

# 2014

## Pembroke Pines GREEN Plan









Planning & Economic Development Division

City of Pembroke Pines

10/28/2014



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## Acknowledgements

### **City Commission**

Mayor Frank C. Ortis

Vice Mayor Jay Schwartz

Commissioner Angelo Castillo

Commissioner Iris A. Siple

Commissioner Carl Shechter

### **Members of the Landscape Advisory Board**

Howard Vollovick

Heidi Jones

Heather Hasandras

Rosana D. Cordova

### **Members of the City's Planning & Zoning Board**

Henry Rose, Chair

John Jacob, Vice Chair

Jack McCluskey

Paul Girello

Linda Gonzalez

Dr. Fred Lippman

Norman Taylor

### **City Administration and Staff**

Charles F. Dodge, City Manager

Marty Gayeski, Deputy City Manager

Aner Gonzalez, Assistant City Manager

Michael Stamm, Jr., Planning and Economic  
Development Director

Joseph Yaciuk, Planning Administrator

Dean Piper, Zoning Administrator

Christina Fermin, Community Planner

Sue-Ling Rosario, Landscape Planner & Designer

Sharon Williams, Planning Administrator (P/T)

Christian Zamora, Business Support Specialist

Benjamin Koubek, Landscape Planner & Arborist

Shawn Denton, Director of Public Services

Christina Sorenson, Purchasing Manager

Chuck Vones, Director of Recreation and Cultural  
Arts

Jay Shechter, Community Services Director

Sandra Lluis, Division Chief/Fire Marshall

Shawn Hallich, Assistant Division Chief/Assistant  
Fire Marshal

### **Other Noted Participants**

Lauren Swan (former Landscape Planner)

Gloria McCluskey (former LAB Member)

Alanna E. Carinio (former LAB Member)

Broward County Environmental Planning and  
Community Resilience Division

Waste Pro USA, Inc.

Waste Management, Inc.

Symbiont Service Corporation

## Introduction

City Commission has tasked City staff and key stakeholders with the creation of a Green Plan for the City of Pembroke Pines to begin the process of identifying current policies, procedures, initiatives and objectives that are aimed at protecting limited natural resources, energy efficiency, responsible development and transportation, waste reduction, community empowerment and governmental leadership. This document focuses on the creation of a framework that has been designed to assist in guiding City departments and staff in making decisions, guiding leadership, and engaging our community in becoming more proactive to ensure the decisions that are being made today will not affect our communities of tomorrow.

Currently Pembroke Pines and the South Florida region face challenges that have the potential to decrease the quality of life, environmental assets and degrade the built environment – these challenges have the capacity to diminish resources and add further strains on the environment and existing infrastructures. The City is currently at a crossroad, as the City nears build out and the need for redevelopment looms, the crossroad will present itself in two routes. One route to choose will be “business as usual.” This road will lead to diminishing resources such as land, water, wildlife, housing, jobs and educational opportunities. The other route to choose is one that would anticipate and plan for the future to assist in ensuring resources for our future citizens.

With sound principles, good policies and a Green Plan looking forward that emphasizes conservation, efficiency and a balance that will prepare the City to increase our capacity for resilience and build a foundation that will steer us towards a rewarding and exciting future that adheres to the triple bottom line<sup>1</sup> of community, environment, and economy.

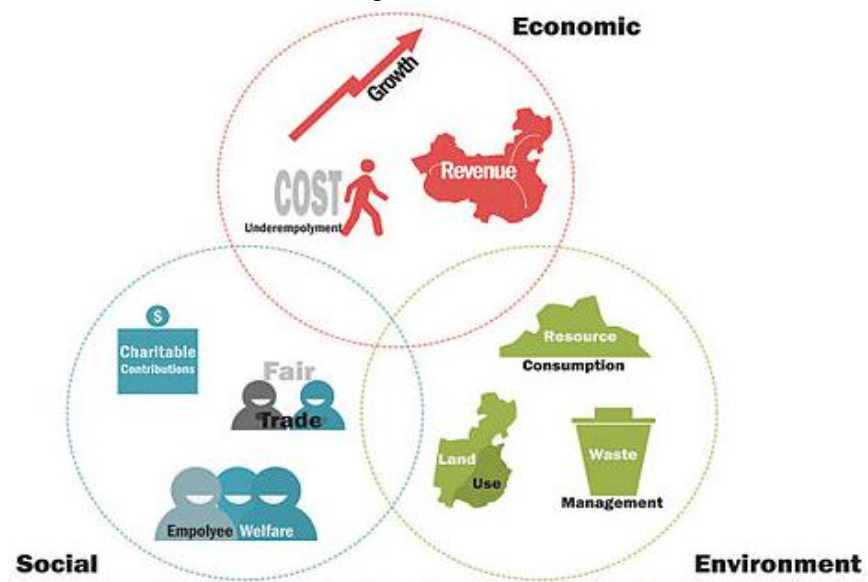


Figure 1: Triple Bottom Line Framework (<http://commons.wikimedia.org>)

<sup>1</sup> Triple bottom line was first coined in 1994 by John Elkington, incorporates the notion of sustainability into business decisions. The framework incorporates social, environmental and financial. This framework takes the bottom line account for all three spheres – also known as the three Ps: people, planet, profits.



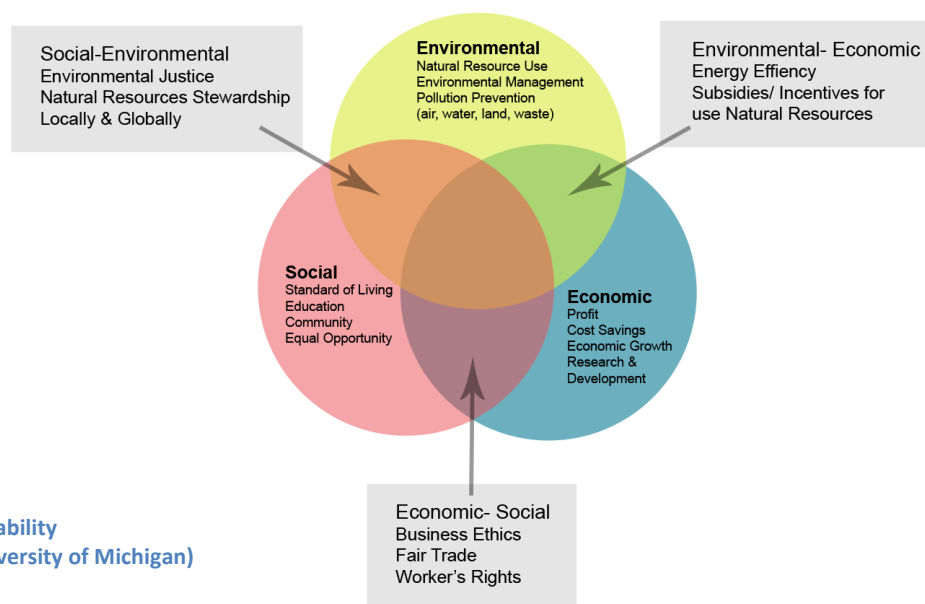
The **purpose** of this document is to serve as the framework to create a more livable community for the City of Pembroke Pines. Updating policies and procedures every few years will ensure the City's mission of providing a quality of life that will foster the desire to live, work, play, raise a family and retire. This can be accomplished by adhering to the following principles:

- Improving the quality of life within our communities
- Fostering a culture of environmental stewardship
- Responsible economic development
- Understanding the interconnectivity of our communities to the region
- Leadership by example
- Adhering to the triple bottom line

By adhering to the principles listed above in combination with the principles of livability and a sense of civic responsibility, Pembroke Pines can strategically plan for a future that is resilient, inclusive and diverse. Livability adheres to six principles (as defined by the partnership for Sustainable Communities):

- Provide more transportation choices
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate and leverage federal policies and investment.
- Value communities and neighborhoods.

### ***The Three Spheres of Sustainability***



**Figure 2: Sustainability Assessment (University of Michigan)**

## Why?

With increasing environmental threats to the region, depletion of natural resources, regional build out, population increases and the growing demand on our natural environment, it is the responsibility of local governments and the citizenry to ensure decisions today are resilient enough to withstand the test of time. The Green Plans goals and objective are to increase the quality of life for current and future generations and ensure residents have access to clean water, food, shelter, transportation, vibrant communities and a healthy environment.

The biggest threat to future generations is the increase of carbon emissions and carbon dioxide levels in the environment which leads to increased temperatures in the atmosphere. This also leads to increased ocean acidity, extreme weather, threats to human health, sea level rise and economic losses<sup>2</sup>. Living within the South Florida region<sup>3</sup>, the region is more vulnerable than most other communities in the nation to future threats and environmental extremes<sup>4</sup>. Reducing our reliance on carbon-intensive energy sources, protecting our natural environment and resources, reducing our waste, building resiliently as well as educating the public is the City's best defense against the inevitable changes that will come to the region.

Focusing on energy efficiency, public empowerment, and resilience<sup>5</sup> of the built environment are the key components to ensuring Pembroke Pines strategically plans for an unpredictable future.

This document focuses on **six key areas** that are vital to achieving the City's mission and vision.

1. Natural Resources & Environmental Design
2. Energy Efficiency & Conservation
3. Built Environment & Transportation
4. Waste Reduction & Recycling
5. Community Outreach & Empowerment
6. Leadership & City Operations



Figure 3: Hurricane Wilma (2005) <http://commons.wikimedia.org>

The following sections will identify policies and procedures already in place, future goals and objectives, and how the City will achieve these goals. Again, this document is meant to serve as a living document, changing and updating upon discoveries of new technologies, ideas and innovations. It is the hope of staff, that the City of Pembroke Pines and its residents will embrace a future that is committed to a clean, green and beautiful future.

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<sup>2</sup> As reported by the Intergovernmental Panel on Climate Change (IPCC).

<sup>3</sup> The South Florida Region comprises of Monroe County, Miami-Dade County and Broward County ([sfrpc.com](http://sfrpc.com)).

