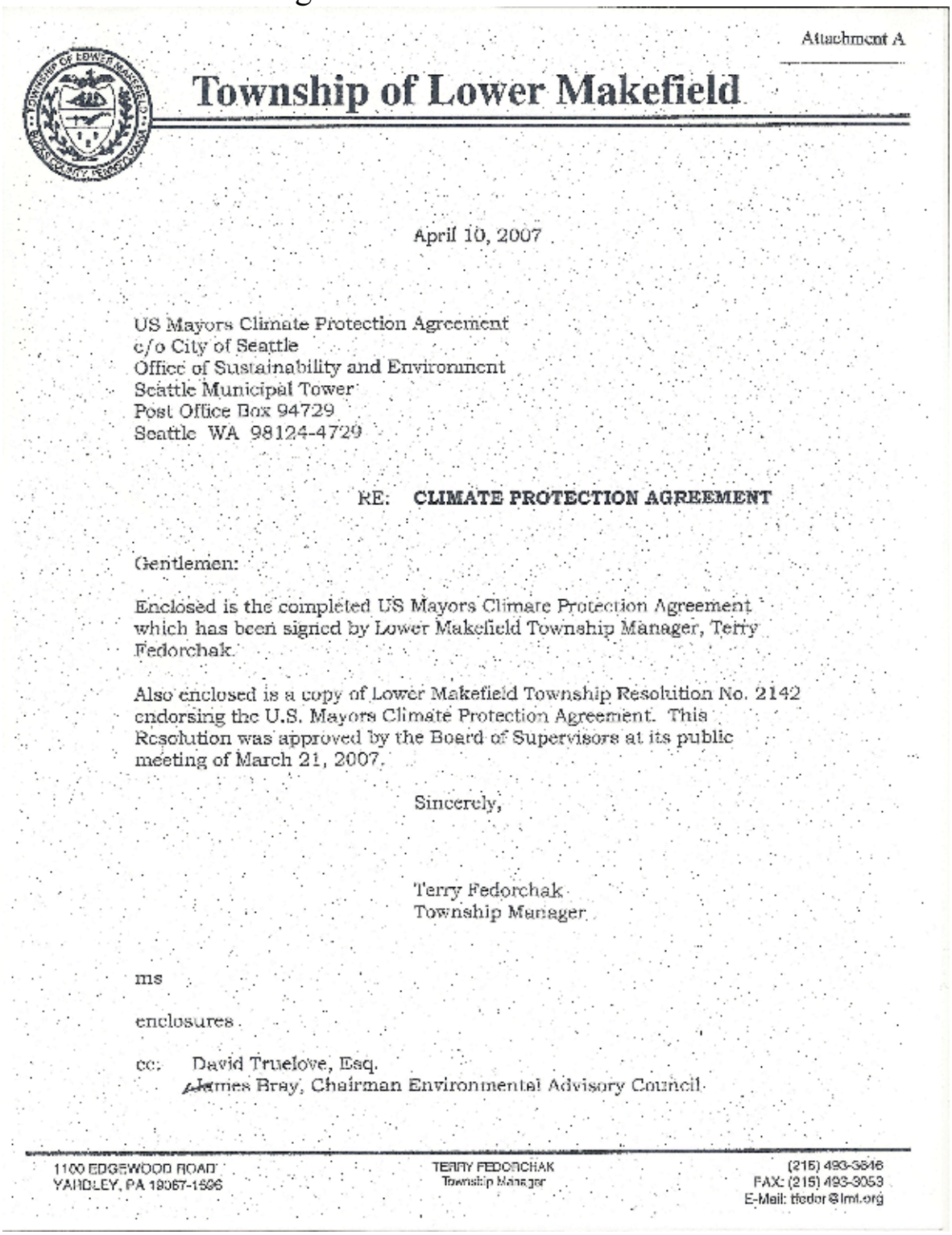
Next Steps

The Cool Cities Committee and the EAC will invite stakeholders from the community including business leaders, school officials, environmentalists and residents to become partners; to breath life into the Action Plan by moving forward with these measures that will improve the quality of life in our community by saving energy and reducing the life threatening GHG emissions.

We will prioritize the proposed actions and set a goal completion date for each project that is undertaken. We will continuously work to inform the Township residents and encourage Township residents to join in to work on this very important on-going project.

