City of West Palm Beach Green Task Force Recommendations

June 10, 2010

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Special thanks to all our distinguished speakers whose presentations can be found at: http://wpb.org/sustainability/city-green/ and to everyone who gave of their time, brought good ideas, and participated in our meeting discussions.

Sustainability is the condition where society meets the needs of the present without compromising the ability of future generations to meet their own needs.

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Introduction

The West Palm Beach City Green Task Force was brought into existence by the Mayor as an all-volunteer citizens group charged with developing recommendations and assisting City government in developing goals that create and preserve a sustainable future for the residents of the City of West Palm Beach, Florida. Task Force members began their work on March 19, 2008 and completed their work on June 10, 2010 by producing and delivering this comprehensive recommendations document to the elected representatives and decision makers of City government on behalf of the citizens of our City. In these 27 months the Task Force held 40 public meetings, and participated in 2 City-sponsored sustainability conferences to hear and learn from experts and the public. The recommendations document was written during 14 public work sessions. There is a library of valuable information material hosted on the City website as a result of our endeavor.

It is our intent that this set of recommendations be a living document that changes as technology and management techniques change and improve over time; and that our "greenprint" be reviewed and improved periodically by future citizen-volunteers on behalf of our community. Members of the City Green Task Force believe that this document provides not only the initial framework for government as it begins managing the various elements of sustainability, but also as a call to action to the citizen-shareholders of our City as we collectively move from a culture of unsustainable resource consumption to one of balance, sustainability, and resiliency. Past generations have improved the human condition by providing us with the health, conveniences, and quality of life that we enjoy today. It is now our turn to ensure that our high quality of life is fairly distributed to all, to improve upon our human condition every chance we get, and to ensure that it lasts in perpetuity for future generations.

Lastly, we call upon our fellow citizens to learn how to live with less impact upon the earth we share together. Founding father Benjamin Franklin said: *"If you desire many things, many things will seem few."* We are fortunate that we can live efficiently and with less material "stuff" and still have a very satisfying life. Reducing consumption reduces waste; recycling and composting everything you can, further reduces waste. Consider capturing rainwater in a cistern or rain barrel to irrigate your lawn and garden. This simple change reduces the energy needed to treat and deliver drinking quality water to your home and helps save our precious water resources. Consider planting native Florida plants and creating a backyard habitat for birds and beneficial insects. Reduce or eliminate the harshest chemicals and poisons from your home by purchasing "benign by design" products. High toxicity of a cleaning chemical does not necessarily correlate to a better or more effective product. Save money, reduce fuel consumption, and lower your carbon footprint by carpooling, walking, and riding a bicycle every chance you get. It's fun and will improve your health.

Accept the challenge of incorporating the lifestyle changes necessary to benefit your family, our community, and the environment. If we accept this challenge together we will accomplish the cultural shift we need to achieve a truly sustainable future for our children and our grandchildren.

Eco-municipality and Natural Step

An **eco-municipality** is a municipal government jurisdiction that has adopted ecological and social justice values in its charter. These municipalities recognize that issues of sustainability are essential to all decisions made by government.

While many U.S. communities still carry out sustainability projects such as green buildings, affordable housing, smart growth, or any number of climate change driven development initiatives on a project-by-project basis, the eco-municipality model uses a *systems approach* that involves widespread community outreach, awareness-raising, and collaborative planning with its citizenry. All municipal departments work toward the same environmental, economic, and societal goals and seek collaboration on policy and actions with neighboring jurisdictions.

In becoming an eco-municipality, a City typically adopts a resolution that states the community's intention to become an eco-municipality and adopts the ***Natural Step*** sustainability principles and framework, or the American Planning Association's (APA) sustainability objectives as its guide.

According to the *Institute for Eco-Municipality Education & Assistance,* there are now more than twenty eco-municipalities in the U.S. that have officially passed resolutions adopting either the Natural Step or the APA sustainability objectives as official municipal policy.

The *Natural Step* sustainability principles and framework has the following objectives:

- Reduce dependence upon fossil fuels.
- Reduce dependence upon synthetic chemicals.
- Reduce encroachment upon nature.
- Meet human needs fairly and efficiently.

The *Natural Step's* framework for sustainability provides principles that are scientifically grounded. This foundation, combined with an understanding of the societal decision-making process, makes the *Natural Step* framework a powerful tool in assisting a municipality's move toward sustainability. Because *Natural Step* principles are based on science, they are **measurable** and progress toward goals **can be tracked**.

The four APA sustainability objectives stress planning and expand slightly on the *Natural Step* objectives. They are:

- Reduce dependence upon fossil fuels, extracted underground metals and minerals.
- Reduce dependence upon chemicals and other manufactured substances that can accumulate in nature.
- Reduce dependence upon activities that harm life-sustaining ecosystems.
- Meet the hierarchy of present and future human needs fairly and efficiently.

The APA *Planning Actions toward Sustainability Guide* is included in this document as *Appendix A*.

The Green Task Force recommends that the City of West Palm Beach become an eco-municipality by officially passing a resolution adopting the Natural Step and/or the APA sustainability principles and objectives as official municipal policy and add language in the City's charter to reflect the community's ecological and social justice values.

Environmental Management System

The most effective way to implement environmental and sustainability goals is to develop an *Environmental Management System* (EMS) based on widely published and accepted standards. The *International Organization for Standardization* (ISO) has developed over 18,000 international standards on a wide variety of subjects for business, government, and society.

The ISO 14000 family of standards is one of the ISO's best known standards. It addresses the various aspects of environmental management. For example: ISO 14001 provides the requirements for an EMS; ISO 14004 gives general EMS guidelines, and ISO 14064 provides tools for assessing and supporting greenhouse gas reduction and emissions trading.

For a detailed summary of the ISO 14000 family of standards please refer to: www.iso.org/iso/theiso14000family_2009.pdf

The **Plan – Do – Check – Act** (PDCA) cycle is the operating principle behind ISO's management system standards and is described briefly below:

> **Plan** – establish objectives and make plans (analyze your organization's situation, establish your overall objectives, set your targets, and develop plans to achieve them).

Do – implement your plans (do what you planned).

Check – measure your results (measure/monitor how far your actual achievements meet your planned objectives).

Act – correct and improve your plans and how you put them into practice (learn from your mistakes and improve your plans in order to achieve better results next time).

ISO 14001 is essentially a system designed to help communities and organizations meet their environmental obligations and reduce the impact of their operations on the environment. Counties and municipalities typically oversee a number of separate facilities and operations, and an EMS can be used as a framework to help these operations improve their environmental performance and make greater use of pollution prevention approaches.

The ISO 14001 standard requires that a community or organization put in place and implement a series of practices and procedures that, when taken together, result in an environmental management system. ISO 14001 is not a technical standard, nor does it set prescribed standards of performance for organizations. The intention is to provide a framework for holistic, strategic approaches to the organization's environmental policy, plans, and actions.

In the context of ISO 14001, certification refers to the issuance of written assurance (the certificate) by an independent external body that it has audited a management system and verified that it conforms to the requirements specified in the standard. In the U.S. the certification body should be accredited by the ANSI-ASQ National Accreditation Board.

The Green Task Force recommends that the City of West Palm Beach develops and implements an ISO 14001 Environmental Management System (EMS) to comply with applicable environmental and sustainability related legislation, regulations, ordinances, policies, and civic goals. The City should have the EMS audited and certified by an independent body to verify that it conforms to ISO standards. The auditing and certifying body should have ISO compliant accreditation.

One of the components of the Environmental Management System should be the creation of a ***Local Environmental Action Program (LEAP)*** (reference: US EPA "Guide to Implementing LEAP"). The LEAP should develop and prioritize effective environmental and sustainability action strategies. It should promote volunteerism within the citizenry and partnerships with community organizations and businesses as well as academic institutions like colleges and universities involved with environmental issues. The City should foster and facilitate sustainability projects with funding and/or financing from national and international institutions.

United Nations Urban Environmental Accords - Green Cities Declaration

The themes in this recommendations document follow the framework of the United Nations Urban Environmental Accords - Green Cities Declaration. The Urban Environmental Accords cover seven environmental categories that cities can address to enable sustainable urban living and improve the quality of life for urban dwellers. The seven categories are: energy, waste reduction, urban design, urban nature, transportation, environmental health, and water.

The Accords lay out 21 practical actions cities can take to meet the needs of the present without compromising the ability of future generations to meet their own needs or the health of the planet. The 21 actions are included in this document as *Appendix B*.

Signatory cities shall work to implement the Urban Environmental Accords. Each year, cities shall pick three actions out of the list to adopt as policies or laws. (21 actions at 3 a year = 7 years to implement).

The Green Task Force recommends that the City of West Palm Beach become a signatory City to the United Nations Environment Programme - Urban Environmental Accords in order to provide a framework for prioritizing the City's environmental initiatives as well as establishing a national recognizable benchmark for its achievements.

Florida Green Building Coalition Local Government Standard

The Florida Green Building Coalition (FGBC) Green Local Government Standard designates Green Cities and Green Counties for outstanding environmental stewardship. The standard includes a set of criteria, organized in terms of local government department functions prioritizing energy, water, air, land, and waste. It includes actions that can be completed by the local government in addition to policies that implement green practices and educational components.

The FGBC Green Local Government Standard is based upon an assigned point value, and a government can become "certified" or "registered" as a Green Local Government. Examples of criteria include developing local government energy reduction plans, promoting environmentally preferable purchasing programs, utilizing green fleet management, and working with water utilities to promote conservation. Several of the recommendations in this document advance these principles.

The Green Task Force recommends that the City of West Palm Beach become a certified Green Local Government by the Florida Green Building Coalition.

City-wide Greenhouse Gas Inventory

The principal greenhouse gases that enter the atmosphere from human activity are: Carbon Dioxide (CO_2), Methane (CH_4), Oxides of Nitrogen (N_2O, NOx), and Fluorinated Gases/Ozone-depleting substances (CFCs, HCFCs, and Halons). A greenhouse gas inventory is an accounting of the amount of greenhouse gases emitted to or removed from the atmosphere over a specific period of time (e.g. one year). A greenhouse gas inventory provides information on the activities and sectors that cause emissions, as well as background on the methods used to make the calculations. Policy makers use greenhouse gas inventories to track emission trends, develop strategies and policies, prioritize those strategies and policies, and assess progress towards reaching goals. Typically, a business-as-usual path is determined by showing continued emissions with no additional effort at reduction. A forecast year is also chosen to show the level of effort needed to reduce emissions to meet a certain goal.

With a community-wide greenhouse gas inventory, the City can utilize that data to prioritize the recommendations in this document, develop additional recommendations to fill any gaps, and devise a strategy to reduce emissions based upon a forecast scenario.

The Green Task Force recommends that the City of West Palm Beach immediately complete a community-wide greenhouse gas inventory to prioritize emissions reduction strategies based upon the inventory's data and analysis.

The Precautionary Principle

A globally accepted definition and one of the primary foundations of the precautionary principle comes from the work of the Rio Conference or *Earth Summit* of 1992. Principle #15 of the Rio Declaration states:

> *"In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."*

Policy makers have an obligation to anticipate harm before it occurs. When applied, the principle creates a condition where decision makers can make critical discretionary decisions where there is the possibility of harm in the absence of complete scientific proof.

The Green Task Force recommends that the City of West Palm Beach apply the precautionary principle to any decision-making that has environmental and sustainability implications.

Government Operations and Policies

Because the City has control over many actions that reduce greenhouse gas emissions, reduce energy use, and implement sustainability policies, it is important that the City itself lead by example and create sustainable operations and policies. Purchasing decisions, selection of event locations, waste management policy, and simple operational decisions can have a significant impact on the City's greenhouse gas footprint. This has the dual benefit of reducing energy costs while demonstrating to its citizens and the public at large that the City's obligations to address issues of sustainability are not discounted. The City can also serve as a resource for citizens and businesses wishing to implement their own sustainability approaches and initiatives. The recommendations in this section should be reviewed and coordinated with the Urban Design, Green Building, and Development Section.

- Establish a permanent standing citizen's Sustainability Advisory Committee.
- Support and fund the Office of Sustainability by staffing it at an appropriate level to assure adequate coordination, including but not limited to, the departments of Planning, Zoning, Public Works, and Building. Synergize the City's Green Initiatives between City departments and public and private partners. A core function of the Office of Sustainability should be a robust and continuous effort to seek grants and private contributions to develop and enhance sustainability initiatives and to ensure progress through policy, guidance, audit, and enforcement when necessary.
- Establish, maintain and empower an inter-departmental Green Task Force, which should meet regularly, and as often as appropriate, to evaluate the effectiveness of the City's operations and policies relative to energy conservation and sustainability. Other duties should include, but not be limited to:
    - Develop an office and administrative procedures *Green Manual* with milestones, goals and timelines, including meeting and exceeding the State's recycling goals (75% by 2020).[1]
- Appoint a designated Energy Manager for management of its facilities - someone who is knowledgeable about sustainability, green building, energy use in industrial processes such as water treatment and wastewater treatment, and understands cogeneration and district cooling and heating. The City Energy Manager should be thoroughly familiar with not only the money the City is spending on electricity, natural gas, oil, and gasoline, but also the number of kilowatt-hours, therms, and gallons being consumed.

[1] Section 403.7032, F.S.

  - The City Energy Manager should have authority to identify what the City should do, influence policy, develop and prioritize procedures, and implement procedures throughout the City departments so that the City continuously lowers its energy consumption to a goal of net zero.

- Conduct environmental inspections of business facilities that have the potential to cause air and/or water pollution.

- Create a prioritized list of capital improvement projects (dictated by GHG Inventory) to be integrated into the Capital Improvements Element of the Comprehensive Plan, focusing on energy retrofits, including City buildings, non-office facilities, recreational facilities, and transportation facilities.

  - Prioritize capital projects based on the greatest energy and water conservation.

  - Develop and implement a public street lighting and public building lighting retrofit priority strategy and timetable.

  - Establish a schedule to replace computer equipment and appliances with *Energy Star* rated devices so that they meet and contribute to agreed-upon energy conservation goals.

  - Develop and implement a street tree plan for the City.

    - Street trees are an important capital expenditure and a living asset that becomes more valuable over time. Most importantly trees capture and sequester carbon from the atmosphere. Trees are relatively low in cost for their high return on investment.

  - Develop adaptation and resiliency strategies coordinated with scheduled capital improvements. Establish targets as necessary based upon the best available data.

- Develop a financial implementation strategy, including grants, financing districts and revolving loan funds for commercial and residential properties.

- Support energy management approaches, such as energy performance contracting, to assure City facilities, including water and wastewater facilities that can be upgraded to increase energy efficiency.

- Coordinate with the Solid Waste Authority to explore opportunities for centralized pickup of hazardous and electronic waste materials (e.g. at Fire Stations)

- Reduce City's employee vehicle miles traveled and vehicle hours traveled to facilitate internal ride-share and carpool information exchange:
    - Develop a City ride-share policy. Implement and incentivize a GIS-based employee ride-share program with electronic messaging.
    - Develop and adopt a hybrid/electric vehicle and high-occupancy vehicle incentive program through preferred parking and other incentives.
    - Adopt a City policy for all City fleet operations to reduce miles traveled and vehicle hours traveled by considering efficiencies in scheduled meeting times and locations.
    - Provide additional bicycle amenities for City staff and the public as part of facilities planning and capital budget processes.
    - Look into an employee shuttle service between City offices.
- Develop a vehicle idling policy for all applicable City vehicles.
- Purchase fuel efficient vehicles like electric, electric-gas hybrid and compressed natural gas vehicles and alternatives to traditional transportation where appropriate such as bicycles and Segways for trips made by City employees. Prioritize the replacement of less fuel efficient vehicles. Assure adequate recharge or plug in facilities to service fleet. Develop return on investment and cost comparison analysis of same.
- Purchase and use biodiesel for the City fleet of diesel vehicles and E85 gasoline for flex-fuel vehicles.
- Purchase natural gas powered vehicles and motorized equipment and the necessary refueling infrastructure.
- Promote biodiesel and E85 gasoline sales within the City at gas stations, particularly where special permit conditions are required.
- Promote partnerships with natural gas companies and gas station owners to install natural gas vehicle refueling infrastructure at local gas stations particularly where special permit conditions are required.
- Develop and publish guidelines for the purchase of gasoline operated equipment. Adopt a policy that replaces gasoline engine lawn equipment with electric where feasible.

