



Township of Long Hill Planning for a Clean Energy Future

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A discussion with the LHT Planning Board

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Introduction

We tend to think of energy as something we have to have and pay for, but we should be thinking of energy as waste. To reduce and minimize that waste we need to ensure that Energy Efficiency and the use of Clean Energy is specifically included in building management and green building policies. Over 100 cities across the U.S. have already committed to having 100% renewable energy by a specific date in the near future. The New Brunswick City Council passed an ordinance recently that commits the city to a 100 percent renewable energy supply by 2035.

That's 15 years ahead of Gov. Phil Murphy's goal for all of New Jersey to be powered by renewable energy by 2050. New Brunswick is believed to be the first municipality in the state to commit to a total green energy goal.

New Brunswick's path to a green future is through the creation of the New Brunswick Community Energy Aggregation program.

The ordinance requires that this new program purchase at least 30 percent of its energy from renewable sources by 2020. That share increases to 50 percent by 2024, and gets to 100 percent at 2035.

As Long Hill is part of the Morris Area Energy Cooperative 'Energy Aggregation Program, we should be pushing to ensure that a similar increasing proportion of our electricity is sourced from renewable energy, an aspiration which is mentioned in the MAEC program.

However, achieving a goal of 100% clean energy is more than just signing on to some program. Having a clean energy future involves committing and working towards achieving the highest standards of energy efficiency, then using renewable energy sources to meet the remaining energy needs.

What strategies should Long Hill be pursuing?

A good starting point is to improve the energy efficiency of municipal facilities/operations. This is a proven cost-effective strategy which:

- **saves money**
- **demonstrates fiscal responsibility**
- **testifies to community leadership**
- **helps stimulate the economy**
- **reduces emissions of air pollutants and greenhouse gases**

Through improving energy efficiency in their own operations, local governments are leading by example, motivating the private sector and other stakeholders to follow suit. Involving the private sector in municipal energy efficiency improvements can also foster a community-wide discussion about saving energy, money, and the environment.

Some examples of known energy-saving potential are:

- **LED traffic signals and street lighting:** Traffic signals and street lighting which use LEDs typically consume 80 to 90 percent less energy than conventional traffic signals, and because traffic signals operate continuously, LED traffic signals can reduce peak energy demand. A full audit of the town's lighting has already taken place and the recommendations should be acted as soon as possible.
- **Improve fleet vehicle efficiency:** When replacing vehicles, the town should commit to purchasing hybrid and/or electric vehicles, which offer significant energy savings and reduced maintenance costs.

What strategies should Long Hill be pursuing?

Electric vehicles (EVs)

Bloomberg New Energy Finance predicts that sales of Light-duty EVs will account for 10% of vehicle sales by 2025, and then a dramatic acceleration through 2035, by which point, well over half of all new LDVs sold will be EVs.

To meet this demand the town should install electric vehicle charging stations. NJDEP- 'It Pay\$ to Plug In' Program offers grants for installing EV charging stations:

- **\$750 per Level 1 charging station (110v, 15 amps)**
- **\$5,000 per single-port Level 2 charging station (220-240V, 30-40 amps)**
- **\$6,000 per dual-port Level 2 charging station**

SolSmart

A program which awards cities points using objective criteria for removing obstacles to solar energy development that is funded by the U.S Department of Energy Solar Energy Technologies Office.

"For communities that do not yet meet the criteria, SolSmart provides no-cost technical assistance to help communities achieve designation of Bronze, Silver or Gold. At the time of publication, SolSmart offers this technical assistance to all participating communities, but it is not guaranteed to continue past 2020."

Long Hill could become one of the 1st recipients of Solsmart designation in NJ with free Technical assistance provided by Solsmart to review/write Ordinances that encourage Solar use. **Qu/ Do we want to do this?**

What strategies should Long Hill be pursuing?

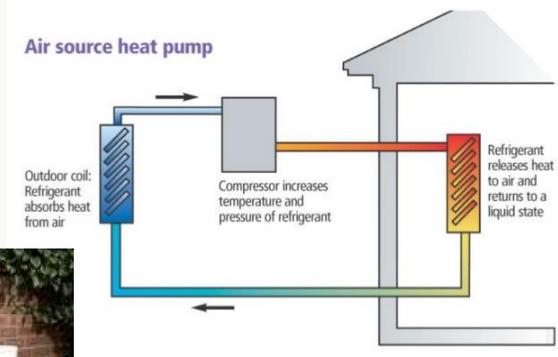
What forms of Renewable Energy are best suited to LHT?

Wind and hydro forms of renewable energy may not be practical for Long Hill, but both solar pv for electric generation or solar thermal for water heating is readily available at a cost competitive with the grid.

What type of high efficiency heating and cooling systems are compatible with RE?

An air source heat pump (ASHP) is a system which uses electricity to transfer heat from outside to inside a building, or vice versa. An ASHP uses a refrigerant system involving a compressor and a condenser to absorb heat at one place and release it at another. They can be used as a space heater or cooler. They are commonly used in hotel rooms but are becoming more common in residential homes. A high efficiency heat pump can provide up to four times as much heat as an electric heater using the same energy

Benefits Of Air Source Heat Pump



Geothermal Heat pumps would also work well in particular circumstances, i.e. where there are no issues of toxic material being disturbed. The shallow ground, the upper 10 feet of the Earth, maintains a nearly constant temperature between 50° and 60°F (10°-16°C). Like a cave, this ground temperature is warmer than the air above it in the winter and cooler than the air in the summer. Geothermal heat pumps take advantage of this resource to heat and cool buildings.