Attachment A

Township of Lower Makefield
Climate Protection Agreement



Attachment A

Township of Lower Makefield

April 10, 2007

US Mayors Climate Protection Agreement
c/o City of Seattle
Office of Sustainability and Environment
Seattle Municipal Tower
Post Office Box 94729
Seattle WA 98124-4729

RE: **CLIMATE PROTECTION AGREEMENT**

Gentlemen:

Enclosed is the completed US Mayors Climate Protection Agreement which has been signed by Lower Makefield Township Manager, Terry Fedorchak.

Also enclosed is a copy of Lower Makefield Township Resolution No. 2142 endorsing the U.S. Mayors Climate Protection Agreement. This Resolution was approved by the Board of Supervisors at its public meeting of March 21, 2007.

Sincerely,

Terry Fedorchak
Township Manager

ms

enclosures

cc: David Truelove, Esq.
James Bray, Chairman Environmental Advisory Council

1100 EDGEWOOD ROAD
YARDLEY, PA 19067-1696

TERRY FEDORCHAK
Township Manager

(215) 493-3846
FAX: (215) 493-3053
E-Mail: tfedor@lmt.org

RESOLUTION NO. 2142

A RESOLUTION OF THE BOARD OF SUPERVISORS
OF LOWER MAKEFIELD TOWNSHIP
ENDORSING THE U.S. MAYORS
CLIMATE PROTECTION AGREEMENT

WHEREAS, the U.S. Conference of Mayors has previously adopted strong policy resolutions calling for cities, communities and the federal government to take actions to reduce global warming pollution; and

WHEREAS, the Inter-Governmental Panel on Climate Change (IPCC), the international community's most respected assemblage of scientists, has found that climate disruption is a reality and that human activities are largely responsible for increasing concentrations of global warming pollution; and

WHEREAS, recent, well-documented impacts of climate disruption include average global sea level increases of four to eight inches during the 20th century; a 40 percent decline in Arctic sea-ice thickness; and nine of the ten hottest years on record occurring in the past decade; and

WHEREAS, climate disruption of the magnitude now predicted by the scientific community will cause extremely costly disruption of human and natural systems throughout the world including; increased risk of floods or droughts; sea-level rises that interact with coastal storms to erode beaches, inundate land, and damage structures; more frequent and extreme heat waves; more frequent and greater concentrations of smog; and

WHEREAS, on February 16, 2005, the Kyoto Protocol, an international agreement to address climate disruption, went into effect In the 141 countries that have ratified it to date; 38 of those countries are now legally required to reduce greenhouse gas emissions on average 5.2 percent below 1990 levels by 2012; and

WHEREAS, the United States of America, with less than five percent of the world's population, is responsible for producing approximately 25 percent of the world's global warming pollutants; and

WHEREAS, the Kyoto Protocol emissions reduction target for the U.S. would have been 7 percent below 1990 levels by 2012; and

WHEREAS, many leading U.S. companies that have adopted greenhouse gas reduction programs to demonstrate corporate social responsibility have

also publicly preference for the U.S. to adopt precise and mandatory emissions targets and timetables as a means by which to remain competitive in the international marketplace, to mitigate financial risk and to promote sound investment decisions; and

WHEREAS, state and local governments throughout the United States are adopting emission reduction targets and programs and that this leadership is bipartisan, coming from Republican and Democratic governors and mayors alike; and

WHEREAS, many cities throughout the nation, both large and small, are reducing global warming pollutants through programs that provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements, reduced traffic congestion, improved transportation choices, and economic development and job creation through energy conservation and new energy technologies; and

WHEREAS, mayors from around the nation have signed the U.S. Mayors Climate Protection Agreement which, as amended at the 73rd Annual U.S. Conference of Mayors meeting, reads:

The U.S. Mayors Climate Protection Agreement

A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;
B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that includes

    1. Inventory global warming emissions in Township operations and in the community, set reduction targets and create an action plan.
    2. Adopt and enforce land-use policies that reduce sprawl, preserve open space and create compact, walkable urban communities;
    3. Promote transportation options such as biocycle trails, commute trip reduction programs, incentives for car pooling and public transit;
    4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for

energy production, and supporting the use of waste to energy technology;

5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;
6. Purchase only Energy Star equipment and appliances for Township use;
7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;
8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;
9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;
10. Increase recycling rates in Township operations and in the community;
11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb C02; and
12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

NOW THEREFORE, BE IT RESOLVED that the Township of Lower Makefield will work in conjunction with the International Council for Local Environmental Initiatives, the Sierra Club Cool Cities Program and any other appropriate organizations to track progress and implementation of the U.S. Mayors Climate Protection Agreement.

