

**Planning Board and Green Team Review**  
**Final DRAFT**



**Sustainable  
Community  
Plan**

Borough of Leonia  
New Jersey

**Sustainability Element  
*of the*  
Leonía Master Plan**

**Prepared by:**

**The Leonia Green Team  
&**

**Planning Consultant: H2M Associates, Inc.**

**July 17, 2013**

(Back of cover / Print double-sided)

*“Through planning, we can change the way we design and develop our cities and towns. Communities can become more disaster resistant, more sustainable. We have seen it happen.”*

*“The planning process is as important as the plan itself.”*

~Senior FEMA Officials

*“Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it’s the only thing that ever has.”*

~Margaret Mead

## Acknowledgements

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## Executive Summary

By preparing a Leonia Sustainability Plan, the Borough of Leonia is at the forefront of municipal sustainability planning. Leonia recognizes the importance of incorporating "sustainable thinking" into its land use and development decision making processes. Once adopted, this Plan becomes one of the Elements of the Borough's Master Plan (SEMP), an overarching policy document that is meant to guide the land use and development decisions of the community.

**How the Plan was prepared**

This Plan was prepared by the Leonia Green Team Advisory Committee and their Consultant, H2M Associates, Inc., with the financial assistance of a Smart Growth Planning Grant from the Association of New Jersey Environmental Commissions (ANJEC). The Green Team met throughout the preparation of the Plan and promoted the plan via social media and at various public events, including the annual Arbor/Earth Leonia Day Fair and the Leonia Health Fair. A successful Visioning Workshop was held where Green Team members and community leaders facilitated 'topic tables' where discussions focused attention on each of the Plan's sustainability categories. The Mayor and Council, Environmental Commission and other community Boards and Committees were engaged in the process and provided comments. The Green Team members reviewed and edited the Plan in an iterative process including additional public outreach and meetings until a final draft was prepared for submission to the Planning Board, for review and adoption.

**How the Plan is Organized**

This Leonia Sustainability Plan is organized around the following topics of sustainability. These topics are important to Leonia, address the requirements of the Municipal Land Use Law (MLUL), and are recommended by the Sustainable Jersey™ program.

- Energy and Greenhouse Gas Emissions
- Renewable Energy
- Green Buildings, Green Site Design and Green Streets
- Land Use and Development Patterns
- Transportation
- Open Space, Recreation, and Natural Resources
- Water Conservation and Protection
- Waste Management & Recycling

**How to use the Plan**

Within each of the above sustainability categories, the Plan identifies the following-

The sustainability **goal** for that category  
(i.e., "Reduce Energy Consumption and Green House Gases")

Several **strategies** to reach this goal  
(i.e., reduce energy consumption in residential uses, commercial uses, municipal uses, etc.)

A number of **action items** for each strategic area. Action items range from policies and ordinances to educational programs and pilot projects. Completing these incremental steps will help to comprehensively advance sustainability in that strategic area. Actions are organized in an action plan matrix within each sustainability category.

How to implement the Plan

This Plan recommends that the Leonia Green Team serve as the "implementing entity" with standing within the Borough Government to effectively coordinate the Plan implementation. The Leonia Green Team will closely collaborate with the Planning Board, the Mayor & Council, other Boards, Commissions and committees to formalize plan implementation tasks with their ongoing efforts, day-to-day operations and responsibilities. The Green Team will facilitate the prioritizing and delegating of actions to appropriate authorities and Project leaders. Project leaders and action item volunteers can come from every segment of the municipal government and community- from Borough Officials and department employees, to local community groups, businesses and residents. Overall progress being made in each sustainability category will be measured and periodically reported to the Planning Board. Targets will be set for a variety of sustainability indicators. Example indicators are provided throughout the Plan.

Updating and expanding the Plan

The Sustainability Plan requires regular updating in order to report all the progress that has been made, and to update goals, objectives and priorities. While the sustainable policies presented in this Plan can be weaved into other Borough Master Plan elements, Leonia will continue to have a stand-alone Sustainability Element of the Master Plan. A standalone element enables Leonia to comprehensively address sustainability across multiple topic areas (and beyond the topics of the standalone elements) during a single updating and public involvement process, and allows information to be easily found and tracked in one location.

Moving forward, Leonia will continue to engage the community by hosting regular meetings, events and opportunities for dialogue on important sustainability topics. The more the topic of sustainability is discussed by the Borough's leadership, the more residents will understand the issues, support Borough initiatives, and be able to make changes in their own lives. These discussions will also move beyond land use and the environment, to tackle other areas of sustainability- including public health, the local economy, government accountability, fair housing, social equity, etc. A future update of the Plan can include these important topics.

Sample Leonia Sustainability Plan Implementation Schedule

Leonía Sustainability Implementation Tasks	Q 4		Q 1			Q 2		Q 3		Q 4			
	1	2	3	4	5	6	7	8	9	10	11	12	13
<b>1 Adopt Sustainability Plan &amp; assign Implementation Entity</b>	◆												
<b>2 Assign coordinating roles within Implementation Entity (Outreach, Grants, Indicators, Action Item Facilitator, Web Manager, etc.)</b>	◆												
<b>3 Develop Annual Outreach Program, i.e.:</b>	◆-----◆												
4 Establish partnerships with local entities (schools, religious institutions, business community, etc.)	◆-----◆												
5 Plan periodic (i.e., quarterly) town meetings on sustainability topics				◆			◆			◆			◆
6 Determine events for green team participation				◆			◆			◆			◆
7 Develop program for signing up partners, volunteers, & action item leaders				◆			◆			◆			◆
8 Develop and maintain Green Team and Plan Tracking website	◆-----◆												
<b>9 Prepare database of Action Items &amp; track status</b>	◆-----◆												
10 Prioritize action items / Select for implementation				◆			◆			◆			◆
11 Assign Action Item leaders and volunteers				◆			◆			◆			◆
12 Periodically Update the status of action items within database				◆			◆			◆			◆
<b>13 Select Sustainability Indicators; collect baseline data</b>				◆			◆			◆			◆
<b>14 Collect indicator data at year end for baseline comparison</b>													◆
<b>15 Create and maintain calendar of grant/funding opportunities</b>	◆-----◆												
<b>16 Prepare annual Plan status update</b>													▼

## Vision Statement

**We** envision Leonia as a compassionate community established on a rich history in the arts, literature and music, which welcomes the diversity of its people; a community which moves towards a future built on the principles of environmental economic and social sustainability.



## Introduction

This Plan establishes Leonia's goals and objectives towards becoming a more sustainable community and provides a multitude of actions the Borough can take to meet those goals. By adopting a Sustainability Plan, Leonia sets achieving environmental, social and economic sustainability as high priorities for the Borough.

Planning for sustainability can seem overwhelming- given the wide range of connected issues that cut across all sectors of community life- from saving energy, reducing water consumption, improving air quality, and generating less waste- to reducing congestion, stemming obesity, improving the economy, and fostering social interaction. A sustainability plan creates a framework that while acknowledging a holistic interconnected system, breaks those issues and linkages into manageable pieces, sets realistic targets, and develops a plan for measuring progress and achieving goals. As a Leonia Master Plan Element, the Sustainability Plan is part of the Borough's policy roadmap. Setting goals and priorities and implementing the actions to meet them will assist Leonia in reducing its impact on the environment; ensure that resources are available for future generations; and providing for healthy populations, places, and economies to thrive. Therefore, this plan sets a 'sustainability agenda' for the Borough.

Sustainability requires a new way of "cradle to grave" thinking at every level of government decision-making. The notion of how today's decisions impact tomorrow's outcomes, and the Borough's criteria for making those decisions applies when- approving a site or building for construction, installing or upgrading infrastructure, maintaining school athletic fields, purchasing cleaning products, setting new government policies and regulations, and even everyday simple actions, such as turning off the lights or printing documents on recycled paper. From the smallest to the largest decisions, the Leonia municipal government sets an important example for the community to follow.

Beyond the government's role, Leonia residents and Borough stakeholders (school teachers and students, local businesses, community groups, neighborhood associations, etc.) must all get on board. In 2009, the international think tank Global Footprint Network issued a report that calculated humanity would need 5 Earths to produce the resources needed if everyone lived as profligately as Americans. That is simply unsustainable and reversing this trend is critical. Working locally to make changes in behavior and priorities, Leonia can ensure a healthy, productive community and environment for today and tomorrow, and contribute to a shared global prerogative.

## What is Sustainability?

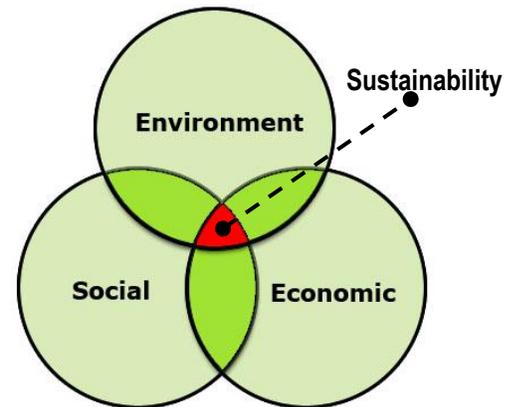
The term was first defined by the United Nations (Brundland Commission) in 1987. Other organizations have since updated or revised it, but the message is still the same.

**Sustainability:** "The ability of present generations to meet their needs without compromising the ability of future generations to meet their own needs."

-- *United Nations World Commission on Environment and Development, 1987*

Sustainability is often described as the need to holistically balance the "three Es" or the "three Ps"-,

1. **Environment / Planet:** Conserving natural systems and minimizing ecological impacts
2. **Equity / People:** Focusing on people and communities and their needs
3. **Economy / Prosperity:** Creating a vibrant economy through the creation of wealth, prosperity and jobs.



*Source: Assessing Sustainability: A Guide for Local Governments, W. Feiden & E. Hamin, PAS Report, July 2011*

Sustainable policies and actions are those that advance these three goals simultaneously- ideally without trading off one goal for another. (Hecht, 2007) Therefore, each of the three "pillars" of sustainability is equally weighted in importance and requires a careful balancing when making decisions.

Based on these principles, Leonia has established its own guiding definition of Sustainability. All future policies and decisions made in the Borough should first be assessed as to whether they meet this definition and further the Borough's sustainability objectives:

### Leonias Definition of Sustainability

Leonias understands that sustainability has no simple definition, but is an evolving set of practices and principles implemented as a shared responsibility of all people. Our actions and principles intend to conserve resources and regenerate the Borough's ecosystems, ensure a vibrant local economy within a regional and global context, and promote high quality of life whether residing, working or playing in Leonia.

## Relationship to the Leonia Master Plan

In New Jersey, the Municipal Land Use Law (MLUL- NJSA 40:55D) is the enabling legislation that governs land use and development in a municipality. The MLUL requires that every municipality with a Zoning Ordinance to first develop a municipal Master Plan- a policy document consisting of a number of “Elements” that sets the goals, objectives and recommendations that direct future land use in a community. The municipal Zoning Ordinance must then be consistent with the Master Plan- a way to ensure that the regulations are in fact in line with the policies. In addition to a statement of goals and objectives, the MLUL requires the Master Plan to include two required Elements- a Land Use Plan and a Housing Plan, and offers guidance as to a number of optional Elements (Circulation Plan, Open Space & Recreation Plan, Conservation Plan, Economic Plan, Community Facilities Plan, Utility Plan, and Transfer of Development Rights Plan). Most recently (2008), the MLUL included the Green Buildings and Environmental Sustainability Plan as an optional Master Plan Element. Upon adoption by the Leonia Planning Board, this Sustainability Element of the Master Plan (or “SEMP” or just “Sustainability Plan”) will be an Element of the Leonia Borough Master Plan.

### Sustainability Element of the Master Plan (SEMP)

The municipal Master Plan guides the use and development of land within the municipality. The MLUL provides that the Sustainability Element (N.J.S.A 40:55D-28) of a Master Plan must:

- provide for, encourage, and promote the efficient use of natural resources and the installation and usage of renewable energy systems;
- consider the impact of buildings on the local, regional, and global environment
- allow ecosystems to function naturally;
- conserve and reuse water;
- treat stormwater on-site; and
- optimize climatic conditions through site orientation and design.



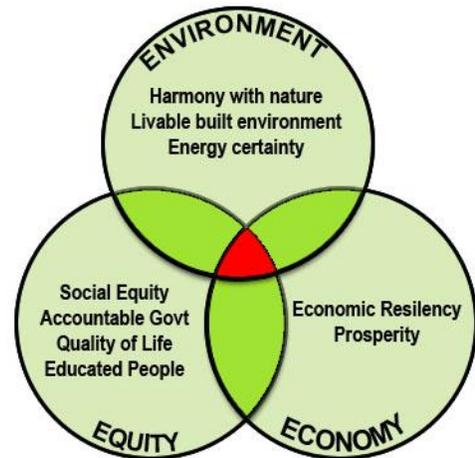
The MLUL guides how municipalities may regulate the use and development of land in their community; as a result, the Master Plan largely focuses on land use and the environment. Of course, to comprehensively plan for municipal sustainability, a community’s Plan should provide recommendations that go beyond land use policy and regulatory guidance. Therefore, this Plan also includes recommended actions related to individual behavior, initiatives for education and awareness, and new community programs, among others.

To achieve a greater “balancing” of environmental, social and economic objectives, and comprehensively address sustainability, it is recommended that the SEMP be expanded in the near future to address other important topics not represented at this time. These include: equal access to public transit, affordable housing, education and healthy food; public awareness and community participation; the green economy; local food systems; the role of schools; transparency in government, and others of importance to the Borough.

## Components of the Sustainability Plan

On its own- the idea of sustainability- is difficult to understand, measure, or track. More straightforward, sustainability should be framed in terms of the “sustainable outcomes” Leoneans want, and how they represent the intersection of the 3 pillars of sustainability.

As shown in the graphic, sustainability includes such outcomes such as- a livable built environment, harmony with nature, energy certainty, economic resiliency and prosperity, social equity, educated people, and accountable governance. This Plan recommends goals, strategies and incremental actions for Leonia to achieve these outcomes.



### Goals:

The outcomes listed above require simultaneously addressing many familiar components of sustainability- smart land use and development patterns, green construction of buildings and sites, efficient transportation networks, preserving natural systems, reducing energy consumption and reversing climate impacts, ensuring water resources, efficient use of materials and appropriate waste management, access to education, transparent government, and many others.

As shown in the list of goals below, the Leonia Sustainability Plan goals are organized by these individual topics. Many of these topics are also represented in the Municipal Land Use Law, permitted as individual Master Plan Elements. Using the sustainability goals as an organizing framework for the Plan will assist the Borough in future updates to its individual plan elements. It is recommended that a future update of this Plan round out the Borough’s efforts to comprehensively address sustainability by including goals, strategies and actions that also focus on social equity and the economy.

#### Leonia Sustainability Plan Environmental Goals

- A: Reduce **energy** consumption and **green house gas** emissions.
- B: Promote the use of **renewable energy** in homes, businesses and in public facilities.
- C: Encourage the development of **green buildings, green site design, and green streets.**
- D: Implement efficient **land use** and development patterns.
- E: Provide **transportation** options and reduce vehicles miles travelled.
- F: Protect **open spaces, recreation areas and natural resources.**
- G: Promote **water** conservation and protect water resources.
- H: Improve **waste management** and recycling.

Example additional Goals for a Future Update of the SEMP:

- I: Improve **public health**, by promoting access to **healthy, local food** and **exercise**.
- J: Promote **economic development** and vibrant local businesses.
- K: Foster the “greening” of **government**, education and **schools**, and **residents’** lifestyles.
- L: Develop a creative **learning culture**.
- M: Increase opportunities for and the amount of **civic engagement** and **public participation**.
- N: Ensure **social equity** among all Leonia residents.

**Strategies**

A number of strategies have been identified to work towards meeting each goal. For example, where a goal is to “encourage development of green buildings,” specific strategies to meet that goal include using sustainable building materials and improving energy efficiencies in buildings.

**Action Items:**

The “action items” are the steps that the Borough and Leoneans can take which together add up to meaningful change. The types of actions government can take- variations on providing “carrots and sticks”- are discussed in greater detail below.

*Tools for Action*

The proposed concepts, strategies and actions recommended in this Plan may be new or unfamiliar to many Leoneans. Therefore, as is true for bringing any new idea to public acceptance, the Borough should consider the tried-and-true **5 stages of market adoption**: awareness, interest, evaluation, trial and adoption. Leonia can take steps to advance each of these stages by- getting out the message about the benefits of going green, forging partnerships with the community and stakeholders, setting up pilot projects that demonstrate success, encouraging investment through incentives, and putting regulations in place. By embracing sustainability in its own buildings, policies and actions, the Borough can facilitate all 5 stages, and set an example for residents to follow.

**5 Stages of Market Adoption – new ideas, products and services**

1. awareness
2. interest
3. evaluation
4. trial
5. adoption

The numerous actions listed in the Action Plan help to advance each of the 5 stages of market adoption. The action items in this Plan include proposed programs, projects, reports, policies, studies, incentives, ordinances, etc. Low hanging fruit are the items that can be implemented immediately, without too much trouble or expense. Initiating these actions quickly helps to generate interest and demonstrate progress. Conversely, some actions may take many months, or years. The availability of resources, funding, timing, politics, community opinion, and other factors can influence when action items get done.

*“First, a small number of pioneering individuals or organizations pick up the idea. Under the right conditions, particularly if the innovation is supported by good policy design, it gradually moves more deeply through society.” -- www.greenplaybook.com*

Borough actions will typically fall under the following broad categories. Many of these are provided within the *Green Playbook*.

#### ■ **Capacity Building Strategies**

Capacity building begins with raising awareness and educating stakeholders to increase skills and knowledge. Engaging the right people and forging strategic partnerships are key strategies that can ensure success. Strategies for building capacity include:

- Engagement
- Education and outreach
- Municipal policy and pilot projects
- Rating systems
- Recognize leaders
- Training of regulators

#### ■ **Incentive Strategies**

Perception of risk can be overcome by offering financial incentives that encourage investment in green building. Incentive solutions include:

- Program incentives
- Technical assistance
- Zoning incentives
- Expedited permitting
- Rebates and Grants
- Tax abatements and credits
- Reduced or discounted fees
- Stormwater fee discounts

#### ■ **Funding Strategies**

On the other hand, funding and financing strategies- or user charges- enables means of implementing Borough actions. Funding strategies include:

- Utility fees (i.e., stormwater fee)
- Infrastructure bonds
- Development review / impact fees
- Loans and grants
- Private donations & sponsorships

#### ■ **Regulations Levers**

Regulations can be applied to achieve market diffusion, and mainstream green building as standard practice. This can most easily be achieved when a broad constituency of support exists and the market has a critical mass of green building activity. Regulatory levers include measures that:

- Zoning and subdivision regulations
- Design guidelines
- Policies (i.e., Green and Complete Streets)
- Update building and energy codes
- Analyzing and updating old facilities to improve energy efficiency

### **Benchmarks, Targets & Indicators:**

It is important to get feedback on how much progress we are making in each area. This motivates us to make changes and track the effectiveness of our actions. Understanding where we are today (baseline indicator measures and benchmarking) is important to understanding how we are doing in the future. To track progress on the highest priority goals, the Borough can consider establishing benchmarks, targets and indicators. Examples are provided throughout the Plan.

- An **indicator** is usually something that can be quantitatively measured over time to track progress in a particular goal area (i.e., percent of energy derived from solar panels on schools).
- A **benchmark** is the baseline data that tells us “where are we now” (i.e., 10% of energy in schools today is provided by solar panels).
- A **target** asks “where do we want to be” (i.e., by 2015, 50% of energy in schools should be provided by solar panels or other alternative energy source.)

Leonía Sustainability Plan Framework

Examples:

- A livable built environment
- Encourage the development of green buildings
- Reduce water consumption
- Restrict the use of turf grass and maximize the use of native and bio-diverse plants



Leonía Sustainability Plan  
Organizing Framework

## Implementation

The Leonia Green Team will be charged with coordinating the implementation of the Plan to ensure Plan ownership, accountability, and continuity over time. The Green Team will have standing within the Borough government.

The Leonia Sustainability Plan should be formalized into Leonia's operations, planning and day-to-day activities. For example-

- 1) The Green Team should communicate and coordinate action items to the responsible entities (individuals, community groups, Borough Officials, Borough Departments, students, business owners, etc.) that will be performing each action.
- 2) Each responsible entity should designate a point person or 'project manager' responsible for ensuring the action is implemented. In each Borough Department, a Sustainable Representative or Liaison can be designated.
- 3) The Green Team will be responsible for maintaining communication with the point person/liaison, tracking the progress of each action item, and providing support and technical assistance, as needed.
- 4) On a regular basis (i.e. quarterly) at scheduled Planning Board or Council meetings as appropriate, the Green Team will report progress on actions.
- 5) In addition to tracking the progress of individual actions (preferably in a database), the Green Team will strive to measure the overall progress of each sustainability category through the use of the specified (or other appropriate) targets and indicators.