- Ban the use of internal combustion engine leaf blowers. The purchase of all internal combustion engine equipment should be subject to a high standard where the most efficient and least emitting are purchased.
- Review employee scheduling and measures to reduce energy use.
    - Implement compressed 4-day work week for City employees where appropriate.
    - Adopt a City telecommuting policy such as that found in Section 100.171, F.S.
- Establish a City purchasing program whereby the City would leverage its purchasing power for certain sustainable items (e.g. LED light bulbs, rain barrels, cisterns, hot water recirculation devices, low volume toilets, etc.) to take advantage of government materials rates so citizens could then purchase these items from the City at a reduced rate, as appropriate and consistent with law.
- As an alternate to the above recommendation, assist in the creation of local neighborhood product and service purchasing cooperatives. This would allow groups of citizens to purchase sustainable products or services like solar water heater installations at a volume discounted rate.
- Develop a method for the City to participate and raise revenue from the carbon offset sales market. A community-wide greenhouse gas inventory would have to be completed based upon an acceptable protocol to enter into a market. *(reference: ISO 14064)*
- Require that all City staff take sustainability training, and include sustainability training in new employee orientation. Implement a modular computer-based training solution as part of the Environmental Management System for employees, contractors, and, where applicable, permit seekers.
- Set up s*ustainability challenges* for City departments: set up competitions, rewards, and a recognition program to promote GHG/CO_2, energy, waste reduction, water savings, etc.
- Modify zoning code where necessary to attract and support clean, green businesses and industries, particularly in the City's urban industrial areas.
- Require a **life-cycle cost analysis** and that life cycle costs be considered for <u>all</u> City capital projects particularly those with environmental and sustainability benefits.

PACE stands for ***Property Assessed Clean Energy***. It is an innovative financing mechanism pioneered in Berkeley, CA that allows private residents and businesses to finance energy efficient retrofits of their buildings through a *voluntary* special assessment on their property. By doing so, it solves the single greatest obstacle to the installation of solar or energy efficiency technology on homes and business property: because the investment is tied to the property and its installation can be financed over 10 – 20 years without acceleration upon sale, it facilitates financing of retrofits that can pay for themselves through the energy savings yielded over time.

Since the first PACE bond was issued in Berkeley in January 2009, it has evolved through various permutations and improvements. In October 2009, the White House published guidance supporting the concept and providing safeguards to various parties (the local government, the property owner, the mortgage lender): www.whitehouse.gov/assets/documents/PACE_Principles.pdf. Key to the proposed safeguards in the White House guidance policy is to preserve the ability to finance retrofits that will pay for themselves over time assuming electricity prices remain the same or increase.

In May 2010, Florida became one of the most recent states to pass legislation clarifying and/or enabling PACE financing programs with the passage of House Bill 7179. The bill was signed into law by the Governor on May 27, 2010. As a result, "local governments" (which, according to the PACE statute in Florida includes cities, counties and dependent special districts) may facilitate PACE programs. Such facilitation begins with the passage of a resolution to endorse PACE and to begin the process of establishing a voluntary special assessment district.

For details about how PACE works and its benefits, there are several good sources of information (e.g., www.pacenow.org; www.votesolar.org). While there are over 200 municipalities around the country which have implemented PACE programs, there are various alternatives ranging from self-design and finance to the hiring of a third party as turn-key administrator of such a program, including the design, implementation, marketing, finance and administration of the program. Further, in this difficult funding environment, it may be possible for the City to secure grants to launch a program and secure third-party assistance without a significant commitment of City resources, including funding and employee time, without the issuance of traditional municipal bonds, and without significant risks to the City's bond rating. The City should explore the full range of these alternatives in depth.

Given that there are incidental costs to the establishment of a PACE program, it is both possible and likely preferred to minimize these costs through partnership with other like-minded local governments, perhaps through the establishment of an inter-local authority. The City should likewise explore this alternative.

The Green Task Force recommends that the City of West Palm Beach pass a resolution endorsing PACE and begin the process of establishing a voluntary special assessment district to fund energy efficiency, water efficiency and renewable energy retrofits on homes and businesses.

Green Procurement

By increasing the scrutiny the City has on products and services it contracts to purchase, the City can make great strides in implementing its sustainability strategy. The outcome of green procurement policies will be a reduction of the City's carbon footprint, healthier buildings and employees, and reduced operational costs over the long-term. Green procurement policies have become a cornerstone of sustainable approaches to managing a local government's operations. Several of these governmental policies can, and should be, coordinated with local area businesses to form the basis of a commercial "green" certification awarded to businesses (including: residential and/or building management companies) by the City. The City should work closely with the business community to encourage the use and sale of green products and services.

- The City should establish an *Environmentally Preferred Procurement Policy* (EP3) which should include, but not limited to:
  - Immediately begin to investigate the "greenness" of the products and materials procured and start using organic and more benign alternatives to non-green products and materials.
  - Purchase products that have been manufactured in ISO 14001 certified facilities when available.
  - Purchase cleaning products and building maintenance services that do not impact negatively upon the Indoor Air Quality (IAQ) and the health of building occupants *(see Indoor Air Quality Building Management Section)*.
  - Purchase or lease environmentally preferable *(Energy Star)* computer products, appliances, and equipment.
    - Printers and copiers purchased or leased should have built-in duplex capabilities. Employees should be trained regarding the importance of and how to print in duplex mode to save paper and in draft mode to conserve ink and toner. Set fonts in such a manner as to reduce ink and toner usage.
  - Purchase remanufactured and generic ink and toner cartridges in lieu of brand-name (OEM) products whenever available. Require that vendors provide arrangements to pick up and recycle empty cartridges.
  - Require verification and certification that recycling of electronic waste be done in an environmentally sustainable manner.
  - To the extent practicable, purchase local and "made in USA" products.

- Utilize ***EPA Water Sense*** or ***Florida Water Star*** rated water fixtures.
- Recycled (office) paper content requirement should be at a minimum of 50% post-consumer waste paper products and more when appropriate.
- Hold City-initiated conferences, workshops, or events at *Green Lodging* certified hotels whenever possible. All new hotels should be certified *Green Lodging*.

o Develop criteria for evaluating governmental services contracts and provide points to certified green businesses. Ensure that third-party green certification criteria are robust and legitimate for the services provided.

o Establish sustainable business operation guidelines for businesses submitting proposals to work with the City (e.g. preferred non-peak drop off times for responses or alternate delivery and service work schedules).

o Develop a data management system to monitor and track progress towards reaching GHG reduction goals with an *Annual Report of City's Emissions*. This report should be accessible to the public on the City's website.

o Purchase furniture and wood products certified by the ***Forest Stewardship Council*** whenever possible.

Chemical Policy

- Review and modify the City's policies to restrict or eliminate certain types of pesticide products and use less harmful ones. Apply new policies citywide. Develop standards for *Integrated Pest Management* (IPM) that uses Green & Organic products in the IPM.
    - An IPM system is designed around 6 basic principles: *(applied in 3 stages - Prevention, Observation, and Intervention)*
        - 1) Acceptable pest levels, 2) Preventive Cultural Practices, 3) Monitoring, 4) Mechanical Controls, 5) Biological controls, 6) Chemical controls
- Use natural alternatives to synthetic chemical pesticides and herbicides.
- Use "benign-by-design" chemicals.
- Adopt a *Green Housekeeping Policy* to improve the health and safety of building occupants, visitors, and maintenance workers based on the following principles :
    - Require cleaners procured under janitorial services contracts to have independent, non-profit, third-party certification through the *Green Seal Standard for Industrial and Institutional Cleaners* (GS-37 or other appropriate standard). Products shall be as free from toxic and environmentally damaging chemicals as possible and chosen based on the following considerations and their MSDS - *Material Safety Data Sheet* :
        - Toxicity to and chemical sensitivity for both humans and aquatic life.
        - Biodegradability.
        - Corrosivity/pH.
        - Volatile organic compounds levels.
        - Availability in concentrated form.
        - Utility for multiple cleaning purposes.
        - Additives that may have a negative effect on biodegradability, worker health, and aquatic life.
        - Fragrance level, including recommendations for fragrance-free products.
    - Products should be in refillable, recycled, or recyclable containers in order to minimize waste generation.

- Significantly reduce and, when possible, eliminate the use of commercial air fresheners in City buildings.
- Reduce or eliminate the use of lake chemicals to the extent possible because they generate organic wastes that sink to the bottom causing eutrophication. Undesirable lake vegetation should be removed mechanically or naturally.

Materials Policy:

Maintain a list of standards, manufacturers, and products for use in achieving targets set forth below:

- Create VOC standards for adhesives, sealants, coatings and paints, and composite wood products including agri-fiber products, hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior or exterior of buildings must contain no added urea-formaldehyde resins.
- Establish criteria for carpet and carpet cushion systems and purchase the environmentally best carpeting when it is needed. Use natural fiber, like wool or cotton, and use natural fiber cushions. Minimize the amount of carpeting used in City buildings. Recycle old carpeting.
- Phase out and prohibit, where feasible, HVAC, refrigeration and fire suppression systems that contain ozone-depleting substances and review exceptions for small HVAC systems consistent with the Florida Building Code.
- Establish moisture (humidity) control standards *(independent of air cooling)* for buildings.
    - Typical humidity levels should be between 30 - 50% to deter the growth of mold.
- Where mechanical room walls are exposed to an occupied area, the insulation must be at least an R-11 rating to mitigate the electromagnetic field generated in these rooms. The doors of mechanical rooms must be made of steel.
- Purchase furniture for public buildings that is rated *E1* on the *European Formaldehyde and Toxic Gas Emission Standard*.

Community Outreach and Empowerment

The growth and empowerment of our City is directly related to education and educational innovation in science and technology.

Educate residents, business owners, students, and government personnel to practice green and sustainable habits because it is vital to becoming a truly sustainable city. Community outreach programs are necessary to increase public awareness of environmental issues. The City should explore all incentives to speed up the development of a workforce that is well positioned to take advantage of and provide leadership in green jobs including grants and scholarships to train our young people and retraining our existing workers in transition.

Three co-dependent aspects to the educational system include educational opportunities, green jobs (both green collar and green tech), and renewable energy financing. The City must address all three aspects in order to effect positive change.

Forming partnerships with local education and conservation institutions will promote sustainability, in addition to saving the City's money. Since people learn in different ways, the availability of multiple educational resources will stimulate the learning process, promoting cultural change. Social equity is paramount.

Green industries help the local economy to grow. Therefore, green job training and retraining must be priority issues for the City. Funding green initiatives will create an active job market in environmental careers. Also, implementing internship programs (paid and volunteer) will enable the City to help mentor our future green leadership.

Encouraging renewable energy financing must be done by setting an example, beginning with city funded projects and involving City businesses.

- Develop city-wide supported environmental education programs for all ages, areas, and groups by utilizing all available media. All communities must have education programs to establish and reinforce social equity. Bring the educational program to the neighborhood. Involve City businesses in greening their offices and/or businesses (e.g. *ICLEI Green Office Challenge*). Provide incentives through awards, recognition, and prizes.

- Create a *Grow Local - Buy Local* program. Provide education on CO_2 savings and the health benefits of eating locally and organically. Replace highly packaged foods. Offer City activities to educate citizens, explaining the difference between natural and organic-expound on buy local program.

- Diversify educational programs by using hands-on, workshops, lectures, and City TV18.

- Form education and green job training partnerships:
    - Contact local education and conservation institutions to partner in promoting sustainability. Implement active internship programs, both paid and volunteer.
    - Encourage local colleges and universities to establish environmental (green) departments, courses, curricula, and degrees.
    - Encourage building industry associations to offer education, training, and resources to contractors and design professionals regarding the City's green building requirements and initiatives.
    - Draw upon international expertise by forming *Sister Cities* for sustainability. Partner with traditional and non-traditional institutions to accomplish the same.
- Establish a goal for the residents of the City to exceed the State's recycling goals. Expand the current recycling program with alternate methods of pickup. Recommend that school classrooms have recycling programs and cafeterias compost food waste.
- Build an education and recognition component into all City funded projects highlighting sustainable activity. For example, make it a requirement for contractors and vendors to report on, and to promote sustainable activities and CO_2 reduction by using signage, interactive touch screens, etc. Create a marketing program that further educates the public on the environmental and cost benefits of energy and water efficiency, sustainable construction, improved air, indoor air quality and water quality.
- Make the E4 conference an annual event, highlighting the annual results and accomplishments of the City's overall Sustainability Plan. Provide copies of the report to residents and distribute the report online. Explore options for energy audits for residents as part of a learning process, free of charge, possibly in conjunction with the aforementioned special district for energy retrofits. Provide workshops on conducting energy and water audit along with other informational material and contact information.
- Develop a well orchestrated series of public service announcements utilizing all available media, including TV and the web, to promote sustainable activities and programs.
    - Publish monthly energy use on the City website. Utilize water bills to distribute conservation information.

  - Create a personal carbon footprint calculator with public access on the City's Sustainability Website. List tips for maintaining cars (keeping tires inflated, etc.) and homes to reduce emissions and energy consumption.
    - Help residents understand how to develop their own plans to promote cultural change. Provide links to financial resources available to homes and businesses to assist them in "going green".
  - Work with local banks to educate and to encourage lending for sustainable projects, marketing such programs through the City's website.

- Encourage residents to reach out to their state and federal legislative delegations to support energy and water efficiency, renewable energy, and sustainable principles in legislative proposals.
- Include artistic expression of green design (eco art) in the educational process.
- Establish mentoring programs with incentives for businesses and neighborhoods.
- Provide green job training for the unemployed and underemployed.
- Incentivize educational programs through rewards and access (free programs=rewards).
- Sponsor/support community education programs (e.g. *Envirothon*).
- Utilize the City Library for environmental and sustainability education.
- Create economic and other incentives that encourage environmental (green) businesses to relocate to the City in particular the relocation of greener, cleaner industries and businesses into our urban industrial areas.

Adopt a policy to help develop green jobs in low-income neighborhoods. By 2010, launch one or more Green Job Training Center(s) to help alleviate poverty and prepare marginalized people for work in green enterprises.

The world's first e-Source Center opened in West Palm Beach on Earth Day 2010

Urban Design, Green Building and Development

Given that a significant amount of the City's carbon emissions and energy use stems from building energy use in the residential and commercial sectors, it is clear that the more sustainable approach to design, building, and development of new and renovated structures can have significant impact on reducing the City's impact on the environment. Design standards that enhance the linkage between land use, transportation, and reduction of vehicle miles traveled - likely the highest emissions sector in the City. Building upon "greener" design, land uses constructed or reconstructed can further reduce the City's environmental impact. Examples of this include walkable communities, integration of mixed uses, assuring job centers have services in proximity, etc. By requiring new construction and renovations to be held to higher energy, water, and environmental efficiency standards, the results to City residents and building occupants can be significant.

Recognizing that the State of Florida's own Building Code is increasing in energy and water efficiency, the City should investigate opportunities to go "beyond code", either through incentives or promulgating higher standards where appropriate and feasible. Even though the City has incorporated numerous smart growth and greenhouse gas reduction strategies into its Comprehensive Plan, it is appropriate to determine where the City can revise policies to achieve even more reductions in impact. The benefit is that the City's community-wide environmental impacts are reduced. Equally important, the inclusion of such policies will make the City more marketable to secure funding opportunities to advance its green initiatives. Demonstrating the City's commitment through long term policy implementation, addressing what is likely one of its highest emissions sectors, shows that the City is taking a proactive approach to its sustainability initiatives.

The Green Task Force recommends that the City of West Palm Beach adopt urban planning principles that advance higher density mixed use, walkable, bikeable neighborhoods which coordinate land use and transportation with open space systems for recreation and ecological reconstruction.

The Green Task Force further recommends that the City of West Palm Beach, upon completion of the appropriate community-wide inventories, prioritize and implement the following initiatives:

- Adopt ecological planning methods and require all new development be Low Impact Development (LID).
    - Reference: www.lowimpactdevelopment.org and www.epa.gov/nps/lid/

- Promote *Regenerative Design* for energy conservation, air quality standards/requirements, and reduced impact on infrastructure.
    - Regenerative Design seeks to create systems that are efficient and waste-free.
- Provide incentives for the development of infill open spaces and vacant land in urban areas. Encourage sustainable, denser development and remediate brownfields in particular environmental hot spots within brownfields. The City's sustainability goals should encourage the reusing of land rather than the consumption of undeveloped (raw) lands. The City should develop disincentives for raw land *"greenfield"* development on suburban and rural land to the extent such land exists within the corporate boundaries of the City.
    - While the lure of "greenfield" development may initially appear less costly than the redevelopment of urban brownfields and infill sites, this unsustainable practice must be viewed in the context of longer term economic benefits and the added social and environmental value of sustainable development.
- Assess the total area of the City's built environment to determine the percentage of mixed uses, energy consumption, greenhouse gas emissions, and vehicle miles traveled. This should occur through a community-wide greenhouse gas inventory based on an acceptable protocol that includes all of the City's designated land uses.
- Develop design criteria with specific green building characteristics and requirements as they pertain to diverse land uses regarding new construction and "major renovations". Consult the Florida Building Code for consistency in requirements of new construction and major renovations of specific systems such as mechanical systems, additional space, and electrical systems.
    - Review definition of "major renovations" to determine if modifications need to be made, with particular emphasis on completing such renovations in conjunction with electrical code upgrades.
    - Ensure that any zoning overlay criteria developed for sustainable purposes respects the City's historic districts and individually designated historic sites, and is careful to balance green building criteria with historical preservation needs.
    - Review the approval process for renovations on historical properties and create a checklist for possible "green" renovations. Streamline the approval process where feasible. Review the *Historical Preservation Property Tax Exemption* program to encourage "green" renovations and retrofits.