Resolved and at a public meeting of the Board of Supervisors held March 21, 2007.

BOARD OF SUPERVISORS
LOWER MAKEFIELD TOWNSHIP

US Conference of Mayors Climate Protection Agreement – Signature Page

You have my support for the US Mayors Climate Protection Agreement.

Date: March 21, 2007

~~Mayor~~: Terry Fedorchak, Township Manager, Lower Makefield Township

Signature: [signature]

Address: 1100 Edgewood Road, Yardley PA 19067

City: Yardley State: PA Zip: 19067

Mayor's Email: tfedor@lmt.org

Staff Contact Name: Marybeth States

Staff Contact Title: Manager's Assistant

Staff Phone: 267-274-1101

Staff Email: admin@lmt.org

Please add my comments in support of the US Mayors Climate Protection Agreement. We will add these to the Website *(optional)*:

Please return completed form at your earliest convenience to:
US Mayors Climate Protection Agreement

By Mail:
c/o City of Seattle
Office of Sustainability and Environment
Seattle Municipal Tower
PO Box 94729
Seattle, WA 98124-4729

By Fax: (206) 684-3013

By Email: john.mauro@seattle.gov

For more Information: (206) 733-9084

Attachment B

Abbreviations and Acronyms

A/C	Air conditioning
ACH	Air Changes per Hour
BPI	Building Performance Institute
CcF	100 cubic feet (a measure of water or natural gas)
CFL	Compact Florescent Light
CSA	Community Supported Agriculture
DVRPC	Delaware Valley Regional Planning Commission
EAC	Environmental Advisory Council
eCO2	equivalent units of carbon dioxide
EDC	Economic Development Commission
F	fahrenheit
FMW	Five Mile Woods
GHG	green house gases
HVAC	Heating, Ventiliation, Air Conditioning
ICLEI	International Council on Local Environmental Initiatives
IPCC	Intergovernmental Panel on Climate Change (United Nations)
IRC	International Residential Code
KwH	kilowatt hour
LCD	Low Carbon Diet
LED	light emiting diode (light)
LEED	Leadership in Energy and Environmental Design
LMT	Lower Makefield Township
MMBtu	million BTU (British Thermal Units)
NECIA	Northeast Climate Impacts Assessment (by Union of Concerned Scientists)
PTO	Parent Teacher Association
SEER	Seasonal Energy Efficiency Ratio (air conditioning)
UCS	Union of Concerned Scientists
UNEP	United Nations Environment Program
WMO	World Meteorological Organization

Pledge

A PLEDGE STATEMENT

Cool Households in LMT– Saving money and energy one household at a time.

I will save money on energy,
I will live in a comfortable home,
I will help America gain energy independence,
I will start today!

Name: _____

Email: _____

[The monthly plan would be more detailed, only highlight examples are shown here.]

First Month (the starter month, after signing the pledge):

- Find out from PECO and your oil company how much money you spent on energy in the past 12 months,
- Set a goal to reduce energy costs in the next 12 months, by at least ….[10%],
- Talk to other family members about the goal and get their commitment to help.
- Read US DOE Energy Savers booklet [Get hard copies for distribution www.eere.energy.gov/consumer/tips/]

Consider immediate action on any of the following Quick Tips:

- Seal air leaks
- Insulate the attic
- Install programmable thermostats
- Install CFL lights in high use rooms
- Use cold water settings for laundry,
- Lower heat settings in winter (65), increase A/C temperature setting in summer (78), lower hot water settings (120), etc

Monthly Themes:

