

SUSTAINABLE HAWORTH 2012

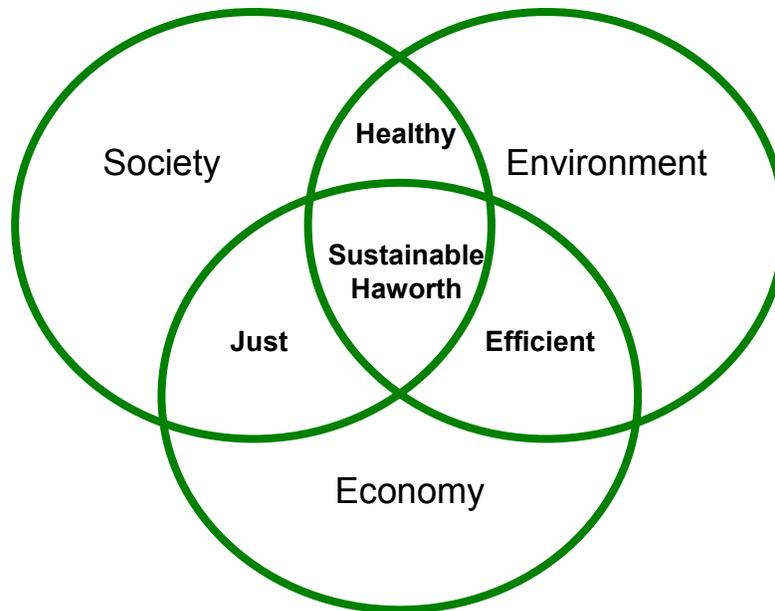


According to N.J.S.A. 40:55D-28b(16), a Green Buildings And Environmental Sustainability Plan Element: "...shall provide for, encourage, and promote the efficient use of natural resources; consider the impact of buildings on the local, regional and global environment; allow ecosystems to function naturally; conserve and reuse water; treat storm water on site; and optimize climatic conditions through site orientation and design."

The terms "green" and "sustainable" have become commonplace in today's environmental vocabulary. They have become as recognizable as the terms "environmental", "natural" and "ecosystem". For this reason it is important to define these two terms that are new and contemporary in most circles but which have been used for decades by certain environmentally minded professionals:

"Green design" is an overview term indicating a direction of improvement in design. For example, this could mean continuous improvement towards a complete and healthy integration of human activities with natural systems.

“Sustainability” is the capability to equitably meet today’s human needs that are vital to our existence without compromising the ability of future generations to meet their own vital needs. This is accomplished by preserving and protecting the area’s ecosystems and natural resources, integrating them into our human needs, and utilizing them responsibly. The concept of sustainability describes conditions wherein human use of the natural resources that are required for the continuation and sustenance of our lives is in balance with nature’s ability to replenish these resources. The following diagram illustrates the described integration principle and how it pertains to a community, in this case Haworth.



A Mercer County New Jersey community expressed these principles in different terms:

Adopting practices for living, today, that will complement and enhance, without depleting, the opportunity and quality of life tomorrow.¹

It is a principle of sustainability that sustainable practices will attempt to balance the environmental, economic and social impacts of any action.²

An environmentally sustainable community is one that manages and stewards its natural resources and environmental assets such that their value is preserved, restored and enhanced for the present and future generations and in which such stewardship complements the community’s efforts to foster economic and social health.³

Numerous (13 of 15) N.J. Municipal Land Use Law (MLUL) purposes that preceded the advent of Sustainability Master Plan Elements support goals that are consistent with sustainability objectives in general, and this plan more specifically. From MLUL they include:

¹ Sustainable West Windsor Plan 2007

² ibid

³ ibid

“40:55D-2. Purpose of the act

Purpose of the act. It is the intent and purpose of this act:

- a. To encourage municipal action to guide the appropriate use or development of all lands in this State, in a manner which will promote the public health, safety, morals, and general welfare;
- b. To secure safety from fire, flood, panic and other natural and man-made disasters;
- c. To provide adequate light, air and open space;
- d. To ensure that the development of individual municipalities does not conflict with the development and general welfare of neighboring municipalities, the county and the State as a whole;
- e. To promote the establishment of appropriate population densities and concentrations that will contribute to the well-being of persons, neighborhoods, communities and regions and preservation of the environment;
- f. To encourage the appropriate and efficient expenditure of public funds by the coordination of public development with land use policies;
- g. To provide sufficient space in appropriate locations for a variety of agricultural, residential, recreational, commercial and industrial uses and open space, both public and private, according to their respective environmental requirements in order to meet the needs of all New Jersey citizens;
- h. To encourage the location and design of transportation routes which will promote the free flow of traffic while discouraging location of such facilities and routes which result in congestion or blight;
- i. To promote a desirable visual environment through creative development techniques and good civic design and arrangement;
- j. To promote the conservation of historic sites and districts, open space, energy resources and valuable natural resources in the State and to prevent urban sprawl and degradation of the environment through improper use of land;
- m. To encourage coordination of the various public and private procedures and activities shaping land development with a view of lessening the cost of such development and to the more efficient use of land;
- n. To promote utilization of renewable energy resources; and
- o. To promote the maximum practicable recovery and recycling of recyclable materials from municipal solid waste through the use of planning practices designed to incorporate the State Recycling Plan goals and to complement municipal recycling programs.”

The only MLUL purposes of the act that are not on point with the objectives of sustainability are “k” and “l” which address planned unit developments and senior citizens housing respectively, and even these two purposes are marginally related.

3.1 BACKGROUND

3.1.1 Objectives and Importance

Many sustainability elements in other less developed communities focus on future land use patterns and development models as well as on behavior and policy. In contrast, Haworth is a fully developed community. Its focus, therefore, should be on behavior, policy, awareness, practices, retrofitting, and interconnectivity.

In preparing a Sustainability Master Plan Element, it is important to establish a common vision and set of goals for the community. In Haworth, these are set forth as follows:

Vision of a Future Sustainable Haworth:

As an economically, socially and environmentally sustainable community, Haworth will continue to have sustainable land uses, efficient circulation, a protected environment and abundance of open space, an engaged and responsible population, an equitable community, and a government that is a leader in sustainability. Haworth will continue to encourage green buildings and expanded recycling and reuse of materials. A brief explanation of each of these goals is provided below.

Sustainable Land Uses - The location of future land uses, including infill redevelopment land uses, will be planned with primary considerations being environmental sensitivity, economic opportunity, land use compatibility, ease of connectivity, and access to transportation routes, and will be mindful of those who live and work in Haworth.

