SUSTAINABILITY ELEMENT

INTRODUCTION

Sustainability is a new element for the Township's Master Plan and one that looks to support initiatives being driven at the State and Federal level. Globally, "sustainable development" has been defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" - The United Nations World Commission on Environment and Development (The Brundtland Commission, 1987).

This Element is being written to support a more sustainable and resilient New Jersey, a State ready to take on the many environmental, economic and social challenges which face us in the future. Most people would agree to the benefits of clean air, fresh water, waterways filled with fish, garbage in its proper place, clean energy options, parks and open space, and a healthy place to work and live. The big question for communities such as Long Hill is how can we contribute to achieving these goals.

In New Jersey, Governor Murphy unveiled the State's Energy Master Plan in January 2020. It outlines key strategies to reach the Administration's goal of 100 percent clean energy by 2050. This will also strengthen NJ's Global Warming Response Act that mandates 80% emissions reduction by 2050.

It is critical that Long Hill Township be proactive in deciding how these targets will be met at the local level rather than depending on decisions coming from the "top down". Such "top down" decisions may have been made without unique local concerns in mind. This Sustainability Element outlines how Long Hill Township's sustainability objectives can serve as a foundation for recommendations in other elements of the Master Plan as well as offer a variety of strategies to meet the State energy and emission reduction plans. Some of the strategies and goals addressed below are expanded upon in the different elements.

One of the best ways forward is for municipalities to adopt and pursue the principles and practices of sustainable development. Sustainability is being addressed by nearly 400 municipalities across New Jersey through participation in the Sustainable Jersey Program. This program provides a science-based, measurable framework for municipalities to follow to become more sustainable. Municipalities that achieve certification become eligible for grant funding to help pursue their sustainability related goals such as the efforts to improve energy efficiency and conserve natural areas being pursued by the Township.

The certification is free and completely voluntary. Long Hill Township has been a registered participant since the program's founding in 2009 though progress towards receiving certification has been slow. The Township established a "Green Team Advisory Committee" by Resolution 17-198 in July 2017 and this is now working towards achieving certification.

BACKGROUND

The three objectives of the Sustainability Element are:

- Protect the town's existing natural landscape by creating an economic climate that enhances the town's prosperity, thus providing the resources to conserve and manage surrounding natural lands, increase biodiversity and strengthen resilience to natural hazards;

- Help existing businesses to thrive and be proactive in attracting new green businesses by modernizing and improving our assets and investments such as downtown areas, existing infrastructure, and places that the community values;
- Develop vibrant, healthy neighborhoods that people of all ages can easily access and feel part of a community and its environment.

Sustainable Development and the Community

When introducing a relatively new concept to a municipality and its residents, education pays off. The growing consensus among experts and organizations working for sustainability is that sustainability must be accomplished at the local level if it is ever to be achieved on a global basis1. When sustainable development is community-based, it is more likely to be viable because it:

- Helps keep economic benefits and resources within the community;
- Supports existing local businesses that tend to be more responsive to local needs and more likely to support the community;
- Encourages the establishment of greener enterprises;
- Seeks small-scale solutions, which are usually faster, more flexible, less expensive, and more manageable than larger ones,
- Builds social capital – the capacity of its people to work together for the common good.

Building mix and Uses

Long Hill has a number of historic buildings and the historic neighborhood of Stirling village. Reinvesting in existing infrastructure and rehabilitating historic buildings conserves resources, protects the historic character of a neighborhood and reduces material going to landfill. Existing single-story commercial properties could have an additional story of apartments built above. Where new developments are proposed they should house a mix of structures such as residences, commercial stores, community centers, day-care facilities, and artist's studios. Flat roofed buildings should be designed for multiple uses such as roof-top restaurants, viewing platforms, gardens and patio spaces, solar pods, play areas and more.

Water-Use Infrastructure

Clean, readily available water supplies are a growing concern for towns and cities. Sustainability of the water supply system faces several imminent challenges such as increasing water main breaks, decreasing fresh water resources, untraceable non-revenue water use, and increasing water demands1. Efforts to meet future needs include a variety of Internet-based innovations, such as the Internet of Things (IoT) technology. Using sensors installed throughout the water supply infrastructure IoT can produce large amount of data to monitor both the infrastructure and consumers' usage. Such proactive measures frequently result in positive consumer benefits, as well as a reduced need for emergency repairs and service disruptions for this vital utility in the future.