Month	Theme	Easy	Low cost	Significant
January	Lock-in savings (2)	Install storm windows	Insulate the attic	Insulate whole house
February	Energy wise Habits (1)	Shorter showers	Low flow shower-heads	Only buy Energy star appliances
March	Energy wise Habits (2)	Use cold water laundry setting	Insulate the hot water tank	Buy a high efficiency water heater
April	Heating and cooling	Check duct-work for leaks, seal with mastic tape	Install programmable thermostats for A/C	Get HVAC units serviced
May	Get Outside	Paint flat roofs white to reflect heat	Plant trees for shade on southern exposures	Service or upgrade the A/C units to High SEER.
June	Appliances	Use dishwasher on full and air dry settings	Install ceiling fans in bedrooms and family room	Buy high efficiency A/C units
July	In the kitchen	Cook out-side	Use exhaust fan for 20 minutes past cooking	Consider Nat. Gas Appliances if possible
August	Three H's of summer	Draw the blinds to keep the sun out.	Buy low-e film coatings for the windows	Install a dehumidifier
September	Energy Wise habits (3)	Switch off lights when leaving a room	Put house electronics on power-strips	Put TV set-top boxes on a timer switch
October	Light up smartly	Use CFAs	Buy LED decorations	Use auto timers and sensors
November	Get Control	Set Temperature	Install programmable thermostats for heat	Energy Audit
December	Lock-in savings (1)	Stop draughts from doors	Seal air leaks at other openings	Use a blower door test to find leaks

Energy Efficient New Building Construction: Energy Star

Probably the most well known rating system for an energy efficient home is the Energy Star system

To earn the ENERGY STAR label, a home must meet guidelines for energy efficiency set by the U.S. Environmental Protection Agency. These homes are at least 15% more energy efficient than homes built to the 2004 International Residential Code (IRC), and include additional energy-saving features that typically make them 20–30% more efficient than standard homes.

Any home three stories or less can earn the ENERGY STAR label if it has been verified to meet EPA's guidelines, including: single family, attached, and low-rise multi-family homes; manufactured homes; systems-built homes (e.g., SIP, ICF, or modular construction); log homes, concrete homes; and even existing retrofitted homes. ENERGY STAR qualified homes can include a variety of 'tried-and-true' energy-efficient features that contribute to improved home quality and homeowner comfort, and to lower energy demand and reduced air pollution:

- Effective Insulation
    - Properly installed and inspected insulation in floors, walls, and attics ensures even temperatures throughout the house, reduced energy use, and increased comfort. Learn more about Properly Installed Insulation

- High-Performance Windows
    - Energy-efficient windows employ advanced technologies, such as protective coatings and improved frames, to help keep heat in during winter and out during summer. These windows also block damaging ultraviolet sunlight that can discolor carpets and furnishings. Learn more about Qualified Windows

- Tight Construction and Ducts
    - Sealing holes and cracks in the home's "envelope" and in heating and cooling duct systems helps reduce drafts, moisture, dust, pollen, and noise. A tightly sealed home improves comfort and indoor air quality while reducing utility and maintenance. Learn more about Efficient Duct Systems
- Efficient Heating and Cooling Equipment

    - In addition to using less energy to operate, energy-efficient heating and cooling systems can be quieter, reduce indoor humidity, and improve the overall comfort of the home. When properly installed into a tightly sealed

home, this equipment won't have to work so hard to heat and cool the home.

- Efficient Products
    - ENERGY STAR qualified homes may also be equipped with ENERGY STAR qualified products — lighting fixtures, compact fluorescent bulbs, ventilation fans, and appliances, such as refrigerators, dishwashers, and washing machines.

- Third-Party Verification
    - With the help of independent Home Energy Raters, ENERGY STAR builder partners choose the most appropriate energy-saving features for their homes. Additionally, raters conduct onsite testing and inspections to verify the energy efficiency measures, as well as insulation, air tightness, and duct sealing details

Energy Audits

Self performed

How Should a Homeowner Conduct a Self-Performed Energy Audit.

A self-assessment of home energy use may be the hardest one to because what we do in our homes is often by force of habit. Force of habit equates to easily justifiable and thus hard to change. In addition, if there are others living in the same house, social and relationship pressures may keep change from occurring.

That said, the conservation of energy in our homes is so important that in many ways we have to go beyond our natural tendencies to continue to do what we are doing and force ourselves to be a new and different person – or family. Here are a few suggestions on self-assessment and steps for reducing energy use.

- Look around. What is on right now? Do this periodically during the day, get everyone involved. Typically there is an ebb and flow of energy use in a home. For a young family it may be lots of lights and heat on in the 7 am to 8:30 am off-to-school time frame, less during the day, then lots again in the 3 pm to 8:30 pm homework-tv/wii-dinner time-bedtime hours. For retired folks someone may be home all day everyday. In any event, there are probably appliances and lights that could be turned off or dimmed, thermostats that could be turned down.

- Use the washer, dryer and dishwasher during off peak hours. Every one knows that new appliance purchases should be Energy Star rated. Currently PECO does not reward residential clients with lower energy charges if they use energy during off peak hours. In the near future residential customers will pay more for electric use during peak demand hours, just as commercial customers now do. We can help even-out electricity demand by getting in the habit of using our discretionary appliances during off peak hours only.