## Implementing and Updating the Sustainability Plan

The Sustainability Plan should be updated annually to reflect and report on all the progress made over the previous year. Goals and objectives can be revisited and updated at this time. This is also the time to re-assess Borough priorities. The Green Team should evaluate the effectiveness of the goal tracking and determine if new indicators are needed. Advancements in technology, incentive programs, funding availability, and increased knowledge of sustainable impacts will direct changes to the plan. Of course, political will and Green Team capacity are also influencing factors. The implementation entity may prepare an annual progress report that summarizes the years' activity.

An **Annual Plan Progress Report** should contain summaries of:

- ✓ Status of all actions initiated / completed
- ✓ Progress towards targets / indicators
- ✓ New partnerships developed
- ✓ Education and outreach events
- ✓ Volunteer participation
- ✓ Actions proposed for next year, 5-year, 10-year, etc.

Leonía can also make use of the Sustainability Plan when updating its other Master Plan Elements. The sustainable policies recommended here, can be weaved into those elements, as appropriate. However, the Borough should continue to have a stand-alone Sustainability Plan Element, as it affords an opportunity to comprehensively address sustainability across multiple areas within and beyond the standalone elements, and allows information to be easily found and tracked in one location. A Sustainability Plan Element also provides an opportunity for the community to put a direct focus on sustainability- and offers a vehicle for public participation related to this important topic.

A committee should be assembled to support the Green team with comprehensive Plan implementation and updates. Representatives from Borough Departments and committees (environmental commission, public works, engineering, planning board, parks and recreation, etc.) should be on this committee to offer assistance in their area of expertise or interests. Community leaders and representatives of the business community should also be invited onto the committee.

### Green Team Advisory Committee

This Plan was prepared by the Leonia Green Team Advisory Committee and their Consultant, with the financial assistance of a Smart Growth Planning Grant from the Association of New Jersey Environmental Commissions (ANJEC).

Established in 2009, the Green Team has been actively involved in promoting sustainability in the Borough. The Green Team consists of five members and a committee liaison from Borough Council. The Green Team holds regular meetings at the Borough Library.

The Green Team leads or participates in a number of activities within the Borough that advance the community's sustainable development vision and goals. One overarching activity of the team is to coordinate

#### Green Team Mission

<http://www.leonianj.gov>

"The Mayor and Council of Leonia strives to save tax dollars, assure clean air and water, and improve working and living environments to build a community that is sustainable economically, environmentally, and socially; a Community which would thrive well into the new century.

The Governing Body wishes to build a model of Government which benefits our residents now and far into the future with "Green" Community initiatives which are easy to replicate and affordable to implement; in an attempt to focus attention on "Green" issues."

and support the community's interactions with the Sustainable Jersey certification program. This program is presented in the section below. The Sustainability Plan and Sustainable Jersey certification program actions will be completely aligned and interconnected with each other.

Sustainability risks and opportunities exist throughout the Borough and affect all of Leonia's community boards and committees. Every Board and Committee can contribute to Sustainable Jersey actions and Leonia Sustainability Plan goals. Leonia understands that it cannot become a sustainable community alone. Active collaboration among all of our citizens, with all of our neighboring communities, with the State and beyond is required. The Green Team Advisory Committee serves as a central coordinating body that facilitates multi-stakeholder sustainability discussions, the sharing of best practices and implementation experiences.

## Planning Process

The kick-off meeting and discussions regarding plan preparation took place at the regularly scheduled, Green Team meetings. Generating public support and involving residents was one of the main goals of the process. At booths at the annual Arbor/Earth Leonia Day fair and the Health Fair, the Green Team was able to display information about the Committee and the Sustainability Plan. The Team also collected an estimated 100 responses from a short survey handed out at the Health Fair.

The capstone of the planning process was a Visioning Workshop held on the evening of February 29, 2012 at the Anna C. Scott Elementary School. At this workshop, nearly 80 attendees, including residents, students, teachers, and representatives from Borough Departments split into groups to discuss the sustainability topics presented in this Plan. Using flip charts and handouts prepared by the Team, the individual tables discussed issues, challenges and opportunities in each sustainability category, and then rotated tables so each participant could reach all discussions. Towards the close of the meeting, the facilitator for each group presented a summary of discussions to all attendees. Many of the issues and ideas generated are reflected in the strategies and actions within this Plan.

The Green Team recognizes that generating awareness towards sustainability issues is perhaps the biggest challenge and greatest purpose of the Plan. To that extent, the visioning workshop was only the kick-off of what should be an ongoing process of public involvement to generate awareness and interest in making Leonia Sustainable.

## Coordination with Sustainable Jersey™

Sustainable Jersey™ is a certification program for New Jersey municipalities looking to "go green." Participating communities establish a Green Team and choose from a menu of action items that give "points" towards certification when completed. Of the 566 NJ municipalities, 387 are registered in the program and 116 are certified. Leonia is currently a "Bronze Certified" municipality and hopes to achieve a "Silver" certification for 2013.



In selecting from the menu of actions, Leonia can choose actions that are high priorities for the Borough. Actions range from focusing on transportation, storm water management, arts and culture and animal welfare issues. Points can also be obtained for “innovation,” or projects that are not part of the current menu of actions or for cooperating with other towns on projects.

Throughout this Plan, actions items that are on the Sustainable Jersey menu are recognizable by a “SJ.” If completed, these actions will also enable the Borough to achieve certification points.

Participation in the Sustainable Jersey program also allows a number of other benefits including information about various programs and the ability to apply for funding for sustainable projects through the Sustainable Jersey Small Grants Program.



Photos from the Community Visioning Meeting on February 29, 2012

## Sustainability Goals, Strategies & Actions

The pages that follow address each of the Leonia Sustainability Goals listed below.

- A:** Reduce **energy** consumption and **green house gas** emissions.
- B:** Promote the use of **renewable energy** in homes, businesses and in public facilities.
- C:** Encourage the development of **green buildings, green site design, and green streets**.
- D:** Implement efficient **land use** and development patterns.
- E:** Provide **transportation** options and reduce vehicles miles travelled.
- F:** Protect **open spaces, recreation areas** and **natural resources**.
- G:** Promote **water** conservation and protect water resources.
- H:** Improve **waste management** and recycling.

For each above goal, the Plan includes a discussion and action plan, outlined as followed:

- **Goal Overview**
  - *Principles*
  - *Benefits*
- **Leonia today**
  - *Borough Challenges*
  - *Borough Opportunities*
- **Strategies** for meeting the goal
  - **Actions** in each strategic area
- **Goal Indicators** – methods for tracking progress

To maximize the Borough's efficiency in utilizing the following pages, the Green Team will develop a single database that includes all of the actions listed in each of the action plan matrices. The database can identify the action type (educational, financial incentive, partnership, ordinance control, etc.), the person or organization leading the action (with contact information), the timeframe, estimated cost, completion status, work hours, and other. For example, reports or queries can be run to show just short-term actions, just Green Team-led actions, or just completed actions. If possible, the database should be online or accessible to more than one person so that action status can be regularly documented, updated and managed. The Green Team can use the information tracked in the database to prepare an Annual Sustainability Plan Progress Report.

### Database of Actions.

A form for each action should track:

- ✓ Action Name
- ✓ Type
- ✓ Leonia Sustainability Category
- ✓ Priority level
- ✓ Responsible Entity
- ✓ Team members & contact info
- ✓ Start Date & Finish Date
- ✓ Estimated Timeframe
- ✓ Estimated costs
- ✓ Funding sources
- ✓ Notes / Status updates
- ✓ Lessons learned

## A: Energy consumption & GHG emissions

### Overview

Greenhouse gases (GHG), including carbon dioxide (CO<sub>2</sub>), are emitted into the atmosphere when fossil fuels are burned for energy use. The Global Warming Response Act, P.L. 2007, c.112, adopts goals for the reduction of greenhouse gas emissions in New Jersey. The law requires the stabilization of statewide GHG emissions to 1990 levels by 2020 and to 80% below 2006 levels by 2050.

How will we be able to meet these goals? The answers lie in utilizing renewable energy sources (see Goal B), technologies designed to improve energy efficiency, and in changing our habits and behaviors to reduce our energy use.

The largest sources of GHG emissions and energy use for most municipalities lie in the use of buildings and transportation. Reducing the amount of energy utilized in these sectors will have the greatest impact for Leonia --

To reduce energy consumption in **buildings**, for example, municipalities can:

- Update existing buildings with energy-saving technologies (i.e., insulation, skylights, light timers)
- Modifying user behavior to reduce energy use (i.e., turn off lights, walk to work, recycle)
- Require new buildings to be energy-efficient through updated building codes
- Require energy-efficient technologies be installed when renovating buildings

To reduce energy use in **transportation**, municipalities can promote:

- Using alternative fuel vehicles
- Using more energy efficient vehicles
- Reducing VMT (i.e., more walking, bicycling, carpooling, transit)

The negative impacts of poor energy consumption habits include: air pollution, water pollution and the related negative health effects; dependence on foreign oil; natural resource destruction; high cost energy, and GHG emissions and an overall warming of the earth's surface, atmosphere and oceans ("global warming").

**Sustainable Jersey:** "There is a consensus in the scientific community that increasing concentrations of greenhouse gases in the atmosphere contribute to extreme weather patterns and rising sea levels. The State of New Jersey has identified climate changes as a public health risk and a threat to the public safety and welfare, and set targets for GHG emission reductions as codified in the Global Warming Response Act of 2007."

*Principles -*

- Mitigate greenhouse gas emissions
- Improve response and resiliency to climate change impacts
- Enhance the energy performance and resource efficiency of a community's building stock throughout its lifecycle
- Support low-carbon and high resource-efficiency transportation options
- Support the development and use of alternative sources of energy

*Benefits-*

- Cleaner air and water
- Healthier overall environment
- Reduce and reverse the impacts of climate change
- Energy independence
- Reduced costs and improved economies
- Preservation of limited natural resources

**Leonia:**

The Borough of Leonia conducted an energy audit of municipal energy use in 2011. Through this effort, the borough has established a baseline for future energy efficiency initiatives and cost savings. The energy audit information was used to help obtain grants to retrofit lighting in all municipal buildings. The Borough appreciates that energy efficiency is a continuous improvement initiative which we have only just begun to measure and improve.

*Leonia's Challenges:*

- @ Borough budget constraints in implementing audit recommendations
- @ Borough maintenance staff need will training on new technologies
- @ Getting resident 'buy-in' in implementing conservation practices

*Leonia's Opportunities:*

- h Town Meetings typically have good attendance from engaged citizens
- h Implementing recommendations of completed energy audits
- h Improving bicycle and pedestrian connectivity to downtown and park
- h The potential for a Light Rail station and line connecting Leonia to Lower Hudson/NYC destinations
- h Building on the Transportation Education project that was funded by ANJEC and the Borough

*Stakeholders to involve:*

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Borough Council members | <input checked="" type="checkbox"/> Department of Public Works |
| <input checked="" type="checkbox"/> Planning Board members  | <input checked="" type="checkbox"/> Environmental Commission   |
| <input checked="" type="checkbox"/> Maintenance Department  | <input checked="" type="checkbox"/> NJ Transit                 |
| <input checked="" type="checkbox"/> Building Department     | <input checked="" type="checkbox"/> Local Bus Companies        |
| <input checked="" type="checkbox"/> Purchasing Department   | <input checked="" type="checkbox"/> Residents                  |
| <input checked="" type="checkbox"/> Engineering Department  | <input checked="" type="checkbox"/> Business Owners            |

**Goal**

Reduce **energy** consumption and **green house gas** emissions.

**Measures of Success**

To measure the Borough's success for Goal A, Leonia can establish historical baseline figures of the following indicators, and their progress.

Indicator	Explanation	Data Sources	Target
<b>GHG Emissions</b>	Track Leonia's carbon dioxide emissions and the sources of those emissions (electricity, natural gas, fuel oil, gasoline), if possible, by the users (residential, non-residential, government, schools, etc.)	PSE&G	Establish baseline municipal emissions and set a goal to Reduce by ___% percent each year.
<b>Energy Audits</b>	Track the number of energy audits completed by residents, businesses, government, etc.	Business Administrator	Increase year over year
<b>Clean Energy Program</b>	Track participation in the New Jersey Clean Energy Program, which provides financial incentives and rebates to residents and businesses that implement energy saving strategies	<a href="http://www.njcleanenergy.com">http://www.njcleanenergy.com</a>	Increase year over year

**Strategies**

The Borough can focus its efforts in a number of strategic areas to achieve this Goal.

No.	Strategy
A1	Reduce energy consumption rates and GHG emissions in new and existing homes
A2	Reduce energy consumption rates and GHG emissions in new and existing places of business (offices, warehouses, manufacturing plants, stores, etc.)
A3	Reduce energy consumption rates and GHG emissions in public facilities
A4	Reduce energy consumption rates and GHG emissions in transportation sectors
A5	Improve municipal-wide assessment capabilities and programming with regular GHG emission inventories /energy audits and monitoring
ASJ	<b>Implement Sustainable Jersey: Energy and Climate Change Activities</b>

Action Items:

Note: By setting up a database of all Action Tables in this Plan, the Green Team can track, sort or filter for actions by type, participant, responsible entity, timeframe, category, strategy, status, etc.

Goal A: Reduce energy consumption and greenhouse gas emissions														
#	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Item Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
<b>A1 Reduce GHG emissions in new and existing homes</b>														
A1a	Develop a pamphlet/brochure for Leonia residents on "living green" and a home maintenance tool kit that teaches energy efficiency.			^				●	●				Green Team	M
A1b	Encourage residents, through outreach and incentives, to sign up for home energy-audits and to utilize online calculators/tools.			^				●	●				Green Team	S
A1c	Adopt an Ordinance that requires new residential buildings, or substantial rehabilitations, follow new Green Building codes and be Energy Star compliant; or align to USGBC or other green building codes and techniques.					§		●	●				Green Team Planning Board Borough Council	S
A1d	Create a committee focused on Green Residents that develops regular programs, trainings seminars and workshops for residents to green their homes and habits; hold workshops on energy efficient techniques			^	E			●	●				Green Team Environmental Commission New Subcommittee Energy professionals	M
A1e	Develop a website for Leonia residents to visit where they can retrieve and share information on greening their homes; highlight a "Leonian of the Month" who is making strides.			^				●	●				Green Team New Subcommittee Technology Subcommittee	M
A1f	Hold an annual Energy Town Meeting; invite stakeholders (i.e., BPU, PSE&G) and industry specialists as guest speakers			^	E			●	●	●	●	●	Green Team New Subcommittee	M
A1g	Hand out free clothes line and pins to promote their use; Have school children decorate the clothes pins as an art class project. Update Leonia's Code, if necessary, to permit outdoor use of clotheslines.			^	E			●	●	●	●	●	Green Team School Leaders	M
A1h	Study creating a campaign against the use of snow blowers, leaf blowers and lawn mowers- that promotes the exercise benefits and calories burned from not using such equipment	☰			E	§		●	●	●	●	●	Green Team Borough Council	M
A1i	Require disclosure of utility bills to new owners at the time of residential sale transaction					§		●	●				Borough Council	M

Goal A: Reduce energy consumption and greenhouse gas emissions														
	Action	Action Type						Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org		
#	Action Item Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
A1j	Promote home weatherization programs			^				●	●			●	Green Team	S
A1k	Encourage residents and businesses to use programmable thermostats			^				●	●	●	●	●	Green Team	S
<b>A2 Reduce GHG emissions in new and existing places of business (offices, warehouses, stores, etc.)</b>														
A2a	Provide incentives for Leonia's businesses to conduct energy audits.		\$	^		§		●		●		●	Green Team Economic Development Committee (EDC)	M
A2b	Create partnerships between the Leonia business community and providers of environmentally-friendly services and products.			^	E			●		●		●	Green Team EDC	M
A2c	Adopt an Ordinance that requires new non-residential buildings, or substantial rehabilitations, to use green building techniques.					§		●		●	●	●	Green Team Planning Board Borough Council	S
A2d	Highlight businesses that are 'going green' through press releases and posting on the Borough website			^				●		●			Green Team EDC	M
A2e	Develop a pamphlet and checklist ("scorecard") that can be given to building maintenance or operations departments to assess green practices. Provide incentives to workplaces that complete and return the checklists.			^				●		●			Green Team EDC	S/M
A2f	Create a "business liaison" position on the Green Team that is responsible for reaching out to the Leonia business community to assist with and report on sustainability initiatives.			^	E			●		●			Green Team EDC	S / M
A2g	Establish a Private Sector energy efficiency Task Force			^	E			●		●			Green Team New Subcommittee	M
A2h	Assist Leonia's businesses in signing up for ENERGY STAR for Small Business and NJDEP Sustainable Business registry			^	E			●		●			Green Team EDC	S
<b>A3 Reduce GHG emissions in public facilities</b>														
A3a	Adopt an Ordinance that requires new and rehabilitated publicly-owned buildings to meet green building and design requirements.					§		●					Green Team Planning Board Borough Council	S
A3b	Conduct energy-audits of all public facilities and set site-specific goals			^				●					Green Team Borough Admin. Borough Council	S

Goal A: Reduce energy consumption and greenhouse gas emissions														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Item Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
A3c	Establish a Government-Sector energy efficiency Task Force			^	E			●			●		Borough Admin.	M
<b>A4 Reduce GHG emissions in transportation sectors</b>														
A4a	Encourage residents and businesses to purchase fuel-efficient vehicles and alternative fuel vehicles			^		§		●	●	●			Green Team Environmental Commission EDC	M
A4b	Require municipal fleet vehicles reach specified fuel efficiency standards			^		§		●					Green Team Borough Admin.	M
A4c	Study providing electric charging stations in municipal parking lots and encourage local businesses to install them conveniently in their lots	☰	\$	^				●	●	●	●	●	Engineering Dept. Transportation Committee Green Team	M
--	See Transportation Chapter See Land Use Chapter													
<b>A5 Improve municipal-wide assessment capabilities and programming with regular GHG emission inventories /energy audits and monitoring</b>														
A5a	Increase the number of home energy performance audits. (See A1b)			^		§		●					Green Team	M
A5b	Prepare and monitor municipal-wide GHG inventory	☰		^	E		X	●	●	●	●		Green Team Borough Admin.	S
A5c	Require that all new infrastructure projects, and public or private developments demonstrate how the design, construction, and operation will minimize green house gas emissions					§		●					Green Team Borough Council	M
<b>ASJ Sustainable Jersey: Energy and Climate Change Activities</b>														
ASJ1	ENERGY STAR Portfolio Manager	☰						●					Green Team Borough Admin.	M
ASJ2	Energy Education and Outreach	☰						●					Green Team Environmental Commission	S
ASJ3	School-based Energy Conservation Program	☰						●					Green Team School Leaders	S
ASJ4	Municipal Carbon / Community Carbon Footprint (See Action A5b above)	☰		^	E		X	●	●	●	●		Green Team Borough Admin.	S
ASJ5	Climate Action Plan	☰						●					Green Team	M

Goal A: Reduce energy consumption and greenhouse gas emissions														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org			
#	Action Item Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
ASJ6	Energy Tracking & Management	☰						●					Green Team Borough Admin.	S
ASJ7	Inventory and Upgrade all Buildings	☰						●					Infrastructure Committee	M
ASJ8	Adopt Behavioral Policies	☰						●					Green Team Environmental Commission Borough Council	S
ASJ9	High Performance Building Portfolio	☰						●					Green Team Planning Board	L
ASJ10	Anti-Idling Education and Enforcement Programs	☰						●					Transportation and Environmental Committees	S

**Sources & Resources:**

Smart Communities Initiative  
<http://www.smartcommunities.ncat.org/municipal/sstoc.shtml>

Energy Star  
<http://www.energystar.gov/>

Energy Education Inc.  
<http://www.energyeducation.com/OurServices/tabid/58/Default.aspx>

Schools for Energy Efficiency® (SEE)  
<http://www.seeprograms.com/overview.htm>

Intergovernmental Panel on Climate Change  
<http://www.ipcc.ch/>

15 Ways to reduce your carbon footprint  
<http://sustainability.publicradio.org/consumed/tips.html>

## B: Renewable Energy

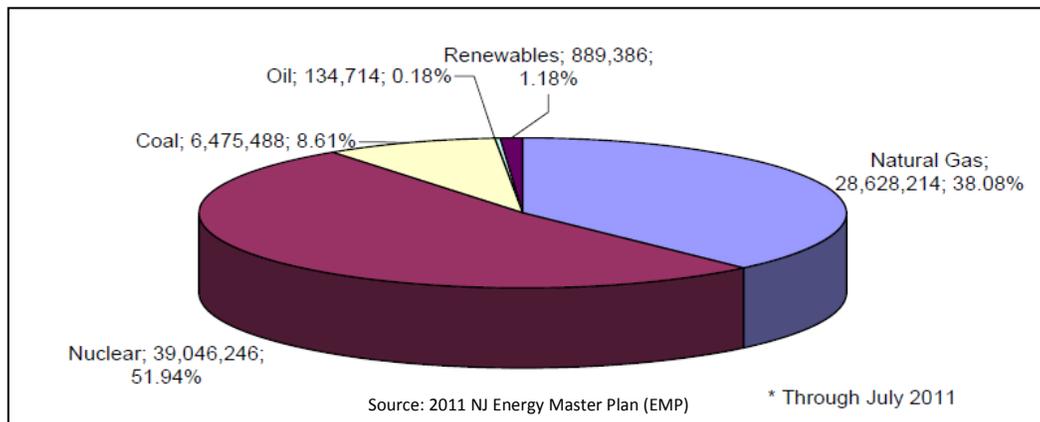
### Overview:

Renewable energy sources include **solar, wind, hydroelectricity, wave power, geothermal, and tidal power**. As of 2008, New Jersey’s energy fleet was 55% gas-fired (based on generation capacity), 23% nuclear, and 11% coal fired. In the last twenty years, natural gas generation capacity has increased from 1/3 to over ½ the State’s generation capacity; in the same period, the amount of coal and nuclear generation has remained relatively constant.