  - Incentivize energy and water conservation, reuse, recycling, and waste minimization policies that achieve and exceed the City's sustainability targets and apply significant financial disincentives for not achieving these targets.

  - Encourage creative artistic architecture which incorporates green building principles and materials while considering appropriate aesthetic controls. Green building should be aesthetically pleasing.

  - Have the *Sustainability Advisory Committee* review the various green overlay criteria and designations similar to the way the *Historic Preservation Committee* ensure historic criteria are met.

    - An overlay district is an additional zoning requirement that is placed on a geographic area but does not change the underlying zoning. Overlay districts have been used to establish development criteria in specific locations in addition to standard zoning requirements. Overlay districts are typically developed in conjunction with the preparation of a comprehensive land-use plan.

  - Review ad valorem policies to assure that the implementation of green retrofit projects does not increase tax obligations that would negate the upfront energy savings.

- Monitor rule development of Chapter 163, F.S. related to greenhouse gas reduction strategies by the Florida Department of Community Affairs to determine if further amendments to the City's Comprehensive Plan will need to be completed.

- Utilize land use and parking strategies that reduce reliance on automobiles, including but not limited to, short-term over long-term parking, promotion of park and ride and bike and ride areas and shared parking facilities, consistent with, and in furtherance of, the Transportation Demand Management Initiative.

- Expand and enhance the Transportation Demand Management Initiative with a focus on reducing single occupancy vehicle use.

  - Transportation demand management or travel demand management (both TDM) is defined as the application of strategies and policies to reduce travel demand (specifically that of single-occupancy private vehicles), or to redistribute this demand in space or in time.

- Develop streetscape requirements that assure the facilitation of ***complete streets***.

  - Complete streets are streets designed and operated to enable safe access for all users**.** Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a *complete street.*
  - Elements of *complete streets* include sidewalks, bike lanes, special bus lanes, comfortable and accessible transit stops, frequent crossing opportunities, median islands, curb extensions, etc.
  - *Complete streets* improve safety, address climate change and oil dependence, and foster stronger more livable communities.

- When evaluating mixed-use developments, develop review criteria focusing on increased density where appropriate, connections to transit, shared parking, and reduction of vehicle reliance and vehicle miles traveled.

Sustainable Construction

Sustainable Development ties together concern for the carrying capacity of natural systems with the social challenges facing humanity. Sustainable development does not focus solely on environmental issues. It can be conceptually broken into three constituent parts: environmental sustainability, economic sustainability, and social/cultural sustainability.

Sustainable Construction aims to apply principles of sustainability to the construction industry by providing ways of building that use less virgin material and less energy, cause less pollution and less waste, but still provide the benefits that construction projects have brought us throughout history.

- Establish a recognition program building upon existing green building certification programs for new construction and renovation. Feature on the City's website and social networking site(s). Develop appropriate signage for projects achieving recognition. Assure the program includes principles from the *Indoor Air Quality* and *Building Management* section of these recommendations.
- Require a commitment for permit applicants to report on energy use for up to five years to qualify for the City's green building designation.
- Explore increased targets for energy efficiency above those in the Florida Building Code: 15%, 30%, and 50% more efficient than the most current state code requirement or national IECC (residential) & ASHRAE 90.1 (commercial) standard. Establish a percentage target for energy efficiency based on the point allocation system permitted by the Florida Code.

- Develop and require implementation of green building code provisions citywide, such as but not limited to, shading buildings with native Florida vegetation, using green roof or white (reflective) roof systems, using designs with building shapes and orientation to reduce heat gain, shading parking lots with native vegetation, using pervious concrete treatments, and providing more insulation than the minimum. Establish standards requiring the consideration of such principles when a building is having the roof either substantially or completely retrofitted. Explore the viability of providing incentives for the green building provision in this section.

- Develop code provisions that encourage (and not prohibit) renewable energy projects such as those under the U.S. Department of Housing and Urban Development's (HUD) recommended guidelines for green elements in new construction projects which include:
    - Energy including passive solar: In new construction, orienting buildings to make the greatest use of passive solar cooling and heating; and the site, design, engineering and wiring of new developments to accommodate installation of photovoltaic panels in the future.
    - Energy efficient materials including locally sourced materials and green label certified floor coverings.
    - Utilization of durable materials that remain cool in summer and retain heat in winter; solar reflective paving; the use of Energy Star compliant reflective or green roofing.
    - Sustainability in Site Design, to include the protection of environmental resources within 100 feet of the potential development; erosion and sediment controls; sustainable and energy-efficient landscaping; availability of transportation choices and connections to surrounding neighborhoods.
    - Water Conservation, including installation of efficient irrigation systems.
    - Recommended Energy Star Codes and Standards for all appliances.
- Incentivize developments that include renewable energy components that achieve certain quantifiable targets.

- Develop code provisions that require building energy efficiency improvements in leased spaces and properties (commercial and residential) and require that energy efficiency and audit information is published and provided to renters and tenants.

- For moderate rehabilitation or housing retrofit projects requiring permitting citywide, develop energy efficient affordable housing recommendation guidelines utilizing HUD recommended energy efficient and environmentally friendly guidelines previously mentioned. Develop code provisions that consider those green elements as recommended in those activities undertaken by the City's Community Development Block Grant Program (CDBG) and coordinate these efforts with the City's

Housing and Community Development Department. Additionally, consider the usage of HUD's energy-related provisions of the Housing Quality Standards (HQS) checklist for both single and multi-family housing.

- Require cool (reflective) roofs for new construction and provide incentives for cool (reflective) and green roofs for existing residential and commercial buildings.
- Conduct a pilot project to study the effects and/or incentivize private entities to build outdoor green walls and indoor bio-walls.
    - Outdoor green walls cool buildings and indoor bio-walls are used to clean air at the intake of an air handling system.
- Work with FPL to incorporate "smart metering" and "smart load management" devices; codify into the land development code.
- Define Energy Star Ratings, review Energy Star Building Standards, and establish minimum code criteria for new construction or major renovations requiring certain appliance energy ratings such as achieving an Energy Factor >0.82 or a thermal efficiency of at least 90% (same target as Federal tax rebates).
- Create incentives to foster and encourage sustainable development for all types of building use classifications:
    - Establish a fast track permitting process for green projects based upon criteria that builds upon nationally recognized green building certification systems. Focus on a target for permit approval, not just targets for review. Also explore concurrent processing through various City review boards and utilize the pre-application meeting process to facilitate expedited review.
    - Examine Code and Comprehensive Plan for opportunities to allow appropriate flexible floor area ratios, building densities, parking requirements reductions, and other incentives.
    - Assist marketing projects that achieve *Green Certification*.
    - Review fee structures (over a certain level such as $10,000) to create incentives (and disincentives) on permits based on the scoring process employed in the Florida Energy Code. Assure permit fees cover costs of processing applications, but look for reductions where available.
    - Make energy reduction from an established baseline of the building type a component of the Green Expedited Permit Review.

  - Develop a program for no or reduced cost energy and water efficiency audits in residential properties. Explore partnerships with local businesses and utilities for same.
  - Create a low interest revolving loan fund for energy efficient retrofits. Explore establishment of a special district to encourage and provide a financial mechanism for same.

- Support initiatives and alternatives allowing property owners to creatively finance energy retrofitting or renewable energy projects. Create an annual event to brief the construction industry on the City's green building code and gain feedback from the construction industry on green building techniques.
- Address sustainable construction principles on City facilities:
  - Add Chapter 255, F.S., requirements of constructing to LEED, Florida Green Building Coalition, National Association of Home Builders or Green Globes standards for City facilities.
  - Develop sustainable building criteria for capital improvements that are less than whole buildings or are non-occupied facilities, such as infrastructure.
  - Track greenhouse gas reductions for construction. Include these metrics in the City's Annual Report on greenhouse gas emissions.
- Develop and publish a waste management policy for construction projects. Require the submittal of a waste management plan as part of the application review process for private sector construction.
- Explore hurricane "hardening" construction practices that also address climate change resiliency. Incentivize and apply construction and development practices that help achieve both.
- Given the state of the real estate industry, government agencies and banks, as holders of foreclosed properties, should be engaged to see how they can assist the City with its sustainability goals.

Indoor Air Quality and Building Management

Due to human health issues associated with poor Indoor Air Quality (IAQ), the Green Task Force recommends that the highest standard for Indoor Air Quality be required on all new construction projects. The City should review the different property uses within the City to establish a comprehensive set of air quality and building management standards.

Members of the Green Building Sub-Committee have completed a significant amount of research on specific IAQ standards, and, where appropriate, the Sub-Committee's recommendation may actually suggest an appropriate standard.

This section should also be coordinated with the Government Operations and Policies Section, where appropriate, given the level of applicability of these recommendations to both public and private sector building management.

Definitions to be added to the land development regulations include the following:

- Agri-fiber products with no added urea-formaldehyde resins.
- Composite wood products with no added urea-formaldehyde resins.
- HVAC Units, small/large to properly develop refrigerant standards for small and large systems.
- MERV: Filter *minimum efficiency reporting value*, based on ASHRAE 52.2-1999.
- VOC: *Volatile organic compound* is a chemical compound based on carbon chains or rings with vapor pressures greater than 0.1 millimeter of mercury at room temperature. These compounds typically contain hydrogen and may contain oxygen, nitrogen, and other elements.

Pre-Construction

- Require construction/demolition debris to achieve a 90% - 100% recycling rate as a matter of policy.
- Develop requirements for a pre and post construction IAQ management plan.
- Create a standard for ventilation during construction based on an appropriate number of air exchanges per hour.
- Create standards to protect HVAC system openings from dust during construction.

- Establish standards for use of the permanent HVAC system during pre-construction and air filter standards and change out requirements for pre- and post-construction. Establish standards for filter replacement immediately prior to occupancy. Evaluate requirements for materials used to create duct systems, such as metal, to improve the ability to clean and maintain the systems.

- Establish standards to protect onsite absorbent materials from moisture, including removal and replacement of any materials with evidence of moisture or mildew infiltration.

- Do not store solvents or any high Volatile Organic Compounds (VOC) emitting materials in (enclosed) buildings where people work. These products should be housed in a separated storage area designed for proper safety and ventilation.

- Create standards for cleaning of ducts before occupancy and coverage of all duct and other related air distribution component openings to reduce the amount of debris or dust which may collect in the system.

Construction & Post-Construction

- Establish post-construction building flush-out standards with continuous ventilation from all air-handling units based on duration, minimum temperatures, and humidity levels. Prohibit building "bake out" by increasing the temperature of the space.[2] Include ventilation monitoring requirements. Create incentives for increased ventilation.

- Allow for proper VOC out-gassing (preferably off site) of high VOC products. Install fabric furniture, drapes, and carpeting after installation has time to outgas.

- Minimize and control pollutant entry into buildings by establishing permanent entryway system requirements and methods.

- Develop procedures to exhaust and isolate rooms where activities produce hazardous fumes or chemicals, such as garages, janitorial or laundry rooms, and copy or printing rooms. Procedures could include requirements for exhausting spaces, self-closing doors, and deck to deck partitions or a hard ceiling.

- Require shielding and insulation to manage electromagnetic field within buildings.

[2] Section 4 through 7 of ASHRAE Standard 62.1-2007 or more updated standard.

- Prescribe certain air filtration criteria for buildings.
- Establish lighting and thermal control system requirements and verification of same.
    - Adopt standards for day-lighting requirements and create incentives to encourage same.
- Strengthen the City's smoking ordinance to prohibit smoking within a 25 feet threshold in relation to building entryways and operable windows.[3]
- Establish proper air delivery throughout residential and commercial buildings by updating and increasing standards for mechanically or naturally ventilated spaces.
    - All joints in air distribution systems should be sealed with duct mastic.
    - Duct leakage shall be less than, or equal to, 5% of square footage served by unit or less than, or equal to, 10% if a fan flow high speed system is installed.
    - Exterior ventilation systems should be installed to perform at an appropriate standard.
    - Options and incentives should be provided for duct-mounted electronic/electrostatic air cleaners.
    - Central vacuum systems should exhaust outside.
    - Research and, where feasible, require HVAC plenums on the supply side to be constructed of sheet metal with external insulation.
- Require thermal, humidity, and indoor air quality environmental monitoring targets and monitor building management plans for achievement of these targets.
- Install UV bulbs in HVAC plenums to destroy harmful bacteria and viruses in city/public facilities.

[3] USGBC uses a 25' standard on tenant spaces. USGBC has additional standards in multi-family housing and tenant spaces.

Urban Nature

West Palm Beach has an obligation to improve and beautify its open spaces and elevate citizen appreciation for the environment. The City can take specific actions to improve environmental quality, combat global warming, and positively enhance the environmental sensitivity of its residents. There are a number of ways we can achieve this goal. The health and sustainability of our natural areas are contingent upon our becoming more aware of what it means to be "green."

An argument for shifting toward more sustainable landscapes is to restore and protect our ecological sites. We should support native Florida plant species that benefit birds, beneficial insects and other wildlife. Unfortunately, too many people view plants merely as décor rather than a critical part of the ecosystem. Restoring and preserving natural habitat attracts and supports wildlife, preserves the ecosystems that supply our water, nourishes our soils, and moderates our climate.

Unfortunately, a huge portion of our natural habitat has been significantly altered or destroyed by human development. One way we can reverse this long-standing trend is by reducing the vast areas of sod and replacing it, wherever possible, with native Florida plants and trees. Turf grass has a very poor ecological return and it is a detriment to our water reserves and requires fertilizer and mowing. The City should seek alternatives and discourage the use of turf grass wherever possible.

Non-native plants can be water hungry as opposed to drought tolerant native Florida plants. The City should only use nurseries that sell regionally endemic Florida natives for its plantings. Though people have been led to believe that Florida natives are more expensive, the reality is that native species are far more cost effective in the long term. Florida natives plants can better withstand hurricanes, so they do not have to be replaced like non-natives (e.g. enormous loss of trees from Hurricane Frances in 2004). Trees lost through death and destruction should be replaced with Florida natives.

It also has been proven that Florida native plants and trees require much less maintenance. Native plants from local growers using locally harvested seed can greatly reduce the use of fossil fuel burned to transport, grow, and maintain landscape plants. A minimum amount of attention is required to maintain optimal appearance and health when planting and growing natives. In addition densely planted trees, shrubs, and ground covers better absorb rainfall. Native plants are better at filtering water that enters ponds, lakes, and riverfront (e.g. the intracoastal). More carbon dioxide is removed from the atmosphere with dense plantings of deeply rooted native plants.

Landscapes with native Florida vegetation better survive and in many cases thrive through droughts and water shortages.

Finally, while plants that are labeled *Florida Friendly* do provide a wider range of choices to the plant palate it should be noted that they do not measure up to the benefits of Florida natives and specifically to regionally endemic native plants. Native plants are more capable of withstanding the rigors of our climate. [4]

Vacant land now owned by the City of West Palm Beach can and should be planted with Florida natives and could be used as native tree nurseries for the City. One benefit to doing this is that these properties would require less maintenance, no mowing and little water. Working with the Mounts Botanical Garden, garden clubs, environmental organizations, and citizen volunteers, the City could accomplish this without significant expense. Planting and maintaining Florida natives can significantly reduce our "carbon footprint." A vibrant natural landscape is a sign of sustainability.

Care and concern for the community's tree canopy must be addressed. An aggressive urban forestry plan beyond the current landscape code is needed to improve air quality. As an Arbor Day Foundation City, we should have a sustainable and fully funded urban tree program. Invasive exotics should be removed and replaced with Florida natives. Trails and greenways, wildlife corridors, and areas near and around developments should be established and restored to provide ecosystem value.

The City, through interdepartmental cooperation, can achieve its urban ecosystem and tree canopy goals. For example, the Parks and Recreation Department can partner with Public Works to focus on projects that involve neighborhood tree restoration. Partnerships can be formed with non-governmental organizations that have an interest in preserving natural spaces as well, (e.g. colleges, universities, and non-profits).

An expanding natural landscape can be one of the City's responses to mitigate environmental degradation from past unsustainable development practices. An enlightened green infrastructure plan will have a major impact on the quality of life in West Palm Beach. Our city can set an example for other communities, and it can be a garden spot in Florida and our nation.

The Green Task Force recommends that the City of West Palm Beach plant regionally endemic Florida native plants on publicly owned lands and projects of ecological significance.

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[4] Association of Florida Native Nurseries: Guide for Real Florida Gardeners, 2008;
Xeric Landscaping with Florida Native Plants, Jameson, Michael and Richard Moyroud eds., 1991.