<sup>4</sup> According to EPA, NOAA, IPCC and the Southeast Florida Regional Climate Change Compact

<sup>5</sup> Resiliency (also Resilience) – a capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment (National Research Council, *America's Climate Choices*).





## Chapter 1: Natural Resources & Environmental Design

Pembroke Pines is home to over 600 acres of wetlands, neighbor to the Florida Everglades, home to the first pair of nesting bald eagles in over 50 years and a community filled with natural beauty. Today Pembroke Pines is one of the largest suburban communities within the region<sup>6</sup> and plays a strategic role within the larger metropolitan areas of Fort Lauderdale and Miami. Preserving and protecting the City's natural resources is an important component for residents, ecological tourism and maintaining a balance between development and the natural environment. The City continues to strive and maintain this balance through natural resource enhancement, protecting air quality, protecting ecosystems, and water conservation.

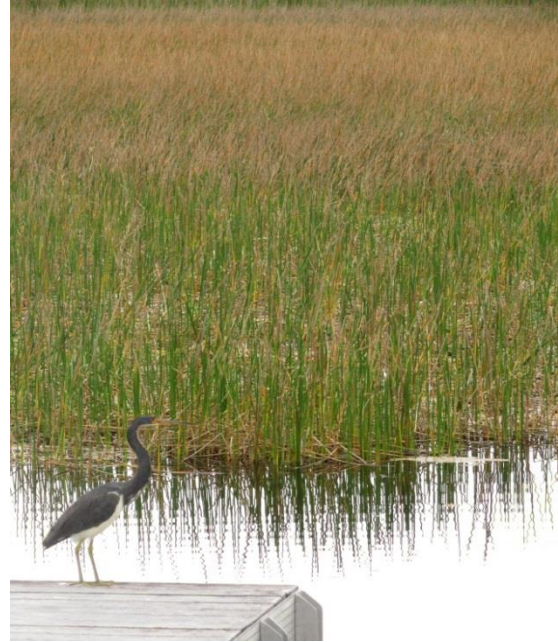


Figure 4: Tricolored Heron at Chapel Trail Nature Preserve

**Goal 1.1** The City is dedicated to **natural resource enhancement** through ensuring the City landscaped areas adhere to Florida-Friendly Landscaping™ practices<sup>7</sup>, are aesthetically pleasing and support critical wildlife such as bees, butterflies and native wildlife.



Figure 5: Overlook of Chapel Trail Nature Preserve

<sup>6</sup> According to 2013 Census estimate Pembroke Pines has a population of 162,329 – second largest City in Broward County, Florida.

<sup>7</sup> Florida-Friendly Landscaping™ - a set of nine guiding principles which help protect natural resources and preserve Florida's unique beauty. The nine principles include: right plant, right place; water efficiency; fertilize appropriately; mulch; attract wildlife; manage yard pests responsibly; recycle; reduce storm water runoff; and protect the waterfront. (University of Florida's Florida Yards & Neighborhoods Program)

The following initiatives are currently being undertaken by the City to ensure we are dedicated to natural resource enhancement:

- City staff is currently rewriting the landscape code in order for all users to better understand and interpret the code.
- The adoption of Florida-Friendly Landscaping™ practices in 2010 which requires that at least 50% of landscape is Southeast Florida Native.
- Participation in NatureScape Broward<sup>8</sup> – a Broward County initiative that focuses on landscapes that conserve water, protects water quality, and creates wildlife habitat.
- National Wildlife Certification – Pembroke Pines recently became one of the largest Cities within Florida to participate within the National Wildlife Federation’s certification program, whose goal is to create wildlife habitats through providing food sources, water sources, shelter and an area for wildlife within individual properties.

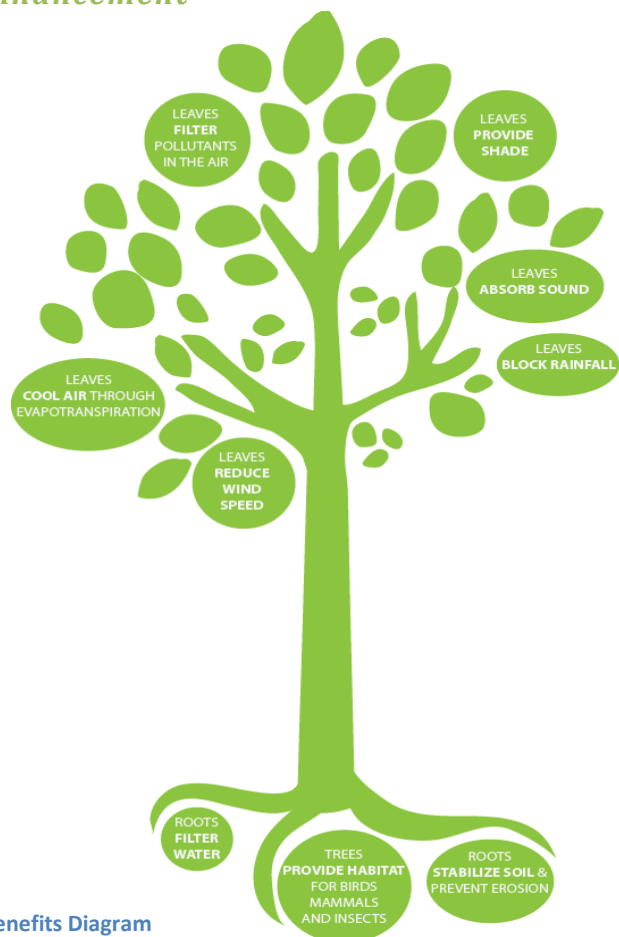
### *Future Objectives: Natural Resource Enhancement*

#### **Objective 1.1.1: Enhance Parks**

- Preserve and expand green and open space within the City to ensure quality of life to residents through identifying key areas for recreation and conservation.
- Continue to implement Florida-Friendly Landscaping™ practices and remove invasive species.
- Continue to plant large shade trees where feasible.
- Map parks to ensure all residents reside within walking distance of green or open space.

#### **Objective 1.1.2: Develop, Design and Designate Greenways**

- Encourage residents to plant Florida-friendly category 1-3 trees.



**Figure 6: Tree Benefits Diagram**

<sup>8</sup> NatureScape Broward is a county program that encourages the use of native plants in landscaping ([broward.org](http://broward.org)).

- Design, plan and implement green corridors that link major environmental assets to residential communities within the City through identifying grants and local partnerships.
- Explore the feasibility to nominate a site within the City to add to the Great Florida Birding & Wildlife Trail.

### **Objective 1.1.3: Update, Revise and Strengthen Policies**

- Revise city code of ordinances to better protect and preserve natural resources.
- Updating the City's Comprehensive Plan to ensure it is up to date with current needs and County requirements.
- Create flexible landscaping guidelines for the original east side of the City where there is little room for landscaping and trees to maintain an aesthetically pleasing city that residents are proud of.

**Goal 1.2** The City is dedicated to **protecting air quality** through Tree Preservation, landscaping guidelines and increasing tree canopy.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to protecting air quality:

- Tree removal permits – residents and businesses are required to obtain a tree removal permit to remove native trees.
- Increase tree canopy by 30% by 2030 – City Commission in 2009 passed Resolution number 3218 to increase tree canopy by 30% within the City.
- Restricting and regulating industrial businesses that may contribute to pollution.
- Increase the diversity of species being planted and approved to ensure diversity and resilience.

### ***Future Objectives: Protecting Air Quality***

#### **Objective 1.2.1: Protect Air Quality**

- Promote the use of alternative transportation to reduce carbon emissions and air pollution.
- Create an outline on how the City can meet the 30% increase in tree canopy.
- Develop a city tree and open space inventory for insurance and streetscape purposes

**Goal 1.3** The City is dedicated to **protecting ecosystems** through the monitoring of City wetlands, protecting the Everglades and Florida wildlife.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to protecting ecosystems:

- Designation and protection of the Eagle Sanctuary located in Western Pines – the first pair of nesting bald eagles in Broward County in over 50 years.
- Designation and protection of the Taft/Palm Bird Rookery through monitoring and landscape maintenance and enhancement (Comprehensive Plan Conservation Element Policy 4.24).
- Continually coordinate mitigation efforts for all new development.
- Continually monitor and maintain approximately 620 acres of wetlands.
- Continued support for the Comprehensive Everglades Restoration Plan<sup>9</sup> and prohibition of development within the Florida East Coast Buffer Zone<sup>10</sup> in the western most portion of the City along the Florida Everglades.



Figure 7: Everglades Restoration Plan Diagram

### *Future Objectives: Protecting Ecosystems*

#### **Objective 1.3.1: Enhance and Protect Ecosystems**

- Enhance protections for the Eagle Sanctuary to ensure safety for both wildlife and people.
- Reviews the City's Wetland Management Plan and identify deficiencies to ensure the success and health of these vital ecosystems.
- Market Chapel Trail Nature Preserve to encourage recreational use and eco-tourism.

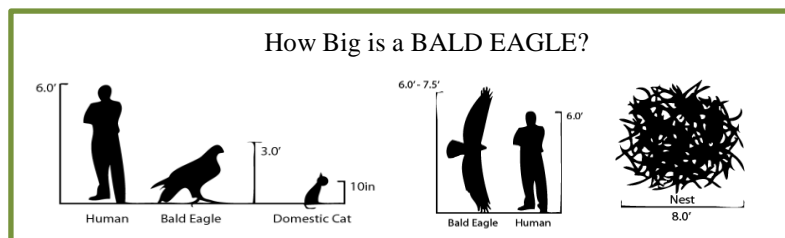


Figure 8: Did you know?

<sup>9</sup> Comprehensive Everglades Restoration Plan (or CERP) – provides a framework and guide to restore, protect and preserve the water resources of central and southern Florida, including the Everglades.