Waste Reduction and Recycling Efforts

Long Hill Township has made substantial efforts towards improving its waste management and reducing the amount which goes to expensive landfills. The Township previously produced a Recycling Element as part of the 1995 Master Plan, which indicated that 3,568 tons of materials were recycled in 1993. In 2018, the last year for which data is available, the township recycled 50,457 tons of materials, a very commendable 14-fold increase.

The Township manages its recycling program out of the public works facility off Warren Street. The program collects and recycles a wide variety of materials, including aluminum, glass, newspaper, plastic, tires, batteries, white goods, oil, metal cans and electronic goods. Tree and yard waste is collected and converted into compost and mulch, which is made available to township residents. The Township Committee recently established collection points for flexible plastic waste such as bubble wrap and plastic grocery bags. These are collected by a private company and recycled into durable outdoor products such as decking and seating. The Township and community further benefits by receiving an outdoor bench for each 500 pounds of waste plastic collected. More useful than benches may be planking to build walking trails through wet areas.

Plastic waste and its far-reaching effects is one of the most pressing environmental issues today. Some towns have taken strong positions on plastic waste by also passing ordinances banning single use plastic bags. In other cases, towns have included a prohibition on plastic straws and polystyrene, all of which have damaging effects. There is currently a bill in the NJ State Legislature (S864/A1978) which would prohibit single-use bags (plastic and paper) and polystyrene food containers.

Energy Efficiency

One of the easiest ways to reduce our environmental impact is through improving energy efficiency. Increasing energy efficiency is a proven cost-effective strategy which

- Saves money,
- Demonstrates fiscal responsibility,
- Testifies to community leadership,
- Helps stimulate the economy, and
- Reduces emissions of air pollutants and greenhouse gases.

By improving energy efficiency in their own operations, local governments are leading by example, motivating the private sector and other stakeholders to follow suit. An energy audit was carried out in 2018 of all municipal buildings to examine the cost and benefits of upgrading to high efficiency fixtures and fittings. This showed that if all of the recommendations were carried out the Township would have annual savings of over $78,600 with an average payback period of 6.4 years.

Involving the private sector in municipal energy efficiency improvements can also foster a community-wide discussion about saving energy, money and the environment. This is supported by 86% of respondents in the 2016 Township-wide survey who either agreed or strongly agreed that new commercial developments should be environmentally 148 responsible. In addition, the 2020 Land Use Assessment showed that a majority of respondents found environmental standards in new building and remodeling projects to be important or very important.

Smart Street Poles

As cities switch from conventional streetlights to LED-based updates, they have the opportunity to connect light poles to form a web of information sensors that can do everything from broadcasting severe weather warnings, gathering air quality data to monitoring traffic and reducing the risk of crime. Traffic signals and street lighting which use LEDs typically consume 80% to 90% less energy than conventional

traffic signals, and because traffic signals operate continuously, LED traffic signals can reduce peak energy demand. The 2018 energy audit stated that if the recommendations were followed street lighting energy costs would be reduced by approximately $8,400 annually.

Electric Vehicles (EVs)

EV Use is on the rise: In 2009, the IEA (International Energy Agency) World Energy Outlook scarcely mentioned EV's apart from a prediction than they would amount to just 0.3% of the global fleet by 20303. Due to rapidly improving battery and other technologies that has all changed. Bloomberg New Energy Finance predicts that sales of Light-duty EV's will account for 10% of vehicle sales by 2025, and will then show a dramatic acceleration through 2040, by which point, over 57% of all new LDV's sold will be EVs4.

In early 2020, the NJ State Legislature passed a comprehensive, bipartisan bill (S2252) that establishes goals and incentives for the increased use of plug-in electric vehicles and infrastructure in New Jersey. The bill also codifies the Administration's goal of having 330,000 registered light-duty EVs by 2025 and directs State-owned light-duty vehicles to be electric by 2035. There is currently only one EV charging station in the Township.