Efficient Circulation – Haworth does not enjoy multi-modal mass transportation access. Residents depend only on a few buses and their private vehicles. Since increasing access to more mass transit is unrealistic at this time, it will be the intra-Haworth transportation system and interconnectivity to Haworth’s neighboring communities that will become more comprehensive. The routes for bicycles, pedestrians, automobiles and scooters will be interconnected and continuous. In this manner the disjointed nature of the piecemeal facilities will be eliminated in favor of opportunities to traverse town and arrive at a variety of desirable destinations. Some of those destinations will include the Chestnut Bend bus station, the government complex, the shopping district, the schools, the houses of worship, and the parks. This will encourage the use of non-motorized (and low motorized in the case of scooters) means of transportation that will serve to reduce emissions, improve the health and well-being of residents and visitors, and decrease congestion.

Protected Environment and Abundant Open Space - As has always been the Borough’s policy, all parks and open spaces (both public and private) will be fiercely protected. The Borough will continue its policy of not disposing of publicly held open spaces, except in the cases where small slivers of land are more appropriately owned by their neighbors. In the future, Haworth will do a more thorough job of protecting street trees and trees on all public properties within the Borough.

Engaged and Responsible Population - From individual actions, behavior and community minded awareness in their everyday activities and adopting a common beneficial ethic, to group projects such as maintaining the community tree nursery and community cleanups, collectively Haworth's residents will attempt to join together to help their Borough become a sustainable community. In the future, Haworth will strive for greater levels of community participation and commitment to promote and support the Borough's sustainability efforts.

Equitable Community - An equitable community is one that offers opportunities for all residents, irrespective of age, gender, religion, race or ethnicity. As an equitable community, Haworth provides affordable housing, access to employment, access to public transportation, and valued community services for all Borough residents.

Government Leadership - Haworth's government will lead by example. They will reduce the waste stream generated by the municipality. They will reduce the Borough's energy use. They will continue to work with surrounding municipalities to explore ways of combining services. And they will explore the use of green building techniques in future public buildings and expansions. These steps will lower operating expenses and set examples for Borough residents, business owners, and other area municipalities.

Green Buildings and Energy Efficient Site Design – Haworth will encourage buildings to be constructed and maintained using a variety of green technologies and techniques, including properly locating buildings to maximize passive solar orientation and winter storm buffering, and influencing the construction materials utilized by encouraging the use of recycled and energy efficient materials.

3.1.2 Haworth's Sustainability History

The value of documenting the Borough's recent sustainability history and accomplishments is to establish a baseline against which additional progress can be measured. Sustainable measures of importance have been implemented within Haworth on a piecemeal basis in recent years, all with good intentions, but without an overall plan and direction that has now been outlined in this Master Plan element. A few of the organizations that have adopted these measures include the governing body, the Planning Board, the Environmental Commission, and the Department of Public Works. Over the past several years:

The governing body has:

- Entered into agreements to purchase its energy in bulk at reduced cost;
- Had a municipal energy audit performed so that a plan for efficiency improvements can be prepared;
- Upgraded the energy efficiency of the Haworth School, street lighting, and to some degree within other municipal buildings;
- Approved solar panels for strategically located street lighting poles;
- Initiated a municipal tree farm, arranging for the site, materials, and volunteers to oversee and run it;

- Initiated recreational programs specifically targeted to promote healthy lifestyles for children;
- Created the inaugural 5K Run to promote healthy lifestyles for both adults and children;
- Erected “No Idling” Signs at the Haworth School;
- Promoted food drives at the Post Office and Borough churches, to help promote an equitable community where no one needs to go hungry;
- Adopted a policy of no disposition of publicly owned open space;
- Begun an annual Health Fair for residents and guests;
- Supported and promoted blood drives to support the regional blood bank;
- Promoted scouting for boys and girls as a way of promoting environmental stewardship and knowledge of outdoor living skills;
- Enacted an ordinance governing the recycling and disposal of construction and demolition debris;and
- Supported the philosophy of creating a walkable community.

The governing body has shown some potential interest in the banning of or restrictions on:

- styrofoam;
- leaf blowers above certain temperatures;
- excessive use of fertilizers;
- the use of water and chemicals on golf courses;

The governing body has also shown some potential interest in:

- low water usage lawns;
- home composting;
- beekeeping in isolated locations;
- regulating the keeping of hooved animals and chickens;
- offering LEED building incentives;
- promoting bat houses;
- encouraging re-usable coffee mugs and water bottles;
- smart utility meters for houses and other buildings;
- conducting an annual Green Fair; and
- supporting the use of mulching lawn mowers.

The Planning Board’s accomplishments include:

- the recognition and protection of critical environmental areas in both the master plan and the zoning ordinance;
- the preparation of the Borough’s first Conservation Plan Element for their Master Plan;
- the preparation of a new Land Use Plan Element for their Master Plan that places strong emphasis on environmental protection;
- the creation of a new residential building zone that reflects the prevailing dimensional and environmental conditions in a specific section of the Borough, and protects those features by diminishing the likelihood of higher density redevelopment;

- participation in two cross-acceptance processes of the N.J. State Planning Commission's State Development and Redevelopment Plan. Working with the Bergen County Department of Planning and Economic Development, Haworth's Planning Board mapped the entire borough in compliance with SDRP standards. In doing so they documented most of their lands as being in the Environmentally Sensitive Planning Area, while others were identified as Critical Environmental Sites;
- the preparation of a Housing Element and Fair Share Plan that once implemented would provide more equitable housing by expanding alternative housing opportunities within the Borough;
- the land use re-designation and pending rezoning of lands which are encumbered by an abundance of natural resources to watershed and environmentally sensitive lands from their previous inappropriate designations as residential and business properties; and
- the creation of ordinances requiring a three pronged approach for evaluating the environmental impacts that could be anticipated from development proposals as part of the development approval process. It begins with an environmental checklist, followed by an environmental assessment if required, and concluding with an environmental impact statement for the most serious of cases.

Haworth's advisory Environmental Commission has also had sustainable land use accomplishments, including:

- the preparation of an environmental resource inventory;
- the updating of the ERI large scale map exhibits on display in the council chambers;
- the organization of annual town clean-up day;
- obtaining two Smart Growth grants for environmental initiatives;
- conducting environmental education programs for residents and students; and
- mapping NJDEP c-1 anti-degradation category lands.

Even Haworth's Department of Public Works (DPW) has made sustainability in their activities a priority. Some of their recent accomplishments include:

- conducting recycling education sessions for Haworth School students in grades K-3;
- installing timers on Borough lights, the pond fountains, and the Borough's HVAC units;
- installing recycling containers within the Borough parks;
- implementing a "No Idling" policy for any stops other than those of extremely short duration;
- disseminating information on the value of recyclable materials to residents through their tax bills;
- making concerted efforts to reuse materials that might otherwise reach the waste stream; and
- creating a brine snow removal system at no cost to Borough residents.