The Green Task Force recommends that the City of West Palm Beach conduct an Urban Ecosystem Analysis as part of its strategy to protect and enhance valuable urban ecosystems and assist policy makers on how to control greenhouse gases and better manage storm water through ecosystem enhancement.

An *urban ecosystem analysis* determines how much of the City's land is covered in trees and assists policy makers in determining standards for ecosystem protection and GHG reduction. It will identify how much of the community is open space, pervious and impervious surface, and covered by water without the encumbrance of legal land use definitions. The *urban ecosystem analysis* should be mapped and broken down by categories. It will show the amount of tree canopy the City has and where that tree canopy is. The analysis can then be used to develop a plan to increase the tree canopy to a sustainable level. It can also be used to determine how much of existing tree canopy is native, how much is invasive exotic, and develop a plan for eradicating the invasive exotics and plant native vegetation without decreasing the tree canopy in the process.

The City should always have a certified forester or arborist on staff charged with managing the city's tree canopy. In addition, sophisticated software programs exist for keeping track of trees and calculating the value of their services to a community (storm water control, carbon sequestration, etc.) as the trees mature. The City should utilize the expertise of the U.S. Forest Service or the nonprofit *American Forests* to get this program started.

See this link for information on how to set urban tree canopy goals:

www.americanforests.org/resources/urbanforests/treedeficit.php

In conjunction with this effort, the City should update its landscape code to require trees and other landscape plantings that help buildings conserve energy. The code should promote and give credits for creating an energy conservation zone around buildings (see definition below). A minimum of four trees should be strategically planted for this purpose. This zone should incorporate appropriate plantings to shade walls and windows. Once roof heat is addressed through reflective coating and proper insulation, it is the walls and windows that are responsible for most of the heat gain and cooling loss in a building.

> An *Energy Conservation Zone* is a zone located no more than twenty-two (22) feet from a structure in a one hundred eighty (180) degree band from due east of the northeast point of the structure, to due south, to due west of the northwest point of the structure.

When it comes to increasing tree canopy and the use of palm trees, three (3) palm trees should count as one tree, and they should be clustered in minimum groups of three (3) to achieve some canopy value.

It is recommended that the following priorities be implemented citywide:

- Partner with the various government agencies, local businesses, neighborhood associations, and non-profits to enhance the urban ecosystem and environmental sustainability goals of the City.
- Establish pocket parks.
- Prohibit removal of vegetation not necessary for the development of a site. Require conservation of native vegetation and habitat during the development review process.
- Require pervious parking lots for new construction where appropriate to reduce storm water runoff into local water bodies.
- Increase the amount of green space with ecosystem value in the City to reduce a significant and measureable amount of green house gases.
- Include wildlife corridors and areas around development. Request this in development plans.
- Create, preserve, restore, protect, and promote wildlife habitat in public open spaces and backyards.
- Reduce sod (turf grass lawns, easements, and rights-of-way) wherever possible replacing with native plants and trees. ***Sod should be no more than 70% of the landscape***. [5]
- Adopt landscape requirements with targets established in the City's Comprehensive Plan and include new landscaping requirements consisting of native species.
- Aggressively pursue a policy of removal of invasive non-native vegetation and have a program to replace it with appropriate native xeric vegetation. This should be coupled with an education program so citizens understand their role in saving water and preserving our environment.
- Require littoral plants on all created water bodies including existing created water bodies.
- Establish and maintain gopher tortoise populations and habitat in natural area recipient sites like the golf course.

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[5] *Getting to Smart Growth, International Cities / Counties Management Association*

- Prohibit the sale and use of cypress mulch. The demand for it seriously degrades wetlands and wetland ecosystems.
- Fill gaps in the urban tree canopy by replanting urban street trees on parkways and easements as part of an urban forest initiative.
- Educate the public that urban trees are infrastructure, just as water, sewer, and roads are infrastructure, and that they need to be maintained and enhanced.

Create a backyard habitat and consider becoming a Certified Florida Yard

Urban Agriculture and Community Gardens

Approximately 15% of the world's food is now grown in urban areas.[6] Urban agriculture and community gardens provide a realistic and viable solution to growing problems, such as increasing global carbon dioxide emissions, obesity, and food security within the United States.

CO_2 Emissions:

The average American diet creates 2.8 tons of CO_2 emissions each year per person, which has now surpassed the 2.2 tons generated by transportation. Roughly one-third of all CO_2 emissions can be traced back to the food supply[7]. The average food is traveling 1500 miles before it arrives on a meal plate.[8] There is a movement to reverse this trend in proactive cities throughout the United States. Keeping the food supply local and fresh reduces the need for excessive packaging and travel, in addition to significantly reducing the amount of CO_2 emission. The greatest reduction in CO_2 emissions will be seen by those residing in cities with urban farms and community gardens where produce is available in a location that requires little transportation for the farmer to bring the product to market and for the consumer to acquire, such as a neighborhood community garden and commercial urban market gardens.

Sustainable Agriculture:

The USDA is currently promoting the new *Know Your Farmer, Know Your Food* program that encourages sustainable agriculture practices that will protect and preserve soil, water, and air for future generations. Education is provided by the USDA for small and large farming operations to help reformulate conventional farming practices and to move to sustainable practices.

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[6] USDA Farms and Community, Urban Agriculture and Community Gardening, http://afsic.nal.usda.gov

[7] Eshel G. and Martin P.A. Diet, Energy and Global Warming. Earth Interactions. 2006:10(9):1-17. Bon Appétit Management Company.

[8] Leopold Center for Sustainable Agriculture. "Checking the food odometer: Comparing food miles for local versus conventional produce sales to Iowa institutions". Iowa State University, July 2003.

This education is provided through the *Sustainable Agriculture Research and Education (SARE)* program or the *National Institute of Food and Agriculture (NIFA)* program and is delivered through field days, workshops, conferences, and publications. The USDA is also encouraging providing local food systems and the utilization of farmers markets.

Community Health:

In addition to the beneficial reduction in CO_2 emissions that urban farming and community gardens can bring, having local, fresh produce available through community garden projects and urban farm markets may aid with decreasing overweight/obesity as well as to help protect against chronic diseases. Currently in the United States, more than one-third of adults – over 72 million people - and 16% of children are obese.[9] Those that consume greater amounts per day of fruits and vegetables as part of a healthy diet have a decreased risk of overweight/obesity, stroke, cardiovascular disease, and certain cancers when compared to those that consumed only small amounts.[10] Adults with a household member who participated in a community garden consumed fruits and vegetables 1.4 more times per day than those who did not participate, and they were 3.5 times more likely to consume fruits and vegetables at least 5 times daily.[11] Making fruits and vegetables more accessible can promote the health and well being of our community. Low socioeconomic status in children and adults has been associated with a greater prevalence of both obesity [12] and type-2 diabetes.[13]

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[9] Centers for Disease Control and Prevention, Obesity – Halting the Epidemic by Making Health Easier: At A Glance 2009. http://www.cdc.gov/chronicdisease/resources/publications/AAG/obesity.htm

[10] US Department of Health and Human Services, US Department of Agriculture. Dietary guidelines for Americans, 2005. 6th ed. Washington, DC: US Government Printing Office; 2005. Available at http://www.health.gov/dietaryguidelines.

[11] Fruit and Vegetable Intake among Urban Community Gardeners *Journal of Nutrition Education and Behavior*, Volume 40, Issue 2, Pages 94-101
K. Alaimo, E. Packnett, R. Miles, D. Kruger

[12] Molarius A, Seidell JC, Sans S, Tuomilehto J, Kuulasmaa K. Educational level, relative body weight, and changes in their association over 10 years: An international perspective from the WHO, MONICA project. *Am J Public Health*. 2000; 90:1260-1268.

[13] Mokdad AH, Marks JS, Stroup DS, Gerberding JL. Actual causes of death in the United States, 2000. *JAMA*. 2004; 291:123801245.

Community garden projects can provide adults and children fruit and vegetable choices at low or no cost that may otherwise be unaffordable due to income, transportation, convenience, or all three.

Food Security:

The presence of urban farms and community gardens within a city also contributes to community food security.[14] Interaction between urban farmers and community gardeners and the community increases the awareness of local food options. This increased awareness is not just limited to food options but also conveys a message of healthy, sustainable, and secure food products and practices. Community gardens and urban farms provide fruit and vegetable food choices in urban areas deemed "food deserts", and urban areas without conventional grocery stores, where the only food choices may be through convenience foods and fast food establishments. The USDA is currently promoting several programs to expand access to local, nutritious foods. Funding is currently underway for community food projects to help communities become more self-reliant in maintaining sustainable food systems. There are also resources available through the USDA for the Farm to School Initiative, Farmers Market Promotion Program, Specialty Crop Block Grants, and Women, Infants and Children – Farmer's Market Nutrition Program.

Encouraging sustainable agriculture through urban farms and community gardens within the City of West Palm Beach will decrease our City's carbon footprint, improve the health of adults and children within the community, increase community involvement and learning, improve food security, and bring revenue to the City while preserving our natural resources for the next generation.

Mission and Vision:

To provide a sustainable and secure source of safe, easily accessible, and affordable foods of high nutritional quality grown on virtually any site close to its consumer market; to promote optimal health so that no one need go hungry. To create a collection of community gardens and urban market gardens that can thrive and successfully provide the community with a source of freshly grown produce to promote the health and well-being of the local population, utilizing government and privately owned properties effectively preventing urban blight. At the same time providing an agriculturally sustainable, economically viable, environmentally responsible climate in which the community can flourish and prosper.

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[14] Koc et al. 1999; Bellows and Hamm 2003; Hamm and Bellows 2003; Mann 2001.

Recommendations:

- Define and set a target to decrease blighted space within the City through the creation of community gardens.
    - Determine the need for, and map if necessary, blighted and other appropriate areas to create favorable zoning and land use criteria for community gardens.
    - Match property owners with interested gardeners.
    - Identify resources to aid with overhead costs.
    - Promote, install, and provide infrastructure for community gardens.
    - Create a self-sustaining pilot-project garden that covers overhead costs (e.g. by selling excess produce).

- Provide economic incentives to commercial urban farming operations.
    - Encourage commercial urban farming projects to locate within the City by leasing vacant City land to commercial urban farming operations at a discount.

- Create and implement a training program to educate and promote sustainable farming practices and systems to be utilized by community garden projects and commercial urban farming operations.
    - Create a land location within the City to provide hands-on farming education.
    - Educate City residents on how to grow food through neighborhood associations, church groups, homeowners' associations, and schools.
    - Educate the community on the benefits of community gardens and provide education on sustainable agriculture practices and systems through the City website, signage, and City television.
    - Partner with the Health Department on a demonstration garden to educate residents on food and health.

- Provide incentives to building owners and businesses and residents that reside in those buildings for creating and maintaining food-producing gardens on rooftops, patios, parking lots, or other non-conventional gardening space.

- Create a City composting program for all compostable food and paper waste and make participation mandatory for all restaurants and city buildings serving food.
    - Provide a program of incentives to promote sustainable farming practices and systems by using the organic City compost instead of synthetic fertilizers, such as is being done with the San Francisco program by *Center for Urban Education and Sustainable Agriculture (CUESA)*.
    - Provide composting locations and collection initiatives.
    - Provide compost to registered community gardens free of charge and to commercial urban farming operations at a minimal cost as an incentive to do business within the City and to promote sustainable farming practices.

- Offer registered community gardens within the City a free table at the City Green Market weekly to sell surplus produce.

- Offer commercial urban farms within the City a discounted table at the City Green Market each week as an incentive to do business within the City.

- Extend the City Green Market throughout the year.
    - Offer a venue for the sale of local produce all year.

- Allow the use of farm inputs such as the use bees for pollination, and the raising of worms and fish and backyard egg-laying hens.
    - Offer sustainable alternatives to synthetic fertilizer, herbicides, and pesticides.
    - Allow natural pollination of plants.
    - Mentioned sustainable methods require no packaging and transport and thus produce no greenhouse gas.
    - Egg-laying hens provide an ideal protein source in addition to manure that can be utilized for natural fertilizer.

- Create a local label for foods grown and sold within the City.

- Initiate a local food purchase policy.

- Create a Community Food Council (CFC) to serve as a standing sub-committee under the Sustainability Advisory Committee. The CFC will function to educate and promote sustainability and food security by developing policy recommendations that make fresh produce more available and affordable to the citizens of the City of West Palm Beach. The actions of the CFC can improve health and decrease overweight/obesity by facilitating the consumption of fruits and vegetables and thus decrease the incidence of overweight/obesity-related disease such as diabetes, heart disease, hypertension, and many cancers. The CFC will be composed of City residents and include interested healthcare professionals within the community that possess a desire to participate on issues surrounding the availability of locally grown and marketed fresh food and issues pertaining to the sustainable growth and procurement of foods. It is recommended that the CFC meet quarterly to examine how the local food system is operating and develop a Food Security Report annually for the Mayor and City Commissioners.

    - Duties of the *CFC* may include, but not be limited to:

        - Mapping and publicizing locally grown food resources and providing that information to City residents.
        - Developing sustainable gardening education program for City residents.
        - Providing recommendations to the Mayor on how the City can improve food security and food availability for all City residents.
        - Providing recommendations to the Mayor on how to improve sustainable food growing practices and promote locally grown foods.

Energy Conservation and Alternative/Renewable Energy

According to the Florida Public Service Commission and the Energy Information Administration, residential customers comprise approximately 89% of Florida Power and Light's (FPL) customers and are responsible for almost 51% of the electrical energy consumed. Commercial-industrial customers are responsible for the remaining 49%. Our per capita residential electricity demand is among the highest in the country. This is due primarily to air conditioning in the summer and home heating in the winter that relies primarily on electricity as the energy source

Energy efficiency is the foundation for energy planning and should be prioritized before solar thermal, solar photovoltaic, wind, or water energy. The least expensive kilowatt is the one we do not use or produce.

Not to be overlooked in our attention to energy efficient buildings and energy efficient appliances, lighting, motors and office equipment is how we use these items. We Americans are careless in our usage. We forget to turn off the lights when we leave the room. We leave the cell phone charger plugged in even after the phone is charged. We leave our multiple computers, video games and televisions on when they're not being used when we should be turning them off at the power strip. We need to turn off the fans and turn up the air conditioning thermostat when we are not at home. During the summer when the water coming into our homes is warmer we should set our water heaters to low. We should turn off the electric water heater when they are not being used for an extended period of time; like when we go on vacation. It only takes about 15 minutes for the water to reheat. As a people, we waste more electricity than some countries use. This wastefulness costs us in money and unnecessary fuel use. An energy audit of our wasteful habits can yield surprising energy and money savings. All we have to do is change some behaviors.

As fast track permitting of buildings certified as green is being contemplated, we should establish a minimum energy standard that must be met to be eligible for fast track permitting. This could be a tiered approach that would enable the city to meet its target of net zero buildings. Currently a 15% increase in energy efficiency over and above what the current state energy code requires makes a building eligible for an Energy Star designation. We should progressively increase our energy efficiency requirement over time so that the City can achieve net zero buildings (preferably by 2030). For more information, see:

DOE Building America: www1.eere.energy.gov/buildings/building_america/ and

Architecture 2030: www.architecture2030.org and

EPA's Energy Star Building Program: www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager_intro

The City should promote decentralized energy generation that relies on local resources. For example, using an anaerobic process in wastewater treatment produces methane that can be recovered and used for energy to run the facility.

Also, because the City has its own water utility, it could lease or sell to qualified homes, businesses, etc. solar water heating systems at a lower (bulk) cost and provide a payment plan through the utility bill. See City of Lakeland's program at:

www.dsireuse.org.

Before building new power lines, the City should ask for old ones to be rebuilt or consolidated and make sure the newest, most efficient cables are being used. The City should review where current distribution and transmission lines are and should collaborate with FPL on identifying preferred routes for power lines.

See Treasure Coast Regional Planning Council (TCRPC) policy 3.1.6 in the energy planning guide at:

www.tcrpc.org/council_meetings/2009/DEC09/Energy Planning Guide - 2009 Update Final.pdf

It is important to note that reliance on an extensive electric grid that brings electricity from large centralized electric power plants is a national security issue, and that any amount of decentralization adds resiliency to our City.

The West Palm Beach Green Task Force recommends that the City negotiate our Franchise Agreement with FPL that expires in 2014 in such a fashion to help achieve the goal of becoming a net zero energy City.

Given the influence of state and federal policy on City energy use, it is important to understand the fact that some goals and targets for energy conservation and alternative/renewable energy production will need to be updated. The state and federal government are currently debating multiple approaches to establish energy conservation and alternative/renewable energy production legislation. Additionally, the City can only control certain aspects of energy use within the community because it does not own or manage its own electric utility. The City should examine the feasibility and value of becoming a municipal utility. Even within those parameters, the City can implement numerous strategies to reduce the City's dependence on traditional energy sources and increase energy conservation. The City also recognizes the significant linkage between water and energy efficiency and can encourage further energy use by promoting water conservation goals and technologies. Towards this effort the City should implement the following:

- Adopt zoning regulations and land use controls to encourage renewable energy source development.
- Complete an energy audit on water and wastewater utilities operations and infrastructure and focus on retrofits and upgrades to those facilities.