- Programmable thermostats can be intimidating. But go ahead, read the manual and punch a few of the programming keys. Figure it out. If you make a few mistakes it not a big deal. It can mean big savings though – think about the money you will be leaving in your check book each month by simply out smarting a 2" x 4" x 6" gadget attached to your wall.

- Get to know your furnace or boiler and hot water heater. How old are they? If you don't know how to figure that out, call the company you have a service contract with and ask them. If your units are 12 yrs or older (they typically last 15 to 20 years with proper maintenance) ask your service rep to make recommendations for upgrades. You will want to have this information on hand before the units die. Many people get caught with unexpectedly needing to replace the units without the time to assess what would be the best new system to put in. If it's New Year Eve when the unit fails you

may not have the option of getting the optimum equipment. Be forewarned by planning ahead.

- Look over your energy bill and determine what you want the bill to be. Say you want to drop it by 15% -- that's really doable with a little bit of planning and concerted effort. Each month's bill will be a prize to open as you see the savings you have achieved as compared to the last month and the month exactly one year ago. Put a piece of graph paper on the wall and graph your usage over a multi-year period. It is really amazing to watch the peaks and valleys of energy use. While the price may rise due to increases in PECO or oil prices, one can gage usage and savings over all by comparing year to year and month to month.

- Put your head up in the attic and see how deep the insulation is between the floor joists. There should be 10 to 14 inches of blown in insulation. If it is less you are in luck because the attic can be air-sealed prior to adding additional blown in. See the Energy Audit section of this document on having an energy audit of the house completed prior to adding insulation.
- Check your window and door seals or weather stripping. These do wear out and can be replaced fairly easily. Make sure storm windows are functioning properly – these do have a beneficial effect in reducing air infiltration if properly maintained.

- A list of things to look for: "extra" refrigerators or freezers in the basement or garage are usually energy hogs, replace shower heads with low flow and add 1.0 gallon/ minute aerators to non-kitchen faucets, add power strips to turn off "vampire" loads, replace light bulbs with florescent or LED.

Professionally performed

List of Items that should be in an Energy Audit Report

- **Homeowner interview and walk-through:**
    - The auditor typically starts the audit in conversation with the homeowner(s). The auditor is seeking the homeowners' knowledge and observations about the house. The auditor creates a list of the major issues or complaints which prompted the homeowner to seek an energy audit. The Auditor will also do a visual inspection of the house. The Auditor will compile a list of the existing conditions (see list below) and create a list of repairs and upgrades which will remedy the problems discovered.

    - The list of Existing Conditions will include:

        - The square footage of the house,
        - The type of house: split level, colonial, etc.
        - The volume of the house, number of floors including the basement or crawl spaces.
        - The axis of the house in relationship to due North

- Insulation values and type in the attic
- Insulation values and type in crawl spaces
- Insulation values and type in the exterior walls
- Type of heating and cooling systems, including the age of the equipment, efficiency of the equipment, Manufacture and model number
- A visual evaluation of the windows, how many there are and there condition.
- The number of recessed lights which are in ceilings with an attic above.
- How the house is situated on the land – whether there are wind barriers such as trees or other near by houses or whether the house is exposed.
- Typically the auditor will take photos for future reference and draw a rudimentary sketch floor plan.

- **Visual Inspection:**

  - The auditor inspects accessible areas of the home, including accessible attics and crawlspaces in order to address issues such as insulation, air infiltration/seal-up, draft blocking, installation of the HVAC system and equipment, and homeowner practices relating to comfort in the home. The report includes recommendations for thermal improvements which address homeowner concerns and improves the energy performance for the home.

- **Combustion System Testing:**

  - The auditor will test all combustion appliances to determine if there are any combustion safety issues that should be addressed prior to air sealing and insulating the home. The combustion system procedures have been established by the Building Performance Institute (BPI). The auditor should be BPI certified in order to perform the combustion safety evaluation.