3.2 PROPOSED SUSTAINABILITY PLAN

The recommendations contained in this Sustainability Plan fall into a few different categories. In some cases they recommend new or revised ordinances. In other cases, they reinforce the Borough's existing ordinances or policies. In still others, philosophical or behavioral recommendations are offered with the intent of urging all who operate in any fashion within the Borough to become more thoughtful in their actions and objectives. Some of the recommendations are tangible while others are less so. Wherever possible, references are provided either to other documents that address these issues, or ways for people to participate in this communal effort towards a more sustainable community.

3.2.1 Community Awareness, Education and Publicity

Effective means of accomplishing this are to:

- Add a "green page" to the Borough's website announcing the Borough's green and sustainable initiatives. Invite the public to get involved, or to at least adopt green ethics into their everyday activities.
- Add a periodically changing "green message" to all government emails, reminding residents of small steps they can take to contribute to the community effort. Try to instill the idea that to "think globally and act locally" can reap cumulative benefits.
- Create sustainability educational exhibits for display at Green Fairs and at the Borough's Farmers Market. These should be small steps residents can reasonably take to contribute to the effort, both on their own properties and in the manner in which they go about their local business. This should be spearheaded by the Green Team and/or the Environmental Commission.
- Recognize sustainable and green businesses that distinguish them from others by citing them in the Borough newsletter and with celebratory window stickers.
- Engage and educate the public on the effect of behaviors and consumption patterns on the environment. Acknowledge our need to consume natural resources for our sustenance, but impress upon them that this can be done responsibly by not depleting them to the point where they cannot adequately replenish themselves. Information on these topics can be gleaned from Sustainable Jersey (sustainablejersey.com) and the Association of New Jersey Environmental Commissions (ANJEC; www.anjec.org).
- Provide easy access to information and demonstrate the effects of behavioral changes, obtainable from the same sources as above. The more this can be done electronically without adding more printed material to the waste stream, the better the effort. However, some printed materials should be easily available to the public by distributing copies to the library, schools, town hall, houses of worship, and any senior center that may arise.
- Integrate environmental education into the school curricula. This can be done in numerous ways. Distribute reading material that has environmental messages to the Haworth School and the regional high school. Emphasis should be on local documents such as Environmental Resource Inventories, Conservation Elements, and Sustainability Elements.

- Invite the schools to take field trips into the local natural areas, and have volunteers talk to the students about their environment and its value. Encourage the establishment and continuation of student Environmental Clubs, and encourage students to become involved in local sustainability affairs.
- Take advantage of communication media, including electronic mediums, Borough newsletter, bulletin boards and print media.



Haworth's Farmers Market

3.2.2 Climate Change/Green House Gas Emissions

While some still debate the impacts or even the existence of a phenomenon known as climate change, and others dismiss the deleterious effects of greenhouse gas emissions, most scientists today are convinced that at the very least these factors contribute to a deterioration of environmental conditions. Prudence, therefore, suggests that the most responsible position to take is to heed the warnings until these theories are definitively disproven, if ever.

3.2.2.1 Energy conservation measures in public buildings and rights-of-way

- Energy audits of all public buildings should be conducted. Each audit should include a cost-benefit analysis that estimates payback periods. Once these have been completed, the recommended improvements should be prioritized to maximize energy efficiency. A municipal budget should then either be created or strived for so that they are tackled in an organized and timely fashion.



Borough Hall



Public Library



Fire House



Ambulance Corps

- One easy improvement that will clearly reap benefits is that incandescent bulbs in public buildings can be replaced with light-emitting diode (LED) bulbs. Haworth has already initiated this program on a small scale in the Borough Hall. It should be noted however that some believe downsides exist with these bulbs, so this item requires some time tested data that is not yet available.
- The Haworth School is now awarding a contract to install a new ventilation system throughout the building to coordinate the work of its three boilers. This project will equalize temperatures in the building and conserve energy.
- Wherever it is within the purview of the Borough, solar panels to power street lights, electronic signs, etc. should be installed. Otherwise, the utility company that has jurisdiction should be lobbied to make these improvements. As shown below, this has already started in Haworth.



Solar Panel



Solar Panels

- Encourage anti-idling, or turning off vehicular engines when standing. Idling of vehicles is extremely inefficient and a source of much air pollution. Therefore, all vehicular trips that are subject to frequent stops, e.g. police stops, inspectors, mail deliveries, and public works and utility company vehicles, should all practice shutting off engines during those short stops.

3.2.2.2 Energy conservation by residents

- Energy audits of private houses should be conducted. The utility companies that service our region offer attractive programs to accomplish this efficiently and effectively at different times. Most of the products required to accomplish their recommendations are obtainable from local hardware stores, specialty vendors, and nurseries. Several of their recommendations should include:
- Install motion detectors for indoor and outdoor lighting. In this manner, unnecessary energy for lighting won't be expended in locations where lighting is not needed. These detectors also provide security.
- Install high quality storm doors and storm windows. High "R" values for glass surfaces are recommended for insulation. Tight seals are important for windows and doors.
- Add caulking into drafty joints; and re-caulk those joints where the caulk has dried out and/or crumbled away. These joints generally occur around doors and windows.
- Add insulation wherever there is excessive heat transfer. Typical locations include attic floors, garage ceilings beneath indoor habitable space, outside building walls, basement ceilings, and heat ducts and hot water pipes that traverse unheated spaces such as garages.
- Replace air filters on a regular basis in your furnace and air conditioning systems. Clean filters promote more efficient functioning of these appliances and make for a healthier indoor environment.
- Install power strips in various house locations so that when you power down certain appliances, everything plugged into that power strip also powers down. The value of doing this is that many appliances draw small amounts of power even when they are in the off position.
- Install fans for both summer and winter use. Ceiling fans can be used to circulate the air in the warm weather months, and keep warm air down within the human living zone during the cold weather months. Window and other horizontal fans serve to create air movement and cooling.
- Plant deciduous trees on your house's southern and western exposures, but not so tall that they block solar panels. These two exposures are most susceptible to the overheating effects of the summer sun, and the dense foliage of shade bearing deciduous trees intercept the direct sunlight to cool their shadier sides which in this case includes the house. Care should be taken to not intercept sunlight that shines on solar panels because that would defeat or minimize their purpose.



Shade on Southern and Western Exposures

- Plant evergreen trees on your house's northern and northwestern exposures. These two exposures are most adversely affected by winter winds and storms. By planting dense evergreens on these exposures, homeowners can replicate the buffering effects of northern climate shelterbelts that absorb the energy of winter storms that would otherwise impact your residential structure.