The figures below show New Jersey’s installed generation capacity in 2010 and the actual energy generated by these plants in 2011. Nuclear power, which is carbon-free, accounted for 52% of NJ’s native energy generation in 2011. Note the very small amount of renewable energy capacity and generation.

**Sustainable Jersey:** “Use of renewable energy in homes, businesses, and in public facilities reduces the use of fossil fuels that contribute to global warming and impair air quality. The public benefits of renewable energy, such as wind and solar, have been deemed inherently beneficial in the Municipal Land Use Law. Other forms of renewable energy, such as geothermal and biomass production, may be appropriate for a community to investigate. The Sustainability Plan Element should proactively address ways to promote the use of renewable energy by retrofitting existing structures and incorporating renewables in new developments, redevelopment projects and public facilities.”

Energy Generation by Fuel Type, 2011 (MWh / %)



Still, New Jersey imports a substantial proportion of its energy, at least 25% each year. To the extent that new efficient, native generation is added, New Jersey can reduce its reliance on imports (much of which comes from pollutant-heavy sources, like coal).

*Renewable energy sources* are a small component of the energy portfolio in New Jersey, but a source that is growing. New Jersey’s Renewable Portfolio Standard (RPS) requires that electricity suppliers serving New Jersey customers (i.e., PSE&G) procure **22.5%** of the electricity it sells to NJ customers from “qualified renewable energy resources” by 2021. And as indicated in New Jersey’s 2011 Energy Master Plan (EMP), the Christie Administration aspires to fulfill **70%** of the State’s electric needs from “clean” energy sources by 2050. (The EMP broadens the definition of clean energy beyond renewables to include nuclear, natural gas, and hydroelectric facilities.) At the current rate, and as shown in the figures above, it is not clear that New Jersey’s energy suppliers will be able to meet these targets.

The Board of Public Utilities (BPU) administers the **New Jersey Clean Energy Program**, which according to its website ([www.njcleanenergy.com](http://www.njcleanenergy.com)):



*"promotes increased energy efficiency and the use of clean, renewable sources of energy including solar, wind, geothermal, and sustainable biomass. The results for New Jersey are a stronger economy, less pollution, lower costs, and reduced demand for electricity. NJCEP offers financial incentives, programs, and services for residential, commercial, and municipal customers."*

In addition to rebates and promotions for energy-efficient technology installations, audits, recycling and performance programs, the NJ Clean Energy Program also provides a number of *New Jersey Renewable Energy Programs* including-

- *Renewable Energy Incentive Program (REIP)* – provides rebates to reduce upfront costs when installing renewable energy systems (wind, biomass, etc.)
- *SREC Registration Program* – registers participants in the solar marketplace
- *Clean Power Choice Program* – allows residents and business owners to choose renewable energy courses for an additional small charge on their monthly electric bill.

By far, *solar power* is the alternative energy source most utilized by New Jersey energy users. By September 2011, there were roughly 11,700 solar photovoltaic (pv) projects totaling 490 MW Statewide. Commercial and residential solar projects account for about 94% of the total number of projects and 84% of the total installed solar capacity in New Jersey. The average installation size of a solar project is 38.2 kW and ranges considerably, from an average residential size of 7.8 kW to average commercial size of up to 175 kW.



### **Leonia:**

Beginning in 2011, the borough installed 100 kilowatts of solar energy on two facilities, the municipal pool parking lot and the Department of Public Works garage. Additionally, The Board of Education installed 435 kilowatts of solar energy on three schools. Through these efforts, it is clear that the borough remains committed to alternative energy resources.

*Leonia's Challenges:*

- @ Uncertainty with the future of the New Jersey SREC program
- @ High costs of installing geothermal and other sources of alternative energy
- @ Borough maintenance staff may need training on maintaining new technologies

*Leonia's Opportunities:*

- h Continue to build on progress of installing solar projects on government buildings and schools
- h Send excess energy production back to the grid to save tax payers money
- h Self-generate power

*Stakeholders to involve:*

- Borough Council members
- Planning Board members
- Maintenance Department
- Building Department
- Engineering Department
- Department of Public Works
- Environmental Commission
- Residents
- Business Owners
- Borough Schools
- Board of Public Utilities (BPU)

**Goal:**

Promote the use of **renewable energy** in homes, businesses and in public facilities.

**Measures of Success**

To measure the Borough’s success for Goal B, Leonia can establish historical baseline figures of the following indicators, and their progress.

Indicator	Explanation	Data Sources	Target
<b>Participants in Clean Power Choice Program</b>	Track the number of participants in the NJ Clean Power Choice Program	NJ BPU	Increase each year
<b>Solar Installations</b>	Track the number of solar projects and PV installations in the Borough	Building Department Board of Ed	Increase each year
<b>Alternative fuel vehicles in municipal fleet</b>	Track the number of alternative fuel vehicles in the municipal fleet	DPW, Police, Fire Department	Increase every 3 years

**Strategies**

The Borough can focus its efforts in a number of strategic areas to achieve this Goal.

No.	Strategy
B1	Increase participation in the NJ Clean Power Choice Program
B2	Increase the use of solar energy and other forms of alternative energy in the Borough
<b>BSJ</b>	<b>Implement Sustainable Jersey: Energy and Climate Change Activities</b>

**Action Items:**

Goal B: Promote the use of renewable energy in homes, businesses and in public facilities														
#	Action Step Description	Action Type						Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+
		Study / Plan ☰	Purchasing \$	Program / Project ^	Partnership E	Policy / Ordinance §	Organizational X	Borough ●	Residents ●	Businesses ●	Schools ●	Partner/Civic Org ●		
<b>B1 Increase participation in the NJ Clean Power Choice Program</b>														
B1a	Collect data from BPU on Leonia's participation in the Clean Power Choice Program.	☰						●					Green Team	S
B1b	Promote the program by distributing pamphlets at meetings, events, with school children, etc.			^				●	●	●	●	●	Green Team School Leaders	S
B1c	Set a Borough-wide target (i.e., 500 households)- and place a large cardboard thermometer or other measure of progress in a visible location- just as in front of Town Hall.			^				●	●	●	●	●	Green Team Borough Council	S
B1d	Initiate a competition with surrounding NJ towns to get residents to sign up.			^	E			●	●	●	●	●	Green Team Borough Council	M
B1e	Post the CleanPower application form on the Borough website for download and include a "number of downloads" counter. Put a survey question on the website that asks "Have you signed up for the CleanPower program" with yes and no answer choices.			^				●	●	●	●	●	Green Team Borough Website Administrator	S
<b>B2 Increase the use of solar energy and other forms of alternative energy in the Borough</b>														
B2a	Assess Leonia's zoning ordinances and amend to remove barriers to the development of wind and solar energy systems in appropriate locations	☰				§		●					Green Team Planning Board Borough Council	S/M
B2b	Promote free online calculators that determine the cost of solar installations and the time period for pay-off			^				●	●	●	●	●	Green Team	S/M
B2c	Provide residents and businesses a 'go solar' kit that has start-to-finish helpful information- from assistance using online calculators, to providing names of installers who can check roofs to ensure they can handle the loads.			^				●	●	●			Green Team	M
B2d	Create an incentive program for residents and businesses that install solar systems, geothermal, or wind systems, i.e., tax abatements, subsidies, and rebates		\$	^				●	●	●	●	●	Borough Council	L

Goal B: Promote the use of renewable energy in homes, businesses and in public facilities														
	Action	Action Type						Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org		
#	Action Step Description	☰	\$	^	E	\$	X	●	●	●	●	●	Person / Entity	S M L
B2e	Adopt a Solar Access Preservation ordinance that protects building owners who install photovoltaic energy systems from a neighboring building that could block sunlight from reaching the system					\$		●	●	●	●	●	Borough Council	M
B2f	Require Borough vehicles to be alternative fuel or flex-fuel vehicles.		\$	^				●	●	●	●	●	Transportation Committee Borough Admin.	M
B2g	Promote geothermal heat pumps, solar water heating systems, and small wind turbines by periodically highlighting a different technology in Borough newsletters or on the website. Provide typical cost details, incentive programs, installation information, etc.		\$	^				●	●	●	●	●	Green Team	M
B2h	Look for ways to publicly recognize Leonia's businesses that generate and use renewable energy – such as an awards program			^				●	●	●	●	●	EDC Green Team	S/M
B2i	Encourage Leonia's businesses to prepare Environmental Management Systems (EMS)			^				●		●			EDC Green Team	S
B2j	Study instituting a "Climate tax" – a small tax on household energy use- that incents households to consume less energy and generates funding to finance climate change initiatives, such as alternative energy projects.	☰	\$	^		\$		●	●	●	●	●	Borough Council Green Team Citizen Advocates	M/L
B2k	Review performance of bonding for a municipal and school alternative energy projects	☰	\$	^				●	●	●	●	●	Green Team Borough Admin. School Leaders	S
<b>BSJ Implement Sustainable Jersey: Energy and Climate Change Activities</b>														
BSJ1	Wind Ordinance Action					\$		●					Borough Council Green Team	M/L
BSJ2	Innovative demonstrative projects (solar, wind, geothermal)	☰	\$	^				●					Green Team	S
BSJ3	Green fleets inventory, driver training			^				●					Borough Admin. Transportation Committee	S
BSJ4	Purchase alternative fuel vehicles	☰	\$					●					Borough Admin. Transportation Committee	M/L
BSJ5	Vehicle Conversions	☰	\$	^				●					Borough Admin. Transportation Committee	M/L

Goal B: Promote the use of renewable energy in homes, businesses and in public facilities														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	⌘	^	E	⌘	X	●	●	●	●	●	Person / Entity	S M L
BSJ6	Meet targets for green fleets	☰	⌘	^				●					Borough Admin. Transportation Committee	M/L

**Sources & Resources:**

Clean Power Choice Program & SREC Program

<http://www.njcleanenergy.com>

NJ Energy Master Plan (2011)

<http://nj.gov/emp/>

## C: Green Buildings

### **Overview:**

The built environment has a vast impact on the natural environment, human health, and the economy.

In the United States, buildings account for:

- 12% of the total potable water consumption
- 39% of the carbon dioxide emissions
- 65% of waste output
- 71% of total electricity consumption

A Green Building is a structure that is designed, constructed, operated, and demolished in a healthy and resource-efficient manner. High performance buildings significantly reduce impacts to water quality, air pollution, global warming and the depletion of natural resources. At the same time, they lower operating costs over time and create a healthier indoor environment.

Green construction methods can be integrated into buildings at any stage- from design and construction, and operations and maintenance, to renovation and finally, demolition. They can be utilized for all types of buildings- single-family homes, condominiums, retail, office, industrial, schools, municipal, etc.

Green building techniques go beyond energy efficiency and water conservation to incorporate environmentally sensitive site design, resource efficient building materials, healthy indoor air quality, etc. They holistically plan the location and the design of the building, parking areas, stormwater management systems, and pedestrian circulation, for example.

### *Principles:*

- Sustainable site selection and design (walkability and proximity to jobs/recreation/transit, solar access, natural and historic resource avoidance, infill and redevelopment)
- Sustainable materials (recycled content, life cycle analysis, local/regionally provided material)
- Storm water management (runoff treatment, permeable areas, LID techniques, native species)
- Energy efficiency (lighting efficiency, heat island reduction, renewable energy sources, conservation appliances and techniques)
- Water use efficiency (efficient fixtures, water recycling and reuse)
- Sustainable construction activities (recycle construction waste, noise/fumes control, site safety)
- Community engagement and public input (visioning sessions, town meetings, outreach to nearby residents)

**Sustainable Jersey:** According to the US Green Building Council, buildings account for 40 percent of the primary energy use, 72 percent of electricity consumption and 39 percent of carbon dioxide emissions in the United States. Green building and design strategies improve the environmental and energy performance of buildings, and also lessen the impact of those buildings on the surrounding environment. Such strategies include energy efficiency, water conservation, indoor environmental quality, increased recycling, use of recycled renewable materials, construction waste reduction, reduced auto use, tree preservation, native plants, and avoidance of environmentally-sensitive landscape features. Most of these techniques are not prohibitively expensive and can yield significant long-term cost savings with lower energy and water consumption.

**Benefits:**

- Interconnected land use and walkability
- Increased durability and lifespan
- Excellence in design
- Design for people
- Land conservation
- Resource efficiency
- Enhanced energy performance
- Water use minimization
- Improved indoor air quality
- Use of more sustainable building materials
- Renewable energy generation
- Waste minimization and reuse and recycling
- Pollution reduction
- Comfortable conditions, indoors and outdoors

**Leonia:**

The places where Leoneans live, work and play should be healthy and high-performing. Leonia is a built-out community in one of the most developed Counties in the Nation. There are no remaining “green fields” or open areas that would allow for new sprawling development. As a compact community, most projects in Leonia already meet the “sustainable site selection” criteria specified by green building rating systems, such as the USGBC’s LEED certification program. Beyond selecting the site, however, project site design (how uses and elements are arranged on a site), and the design, construction and lifecycle of the building, are critical to green building development.

The Leonia Borough Council has initiated work on a Green Building Ordinance. Work still needs to be done before an Ordinance is adopted. The Ordinance should incorporate sustainable principles (i.e., on the previous page) of all areas of site and building design and maintenance. It should be vetted with the business community and the public and should be carefully crafted so as not to be cost prohibitive or stymie economic development in the Borough. The Ordinance should balance the three “Es” of Sustainability- the Environment, Economy and Equity.

### *Leonias Challenges*

- @ Municipal Land Use Law limits what Leonia can require of developers
- @ NJ Building Code does not currently require 'green' initiatives
- @ Developers lack knowledge of green building techniques and long term benefits
- @ Upfront costs can be prohibitive, or at least perceptively prohibitive
- @ Municipal Board members, review staff and building inspectors need training in green building
- @ Municipal buildings are scattered, small and inadequate for Borough functions

### *Leonias Opportunities*

- h Use of Leonia's schools as laboratories for green building techniques and practices
- h Develop a new municipal 'campus' to house municipal buildings and services and develop it as model of green building and design
- h Develop a new green community center / recreation center to enhance individual wellness and community social and entertainment services

### *Stakeholders to involve:*

- Borough Council members
- Planning Board and Zoning Board members
- Maintenance Department
- Building Department
- Building Inspector
- Engineering Department
- Environmental Commission
- Residents
- Business Community
- Resident Experts in Green Building
- Local Developers and Contractors
- Local Landscapers and Landscape Architects

**Goal**

Encourage the development of **green buildings**, **green site design** and **green streets**.

**Measures of Success**

To measure the Borough's success for Goal C, Leonia should establish historical baseline figures of the following indicators, and its progress.

Indicator	Explanation	Data Sources	Target
<b>Site Plans &amp; building permits</b>	Track number of site plans approved / permits issued for green projects	Land use boards & Building Dept.	Year over year increases
<b>Total impervious surface</b>	Use ortho-imagery and GIS to map impervious surface and calculate amount and percentage of land area	Engineering, Consultant or local expert	Reduce total impervious surface per yr
<b>EnergyStar standards &amp; Home Energy Rating System (HERS)</b>	Establish way for residents to submit results and track submissions	Borough	Year over year increases
<b>Renovated buildings</b>	Track the number of existing buildings that get renovated, instead of torn down	Building Dept.	Highlight each one
<b>Linear feet of green streets</b>	Track the length of Borough streets that are redesigned as green streets	Engineering Dept.	i.e.) 200 feet per year

**Strategies**

The Borough can focus its efforts in a number of strategic areas to achieve this Goal.

No.	Strategy
C1	Provide educational and informational materials to Leoneans
C2	Ensure sustainable site selection and design
C3	Reduce water consumption inside and outside of buildings
C4	Reduce energy consumption and maximize energy efficiency
C5	Improve indoor air quality in buildings
C6	Use and reuse of sustainable building materials
C7	Convert streets to Green Streets
<b>CSJ</b>	<b>Implement Sustainable Jersey: Green Design Activities</b>

**Action Items:**

Goal C: Encourage the development of green buildings, inside and out.														
#	Action Step Description	Action Type						Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org		
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
<b>C1</b>	<b>Provide educational and informational materials to Leoneans on Green Building</b>													
C1a	Develop advisory documents for download on the Borough's website on energy efficiency, water conservation, indoor air quality, recycling, etc. and set usage figures for residents, schools and businesses to strive to attain.			^				●	●	●	●	●	Green Team	S
C1b	Publish a list of local green building contractors.			^				●	●	●	●	●	Green Team	S
C1c	Provide tools and calculators (score cards, inventories, audits, portfolio trackers, Energy Star certification process, home footprint calculator) on a Leonia Sustainability Portal website.			^				●	●	●	●	●	Green Team	M
C1d	Ask neighborhood associations, apartment buildings, and informal groups of neighbors to establish "Green Coordinator" positions within their organizations					X		●	●				Green Team	M
C1e	Develop an annual awards program "Greenest Residence" and "Greenest Workplace." Comprise a jury of green team members, Borough Council, Industry Leaders, fellow residents, etc.			^				●	●	●	●	●	Green Team EDC School Leaders	M
C1f	Create a Borough-wide map of green initiatives. Have residents submit their green projects through an online and paper submission process. Leoneans and others will be able to interactively see what fellow residents and businesses are doing.			^				●	●	●	●	●	Green Team EDC	M
C1g	Ask residents, businesses, schools and organizations to sign a "Green Pledge."			^				●	●	●	●	●	Green Team EDC	S
C1h	Provide residents with a scorecard or checklist they can put on the refrigerator and mark off items as they're completed. Do the same for students and have teachers incorporate the scorecard into their curriculums.			^				●	●	●	●	●	Green Team School Leaders	M
C1i	Require energy audits to ascertain building performance as part of the real estate transaction and full disclosure to purchasing parties			^				●	●	●	●	●	Green Team Borough Council	M
C1j	Develop training programs for local office workers on greening the workplace by changing habits			^				●	●	●	●	●	Green Team EDC	M

Goal C: Encourage the development of green buildings, inside and out.														
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		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org		
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
C1k	Train building code officials and inspectors on green building practices and monitoring. Look for grants to fund their attendance at training programs or certification programs.			^			X	●					Building Dept	S
C1l	Educate facilities managers on inspections and maintenance of new practices- i.e., maintaining porous pavement, bioswales, etc.			^			X	●					Building Dept	M
C1m	Evaluate a number of green building rating systems (LEED, Energy Star for buildings, REGREEN, NAHB National Green Building Standard, Green Globes, Labs21, etc.); Utilize the most relevant components of these resources to develop a rating system for Leonia.	☰				§		●					Planning Board Green Team Building Dept	S
C1n	Require that capital projects requiring municipal funding be based on a <i>life cycle analysis</i> - which considers the full operational, maintenance and capital costs over an investments entire life cycle, rather than just its original capital cost.					§		●					Planning Board Borough Council Green Team	M
C1o	Require that all municipal spending projects consider the full cost of projects ( <i>full cost accounting</i> )- such as the health impacts to air pollution and climate effects triggered by greenhouse gas emissions.					§		●					Planning Board Borough Council Green Team	M
C1p	Where developers will not be the ones operating and maintaining buildings they construct, require operations cost analysis be submitted to prevent cost-cutting during construction and impacts to operational costs.					§		●					Planning Board Borough Council Green Team	M
C1q	Develop a scorecard that is used during site plan review to assess whether a proposal meets the values and sustainability objectives of the Borough. Require the submission of a LEED for Neighborhood Development (LEED-ND) checklist for larger projects.					§		●					Planning Board Borough Council Green Team	M
C1r	Establish a relationship with the local chapter of the US Green Building Council.				E			●					Green Team Borough Admin.	S
C1s	Require that applicants complete a one-page form with their application that describes project sustainability measures- including energy reduction and water conservation measures.					§		●					Planning Board Borough Council Green Team	M
<b>C2</b>	<b>Ensure sustainable site selection and design</b>													