<sup>10</sup> East Coast Buffer Zone – established by the South Florida Water Management District, the buffer was created for enhancing regional capabilities for meeting water supply demands. This area acts as a buffer between urban areas and the Everglades. The buffer is used to capture and store excess surface waters normally discharged from the lower east coast area to tide.



Figure 9: Months for highest irrigation usage (<http://centennialwater.org>)

**Goal 1.4** The City is dedicated to **water conservation** and has been a leader in water conservation in Broward County for the last several decades.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to conservation:

- Incorporation of conservation into the City's Comprehensive Plan.
- Promoting xeriscaping<sup>11</sup> techniques (Conservation Element Policy 4.22).
- Not allowing potable water for irrigation.
- Partnership with Broward County's Energy Sense<sup>12</sup> rebate program which encourages residents to switch to low flow toilets, faucets and shower heads.
  - The City currently gives away low flow shower heads and aerators to residents who request such items.
- The City continues to enforce water restrictions set forth by the South Florida Water Management District (SFWMD)<sup>13</sup>.
- Partnership with Broward County to evaluate irrigation systems on public lands to ensure efficiency.
  - Within the last year (2013) the City has saved over 19 million gallons of water. (Broward County)
- Dedication to preserve groundwater resources through aquifer recharge and conservation.
- Continually adhering to water conservation best management practices.
- Current residents use approximately 85 gallons per day (gpd) which is far lower than the Florida average of 138 gpd and significantly lower than Fort Lauderdale's 189 gpd<sup>14</sup>.

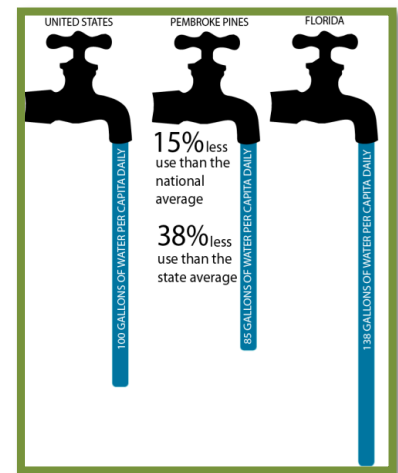


Figure 10: Water Usage Comparison

<sup>11</sup> Xeriscaping – the use of landscaping with slow-growing, drought-tolerant plants to conserve water and establish a waste-efficient landscape (UF).

<sup>12</sup> Energy Sense – Broward County initiative that provides residents and business owners with energy savings tips, conservation practices and rebates to assist in reducing energy use and lowering your monthly utility bill (Broward.org).

<sup>13</sup> South Florida Water Management District (SFWMD) – created in 1949, the SFWMD is a regional governmental agency that oversees the water resources in the southern half of the state (sfwmd.gov).

<sup>14</sup> This information is from the Pembroke Pines Water Supply Plan and the City of Fort Lauderdale Sustainability Action Plan.



- Exceeding water treatment standards for possible water reuse.
- Allowing residents the use of rain barrels for rainwater harvesting and irrigation.

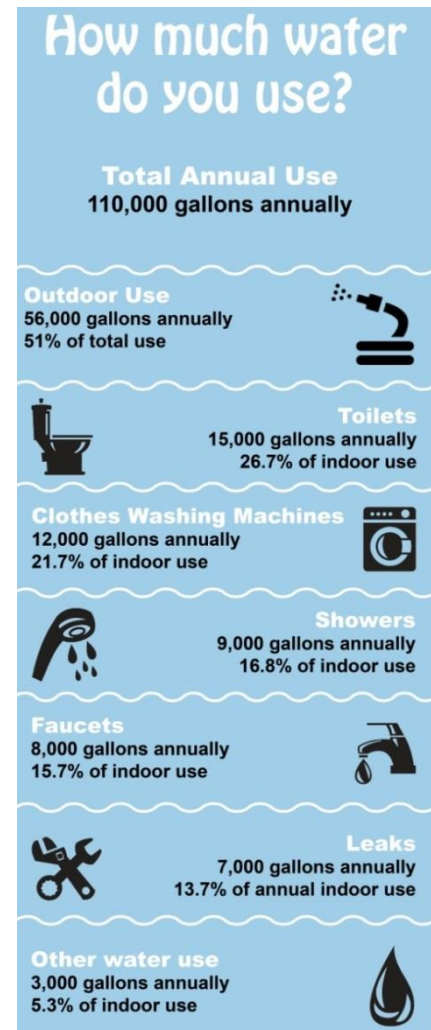
### *Future Objectives: Water Conservation*

#### **Objective 1.4.1: Encourage Water Conservation**

- Identify high water users within the city by working with the City's water provider to ensure they are abiding by restrictions and best management practices.
- Encourage large developments to install and use water reuse techniques and alternatives.
- Encourage the commercial and residential use of rain barrels.

#### **Objective 1.4.2: Protect Water Resources**

- Incorporate Green Infrastructure<sup>15</sup> within the City where appropriate to assist in reducing storm water runoff.
- Partner with Broward County Sheriff's Office for proper disposals of medications to ensure they do not end up in the waterways, canals and aquifers.
- Encourage commercial and residential projects to follow Florida Water Star<sup>SM 16</sup> standards and guidelines for water efficiency.
- Explore the idea of using reclaimed water for irrigation of public spaces, City parks, City property, construction and landscape.



**Figure 11: Water Usage Infographic**  
(<http://centennialwater.org>)

<sup>15</sup> Green Infrastructure –strategically planned and managed networks of natural lands, working landscapes and other open spaces that conserve ecosystem values and functions and provide associated benefits to human populations. (broward.org)

<sup>16</sup> Florida Water Star<sup>SM</sup> – a state water conservation certification program for new/existing homes and commercial developments; standards and guidelines for water efficiency include: indoor fixtures and appliances, landscape design and irrigation systems. (floridawaterstar.com)





## Chapter 2: Energy Efficiency & Conservation

Energy efficient upgrades and retrofits are the most cost effective ways for the City to save money, reduce the use of resources and foster an attitude of conservation. Fossil fuel energy is currently the largest producer of energy and generally includes: coal, petroleum and natural gas. Fossil fuels are also responsible for carbon emissions and pollution. Therefore, it is the duty of local governments to educate and inform the public of the growing threat of our reliance on fossil fuels. It is of the utmost importance that local governments be the leaders in demanding, supporting and calling for the use of renewable energy options such as solar, wind, geothermal and biomass.

Protecting our natural resources through energy efficiency, energy conservation and renewable energy are vital to

ensuring we curb the use and consumption of fossil fuels, while also ensuring that future generations are left with a clean and healthy planet. Dedication to energy efficiency and conservation is the City's dedication to the triple bottom line of community, environment and economy.

**Goal 2.1** The City is dedicated to **energy efficiency** through upgrades, support of renewable energy and partnerships with local stakeholders.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to energy efficiency:

- Encouraging energy efficiency in new development through the installation of Energy Star appliances and light fixtures.
- LEED™<sup>17</sup> Silver Standard for all new Construction of City owned building projects.

<sup>17</sup> Leadership in Energy and Environmental Design™ (or LEED™) – a rating system development by the U.S. Green Building Council to verify that a building, home or community was designed and built using strategies aimed at achieving high performance in key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. (USGBC.org)

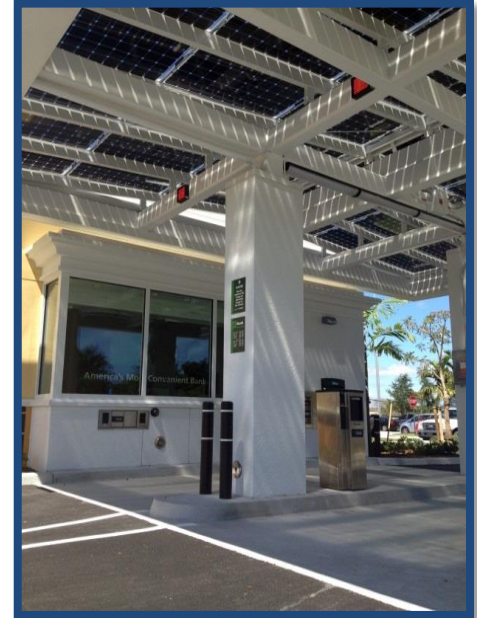


Figure 12: Solar Panel Roof of a local drive thru



Figure 13: Energy Efficient Chillers at the Howard B. Foreman Health Campus

- Downsized vehicle fleet and supporting the use of fuel efficient vehicles.
- Support and encourage the use of renewable energy.
- Energy efficient upgrades to the Howard B. Foreman Health Campus which resulted approximately \$150,000 in annual savings.

### *Future Objectives: Energy Efficiency & Conservation*

#### **Objective 2.1.1: Promote Energy Efficient Upgrades**

- Continue diversification of energy portfolio by giving preference to vendors who highlight the use of energy efficiency and renewable energy.
- If adopted by the County, promote the use of Broward County's Property-Assessed Clean Energy (PACE) program which offers financing options for energy efficiency retrofits for both residents and businesses, such as the installation of renewable energy (rooftop solar), insulation, energy efficient lighting, etc...
  - The PACE program allows households to pay for the cost of energy improvements and wind mitigation measures to their homes or businesses through a voluntary assessment on their property tax bill.
- Explore other energy efficient upgrades on City property that would result in financial savings.

**Goal 2.2** The City is dedicated to **energy conservation** through best management practices, energy use reduction, and promoting of green building principles.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to energy conservation:

- Reduction of a five day work week to a four day work week for general shift employees.
- The purchase of Energy Star™ office supplies since 2012.
- Recently contracted company for Investment Grade Energy Audit to evaluate consumption and propose construction projects that will result in reduced energy consumption to be paid with the energy cost savings.
- A culture of environmental stewardship.



**Figure 14: Green Building Benefits (EPA & USGBC)**

## ***Future Objectives: Energy Conservation***

### **Objective 2.2.1: Encourage and Promote Energy Conservation**

- Phase in LED lighting throughout the City where deemed appropriate.
- Encourage new development to use and install renewable energy, such as solar panels.
- Community outreach on energy conservation tips and challenges.