- Incentivize projects that achieve net zero or low levels of energy use.
- Create mechanisms that allow businesses and residents to install renewable energy projects or complete energy improvements through the creation of an energy improvement district.
- Incentivize (reflective coating) cool roofs and (vegetated) green roofs throughout the City.
- Trees and shrubs should be planted in the energy conservation zone, where feasible, in order to reduce energy consumption by shading buildings and shall be used to reduce heat island effects by shading paved surfaces.

An aesthetically pleasing solar parking lot
In addition to generating electric power and shading the cars, this parking lot can charge electric vehicles.

Water Conservation and Protection

The City of West Palm Beach is solely reliant upon surface waters to supply the water needs of the City as well as the towns of Palm Beach and South Palm Beach. This source of water is part of the historic and vast Loxahatchee Slough wetlands and spans an area of approximately 20 square miles. It is abundant with wading birds and other wildlife and hosts listed endangered and threatened species such as the Everglades (Snail) Kite, Wood Storks and Bald Eagles. It is the City's Water Catchment Area (WCA) and known as Grassy Waters Preserve.

Grassy Waters Preserve was identified early as a freshwater resource, and the Flagler Water System, established in West Palm Beach in 1894, incorporated that portion of the slough as part of its potential water source. In 1955 the City purchased the WCA from the Flagler Water System for its water department. In 1964 a special legislative act officially created the Water Catchment Area, giving it special use as a water supply. The City protects it as a water supply and provides water conservation and environmental education to the citizens of Palm Beach County on the importance of wetland ecosystems.

Because Grassy Water Preserve serves the dual function of water supply and important ecosystem, it is incumbent upon the City to develop progressive policies and techniques to protect and preserve this important resource. Twentieth century water policy and planning required water planners and managers identify and meet growing human demands for water. The principal tools have been long-range demand projections and the construction of tens of thousands of large facilities for storing, moving and treating water. The long construction times and high capital costs of water infrastructure requires that planners try to make long-term forecasts and projections of demand. This "hard path" approach brought tremendous benefits to billions of people, reduced the incidence of water-related diseases, expanded the generation of hydropower and irrigated agriculture, and moderated the risks of devastating floods and droughts. [15]

However the U.S. Environmental Protection Agency (EPA) predicts that 37 states will have non-drought related water supply shortages of some type by 2013. EPA also estimates that water utilities will need $277 billion for infrastructure construction, upgrades, and replacement during the next 20 years. Additionally, loads are expected to increase by 20% in the next 15 years due to increased populations and regulations for treatment.

The Pacific Institute, a nonpartisan research institute, works to advance environmental protection, economic development and social equity and according to its 2008-2009 biennial report on freshwater resources, entitled *The World's Water,* water might well

[15] Gleich, Peter H., *Global Freshwater Resources; Soft-Path Solutions for 21st Century,* State of the Planet, 5 December 2003.

be a renewable resource, but its capacity to renew itself depends on how it is managed. There is a vast amount of water on the planet – but we are facing a crisis of running out of sustainably managed water.

What is required is a *"soft path"* to water resource management. In the late 1970's, Amory Lovins, Chairman and Chief Scientist of the Rocky Mountain Institute, coined the term "soft path" for energy to denote an alternative approach for meeting human energy needs. The "soft path" recognizes that people do not want energy itself, but rather transport, light, warmth, for example…a means to a certain end. The soft path for energy means a reduction in wastage and inefficient use of energy, the deployment of renewable energy resources, and the increased use of decentralized options, among other things.

Expanding this theme, Dr. Peter Gleick, President of the Pacific Institute, and others, coined the concept of a "soft path" for water resource management.

> *The "soft path" is a comprehensive approach to water management planning, and use that uses water infrastructure, but combines it with improvements in the overall productivity of water use, the smart application of economics to encourage efficiency and equitable use, innovative technologies, and the strong participation of communities and local water users making decisions. Rather than seek endless sources of new supply, the soft path matches water services to the scale of the users' needs, and it takes environmental and social concerns into account to ensure that basic human needs and the needs of the natural world are both met.*[16]

Rethinking water use means reevaluating the objectives of using water. Hard path water planners equate the idea of using less water, or failing to use much more water, with a loss of well being. Soft path planners believe that people want to satisfy demands for goods and services, such as food, fiber, and waste disposal, and may not care how much water is used – or even whether water is used at all – as long as these services are produced in convenient, cost-effective, and socially acceptable ways.[17]

This new water paradigm, the soft path of water to meet both human and the natural environmental needs for water, can be achieved in a more integrated, sustainable, and effective way than traditional hard path ways. The soft path for water can be distinguished from the traditional hard path in six main ways.[18]

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[16] "Peak Water", *The World's Water, 2008-2009 Biennial Report on Freshwater Resources,* Pacific Institute, January 2009.

[17] Gleich, Peter H., *Global Freshwater Resources; Soft-Path Solutions for 21st Century,* State of the Planet, 5 December 2003.

[18] "Peak Water", *The World's Water, 2008-2009 Biennial Report on Freshwater Resources,* Pacific Institute, January 2009.

1. **Focusing on ensuring water for human needs:** The soft path directs governments, companies, and individuals to meet the water needs of people and businesses, instead of just supplying water. People want clean clothes, or to be able to produce goods and services—they do not care how much water is used and may not care if water is used at all.

2. **Focusing on ensuring water for ecological needs:** The soft path recognizes that the health of our natural world and the activities that depend on it (like swimming, water purification, ecological habitat, and tourism) are important to water-users and people in general. The hard path, by not returning enough water to the natural world, ultimately harms human and other ecological users downstream.

3. **Matching the quality of water needed with the quality of water used:** The soft path leads to water systems that supply water of various qualities for different uses. For instance, storm runoff, gray water, and reclaimed wastewater are well suited to irrigate landscaping or for some industrial purposes that currently are supplied with more expensive potable water.

4. **Matching the scale of the infrastructure to the scale of the need:** The soft path for water recognizes that investing in decentralized infrastructure can be just as cost-effective as investing in large, centralized facilities. There is nothing inherently better about providing irrigation water from a massive reservoir instead of using decentralized rainwater capture and storage.

5. **Ensuring public participation in decisions over water:** The soft path requires water agencies, policy makers, or private entities to interact closely with water users and to engage community groups in water management. The hard path, governed by an engineering mentality, is accustomed to meeting generic needs with little transparency or public input.

6. **Using the power of smart economics:** The soft path recognizes the public and economic aspects of water, using the power of water economics to encourage equitable distribution and efficient use of water.

It should be noted that the country of Australia leads in *soft path* water governance by developing a *National Water Initiative* agreed to by all 6 states. Canada has also embarked on a “new path” to water sustainability using soft path strategies by conducting pilot studies in several areas in collaboration with the POLIS Project on Ecological Governance and the University of Victoria BC.

The Green Task Force recommends that the City of West Palm Beach follow the tenets of soft path water management in all aspects of future water resource planning.

Land development and the resulting population growth in our community and region continue to impact not only water availability, but also protection of the quality of our water resource, as well as other water bodies in the area.

Stewardship of this vital environmental and water resource is not only in the best interest of the community, but also is the responsibility of the public that not only reaps the benefits of the water resource and enjoys the environmental education and recreation resources the Preserve and the entire region have to offer.

The following recommendations have been identified by the City Green Task Force as those which will assist in conserving and protecting the water resources of the City of West Palm Beach:

- Begin to move away from a supply-side water management path, apply demand management strategies, and improve the efficiency of current practices.
- Analyze and revise the City's current tiered water conservation rate structure as needed. More tiers can be created, and the rate structure should be based on property use, water consumption, and efficiency measures taken.
- Require that new and replacement toilets, showerheads, and other water fixtures must be low flow, consistent with EPA's *Water Sense* and *Energy Star* programs.
- Expand and update the City's water conservation education program.
- Promote partnerships and consistent conservation policies and per capita use goals with all users within the City's water service area, including homeowner's and condominium associations.
- Commit to using water savings and efficient fixtures in all new construction of City facilities. The City should institute a program to convert any inefficient water fixtures in City-owned facilities to water saving efficient fixtures.
- Develop an energy efficiency strategy for water utilities' operations and explore opportunities to incorporate renewable energy sources into the expansion or retrofit of water and wastewater infrastructure.
- Provide subsidy and/or rebate programs, possibly supported by grants, to allow retrofitting of the homes of interested West Palm Beach property owners. Low flush toilet replacements, low water use washing machines, hot water recirculation devices, drip irrigation, rain sensors, and rain barrels will be included.
- Consider setting higher water efficiency standards for appliances.
- Develop a program allowing single-family residents to enact their own gray water/irrigation-quality water use practices. Also provide incentives for new commercial and residential development incorporating gray and irrigation quality water use.

Landscape Irrigation

- Adopt landscape requirements (with a target established in the City's Comprehensive Plan) including new landscaping consisting of Florida native species.
- Analyze use of the tree permitting and/or removal program as an enforcement mechanism for new landscaping policies. Consider establishing or reviewing thresholds for landscape plans required in new construction or replacement of landscapes.
- Adopt Florida Friendly landscaping principles in the land development code including the identification of permitted and prohibited species on private properties. Use true Florida natives on public property. Require the use Florida Natives on projects that would have significant ecological benefit. (i.e.: Golf Courses, Parks, etc)
- Adopt new ordinance provisions regulating the requirements for installation of rain sensors on automatic irrigation systems including maintenance and replacement of such systems consistent with new requirements in SB 2080 and HB 494.
- Amend the City's code to encourage rainwater harvesting by allowing irrigation cisterns for applicable homes and commercial properties.
- Amend the City's landscape requirements to reduce the required area of planting water-thirsty grass lawns while at the same time ensuring adequate pervious surface for rain/storm water infiltration.
- Penalize repeated violators of watering policy, especially on commercial properties that use large amounts of water.
- Aggressively pursue a policy of removal of invasive, non-native vegetation and have a program to replace them with appropriate native vegetation. This should be coupled with an education program so citizens understand their role in saving water and preserving our environment.
- Require using Florida native plant species along roadways.

Stormwater Management

- Incorporate principles of low impact design and development and create innovative approaches for stormwater management in neighborhoods.
    - Fully utilize existing stormwater buffer areas by using the full range of biofilter options including bio-swales, vegetated filter strips, and constructed wetlands.
    - Use bio-swales for storm water discharge points wherever possible.
    - Prevent discharge of vegetative waste into water bodies via storm water drains. Require that landscape companies using leaf blowers not blow lawn clippings onto the street. Require by ordinance; enforce by fines.
    - Retrofit existing point-source storm drains to provide pretreatment prior to discharge to water bodies.
    - Continue baseline analysis of storm events to determine storm water quality (WQ) trends.
    - Manage all conservation easements to ensure proper compliance.
        - Conservation easements are legally enforceable land preservation agreements between a landowner and a government agency for the purposes of conservation. They restrict real estate development, commercial and industrial uses, and certain other activities on a property to a mutually agreed upon level. The property remains the private property of the landowner.
    - Significantly reduce the City's use of chemical fertilizers during the rainy season. Eliminate the use of chemical fertilizers near storm drains and water bodies. The City should use organic fertilizers and/or microbial augmentation instead to build and enhance healthy soils.
    - Significantly reduce or eliminate the City's use of chemical herbicides. Use mechanical removal of undesirable vegetation as the primary option.
    - Eliminate the City's use of chemical pesticides near storm drains and water bodies all year long to set an example for residents to do the same. *(refer to: Integrated Pest Management (IPM) under the Chemical Policy section of this document, p15)*

- Educate residents and businesses about the importance of stormwater protection and the City's obligations under the National Pollution Discharge Elimination System (NPDES) permit requirements.
- Encourage the use of Irrigation Quality (IQ) water. **Promote the use of irrigation water cisterns and rain barrels**.

- Coordinate with the South Florida Water Management District and the Department of Environmental Protection to support more flexible stormwater management rules that allow projects to incorporate principles of low impact design such as stormwater management calculations for green roofs and pervious streets.
- Explore opportunities for storm water management and irrigation with onsite collection systems, bio-swales, (cisterns, etc.) and create incentives for incorporating such features into development projects. Review the land development regulations to assure setback and other criteria to facilitate use of these techniques.



Rainwater harvesting cisterns and rain barrels can be functional and aesthetically pleasing.

Waste Management

- Require all businesses to recycle. Provide incentives where possible.
- Require recycling at residential and commercial high rise buildings. These buildings should have recycling containers on each floor or, in new structures, shoots for recyclables separate from regular trash.
- Increase recycling at organized events. Examples are to use a theme: e.g. *"Sunfest Goes Green"*, to require food vendors to provide waste segregation and recycling, and to have a significant penalty for non-compliance.
- Boaters do not have adequate opportunities to recycle, and should be provided with appropriate receptacles for the proper segregation of waste and recyclables from the waste stream at boat docks.
- Electronic waste needs to be managed so that no electronic waste ends up in the landfill. City government should be an example, recycling 100% of their electronic waste effective immediately. Include an education and physical outreach component to ensure residential electronic waste is recycled through periodic pick-up programs, like neighborhood clean-ups. The amount recycled should be tracked to ensure that the waste does not become someone else's environmental problem.
- Empty ink and toner cartridge waste should be 100% recycled.
- Create a plastic shopping bag ban, particularly for plastic grocery and chain pharmacy shopping bags. The City should review models of other progressive cities implementing such programs.
- The composting of food waste from restaurants should be allowed and encouraged. The compost generated from this effort can be used in community gardens.
- The amount of telephone books being printed and delivered should be significantly reduced. The City should require telephone book providers to offer consumers an "opt in" provision to receiving a phone book as opposed to an "opt out" provision.
- Styrofoam and polystyrene foam, including "peanut" packaging material, should be replaced with environmentally benign alternatives. All polystyrene foam should be recycled, similar to cardboard, aluminum, paper, etc., at the curbside and at businesses. Restaurants should be actively encouraged to discontinue polystyrene foam use as "doggy bags".

- Collect a deposit for plastic (water, soda, etc.) bottles.
- Establish once-a-week household garbage pickup, particularly given the new and larger containers provided to the public by the City.
- Imported products tend to be individually packaged, and thus over-packaged, as an import requirement. This policy should be reviewed and changed. The City should champion the effort through their government relations representatives to reduce over-packaged products that are imported into the country at the state and federal level. Promote a ***buy local*** program.
- Facilitate the proper disposal of household hazardous (chemical) waste. Educate people and conduct periodic collections, like neighborhood clean-ups.
- Promote and educate the public on the proper disposal of prescription drug (medicines) to keep these chemicals out of our wastewater system. The City should provide a way to educate and collect this material at City events like the Green Market.
    - Require that pharmacies take back prescription drugs for proper disposal.
    - Partner with the Palm Beach County Sherriff's Office prescription drug collection program.

When vegetation is alive and growing it removes and sequesters carbon from the atmosphere and produces oxygen. Conversely when vegetative waste from typical maintenance or land clearing decomposes, it releases some of that carbon back into the atmosphere. The carbon that isn't release into the atmosphere is released into the soil along with micronutrients plants use. This is a very simple explanation of the one of the most important biogeochemical exchanges on earth – the carbon cycle. Management of the vegetative waste stream therefore has significant potential for the management of the City's carbon footprint, particularly in a subtropical City like West Palm Beach with large amounts of vegetative biomass.

A promising approach that the City should seriously explore is the creation of a carbon-rich material called **biochar** through the direct thermal decomposition of vegetative waste in the absence of oxygen in a process known as pyrolysis. Modern pyrolysis kilns essentially optimize the process of creating biochar. The use of biochar as a soil amendment improves the fertility, texture, and ecology of soil while concurrently sequestering carbon for very long periods of time.

The Green Task Force recommends that the City of West Palm Beach research and look for funding and partnerships to conduct a biochar pilot project that would convert a portion of the vegetative waste stream into biochar.

Sustainable Transportation

Within the City of West Palm Beach there are a variety of modes of public transportation for residents and visitors. These include: County PalmTran buses, Tri-Rail and Amtrak trains, Greyhound Buses, air travel at Palm Beach International Airport, trolley rides, electric vehicles, South Florida Commuter Services car pools and van pools, public boat docks, biking, rickshaws, and walking.

West Palm Beach is well situated and suited for sustainable transit. Key elements, especially on the eastern coast, have the potential of making the City a model urban transit city within Palm Beach County and the rest of the country. Some of these fundamentals already in place include: high density neighborhoods, streets and sidewalks which follow a grid pattern, major bus and train routes and stations, transit transfer locations, an Intermodal facility, an international airport, newly-built public docks for boats and water taxis, bike lanes and bicycle racks on the front of buses, a free electric car service in the downtown area, trolleys which run between Clematis and City Place, many streets having sidewalks, and, in some locations, buildings with overhangs, which provide pedestrian protection from the sun or rain.