Solar Energy

Solar photovoltaic panels for electric generation or solar thermal for water heating is readily available at a cost competitive with the grid. Wherever they are installed, solar arrays can produce an income, reduce electrical costs for nearby buildings, support EV charging stations and provide shaded parking. Rooftop solar arrays on flat roofs can be raised structures, allowing the area beneath to double as shaded roof gardens or multi-function venues. Solar carports over existing parking lots help keep cars dry in inclement weather, provide security from sun and hail damage, and keep cars and the tarmac cooler in the summer.

However, a common complaint of homeowners and businesses wishing to install solar are the "soft costs", which have significant local impacts on the affordability of solar energy systems. "Soft costs" refer to business processes or administrative costs that can increase the time and money it takes to install a solar energy system – costs that are then passed on to customers. These costs arise due to permitting processes, planning and zoning considerations, financing, and a wide variety of other factors. Overall, these soft costs represent up to 64%[1] of the total cost of a solar energy system.

To address solar soft costs at the municipal and county levels, the U.S. Department of Energy Solar Energy Technologies Office (SETO) funds SolSmart, a program that provides designation and no-cost technical assistance to accelerate the development of local solar energy markets and reduce soft costs. During the SolSmart application process, communities are required to provide a formal letter of commitment acknowledging their solar energy goals and plans. A community then earns points by introducing or streamlining various administrative processes related to solar applications. Depending on how many points are earned determines whether the community qualifies for Bronze, Silver or Gold Designations. These designations signal to both installers and their customers that a town has streamlined its solar permitting and administrative processes and is "open for solar business".

[1] See: https://solsmart.org/faqs/

For residents who cannot install solar on their own property an alternative is to participate in a Community Solar Program as offered by some solar companies. With Community Solar, solar arrays are installed in a centralized location such as a brownfield site or parking canopy, which may be outside of one's own town. Residents can purchase or lease a 'share' in a solar project, and receive a credit on their utility bill for the energy produced by your share. Community Solar gives participants all the benefits of solar energy, allowing a household to go green and save, but also support the local economy by helping to create jobs.

Green Buildings

A variety of energy standards have been adopted across the U.S. to improve the energy efficiency and environmental health impacts of new buildings beyond existing code. Some examples of such standards in the residential field are the ENERGY STARTM certification or those supported by the National Association of Home Builders (NAHB), which has adopted the ICC/ASHRAE 700-2015 National Green Building StandardTM (NGBS).

A high performance building includes:

- Energy-efficiency improvements, such as high levels of insulation, efficient HVAC systems, high-performance windows and energy-efficient appliances or lighting
- Water conservation measures, such as water-efficient appliances, water- conserving fixtures, filtration and water re-use systems, and water-efficient or low-maintenance landscaping
- Resource conservation techniques, such as using high-performance engineered wood, wood alternatives, recycled building materials, sustainably harvested lumber and more durable products. Reducing the amount of construction debris which goes to landfill should be a priority.
- Indoor environmental quality considerations, such as effective HVAC equipment, use of formaldehyde-free finishes, allergen-free materials, and products with low levels of volatile organic compounds.
- 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 – strong enough to support the additional weight, with appropriate roof truss spacing and 50-year roof shingles.

In the commercial sector standards such as LEED (Leadership in Energy and Environmental Design) or IgCC (International Green Construction Code) set minimum requirements for increasing the environmental and health performance of buildings, sites, and structures.

Urban Trees

Long Hill has a rich and varied urban and suburban forest, and the wooded character of the Township is highly valued by residents. Urban trees are a vital part of a Township's "natural capital". Natural capital is the stock of natural resources and environmental assets including water, soils, air, flora, fauna, minerals, and other natural resources. Apart from their aesthetic appeal, trees provide environmental services such as oxygen supply, wood for timber and fuel, and wildlife habitat. They also reduce temperature extremes, moderate stormwater flows, sequester carbon, and capture nutrients from runoff.