**Goal 2.3** The City is exploring **renewable energy** options through the small scale use of solar panels for small projects.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to renewable energy:

- Diversifying energy portfolio through added solar components to City monument signs, bus shelters and outside utilities.
- Installation of a GeoThermal<sup>18</sup> Pool Heating and Cooling system in 2011 at the Academic Village campus.



Figure 15: Solar Roof

## ***Future Objectives: Renewable Energy***

### **Objective 2.3.1: Promote and Encourage Renewable Energy**

- Educate and encourage residents to purchase or install renewable energy.
- Explore purchasing of renewable energy credits and/or systems.
- Encourage new development to follow principles for passive solar design<sup>19</sup> when feasible.
- Explore and identify funding sources for the installation of solar panels on public buildings.

#### **DID YOU KNOW?**

Figure 16: Solar Energy Facts

- Solar power is Free once the equipment is installed.
- The cost of PV systems has decreased by 33% since their inception – and continues to decrease.
- You can expect a complete payback on your investment in solar energy in 3 to 6 years.
- Solar energy produces no pollution and has no environmental effects.
- By relying on a battery backup system, solar energy can provide electricity 24/7, even at night and on cloudy days.
- 0.2% of our nation's energy is currently supplied by solar energy.

\*Facts from American Solar Energy, LLC

<sup>18</sup> GeoThermal – is thermal energy generated and stored within the Earth.

<sup>19</sup> Passive Solar Design – gets part of its heating, cooling, and lighting energy from the sun. Passive solar design takes advantage of a building's site, climate, and materials to minimize energy use. A well-designed building first reduces heating and cooling loads through energy-efficiency strategies and then meets those reduced loads in whole or part with solar energy. (energy.gov)



## Chapter 3: Built Environment & Transportation

The built environment is responsible for energy consumption patterns, healthy communities, local economies, and growth patterns. Transportation and the built environment are some of the largest contributors to carbon emissions, energy use and the culture in which residents live, work and play. 39% of carbon emissions come from buildings, 33% of carbon emissions come from transit; combined buildings and transit contribute to over 70% of all carbon emissions released into the environment. Buildings are also responsible for over 70% of all electricity consumed within the United States<sup>20</sup>. Without proper planning, coordination and cooperation the built environment will continue to contribute to the degradation of communities, healthy living, sprawl and unsustainable practices. It is the prerogative of local governments to ensure they are encouraging and supporting green development that abides by smart growth principles and transit oriented development which leads to better mobility, healthy communities, interesting places and historic preservation.



Figure 17: Cobblestone Townhomes (left) Sheltered Bus Station on Pines Blvd. (top) Green Screened Wall (bottom)

**Goal 3.1** The City strongly encourages and supports **Green Development** and redevelopment, especially as the city nears build out.

Green Development is a concept that includes a community-wide holistic approach to development; it also includes the use of green building techniques to be used when developing a

<sup>20</sup> Statistics come from U.S. Green Building Council.



site or area. Green development seeks to look at the whole rather than the part and how it can be integrated with consideration of the people and ecology. Green Development generally includes city planning, environmental planning, architecture, construction, landscape architecture and community building.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to Green Development:

- In 2008, the City passed Ordinance number 1622 to ensure all new City owned construction projects met LEED™ Silver Certification.
- To date, the City has seven LEED™ certified buildings (USGBC) within the City, with several pending.
  - Four LEED™ Gold
    - Two TD Banks along Pines Boulevard
    - Broward College, Building 72
    - Modera Clubhouse
  - Two LEED™ Silver
    - Broward County South Regional Library
    - Douglas Gardens North, Phase III
  - One LEED™ Certified
    - Baptist Health of South Florida
- Plans are in place to build a LEED™ Silver Certified City Hall/Civic Center within the next several years.
- General support of Green Development on City Center property.



Figure 18: LEED Silver Certified Broward County South Regional Library

### *Future Objectives: Green Development*

#### **Objective 3.1.1: Support and Encourage Green Development Techniques**

- Creation of a Green Checklist to add to the Unified Development Application to ensure all new development or major renovations within the city adds a “Green” component to their development site, which in turn will create awareness and a beautification component.
- Allow Green Roofs and Living Walls within the City.
  - Green Roofs are roofs that support shallow root vegetation – typically results in reduced energy use, water quality and reduced air pollution and greenhouse gas emissions are to name a few. (epa.gov)
  - Living Walls are facades equipped with vegetation and share some of the same benefits of green roofs.

- Decrease heat island effect<sup>21</sup> through the encouragement of solar reflective coatings on roofs and parking areas, permeable pavement and increased tree canopy.
- Encourage the use of low volatile organic compounds (VOCs)<sup>22</sup> found in sealants, paints and adhesives.
- Continue adopting policies that encourage and promote Green Development and resiliency.

**Goal 3.2** The City promotes and encourages **Smart Growth** principles when and where feasible.

Smart Growth is a comprehensive approach to development used in many cities across the nation. The following principles are incorporated into Smart Growth strategies (EPA):

- Mix land uses
- Take advantage of compact building design
- Create a range of housing opportunities and choices
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place
- Preserve open space, farmland, natural beauty, and critical environmental areas
- Strengthen and direct development towards existing communities
- Provide a variety of transportation choices
- Make development decisions predictable, fair, and cost effective
- Encourage community and stakeholder collaboration in development decisions

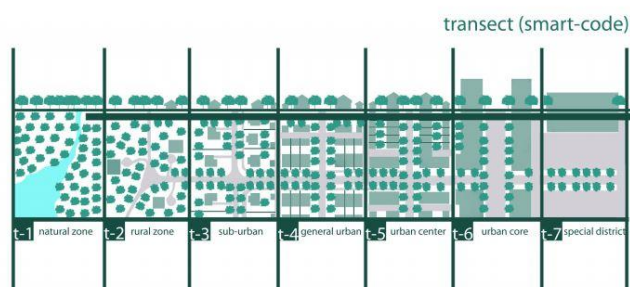


Figure 19: Smart Growth Transect (transect.org)

"This zoning system replaces conventional separated-use zoning systems that have encouraged a car-dependent culture and land-consuming sprawl. The six Transect Zones instead provide the basis for real neighborhood structure, which requires walkable streets, mixed use, transportation options, and housing diversity." transect.org



Pembroke Pines currently offers a range of home and density types for resident preference.

<sup>21</sup> Heat Island Effect – localized increase in ambient urban air temperatures resulting primarily from the replacement of vegetation with buildings, roads, and other heat-absorbing infrastructure. The heat island effect can result in significant temperature differences between rural and urban areas and contributes to global warming. (epa.gov)

<sup>22</sup> Volatile Organic Compounds (or VOCs) - are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short and long-term adverse health effects. VOCs are emitted by a wide variety of products numbering in the thousands, examples include: paints, cleaning supplies, pesticides, building materials, office equipment, furniture, glues and adhesives, permanent markers, etc... (epa.gov)



The following initiatives are currently being undertaken by the City to ensure we are dedicated to Smart Growth strategies:

- City Center is currently zoned Mixed Use Development (MXD) encouraging innovative development and redevelopment that is architecturally compatible, promotes a pedestrian friendly environment and reduces traffic generation.
- Pembroke Pines Community Bus and Broward County Transit routes along all major thoroughfares, bicycle lanes throughout the City and pedestrian access to many of the commercial shopping centers.
- All new development and redevelopment goes through a vigorous public noticing process before development can be scheduled for the Planning and Zoning Board.
- Pembroke Pines is home to an abundance of senior housing, affordable housing options, workforce housing and a range of other housing options.
- The creation of a new “Planned Small Lot Development District” or PD-SL District that allows for a flexible zoning category for smaller lots of land.
- Participated in Complete Streets audit with the Smart Growth Partnership.

### *Future Objectives: Smart Growth*

#### **Objective 3.2.1: Support and Encourage Livable Communities**

- Adopt some or all Complete Streets principles.
  - Complete Streets are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. ([smartgrowthamerica.org](http://smartgrowthamerica.org))
- Encourage new development to abide by Smart Growth and Complete Street principles.
- Assist communities in the eastern portion of the City to create a sense of place and foster an ethic of participation through community outreach and engagement.



Figure 20: Complete Streets Cross Sectional

**Goal 3.3** The City encourages the principles of **Transit Oriented Development (TOD)** within the older more populated eastern portions of the City.

TOD is compact, mixed-use development near transit facilities and high-quality walking environments. TOD leverages the use of transit infrastructure to promote economic development and smart growth, and caters to shifting market demands and lifestyle preferences.

TOD is about creating sustainable communities where people of all ages and incomes have transportation and housing choices, increasing location efficiency where people can walk, bike and take transit. TOD typically boosts transit ridership and reduces automobile congestion, providing value to both the private and public sectors, while creating a sense of community and place. (FTA)

The following initiatives are currently being undertaken by the City to ensure we are dedicated to Transit Oriented Development:

- General support for transit hubs throughout the City.
- Park and Rides (aka express buses) situated along Pines Boulevard on Flamingo Road and University Drive.
  - Currently very successful and these County operated buses transport residents to downtown Miami.
- Recognizing the need for regional connectivity and collaboration (Transportation Policy 2.1.16).
- Encourage new housing to locate on or near major corridors, regional intermodal facilities and regional centers (Transportation Policy 2.2.9).
- Continue to work with the County and local Metropolitan Planning Organization (MPO) in their efforts to establish a transit-oriented corridor overlay zoning district along high capacity transit corridors within the City (Transportation Policy 2.2.8).
- Continue to encourage the use of public transit.
- Participation in the University Drive Mobility Improvements Planning Study.