The four E's representing the elements of sustainability: the environment, economics, equity, and energy are best achieved through mixed use, transit-oriented communities. The more the City is able to encourage the design of urban transit communities, the less people will be dependant on cars, with the resulting reduction in CO_2 emissions. Communities which are mixed use will allow residents to meet their daily shopping and employment needs nearby, ideally within walking distance, by bike or electric car or shuttle service. With the addition of Florida native shade trees and landscaping, and with less required motorized vehicular travel, communities can move toward becoming more carbon neutral environments. There will be greater social equity because residents will have greater choices to use the variety of transportation modes depending on their needs. Economic and energy savings will occur because of reduced dependency on oil for transportation.

Future new service or improvements in transit should include the following enhancements to the current modes of transportation:

- Encourage *PalmTran* to increase frequency (reduce headways) on its East-West corridors and to TriRail stations because wait times are currently too long.

- Encourage and support light rail passenger service on the FEC eastern rail corridor. This should include the adoption of the proposed stops at eight new train stations at the following locations: 45 St, 23-25 St, 13 St / Palm Beach Lakes Blvd, Government Center, Okeechobee Blvd, Belvedere Rd, Southern Blvd, and Forest Hill Blvd.

- Support the CSX Corridor (Tri-Rail) and the FEC Corridor connection to accommodate enhanced transit services.

- Most urban noise comes from the transportation system. Noise pollution is displeasing to people and could have detrimental effects on human health. Reducing the overall noise of train operations will go a long way toward getting public support for commuter service on the FEC corridor. It is recommended that the City support train horn free zones at FEC rail crossings.

- Encourage elevated parking garages, instead of using valuable ground-level parking where residences or stores can be located.

- Build more bus shelters and benches to accommodate mass transit riders.

- Promote water taxi service at the new Downtown docks, at Currie Park, and at other locations along the City waterfront. Include service to the neighborhoods in the north and south part of the City.

- Allow and promote the use of neighborhood electric vehicle shuttle service in gated communities and dense urban neighborhoods and provide drop off service for residents at bus stops and stations.

- Design and establish more bicycle routes within the City. Provide more bike racks at City facilities. Require bike racks at grocery stores, drug stores, and banks.

- Provide more trolley services in dense areas and business areas. .

- Promote expanded use of Segways for personal travel and electric car service to serve as a shuttle between local points.

- When City vehicles need replacing, purchase or lease hybrid, natural gas, or high mileage cars. Prioritize the phasing-out of low mileage/high horsepower cars. Review requirements for trucks and off-road vehicles and minimize their numbers. Report with metrics the evolution of the City's fleet to a less carbon intensive one.

- Design building setbacks so buildings are closer to the street. Buildings closer to the street are more pedestrian friendly.

- Add definition of "vehicle miles traveled" to the Comprehensive Plan and Code.

    - Keeping track of the number of miles traveled by City vehicles allows analysts to track efficiency of vehicles by type and recommend energy consumption improvements.

- Establish an integrated network of non-motorized transportation corridors by including and utilizing existing rights of way that connect parks, linear parks, greenways, canals, and waterways to increase the non-motorized transportation network.

- Connect the City's Bike and Greenways Plans to the Countywide Bike Plan and expand connectivity efforts citywide.
- Encourage the construction industry's use of public transit. Consider requiring construction projects over a certain threshold to provide "changing and clean-up facilities" for workers to utilize before using public transit at the end of the work day.
- Explore employer fare contribution programs to encourage the use of public transit by employees.
- Develop a City-wide multi-modal map that illustrates deficiencies and opportunities related to transportation and land use integration.
- Work with *PalmTran* and private developers to increase the percentage of individuals riding mass transit. A survey should document the percentage of individuals by their transit modal share or choice of transportation (drive alone, car pool, public transit, walk or bike). Set modal share targets for sustainable transport modes, with efforts made to lower the percentage of vehicle trips and increase other modes.
- Increase opportunities for park-and-ride facilities as a means to encourage greater use of transit and to increase opportunities for ride-sharing.
- Create incentives to be implemented in the development approval process for commercial projects that link directly to public transit alternatives such as Tri-Rail.
- Improve pedestrian continuity on downtown streets to decrease short trip automobile use and iterative parking, increase transit viability, and require less parking.
- Provide or require bicycle and pedestrian ways for connecting residential areas to recreational areas, schools, shopping areas, and employment areas.
- Evaluate and improve the City-Wide Bicycle Facilities Network and adopt a pedestrian and bicycle master plan by a certain targeted date.
    - Identify any missing links in the network to ensure all City streets have sidewalks.
    - Place special emphasis on streets located in downtown and single-family neighborhoods.
- Increase the amount of bicycling and pedestrian facilities and incorporate the concept of *complete streets* to accommodate the needs of the different transportation modes and users into the City's transportation plans and new projects proposed.

- Develop comprehensive planning objectives and City land development regulations to support federal initiatives pertaining to *complete streets*.
    - Accommodate automobiles, transit vehicles, and non-motorized forms of transportation.
    - Provide assurances for a safe and comfortable environment that are aesthetically pleasing for diverse users. Encourage utilization of solar-power and light-emitting diode (LED) equipment for transportation infrastructure and encourage alternative surfaces for parking lots, parks, and other paved facilities. The City should promote and incentivize solar (photovoltaic) parking lots and garages. Not only can the panels provide shade for the cars below, they can provide clean energy to the electrical grid, thereby increasing the City's percentage of renewable energy use.
- Require the best timing of traffic signals to reduce the amount of time drivers are stopped and idling at signalized intersections.
- Coordinate with PalmTran to analyze the locations and amenities associated with transit stops to potentially upgrade them with a goal of expanding transit ridership. Prioritize corridors where ridership could potentially increase. Existing stops may need to be relocated to facilitate increased ridership.
- Review and incorporate "20-Minute Complete Neighborhood Concept" where residents can safely walk a relatively short distance from home (within 20 minutes) to most of the destinations and services they use every day.
- Encourage and require accessible plug-in locations for hybrid vehicles in new multi-family development projects and major renovations, and city parking facilities. Assure location is proximate to parking designated for hybrid vehicles.
- Vancouver, British Columbia prioritized the City's transportation investment monies as identified below and is now one of the most livable cities in North America. West Palm Beach should adopt a similar transportation priority funding strategy:
    1) pedestrian facilities like sidewalks and crosswalks
    2) bicycle facilities to safely separate motorized from non motorized modes of transportation
    3) public mass transit service like bus and rail service which is shared with other passengers
    4) commercial vehicles for the rapid movement of goods and services
    5) private vehicles

Climate Change Resiliency and Adaptation

The effects of global climate change to our City are coming and can be divided into four major impact areas:

- Rising seas – both from the thermal expansion of water as the seas warm and from the addition of water into the seas from melting polar ice.
- Increase in temperature (estimated 2^{o}F by 2060, 4^{o}F by 2100) and evapotranspiration (estimated 20% by 2100).
- Changes in rainfall, with corresponding changes in flood and stormwater management requirements and drought mitigation.
- Changes in the frequency and intensity of tropical cyclones.

The Intergovernmental Panel on Climate Change projects sea levels to rise from 7 to 23 inches by the end of the century. The South Florida Water Management District currently projects sea level rise between 5 and 20 inches by 2060 (their 50 year planning horizon). It will require that coastal communities take measures to counteract saltwater intrusion. It is important to note that at the same time sea levels rise, our stormwater retention capacity declines. The City must begin planning and upgrading our drinking water reservoir and storm water systems to withstand this change.

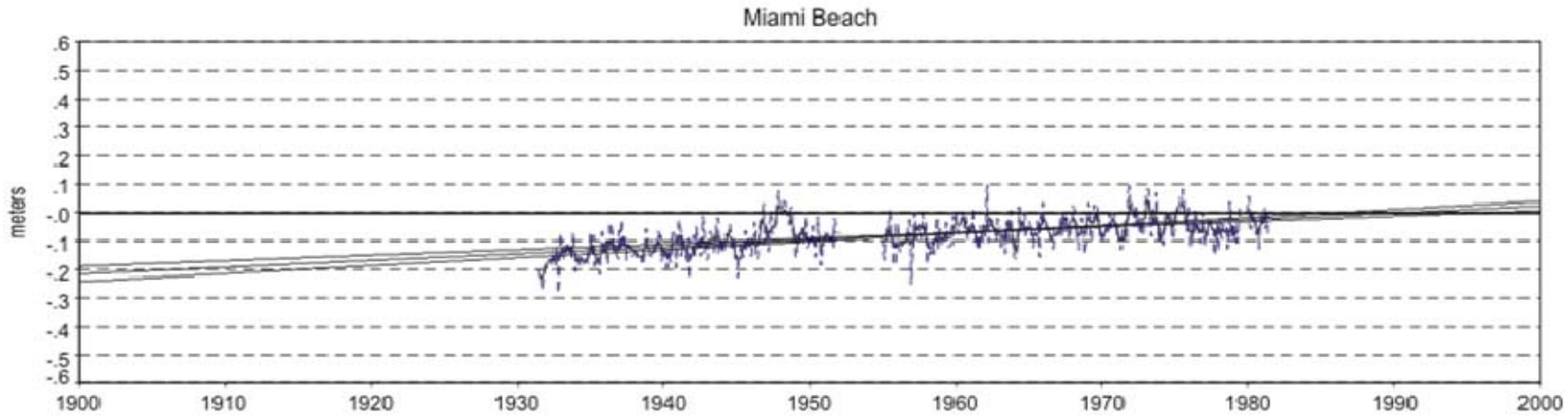
Increases in temperature will have negative effects on human, ecological, and agricultural systems that will increase water demand and require changes in the way we currently manage our precious water resource. The Intergovernmental Panel on Climate Change estimates about a 0.4^{o}F increase in global temperature per decade. Increased evapotranspiration will result in more severe drought conditions when they occur. At the same time rainfall is projected to either increase or decrease by as much as 20% manifesting itself as more intense rainfall when it occurs with longer dry periods in between.

The consensus from the experts on the effects of global climate change on tropical cyclones is one of opposing forces. Warming of the atmosphere and seas are predicted to lessen the frequency of storms because of increased wind shear but storms that do form will have a stronger intensity. While tropical storms and hurricanes are unpredictable they do provide the regions with rainfall that could exacerbate flooding or drought conditions.

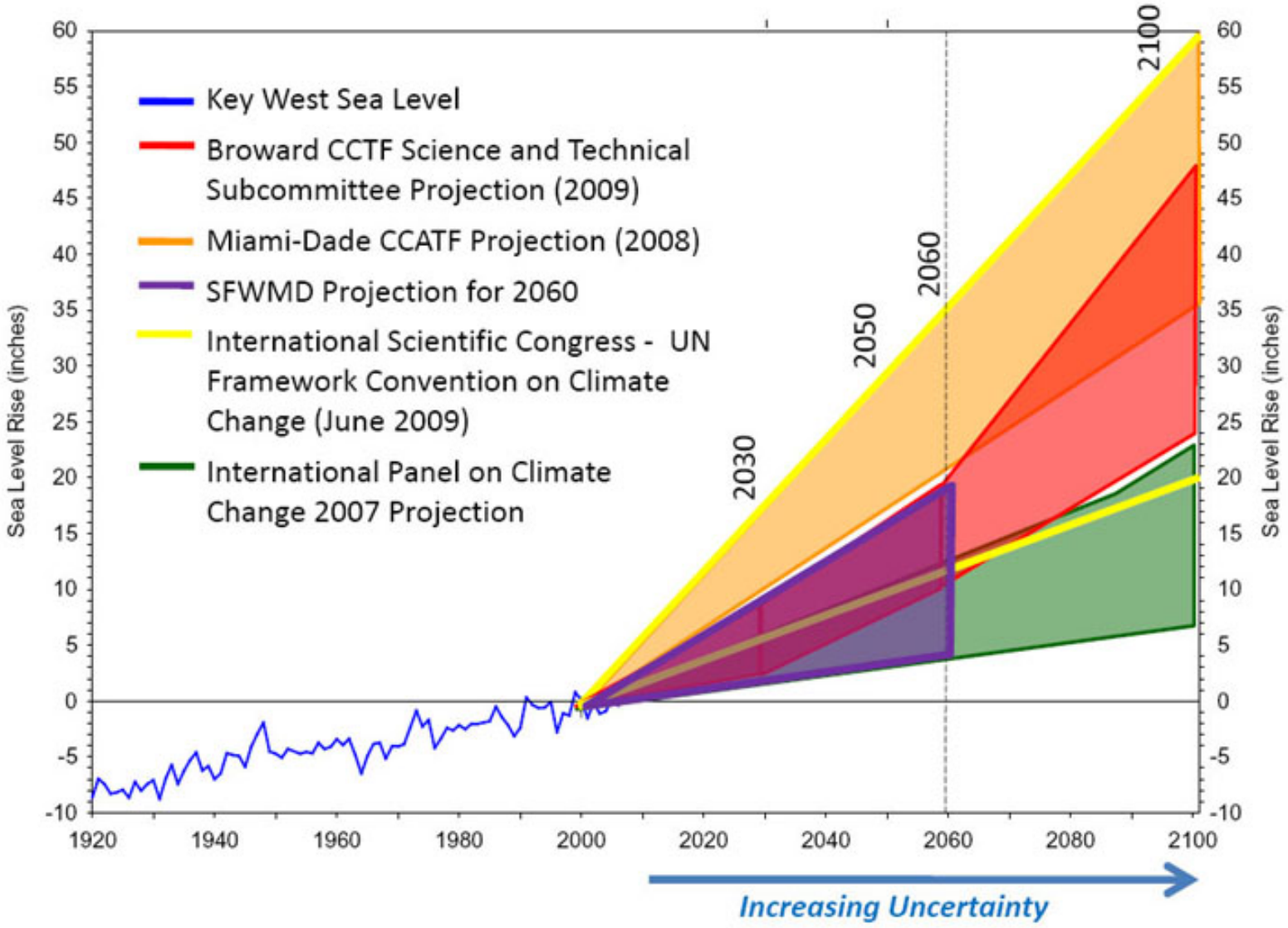
The Green Task Force recommends that the City develop a proactive response to climate change resiliency and take the adaptation actions described below to mitigate the effect of climate change and protect our valuable water resources:

- **Protect Existing Water Supplies** – move toward **national landmark protection status for Grassy Waters Preserve**.
- Reengineer the stormwater system so that storm water doesn't spill into the Lake Worth Lagoon, but instead is used to recharge the coastal aquifer and stem saltwater intrusion.

- Limit flows entering storm water drainage systems through source control, bio-retention (e.g.: created wetlands), and infiltration basins (e.g.: pervious streets).
- Incentivize storm water source control on (private) new construction and existing buildings and (public) capital projects.
- Increase the amount of pervious surface to allow rain water to more naturally enter the surficial aquifer and stem saltwater intrusion.
- Wastewater Recovery and Reuse – promote the capture and use of irrigation quality water and gray water where feasible.
- Consider all conservation alternatives and potential alternative water supplies and reservoirs.
- Lead in ***Soft Path*** water governance *(described in the Water Section of this document)*
- Develop demand management conservation strategies and place flood and drought risk at the heart of urban design.
- Promote and, in some cases require, irrigation cisterns and the use of irrigation quality water.
- The City should host a rainwater harvesting conference.
- 30% - 60% of a typical City's energy use is on drinking water and waste water delivery, management, and treatment. Energy and water management are linked. The City of West Palm Beach must do all it can by synergizing efforts to optimize efficiency in both areas.



This graph shows a 2.39mm/year or .78 ft/100 year increase in mean sea level trend for nearby Miami Beach, FL
This measurement record was taken between 1931 and 1981



Sea level rise projections by local governments, the South Florida Water Management District, the IPCC, and the UN

Graph courtesy of Dr Nancy Gassman, Broward County

Appendix A: APA Planning Actions toward Sustainability Guide

I. Land Use Actions toward sustainability

A. Reduced dependence upon fossil fuels, underground metals, and minerals by promoting:

1. Compact development that minimizes the need to drive.
2. A mix of integrated community uses - housing, shops, workplaces, schools, parks, civic facilities - within walking or bicycling distance.
3. Human-scaled development that is pedestrian-friendly.
4. Development oriented around public transit.
5. Home-based occupations and work that reduce the need to commute.
6. Local food production and agriculture that reduces the need for long-range transport of food.

B. Reduction of activities that encroach upon nature through:

1. Guiding development to existing developed areas and minimizing development in outlying, undeveloped areas.
2. Maintaining a well-defined "edge" around each community that is permanently protected from development
3. Remediation and redevelopment of brownfield sites and other developed lands that suffer from environmental or other constraints.
4. Promote regional and local designs that respect the regional ecosystems and natural functions which support human communities.
5. Creation of financial and regulatory incentives for infill development; elimination of disincentives.