Evergreen Buffer

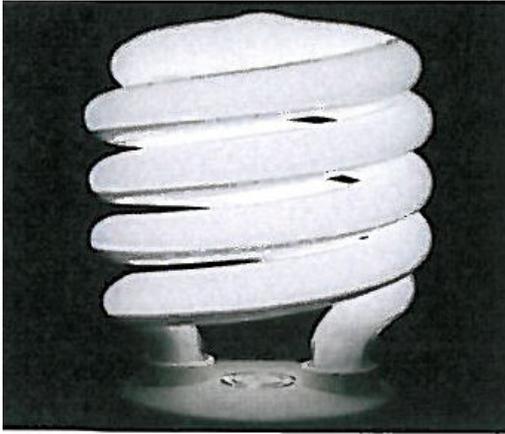


Evergreen Shelterbelt

- Install glass fireplace doors and heat return blower systems in your hearth. Fireplaces are notorious for sucking heat out of houses and up and out of the house through the chimney. Glass doors can prevent that heat loss; and heat return blower systems capture the heat generated by the fire and redirect it from the chimney into the living space. They do not blow unwanted smoke into the house since they collect their heat at the bottom of the fire and the smoke is only present above the fire.
- Install solar covers over pools and spas. These prevent heat loss by minimizing heat transfer to the surrounding air mass when the water is warmer than the air. They also minimize evaporation which is the number one cause of energy loss.
- Replace incandescent bulbs in frequently used fixtures with compact fluorescent bulbs. Fluorescent lighting uses significantly less energy and creates far less energy loss to heat than does incandescent lighting. Fluorescent light bulbs also last much longer. The other side of that coin is that fluorescent bulbs are more expensive than incandescent bulbs, and their disposal is problematic due to their hazardous components. There is strong support in the industry for the continued use of incandescent lights in less frequently used fixtures that are not subjected to the constant strain of turning them off and on.
- Encourage anti-idling, or turning off vehicular engines when standing. Idling of vehicles is extremely inefficient and a source of much air pollution. Therefore, all vehicular trips that are subject to frequent stops, e.g. to and from school, to the local store for a quick stop, etc. should all practice shutting off engines during those short stops.
- Encourage the use of energy star appliances. These appliances have been rated as being at the top of their industry in energy efficiency.

3.2.2.3 Energy conservation by businesses

- Energy audits of business space should be conducted. This should be a cooperative effort between landlords and tenants since the benefits should be reaped by both parties.
- Incandescent light bulbs should be replaced by installing LED and/or compact fluorescent bulbs, for all the reasons cited above. Business light fixtures are generally in the “on” position for long periods at a time making them prime targets for the more efficient bulbs.
- Encourage anti-idling, or turning off vehicular engines when standing. Idling of vehicles is extremely inefficient and a source of much air pollution. Therefore, all vehicular trips that are subject to frequent stops, e.g. delivery vans, should all practice shutting off engines during those short stops.
- Install motion detectors for indoor and outdoor lighting. In this manner, unnecessary energy for lighting won’t be expended in locations where lighting is not needed. Businesses are notorious for leaving unnecessary lighting on.
- Install high quality storm windows and storm doors for retail businesses. High “R” values for glass surfaces are recommended for insulation. Tight seals are important for windows and doors. Retail establishments should also keep their doors closed to contain heat and air conditioning.



Compact Fluorescent Bulb



Store Fronts

3.2.3 Renewable Energy

The intent is to promote the use of renewable energy sources, minimize the use of fossil fuels, and also to influence their design for community compatibility so that they do not become objectionable to neighbors.

3.2.3.1 Solar energy systems in homes

- Consider installing new or used solar energy systems and panels. The availability of used panels both domestically and internationally is an emerging industry as early solar energy system installations become upgraded by their owners.
- Installations should be on roof tops with the proper orientation (south to west) and access to direct sunlight only. In rural areas, solar arrays have been erected on the ground, but this would not be acceptable in a developed suburb such as Haworth for aesthetic compatibility reasons.
- Do not screen these systems from access to the sun from the east, south or west.

3.2.3.2 Renewable energy systems in businesses

- Encourage the installation of solar panels on business roofs, particularly on large surfaced flat roofs. The Borough could offer incentives to those businesses since they enhance the energy consciousness image of the Borough. Recently, the City of New York enacted an ordinance offering tax abatements for solar panel installations. The State of New Jersey periodically offers tax incentives for these systems.
- Support wind power in cases where they do not create adverse impacts that would harm residential properties. United Water Resources along Lake Shore Drive is a prime candidate for such systems for two reasons. First, the open water reservoir provides exposure to higher wind velocities than is available elsewhere within the

Borough. And second, there are no residences within close proximity that could be considered to be sensitive receptors to noise.

- Passive windmills leading to quiet generators are reasonably acceptable since the impacts they generate that some might consider adverse are limited to the visual impact of the turning windmill.
- Windmills that power turbines are less acceptable since these turbines frequently generate objectionable noise.
- Insure that all businesses that generate renewable energy have arrangements to sell the excess energy they generate back to the power company.

3.2.3.3 Renewable energy systems in public buildings

- Investigate the benefits of installing solar panels on the roofs of the government complex, including Borough Hall/Police Station, and the existing and future expanded library building. The Haworth School may be another candidate. Many municipalities are investigating doing this, and the Borough of Old Tappan, N.J. has recently completed a comprehensive installation on their public buildings.



Flat Roofs of Haworth School

- Houses of worship are excellent candidates for roof top solar energy system installations. This is because they are generally open no more than two days per week, and that infrequency of energy use creates a situation where more energy is generated than consumed and the excess energy available to sell back to the power company is maximized. GreenFaith, an organization that has its roots in Haworth, is promoting this activity with houses of worship of all faiths.



Flat Installation



Tilted Installation

3.2.4 Green Building & Design

The intent is to encourage and reward those who incorporate green techniques and features into their building and site designs. To promote this municipal objective, Haworth will strive to add green design elements to the Borough's recently updated site plan and subdivision checklist. In this manner, the reviewing agents, the applicant, and most importantly the interested public can become cognizant of their value. As has been the Borough's practice, the draft language should be prepared by the Planning Board with input from the Environmental Commission, and then the ordinance revisions should be forwarded to the governing body for enactment.

3.2.4.1 Water conservation

Water conservation is a prevalent issue in terms of both its quantity and its quality, and the recommendations below address both aspects.