Goal C: Encourage the development of green buildings, inside and out.														
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		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org		
#	Action Step Description	☰	⌘	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
C2a	Encourage the adaptive re-use of existing buildings. Create a Borough-wide inventory of buildings that would be appropriate for adaptive re-use, with potential re-use option ideas.	☰						●					Planning Board Infrastructure Committee Green Team	M
C2b	Inventory the Known Contaminated Sites and Brownfield's in Leonia; track clean-up status and report progress periodically to ensure accountability; Apply for Brownfield Redevelopment Grants (i.e., through EPA and NJDEP) to get the properties back on the tax roll.	☰						●					Planning Board Green Team	M
C2c	Permit and promote higher density development around bus stops, and any future park n' ride and light rail station.					§		●					Planning Board EDC Borough Council	M
C2d	Require stormwater management LID strategies such as bioretention, rain gardens, filter strips, swales, vegetated green roofs, or open space.					§		●					Planning Board Borough Council Environmental Commission	M
C2e	Evaluate every site plan for ways to reduce the "heat island" effect— such as minimum solar reflectance index of pavings, cool roof requirements, shade coverage calculations, etc.					§		●					Planning Board Environmental Commission	M
C2f	Reduce light pollution/escape by requiring total light lumen limits and restrictions against off-site lighting trespassing.					§		●					Planning Board Borough Council	M
C2g	Provide applicants with a recommended solar reflectivity index, Energy Star roof products and green roof design standards.					§		●					Planning Board Borough Council	M
C2h	Re-evaluate the maximum pervious surface percentage requirements for each Zone District.					§		●					Planning Board Borough Council	M
C2i	Require permeable surfaces (i.e., porous pavement, permeable pavers) be used where feasible. Provide guidance documents and standards for the proper site preparation, construction and maintenance.					§		●					Planning Board Borough Council	M
C2j	Use stormwater management Low Impact Development (LID) techniques including the installation of curb planters, rain gardens, swales, and xeriscaping along roadways and in landscaping. Provide the contact information for local horticulturists, plant nurseries and landscape architects on the local green contractor listing.			^		§		●					Planning Board Borough Council	M
<b>C3</b>	<b>Reduce water consumption inside and out of buildings</b>													

Goal C: Encourage the development of green buildings, inside and out.														
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		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org		
#	Action Step Description	☰	⌘	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
C3a	Establish building water use standards (potable and non-potable) and flow rates for various types of uses; evaluate compliance with WaterSense criteria.					§		●	●	●	●		Environmental Commission Planning Board Borough Council	M
C3b	Restrict the use of turf grass and maximize the use of native plants and bio-diverse plantings.					§		●	●	●	●		Environmental Commission Planning Board Borough Council	M
C3c	Restrict the use of surface sprinkler systems.					§		●	●	●	●		Environmental Commission Planning Board Borough Council	M
C3d	Require irrigation systems to be from alternate sources of on-site water.					§		●	●	●	●		Environmental Commission Borough Council	M
C3e	Educate residents on how to capture backwash water from swimming pools for use in gray water applications.			^				●	●			●	Environmental Commission	M
C3f	Develop a pilot project of a “Leonia sustainable site;” monitor progress online and provide educational tours; school children can assist in the construction and maintenance.			^				●	●	●	●	●	Green Team Borough Admin. School Leaders	M
C3g	Provide workshops on xeriscaping, a landscaping method that emphasizes water conservation through planning, plant selection, efficient irrigation, use of mulches, soil analysis and improvement, practical turf use and proper maintenance.			^				●	●	●	●	●	Environmental Commission	M
C3h	Permit rainwater collection tanks, cisterns and rain barrels to be located within the required setbacks.					§		●	●	●	●	●	Environmental Commission Planning Board Borough Council	M
C3i	Provide workshops on rainwater harvesting and provide discounts on rain barrels; develop a competition where the winner gets a free barrel.			^				●	●	●	●	●	Environmental Commission	M
C3j	Require sub-meters for occupants utilizing water in water-intense processes (restaurants, dry cleaners, food service, medical/dental offices, laboratories, salons and spas, car washes).					§		●	●	●	●	●	Environmental Commission EDC Borough Council	M
C3k	Promote the re-use of water for toilets and landscaping.			^				●	●	●	●	●	Environmental Commission	M
C3l	Promote water conserving fixtures (low-flow and aeration) for toilets, showerheads and faucets for new construction and rehabilitation projects			^				●	●	●	●	●	Environmental Commission	M

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	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	⌘	^	E	⌘	X	●	●	●	●	●	Person / Entity	S M L
<b>C4 Reduce energy consumption</b>														
C4a	Sign up Leonia’s commercial and industrial businesses to participate in the Energy Star Challenge- a program of the USEPA to have commercial and industrial buildings improve energy efficiency by 10% or more.			^						●			Green Team EDC	S
C4b	Participate in the Architecture 2030 Challenge – which aims to have all new buildings be carbon neutral by 2030.			^				●	●	●	●	●	Green Team EDC	L
C4c	Encourage purchase of Energy Star qualified washers, dishwashers, refrigerators, lighting and roofing. Require Energy Star appliances for municipal uses.			^		⌘		●	●	●	●	●	Green Team Borough Admin.	M
C4d	Review final construction plans and inspect for tight construction- well-insulated walls and sealed windows to reduce heating and cooling loss.					⌘		●					Construction Official Building Inspector	M
C4e	Develop guidance documents and standards on developing green roofs.			^				●	●	●	●	●	Green Team Planning Board	M
C4f	Pilot a green roof on a municipal building or school. Create a webpage dedicated to the construction that includes a step-by-step documentation of the process- including how-to videos, the project timeline, and lessons learned.			^				●			●		Borough Admin.	M
C4g	Coordinate a Leonia Green Roof Tour among multiple households, government buildings, or office buildings that have green roofs, even if it’s just for one roof.			^				●	●	●	●	●	Green Team Environmental Commission EDC	M
C4h	Promote the use of solar water heating by offering education and financial incentives.		⌘	^				●	●	●	●	●	Green Team	M
C4i	Research “wind maps” to determine whether there are areas in Leonia with high wind potential. Involve schools.			^				●					Green Team	M
<b>C5 Improve indoor air quality in buildings</b>														
C5a	Require the use of Low/No VOC paints, primers, adhesives, sealants, coatings, floor coverings, composite wood, ceiling systems, furniture, wood panels and agrifiber products.					⌘		●	●	●	●	●	Borough Council Construction Official Building Inspector	M
C5b	Require windows to be located to provide natural cooling, ventilation and natural daylighting					⌘		●	●	●	●	●	Borough Council Construction Official Building Inspector	M

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#	Action Step Description	☰	⌘	^	E	⌘	X	●	●	●	●	●	Person / Entity	S M L
C5c	Promote the use of green cleaning supplies and integrated pest management. Start with Borough DPW managers, janitorial staff and purchasing managers; expand to building managers and owners.			^				●	●	●	●	●	Green Team Purchasing Dept. Maintenance	M
C5d	Restrict against smoking within 25 feet of any building entrance, outdoor air intakes, or operable windows. Require signage be posted.					⌘		●	●	●	●		Borough Council	M
C5e	Promote the use of daylighting in construction and retrofits- with shading on fenestration facing east, south, and west facades; roof overhangs and recessed windows.					⌘		●	●	●	●	●	Borough Council Planning Board	M
<b>C6</b>	<b>Use and reuse of sustainable building materials</b>													
C6a	Promote the use of recycled materials and rapidly renewable materials by providing contractors with information on how to recycle and reuse construction materials; Develop a Construction Site Recycling Guide			^				●					Green Team Building Dept	S
C6b	Require all large construction and renovation projects (i.e., over \$50,000) to submit Recycling and Reuse Plan that outlines how the developer will meet Borough requirements for reducing, reusing or recycling waste generated. Develop a model Recycling and Reuse Plan.					⌘		●					Borough Council Planning Board Environmental Commission	M
C6c	Develop a listing of companies and products that manufacture building materials locally and regionally, as well as those that recycle materials			^				●					Green Team	S
C6d	Develop construction waste management policies that set requirements for waste diversion					⌘		●					Borough Council Planning Board Environmental Commission	M
C6e	Restrict against the use of refrigerants and ozone-depleting substances as a municipal wide policy.					⌘		●					Borough Council	M
<b>C7</b>	<b>Convert streets to Green Streets</b>													
C7a	Review existing green street design standards, such as 'High Performance Infrastructure Guidelines,' developed in 2005 for New York City for building environmentally sustainable streets, sidewalks, infrastructure and urban landscaping	☰						●					Planning Board Engineering Dept Transportation Committee Green Team	S

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#	Action Step Description	☰	⌘	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
C7b	Adopt Roadway design standards (subject to RSIS limitations) that incorporate LID techniques to address stormwater management, limit impervious coverage, ensure planting of native and drought-resistant vegetation, and integrate other "green street" design initiatives.					§		●					Planning Board Engineering Dept Transportation Committee Green Team	M
C7c	Reduce the urban heat island effect by studying where impervious surface can be minimized (reducing road widths, pervious overflow parking areas, planting strips, paver driveways, etc.)	☰						●					Planning Board Engineering Dept Transportation Committee Green Team	S
C7d	Install curb planters to reduce stormwater runoff; evaluate locations for contained boxes, flow-through and infiltration planters			^				●					Engineering Dept Transportation Committee Green Team	S
C7e	See Open Space, Recreation and Natural Resources Chapter													
<b>CSJ Implement Sustainable Jersey: Green Design Activities</b>														
CSJ1	Green Building Policy / Resolution					§		●					Planning Board Green Team	S
CSJ2	Green Building Training			^				●					Planning Board Green Team	S
CSJ3	Green Development Checklist			^				●					Planning Board Engineering Dept. Green Team	S
CSJ4	Site Plan Green Design Standards			^				●					Planning Board Engineering Dept. Green Team	S
CSJ5	Green Building Education			^				●					Planning Board Green Team	M
CSJ6	Municipal Buildings: New Construction			^				●					Planning Board Infrastructure Committee	M
CSJ7	Municipal Buildings: Water Conservation			^				●					Borough Admin. Green Team	M
CSJ8	Municipal Buildings: Light Pollution			^				●					Borough Admin. Green Team	M
CSJ9	Municipal Buildings: Construction Recycling			^				●					Borough Admin. Public Works Green Team	M

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#	Action Step Description	☰	⌘	^	E	⌘	X	●	●	●	●	●	Person / Entity	S M L
CSJ10	Innovative Demonstration Project: Rain Gardens			^				●					Environmental Commission Green Team	M

**Sources & Resources:**

United States Green Building Council:

<http://www.usgbc.org>

Playbook for Green Building and Neighborhoods:

<http://www.greenplaybook.org/building/plan/commit.htm>

Global Green’s Guide to Green Building for Local Governments:

<http://www.globalgreen.org/docs/publication-71-1.pdf>

A list of additional statistics on buildings and the environment (PDF)

<http://www.epa.gov/greenbuilding/pubs/gbstats.pdf>

## D: Land Use

### Overview:

The way we plan the physical layout or land use of our communities is fundamental to the concept of sustainability. Land use development must simultaneously balance the three E's of Sustainability (environment, economic opportunities, and social equities). In doing so, decision makers need to understand how people within such development will live, work and play. Issues to consider include- access to transportation options, access to services, public health impacts, and many others.

Land use and transportation are inherently linked. Unfortunately, as our dependence on automobiles has increased- so has air pollution, traffic congestion, longer commute times, and obesity rates. Traditional zoning (the separation of uses) and the policies and projects that accommodate the automobile- as opposed to people- have resulted in a number of environmental and social challenges: land consumption (sprawl), over-tapped and failing transportation infrastructure, reduced air quality, climate change, surface and ground water pollutants, dependence on oil, a weakened sense of community, and decreased quality of life.

**Sustainable Jersey:** Land use plays a critically important role in climate change because it directly affects emissions from transportation. In New Jersey, transportation accounts for the largest single sector of its carbon footprint, representing 35 percent of emissions, compared with 26 percent for the nation as a whole. It is also projected to be the fastest-growing sector for the foreseeable future. Therefore, communities should plan for and implement land-use and transportation strategies that reduce vehicle miles traveled (VMT), or the amount each person drives, to address sustainability. **(Land Use & Mobility)**

Green land use planning promotes the creation and enhancement of moderately dense, walkable places with a mix of uses. Sustainable land use planning requires pedestrian-friendly environments and a range of transportation options, ample green space and recreation opportunities, green infrastructure and green buildings, access to vital services including employment, education and healthy food. Direct benefits include reductions in GHG emissions and the municipal carbon footprint, opportunity for additional social interaction, a more healthy population, cost-effect infrastructure, an improved tax base and a revitalized economy.

Effective land use planning and development must be understood from multiple vantage points-

Geographic Level	Municipal Land Use Planning Tools of Influence
Site level (lot & building)	Site plan / subdivision review and approval; building codes and issuance of building permits
Neighborhood level	Neighborhood plans, Redevelopment plans, TOD plans, Capital infrastructure projects, road improvements
Municipal Level	Master Plans, Land Use and Zoning Ordinances, Parking Requirements, etc.
Regional level	Participation in County and State Master Plans, County and State regulations

Decisions made for a single site- i.e, the types of uses and buildings permitted, the number of cars generated, the amount of impervious surface installed, etc.- have ramifications for the neighborhood, municipality and region. Leonia must assess its policies to ensure that sustainable land use planning encompasses each geographic level- from site plan approval and issuing building permits, to selecting land for open space acquisition, to the types of street trees required.

### Principles-

Sustainable land use principles crosscut many disciplines and many areas of government influence. They require coordination in the areas of-transportation, parking, recreation and open space, food production, natural resource preservation, and others.

- *A mix of diverse uses and higher density for walkability and connectivity:* Having pedestrian-oriented communities with daily needs (jobs, schools, recreation and shops) within easy and enjoyable walking distance requires moving destinations closer through moderate density and mixing land uses. Mixing uses means allowing shops, services, amenities, jobs and homes to be located within easy reach of one another, whether on the same parcel, in the same building, or within a few minute walk. Diverse communities should have a variety of residential, commercial, recreational and civic facilities.
- *Complete Streets and varied transportation options:* Street right-of-ways in Leonia occupy approximately 18% of the Borough's land area. Compact, mixed use development makes walking more convenient, but good pedestrian design is equally important to generate high level of pedestrian activity. Provide options for walking, biking, and using public transit to reduce traffic congestion, protect the environment and encourage physical activity (See Transportation Section)
- *Support for Transit:* In addition to supporting local stores, higher density targets can provide support for different levels of transit service. At 4 to 8 units per acre, buses can run every 30 minutes. At 15 or more units per acre, buses can run more frequently, which typically attracts more riders. The threshold of 15 units per acre is a minimum target for any transit-oriented development. It's also a useful target for average densities within walking distance of existing and potential bus routes.

### Some facts and figures from [www.greenplaybook.com](http://www.greenplaybook.com) –

- ✓ Residents of walkable communities are 2.4 times more likely to get 30 minutes a week of physical activity than residents of neighborhoods without walkable features.(Ewing & Kreutzer, 2006)
- ✓ 25% to 33% of potential buyers prefer infill, mixed-use, and transit-oriented neighborhoods, and this demand is expected to grow as the population ages. (Ewing et. Al, 2007)
- ✓ Residents in neighborhoods in inner areas have 36-60% lower travel-related greenhouse gas emissions than those in outer areas. (IBI Group, 2002)
- ✓ Households close to a city's center spend about half as much on travel expenses as those in the suburbs do. (Hagler Bailley Services, 1999)
- ✓ Cumulatively, compact development could save 8% in development costs and reduce local government deficits by 10% by 2025. (Burchell et. Al, 2005)
- ✓ High density neighborhoods in inner areas are as much as 50% more cost efficient than low density outer suburbs neighborhoods on a life cycle cost basis.(Dillon Consulting et. Al, 2005)
- ✓ Compact development generates three times less storm water runoff per household than low-density development does. (Heaney, Pitt, & Field, 1999)
- ✓ Trees can reduce local ambient temperatures by 5 degrees. (McPherson et. Al, 2003)
- ✓ To avoid the most serious consequences of climate change, American towns and cities should be have emission levels that peak by 2015 and are reduced in the order of 60-80% by mid-century ([www.greenplaybook.org](http://www.greenplaybook.org))

- *Open Space:* An ample supply of green open space (ecological / natural) has numerous benefits including—provision of habitat (for fish, birds, small mammals, butterflies, and others), management of water quality and protection from flooding, sequestration of carbon and improvement of air quality, places for passive and active recreation, human interaction and appreciation for nature, reductions in the urban heat island effect and creation of more beautiful spaces, to name a few. Even the smallest component can be a green space- street boulevards and trees, parking lots, green roofs, green walls, and green balconies. It's important to think of even the smallest green space as part of a larger network within Leonia. (See Open Space Section)
- *Expanded housing opportunities:* Locate homes near transit, jobs, schools, and where services are available. Foster development and rehabilitation of homes to meet the needs of all people of all abilities, income levels and household types.
- *Strong sense of place:* Buildings, structures and spaces should reflect and celebrate a community's people, culture and heritage. Public spaces that are welcoming and well-defined stimulate face-to-face gatherings, whether for public events or chance meetings.
- *Environmental resource protection:* Balance nature and development to preserve natural systems, protect waterways from pollution, reduce air pollution, and protect property values.

#### *Benefits:*

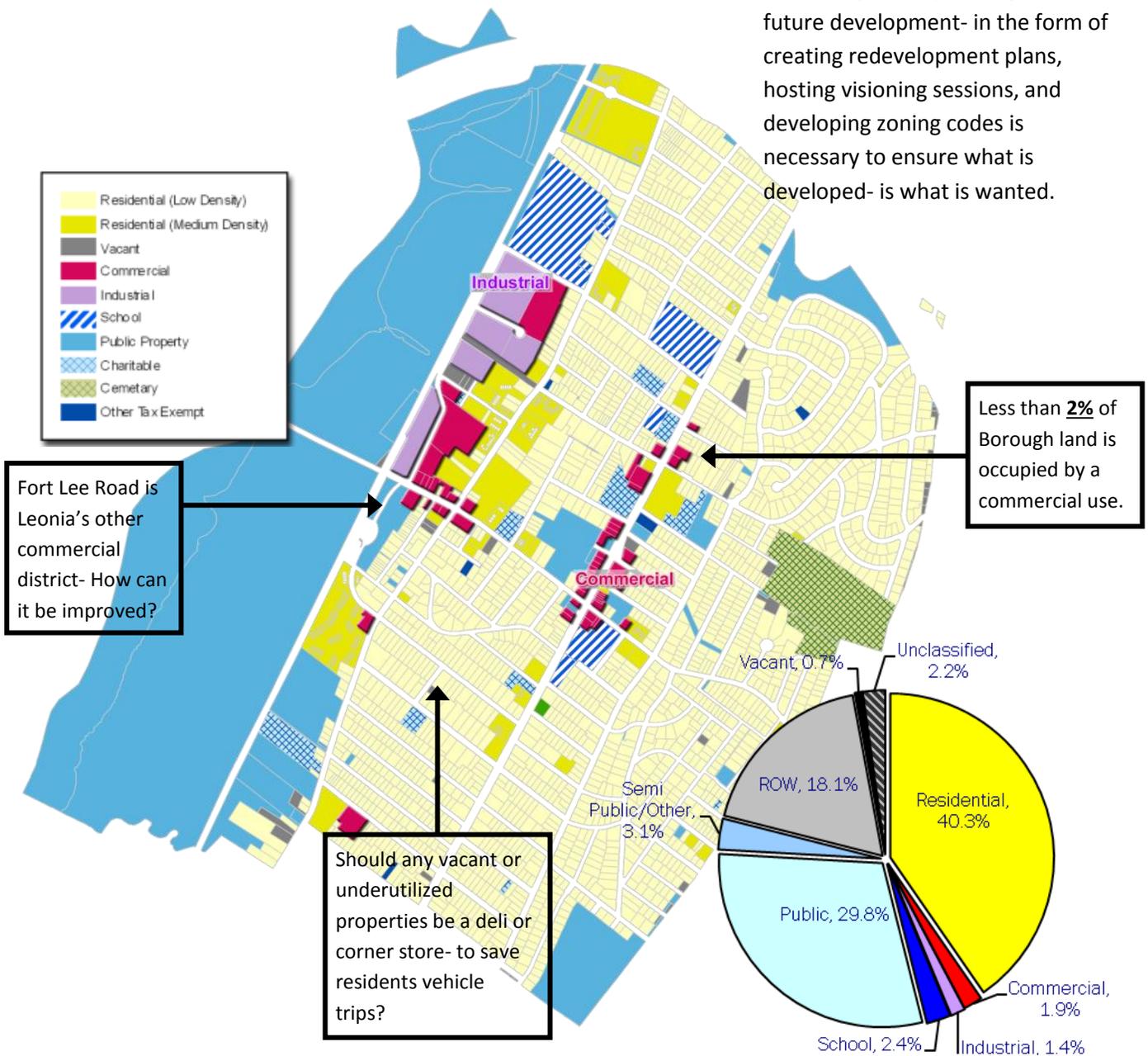
Many of the benefits of sustainable land use are the same as the principles, and include:

- Access to transportation options
- Improved public health and wellness
- More face to face interactions
- Protection of natural resources
- Energy conservation
- Reduced traffic congestion and associated economic impacts
- Higher quality of life

**Leonia:**

There is very little land that has *not* been built on in Leonia. Any changes to the Borough’s development pattern would occur through redevelopment projects and infill development. However, maintaining a “small town” feel is essential to Borough residents; it is what attracts many residents to live in Leonia. Future development must therefore strike a balance between Leonia’s sustainability goals and the preservation of the Borough’s small-town residential character.