Apart from street trees, other features such flower beds, window boxes and bioswales contribute to a sense of place while satisfying

the basic human need to connect with nature. Bioswales are planted channels which slow water flow down and allow it to infiltrate into the soil. They are particularly useful along streets or in parking lots where they can redirect water from the curbside. When native water-wise plants are used, they may even self-sustain vegetation, reducing watering costs

Urban Agriculture

Communities like Long Hill can help cut food waste by growing perishable produce right in their own communities, boosting an individual's connections to food and reducing spoilage-promoting lengthy transit distances and time. With the emergence of new hydroponic and aquaponic gardening technologies, walls, roofs and other structures that serve one function can multitask as food-producing gardens too. Where appropriate, consideration can also be given to including indoor-agriculture as an allowable use to encourage private enterprises to expand such practices in ways that could also enhance the local economy.

Non-motorized Transit

When non-motorized transport options are encouraged, streets become less congested, air quality improves, and human health and well-being is boosted. An important way to increase such options is to provide safe traffic lanes for bicycles and a well-marked trail system for walkers. These discussions are expanded upon in the Circulation Element.

RECOMMENDATIONS

1. Sustainable Development and the Community

a. Make a public commitment for the Township of Long Hill to work towards being a sustainable, green community.

b. Seek grant aid to create a new staff position responsible for furthering the twin goals of economic development and sustainability. This position would focus on attracting green businesses such as assembly and light manufacturing.

c. Support the Green Team in achieving certification with the Sustainable Jersey Program and work toward producing early benefits to build support for further efforts. Develop networks with other municipalities as well as utility partners for information exchange and learning best practices.

d. Facilitate Community Education and participation by developing resource materials to help the public understand how sustainable actions benefit public health and welfare. Introduce public awareness programs around the wider issue of waste reduction, including the reduction of food waste.

e. Encourage builders to offer and promote high efficiency products and features.

2. Optimize Building Mix and Uses

Building density should be selectively increased where appropriate in support of the Land Use Element. Develop strategies to repurpose the use of existing structures and brownfield sites rather than building out. Buildings should be designed in a way that allows them to switch functions – for example, from a theater to a children's pre-school – as needs change. Building second story apartments above existing commercial developments should be allowed and encouraged. Older buildings should be reused when possible rather than being torn down.

3. Strengthen Water-Use Infrastructure

Manage water challenges such as flood control and rainwater management using appropriate best management practices

4. Waste Reduction and Recycling Efforts

a. Consider ordinances banning retail businesses from providing customers with single use bags, both plastic 298 and paper, and restaurants providing single use plastic straws and polystyrene containers.

b. Expand the returns from the flexible plastic waste recycling program to include composite decking for boardwalks for trail construction.

c. Increase recycling rates through education and enforcement where necessary.

5. Improve Energy Efficiency

a. Improve the efficiency of the municipal vehicle fleet. When replacing vehicles commit to purchasing hybrid and/or electric vehicles, which offer significant energy savings, potentially reducing maintenance costs while creating positive environmental benefits.

b. Carry out the recommendations in the 2018 Township energy audit.

6. Install Smart Street Poles

Review the completed full audit of the town's lighting. Prioritize and act on the stated recommendations as soon as possible. Work with local utilities to install smart street poles.

7. Support EV growth

a. To accommodate the future growth in electric vehicle usage, all new single-family and multi-family homes with garages should provide a 220-240V, 40 Amp outlet on a dedicated circuit and in close proximity to vehicle parking areas. Large multi-family units should have multiple charging stations in the parking areas.

b. Install EV charging stations at municipal parking lots and encourage the installation of others at stores, restaurants, public spaces and existing multi-family units, to meet rising demand.

8. Encourage Solar Energy Growth

a. Enroll in SolSmart to reduce solar administrative costs and send a clear signal to solar companies that the town is encouraging solar installations.

b. Convert municipal buildings to solar power over time.

c. Install solar carports at publicly-owned parking lots, such as municipal and NJ Transit train station parking lots, where solar arrays would also provide summer shading.

d. Write new ordinances which encourage solar use.

e. Encourage residential and commercial properties to install solar arrays on flat roofs and use the area beneath for rooftop gardens or multi-function venues.

f. Provide education to residents on how they can participate in Community Solar programs.

9. Improve the resiliency of the electric grid

Ensure power lines in new developments are buried to improve resiliency and enhance township aesthetics.