C. Meeting human needs fairly and efficiently by:

1. Eliminating disproportionate environmental burdens and pollution experienced by historically disadvantaged communities.

II. Transportation Actions toward sustainability

A. Reduced dependence upon fossil fuels through:

1. Reduction in vehicle trips and vehicle miles traveled through compact, infill, and mixed use development.
2. Use of alternatives to the drive-alone automobile, including walking, bicycling, and public transit.
3. Development and use of vehicles powered by renewable fuel sources.

4. Local street designs that encourage pedestrian and bicycle use and discourage high speed traffic.
5. Street designs that support/enhance access between neighborhoods and to neighborhood-based commercial developments.

B. Meeting human needs fairly and efficiently, by:

1. Providing affordable, efficient transportation alternatives for everyone, especially low-income households, elders, and others comprising 30% of the national population that cannot or do not own cars.

III. Housing and Building Actions toward sustainability

A. Reduced dependence upon fossil fuels, extracted underground metals, and minerals through:

1. Solar-oriented design of development.
2. Use of regenerative energy heating and cooling source alternatives to fossil fuels.
3. Provision of housing near places of employment.
4. Selection of building materials with low "embodied energy," which require less energy-intensive production methods and long-distance transport.

B. Reduced dependence upon chemicals and unnatural substances through:

1. Use of chemical-free and toxic-free building materials.
2. Reduction of waste and recycling of building waste materials and promoting recycling by residents.
3. Landscape design standards that minimize the use of pesticides and herbicides.

C. Reduction of activities that encroach upon nature through:

1. Reuse of existing buildings and sites for development.
2. Compact and clustered residential development, including reduced minimum lot sizes.
3. Removal of code obstacles to using recycled materials for building.
4. Water conservation measures, to minimize environmentally destructive side effects of developing new water sources.
5. Responsible storm water management that reuses and restores the quality of on-site run-off (example, constructed marsh or wetlands systems).
6. Reduction or elimination of impervious paving materials.
7. Use of recycled building materials, helping to minimize the mining of virgin materials.
8. Use of "cradle-to grave" (life cycle) analysis in decision-making for materials and construction techniques

9. Recycling of building construction waste materials and appropriate deconstruction techniques.

D. Meeting human needs fairly and efficiently by providing for:

1. Communities and housing developments that are socially cohesive, reduce isolation, foster community spirit, and sharing of resources (example: cohousing).
2. Housing that is affordable to a variety of income groups within the same community.
3. A diversity of occupants in terms of age, social, and cultural groups.
4. Housing located near employment centers.

IV. Economic Development Actions toward sustainability

A. Encourage businesses that reduce dependence upon fossil fuels, extracted underground metals, and minerals; for example, businesses that:

1. Reduce employee and product transport vehicle trips.
2. Use regenerative energy alternatives to fossil fuel, or that are working to reduce dependence on fossil fuel.
3. Do not use or are reducing use of cadmium, lead, and other potentially toxic metals and minerals that can accumulate in the biosphere.
4. Are locally-based or home-based, reducing or eliminating the need to commute.

B. Encourage businesses that reduce dependence upon chemicals and unnatural substances; for example, enterprises that:

1. Actively seek ways to minimize the use of toxic manufactured substances.
2. Meet or exceed clean air standards.
3. Minimize or reduce use of chemicals and employ proper disposal and recycling mechanisms for these.
4. Use agricultural methods that reduce or minimize use of pesticides, herbicides, and manufactured fertilizers.
5. Use byproducts of other processes or whose wastes can be used as the raw materials for other industrial processes.

C. Encourage businesses that reduce activities that encroach upon nature; for example, enterprises that:

1. Use recycled or by-products of other businesses, minimizing the use of virgin raw materials.
2. Prevent activities that emit waste or pollutants into the environment.
3. Use agricultural approaches that build up rather than deplete topsoil, and conserve or minimize water use.
4. Maintain natural terrain, drainage, and vegetation, minimizing disruption of natural systems.
5. Re-use processed water.

D. Encourage businesses that meet human needs fairly and efficiently; for example, enterprises that:

1. Fulfill local employment and consumer needs without degrading the environment.
2. Promote financial and social equity in the workplace.
3. Create vibrant community-based economies with employment opportunities that allow people economic self-determination and environmental health.
4. Encourage locally-based agriculture, such as community supported agriculture, providing a nearby source of fresh, healthy food for urban and rural populations.

V. Open Space / Recreation Actions toward sustainability

A. Reduced dependence upon fossil fuels, extracted underground metals, minerals, by:

1. Providing recreational facilities within walking and bicycling distance.
2. Using local materials and native plants in facility design to reduce transport distances and reduce maintenance.
3. Landscape and park maintenance minimizing use of equipment powered by fossil fuels.

B. Reduced dependence upon chemicals and synthetic substances; for example by:

1. Use of alternatives to chemical pesticides and herbicides in park and facility maintenance (example: integrated pest management).

C. Activities that reduce encroachment upon nature, such as:

1. Funding for open space acquisition.
2. Preservation of wilderness areas.
3. Urban gardens, community gardens.
4. Preservation of wildlife habitats and biological diversity of area ecosystems.
5. On-site composting of organic waste.
6. Restoration of damaged natural systems through regenerative design approaches.
7. Creation of systems of green spaces within and among communities.
8. Development of responsible alternatives to landfilling of solid waste.
9. Using regionally native plants for landscaping.
10. Encouraging landscape and park maintenance that reduce the use of mowers, edgers, and leaf blowers.

VI. Infrastructure Actions toward sustainability

A. Reduced dependence upon fossil fuels, extracted underground metals, minerals, by promoting:

1. Facilities that employ renewable energy sources, or reduce use of fossil fuel for their operations and transport needs.

B. Reduced dependence upon chemicals and synthetic substances, by promoting:

1. Treatment facilities that remove or destroy pathogens without creating chemically-contaminated byproducts.
2. Design approaches and regulatory systems that focus on pollution prevention, re-use and recycling.

C. Reduction of activities that encroach upon nature, through:

1. Promotion of innovative sewage and septic treatment that discharges effluent meeting or exceeding federal drinking water standards while minimizing or eliminating the use of chemicals (example: greenhouse sewage treatment facilities).
2. Recognition of the "cradle to grave" costs of waste generation and disposal.
3. Promotion of and removal of regulatory barriers to composting and gray water reuse systems.

D. Meeting human needs fairly and efficiently, by:

1. Cleaning, conserving, and reusing wastewater at the site, neighborhood or community level, reducing the need for large, expensive collection systems and regional processing facilities.

VII. Growth Management Actions toward sustainability

A. Reduced dependence upon fossil fuels, extracted underground metals, and minerals, by promoting:

1. Development near existing transport systems; minimizing need for new road and highway construction.

B. Reduction of activities that encroach upon nature, by promoting:

1. Appropriate development and population growth policies linked to carrying capacity of natural systems and community facilities.
2. Development patterns that respect natural systems such as watersheds and wildlife corridor.

C. Meeting human needs fairly and efficiently, by promoting:

1. Fair and equitable growth management policies maintaining diversity in local populations and economies.

VIII. Floodplain Management Actions toward sustainability

A. Reduction of activities that encroach upon nature, by:

1. Guiding development away from floodplains.
2. Guiding development away from barrier beaches.
3. Preserving or restoring wetland areas along rivers for natural flood control.

VIX. Watershed Planning / Management Actions toward sustainability

A. Reduction of activities that encroach upon nature, such as:

1. Preservation and enhancement of water quality.
2. Reduction in water use.
3. Recharge of groundwater basins.
4. Use of flood control and stormwater techniques that enhance and restore natural habitats.
5. Prevention of wetlands destruction; restoration of degraded wetlands.

X. Resource Conservation Actions toward sustainability

A. Reduced dependence upon fossil fuels, extracted underground metals, and minerals, by:

1. Minimizing energy use.
2. Encouraging the development of renewable energy sources.
3. Discouraging the use of products that utilize packaging derived from non-renewable, non-degradable resources.
4. Promoting the recycling of waste materials derived from non-renewable, non-degradable resources.
5. Developing community gardens that reduce the need for long-range transport of food and associated consumption of fossil fuels.

B. Reduction of activities that encroach upon nature; for example, by:

1. Promoting the preservation and planting of trees and other vegetation that absorb carbon dioxide and air pollutants.

XI. Planning Processes / Education Actions toward sustainability

A. Support activities that reduce dependence upon fossil fuels, extracted underground metals, and minerals; for example, by:

1. Encouraging and enabling people to use transport other than gasoline-powered vehicles.

B. Support activities that reduce dependence upon chemicals and unnatural substances; for example, by:

1. Educating citizens and public servants about both short- and long-term risks associated with the use and disposal of hazardous materials.

C. Support activities that reduce encroachment upon nature; for example, through:

1. Educational efforts to reduce levels of consumption and waste generation at the household and community levels.

D. Support meeting human needs fairly and efficiently by:

1. Integrally involving local community residents in setting the vision for and developing plans for their communities and regions.
2. Establishing avenues for meaningful participation in decision-making for all citizens and in particular for historically disadvantaged people.
3. Providing for equitable educational opportunities for all members of society.
4. Promoting retraining of those displaced in the short-term by a shift to a more sustainable economy.

www.planning.org/policy/guides/adopted/sustainability.htm

Appendix B: Framework for the Plan

The themes of this report follow the framework of the United Nations Urban Environmental Accords - Green Cities Declaration.

Urban Environmental Accords cover seven environmental categories that cities can address to enable sustainable urban living and improve the quality of life for urban dwellers: energy, waste reduction, urban design, urban nature, transportation, environmental health, and water.

- Energy: Renewable Energy, Energy Efficiency, Climate Change
- Waste Reduction: Zero Waste, Manufacturer Responsibility, Consumer Responsibility
- Urban Design: Green Building, Urban Planning, Slums (Low income neighborhoods)
- Urban Nature: Parks, Habitat Restoration, Wildlife
- Transportation: Public Transportation, Clean Vehicles, Reducing Congestion
- Environmental Health: Toxics Reduction, Healthy Food Systems, Clean Air
- Water: Drinking Water Access, Source Water Conservation, Waste Water Reduction

The Accords lay out 21 practical actions cities can take to meet the needs of the present without compromising the ability of future generations to meet their own needs, or the health of the planet.

Signatory cities shall work to implement the following Urban Environmental Accords.

Each year, cities shall pick three actions out of the following list to adopt as policies or laws.

(21 actions @ 3 per year = 7 years to implement)

Energy

Action 1: Adopt and implement a policy to increase the use of renewable energy to meet ten per cent of the city's peak electric load within seven years.

Action 2: Adopt and implement a policy to reduce the city's peak electric load by ten per cent within seven years through energy efficiency, shifting the timing of energy demands, and conservation measures.

Action 3: Adopt a citywide greenhouse gas reduction plan that reduces the jurisdiction's emissions by twenty-five per cent by 2030, and which includes a system for accounting and auditing greenhouse gas emissions.

Waste Reduction

Action 4: Establish a policy to achieve zero waste going to landfills and incinerators by 2040.

Action 5: Adopt a citywide program that reduces the use of a disposable, toxic, or non-renewable product category by at least fifty per cent in seven years.

Action 6: Implement "user-friendly" recycling and composting programs, with the goal of reducing by twenty per cent per capita solid waste disposal to landfill and incineration in seven years.

Urban Design

Action 7: Adopt a policy that mandates a green building rating system standard that applies to all new municipal buildings.

Action 8: Adopt urban planning principles and practices that advance higher density, mixed use, walkable, bikeable, and disabled-accessible neighborhoods which coordinate land use and transportation with open space systems for recreation and ecological restoration.

Action 9: Adopt a policy or implement a program that creates environmentally beneficial jobs in slums and/or low-income neighborhoods.

Urban Nature

Action 10: Ensure that there is an accessible public park or recreational open space within half-a-kilometer of every city resident by 2015.

Action 11: Conduct an inventory of existing canopy coverage in the city and then establish a goal based on ecological and community considerations to plant or maintain canopy coverage in not less than 50 per cent of all available sidewalk planting sites.

Action 12: Pass legislation that protects critical habitat corridors and other key habitat characteristics (e.g.: water features, food-bearing plants, shelter for wildlife, use of native species, etc.) from unsustainable development.

Transportation

Action 13: Develop and implement a policy which expands affordable public transportation coverage to within half-a-kilometer of all city residents in ten years.

Action 14: Pass a law or implement a program that eliminates leaded gasoline (where it is still used); phases down sulfur levels in diesel and gasoline fuels, concurrent with using advanced emission controls on all buses, taxis, and public fleets to reduce particulate matter and smog-forming emissions from those fleets by 50 per cent in seven years.

Action 15: Implement a policy to reduce the percentage of commuter trips by single occupancy vehicles by ten per cent in seven years.

Environmental Health

Action 16: Every year, identify one product, chemical, or compound that is used within the city that represents the greatest risk to human health and adopt a law and provide incentives to reduce or eliminate its use by the municipal government.

Action 17: Promote the public health and environmental benefits of supporting locally grown organic foods. Ensure that twenty per cent of all city facilities (including schools) serve locally grown and organic food within seven years.

Action 18: Establish an Air Quality Index (AQI) to measure the level of air pollution and set the goal of reducing by 10 per cent in seven years the number of days categorized in the AQI range as "unhealthy" or "hazardous."

Water

Action 19: Develop policies to increase adequate access to safe drinking water, aiming at access for all by 2015. For cities with potable water consumption greater than 100 liters per capita per day, adopt and implement policies to reduce consumption by 10 per cent by 2015.

Action 20: Protect the ecological integrity of the city's primary drinking water sources (i.e., aquifers, rivers, lakes, wetlands and associated ecosystems).

Action 21: Adopt municipal wastewater management guidelines and reduce the volume of untreated wastewater discharges by ten per cent in seven years through the expanded use of recycled water and the implementation of a sustainable urban watershed planning process that includes participants of all affected communities and is based on sound economic, social, and environmental principles.

Appendix C – Proposed Zoning Regulations for Community and Urban Market Gardens

Community Gardens: Non-commercial only

(1) *Purpose and intent.* To allow a group of residents to grow produce and horticultural plants for their consumption and enjoyment, without creating adverse environmental impact or land use incompatibilities. To function effectively, a community garden shall have established operating rules and a garden coordinator.

(2) *Definition.* Community garden means an area of land managed by an individual or a group of individuals growing and harvesting a mixture of food crops and/or non-food, ornamental crops, such as flowers, for personal or group use, consumption, or donation. Community gardens may be divided into separate plots for cultivation by one or more individuals or may be farmed collectively by members of the group. (Nashville, TN & Cleveland, OH)

(3) *Exception.* This section pertains to community gardens that are a primary and singular use on the property and shall not be construed so as to apply to any private garden established as an accessory use to an existing principal residential use.

(4) *General provisions.* Community gardens may be established on any residentially zoned parcel, excluding Residential Planned Developments ("RPD"), and Recreation and Open Space ("ROS") zoning district with the expressed permission of the property owner, or as an accessory use to any religious place of assembly, institutional use, or community center located within the residential and ROS zoning districts.

(5) *Additional application requirements.* Community gardens shall comply with the following specific requirements:

a. ***Location*.** Permitted in all Residential and Recreation and Open Space ("ROS") Zoning Districts with extra requirements, excluding Residential Planned Developments ("RPD"), or permitted with extra requirements when accessory to any school, religious place of assembly, institutional use, or community center located within the residential or Recreation and Open Space ("ROS") zoning district.

b. ***Environmental assessment.*** Any person or group who wishes to establish a community garden with plant beds that are not separated from the ground by a physical barrier shall be required to obtain a Phase I Environmental Site Assessment ("ESA") to determine if any soil contamination exists. Such soil must be tested for any contaminants that would render it unsuitable for cultivating food on topsoil, including, but not limited to, lead and other toxic heavy metals; industrial solvents; gasoline; oils and greases; perclorethylene; and other chemicals that can be transmitted to people via soil contact or consumption of foods grown in such soil.