Forethought and planning for future development- in the form of creating redevelopment plans, hosting visioning sessions, and developing zoning codes is necessary to ensure what is developed- is what is wanted.



### *Leonía Challenges*

- @ There is little vacant land
- @ Public acceptance towards sustainable land use initiatives
- @ Significant traffic and congestion on Borough roads

### *Leonía Opportunities*

- h The Broad Ave. shopping district is centrally located, within walking distance of most residents
- h Overpeck Park is one of the largest parks on the region and could be accessible by walking and bicycling to all residents with improved infrastructure
- h Linking Wood Park and downtown through programming, design and connectivity
- h Public transportation options (buses, potential future light rail)
- h Live-work-play-shop opportunities on the doorstep to New York City
- h Target some underutilized areas for regenerative growth

### *Stakeholders:*

- Borough Council
- Planning & Zoning Boards
- Environmental Commission
- Zoning Officer
- Residents
- Local leadership
- Businesses Groups
- Community Groups

**Goal**

Implement efficient **land use** and development patterns

**Measures of Success**

To measure the Borough’s success for Goal D, Leonia should establish historical baseline figures of the following indicators, and track their progress.

Indicator	Explanation	Data Sources	Target
<b>Pedestrian Counts</b>	Perform pedestrian counts at various times of the day and year	Engineering Dept. / Consultant	Increase year over year
<b>Bicycle Counts</b>	Perform bicycle counts at various times of the day and year	Engineering Dept. / Consultant	Increase year over year
<b>Housing units within ¼ mile of transit</b>	Track new developments	Certificate of Occupancies from Building Dept.	Reach desirable goal.
<b>Mixed-use buildings</b>	Number of mixed-use buildings approved	Building Dept.	Increase

**Strategies**

The Borough can focus its efforts in a number of strategic areas to achieve this Goal.

No.	Strategy
D1	Promote pedestrian-scale, mixed-use development along existing Broad Ave. and Fort Lee Road commercial areas that encourages people to walk between destinations, rather than drive.
D2	Promote redevelopment, infill and brownfield development in appropriate locations.
D3	Develop mixed-use opportunities (“Transit Oriented Development”) near the proposed commuter rail station if the Northern Branch Light Rail line is advanced.
D4	Locate parks, community facilities and shopping nodes near underserved residential areas
<b>DSJ</b>	<b>Sustainable Jersey Implementation: Land Use &amp; Mobility Activities</b>

**Action Items:**

Goal D: Implement efficient land use and development patterns.														
#	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan ☰	Purchasing \$	Program / Project ^	Partnership E	Policy / Ordinance §	Organizational X	Borough ●	Residents ●	Businesses ●	Schools ●			Partner/Civic Org ●
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
<b>D1</b>	<b>Promote mixed-use development along existing Broad Ave and Fort Lee Road commercial areas that encourages people to walk between destinations, rather than drive.</b>													
D1a	Assess Leonia's existing policies and regulations-zoning ordinance, subdivision regulations, street design standards, building codes, parking requirements, etc.- to see where the barriers to sustainable mixed-use development exist.	☰				§		●					Planning Board EDC Green Team	S
D1b	Revise the Borough zoning code to permit and encourage residential uses above first floor storefronts on Broad Ave. and Fort Lee Road.					§		●					Planning Board EDC Green Team	S
D1c	Assess preparing and adopting a Form Based Code (FBC) Ordinance or FBC Overlay Zone for Broad Ave. and/or Fort Lee Rd. In a FBC, the primary emphasis is on design (building type, dimensions, parking locations, building façade, appearance of the streetscape) over permitted uses. Graphics are used to convey desirable development.					§		●					Planning Board Borough Council EDC Green Team	M
D1d	Adopt zoning overlays that permit higher density or density bonuses around Broad Ave., Fort Lee Road, or bus stops for sustainable projects. For example, permit a 3 <sup>rd</sup> and 4 <sup>th</sup> story on Broad Street if they are "stepped back" from the street line. Consider higher permissible heights on Fort Lee Road.					§		●					Planning Board Borough Council EDC Green Team	S
D1e	Develop urban design standards for buildings and streetscapes in these corridors. The design guidelines should encourage pedestrian activity-wider sidewalks, shade trees, benches for people to rest, façade windows and awnings, outdoor seating, etc.					§		●					Planning Board Borough Council Shade Tree Green Team	M
D1f	Hold regular community visioning meetings to engage residents in developing new zoning for these areas.					§		●	●	●	●	●	Planning Board Green Team EDC	S
D1g	Look at establishing a pedestrian plaza in the Broad Ave downtown district (i.e., at Beachwood & Broad Ave or Magnolia & Broad Ave.). Provide benches, outdoor eating tables, street trees, public art.			^				●					Planning Board Borough Council Transportation Committee Green Team	S

Goal D: Implement efficient land use and development patterns.														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description		\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
D1h	Start a pilot project to make Boro Place, the short section of roadway from Broad Ave. to Wood Park, a car-free pedestrian plaza on certain summer nights. Encourage nearby restaurants to serve light food and drink. Link activities to Wood Park.			^				●					Planning Board Borough Council Green Team	S
D1i	Establish a more pleasant connection to Wood Park from Broad Ave. Provide picnic tables for people to enjoy take-out meals from downtown food establishments.			^				●					Planning Board Borough Council Green Team	M
<b>D2</b>	<b>Promote redevelopment, infill and brownfield development in appropriate locations</b>													
D2a	Conduct an inventory of vacant land, brownfields, infill sites, and underutilized property – Identify properties that are ‘susceptible to change.’							●					Planning Board Green Team	S
D2b	Develop incentives (tax credits, abatements, fee reductions or waivers, grants, technical or marketing assistance) for the redevelopment of identified underutilized areas (vacant, parking, foreclosure, etc.). Develop an RFP process that seeks out developers seeking LEED certification.			^				●					Planning Board Borough Council	M
D2c	Prepare a redevelopment investigation and draft a redevelopment plan that requires compact, pedestrian-oriented development for the commercial section of Fort Lee Road. Require pedestrian and bicycle connections to the Broad Ave. shopping district and Overpeck Park.					§		●					Planning Board Borough Council	M
D2d	Apply for brownfield redevelopment grant funding through EPA Brownfield Grants, Brownfield Reimbursement Fund, HDSRF (hazardous discharge site remediation fund)			^	E			●					Planning Board Borough Council	S
D2e	Continuously review the NJDEP resources for locating brownfields- <i>NJ Brownfields Site Mart</i> and the <i>Known Contaminated Sites List</i> , both of which can be accessed from: <a href="http://www.nj.gov/dep/srp/brownfields/">http://www.nj.gov/dep/srp/brownfields/</a>							●					Planning Board Green Team	M
<b>D3</b>	<b>Develop mixed-use opportunities (“Transit Oriented Development”) near the proposed commuter rail station if the Northern Branch Light Rail line is advanced.</b>													
D3a	Plan now for potential future light rail- Develop a TOD plan and ordinance that provides for a mixture of dense activity within a quarter mile radius of the potential future light rail station.				E			●					Planning Board Borough Council Green Team	M

Goal D: Implement efficient land use and development patterns.														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
D3b	Start evaluating land for potential acquisition around the proposed station area that can be utilized for TOD.	☰	\$		E			●					Planning Board Borough Council	S
D3c	Start discussions with developers to get a sense of the potential development options for the area; find out if developers would be willing to work with NJ Transit to integrate the design of a station and parking into a mixed use development.				E			●					Planning Board Borough Council	S
D3d	Consider a temporary moratorium on non-TOD compatible construction near the proposed station					§		●					Planning Board Borough Council	S
D3e	Start TOD visioning exercises with Leoneans	☰			E			●	●	●	●	●	Planning Board Green Team	S
D3f	Assign a Borough Representative to attend NJ Transit meetings related to the Northern Branch. Ensure that Leonia is involved in the decision-making- particularly with regards to service to Leonia, station design, parking lot design, etc.				E			●					Borough Council	S
<b>D4</b>	<b>Locate parks, community facilities and shopping nodes near underserved residential areas.</b>													
D4a	Perform a land use analysis to determine areas where community uses (a park or childcare) and small retail nodes (a restaurant, corner store, café, deli) could be located within walking distance of residential neighborhoods. Survey residents of those neighborhoods to see what type of use would be welcomed within walking distance.	☰						●	●				Planning Board Green Team	S
D4b	Update zoning codes to further this effort. Overlay zones, for example, could be established where nodes of activity would be permitted.					§		●					Planning Board Borough Council	S
D4c	Update Ordinances to permit or expand permitted home-office uses in residential areas and permit live-work types of uses and structures. As medical offices (doctors, dentist) are lacking in the Borough (see Leonia Economic Plan), start with permitting these home office uses.					§		●					Planning Board Borough Council	S
<b>ASJ</b>	<b>Sustainable Jersey Implementation: Land Use &amp; Mobility Activities</b>													
ASJ1	Sustainable Land Use Pledge					§		●	●	●	●		Planning Board EDC Green Team	S

Goal D: Implement efficient land use and development patterns.														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org			
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
ASJ2	Sustainable Master Plan Revision	☰	\$			§	X	●	●	●	●	●	Planning Board Green Team	S
ASJ3	Municipal Planning and Zoning Self Assessment	☰		^		§		●	●	●			Planning Board	M
ASJ4	Community Asset Mapping	☰		^				●	●	●	●		EDC	S
ASJ5	Community Visioning			^	E		X	●	●	●	●	●	EDC Green Team	S
ASJ6	Sustainable Community Plan	☰						●	●	●	●	●	Green Team	S

**Sources & Resources**

The Sustainability Institute  
[www.sustainer.org](http://www.sustainer.org)

Smart Growth Online  
[www.smartgrowth.org](http://www.smartgrowth.org)

New Jersey Smart Growth Gateway  
<http://smartgrowthgateway.org>

Smart Communities Network  
[www.smartcommunities.ncat.org](http://www.smartcommunities.ncat.org)

## E: Transportation

### Overview:

When most roads were built in New Jersey, no one could have predicted the number of cars that would use them today (and continue to grow!). Capacity for roadway expansion in New Jersey is limited, and in the long term, just leads to greater use and congestion. With more vehicles comes more smog, causing severe health problems for many and contributing to climate change. Traffic congestion costs the United States billions annually in lost productivity, and our auto habits increase our dependency on foreign oil (largely from unstable parts of the world). Also included in the “true cost” of auto-dependency are the lost lives from traffic fatalities and injuries and the health impacts of pollution and sedentary lifestyles.

If communities are to reduce automobile use, they must provide a range of realistic transportation alternatives to driving- including the infrastructure for walking, bicycling and public transit.

**Sustainable Jersey:** Land use plays a critically important role in climate change because it directly affects emissions from transportation. In New Jersey, transportation accounts for the largest single sector of its carbon footprint, representing 35 percent of emissions, compared with 26 percent for the nation as a whole. It is also projected to be the fastest-growing sector for the foreseeable future. Therefore, communities should plan for and implement land-use and transportation strategies that reduce vehicle miles traveled (VMT), or the amount each person drives, to address sustainability. **(Land Use & Mobility)**

### *Principles:*

- *Integrated Land Use Planning:* Any changes to the street network should be planned in concert with the future land use vision (and vice-versa.)
- *Maximized Bike / Pedestrian Travel:* Provide an attractive, safe, practical and inviting way for residents to walk or bike between their homes and Borough destinations. Ensure sidewalks meet ADA standards and are comfortable for pedestrians (street trees, amenities, adequate lighting, etc.). Designate streets for bike routes and provide bike parking.
- *Maximized Public Transit:* Next to walking and biking, public transit is the most energy-efficient and most environmentally-sound way to move people. Improve access to public transit (light rail, buses, vans, shuttles, shared taxis.)
- *Improved Roadways:* Regular road maintenance reduces the need for road closures; Traffic calming measures (curb extensions, crosswalks, center medians, on-street parking) can make roads safer for pedestrians.
- *Technology, Program implementation and Regulation:* Research and implement transportation technologies such as: Transportation Demand Management (TDM), telecommuting, car sharing programs (i.e., Zip-Cars), Bike-sharing, alternative fuel vehicles (electric cars, hybrids), alternative fueling stations, anti-idling ordinances, etc.
- *Improved Parking:* Provide creative solutions such as shared parking between sites, park-once strategies, maximum parking standards, etc. Reducing space for parking provides more land for shops, residences, open spaces space, amenities and for vibrant interactions.
- *Complete Streets.* Streets should be comfortable for all users- not just cars. Complete Streets are safe, comfortable and convenient for travel via automobile, foot, bicycle, and transit. Advocates

believe that we can integrate thoughtful design into our roadways from the beginning [or through retro-fitting], with features like sidewalks, shade trees, comfortable transit stops that are easy to walk to, good crosswalks and traffic signals for pedestrians (and medians on wide streets so a walker can pause halfway across if need be), and bike accommodations.

**Benefits:**

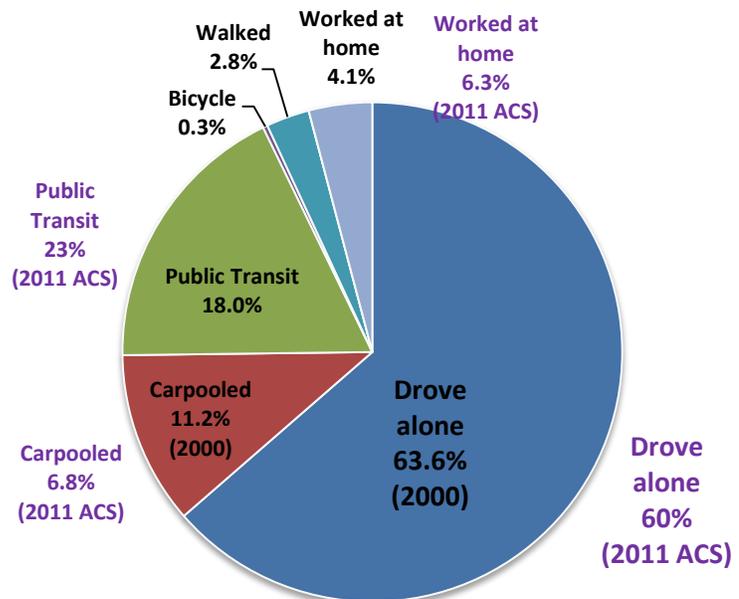
- Reduced congestion
- Reduced dependence on foreign oil (largely from unstable parts of the world)
- Reducing negative effects of climate change
- Less pollution and smog
- Improved health and health cost savings from less pollution and more exercise
- Reductions in lives lost from traffic fatalities and injuries
- Economic benefits from less congestion
- Improved quality of life



**Leonia:**

According to the 2000 Census, 64% of Leoneans commuted to their jobs by driving in a vehicle alone. Journey to work data for the 2010 Census is not yet available. However, data from the 2007-2011 American Community Survey (ACS) estimate indicates potential changes to 2000 commuting patterns. The 2011 ACS estimates that the number of Leoneans commuting alone decreased slightly, while the number of residents taking public transit or working from home increased. The ACS also estimates that carpooling has reduced significantly. These changing figures (i.e., nearly a quarter of residents are now estimated to commute by public transit) should drive Leonia policy and transportation infrastructure and improvement decisions.

The National Bicycling and Walking Study - *Transportation Choices for a Changing America* presents a goal double the current percentage (from 7.9% to 15.8%) of total trips made by bicycling and walking. Leonia is well below the National average with just 3.1% of Leonean's commuting to work by bicycling and walking in 2000. The 2011 ACS estimates indicate that this low percentage is decreasing.



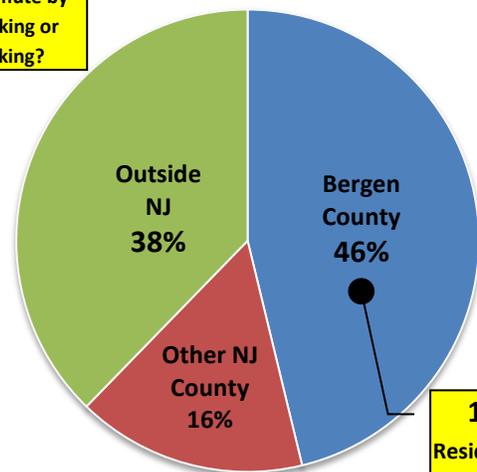
On average, Leoneans have a long commute to work. In 2000, the average commuting time was 34 minutes. The 2011 ACS indicates that commuting times have reduced slightly today (32 minutes). Nearly half of residents (46%) commute within Bergen County. Looking deeper into the numbers, however, it becomes clear that there is some room for improving the bicycling and walking percentages. Approximately 845 residents (20%) had a commute to work of less than 15 minutes. Likely included in this number are the 616 residents or 15% of residents that work within Leonia (and even greater numbers per the 2011 ACS). Residents with shorter commutes have an opportunity to reach their destination by walking or bicycling. In addition, 18% of residents took public transportation in 2000. The 2011 ACS 5-Year Estimate predicts this number grew to 23% of residents. There is also opportunity for residents to reach transit destinations by walking or bicycling, if the infrastructure is in place.

**Commuting Times  
(Census 2000)**

Travel Time to Work	Percent	Summary
Less than 10 minutes	7%	20%
10 to 14 minutes	13%	
15 to 19 minutes	10%	48%
20 to 24 minutes	12%	
25 to 29 minutes	5%	
30 to 34 minutes	15%	
35 to 44 minutes	8%	
45 to 59 minutes	14%	32%
60 to 89 minutes	15%	
90 or more minutes	4%	
Total	100.0	100%

Opportunity to commute by walking or biking?

**Place of Work  
(2010 ACS 5-Year Estimate)**



15% of Residents work in Leonia

Average vehicle ownership in Leonia is approximately 1.5 cars per household (2010 ACS 5-Year Estimate). However, vehicle ownership is much higher among owner households than it is among renter households. Approximately half of homeowners, as opposed to a quarter of renters have 2 vehicles in their household. The more vehicles per household, the more cars that will be on the Borough's congested roads and the more space that will be needed for parking (i.e., driveways, asphalt parking lots, and on-street parking)- which means less space for development or open space. The 2011 ACS estimates predict slight reductions in the number of vehicles available among both renters and owners.

**Vehicles Available per Household  
(Census 2000)**

Nearly HALF of homeowners have 2 vehicles vs. a QUARTER of renters

Number of Vehicles	Owner	Renter
None	5%	16%
1 vehicle	28%	56%
2 vehicles	49%	26%
3 vehicles	16%	2%
4 vehicles or more	3%	1%

Leonia must anticipate and plan for tomorrow's transportation demands. Possibilities for expanding the road network for increased capacity are extremely limited. Leonia must address transportation

holistically- and in concert with future land used decisions. Viable alternatives to driving will be needed in order to maintain or improve commuting conditions, a major quality of life factor and determinant of where people choose to live. Increasing access to public transportation, and creating safe roads for people to walk and bike to school, work, and recreation are essential alternatives.

#### *Leonia's Challenges:*

- @ Roadways are mainly designed for automobiles, not pedestrians
- @ Roads are congested, particularly on Fort Lee Road- used often as a 'cut-through' for traffic heading to the George Washington Bridge
- @ There is little existing bike infrastructure (bike lanes, sharrows, signage, racks)
- @ Perceptions that walking and bicycling is not safe; or not "cool" among school children
- @ No school bussing; many students are dropped off or drive
- @ Budget constraints; reduced funding for infrastructure from State and Federal sources
- @ Many Leoneans have 2 or 3 vehicles and just 3% elect to commute by walking or bicycling

#### *Leonia's Opportunities:*

- h Leonia is a compact, town with great geographic distribution; Broad Avenue is centrally located in the center of the Borough and most residential areas are within walking distance.
- h For bicycle and pedestrian connections to Leonia's destinations (library, shopping, parks, schools.)
- h The potential expansion of the "Northern Branch" of the Hudson-Bergen Light Rail and a proposed station in Leonia will offer an alternative transportation mode for commuting and recreating to and from Leonia.
- h There are existing bus routes through the Borough; service and the experience could be improved
- h To coordinate parking on Broad Ave. so there is more room for development or plaza space, and fewer surface parking areas.