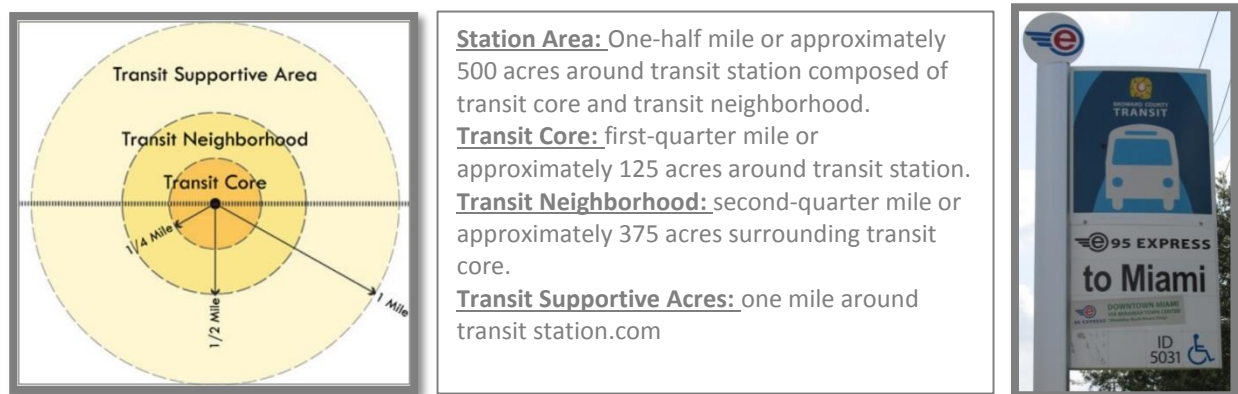


Figure 21: TOD Diagram (FLDOT.Com)



Figure 22: Source - [www.hollywoodcorridor.com](http://www.hollywoodcorridor.com)

## *Future Objectives: Transit Oriented Development*

### **Objective 3.3.1: Support and Encourage Transit Communities**

- Continue working with Broward Metropolitan Planning Organization (MPO)<sup>23</sup> with the Hollywood/Pines Corridor Project and University Drive Mobility Improvements Planning Study.
- Explore and identify parcels that the City could potentially purchase, develop and sell to ensure the success of University/Pines Corridors.
- Provide canopy along sidewalks where feasible throughout the City.
- Identify bike paths and create safe cyclists paths to travel along throughout the City.
- Encourage the installation of bike racks within commercial and business centers.

**Goal 3.4** The City is dedicated to **mobility** and access to transit for all users.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to mobility:

- Pines Shuttle bus currently transports approximately 218,000 passengers per year with three routes that run and intersect within most of the commercial areas within the City. (Broward County Transit)
- The County currently operates Broward County Transit (BCT) routes 2, 5, 7, 16, 23 including University Breeze and two Park and Ride buses located on Pines Boulevard along Flamingo Road and University Drive.
  - Route 7 is one of the heaviest used routes in the County and connects to the Tri-Rail. (BCT)
- Many senior communities, including Century Village, in Pembroke Pines operate a transit system that transports seniors to nearby shopping centers and commercial areas.

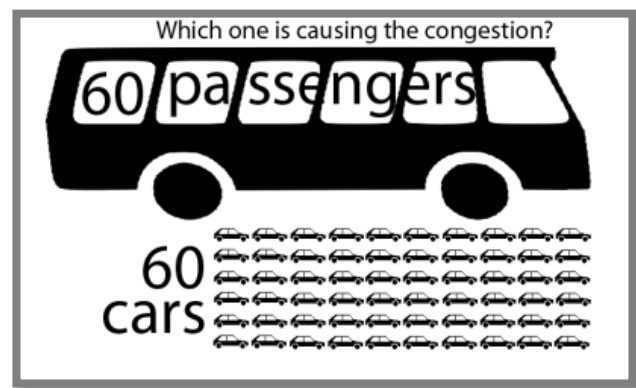


Figure 23: Did you Know?

<sup>23</sup> Broward Metropolitan Planning Organization (or Broward MPO) – is a transportation policy-making board comprised of 19 voting members and 19 alternate members, who have voting rights when others are absent. The MPO is responsible for transportation planning and funding allocation in Broward County. The MPO works with the public, planning organizations, government agencies, elected officials, and community groups to develop transportation plans. ([browardmpo.org](http://browardmpo.org))

## *Future Objectives: Mobility*

### **Objective 3.4.1: Support Mobility and Alternative Transportation**

- Encourage shelter and shade at bus stops without coverage.
- Continue to monitor and assess the City bus network to ensure coverage, identify gaps and modify routes as appropriate.
- Work with the County to identify whether or not there is a need for an express bus west of I-75.
- Encourage the creation of a car share or car pool program for residents.
- Work with communities near shopping centers to create pedestrian access.
- Encourage interconnections between developments.
- Continue to promote and explore alternative transportation options for residents, visitors and workers.



Figure 24: Bike Rack at a local shopping center (bottom)

**Goal 3.5** The City is dedicated to **healthy communities** and residential access to healthy foods and recreation.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to healthy communities:

- The City established an Organic Community Garden<sup>24</sup> in 2011 now located near City Center, on Washington Street, east of Hiatus Road.
- The City supports the establishment of Farmers Markets.
- The City has a range of grocery options from different types of grocery stores offering local food, organic foods, culturally diverse foods, and conventional grocery stores.
- The City has a range of international culinary cuisine.



Figure 25: Pembroke Pines Community Garden - Pictures from TierraLady [www.flickr.com/photos/tierralady](http://www.flickr.com/photos/tierralady)

## *Future Objectives: Healthy Communities*

<sup>24</sup> As an Organic garden, only organic pesticides may be used in the garden. Any inorganic chemicals must be approved by the committee prior to use. The Community Garden is a member-based green space where residents can grow fresh produce. More information can be attained through calling 954-435-6520.

### Objective 3.5.1: Ensure and Encourage Healthy Communities

- Identify whether the City has any food deserts or concentration of food related illnesses, such as diabetes using Geographic Information Systems (GIS)<sup>25</sup>.
- Ensure residential communities are connected to nearby commercial shopping centers.
- Encourage the purchase of locally sourced food, especially among Farmers Markets, through education and outreach.
- Ensure future residential communities have adequate access to recreational facilities.

**Goal 3.6** Though the City was incorporated in 1960, there are not many **historic sites** within the City. What few historic sites do exist within the City, the City is dedicated to preserving.

The state currently runs a historic site program - the Florida Historical Marker Program which recognizes historic resources, persons and events that are significant in the areas of architecture, archaeology, Florida history and traditional culture by promoting the placing of historic markers and plaques at a site of historical and visual interest to visitors. The purpose of this program is to increase public awareness of the rich cultural heritage of the state and to enhance the enjoyment of historic sites in Florida by its citizens and tourists. (flheritage.com)



Figure 26: Standard Florida Historical Marker (flheritage.com)

In conjunction with the Florida Historical Marker Program, the City is dedicated to preserving, promote and enhance historic sites within Pembroke Pines.

The following initiatives have been undertaken by the City and other organizations to ensure we are dedicated to historic preservation:

- Commitment to preserving and protecting the Florida Everglades.
  - 1947 Florida Everglades declared a National Park.
  - 1976 Florida Everglades accepted as a Biosphere Reserve.
  - 1979 Florida Everglades UNESCO<sup>26</sup> World Heritage Site (currently listed as *in danger*).
  - 1987 Ramsar Convention<sup>27</sup> declared Florida Everglades Wetland of International Significance.

<sup>25</sup> GIS – Geographic Information Systems – allows the user to visualize, question, analyze, and interpret data to understand relationships, patterns and trends (ESRI).

<sup>26</sup> UNESCO or United Nations Education, Scientific and Cultural Organization seek to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity. This is embodied in an international treaty adopted by UNESCO in 1972. (whc.unesco.org)



- Preserving the original Pembroke Pines City Hall, located in the Pines Village neighborhood.
- Preserving Perry Airport, a World War II site of historic importance.

### *Future Objectives: Historic Sites*

#### **Objective 3.6.1: Support Historic Preservation**

- Explore the idea of identifying and/or designating historic sites, sites which are of civic or of cultural importance, within the City.
- Identify possible historic sites of historic significance.
- Continue supporting Everglades Restoration and Preservation.



**Figure 27: North Perry Airport**  
(Broward.org)

Wagon wheel configuration at North Perry Airport.

North Perry Airport was founded in 1940 by the U.S. Navy as an emergency landing strip during World War II.

Today, North Perry Airport is a general aviation airport exclusive to private and business light-plane activity.

*"There are no other Everglades in the world. They are, they have always been, one of the unique regions of the earth; remote, never wholly known. Nothing anywhere else is like them"*

– Marjory Stoneman Douglas (1890-1998), American Journalist & Environmentalist

<sup>27</sup> Ramsar Convention is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the sustainable use of all the wetlands in their territories.





## Chapter 4: Waste Reduction & Recycling

The average person in the U.S. produces approximately four to seven pounds of waste per day<sup>28</sup>. Pembroke Pines residents, on average, produce approximately six pounds of garbage per day. Approximately 21% of the waste that is produced within the City gets recycled<sup>29</sup>. Our consumption patterns and the amount of waste that is generated per day are unsustainable and contribute to the pollution of our atmosphere, waterways and natural environments. It is the duty and responsibility of local governments to ensure they have a holistic waste management plan and continue to foster and encourage partnerships with community leaders to ensure recycling efforts, reduce waste and reuse goods. Such policies will ensure the City is committed to the triple bottom line of community, environment and economy.



Figure 28: Reuter Recycling Plant Bundling Recyclables to Sell

**Goal 4.1** The City supports and encourages waste reduction through a **waste management plan** that includes reducing, reusing and recycling.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to waste management:

- In 2009, the City began offering online bill payment and electronic bills to reduce paper waste.
- In 2010, the City initiated a single stream recycling program to allow residents to mix paper, plastic, cardboard and glass in one container to make it more convenient to recycle within the City.



Figure 29: Reuters Recycling Plant Sorting Plastic

<sup>28</sup> Statistic is from the EPA.gov website and Waste Management.