- Encourage turning off the tap when not in use. There are many activities that use water intermittently where water can be saved by not allowing it to run when not being used. Some examples include washing both dishes and automobiles. This habit can also be put to use in individual's personal bathing and hygiene.
- Low-flow faucets, showerheads and toilets can be installed to reduce rates of water consumption. Modern models have been created that replicate the performance of the full water pressure fixtures we grew up with.
- The Borough should support efforts to construct green roofs. This can be passively accomplished by reviewing agents by their not objecting or placing undue barriers to those who choose to pursue this feature. Green roofs absorb storm water and reduce runoff. The excess runoff that is not absorbed in the green roof is then pretreated by the plants that take up pollutants into their flesh to improve its water quality. Green roofs support plant materials that absorb carbon dioxide and exude oxygen. They also moderate the temperatures beneath them by creating an insulating barrier to heat loss. Additionally, on flat roofs they can be

designed to provide additional outdoor living space. The country of Germany and the City of Chicago, Illinois are world leaders in the green roofs movement. Recently, the City of New York enacted an ordinance offering tax abatements for green roofs.



With an area of 30,000 square feet, the facility's green roof is the largest in Connecticut. A selection of low-maintenance sedums on a lightweight soil base adds another layer of seasonal interest to the site.

Green Roof in Connecticut

- Rain barrels should be commonly installed on leader drains from gutter systems. The capture of this water provides a supply for secondary uses such as watering gardens, washing down patios, etc. Rain barrels are available at some hardware stores and through on-line shopping, as well as through County environmental agencies. We also recently saw them for sale at a Rutgers University environmental fair in New Brunswick on Rutgers Day held each April.



Rain Barrel with Spigot and Hose

- A reverse French drain is either a perforated or porous walled pipe installed below grade and protected against silting by filter fabric. Instead of draining away water from saturated areas as is the conventional function of a French drain, they are used to capture roof water conveyed via leader drains and deliver it directly to the root systems of plants. Consideration should be given to installing this passive irrigation system in appropriate situations. Examples of such situations are those locations beneath extensively wide eaves or roof cover where plants wouldn't otherwise receive enough rainfall to survive without mechanical irrigation. This technique increases the amount of planting locations that are available. Caution should be afforded to avoiding the introduction of too much water against foundation walls where interior damage might result. Ideal situations are adjacent to foundations of slab-on-grade structures without basements.
- Encourage the introduction of rain gardens into drainage design. These are earthen depressions that are planted with absorptive native plant materials over a porous subgrade. They serve to slow down and reduce the quantity of surface runoff, absorb pollutants, and replenish the groundwater supply. They also serve as valuable wildlife habitat. The 2004 N.J. Stormwater regulations encourage rain gardens in drainage design. Much information is available on-line, from NJDEP, from environmental organizations, and from certain plant nurseries. At least one rain garden already exists in Haworth on a private residential lot. This was a collaborative effort of the homeowners and Bergen Save the Watershed Action Network (SWAN), an ad hoc environmental advocacy group.



Rain gardens mimic the natural absorption and pollutant removal abilities of a forest, meadow or prairie. By directing rainwater from the roof, driveway, sidewalks or streets into a rain garden, it is allowed to slowly soak into the ground, filtering out contaminants, and cleaning the water. Rain gardens can absorb runoff as much as 30-40% more efficiently than conventional lawns.

- The general public and Department of Public Works should be educated about proper fertilizer use. Serious consideration should be given to the use of organic fertilizers. The application of fertilizers with the proper chemical composition for the intended use is commonly overlooked. The importance of application rates is also commonly undervalued. In the former case, grass plants require significantly different chemical components than do other plant types. One of the most common differences is alkaline versus acidic loving plants. Additionally, fertilizers with overly high nitrogen rates create deleterious effects on surface waters. Native plants often require no fertilizer additives. In the latter case, the over application of fertilizer results in it not being absorbed, running off and adversely affecting downstream water quality. The most contemporary information is available from the Agricultural Extension Agency.
- Vehicles should be properly and regularly maintained to reduce gas and oil drippings and the shavings from brake linings. The chemicals from the drippings and the heavy metals from the shavings contaminate downstream waters.



Haworth DPW

3.2.4.2 Increased recycling

- To promote voluntary compliance, keep recycling convenient by maintaining weekly curbside pickups augmented by providing a drop off site for presorted materials at the Borough's Department of Public Works (DPW).



Drop Off Site Aids Recycling Compliance

- Periodically increase the number and variety of materials that residents can recycle. This can be accomplished by researching cost effective means of disposing of the materials. "Cost effective" in this case either means that the Borough receives payment for the sorted material, or the cost to the Borough for its disposal is less than that of trash disposal. NJDEP may be of assistance in finding receiving sites for recycled materials. By adopting this policy, the DPW

would assist the Borough in complying with the District Solid Waste Management Plan.

- Recycle used oils in addition to solid materials. Motor oils and vegetable oils both have markets for recycling them. A central location for receiving used oils can be established at the Borough DPW where it can then be recycled in large quantities to benefit the community. The Borough should consider adding these materials to its recycling ordinance.
- Recycle white goods. The benefits of not landfilling these old appliances can outweigh the cost of dismantling them and recycling their components. Some appliances contain hazardous materials that should not be landfilled.
- Recycle batteries in licensed hazardous disposal sites. Leaking batteries can be caustic and hazardous. It may be practicable for the DPW to collect batteries and properly dispose of them in a safe manner.
- Recycle consumer electronics either in licensed hazardous disposal sites or with the Bergen County Utilities Authority. A viable industry has arisen to harvest usable components from obsolete electronics and reuse them in other markets. This is another area where the DPW may be able to serve as a collection point for the community.
- Avoid using plastic bags. If they must be used, recycle them either through the DPW, certain supermarkets, or by giving them a second life for your trash.
- Instill awareness of the importance of recycling by initiating a sticker warning system for violators who place recyclable materials in their trash. Some communities will place a sticker on the trash of repeat violators and will not take the trash.
- Recognize that some senior citizens find recycling difficult and inconvenient. Some communities have enlisted boy scouts and girl scouts to assist seniors in setting up home collection points and carrying their recycling barrels out to the curb for municipal pickup.

3.2.4.3 Reduced auto use

The intent is to lessen residents' dependency on the automobile to the extent practicable.

- The Borough can assist in this endeavor by promoting shopping locally for those items available from Haworth retailers. Shoppers can also be reminded to try to combine their local trips by planning ahead, thereby reducing their total driving. This effort must recognize that shoppers have many needs that cannot be met in Haworth's limited downtown. But this effort can make an incremental difference. It can also serve to support the local merchants' businesses which contributes to Haworth's sustainability.
- Encourage a variety of downtown shopping opportunities to minimize need to drive elsewhere for consumer needs. With full recognition that large stores are neither feasible nor desirable in Haworth, a variety of small stores that duplicate one another's wares to the least extent possible can be very valuable. Section 1.2.5.2 of the Borough's Master Plan 2006 Land Use Plan Element supports the

continuation of Haworth's heterogeneous and locally owned one-of-a-kind stores and offices in a pedestrian oriented configuration, and recommends that this goal be promoted through local land use ordinance revisions.