#### *Stakeholders:*

- Borough Council
- Planning & Zoning Boards
- Engineering Department
- Residents
- Students
- Local leadership
- Businesses
- Community Groups
- NJ Transit
- Bus Providers

**Goal**

Provide **transportation** options and reduce vehicles miles travelled.

**Measures of Success**

To measure the Borough’s success for Goal E, Leonia should establish historical baseline figures of the following indicators, and track their progress.

Indicator	Explanation	Data Sources	Target
VMT	Vehicle Miles Travelled (VMT)	Borough, County Engineer	Reduce annually
Transit Riders	Ridership levels at Leonia bus stops	NJ Transit	Increase at each bus stop
Bike Racks	Bike racks installed at schools, library, stores, apartments/condos, etc.	Manual count	Track installations
Pedestrian Accidents	Number of pedestrian accidents in Leonia	Leonia & County Police Depts.	Reduce annually
Household Vehicle Ownership	The average number of vehicles per household; increase 0 & 1 vehicle/hh and decrease 2 & 3 vehicles/hh	US Census Bureau	Reduce annually
Percentage of commuting trips made by bike or walking	Track walking and bicycling as a percentage of all “Commute to Work” statistics	US Census Bureau	Increase annually

**Strategies**

The Borough can focus its efforts in a number of strategic areas to minimize the number and length of car trips.

No.	Strategy
E1	Increase walking as a mode of transportation / (Institute Complete Streets)
E2	Increase bicycling as a mode of transportation
E3	Increase public transportation use and carpooling
E4	Improve parking in Leonia
E5	Promote Transportation Demand Management
ESJ	Sustainable Jersey Implementation: Land Use & Mobility Activities

**Action Items:**

Goal E: Provide transportation options and reduce vehicle miles travelled (VMT)														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
<b>E1</b>	<b>Increase walking</b>													
E1a	Conduct a walkability audit that identifies concerns for pedestrians related to safety, access and comfort. A number of audit tools can be found here: <a href="http://www.walkinginfo.org/problems/audits-general.cfm">http://www.walkinginfo.org/problems/audits-general.cfm</a>	☰						●	●		●	●	Environmental Commission Transportation Committee	S
E1b	Adopt a Complete Streets policy and develop a Complete Streets Plan; work with Engineering to determine a timeline for implementing through future infrastructure projects.					§		●					Transportation Committee	S-M
E1c	Encourage students to walk to school in "walking school buses," such as to Anna C. Scott Elementary School. Identify walking routes and attract volunteer parent leaders.			^	E			●	●		●		School Leaders Environmental Commission	S
E1d	Start a Leonia walking club. Create and publish walking routes of various distances (i.e., 1, 2, 3 or 5+ mile routes) online that explore different areas of the Borough and surrounding communities. Sites like <a href="http://www.mapmyfitness.com">www.mapmyfitness.com</a> allow you to map and download walking routes.			^	E			●	●	●	●	●	Recreation Committee	S
E1e	Organize a monthly topical walking tour. Invite historians, architects, arborists, habitat specialists, City Officials, etc. to give the tours on their subject of expertise.			^	E			●	●	●	●	●	Recreation Committee	S
E1f	Develop a marketing campaign that strives to get residents moving- for commuting, errands, short trips, recreation, or exercise.			^	E			●			●	●	Environmental Commission Transportation Committee	S
E1g	Create a brochure, webpage, or mailing that informs residents of what goods and services residents can acquire locally within Leonia and nearby. Encourage these trips to be made by walking or bicycling. Combine the marketing message to be: shop locally and for your health.			^	E			●	●	●	●	●	EDC	S
E1h	Undertake a Safe Routes to School Program Walking to and from school will alleviate traffic generated by school drop-off and will provide students and parents with daily exercise.			^	E			●	●		●	●	Environmental Commission Transportation Committee	S

Goal E: Provide transportation options and reduce vehicle miles travelled (VMT)														
	Action	Action Type						Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org		
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
E1i	Require sidewalks or walking paths installed on all properties that come in for site plan approval, if no sidewalks exist. Consider permeable sidewalk surfaces in some locations. Property by property, sidewalks will be installed, and will eventually connect.					§		●					Borough Council Planning Board	S
E1j	Develop a Borough-wide Pedestrian Master Plan that encompasses and builds on the Walkability Audits. The Plan makes recommendations for streetscape improvements, amenities and infrastructure in specific locations to improve the pedestrian experience and overall safety. It assesses gaps in the pedestrian network and what is needed to solve them.	☰						●	●		●	●	Planning Board Environmental Commission Recreation Committee	M
E1k	Improve pedestrian crossing conditions at key locations by reducing crossing distances (curb extensions or center median).		\$					●					Engineering Dept.	M
E1l	Initiate a long-term, joint effort with neighboring Fort Lee to create a safe walking route from Overpeck Park to Palisades Park ("park to park"). Pass through shopping districts if possible so walkers can stop for drinks or treats.			^	E			●	●	●	●	●	Environmental Commission Transportation Committee	L
E1m	Establish an interconnected system of paths, sidewalks and trails that reach a variety of services and resources- schools, grocery store, libraries, etc.			^	E			●	●	●	●	●	Green Team EDC	L
<b>E2</b>	<b>Bicycling</b>													
E2a	Start a Leonia bike-riding club (similar to the walking club discussed above). Organize trips from Leonia to Peirmont and Nyack along 9W and over the GWB into Manhattan.			^					●			●	Recreation Committee	S
E2b	Organize bicycle maintenance and safety workshops.			^					●		●	●	Recreation Committee	S
E2c	Participate in Bike-to-Work weeks; also promote Bike-to-School at the same time.			^	E			●	●	●	●	●	Borough Council EDC School Leaders	S
E2d	Develop a Borough-wide bicycle map that shows commuter and recreational routes and clearly indicates lower and higher traffic streets	☰						●				●	Recreation Committee	M
E2e	Develop a bike and pedestrian master plan (See above) that assesses existing conditions and makes infrastructure improvements that enhance safety and walkability.	☰						●				●	Planning Board Transportation Committee	M

Goal E: Provide transportation options and reduce vehicle miles travelled (VMT)														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
E2f	Assess where vehicle travel lanes can be narrowed to establish bike lanes and/or wider pedestrian areas.			^		§		●					Engineering Dept	S
E2g	Require that all road improvement projects (i.e, resurfacing, widening) assess the potential for bicycle facilities (dedicate lanes, sharrows, signage, etc.)					§		●					Borough Council Planning Board Engineering Dept	S
E2h	Adopt minimum bike parking standards and design criteria for indoor parking (protective storage) and outdoor parking (bike racks)					§		●					Borough Council Planning Board	S
E2i	Develop a program for local businesses to easily acquire and install bike racks.		\$	^	E			●		●			Economic Development	M
E2j	Provide bike racks at grocery stores, library, municipal building, schools, parks, downtown, bus stops and other destinations.		\$	^	E			●		●	●	●	Economic Development Businesses, NJDOT	M
<b>E3 Public Transportation</b>														
E3a	Assess NJ transit ridership data to see which bus stops have the highest ridership. Survey persons waiting for the bus to determine where they are coming from, how they reach the bus stop, how frequently they take the bus and what could be done to improve their experience. Present bus stop utilization information to Borough Council and NJ Transit as a way to prioritize enhancements.	☰						●				●	Planning Board Transportation Committee	M
E3b	Create a bus stop map that shows a 5-10 minute walking radius around bus stops to determine where gaps may exist for residents.	☰						●					Planning Board Transportation Committee	M
E3c	Install or improve bus shelters that are comfortable waiting places. Have a bus shelter design competition, and a fundraising event to collect funds for their construction.		\$	^	E			●	●	●	●	●	Transportation Committee NJ Transit Borough Admin. Schools	M
E3d	Develop partnerships with local businesses for them to “adopt a bus stop.” Mount their advertisements or community event information.			^	E			●		●		●	Transportation Committee NJ Transit EDC	M
E3e	Evaluate the potential for jitney service for residents to frequent destinations- nearby mall, movie theaters, borough hall, park, and library. The jitney could run a regularly scheduled route or operate on a demand-based need.	☰						●					Transportation Committee EDC	M

Goal E: Provide transportation options and reduce vehicle miles travelled (VMT)														
	Action	Action Type						Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org		
#	Action Step Description		\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
E3f	Preparing for Light Rail expansion: develop a marketing campaign that promotes the benefits of transit for Leonia- economic, access to jobs and entertainment, reduced congestion and improved air quality, etc.			^	E			●		●		●	Transportation Committee EDC NJ Transit	M
E3g	Review TOD projects from around the world and collect images. Put together a slide presentation that shows images and presents details of each project. Ask residents to rate their preferences for each slide (Visual Preference Survey). Use this data to understand the elements of a TOD design that are important to Leoneans.							●					Borough Council Transportation Committee	M
E3h	Prepare a report and cost estimate of roadway improvements that need to be put in place in advance of, or at the same time, as the light rail station and parking. Include details for all modes of travel- driving, drop-off, walking, and bicycling. Start discussions with NJ Transit about these improvements when the FEIS is released.							●					Borough Council Planning Board Transportation Committee	M-L
<b>E4 Parking</b>														
E4a	Develop an Ordinance that permits shared parking among uses and allow reductions in supply when parking is time-shared.					§		●					Transportation Committee Planning Board Engineering Dept	S
E4b	Prepare a downtown parking inventory and parking plan. Identify opportunities to share parking and provide connections between sites. Shared parking takes advantage of time-of-day variations in peak use.					§		●					Borough Council Planning Board Engineering Dept Transportation Committee	S-M
E4c	Establish a shared parking brokerage service to match partners for shared parking.			^	E			●		●		●	Transportation Committee EDC	M
E4d	Evaluate if minimum parking requirements can be reduced- which help to reduce construction costs and provide more land for development. Also consider providing maximum parking requirements.					§		●					Borough Council Planning Board Engineering Dept	S
E4e	Enact standards that reduce size requirements for compact car parking spaces (and permit a maximum number of compact spaces).					§		●					Borough Council Planning Board Engineering Dept	S
E4f	Provide incentives for developers to build parking garages when developing commercial or multi-family density residential.					§		●					Borough Council Planning Board EDC	S

Goal E: Provide transportation options and reduce vehicle miles travelled (VMT)														
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		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org		
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
E4g	Allow parking areas not heavily utilized to be built of pervious paving techniques.					§		●					Planning Board Engineering Dept	S
E4h	Establish bicycling parking requirements for residential, commercial and public uses. Require multiple-family developments to provide bike parking indoors and outdoors.					§		●					Transportation Committee Planning Board Engineering Dept	S
E4i	Develop a coordinated public parking plan for Broad Ave. The additional public parking enables reduced parking and minimum driveway requirements for development. Reinvest the revenue stream in redevelopment projects or downtown improvements.	☰				§		●					Borough Council Planning Board EDC Engineering Dept	S
<b>E5 Transportation Demand Management</b>														
E5a	Set up a car pooling or rideshare program website (i.e., a Facebook group)			^	E				●	●	●	●	Environmental Commission Transportation Committee	M
E5b	Encourage businesses to permit and promote working from home / telecommuting / van pools and ridesharing programs			^	E				●	●		●	EDC	M
E5c	Establish a car sharing program- invite Hertz or Zip Car, for example, to have a car in a municipal parking lot or central area.			^	E			●	●	●	●	●	Transportation Committee	M
<b>ESJ Sustainable Jersey Implementation: Land Use and Mobility Activities</b>														
ESJ1	Complete Streets Program			^	E			●	●	●	●		Environmental Commission Transportation Committee	M
ESJ2	Safe Routes to School Program			^	E			●	●	●	●		Environmental Commission Transportation Committee	M
ESJ3	Conduct Bicycle and Pedestrian Audit			^	E			●	●	●	●		Environmental Commission Transportation Committee	M
ESJ4	Bicycle and Pedestrian Master Plan	☰						●	●	●	●		Environmental Commission Transportation Committee	M

Goal E: Provide transportation options and reduce vehicle miles travelled (VMT)														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
ESJ5	Open Space Plans (for Trails/Greenway planning)	☰						●	●	●	●		Environmental Commission Transportation Committee	M

**Sources & Resources**

Center for Transit Oriented Development  
<http://www.reconnectingamerica.org/public/tod>

Complete Streets  
<http://www.completestreets.org/>

National Center for Safe Routes to School  
<http://www.saferoutesinfo.org/>

Online TDM Encyclopedia  
<http://www.vtpi.org/tdm/tdm39.htm>

Traffic Calming – Federal Highway Administration  
<http://www.fhwa.dot.gov/environment/tcalm/>

Walkinginfo.org: Pedestrian & Bicycle Info Center  
[www.walkinginfo.org](http://www.walkinginfo.org)

America Walks  
<http://americawalks.org/>

Federal Highway Administration Planning  
<http://www.fhwa.dot.gov/planning/ppasg.htm>

American Public Transportation Association  
<http://www.apta.com/Pages/default.aspx>

Carpooling sites  
<http://www.carpoolworld.com/>  
<http://www.erideshare.com/>

## F: Open Space, Recreation & Natural Resources

Simply speaking, open space is undeveloped land that is protected from development. Open space can be on land or water, beautiful or barren, active or passive, large or small, or public or private. It can include parks, recreation fields, plazas, vacant lots, yards, stormwater basins, gardens, streets, walking and biking trails, and natural areas. However, it must be “safe” from development (i.e., protected, dedicated, or reserved).

**Sustainable Jersey:** The Sustainable Jersey Guidelines for preparing a GBESE do not include open space, recreation and natural resources as a required topic for inclusion in the GBESE.

The New Jersey Municipal Land Use Law (NJAC 40:55D-5) defines open space as:

*“Any parcel or area of land or water essentially unimproved and set aside, dedicated, designated or reserved for public or private use or enjoyment or for the use and enjoyment of owners and occupants of land adjoining or neighboring such open space; provided that such areas may be improved with only those buildings, structures, streets and off-street parking and other improvements that are designed to be incidental to the natural openness of the land.”*



The interconnected network of open spaces and natural areas is the “green infrastructure” in a community or region. These include the greenways, wetlands, parks, forest preserves, and native plant vegetation, which naturally manage stormwater, reduce the risk of flooding, capture pollution, and improve water quality. In urbanized areas, such as Leonia, the green network can be augmented by means of rain gardens, green roofs, tree planting, permeable pavement, and other landscape-based drainage features. They restore, protect, and mimic natural hydrologic functions within the built environment.

In addition to the vast environmental benefits, open space impacts our physical and mental health and the health of all species on our planet. It contributes to social connections and is a major component of a community’s “social infrastructure.” For example, one of the most underutilized opportunities for open space is in the *public* street network. With the right infrastructure, streets can be designed and used for walking, jogging, bicycling and as places for public gathering, such as public plazas. Yet, people will not use these places if they are barren, uninteresting, inaccessible or if they feel unsafe. Good design is an extremely important determinant of use of public space.

*Principles that influence the use of open space include:*

- Perceived proximity- areas should be within a 5-10 minute walk of all residents.
- Accessibly- there should be sidewalk/walkway connections that separate pedestrians from vehicles
- Aesthetically pleasing- areas with water, trees, and natural features attract visitors
- Comfortable- there should be places to rest, water to drink, and shade from the sun
- Amenities- a variety of active and passive amenities such as walking tracks and playgrounds

- Perceived safety- there should be adequate lighting and a sense of security

*Some wide-ranging benefits of open space include:*

- *Quality of life:* Parks, trails, etc. attracts new and retains existing residences and business.
- *Social benefits:* Spending time outdoors, people make connections with neighbors and contribute to a more engaged community. It provides opportunity for people to socialize and engage with others, increasing social interaction and community ties.
- *Economic benefits:* Open space prevents economic loss from flooding, erosion, pollution, or other costly environmental degradation. Proximity to open space can enhance property values because of views and easy access to recreational opportunities and community assets.
- *Ecological benefits:* Natural lands and ecological life are essential to providing vital ecosystem services, including but not limited to:
  - Protection, enhancement and restoration of habitat and ecosystems
  - Climate regulation and improved air quality through carbon sequestration and reducing heating and cooling loads, thereby reducing the urban heat island effect.
  - Ensuring water supply and water quality
  - Protection against hazards like erosion and flooding,
  - Land vitality and nutrient recycling
  - Food production
- *Transportation connections:* Trail networks can offer effective transportation alternatives by connecting homes, workplaces, shopping, parks, and attractions.
- *Cultural awareness and community identity:* Open space provides access to local heritage, contributes to local identity and creates a sense of place. Can be a forum for expression and celebration of local identity and culture
- *Public health:* Parks, trails and open space contribute to overall resident health by offering places to relax, play, recreate and exercise. This daily activities have been shown to reduce stress levels and incidence of a wide range of disease, including diabetes, heart disease and obesity, that have contributed to a public health epidemic and rising health care costs. Public space can provide environments for solitude, contemplation, reflection and inspiration.
- *Education:* The outdoors provides a “hands-on” environmental classroom for people of all ages. Provides children with opportunities for unstructured and adventurous outdoor play
- *Life-long awareness:* Opportunities to connect with the natural world, creates a sense of respect and human responsibility for the environment.

**Leonia:**

As a very built-out community in an extremely built-out region, it is critical for Leonia to protect and preserve its remaining open space. The Borough has a number of parks, as shown on the map and table below. Most notable is the 805-acre County Park, Overpeck Park, of which 227 acres are situated in Leonia. Located on the westerly side of the Borough, Overpeck Park accounts for 27% of Leonia’s total 805 acres. The park is a major asset for the Borough, and attracts visitors from around the region. There are a number of other parks in the Borough that offer amenities from playgrounds and athletic fields to nature paths.



Overpeck Park & World Trade Center Memorial



Map of Parks in Leonia (Schools also shown)



Trails in Highwood Hills

### Leonias Parks

Name	Acres	Park Features
Overpeck County Park	227.43	911 Memorial, playground, picnic, equestrian center, canoe/kayak launch, walking trails, athletic fields
C.J. Kirkland	6.97	Playground, Picnic
Highwood Hills Natural Area	13.67	Nature Trails
Lakeview Park	7.47	Swings, Picnic
Station Parkway	3.63	Playground, Picnic, Softball
Stanley Gallone Park	0.48	Playground, Picnic
Sylvan Park	8.07	Playground, Picnic, Softball, Jr. Baseball, Hardball, Soccer
Wood Park	5.7	Playground, Picnic, Softball, Tennis, Basketball, Handball
Total	273.42	

Leonias can incrementally grow and connect its network of green infrastructure through smaller scale endeavors- such as rain gardens, green roofs, tree plantings, permeable pavement, vegetative swales, and landscaping. Seattle and Portland are two examples of US Cities that have taken the block by block and street by street approach- and have seen dramatic results in terms of environmental benefits and cost savings in stormwater retention, improved air quality, carbon sequestration, energy savings, and aesthetics.

Leonias will be conducting a systematic review of its codes and ordinances to determine if regulatory barriers exist to using green infrastructure. The audit should include regulations that address stormwater, such as:

- Zoning Ordinance
- Design Standards
- Erosion and Sediment Control Ordinance
- Stormwater Management Ordinance
- Parks and Open Space plans

Special attention will be paid to-

- Bulk and dimensional standards- lot area, width, height, coverage, yards, parking
- Standards for roads, sewers and drains
- Landscaping buffers, trees, and tree canopy
- Site Plan review process
- Street and parking requirements
- Stormwater drainage and detention
- Floodplain management
- Etc.