10. Establish Green Building Support Policies

Create ordinances and establish incentives for new residential and commercial buildings and major renovations to be designed in accordance with specific green building performance standards such as ENERGY STAR™ or the NAHB's National Green Building StandardTM. For the commercial sector, follow standards such as LEED (Leadership

in Energy and Environmental Design) or the IgCC (International Green Construction Code).

11. Encourage Urban Agriculture

a. Develop small community gardens on Township-owned land to provide new recreational and community-building opportunities for residents.

b. Increase the number of 'garden' features in the town's public spaces such as bioswales, flower beds and hanging baskets.

12. Protect & Promote Urban Trees

a. Encourage interest in and appreciation for urban trees by discouraging tree removal and expand the discount tree program (Challenge Grant operated by the Long Hill Shade Tree Commission) to property owners to increase the community's overall canopy.

b. Adopt policies to encourage the planting of trees at existing large parking lots to provide shade, food for wildlife, and to reduce the urban "heat island" effect.

c. Promote Township initiatives like the Big Tree list to increase the public's appreciation for the value that trees provide for the health of the local ecosystem.

13. Facilitate non-motorized transit

a. Create traffic lanes for bicycles with ample bicycle parking located throughout the Township.

b. Develop a town-wide connected trail system with seating and exercise hubs.

c. Improve sidewalks to each of the Township's three train stations.

LANDSCAPING SUB-ELEMENT

INTRODUCTION

Sustainability in landscaping is a concept which emphasizes the environmental impacts and benefits of ornamental landscapes. Sustainability involves coordination of landscape planning, design, and management actions for greater overall environmental benefits within the urban environment.

This section addresses actions which collectively work to conserve, recycle and reuse resources invested in landscapes and which work to optimize the environmental benefits provided by landscapes. Conservation actions are directed toward increasing the efficiency and reducing the consumption of energy, water, and chemicals in landscaping. Recycling and reuse of resources is pursued through use of reclaimed water and composted landscape trimmings. Environmental benefits of landscaping are increased through the protection of riparian corridors, the additional production of oxygen to the atmosphere, storage of carbon, developing associations of plants to provide increased 404 wildlife value, and microclimate benefits in the form of temperature and pollution mitigation. The avoidance of future issues caused by invasive species is promoted through public education and the careful selection of plant species in local and large-scale landscaping.

It is the goal of this Sub-Element to ensure that the environmental impacts and benefits of landscaping are considered throughout the planning and design process, in conjunction with aesthetic and functional goals. Good design decisions will result in increased benefits, decreased impacts to the environment and reduced consumption of resources.

Applicants for development are encouraged to seek imaginative concepts which meet or exceed the purpose and intent of the Sustainability Element and any supporting ordinances. The principles and guidelines contained herein are provided as one method to assist in preparing landscape plans which meet the intent of the Township's Policies. Based 415 on recommendations from landscape professionals, alternative methods may be used providing they too meet the intent of such policies. If alternative methods are used, the project documents shall include information addressing each of the design guideline objectives.

Sustainability in urban landscapes can be improved when:

- Landscapes are planned, designed and maintained upon principles of conservation, recycling and reuse of resources, with particular emphasis on energy and water conservation, and local sourcing of materials.
- Landscapes are planned, designed, and maintained to protect riparian areas, achieve improved levels of carbon storage and oxygen production, species diversity, micro-climate benefit and natural habitat value.

BACKGROUND AND GUIDING PRINCIPLES

Landscape Productivity

Increased productivity through reduction of lawn coverage in favor of more diverse plantings leads to greater storage of carbon, production of oxygen, and greater air pollution mitigation. This productivity helps to offset the release of carbon and pollutants to the atmosphere resulting from direct and indirect use of fossil fuels in the development and long-term maintenance of the landscape.

Appropriate Plant Choices

The right choice of plant species can improve the productivity, compatibility and vigor of the landscape, reduce the use of energy, water, and fertilizers, and increase maintenance efficiency. It will also enable the landscape to adapt to varying project conditions now and in the future.

Invasive plant species such as Japanese stiltgrass (Microstegium vimineum) usually have few or no natural controls. Native herbivores and insects often find these invasive species to be unpalatable thus encouraging the alien's spread to the detriment of native plants. Some problematic species such as 'Bradford' pear (Pyrus calleryana) can be both invasive and prone to wind and snow damage, or be susceptible to blight damage.