- **Air Infiltration Testing**

  - The Auditor will conduct air infiltration testing using a Blower Door. The blower door fan is installed in the front doorway. When the fan is operating it gently pulls the air out of the home, thereby pulling air in through the small holes, cracks and crevices in the house. The blower door mimics the effect of a 20-mile an hour wind blowing on all of the exterior surfaces of the house all at the same time.
  - A computer, called a manometer, is connected to the blower door. The manometer measures the amount of air being pulled through the fan, and translates this air movement into Air Changes per Hour (ACH). ACH is a measure of how leaky the house is. ACH is a very important number in

determining energy efficiency. A tight house would be one that has .35 ACH, a leaky house would be above 1 ACH.

- **Infrared Camera: Photos of where air is leaking into the house:**
    - An Infrared camera takes Thermographic pictures of the house. These pictures show differences in heat and cold in the walls, around windows and doors, in the HVAC ductwork and around ceiling light fixtures. Infrared pictures show heat as white, red or yellow and cold as dark purple or blue, or it show heat and cold as relative shades of grey. The thermographic images identify where air in infiltrating into the house, and thus the locations which need to be air sealed. An infrared camera can "look inside" walls at insulation levels. In order for an infrared test to be feasible, there must be a minimum temperature difference of twelve degrees between the inside and outside of the home. The thermographic testing is usually performed as the blower door depressurizes the home to -50 Pascals.
    - If weather conditions do not provide a minimum temperature difference of twelve degrees between the indoor and outdoor temperatures, a thorough inspection of the home will occur while the blower door fan is on using a "smoke gun."
- **Utility Bill Analysis:**
    - The Auditor will review utility bill history and break down consumption patterns into consumption type, as much as possible, and compare usage to other similar households. The Auditor will make recommendations as to how families can reduce their energy consumption by changing some of their behavior patterns.
- **Reporting:**
    - The Auditor's report will summarize the findings in short paragraphs. These Paragraphs are descriptive action items which, if followed, will result in improved energy efficiency and money saving.
    - Imagine that your house is like an upside sieve. Water passes through a sieve, because of the holes. Air passes through your house because of the holes too. If only one half of the holes are plugged, plenty of air still passes through. In other words, to get the most effect from the energy audit most of the recommendations have to be completed to get significant ACH and energy dollar return on investment.
- **Test Out:**
        - The Auditor returns to the home at the completion of the energy efficiency work in order to do another Energy Audit, called the Test Out. The Test Out includes a Blower Door test and a Combustion safety test to determine how tight the house has

become. If only a portion of the work is completed, a test out may not be

Attachment F

Is your Home energy efficient ?

Do you know how much you spend on energy a year?

Your monthly electricity utility bills will normally have how many kilowatt hours (kWh) of electricity you used that month and what your use during the year. Multiply the annual use in kWh with the latest cost per kWh and you get the annual electricity cost. The same kind of information is available from your gas bills but expressed in therms or CcF. By multiplying the annual use in therms with the latest cost per therm you can work out your annual gas cost.

The monthly electricity and gas bills have more interesting information that is very useful. It compares the average daily use with the average daily temperature for the current month, last month and for the year. If the electricity increased but the temperature did not change a lot, for instance maybe you have been keeping something on that you were not last month.

If you use oil, the oil company can tell you how much oil you used in gallons in the last year and you can get your annual oil cost be multiplying the annual use in gallons by the current cost per gallon

Do you know if what you spend is more or less than the average?

You now know how much you are paying for energy but is it what you should be paying. There a number of interesting resources available to check this one of which is http://hes.lbl.gov/consumer. This site allows you to input your specific details to identify how much your utility bills should be and compare that with what you actually spend. The site also identifies where you spend most of your energy dollars.

The site suggests that there is the possibility of reducing the energy costs substantially notably in heating costs, by simple projects and more complicated upgrades.

Contributors

The following list of people have generously donated their time and effort to make the LMT Sustainability Action Plan a reality. The town is indebted to them not only because of their generosity but also to their having made our community a better place in which to live.

John Ackler
Jeannie Alexander
Timothy Aurmuth
Mary K. Barrett
Catherine Beath
Laura Brandt
James J. Bray
Craig Calabria
Keith Cockerham
David Cragin
Soumya Dharmavaram
Melanie Dickersback
Alan Dresser
Joseph Englert
Rick Ewing
Geoff Goll
Lisa Grayson-Zygmont
Margie Greenspan
Ron Greenspan
Bernie Griga
Sandy Guzkowski
Cynara Himes
Chris Leydenberger
Pamela Newitt
Donna Novak
Linda Palsky
Scott Phillips
Scott Priestly
Gail Stringer
Dane Sullivan
Joseph Sundeen