*Leonias Challenges*

- @ There is little to no remaining vacant land
- @ Lack of funding for acquisition and programming
- @ As a County park, Leonia does not have autonomy over Overpeck Park
- @ Connectivity between parks and open space
- @ Walking conditions are often poor to reach parks

*Leonias Opportunities*

- h The Borough has one of the largest parks in the Region, Overpeck park
- h With a network of parks within Leonia and in neighboring communities, connections between parks can be established.
- h Potential joint-use agreements with schools
- h There are a number of active community groups whose volunteers and members provide tremendous value (i.e., Shade Tree Committee, Friends of Overpeck Park, etc.)
- h Opportunities for more small pocket parks
- h Opportunities to green streets

**Leonias Tree Facts**

- Leonia Shade Tree Committee since 1925.
- The Shade Tree Commission was enacted into law by the Mayor and Council in 1988.
- Tree City USA for the past 24 years.
- Approximately 3,000 Borough trees. Many more on private property.
- Leonia is known for having lots of Maple Trees- plus at least 30 other species
- Leonia is now in its 3<sup>rd</sup>, Five-Year Community Forestry Management Plan through 2015.
- Leonia Trees are suffering badly from Sandy and other unusually destructive storms

*Stakeholders*

- ☑ Borough Council
- ☑ Planning & Zoning Boards
- ☑ Parks Department
- ☑ Bergen County
- ☑ NJDEP & Green Acres
- ☑ Residents
- ☑ Students
- ☑ Shade Tree Committee
- ☑ Environmental Commission
- ☑ Friends of Overpeck Park
- ☑ Other Community Groups



**Goal**

Protect **open spaces**, **recreation** areas and **natural resources**.

**Measures of Success**

To measure the Borough's success for Goal F, Leonia can establish historical baseline figures of the following indicators, and track their progress.

Indicator	Explanation	Data Sources	Target
<b>Acres of Parkland (and per capita)</b>	Assess amount of space for each type of open space: passive and active recreation; streets; natural lands; etc	Tax Assessor Google Earth	Increase acreage in each area
<b>Varied Amenities</b>	Maintain a database of park and open space amenities for each open space area- include walking trails, seating, athletic fields, etc.	Recreation Dept	Increase amount and variation at each area
<b>Habitat and biodiversity</b>	Catalogue and identify local species	Environmental Commission	Increase
<b>Tree inventory</b>	Maintain a catalogue of street trees and condition	Shade Tree Commission	Set targets by street
<b>Linear feet of multi-use trails</b>	Track development of walking/bicycling, multi-use trails	Recreation Dept	Increase year over year

**Strategies**

The Borough can focus its efforts in a number of strategic areas to achieve this Goal.

No.	Strategy
F1	Develop more "green infrastructure" (from planters to parks) as a connected, green network
F2	Provide additional recreation opportunities
F3	Protect, restore and regenerate natural resources
FSJ	Sustainable Jersey Implementation: Various Activities

**Action Items:**

Goal F: Protect open spaces, recreation areas and natural resources														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
<b>F1</b>	<b>Develop more “green infrastructure” (from planters to parks) as a connected, green network</b>													
<b>F1a</b>	<b>Parks and Open Space</b>													
F1a1	Map existing open space in the Borough determine if most homes are within a reasonable walking distance (5 to 10 minute walk) to a park, playground or other usable open space. Assess where gaps exist.	☰						●					Green Team, Environmental Commission, Rec Committee	M
F1a2	Assess the routes people would take from their residential area to the neighborhood park or playground and determine if they are safe for walking and cycling.	☰						●	●				Green Team, Environmental Commission, Rec Committee	M
F1a3	Develop native-plant gardens in public spaces such as medians, rights-of-way, etc. Invite volunteers or organizations to adopt the gardens.			^	E			●	●	●	●	●	Environmental Commission	M
F1a4	Require residential redevelopment applications to show how the new residences will access green space and natural areas.					§		●	●	●			Borough Council Planning Board	S
F1a5	Create a better connection between Broad Ave. shopping district and Wood Park.			^				●	●	●			EDC Planning Board	M
F1a6	Create connections between walking paths- such as between the Highwood Hills Natural Area and Overpeck Park walking path; Work with Fort Lee Borough to connect to Palisades Park			^	E			●	●	●	●	●	Green Team Rec Committee EDC	M-L
F1a7	Prepare a parks and recreation survey that asks residents about desirable amenities (picnic areas, nature center, community garden, water feature, dog park, etc.). Use this information to assist Leonia in setting future park spending priorities.	☰						●	●	●	●	●	Green Team, Planning Board Rec Committee	M
F1a8	Reduce or eliminate pesticide use on all publicly owned lawns, landscaped areas and parks; Switch to organic fertilizers, weed killers and bug detractants		\$	^		§		●					Public Works Rec Committee	M
F1a9	Adopt an Open Space and Recreation Master Plan (OSRP) for the Borough that inventories all existing parks, recreation and natural resources and creates a plan for future endeavors (acquisitions, maintenance, park programming, etc.)					§		●					Rec Committee	M
<b>F1b</b>	<b>Greening Streets</b>													

Goal F: Protect open spaces, recreation areas and natural resources														
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	Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org			
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
F1b1	Adopt a Comprehensive Green Streets policy and low impact development (LID) standards and promote use of “green infrastructure” to manage storm water. Train city staff and contractors on the installation and maintenance.					§	X	●					Planning Board, Transportation Committee Engineering Dept	L
F1b2	Look for locations to supplement the grass area alongside streets with rain gardens. Rain gardens can absorb runoff as much as 30-40% more efficiently than conventional lawns. Involve residents, students and local organizations in identifying and installing the rain gardens. Provide a “how to” manual online.			^	E			●	●	●	●	●	Transportation Committee Shade Tree Commission Engineering Dept.	M
F1b3	Recruit a team of residents to inventory the landscaping on their own street and on Borough streets. Provide each resident with paper maps they can physically draw on to show existing landscaping features (grass strips, trees, flower beds), as well as areas that would benefit from additional landscaping (i.e., new shade trees, bushes, traffic medians, etc.). Create a composite map of existing and proposed landscaping and meet with the Borough engineering dept. to plan for future implementation projects.	☰		^	E			●	●				Shade Tree Committee Engineering Dept.	M
F1b4	Inventory conditions on Borough streets to determine if they are safe and pleasant for use by pedestrians and bicyclists. Are they adequately lit for safe after-dark use? Are crossing conditions safe? Are sidewalks cracked?	☰		^	E			●	●				Transportation Committee Engineering Dept.	M
F1b5	Also see Green Building & Transportation Chapters													
<b>F1c</b>	<b>Greening public and private property</b>													
F1c1	Provide residents with information on how to convert backyards into a certified wildlife habitat by participating in the National Wildlife Federation’s Certified Wildlife Habitat program. Consider implementing at the ACS School as a pilot project.			^				●	●	●	●	●	Environmental Commission School leaders	M
F1c2	Establish a pilot project for a green roof on a government building, school or local business. Arrange tours and track progress (design stages, energy savings, etc.) on the Borough website.			^				●	●				Environmental Commission EDC	L

Goal F: Protect open spaces, recreation areas and natural resources														
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#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
F1c3	Develop an annual Leonia Garden Tour and an awards program that recognizes different types of resident and community gardens (vegetable, flower, organic, etc.)			^				●	●			●	Environmental Commission Community Garden Resident Group	S
F1c4	Develop and disseminate materials that list various types of native plants and invasive species			^				●	●				Shade Tree Commission	S
F1c5	The Planning and Zoning Boards can consider retaining the services of a landscape architect to review site plan applications.		\$			§		●					Planning Board Shade Tree Commission	S
F1c6	Encourage residents to replace traditional lawns with organic, native plant gardens in back and front yards- as these landscaping methods require significantly less water, upkeep and pesticide use than traditional grass lawns. Update Ordinances to permit these techniques			^		§		●	●				Environmental Commission Shade Tree Commission Planning Board	M
F1c7	Institute the EPA's Water Quality Scorecard to incorporate green infrastructure practices at the municipal, neighborhood and site scales. <a href="http://www.epa.gov/smartgrowth/pdf/2009_1208_wq_scorecard.pdf">http://www.epa.gov/smartgrowth/pdf/2009_1208_wq_scorecard.pdf</a>			^		§	X						Environmental Commission Engineering Dept	M
<b>F1d</b>	<b>Trees</b>													
F1d1	Prepare a tree inventory using GIS so that tree information can be attributed to a specific location; set canopy goals and track year-over-year canopy coverage, also using geographic information systems (GIS)	☰						●					Shade Tree & Environmental Commissions, Engineering Dept.	M
F1d2	Review and update the Shade Tree Ordinance; determine if changes are needed to tree replacement requirements and tree removal permit process.					§		●					Shade Tree Commission, Borough Council	M
F1d3	Update the Tree Ordinance to include lists of trees which are native, non-invasive and have high carbon sequestration rates					§		●					Shade Tree Commission, Borough Council	S
F1d4	Develop requirements for shade trees (planting locations, maintenance requirements, etc.) that ensure their protection during storm events					§		●					Shade Tree Commission, Borough Council	S
<b>F2</b>	<b>Provide more recreational opportunities for all users</b>													
F2a	Evaluate potential for creation of a multi-use network of trails throughout and beyond Leonia. This network can be a combination of park trails (i.e., Overpeck Park), street sidewalks and private or public easements.	☰						●	●	●	●	●	Rec Committee Planning Board	L

Goal F: Protect open spaces, recreation areas and natural resources															
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+		
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org	
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L	
F2b	Assess opportunity for joint-use facilities with schools and neighboring communities	☰		^	E			●				●	Borough Council, School Leaders	M	
F2c	Determine if there are active and passive recreation opportunities for all potential users and age groups or if some residents are not being adequately served.	☰						●	●			●	●	Planning Board Rec Committee	M
F2d	Develop a tracking system for recreation equipment to track installation date, maintenance, replacement dates, and usage data.			^				●				●	Planning Board Rec Committee	M	
<b>F3</b>	<b>Protect, restore and regenerate natural resources</b>														
F3a	Develop a Leonia Environmental Resources Inventory (ERI / NRI) and a Natural Resource Conservation Plan and adopt both documents as part of the Master Plan	☰				§		●					Environmental Commission, Planning Board	S	
F3b	Ask neighborhood groups to prepare ecological inventories of their neighborhoods. Include tree inventory, habitat types, water features; For neighborhoods not covered, ask school teachers to prepare the inventories as class assignments. Each inventory can contribute to a Borough-wide inventory to assist in the preparation of the ERI.			^	E			●	●			●	●	Environmental Commission, School Leaders	M
F3c	Look for areas to consider for regenerative growth- areas that may be fully or partially developed but would be better served if they revert to original natural state.	☰						●	●			●	●	Environmental Commission, Planning Board	M
F3d	Develop a promotional campaign for the use of native species and importance of biodiversity for all landscaping in the Borough: for the private homeowner, private development applications; and Borough initiated landscaping.			^	E			●	●	●		●	●	Environmental Commission, Planning Board Borough Council	S
F3e	Develop an Adopt-A-Spot program for volunteers or businesses to clean up and maintain pockets of green space.			^	E			●	●	●		●	●	Environmental Commission EDC	M
F3f	Start a database of habitat found in Leonia. Develop an online system for Leoneans to submit photos and descriptions of habitat they identify. Use this information to update the habitat section of the ERI.			^	E			●	●			●	●	Environmental Commission	M
F3g	Consider installing interpretive signage to direct Leoneans to parks, open space, natural areas and historic sites.			^				●					Planning Board Environmental Commission Rec Committee	M	

Goal F: Protect open spaces, recreation areas and natural resources														
Action	Action Type						Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
	Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools	Partner/Civic Org			
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
<b>FSJ Sustainable Jersey: Various Activities related to Open Space</b>														
FSJ1	Easement Inventory and Outreach	☰		^	E			●					Environmental Committee	M
FSJ2	Easement Inspections and evaluation	☰		^	E			●					Environmental Committee	M
FSJ3	Natural Resources Inventory	☰		^	E			●			●		Environmental Committee Shade Tree Commission School Leaders	M
FSJ4	Open Space Plan	☰		^	E	§		●			●		Recreation Committee Environmental Commission School Leaders	M
FSJ5	Habitat Conservation Ordinance					§		●					Environmental Commission Borough Council	M
FSJ6	Environmental Assessment Ordinance					§		●					Borough Council, Environmental Commission	M
FSJ7	Tree Protection Ordinance					§		●					Borough Council, Shade Tree Commission	M
FSJ8	Community Canopy Goal			^	E			●					Shade Tree Commission	M

**Open Space Sources & Resources:**

New Jersey Green Acres Program  
<http://www.nj.gov/dep/greenacres>

Association of New Jersey Environmental Commissions (ANJEC)  
<http://www.greatswamp.org/Education/anjec.htm>

Environment New Jersey  
<http://www.environmentnewjersey.com>

National Recreation and Park Association  
<http://www.nrpa.org/>

The Project for Public Spaces  
[www.pps.org](http://www.pps.org)

## G: Water Conservation

The average American uses (drinks, flushes, sprinkles) 100 gallons of water at home; in the summer months, when nearly half of household water use is for landscape and lawn maintenance, average water use doubles.

Conservation measures result in immediate savings to rate payers and tax payers, and save water utilities and the State considerable capital expenses over the long term by delaying or even eliminating the need to develop new or expanded potable water supply infrastructure. Water savings also reduce the volume of water that needs to be pumped and treated, thereby cutting energy costs and the production of unnecessary greenhouse gases. The more water we use, the more energy we need, and vice versa.

Simple conservation and efficiency measures can reduce home water usage by 30% or more. Across the Country the savings can amount to 98 to 273 million gallons, every day.

**Sustainable Jersey:** Water is vital to the survival of life. All forms of water (Wastewater, Stormwater, Wetlands, Streams, and Drinking Water) are part of the same system – the Water Cycle. Typically, water is extracted, consumed, contaminated, and then treated to a degree that is permissible for it to go back into nature. Water conservation and protection of water quality not only protects the environment, it saves money in avoided supply and remediation costs. Efficiency in water supply and treatment can also provide efficiency in energy use.

### Principles-

The design and maintenance of an integrated water, storm water, and waste water system should encompass these principles.

- Ensure water availability (water quantity) by-
  - Minimizing use / water conservation behavioral practices,
  - Maximizing water use efficiency, and
  - Restoring water resources
- Protect water quality by-
  - Preventing new pollution from entering the water supply
  - Reducing sources of existing pollution
  - Protecting water resources and systems
- Provide equitable distribution and pricing

### Benefits

- Safe, clean drinking water
- Protected water supply for generations to come
- Protected ecosystems and life on earth
- Protection from storm events and reduced occurrence of flooding

**Leonia:**

*Water Bodies*

Overpeck Creek, a tributary of the Hackensack River, runs along the westerly border of the Borough. The creek runs approximately 8 miles from Tenafly, south to where it joins the Hackensack River in Ridgely Park. The Special Flood Hazard Area extends on both sides of the Creek, encompassing most of Overpeck Park on the Leonia side.

Alongside the Creek is the Overpeck Preserve. According to the Preserve’s website, “the 125-acre Preserve is a rehabilitated landfill that includes vernal pools, deciduous woods, non-tidal wetlands, streams, mixed swamp, grasslands, and open water, all of which make it one of the rarest habitats in Bergen County.”

*Water Service*

Communities in Bergen and Hudson Counties receive their water from four reservoirs- Oradell, Woodcliff Lake and Lake Tappan in Bergen County, and the Lake DeForest Reservoir in Rockland County, NY. Treated water is provided to Leonia by United Water (formerly the Hackensack Water Company). United Water purchases a small portion of its water from the Park Ridge Water Department, the Passaic Valley Water Commission, Ridgewood Water Department or the North Jersey District Water Supply Commission. United Water serves 60 communities in Bergen and Hudson counties. UWNJ treats surface water at their Haworth Water Treatment Plant and they treat groundwater by adding just chlorine and corrosion control chemicals.

*Waste Water & Sanitary Sewer System*

Leonia owns and operates a sanitary sewer system that contains approximately 116 miles of municipal sewer pipe, having an asset value of approximately \$86 million. The system conveys its wastewater to the Bergen County Utility Authority’s (BCUA) Overpeck Valley main trunk sewer line. The BCUA system consists of a trunk sewer, intercepting sewers, and a sewage treatment plant. The present peak month design capacity of the plant is 109 mgd. Today, the Water Pollution Control system serves a population of about 536,000 in 46 municipalities, including Leonia.

**United Water New Jersey serves 60 communities in most of Bergen County and parts of Hudson County. Below are some facts and figures about this major utility:**

Service area population:	750,000
Customers served:	186,807
Employees:	353
Water delivered in 2011:	40.2 billion gallons
Average daily demand:	113.2 million gallons
Peak demand:	161 million gallons
Miles of mains:	2,193.9
Hydrants:	15,332
Operating wells:	15
Size of watershed:	112 square miles
Hackensack River reservoir system capacity:	14 billion gallons

**Water Supply Sources 2011**

Reservoirs	88%
Wanaque South	4%
Finished Water Wells	2%
Purchased	6%

**Customer Billing**

The average residential customer uses approximately 3,000 cubic feet (22,440 gallons) of water per quarter, and is billed about \$557 annually. Here’s what a typical dollar pays for:

Taxes	\$0.23
Dividends & Reinvestments	\$0.15
Interest on debt	\$0.06
Depreciation	\$0.12
Operations & Maintenance	\$0.44

*2011 Data*

The BCUA meets annually with Leonia, and each municipality in the BCUA’s service area, to review and analyze their member municipalities’ public works departments’ current efforts to improve their Operations & Maintenance (O&M) program.

*Storm water System*

The Borough operates a municipal storm sewer system that includes catch basins, curbs, gutters, ditches, man-made channels or storm drains. With recent heavy storms, the stormwater system has experienced backup or failure.

*Leonia’s Challenges*

- @ Recent heavy storms have produced intense flooding and have uprooted trees
- @ High concentrations of impervious coverage
- @ High summertime water use for watering lawns and landscaping
- @ High cost of traditional on-site detention

*Leonia’s Opportunities*

- h Overpeck Creek, once polluted from industrial use, is open for water sports (rowing, canoeing)
- h Overpeck Preserve offers educational programs on resource protection

*Stakeholders*

- Borough Council
- Planning Board
- Green Team
- Borough Engineer
- Environmental Commission
- Department of Public Works
- Bergen County Utility Authority
- United Water
- Residents
- Schools

**Household Water Facts**  
**(Source: National Geographic)**

- Northern New Jersey averages 43 inches of rainfall each year.
- Low-flow showerheads can save 15 gallons of water during a 10-minute shower.
- It takes about 70 gallons of water to fill a bathtub
- All of those flushes can add up to nearly 20 gallons a day down the toilet.
- Most front-loading machines are energy- and water-efficient, using just over 20 gallons a load, while most top-loading machines, unless they are energy-efficient, use 40 gallons per load.
- Nearly 22% of indoor home water use comes from doing laundry. Save water by making sure to adjust the settings on your machine to the proper load size.
- Using a dishwasher (4-6 gal per load) is more water efficient than hand washing (20 gal each time), especially if you run full loads.
- Nearly 60% of a person's household water footprint can go toward lawn and garden maintenance.
- The average pool takes 22,000 gallons of water to fill, and if you don't cover it, hundreds of gallons of water per month can be lost due to evaporation.

**Goal**

Promote **water** conservation and protect water resources.

**Measures of Success**

To measure the Borough’s success for Goal G, Leonia can establish historical baseline figures of the following indicators, and track their progress.

Indicator	Explanation	Data Sources	Target
<b>Local Consumption rates</b>	Track per household consumption rates over time to see trends;	United Water	Reduce annually
<b>Recharge Rates</b>	Measures of regional surface and groundwater withdrawals in comparison to recharge rates	United Water / NJDEP	Do not exceed
<b>Water quality</b>	Review water quality reports from provider United Water, particularly with concern for presence of Lead	United Water	No/low lead levels
<b>Overpeck Creek Pollutant loads</b>	Review NJDEP stream gauge data for measures of eutrophication, turbidity, dissolved oxygen, toxic pollution, etc.	NJDEP / USGS	Low levels
<b>Xeroscape gardens</b>	Number of households using Xeroscaping techniques	Survey	Increase each year

**Strategies**

The Borough can focus its efforts in the following strategic areas to achieve this Goal.