Energy Conservation

Energy consumption in landscaping can be divided into two broad categories:

- Direct energy use occurs through fossil fuel consumption of equipment.

- Indirect energy use occurs through the use of electricity to supply irrigation water, and in the manufacture of chemical fertilizers and pesticides. Furthermore, the production and long-distance transportation of mulches and peat-based products in other parts of North America affect national energy use, transport infrastructure and air quality. It also causes immense damage to forests and peat bogs and directly impacts water quality, native wildlife, carbon storage and oxygen production.

Water Conservation

Water conservation practices result in less indirect energy use, less demand for imported water, reduced loss of water to runoff onto pavement and into water bodies, and more efficient use of reclaimed water supplies.

Microclimate

The judicious use of shrub and tree planting can have beneficial effects on nearby buildings, parking and playground areas by providing optimal levels of summer cooling, improving solar heat gain in winter, and ameliorating the effects of vehicular air pollution.

Best Practices for Soil Management

Sustaining natural processes of nutrient development and microorganism activity can ensure the successful establishment and healthy growth of plants. In particular, too much reliance on artificial fertilizers and chemicals can lead to a reduction in soil biodiversity, the development of resistant pest species and have a serious impact on nearby water bodies.

RECOMMENDATIONS

The following recommendations focus on improving the environment while creating aesthetically pleasing outdoor spaces. They can be used at any scale whether by homeowner, professional landscaper or municipality.

1. Improve Landscape Productivity

Consider increasing planting scale, density and quantity to maximize plant cover to the greatest extent feasible. Rather than planting a single tree, install a group of trees, shrubs and ground cover plants.

[2] See: http://www.npsnj.org/pages/nativeplants_Plant_Lists.html

a. Plant a wild flower garden on non-manicured parts of the yard to increase biodiversity.

2. Ensure Appropriate Plant Choices

a. Encourage large development applicants that require Landscape Plans to use species drawn from the list of native plants recommended by the New Jersey Native Plant Society[2]. Consideration should be given to the preferences and tolerances of different plant species and groupings. Private landowners and municipal land keepers are encouraged to use native plants and species diversity when selecting or replacing plantings.

b. The use of known invasive or problematic species is strongly discouraged.

3. Promote Energy and Water Conservation

a. Design plantings to reduce the frequency of gas-powered mechanical operations.

b. Encourage efficiencies in water consumption by using recommended plants which are closely adapted to the climate and soil conditions of the site; organizing landscaping plantings into compatible hydrozones; and designing landscapes within estimated water budgets.

c. Encourage efficiencies in water consumption by capturing and reusing water for landscaping through collecting and storing rainwater from rooftops and roof drains.

d. Encourage the designing and grading of landscape areas to capture and infiltrate irrigation water and seasonal rainfall, especially near water bodies.

e. Encourage landscapers and landowners to develop a minimum 15' buffer zones of native grasses and wildflowers close to all water bodies.

f. Educate residents on technology that can conserve water by using irrigation systems with rain guards, check valves, matched precipitation nozzles, and low-volume heads and emitters; and by directing water to root zones where possible.

4. Microclimate Improvements

Encourage landscapers and homeowners to:

a. Position coniferous trees and shrubs along western and northern boundaries to reduce the effects of winds from these directions.

b. Locate trees with open canopies or deciduous habits along south and east facing walls to provide winter sun exposure on window and wall surfaces while offering shade during the summer months.

c. Use trees and shrubs to reduce heat gain from paved surfaces; provide pleasant, shaded pedestrian areas 529 and reduce levels of air pollution.

5. Soil Management Practices

a. Minimize the use of chemical fertilizers and pesticides. If fertilizers are needed they should be 100% organic.

b. Encourage the practice of incorporating locally sourced compost during soil preparation stages.

c. Expand existing composting efforts by offering subsidized composting containers to residents for their food and garden waste.

d. Provide public education about the benefits of home-based composting.

[2] See: http://www.npsnj.org/pages/nativeplants_Plant_Lists.html