<sup>29</sup> Verified through Waste Pro USA.

- The City encourages the donation of unwanted goods through a donation bin that is periodically setup at City Hall.
- The City will soon begin construction of a Wastewater Treatment Plant Biosolids Processing and Centrifuge System which creates Class AA biosolids<sup>30</sup> to be used for commercial fertilizer.
  - The process eliminates the need for complex wastewater treatment infrastructure and requires only hours to achieve results that oftentimes takes weeks with traditional technologies. The fertilizer is free from foul odors through a process that eliminates odors and increases the air quality at the wastewater treatment plant, surrounding community and site.
  - Other benefits including energy savings, odor control, future capacity expansion and reduced operating costs.

### *Future Objectives: Waste Management Plan*

#### **Objective 4.1.1: Enhance and Encourage Reducing Waste and Recycling Efforts**

- Adopt a more comprehensive waste management plan that includes:
  - Working with the City waste management company to identify processes in which the City can improve upon.
  - Explore a commercial food waste recycling program.
  - Explore a residential composting program.
  - Adopt a 1:1 policy of pairing trash receptacles with recycling receptacles within the City.
  - Ensure City events encourage and promote recycling.
- Encourage community yard sale events to reduce waste and encourage reuse.
- Meet the statewide recycling goal of 75% by 2020<sup>31</sup>.



**Figure 30: Did You Know?**

<sup>30</sup> Biosolids or “sewage sludge” is a solid by-product accumulated in wastewater treatment plants that requires removal. The material is high in organic content and contains moderate amount of nutrients for plants. Properly treated this material may be used as fertilizer supplement or soil amendment, subject to regulations. The highest quality of biosolids known in Florida as “Class AA,” are distributed and marketed like other commercial fertilizer (dep.state.fl.us).

<sup>31</sup> In 2008, the Florida Legislature enacted House Bill 7135 which created section 403.7032, Florida Statutes. This established a new statewide recycling goal of 75% to be achieved by the year 2020. The statute directed DEP to develop a program designed to achieve this goal and submit it to the Legislature for approval. The report was submitted by DEP in January 2010.

**Goal 4.2** The City is dedicated to problem solving through **partnerships** and agreements to solve issues associated with waste and recycling.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to coordination and partnerships:


- Partnerships with waste management companies who are dedicated to the protection and preservation of our environment.
- Partnerships with Reuter recycling plant to ensure it can meet the needs of the City.
- Continue partnership with local waste management provider to encourage proper disposal of electronic waste, hazardous waste and yard waste.

### *Future Objectives: Partnerships*

#### **Objective 4.2.1: Create Partnerships to Enhance and Encourage Waste Reduction Efforts**

- Partner with local organizations to encourage the donation, recycle and reuse of items not wanted by residents.
- Encourage and promote the donation and reuse of unwanted goods.
- Outreach campaign to encourage recycling and educate the public on what can be recycled to reduce contaminated recycling<sup>32</sup>.
- Provide recycling bins at City parks and community events.
- Partnerships with waste management company to ensure electronic waste and hazardous waste is disposed of properly.

#### Tips to Reduce Solid Waste



<b>REDUCE</b> <ul style="list-style-type: none"><li>• Reduce the amount of unnecessary packaging.</li><li>• Adopt practices that reduce waste toxicity.</li></ul>	<b>RECYCLE</b> <ul style="list-style-type: none"><li>• Choose recyclable products and containers and recycle them.</li><li>• Select products made from recycled materials.</li><li>• Compost yard trimmings and some food scraps.</li></ul>
<b>REUSE</b> <ul style="list-style-type: none"><li>• Consider reusable products.</li><li>• Maintain and repair durable products.</li><li>• Reuse bags, containers, and other items.</li><li>• Borrow, rent, or share items used infrequently.</li><li>• Sell or donate goods instead of throwing them out.</li></ul> <p>(*Visit <a href="http://epa.gov">epa.gov</a> for more information)</p>	<b>RESPOND</b> <ul style="list-style-type: none"><li>• Educate others on source reduction and recycling practices.</li><li>• Be creative – find new ways to reduce waste quantity and toxicity.</li></ul>

<sup>32</sup> Contaminated Recycling (also known within the industry as scam recycling) – is when recovered material is not recyclable or contaminated. Waste management industries typically allow up to a 10% contamination rate before it is diverted to the landfill. While plastic bags are a huge culprit, so are plastic household items that are not recyclable. Plastic bags and plastics labeled #3-7 inhibit the recycling process and put workers at risk.



## WASTE FACTS...Did You Know?

**Did You Know?** Only **1 in 5** Plastic Bottles in the U.S. is recycled.

Many end up in our waterways and canals and contribute to one of the **five** trash vortexes in the ocean. The largest – the Great Pacific Garbage Patch– possibly larger than the state of Texas, comprises of broken down pieces of trash that has come from land and sea.



**Did You Know?** Floridians **only recycle 25%** of all waste.

Plastics numbered



are currently **NOT** recyclable, including plastic bags.

**Did You Know?** Broward County has **two** Waste to Energy facilities that **PRODUCE** electricity for Broward.

Approximately 38,000 Florida homes are supplied with electricity produced by the South Broward plant located on State Road 441.

**Did You Know?** Only **1/3** of the waste we generate is diverted from landfills!

**30%** of recycling is **contaminated** and **diverted back** to the landfill!

**Waste Reduction, pollution reduction, and environmental stewardship begin with YOU!**

\*Facts are from EPA , Waste Management and National Geographic.



## Chapter 5: Community Outreach & Empowerment

One of the key components of this plan is community outreach and individual empowerment. Without public awareness and support, future objectives within this document have little chance of success. Therefore, it is the responsibility of local governments to ensure the citizens are educated and aware, that is why it is important for local governments to foster partnerships and collaboration with citizen groups, homeowners associations, local organizations and community leaders. Without public support and buy in, the chances of change are almost nonexistent.

**Goal 5.1** The City understands its service to the community, which is why the City is dedicated to outreach and empowerment through the power of **educating** its citizens.

The following initiatives are currently being undertaken by the City to ensure we are dedicated to educating the citizenry:

- The bi-monthly release of the City Connect, bringing local news and information to residents.
  - Available in paper and electronically
- Recent makeover of the City website [www.ppines.com](http://www.ppines.com) allows easy to use, navigable website where residents and visitors have access to information and resources that are easy to find with the comprehensive “Search” button tool.
- Public noticing of City Commission meetings and board meetings.
- Voluntary e-mail sign-up of local events and City meetings.



Figure 31: Resident's Committed to Going Green

### *Future Objectives: Education*

#### **Objective 5.1.1: Educate and Empower Communities to “Go Green”**

- Educate and inform city residents and businesses on conservation, waste reduction, recycling, resource efficiency and pollution.
- Creation of a citizen led ‘Green Team’ that will attend community events, inform, educate and empower the public.
- Educating the public on proper landscaping techniques to ensure the protection of water, resources and native wildlife and habitat.
  - Promote the plantings of native trees and plants through education and outreach.
- Continue to encourage and promote the City’s organic community garden.



Figure 32: Children Receiving Free Plants

- Continue to partner with community incentive programs to encourage residents and businesses to purchase energy efficient upgrades to their homes and businesses.
- Educate residents to reduce the single use of plastic bags, the proper disposal of plastic bags and encouraging the use of reusable shopping bags.

**Goal 5.2** The business community is beginning to take the lead when it comes to going Green and creating awareness on their own, the City is looking to establish **collaboration and cooperation** within the business community for others to follow.

The following initiatives are currently being undertaken by the business community to ensure collaboration and cooperation:

- Retrofits of buildings to ensure they are energy efficient and showcasing them to be environmentally conscious through exceeding City code standards, installing green components to their development and educating their workforce on the importance of recycling.
- The use and purchase of environmental preferable materials and resources.

### ***Future Objectives: Collaboration and Cooperation***



#### **Objective 5.2.1: Collaborate and Cooperate with Local Partners to Meet the Goals and Objectives of this Document**

- Identify Green business leaders within the City.
- Identify possible “Green” markets within the City.
- Promote and encourage buy local, shop local.
- Partner with the Pembroke Pines – Miramar Chamber of Commerce to foster awareness and encourage member businesses to “Go Green.”
- Foster partnerships with active community members, homeowners associations, local non-profits, colleges and universities and businesses to convey information, outreach and empowerment.
- Partner with community leaders and assist in facilitating community and waterway cleanup programs.
- Explore a neighborhood challenge contest to inform, engage and beautify communities within the City.



Figure 33: Community Involvement Graphic





## Chapter 6: Leadership & City Operations

While the City of Pembroke Pines continues their leadership in the conservation movement that has taken place over the last several years. The City has used best management practices, sound policies and conservation methods. In recent years, the City has taken on a more aggressive role in becoming environmentally conscious. The City will continue its role as a leader while also maintaining city operations that are in line with the **six key areas** that have been discussed thus far.

**Goal 6.1** The City has been a **leader** when it comes to policies, procedures and becoming more aware of the growing threat of unsustainable practices.

The following initiatives are currently being undertaken by the City to ensure our dedication to the environment:

- Intergovernmental coordination with various agencies throughout the County.
- Internal departmental recycling program.
- Retrofit of City owned and operated buildings.
- Policy to build LEED™ Silver Certified standards of City buildings.
- National Wildlife Certification of qualified public parks and open space.
- The City has approximately 85 comprehensive plan policies that are aimed at conservation of natural resources, sustainable infrastructure and transportation – some of which are included within this document.
- The use of Florida-Friendly Landscaping™ techniques within certain City properties.