No.	Strategy
G1	Promote water use efficiency practices
G5J	<b>Sustainable Jersey Implementation: Water Activities</b>

**Action Items:**

Goal G: Promote water conservation and protect water resources.														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
<b>G1</b>	<b>Promote water efficiency practices</b>													
G1a	Offer rebates or coupons for water saving technologies- low-flow fixtures (toilets, showers, faucets), faucet aerators, pressure-reducing valves and high efficiency appliances		\$	^	E			●	●	●	●	●	Public Works Environmental Commission	M
G1b	Develop a “Leak Detector” campaign that promotes unnecessary water waste by fixing leaky appliances.			^				●	●				Public Works Environmental Commission	M
G1c	Distribute a pamphlet on behavioral practices to change water use habits – shutting off water when brushing teeth or shaving; using dishwashers only when full; short verse long showers; watering lawn early in the morning, etc. Show differences in water use with behavior changes.			^				●	●		●		Environmental Commission School Leaders	M
G1d	Invite United Water’s Speakers Bureau to give talks to community groups and schools. Schedule their speakers for a Town Hall Meeting or at school <a href="http://www.unitedwater.com/NewJersey">www.unitedwater.com/NewJersey</a>			^	E			●	●		●	●	Green Team Public Works Environmental Commission	M
G1e	Consider educating the public on water conservation by using tools such as bill inserts, booklets, posters and stickers.			^	E			●	●	●	●	●	Environmental Commission Public Works Water Company	M
G1f	Develop a contest for a Leonean home to win a “water make-over”- and use the home as a demonstration project for water conservation, collecting data and monitoring results on water savings.		\$	^				●	●	●	●	●	Environmental Commission Public Works Water Company	M
G1g	Offer home water audits, where auditors visit participating homes to identify water conservation opportunities, such as repairing leaks and low-flow plumbing.		\$	^	E			●	●	●	●	●	Environmental Commission Public Works Water Company	M
G1h	Require municipal products to be labeled with WaterSense Certification					§		●					Borough Admin.	M

Goal G: Promote water conservation and protect water resources.														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description		\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
G1i	Promote Xeriscaping in Leonia by recognizing households with exceptional gardens and organizing garden tours; Consider a display board at Health Fairs or Earth Day Fairs that shows how beautiful these gardens can be. Xeriscaping is the use of plants that are drought tolerant and techniques that make the best use of water. Techniques include mixing compost in soil to help retain water, installing drip or trickle irrigation, using mulches, and watering during the cool morning hours.			^				●	●				Environmental Commission Shade Tree Commission Community Garden	M
G1j	Include a list of native, drought tolerant trees and plants on the Borough's website			^				●	●				Shade Tree Commission Borough Administrator	M
G1k	Domestic wastewater composed of wash water from kitchen sinks and tubs, clothes washers, and laundry tubs is called gray water (USEPA, 1989). Gray water can be used by homeowners for home gardening, lawn maintenance, landscaping, and other innovative uses. Provide educational workshops on how residents can easily integrate grey water reuse in their homes.			^				●	●				Environmental Commission	M
G1l	Use water collected in rain barrels for watering municipal lawns; track water savings and promote results on the Borough website			^				●	●				Borough Engineering/DPW	M
G1m	Develop and promote water-saving municipal demonstration projects- rain gardens, rain barrels, porous paving, etc.			^				●	●				Borough Engineering/DPW	M
G1n	Encourage and incent builders to integrate building and landscape designs that mimic natural systems, and infiltrate, retain, or detain rainfall onsite, which can reduce excess flows into our sewers, streets, and waterways. Develop a Design Manual for distribution when an application is filed.			^		§		●		●			Planning Board EDC	M
G1o	Develop a Leonia Sustainable Stormwater Management Plan that promotes alternative means of controlling stormwater at the site level. Include a cost benefit analysis method to assist property owners in selecting the appropriate solution.							●	●	●			Borough Engineering/DPW	M

Goal G: Promote water conservation and protect water resources.														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
G1p	Provide technical assistance to developers and property owners looking to use alternative source controls (i.e., green infrastructure, LID-BMPS). Connect them to experts.			^	E			●		●			Planning Board Building Dept. Green Team	S
<b>GSJ Sustainable Jersey Implementation: Water Activities</b>														
GSJ1	Water Conservation Ordinance					§		●	●	●	●	●	Environmental Commission Borough Engineering/DPW Borough Council	S
GSJ2	Water Conservation Education Program			^	E			●	●	●	●	●	Environmental Commission School Leaders	S
GSJ3	Grounds and Maintenance Policy	☰	\$	^	E	§	X	●	●	●	●	●	Environmental Commission Borough Engineering/DPW	M
GSJ4	Integrated Pest Management	☰	\$	^	E	§	X	●	●	●	●	●	Environmental Commission Borough Engineering/DPW	M
GSJ5	Efficient Landscape Design	☰	\$	^	E	§	X	●	●	●	●	●	Environmental Commission Shade Tree Commission	M
GSJ6	Minimize Water Consumption	☰	\$	^	E	§	X	●	●	●	●	●	Environmental Commission	M

**Sources and Resources:**

Environmental Protection Agency's WaterSense Program

<http://www.epa.gov/watersens>

Whole Building Design Guide

<http://www.wbdg.org/design/conservewater.php>

NJDEP Division of Water Supply

<http://www.nj.gov/dep/watersupply/index.html>

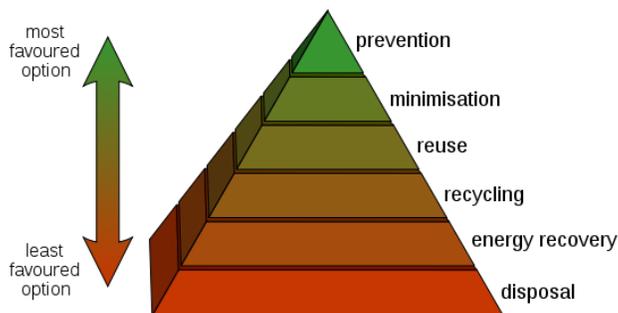
National Geographic – Freshwater Initiative

<http://environment.nationalgeographic.com/environment/freshwater>

## H: Waste Management & Recycling

Waste management is the collection, transport, processing or disposal, managing and monitoring of waste materials. Waste materials can be solid, liquid, gaseous, or hazardous. A variety of factors influence waste growth in a community including economic growth and prosperity, the ease of disposal, the cost of managing waste, and awareness of environmental impacts.

The 3 Rs, as they come to be known -“Reduce, Reuse, Recycle” refer to the hierarchy of managing waste- described as follows:



- **Avoiding** or preventing waste being created in the first place, is the best possible option and is at the top of the waste hierarchy. For example, decisions being made during the design of a product can impact how much material is required to manufacture a product and how long that product can last.
- **Minimizing** waste can be done by repairing broken products rather than purchasing new, designing products to be reusable, and not purchasing or using disposable items (i.e., plastic cutlery), and reusing second-hand items. Composting or biological treatment is form of waste minimization
- **Recycling** involves the reprocessing of products into other materials so that materials are diverted from the solid waste stream. Recycling also reduces the need for unnecessary resource extraction and processing of virgin materials. The consumer products most commonly recycled include food scraps, aluminum, plastic, glass, paper, and cardboard. One of the areas to improve recycling that will have the highest impact is the recycling of construction material at building site. Increased use of recycling wood products, for example, can slow the pace of deforestation. However, since the process of recycling still requires a lot of energy to perform, it is less preferable to waste prevention and minimization.
- **Energy recovery**, or waste-to-energy involves harnessing the energy content of waste by using it as or processing it into fuel sources in a solid, liquid or gas state.

**Sustainable Jersey:** The generation, transport, and disposal of solid waste in New Jersey produces greenhouse gas emissions, including methane from the decomposition of waste in landfills and carbon dioxide from incineration. The New Jersey Department of Environmental Protection estimates that solid waste disposal accounted for 4.9 million metric tons of carbon dioxide equivalent emissions in 2008. In addition, the transportation of waste to disposal sites produces greenhouse gas emissions from the combustion of fossil fuels. Waste disposal is often associated with purchasing of new products for which fossil fuels were used to obtain raw materials and manufacture them.

Waste prevention and recycling can serve as potent strategies for reducing greenhouse gas emissions from the landfilling and incineration of waste. Preventing the generation of waste can also reduce GHG emissions by reducing energy consumption. When products are reused or recycled, less energy is needed to extract, transport, and process raw materials and to manufacture products. When energy demand decreases, fewer fossil fuels are burned and less carbon dioxide is emitted into the atmosphere. Waste prevention and recycling strategies can also save municipalities money, improve air quality, and promote community cohesiveness.

- **Disposal** of waste is the least preferred option and is at the bottom of the hierarchy. Disposal can include dumping it in a land fill or incinerating waste. Landfills take up valuable land area and threaten the environment when toxic chemicals seep into the soil and groundwater. Waste incineration produces toxic emissions such as dioxins and metals.

In New Jersey, all residents and businesses are required to recycle by law. The mandatory recyclable items are determined by individual county and statewide laws.



### Principles

- Deal with waste as high up the Waste Management Hierarchy as possible. Since all waste disposal options have some impact on the environment, the only way to avoid impact is not to produce waste in the first place.
- Where waste is unavoidable, use it as a resource in the form of energy or other materials.
- Eliminate or reduce hazardous waste and remove toxic chemicals from the ecological cycle
- Manage waste in an environmentally sound and economically efficient manner, and protect human health from the adverse effects, such as toxic emissions, resulting from waste
- Provide a clear division of responsibility throughout the waste management cycle (creating, using, sorting, collecting, treating)
- Make it easy and efficient for households and businesses to sort waste
- Continually improve environmental performance of waste management facilities and ensure they are operating according to the best available technologies, processes, equipment and operations.
- Effectively enforce violators of waste regulations

### Benefits

- Reduced need for new resource extraction
- Fewer emissions from landfilling (methane) and incineration (toxic chemicals)
- Less pollution seepage into soils and groundwater
- Cleaner environment and healthier people
- Significant cost savings

**Leonia:**

In Leonia, the Department of Public Works (DPW) operates a curbside system and is responsible for regularly scheduled pick up of trash and recyclables (comingles and mixed paper). DPW also picks up yard waste on a seasonal schedule and residents can schedule a DPW pick up for “white goods” (appliances, air conditioners, and miscellaneous metal items). Commercial and industrial waste streams in Leonia are typically the responsibility of the generator, subject to regulatory requirements.

The Leonia DPW operates 2 trucks for waste collection. Regular household trash and recyclables are picked-up by the DPW at curbside according to regular pick-up schedules. The DPW does not handle hazardous waste or plastic bags.

**Waste Types and Handling in Leonia**

Waste Item	Description	Pick-Up Schedule
Household Garbage	Kitchen, general trash	Tues, Fri
Bulk Trash	Household furniture, rugs, misc.	Mon, Thurs (Alternate Biweekly)
Mixed Paper	Newspaper, cardboard, brown bags	Wed (Alternating)
Co-Mingled Containers	Bottles, cans, plastic containers	Wed (Alternating)
Yard Waste	Branches, brush, clippings	Mon (Alternating), March-Nov.
White Goods	Appliances, AC units, misc.	Call for Pick-up
Electronics	Batteries, computers, TVS, radios	Drop off at DPW
Hazardous Waste	Paints, automotive, pesticides, aerosols, flammable, etc.	Drop off at BCUA
Plastic bags	Grocery bags	Bring to supermarket

According to the DPW, Leonia produced the following waste streams in 2011:

- Co-mingled recyclables: 626,600 lbs
- Co-mingled paper/cardboard: 1,002,560 lbs
- Household garbage: 3,328 tons
- Bulky trash items: 554 tons
- Leaf collection (Oct-Dec): 2,412 cu yards



*Challenges*

- @ Low recycling rates as a percentage of household garbage
- @ Limited budget for DPW services and improvements
- @ Complicated waste management system and schedule that involves the DPW, BCUA, Hazardous material collection contractors and knowing whether items are drop-off, pick-up , permitted or not
- @ Residents may improperly dispose of hazardous items given the inconvenience of required drop-off

### *Opportunities*

- @ Work with the BCUA and partner with other communities
- @ Education on proper handling of waste
- @ Simplify waste management and make it easy for residents to do the right thing

### *Stakeholders*

- Department of Public Works (DPW)
- Bergen County Utilities Authority (BCUA)
- Residents and Community Groups
- Local businesses
- Environmental Groups
- Schools & Students
- Regulatory agencies

**Goal**

Improve **waste management** and **recycling**.

**Measures of Success**

To measure the Borough’s success for Goal H, Leonia can establish historical baseline figures of the following indicators, and track their progress.

Indicator	Explanation	Data Sources	Target
<b>Tons of municipal solid waste (MSW), quarterly/annually</b>	Achieve reductions in total solid waste generated within the Borough.	Leonia DPW	Reduce per year
<b>Percent of household waste recycled.</b>	Increase the percent of waste being recycled. Some areas of the world (i.e., Sweden) have 90% recycling rates.	Leonia DPW	Increase to X%
<b>Waste generated per household</b>	Reduce the per capita or per household waste generation rates	Leonia DPW	Reduce by X% by 2020
<b>Amount of municipal solid waste that is land filled</b>	Reduce the amount of solid waste that is dumped in landfills or is incinerated	Leonia DPW	Reduce
<b>Composting rate</b>	Increase composting rates among residents	Survey of residents; can be under DPW	Increase

**Strategies**

The Borough can focus its efforts in the following strategic areas to achieve this Goal.

No.	Strategy
H1	Minimize waste production
H2	Increase recycling
HSJ	<b>Sustainable Jersey Implementation: Waste Management Activities</b>

**Action Items:**

Goal H: Improve waste management and recycling.														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
<b>H1</b>	<b>Minimize waste</b>													
H1a	Track the amount of solid waste produced by the Borough (all Departments and services) on a daily, weekly, monthly and yearly basis. Use this information to set municipal and per capita goals to reduce waste by a specific percentage by specific dates.	☰						●					DPW BCUA	M
H1b	Provide composting centers where residents can bring their vegetative waste for composting and use in resident or community gardens.			^				●	●				Borough / DPW Environmental Commission	M
H1c	Provide composting bins at a discounted rate to residents along with literature on the process. Hold "Win a Bin" contests.		\$	^				●	●				Borough / DPW Environmental Commission	M
H1d	Prepare a Study that evaluates a "pay-as-you-throw" solid waste billing system that charges by the bag or by the pound for what is thrown away.	☰						●					Borough / DPW Environmental Commission	M
H1e	Develop a waste management policy for all municipal/school buildings and facilities; provide standards for the purchasing, use and disposal of paper, furniture, IT equipment, etc. Establish purchasing policies, for example, that require durable, long-lasting goods that are free of toxics.	☰				§	X	●			●		Borough / Schools Environmental Commission Green Team	S
H1f	Encourage Leonia's retail, service and restaurant establishments to use packaging that is recyclable or biodegradable. Consider an eco-label that businesses can display in their shops if they meet certain standards.			^	E			●		●			EDC Environmental Commission	M
H1g	Require double-sided printing for all photocopying and printing; request the same of consultants and contractors; buy recycled paper products; collect scrap paper for reuse					§	X	●		●	●		Borough Admin. School Leaders	S
H1h	Prepare a study to determine the waste profile of businesses in Leonia; provide technical assistance to companies to assist in creating efficiencies and reducing everyday waste.			^	E			●		●			EDC Green Team	L
H1i	Strive to have all Borough forms available online and to be submitted online to reduce paper waste and cost.			^			X	●					Borough Admin. Environmental Commission	M
H1j	Develop trash awareness programs to be presented in school classrooms.			^				●			●		Environmental Commission School Leaders	S

Goal H: Improve waste management and recycling.														
#	Action Step Description	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
<b>H2</b>	<b>Recycle more</b>													
H2a	Prepare an easy-to-understand Leonia Trash and Recycling Guide that can fit on a magnet or clipped to a home trash can; Prepare the guide as part of an effective waste handling marketing plan; Mail the magnet to every Leonia residence.			^				●	●				DPW Green Team	M
H2b	Develop an easier system for residents to dispose of household hazardous solid waste (lamps, paints, cleaners, oils, aerosols, pesticides, etc.); Consider establishing convenient drop-off locations for this material, such as in bins in parking lots (similar to clothes donation bins)			^		X		●	●				DPW BCUA	M
H2c	Develop requirements for construction job site waste handling (including household remodeling). Wood, metals, concrete, masonry, dry wall, carpet and tile, for example, can be salvaged to make products of recycled content.			^		§		●	●	●	●	●	Borough Engineer Environmental Commission Green Team	M
H2d	Introduce a "freecycle" program and website, where residents can post and exchange items they no longer want or need; Have an annual freecycle day or community swap.			^				●	●	●	●	●	Borough Administrator Environmental Commission	M
H2e	Hold an annual Borough-wide garage sale			^				●	●	●	●	●	Environmental Commission	S
H2f	Evaluate where additional recycling containers in public places are needed. Provide facts about recycling and trash production on the containers to educate consumers.	☰	\$					●	●	●	●	●	Environmental Commission DPW	S
H2g	Prepare annual flyers on recycling policies and procedures. Include year-over-year statistics so Leoneans understand the Borough's progress, including per-capita data.			^				●	●	●	●	●	Environmental Commission DPW	M
H2h	Enforce the anti-littering ordinance more aggressively					X		●	●	●	●	●	Police Department	S
H2i	Enable DPW to collect plastic bags; currently DPW does not accept plastic bags so they likely end up in the waste stream, if residents do not return them to the grocery stores					X		●	●	●	●	●	DPW	M
H2j	Require public, commercial and multi-family residential buildings to have dedicated areas for collection and storage of fluorescent and HID lamps, batteries, and other household hazardous items					§		●	●	●	●	●	Planning Board Environmental Commission	M

Goal H: Improve waste management and recycling.														
	Action	Action Type					Participant					Implementing Responsibility	Time frame (years) S = <1 M = 1-5 L = 5+	
		Study / Plan	Purchasing	Program / Project	Partnership	Policy / Ordinance	Organizational	Borough	Residents	Businesses	Schools			Partner/Civic Org
#	Action Step Description	☰	\$	^	E	§	X	●	●	●	●	●	Person / Entity	S M L
H2k	Conduct a compositional analysis of waste for the average household (organics, paper, glass, metals, plastics, sanitary, wood, hazardous)	☰						●	●	●	●		DPW School Leaders Environmental Commission	M
<b>HSJ Sustainable Jersey: Waste Management Activities</b>														
HSJ1	Waste audit of municipal buildings and schools	☰	\$	^	E	§		●	●	●	●		Environmental Commission DPW	S
HSJ2	Pay-as-you-throw program	☰	\$	^	E	§		●	●	●	●		Environmental Commission DPW	M
HSJ3	Grass: cut and leave it program	☰		^	E	§		●	●	●	●		Environmental Commission DPW	M
HSJ4	EPA WaterWise partner			^	E			●	●	●	●	●	Environmental Commission DPW	M
HSJ5	Recycling Depot			^	E			●	●	●	●	●	Environmental Commission DPW	M
HSJ6	Construction and demolition waste recycling ordinance					§		●	●	●	●	●	Environmental Commission Borough Engineer Borough Council	S
HSJ7	Food waste			^	E			●	●	●	●	●	Environmental Commission DPW	M
HSJ8	Carpet and foam padding		\$	^	E			●	●	●	●	●	Environmental Commission DPW	M
HSJ9	Bulky rigid plastics		\$	^	E			●	●	●	●	●	Environmental Commission DPW	M
HSJ10	Shrink wrap		\$	^	E			●	●	●	●	●	Environmental Commission DPW	M
HSJ11	Community paper shredding day		\$	^	E			●	●	●	●	●	Environmental Commission DPW	S
HSJ12	Operations and maintenance- recycled materials and composting		\$	^	E			●	●	●	●	●	Environmental Commission DPW	M

**Sources & Resources:**

Leonía DPW

[http://www.leonianj.gov/content/DPW\\_Trash\\_and\\_Recycling.aspx](http://www.leonianj.gov/content/DPW_Trash_and_Recycling.aspx)

Recycling NJ

[www.recyclingnj.com](http://www.recyclingnj.com)

Bergen County Utilities Authority

[www.bcu.org/SolidWaste\\_Recycling.htm](http://www.bcu.org/SolidWaste_Recycling.htm)

iRecycle (recycling center finder app)

<http://earth911.com/irecycle/>

NJDEP Solid and Hazardous Waste Management Program

<http://www.state.nj.us/dep/dshw/>

## Recommendations / Next Steps

### Update Plan with Greater baseline analysis

It will be difficult for the Borough to track progress towards meeting its goals if it does not have a good understanding of existing, or current “baseline” conditions. For each goal, the Plan provides at least one “indicator” that the Borough could track. It is recommended that the Borough collect baseline data pertaining to these indicators to get a firm “starting point.” Processes for collecting and synthesizing the data should be documented so that others can easily repeat the process at future points in time. Sustainable Jersey is also developing a Gold certification level which will require municipalities to measure specific actions and overall progress toward a true sustainable community state. Leonia can be a leader in implementing such a system.

### Continue to engage the Community

Community engagement provides opportunity to educate Leoneans on the importance of sustainability and what residents can do. In listening to community concerns, the Borough will also be able to better prioritize the many actions presented in the Plan. Meetings and gatherings also present an opportunity to find leaders among the community, who can assist in implementing the various Plan actions and join committees.

### Expand the Plan to comprehensively address the 3 prongs of sustainability

The path to becoming a “sustainable” community involves additional topics not covered in this SEMP. A future update of the Plan should also include topics including-

- Public health and food systems
- Local economy
- Government accountability
- Social equity

Therefore, it is recommended that this Plan be considered “Phase 1” of the process of creating a comprehensive plan. The Borough should adopt this Plan in order to ensure that land use, zoning, economic development and infrastructure decisions made by the Borough are greatly influenced by sustainable principles. At a future point, the Borough can amend this Plan to include additional topics of comprehensive sustainability, as indicated above.