- Encourage all ground floor establishments in the downtown area to be retail businesses. Office uses should be encouraged to be located or relocated to an upper floor. This can be governed by a land use ordinance revision.
- Promote and encourage carpooling by establishing a signup on the Borough's website that serves to match up residents and destinations with each other.

3.2.4.4 Tree preservation

Haworth's trees represent some of the Borough's most valuable assets. Trees provide beauty, shade, climate control, reduction of glare and reflection, pollution absorption, oxygen creation, architectural enhancement, air cleansing, water absorption, firewood fuel, lumber, erosion attenuation, buffering, screening, habitat, noise reflection and absorption, increases in property values, nutrients, peace and tranquility, and pharmaceutical constituents, among other benefits. They also establish the vernacular of a community and create a baseline against which land use alterations can be measured and contrasted.

- Discourage indiscriminant tree cutting. Haworth should strengthen its policies that protect trees, beyond just those that exist within the public right-of-way or on public property. Borough ordinance #947 from 2006 addresses this issue and governs such disturbance in Section 16-7 Protection of Trees on Streets, Roadways, Rights-of-Way, Parks, Recreation Areas and Other Public Property.
- One very effective way is to take advantage of recent past court decisions that support the right of communities to adopt a tree preservation and removal ordinance. The balance that must be reached is to not usurp property rights beyond those provisions that serve a clear public purpose. The Borough is considering preparing such a strengthened ordinance.
- The most effective tree preservation ordinances are those that emphasize the preservation and protection of existing trees. Unfortunately, too many ordinances place their emphasis on replacement plantings which should be a consideration that is secondary to the preservation of mature and healthy trees.

3.2.4.5 Native planting

American gardens have featured exotic plants and species imported from elsewhere and available in commercial nurseries for the past century or more. The reasons are understandable. Many who are interested in landscaping prefer the ornamental aspects of these foreigners and place too high an emphasis on this feature that plants provide. Unfortunately, the environmental and horticultural impacts of this approach to landscape design have not been widely known until the recent past. The downsides to ornamental plantings are that they generally require high levels of maintenance, and high application rates of fertilizers, herbicides and pesticides. Some of these

species are also very aggressive in their propagation rates and tend to out-compete native species for space, thereby altering the natural ecology.

There are numerous benefits to be derived from planting native and naturalized species. They generally require much less maintenance than do exotics. They cannot be considered intrusive since they exist in their natural habitat. They are in balance with the local ecology, utilizing nutrients and moisture in a sustainable manner, allowing these resources to adequately replenish themselves. Native species provide desirable habitat for wildlife. And among other benefits not discussed here, their natural cycles are in sync with the cycles of native wildlife. For example, they flower when wildlife is in prime condition to be seduced into taking the flower bait, resulting in assisting in their propagation. They fruit at just the appropriate time when wildlife is seeking that fodder. And they provide safe cover for wildlife seeking security for breeding and nesting.

- Native plantings generally do not require chemical additives to help them thrive. As a result, if residents are encouraged to plant native species the efforts to discourage pesticides and herbicides become more reasonable and acceptable. Unfortunately, most local nurseries have only enough room in their yards to carry the most popular plans which historically have been the exotic species. A little research into outlying nurseries, however, will uncover numerous rural and exurban nurseries that carry or even specialize in native plants. It may take a little more effort, but this effort contributes to the community's sustainability.
- The Borough should make use of the information provided in the Haworth Shade Tree Inventory, Summer 2009, which is the Eagle Scout Project prepared by resident Ricky Holden. Its data should be interpreted so that recommendations can be formulated for a preemptive replanting and infill planting program. For example, street tree vacancies have been identified, and these should be the primary locations for new tree plantings. Also, the planting of species other than Norway Maples and Red Maples would assist in reducing their dominance in Haworth's landscape which is currently too high at 40% of all trees. This would have the beneficial impact of increasing the biodiversity of Haworth's tree stand. Additionally, the close proximity of 23% of the Borough's street trees to overhead utility wires is factor that should be monitored and reduced when new trees are planted.
- The Borough should initiate the next logical step for the Borough Tree Nursery by distributing its native trees into the community.



Typical Municipal Tree Nursery

- The Borough should encourage xeriscaping. This term comes from the Greek word “xeros” which means "dry", so xeriscaping means dry landscaping. This is a type of planting that utilizes water-conserving techniques such as the use of drought-tolerant plants, water absorbing mulch, and natural irrigation. A xeriscape garden already exists in Haworth on the grounds of the United Water Resources treatment plant.



United Water Resources Xeriscaping

- The forestry division of NJDEP periodically distributes native seedlings, either for free or at a nominal cost. Often the only difficulty with this program is arranging a truck to arrive at their distribution site to pick them up. This program is quite beneficial and worth the effort when either reforesting an area or replacing tree saplings in Haworth's tree nursery.



Replacing lawns with flowers, native grasses and native plants can greatly reduce the need for pesticides, weed killers and inorganic fertilizers that run into the water system during storm events, polluting all water bodies and potentially polluting drinking water. Using native plants also reduces the amount of water needed for garden upkeep.

3.2.4.6 Avoiding disturbance of natural resources

This effort has gained immensely in importance as the open spaces throughout our region have dwindled. Previously, the removal of forests and the disturbance of natural resources was an accepted component of site development. Today's development model strives to focus first and foremost on redeveloping formerly disturbed sites. Failing that, we strive to protect the natural resources on a site by placing the highest emphasis on natural resource protection of all of the site design criteria. Section 26-904.2 Natural Features of Haworth's Land Use Code requires sensitivity towards minimizing the disturbance of natural features and excessive tree cutting in site development.

- Encourage redevelopment over new development wherever possible.
- Discourage clear cutting of undisturbed lots for development.



Undisturbed Lots Have Great Value

- Emphasize the minimization of site disturbance in site plan creation.
- Utilize the Borough's Environmental Assessment Regulations to explore reasonable alternatives that minimize disturbance. In 2011 Haworth's Planning Board endorsed and sent a revised land use ordinance to the governing body for enactment that strengthens these regulations and provides for a stepped process of review depending on the significance of the proposed action.
- Create and enforce a ban on all-terrain vehicles and dirt bikes in natural areas by ordinance.
- Discourage the deposition of any foreign materials in the Borough's open spaces by ordinance. This should include grass cuttings and leaves which are not beneficial to those ecosystems.