Geothermal heat pumps use much less energy than conventional heating systems, since they draw heat from the ground. They are also more efficient when cooling your home. Not only does this save energy and money, it reduces air pollution.

Fuel cells combines hydrogen and oxygen to produce electricity, heat, and water. Fuel cells are a promising technology for use as a source of heat and electricity for buildings, and as an electrical power source for electric motors propelling vehicles. Hydrogen powered fuel cells have been in use in the space industry since the 1970s.

What standards should Long Hill be pursuing?

Where municipalities can be really effective is by establishing policies requiring that new buildings and major renovations be designed in accordance with specific green building performance standards. One example of such standards is that set by **National Assoc. of Home Builders (NAHB)** that has adopted the ICC/ASHRAE 700-2015 National Green Building Standard™ (NGBS).

"First-time home buyers are eager to move to nicer homes and neighborhoods, yet home prices remain a challenge," said National Association of Home Builders (NAHB) Chairman Greg Ugalde. "Public policies and incentives that support home affordability can help buyers find a home that fits their lifestyle and family."

The NAHB website states that sustainability and high performance building incorporates construction and development techniques, materials & designs intended to minimize a home's impact on the environment and conserve natural resources. It is a practical response to a wide range of issues affecting all consumers: rising energy costs, the need to improve air quality, ensure clean water & minimize water usage. It means:

1. Energy-efficiency improvements, such as high levels of insulation, efficient HVAC systems, high-performance windows and energy efficient appliances or lighting
2. Water conservation measures, such as water-efficient appliances, water-conserving fixtures, filtration systems, and water-efficient or low-maintenance landscaping
3. Resource conservation techniques, such as using high-performance engineered wood, wood alternatives, allergen-free materials, recycled building materials, sustainably harvested lumber and more durable products
4. Indoor environmental quality considerations, such as effective HVAC equipment, use of formaldehyde-free finishes, and products with low levels of volatile organic compounds
5. Site design techniques, like maximizing solar orientation, using existing shade, minimizing disruption and preserving open space. It should be required that roofs be solar-ready in all new construction....
6. Home owner education through orientations and manuals or operating guides. **We get a 20 page manual to operate any power tool but little or nothing on how to run a new home**

What are others doing?

Engelwood, NJ

“Reduce the City of Englewood’s municipal energy usage, and encourage residents to follow suit;

- Improve the environment by lowering emissions of fossil fuels while providing long-term economic savings to the community*
- Encourage the installation of renewable energy systems on municipal buildings and promote renewable options for residents and commercial enterprises.”*

Sustainability Element 2009 Master Plan

Bernards Township, NJ

“Bernards Township is acknowledged as a leader in New Jersey’s green movement through its 2009 Sustainable Jersey certification. Further success in becoming a more sustainable community will occur through local planning choices that are consistent with the green buildings and environmental sustainability goals and objectives of this plan.”

Green Buildings and Environmental Sustainability Plan Element of the Master Summary

Ashland, OR

When considering Affordable Housing there is an opportunity to reduce energy cost.

“Establish minimum energy efficiency standards for the affordable housing program. Ashland’s Affordable Housing Program is an ongoing program that provides incentives to promote affordable housing development and requirements for affordability. The establishment of minimum energy efficiency standards for these housing units present a valuable opportunity to make homes more comfortable and energy efficient for residents, while also lowering energy bills and supporting those most in need.”

Climate and Energy Action Plan

What can we do?

New Jersey Energy Master Plan

"Often times, outdated zoning and planning laws can unintentionally slow down growth of clean energy."

*New Jersey Energy Master Plan Sustainable and Resilient Infrastructure Stakeholder Meeting Discussion Points
Written Comments of Vote Solar Earthjustice Environment New Jersey GRID Alternatives Solar United Neighbors of New Jersey*

Long Hill Township

A simple search on "Solar" within the LHT Code Book provides a single return, which is not overly relevant:

*"The arrangement of streets not shown on the Master Plan or Official Map shall be such as to provide for the appropriate extension of existing streets and so oriented as to permit, within the limits of practicability and feasibility, the buildings constructed thereon to maximize **solar** gain."*

Ordinances could be drafted to:

- **Encourage large scale developments to allow for solar installation** (easier/cheaper to design for the future rather than retrofit based upon the past).
- **To accommodate future growth in electric vehicle usage**, all new single family and multi-family homes with garages should be provided with dedicated 220-240 V/ 40 Amp outlet on a dedicated circuit and in close proximity to vehicle parking areas.
- **Require large commercial building(s) to:**
 1. Provide xx% of energy through renewable means
 2. Provide xx EV charging stations

Conclusion

A well built super-insulated home or building needs a smaller heating & cooling system, and a lot of the electrical demand could be supplied by solar PV with storage batteries. The building's heating and hot water demand could be supplied by solar thermal systems and/or air or ground-source heating systems.

Finally, the township inspection process also has a part to play to ensure that all aspects of a green building are built to the standard chosen.

You as town planners have an opportunity at this point to take the lead in this field. Your children and grand-children will thank you for the choices which you make.