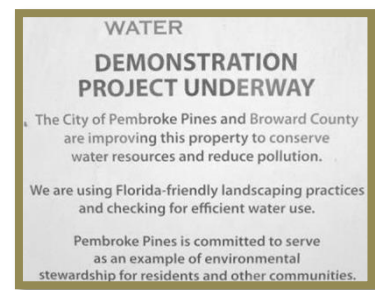
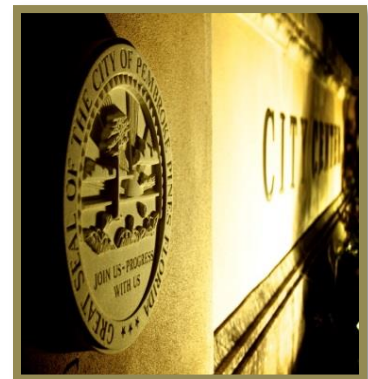


Figure 34: William B. Armstrong Dream Park

### *Future Objectives: Leadership*

#### **Objective 6.1.1: Explore and Implement Eco-Friendly Techniques that Meet the Goals and Objectives of this Document**

- Establish a sample National Wildlife Certified garden at City Hall.
- Replace lighting within City parks and public facilities with LED lighting where appropriate.
- Conduct regular energy audits on City buildings.



- Purchase fuel efficient vehicles.
- Use Green Infrastructure techniques and principles within public property.
- Explore incentives for “Green” companies to locate and expand within the City.
- Explore incentives to encourage Green Development within the City.
- Explore the creation of a carpool/rideshare program for City employees to reduce vehicle miles travelled.



Indoor preview of Future Civic Center/City Hall at City Center. (Rendering provided by Stiles Architecture.)



Future Civic Center/City Hall Coming 2016. (Rendering provided by Stiles Architecture)

**Goal 6.2** In recent years the City has reviewed its operations and taken steps to ensure **City Operations** are efficient, cost effective and sustainable.

The following initiatives are currently being undertaken by the City to ensure our dedication to the sustainability:

- Practice of environmentally preferable purchasing.
- Practice of local preferable purchasing.
- Allowing bill payment and sign-up of electronic bills.
- Consolidation of office equipment.
- Replacement of office equipment with Energy Star rated machines.
- Four day work week for general shift employees.
- The distribution of electronic Agenda's for Commission meetings.



### ***Future Objectives: City Operations***

#### **Objective 6.2.1: Ensure City Operations are Efficient and Environmentally Conscience**

- Develop an internal Green Team for policy updates, changes and departmental coordination.
- Adoption of environmentally preferable purchasing and local preferable purchasing policies.

- Reduce paper waste through encouraging electronic submittals of applications, forms and bill payment.
- Internal recycling program within all City departments.
- Adopt internal quality control standards pertaining to sustainable policies and practices.
- Adopt a Green Cleaning policy.
- Develop polices and remove barriers to foster the growth of renewable energy development within the City.
- Develop policies and remove barriers for the use of green infrastructure within the city.
- Incorporate climate change into long range planning – including the likely impacts of water supply risk, health impacts of increased temperatures, sea level rise and flood mitigation.
- Encourage all development review departments to host a staff member with green building standard credentials, such certifications as LEED™, Green Globes, FGBC<sup>33</sup>, etc.
- Integrate environmental stewardship into all levels of decision-making.
- Review Green Initiatives and policies every three years.
- Review procurement policies to encourage City government vendors and contractors to use fuel efficient/alternative fuel vehicles within their fleets for City work.
- Continue intergovernmental coordination within the local, county and regional levels.
- Explore the feasibility and cost savings associated with an interdepartmental car share program where departments can check out a City car when in need.
  - Ideal for departments who do not always need or use a City car.



Figure 35: Staff Donating Food for the needy (left), Arts and Culture event at Studio18 (middle), Maintenance Staff ensuring energy efficiency at City Hall (right)

<sup>33</sup> LEED™, Green Globes and Florida Green Building Coalition (FGBC) – are green building certification programs aimed at Green Development and sustainability.

## Implementation

The implementation of this document will largely depend upon interdepartmental coordination at all levels at the City of Pembroke Pines and a creation of an internal “green team”, with the guidance and assistance of the Planning and Economic Development Division. The Green Team will be responsible for identifying attainable goals and objectives which are considered efficient, sustainable and cost effective. Through the use of this living green document as a guide, the City of Pembroke Pines is bound to find itself in a position that seeks to achieve the City’s mission and vision in creating a desirable community that will foster the desire to live, work and raise a family.

Adhering to the general philosophies of:

- Improving the quality of life within our communities
- Fostering a culture of environmental stewardship
- Responsible economic development
- Understanding the interconnectivity of our communities to the region
- Leadership by example
- Decisions based on the triple bottom line



The City will strategically situate itself within the South Florida region as a regional power house. With continued public-private agreements and keeping the interests of the community at the heart of the decision-making process while also adhering to the triple bottom line. The City will continue to be successful in business, community, culture, economics, conservation, preservation and the environment.

While the future holds many unknowns if the City continues to plan accordingly, remain resilient and base decisions on the future, the City will ultimately remain successful. The future cannot be planned without holistically approaching it as a whole.

By using the **six key areas** within this document as a guide, the City can begin to address how to remain environmentally responsible while holistically approaching development that will continue through build out and beyond.

## Summary of Goals & Objectives

### Chapter 1: Natural Resources & Environmental Design

**Goal 1.1** The City is dedicated to **natural resource enhancement** through ensuring the City landscaped areas adhere to Florida-Friendly Landscaping™ practices, are aesthetically pleasing and support critical wildlife such as bees, butterflies and native wildlife.

#### **Objective 1.1.1: Enhance Parks**

- Preserve and expand green and open space within the City to ensure quality of life to residents through identifying key areas for recreation and conservation.
- Continue to implement Florida-Friendly Landscaping™ practices and remove invasive species.
- Continue to plant large shade trees where feasible.
- Map parks to ensure all residents reside within walking distance of green or open space.

#### **Objective 1.1.2: Develop, Design and Designate Greenways**

- Encourage the planting of Florida-friendly trees.
- Design, plan and implement green corridors that link major environmental assets to residential communities within the City through identifying grants and local partnerships.
- Explore the feasibility to nominate a site within the City to add to the Great Florida Birding & Wildlife Trail.

#### **Objective 1.1.3: Update, Revise and Strengthen Policies**

- Revise city code of ordinances to better protect and preserve natural resources.
- Updating the City's Comprehensive Plan to ensure it is up to date with current needs and County requirements.
- Create flexible landscaping guidelines for the original east side of the City where there is little room for landscaping and trees to maintain an aesthetically pleasing city that residents are proud of.

**Goal 1.2** The City is dedicated to **protecting air quality** through Tree Preservation, strict landscaping guidelines and increasing tree canopy.

#### **Objective 1.2.1: Protect Air Quality**

- Develop a city tree and open space inventory for insurance and streetscape purposes.
- Promote the use of alternative transportation to reduce carbon emissions and air pollution.
- Create an outline on how the City can meet the 30% increase in tree canopy.



**Goal 1.3** The City is dedicated to **protecting ecosystems** through the monitoring of City wetlands, protecting the Everglades and Florida wildlife.

**Objective 1.3.1: Enhance and Protect Ecosystems**

- Enhance protections for the Eagle Sanctuary to ensure safety for both wildlife and people.
- Review the City's Wetland Management Plan and identify deficiencies to ensure the success and health of these vital ecosystems.
- Market Chapel Trail Nature Preserve to encourage recreational use and eco-tourism.

**Goal 1.4** The City is dedicated to **water conservation** and has been a leader in water conservation in Broward County for the last several decades.

**Objective 1.4.1: Encourage Water Conservation**

- Identify high water users within the city by working with the City's water provider, once identified, work with identified areas to ensure they are abiding by restrictions and best management practices.
- Encourage commercial and residential projects to follow Florida Water Star<sup>SM</sup> standards and guidelines for water efficiency.
- Encourage the commercial and residential use of rain barrels.

**Objective 1.4.2: Protect Water Resources**

- Incorporate Green Infrastructure within the City where appropriate to assist in reducing storm water runoff, such as the installation of bio swales and permeable pavement.
- Partner with Broward County Sheriff's Office for proper disposals of medications to ensure they do not end up in the waterways, canals and aquifers.
- Explore the idea of using reclaimed water for irrigation of public spaces, City parks, City property, construction and landscape.
- Encourage large developments to install and use water reuse techniques and alternatives.

## Chapter 2: Energy Efficiency & Conservation

**Goal 2.1** The City is dedicated to **energy efficiency** through upgrades, support of renewable energy and partnerships with local stakeholders.

**Objective 2.1.1: Promote Energy Efficient Upgrades**

- Continue diversification of energy portfolio by giving preference to vendors who highlight the use of energy efficiency and renewable energy.
- If adopted by the County, promote the use of Broward County's Property-Assessed Clean Energy (PACE) program which will offer financing options for energy efficiency retrofits for both residents and businesses.

- Explore other energy efficient upgrades on City property that would result in financial savings.

**Goal 2.2** The City is dedicated to **energy conservation** through best management practices, energy use reduction, and promoting of green building principles.

**Objective 2.2.1: Encourage and Promote Energy Conservation**

- Phase in LED lighting throughout the City where deemed appropriate.
- Encourage new development to use and install renewable energy, such as solar panels.
- Community outreach on energy conservation tips and challenges.

**Goal 2.3** The City is exploring **renewable energy** options through the small scale use of solar panels for small projects.

**Objective 2.3.1: Promote and Encourage Renewable Energy**

- Educate and encourage residents to purchase or install renewable energy.
- Explore purchasing of renewable energy credits and/or systems.
- Encourage new development to follow principles for passive solar design.
- Explore and identify funding sources for the installation of solar panels on public buildings.

### Chapter 3: Built Environmental & Transportation

**Goal 3.1** The City strongly encourages and supports **Green Development** and redevelopment, especially as the city nears build out.