High Quality Emergent Freshwater Wetland

- Enforce the Borough's ordinance regulating the collection of firewood from Borough woodlands.
- Prohibit the cutting of live wood and other plants within the Borough's open spaces by ordinance.
- Limit the collection of firewood from woodlands to branches and small logs. Larger fallen trees provide rich habitat and should be left to degrade naturally.

3.2.4.7 Proper maintenance of ornamental planting

It is understood that in the real world, ornamental planting is a reality. There is aesthetic value to planting exotic species that are not commonplace on residential properties. When people plant ornamentally, however, they oftentimes inadvertently plant invasive species. It is important, therefore, to maintain these plantings in a responsible manner.

- The most important thing to do in these cases is to decrease the use of herbicides, pesticides and fertilizers. If these planting assist treatments can be minimized or eliminated, many deleterious effects can be avoided. This requires educating the public about the available alternatives.
- When using fertilizer, serious consideration should be given to using organic fertilizers. These do not have the adverse effects of chemical fertilizers.
- Be fully cognizant of when certain ornamental plants begin to aggressively spread. They are propagating themselves when they do this, and it usually means that nearby native plants are going to be out-competed and replaced.
- Encourage Integrated Pest Management (IPM) methods for pest control for ornamental plantings. IPM is an environmentally sensitive approach to pest management that has proven to be effective. IPM uses extant knowledge of the life cycles of pests and how they interact with the environment as its guiding principal. IPM uses this information along with other more conventional pest management methods to economically minimize pest damage while minimizing hazards to people, property, and the environment. Information on IPM can be obtained from ANJEC and the NJDEP.
- Encourage and/or negotiate the employment of Best Management Practices (BMP's) on White Beeches Golf and Country Club to the same extent they are required on the Haworth Golf Club. When the settlement agreement was reached between the Environmental Defense Fund and United Water (UWR), one requirement was that those lands to remain as golf courses would employ BMP's as defined by NJDEP. That requirement does not govern White Beeches, and the Borough should strive to receive the country club's commitment to do the same by appealing to their sense of contributing to a sustainable community. After all, they too rely on pure water from their neighboring reservoir.



Men at Work

3.2.5 Land Use & Mobility

Numerous benefits can be derived from thoughtful land use policies and improved mobility. Unfortunately, the suburbs of northeast New Jersey were not developed with those objectives in mind. Therefore it becomes the more difficult task of retrofitting our existing infrastructure to more closely approach these objectives.

3.2.5.1 Safe routes to school

- Make walking and bicycling to school safe, convenient and enjoyable by employing some of the methods below. Promote its benefits in the schools with the students and with the Parent Teachers Association.
- Consider installing traffic calming devices along the primary routes to schools. These can include speed humps, speed tables, informative signage, curb extensions, and visually apparent crosswalks. NJDOT has a library of traffic calming techniques available for communities to learn about.



Visually Apparent Crosswalk

- Identify those more distant locations on common desire lines towards school that would benefit from traffic calming.

3.2.5.2 Non-motorized transportation routes

- Improve pedestrian and bicycle accesses to the buses that utilize the Chestnut Bend station. This is the only true bus station in Haworth with direct access to Manhattan, and getting to it conveniently and safely by non-motorized means should be a community objective. This can be accomplished by means of continuous sidewalks and marked bicycle routes.
- For those who must access Chestnut Bend via motor vehicle, provide an off-street parking facility. If adequate parking is available, more residents would be inclined to utilize the one mode of mass transportation available to them.
- Complete interconnected bicycle routes in a planned fashion within and throughout town, both on and off road. These can include designated paths, separate lanes, or simply share the road and route signs. Wherever adjoining communities have designated bike routes, Haworth's routes should provide connections to them. This should be planned by professionals and adopted by ordinance.



Route Marking on Streets

- The pedestrian routes within and through the town should be completed, both on and off road. Many trails and sidewalks already exist, but they are not continuous in all cases. These routes can include both sidewalks and off-street trails.



Off Road Trail and Pedestrian Bridge



Sidewalks Promote Pedestrian Safety

- Interconnect vehicular, pedestrian and bicycle routes. In this manner, the functionality of these transportation routes will become enhanced, particularly when more than one mode is required to arrive at one's destination.



Interconnect Sidewalks, Walking Trails and Bike Routes

- Identify and caution users at all points of pedestrian/vehicular conflict so that users can be cautious and on the alert for others.
- Enhance the pedestrian environment to make it more pleasant and enjoyable. Encourage walking by providing benches, sitting areas where people can interact with one another, and decoratively (but non-invasive) planted areas in appropriate locations along the routes.



Benches, Trash and Recycling Containers Enhance the Pedestrian Experience

- Provide secure bicycle parking facilities at popular destinations, i.e. Chestnut Bend, Borough parks, the downtown, the government complex, the houses of worship, the schools, etc. Consider installing an enclosed bicycle parking facility at Chestnut bend for those who leave their bicycles for long periods of time.



Secure Bicycle Parking

- Interconnect culs-de-sac and disconnected streets via non-motorized paths to improve circulation, accessibility and the connectivity between neighborhoods.

This can be accomplished with paths on Borough owned rights-of-way where available, and easements over private property. The benefits of connectivity should be emphasized to those property owners who fear the compromise of their privacy by permitting a public path on their property.

- Link public parks and undeveloped public lands with trails. The synthesis of consolidated and linked open space creates one of those situations where the value of the whole system exceeds the sum of its parts. It also promotes and supports linear passive recreation. Haworth is fortunate to have a large inventory of publicly owned open spaces through which these links can be made.

3.2.6 Waste Management

Reducing waste benefits us in numerous ways. Some of those ways include: (a) reducing the stream of garbage headed for the landfill or resource recovery plant; (b) reducing the amount of land required for waste management and landfilling; (c) reducing the costs of waste management; (d) reducing the need to create more non-biodegradable materials; (e) reducing the consumption of natural resources; (f) giving products a second and possibly third life by reusing them in some creative fashion; (g) reducing air pollution; and (g) reducing groundwater pollution, among others.

3.2.6.1 Reducing waste through increasing composting

- Encourage the home composting of kitchen waste. This practice reducing the amount of kitchen waste that goes into the trash collection and landfilling system, thereby reducing both management and collection costs and the dedication of resources towards that system. It creates high quality compost for our home gardens, thereby promoting better plant growth and reducing the quantities of compost that must be manufactured and purchased commercially. Home composting bins are available from numerous environmental and government organizations at very reasonable costs. Contact ANJEC, Sustainable Jersey or the Bergen County Environmental Council for direction.



Home Composting Bin

- Encourage subsurface dog waste composting barrels. Typically, residents discard dog waste in plastic bags in their garbage that gets picked up by municipal carters. Dog waste composting barrels permit residents to dispose of this material in an environmentally sensitive and cost effective manner, and with no objectionable impacts or odors. They are effectively completely buried bottomless cylinders.

3.2.6.2 Reducing waste through community education

- Encourage residents to “cut it and leave it” for grass their cuttings. Professional landscapers are required by local ordinances to collect these clippings and dispose of them outside of the community. Local residents who mow their own lawns can remove the collection bags and allow the clippings to decompose on their lawns, thereby creating a free and natural fertilizer. Even more effective than conventional lawn mowers are the newer model mulching mowers that cut the blades of grass to an even finer degree. The community should consider allowing the professionals to do the same, provided they do so in a responsible and neat manner without impacting neighboring properties. This practice reduces both the costs involved in hiring carters, and the quantity of fertilizer that must be purchased for residential lawns.
- The Borough can publicize an anti-littering campaign. This can result in a cleaner community, fewer DPW costs for cleanups, less waste finding its way into our waterways, and elevating the character of the community.
- The Borough can promote reduced aerosol use. While the benefits will not be perceived on a municipal basis, reducing damage to the ozone layer will have health and climate change benefits.

3.2.6.3 Increasing residential recycling compliance

- The Borough can publish the comparative costs to the municipality for waste disposal versus recycling. Periodically, the recycling of some materials brings revenue into the Borough. More frequently, however, we must pay recycling companies to collect and recycle the material we collect. Nevertheless, the municipal costs to pay for recycling are surpassed to a large extent by garbage and trash disposal. This disparity should be made public information on a regular and updated basis so that residents understand the impact recycling has on their local property taxes.
- Oil recycling should be encouraged. This can include motor oil as well as vegetable oil. The recycling of motor oil protects our environment by avoiding the more noxious methods of its disposal that pollute, and therefore it is worth the cost to the Borough. In contrast, for the first time on record, vegetable oil actually can bring revenue into the Borough through recycling. New contemporary uses for reused vegetable oil have created the demand that caused this phenomenon. The DPW should contact Bergen County for information on municipal collection and disposition of vegetable oils.

- While Bergen County recycles old electronic equipment brought to them by County residents, some municipalities have made this more convenient for their residents by providing a collection point at their DPW. When enough materials have been collected locally, they are trucked to the Bergen County Utilities Authority site in Little Ferry by the municipality where they are dismantled and their components recycled to the extent possible at no additional cost. The importance of recycling these as opposed to disposing of them is threefold. First, there are several hazardous components in electronics that should be kept out of the waste stream. Secondly, the waste stream is reduced by reuse. And third, reusing serviceable electronic components reduces the demand to manufacture new ones, with all the attendant energy and resource needs thereby avoided.
- Paints and other chemicals should also be recycled in the same manner and for the same reasons as electronic equipment. Municipalities can facilitate keeping these materials out of the waste stream similarly; i.e. collect, store, then recycle.

3.2.6.4 Increasing construction and demolition waste recycling

- Too often, construction and demolition waste gets deposited in landfills rather than finding re-uses for these materials. This exacerbates our limited landfill space problem, requires large amounts of energy for transport, and creates a demand for the manufacturing of new construction materials that could otherwise be provided by reuse of old materials. Haworth should enforce its existing construction and demolition debris recycling ordinance. This ordinance should also be strengthened by adding vegetative waste to the list of items not to be landfilled.
- If not landfilled, construction and demolition waste often gets buried beneath foundations. Masonry can be safely buried provided it is crushed to the extent that it doesn't create subsurface air pockets or voids that can collapse. Wood should not be buried because its decomposition will cause settling above which can become problematic. Gypsum board, wall board, and metals should also not be buried since they emit hazardous components when they decompose. The heavier of these components can seep into our groundwater and escape. The gaseous components can become released into the air causing noxious odors.
- Vegetative waste should be either composted, chipped, or cut into firewood for reuse.

3.2.6.5 Increasing recycling and reuse in municipal operations

- Collect autumn leaves with vacuum trucks. This method avoids the need to bag leaves in paper or plastic bags, thereby reducing the waste stream. It also facilitates windrowing the leaves for the purpose of composting.



Windrowed Leaves Becoming Compost

- Once the windrows have fully decomposed, create a program to redistribute the finished leaf compost to residents' properties. Residents can sign up for however many cubic yards they desire, identify a convenient front yard location for the DPW to deposit it, and pay an amount commensurate with the cost to the Borough. In this manner, recycling of vegetative waste within the community for a valuable reuse is promoted, the sources of the materials are known unlike the purchase of mulch from outside landscapers that may not be free from noxious components, the Borough saves the cost of having it removed, the Borough's landscapes are enhanced, and a sustainable program for a renewable resource coming full circle can be perpetuated. The neighboring Borough of Harrington Park has been providing such a program for approximately twenty years.
- The Borough can also use a chipper machine to chip collected branches and tree limbs, and then the woodchips can be redistributed for mulch. A sustainable program similar to the leaf mulch program described above can be created.



Woodchips Ready for Distribution

- A similar program should not be created for grass clippings. The preferred method for their disposal is the cut it and leave it program described in section 3.2.6.2 of this Element. But the generation of some grass clippings for disposal is inevitable. The Borough should contract with mulch producing companies to collect its excess grass clippings that are not hauled away by private landscapers. The ideal company would be one that composts grass in locations where there are no nearby sensitive receptors for the resulting objectionable odors. Such locations include the old closed landfills in the N.J. Meadowlands. The New Jersey Meadowlands Commission can be of assistance in connecting the Borough with these contractors.
- Provide recycling containers in the downtown and in other public gathering places (i.e. parks) and locate them adjacent to trash receptacles. These help reduce the quantity of recyclable materials that find their way into the trash stream. Several products are commercially available that are quite attractive, and some are even artistic and add beauty to the landscape. Some products have separate compartments for glass, metal, paper and plastic.



Recycling Containers

- One of the best methods of reducing paper waste and tree cutting to create paper is to reduce its use altogether. This can begin with increasing municipal electronic communications. Minutes, correspondence, application materials and the like can all be distributed via email rather than in hard copy. Some communities such as nearby Old Tappan have installed laptop computers on the dais in their Council Chambers for use by the governing body and other Borough agencies.
- When materials must be purchased for government use, the use of recycled paper and other recycled materials serves to offset the need to consume new materials and also reduces the waste stream.



Recycling Vegetative Waste

3.2.7 Food Systems (postponed until phase two)

3.2.8 Water (postponed until phase two)