**Objective 3.1.1: Support and Encourage Green Development Techniques**

- Creation of a Green Checklist to add to the Unified Development Application to ensure all new development or major renovations within the city adds a “Green” component to their development site, which in turn will create awareness and a beautification component.
- Allow Green Roofs and Living Walls within the City.
  - Green Roofs are roofs that support shallow root vegetation – typically results in reduced energy use, water quality and reduced air pollution and greenhouse gas emissions are to name a few. (epa.gov)
  - Living Walls are facades equipped with vegetation and share some of the same benefits of green roofs.
- Decrease heat island effect through the encouragement of solar reflective coatings on roofs and parking areas, permeable pavement and increased tree canopy.

- Encourage the use of low volatile organic compounds (VOCs) found in sealants, paints and adhesives.
- Continue adopting policies that encourage and promote Green Development and resiliency.

**Goal 3.2** The City promotes and encourages **Smart Growth** principles when and where feasible.

**Objective 3.2.1: Support and Encourage Livable Communities**

- Adopt some or all Complete Streets principles.
- Encourage new development to abide by Smart Growth and Complete Street principles.
- Assist communities in the eastern portion of the City to create a sense of place and foster an ethic of participation through community outreach and engagement.

**Goal 3.3** The City encourages the principles of **Transit Oriented Development (TOD)** within the older more populated eastern portions of the City.

**Objective 3.3.1: Support and Encourage Transit Communities**

- Continue working with Broward Metropolitan Planning Organization (MPO) with the Hollywood/Pines Corridor Project and University Drive Mobility Improvements Planning Study.
- Explore and identify parcels that the City could potentially purchase, develop and sell to ensure the success of University/Pines Corridors.
- Provide canopy along sidewalks where feasible throughout the City.
- Identify bike paths and create safe cyclists paths to travel along throughout the City.
- Encourage the installation of bike racks within commercial and business centers.

**Goal 3.4** The City is dedicated to **mobility** and access to transit for all users.

**Objective 3.4.1: Support Mobility and Alternative Transportation**

- Encourage shelter and shade at bus stops without coverage.
- Continue to monitor and assess the City bus network to ensure coverage, identify gaps and modify routes as appropriate.
- Work with the County to identify whether or not there is a need for an express bus west of I-75.
- Encourage the creation of a car share or car pool program for residents.
- Work with communities near shopping centers to create pedestrian access.
- Encourage interconnections between developments.
- Continue to promote and explore alternative transportation options for residents, visitors and workers.

**Goal 3.5** The City is dedicated to **healthy communities** and residential access to healthy foods and recreation.

**Objective 3.5.1: Ensure and Encourage Healthy Communities**

- Identify whether the City has any food deserts or concentration of food related illnesses, such as diabetes using Geographic Information Systems (GIS).
- Ensure residential communities are connected to nearby commercial shopping centers.
- Encourage the purchase of locally sourced food, especially among Farmers Markets, through education and outreach.
- Ensure future residential communities have adequate access to recreational facilities.

**Goal 3.6** Though the City was incorporated in 1960, there are not many **historic sites** within the City. What few historic sites do exist within the City, the City is dedicated to preserving.

**Objective 3.6.1: Support Historic Preservation**

- Explore the idea of identifying and/or designating historic sites, sites which are civic or of cultural importance, within the City.
- Identify possible historic sites of historic significance.
- Continue supporting Everglades Restoration and Preservation.

## Chapter 4: Waste Reduction & Recycling

**Goal 4.1** The City supports and encourages waste reduction through a **waste management plan** that includes reducing, reusing and recycling.

**Objective 4.1.1: Enhance and Encourage Reducing Waste and Recycling Efforts**

- Adopt a more comprehensive waste management plan that includes:
  - Working with the City waste management company to identify processes in which the City can improve upon.
  - Explore a commercial food waste recycling program.
  - Explore a residential composting program.
  - Adopt a 1:1 policy of pairing trash receptacles with recycling receptacles within the City.
  - Ensure City events encourage and promote recycling.
- Encourage community yard sale events to reduce waste and encourage reuse.
- Meet the statewide recycling goal of 75% by 2020.

**Goal 4.2** The City is dedicated to problem solving through **partnerships** and agreements to solve issues associated with waste and recycling.

**Objective 4.2.1: Create Partnerships to Enhance and Encourage Waste Reduction Efforts**

- Partner with local organizations to encourage the donation, recycle and reuse of items not wanted by residents.
- Encourage and promote the donation and reuse of unwanted goods.
- Outreach campaign to encourage recycling and educate the public on what can be recycled to reduce contaminated recycling.
- Provide recycling bins at City parks and community events.
- Partnerships with waste management company to ensure electronic waste and hazardous waste is disposed of properly.

## Chapter 5: Community Outreach & Empowerment

**Goal 5.1** The City understands its service to the community, which is why the City is dedicated to outreach and empowerment through the power of **educating** its citizens.

### **Objective 5.1.1: Educate and Empower Communities to “Go Green”**

- Educate and inform city residents and businesses on conservation, waste reduction, recycling, resource efficiency and pollution.
- Creation of a citizen led ‘Green Team’ that will attend community events, inform, educate and empower the public.
- Educating the public on proper landscaping techniques to ensure the protection of water, resources and native wildlife and habitat.
  - Promote the plantings of native trees and plants through education and outreach.
- Continue to encourage and promote the City’s organic community garden.
- Continue to partner with community incentive programs to encourage residents and businesses to purchase energy efficient upgrades to their homes and businesses.
- Educate residents to reduce the single use of plastic bags, the proper disposal of plastic bags and encouraging the use of reusable shopping bags.

**Goal 5.2** The business community is beginning to take the lead when it comes to going Green and creating awareness on their own, the City is looking to establish **collaboration and cooperation** within the business community for others to follow.

### **Objective 5.2.1: Collaborate and Cooperate with Local Partners to Meet the Goals and Objectives of this Document**

- Identify Green business leaders within the City.
- Identify possible “Green” markets within the City.
- Promote and encourage buy local, shop local.
- Partner with the Pembroke Pines – Miramar Chamber of Commerce to foster awareness and encourage member businesses to “Go Green.”



- Foster partnerships with active community members, homeowners associations, local non-profits, colleges and universities and businesses to convey information, outreach and empowerment.
- Partner with community leaders and assist in facilitating community and waterway cleanup programs.
- Explore a neighborhood challenge contest to inform, engage and beautify communities within the City.

## Chapter 6: Leadership & City Operations

**Goal 6.1** The City has been a **leader** when it comes to policies, procedures and becoming more aware of the growing threat of unsustainable practices.

### **Objective 6.1.1: Explore and Implement Eco-Friendly Techniques that Meet the Goals and Objectives of this Document**

- Establish a sample National Wildlife Certified garden at City Hall.
- Replace lighting within City parks and public facilities with LED lighting where appropriate.
- Conduct regular energy audits on City buildings.
- Purchase fuel efficient vehicles.
- Use Green Infrastructure techniques and principles within public property.
- Explore incentives for “Green” companies to locate and expand within the City.
- Explore incentives to encourage Green Development within the City.
- Explore the creation of a carpool/rideshare program for City employees to reduce vehicle miles travelled.

**Goal 6.2** In recent years the City has reviewed its operations and taken steps to ensure **City Operations** are efficient, cost effective and sustainable.

### **Objective 6.2.1: Ensure City Operations are Efficient and Environmentally Conscience**

- Develop an internal Green Team for policy updates, changes and departmental coordination.
- Adoption of environmentally preferable purchasing and local preferable purchasing policies.
- Reduce paper waste through encouraging electronic submittals of applications, forms and bill payment.
- Internal recycling program within all City departments.
- Adopt internal quality control standards pertaining to sustainable policies and practices.
- Adopt a Green Cleaning policy.

- Develop policies and remove barriers to foster the growth of renewable energy development within the City.
- Develop policies and remove barriers for the use of green infrastructure within the city.
- Incorporate climate change into long range planning – including the likely impacts of water supply risk, health impacts of increased temperatures, sea level rise and flood mitigation.
- Encourage all development review departments to host a staff member with green building standard credentials, such certifications as LEED™, Green Globes, FGBC<sup>34</sup>, etc.
- Integrate environmental stewardship into all levels of decision-making.
- Review Green Initiatives and policies every three years.
- Review procurement policies to encourage City government vendors and contractors to use fuel efficient/alternative fuel vehicles within their fleets for City work.
- Continue intergovernmental coordination within the local, county and regional levels.
- Explore the feasibility and cost savings associated with an interdepartmental car share program where departments can check out a City car when in need.
  - Ideal for departments who do not always need or use a City car.

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<sup>34</sup> LEED™, Green Globes and Florida Green Building Coalition (FGBC) – are green building certification programs aimed at Green Development and sustainability.

## References

American Solar Energy, LLC.

Broward County Environmental Planning  
Community Resilience Division

Broward County Sheriff's Office

Broward County Transit

Broward Metropolitan Planning Organization (MPO)

Centennial Water and Sanitation District

Center for Applied Transect Studies

City of Pembroke Pines Comprehensive Plan

Eco City Partners

Energy.gov

Environmental Cleanup Coalition

Environmental Protection Agency (EPA)

Florida Department of Environmental Protection  
(FDEP)

Florida Department of State: Division of Historical  
Resources

Florida Department of Transportation

Florida Water Star<sup>SM</sup>

Great Florida Birding and Wildlife Trail

Intergovernmental Panel on Climate Change (IPCC)

Institute for Local Government (ILG)

Leadership in Energy and Environmental Design  
(LEED)

My Florida Green Building

National Oceanic and Atmospheric Administration  
(NOAA)

National Wildlife Federation

Smart Growth Partnership

South Florida Commuter Services

South Florida Water Management District (SFWMD)

Southeast Florida Regional Climate Change Compact

The Comprehensive Everglades Restoration Plan  
(CERP)

The Ramsar Convention on Wetlands

United Nations Educational, Scientific and Cultural  
Organization (UNESCO)

University of Florida: The Institute of Food and  
Agricultural Sciences (IFAS)

University of Michigan

U.S. Department of Transportation Federal Transit  
Administration

U.S. Geological Survey (USGS)

U.S. Green Building Council (USGBC)

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