If any historical sources of contamination are identified in the ESA then it is incumbent upon the applicant to conduct all appropriate testing to determine the type and level of contamination; and conduct the appropriate remediation procedures to ensure that soil is suitable for gardening. (National Policy & Legal Analysis Network to Prevent Childhood Obesity "NPLAN", City of Detroit)

c. ***Operation limitations.*** The community garden shall grow at least four (4) different food crops and/or non-food ornamental crops. No gardening activities shall take place before sunrise or after sunset. Motorized-powered equipment of greater than ten (10) horsepower is prohibited. (Leon County, St. Petersburg, FL)

d. ***Maintenance responsibilities.*** The owner of the property on which the community garden is located shall be responsible for maintaining the property so that it does not become overgrown with weeds, infested by invasive exotic plants or vermin, or a source of erosion or stormwater runoff. (Leon County, FL)

1. Abandonment – In the event that the community garden use is not in operation for 30 consecutive days or more, the site shall be restored pursuant to Section 94-450 of the ZLDR.

e. ***Organic Practices****.* The use of pesticides, herbicides and weed killers, insecticides made from synthetic chemical materials and chemicals is prohibited. The use of materials and practices used for organic production found in the Organic Materials Review Institute ("OMRI") guidelines is strongly encouraged.

f. **Outdoor *Storage of compost and organic matter.*** Compost and organic matter to be used for the community garden shall be contained in appropriate containers, shall not be stored in open air, and shall have a 25-foot setback from all rights-of-way and a five (5) foot setback from all property lines. Such containers shall be maintained to prevent odors and prevent the harborage of rodents and pests.

g. ***Storage of toxic or flammable materials*****.** Toxic or flammable materials are regulated as follows:

1. Only fuel used for the operation of lawnmowers or other combustion engine-driven gardening machinery is permitted and shall be kept in sealed containers in locked, ventilated structures in accordance of the National Fire Protection Association ("NFPA") 30: Flammable and Combustible Liquids Code. No other flammable materials or chemicals are allowed;

2. Tires shall not be stored on garden sites; and, [1]

3. Toxic materials, such as pressure treated wood (creosote), shall not be used where they will come into contact with soils that are growing food.

h. ***Drainage.*** The site shall be designed and maintained to prevent draining onto adjacent property.

i. ***Sale of produce and horticultural plants.*** A community garden is not intended to be a commercial enterprise; however, there may be occasions when surplus is available, which shall only be sold off the premises. (St. Petersburg, FL)

j. ***Sheds.*** If provided, the sheds shall have a maximum square footage of four percent (4%) of the gross community garden area and shall have a front setback of a minimum of 50% of the lot depth and meet the accessory setback requirements for the side and rear as provided in the ZLDR. If located within a corner lot, it shall be placed on the non right-of-way side of the lot.

k. ***Required planting setbacks.*** All planting shall be planted no closer than five (5) feet to the front, side or rear property lines. Cultivated area shall not encroach onto adjacent properties. All plantings shall comply with the visibility at intersections requirements, pursuant to Section 94-305(e) of the ZLDR. (St. Petersburg, FL & Bloomington, IN)

1. The five (5) foot setback shall contain mulch (excluding red mulch or mulch made from toxic wood), sod, pavers or rocks and shall be contained within the property.

l. ***Parking.*** No parking allowed on site.

m. ***Fencing.*** All fencing shall comply with Section 94-302 of the ZLDR, except for the following: (St. Petersburg, FL)

1. Hedges, if provided along the frontage line, shall not exceed four (4) feet in height and must be located outside the fence.

n. ***Signage***. Signs shall not exceed four (4) square feet in area and shall not exceed five (5) feet in height and shall be within and visible from the frontage line. The sign shall be limited to identification, information and directional signs, contact information of a garden coordinator and sponsorship information, if provided, shall be secondary to other sign information in terms of sign area and font size. (Cleveland, OH)

o. ***Prohibition on agricultural tax exemption.*** A property owner shall be prohibited from seeking an agricultural tax exemption afforded by the local, state, or federal tax regulations.

p. ***Site plan approval required.*** A Level I Site Plan approval is required for the establishment of a community garden pursuant to Section 94-35 of the ZLDR. The application requires property owner's consent.

q. ***Operating rules and garden coordinator.*** The application shall include established operating rules addressing the governance structure of the garden and maintenance and security responsibilities, as well as the contact information of a garden coordinator who shall be responsible for the management of the community garden. The applicant shall be responsible for notifying the Planning and Zoning Department of any updated management contact information. A sample of operating rules is available at the Planning and Zoning Department. (NPLAN)

r. ***Livestock and animals prohibited.*** The raising of poultry or other livestock, fish, and the keeping of bees shall be prohibited.

s. ***Biennial review.*** The regulations and standards for community gardens shall be reviewed on a biennial or more frequent basis as may be required by the City Commission to ensure their efficacy and fairness. The review shall document any outstanding issues and provide any recommendations for modifications to the standards and regulations set forth herein. (Leon County, FL)

(6) Additional standards.

a. ***Size limitation.*** A community garden shall not be greater in size than 12,000 square feet.

Urban Market Garden: Commercial only

(1) *Purpose and intent.* To ensure that urban market garden areas are appropriately located and protected to meet the needs for local food production, reduce "distance to plate", and to enhance community health, community education, garden-related job training, natural resource protection, preservation of green space, and community enjoyment. Because urban market gardens will typically exist in close proximity to residential and other uses, concern will be given to ensuring compatibility between uses. Urban market gardens are encouraged to practice organic farming methods to minimize its impacts on the environment and to further sustainable communities. (Madison Wisconsin, City of Vancouver)

(2) *Definitions:*

Urban Market Garden means an area of land managed and maintained by an individual or group of individuals growing and harvesting food crops and/or non-food, ornamental crops, such as flowers, for commercial sale, frequently sold directly to consumers and restaurants. Urban market gardens may be divided into separate plots for cultivation by one or more individuals or may be farmed collectively by members of the group and may include common areas maintained and used by group members. It is distinguishable from other types of farming by the diversity of crops grown on a small area of land, typically from under one acre to a few acres, or sometimes in greenhouses grown on site, including but not limited to using growing methods such as hydroponics. (Nashville, Tenn.)

Hydroponics means a method of growing plants using mineral nutrient solutions, in water, without soil. Terrestrial plants may be grown with their roots in the mineral nutrient solution only or in an inert medium, such as perlite, gravel, or mineral wool.

Greenhouse means a building made of glass, plastic, or fiberglass in which plants are cultivated. (Cleveland, Ohio)

Hoophouse means a structure covered with translucent plastic, constructed in a "half-round" or "hoop" shape. (Cleveland, Ohio)

Coldframe means an unheated outdoor structure consisting of a wooden or concrete frame and a top of glass or clear plastic, used for protecting seedlings and plants from the cold. (Cleveland, Ohio)

Organic farming means a form of agriculture that relies on crop rotation, green manure, compost, biological pest control, and mechanical cultivation to maintain soil productivity and control pests, excluding or strictly limiting the use of synthetic fertilizers and synthetic pesticides, plant growth regulators, livestock feed additives, and genetically modified organisms. Organic farming relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. (International Federation of Organic Agriculture Movements)

(3) *Exception.* This section pertains to urban market gardens that are a primary or accessory use on the property and where crops are grown on site. It does not apply to nurseries, botanical gardens or other uses that are otherwise listed pursuant to the Zoning and Land Development Regulations ("ZLDR").

(4) *General provisions.* Urban market gardens may be established on any Neighborhood Commercial ("NC"), General Commercial ("GC"), Community Service ("CS") and Industrial ("I") zoned parcel with expressed permission of the property owner; or as an accessory use to any religious place of assembly, institutional use (i.e. school, hospital), or community center located within these zoning districts.

(5) *Additional application requirements.* Urban market gardens shall comply with the following specific requirements:

a. ***Location.*** Permitted in Neighborhood Commercial ("NC"), General Commercial ("GC"), Community Service ("CS") and Industrial ("I") zoning districts with extra requirements; or permitted with extra requirements when accessory to any religious place of assembly, institutional use (i.e. school, hospital), or community center located within these zoning districts.

   1. Planned Developments - Permitted with a Class B Special Use Permit in Residential Planned Development ("RPD"), Commercial Planned Development ("CPD"), Community Service Planned Development ("CSPD") and Industrial Planned Development ("IPD") zoning districts.

b. ***Environmental assessment.*** Any person or group who wishes to establish an urban market garden with plant beds that are not separated from the ground by a physical barrier shall be required to obtain a Phase I Environmental Site Assessment ("ESA") to determine if any soil contamination exists. Such soil must be tested for any contaminants that would render it unsuitable for cultivating food on topsoil, including, but not limited to, lead and other toxic heavy metals; industrial solvents; gasoline; oils and greases; perclorethylene; and other chemicals that can be transmitted to people via soil contact or consumption of foods grown in such soil.

   If any historical sources of contamination are identified in the ESA then it is incumbent upon the applicant to conduct all appropriate testing to determine the type and level of contamination; and conduct the appropriate remediation procedures to ensure that soil is suitable for gardening. (National Policy & Legal Analysis Network to Prevent Childhood Obesity "NPLAN", City of Detroit)

c. ***Operation limitations.*** No gardening activities shall take place before sunrise or after sunset. The sale of produce shall be limited to no later than 9 PM. Motorized-powered equipment for cultivating or maintenance purposes of greater than ten (10) horsepower is prohibited. (Leon County, St. Petersburg, FL)

d. ***Maintenance responsibilities.*** The owner of the property on which the urban market garden is located shall be responsible for maintaining the property so that it does not become overgrown with weeds, infested by invasive exotic plants or vermin, or a source of erosion or stormwater runoff and shall meet the requirements as applicable through the City of West Palm Beach Code of Ordinances. (Leon County, FL,)

1. Abandonment – In the event that the urban market garden use is not in operation for 30 consecutive days or more, the site shall be restored pursuant to Section 94-450 of the ZLDR; and,

2. Class B Special Use Permit Abandonment – If the urban market garden use was approved through a Class B Special Use Permit and is abandoned for 30 days or more, then the Class B Special Use Permit shall be considered null and void and the site shall be restored in accordance to Section 94-450 of the ZLDR.

e. ***Organic Practices****.* The use of pesticides, herbicides and weed killers, insecticides made from synthetic chemical materials and chemicals is prohibited. The use of materials and practices used for organic production found in the Organic Materials Review Institute ("OMRI") guidelines is strongly encouraged.

f. ***Outdoor storage of compost and organic matter prohibited.*** Compost and organic matter to be used for the urban market garden shall be contained in appropriate containers, shall not be stored in open air, and shall have a 25-foot setback from all rights-of-way and a five (5) foot setback from all property lines. Such containers shall be maintained to prevent odors and prevent the harborage of rodents and pests.

g. ***Storage of toxic or flammable materials*****.** Toxic or flammable materials are regulated as follows:

1. Only fuel used for the operation of lawnmowers or other combustion engine-driven gardening machinery is permitted and shall be kept in sealed containers in locked, ventilated structures in accordance of the National Fire Protection Association ("NFPA") 30: Flammable and Combustible Liquids Code. No other flammable materials or chemicals are allowed.

2. Tires shall not be stored on garden sites; and, [1]

3. Toxic materials, such as pressure treated wood (creosote), shall not be used where they will come into contact with soils that are growing food.

h. ***Drainage.*** The site shall be designed and maintained to prevent draining onto adjacent property.

i. ***Sale of produce and horticultural plants.*** The produce and horticultural plants grown in the urban market garden may be sold on or off the premises and shall obtain a Business Tax/Certificate of Use pursuant to the City Code of Ordinances.

j. ***Structures.*** All structures shall meet the provisions of the City of West Palm Beach Code of Ordinances for height, setbacks, etc. The following uses and structures may be permitted in an urban market garden:

1. Greenhouses, hoophouses, coldframes, and similar structures used to extend the growing season; and,

2. Sheds, shade pavilions, farm stands, restrooms, offices or other structures that are not used for cultivating crops; the combined area of all structures listed in j.2. shall not exceed fifteen percent (15%) of the gross urban market garden area. (Cleveland, Ohio & City of Detroit)

k. ***Required planting setbacks and buffer requirements.*** All planting shall be planted no closer than ten (10) feet to the front, side or rear property lines. Cultivated area shall not encroach onto adjacent properties. All plantings shall comply with the visibility at intersections requirements pursuant to Section 94-305(e) of the ZLDR. (based on St. Petersburg, FL & Bloomington, IN)

1. A minimum five (5) foot wide perimeter landscape buffer and right-of-way landscaping that comply with the ZLDR is required; and,

2. The remaining setback shall contain mulch (excluding red mulch or mulch made from toxic wood), sod, pavers or rocks and shall be contained within the property.

l. ***Parking.*** Required parking shall be as follows:

1. The urban market garden shall have a minimum of two (2) on-site parking spaces per acre or fraction thereof; and, (City of Detroit)
2. One (1) on-site parking space per 200 square feet of building/structure, excluding sheds, greenhouses, hoophouses, or coldframe. (PBC ULDC, ZLDR)

m. ***Fencing.*** All fencing shall comply with the requirements for the applicable zoning district, set forth in the Fence, Wall and Hedge Regulations of the ZLDR.

n. ***Signage*****.** For the expressed use of an urban market garden, high freestanding signs pursuant to the ZLDR, Article XIII are prohibited. All other signs may be permitted pursuant to the ZLDR, Article XIII.

o. ***Prohibition on agricultural tax exemption****.* A property owner shall be prohibited from seeking an agricultural tax exemption afforded by the local, state, or federal tax regulations.

p. ***Site plan approval required.*** A Level I Site Plan approval is required for the establishment of an urban market garden pursuant to Section 94-35 of the ZLDR. The application requires the property owner's consent.

q. ***Livestock and animals prohibited.*** The raising of poultry or other livestock, fish, and the keeping of bees shall be prohibited.

r. ***Biennial review.*** The regulations and standards for urban market gardens shall be reviewed on a biennial or more frequent basis as may be required by the City Commission to ensure their efficacy and fairness. The review shall document any outstanding issues and provide any recommendations for modifications to the standards and regulations set forth herein. (Leon County, FL)

(6) Additional standards.

a. ***Size limitation.*** An urban market garden shall not be greater in size than four (4) acres.

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1. Tires can transmit toxic heavy metals such as lead and cadmium into soils. (City of Detroit supplement, April 2004, 16.)

A great example of an Organic Community Garden in nearby Delray Beach, FL

Appendix D – Green Task Force Recommendations Made Along the Way

• February 18, 2010: The Green Task Force recommends to the Mayor that the City adjust its codes to allow a small number of backyard egg laying hens to promote better nutrition and food security, allowing homeowner's associations to opt-out.

• October 15, 2009: The Green Task Force recommends that the Mayor move forward on the creation of urban farms and community gardens with consideration for water and other resources, and to seek out available grant funds to accomplish this project.

• October 15, 2009: The Green Task Force recommends to the Mayor that a letter and/or resolution from the City Commission be sent to NOAA/National Marine Fisheries Service and any other agencies determined by the Mayor or City Commission to move the Critical Habitat Designation boundary for *Acropora* coral North to the Lake Worth Inlet in support of the petition filed by Palm Beach Reef Rescue.

• August 6, 2009: The Green Task Force recommends to the Mayor that the City accept free "*turn off the lights*" light switch stickers from FPL for City buildings that do not have automated lighting and to promote distribution of stickers to other businesses and organizations in the City.

• August 6, 2009: The Green Task Force recommends to the Mayor that the City develop a tree planting program which allows citizens to donate native trees for planting within the City.

• July 2, 2009: The Green Task Force recommends to the Mayor that the following Water Conservation measures be adopted:

- To provide subsidy and/or rebate program, possibly supported by grants, which would retrofit interested West Palm Beach property owners with low flush toilet replacements, low water use washing machines, hot water recirculation devices, drip irrigation, rain sensors, and rain barrels.

- To amend the City's code to encourage rainwater harvesting and allow irrigation cisterns for applicable homes and commercial properties.

- To require rain sensors with automatic shut-off for new irrigation systems and to phase into existing irrigation systems.

- To amend the City's landscape requirements (as part of our building code) to require the use of native and xeric plants and reduce the required area of planting water-thirsty grass lawns, while at the same time ensuring adequate pervious surface for rain/storm water infiltration.

- To aggressively pursue a policy of removal of invasive non-native vegetation and have a program to replace them with appropriate native xeric vegetation. This should be coupled with an education program so citizens understand their role in saving water and preserving our environment.

• July 2, 2009: The Green Task Force recommends to the Mayor that native plants be included, to the extent possible within the existing budget, in the landscaping of the Waterfront Pavilion.

• May 7, 2009: The Green Task Force recommends to the Mayor that the following Energy Efficiency and Conservation projects be considered for funding (in priority order):

(1) Comprehensive Green Model Home to include the *Greening Your Home*; and *Youth Green Corps* initiatives

(2) City Center Solar Project with solar charging stations

(3) Green Pavilion with recommendations of water conservation with water shortage as priority, solar hot water system and to investigate geo-thermal cooling

(4) Retrofit Lighting in Parking Garages: to look at best lighting alternatives to maximize energy conservation

(5) Solar Litter Container Collection improvements

• May 7, 2009: The Green Task Force supports and recommends that the Mayor take all due and applicable emergency action to endorse a larger comprehensive water conservation action plan, including Phase 3 water restrictions, if deemed necessary.

• November 20, 2008: The Green Task Force recommends to the Mayor that the city make its best effort to support the accelerated implementation of the east-west express rapid transit bus route from the Wellington/Royal Palm Beach area to downtown West Palm Beach via Okeechobee Blvd.

• November 20, 2008: The Green Task Force recommends to the Mayor that the City make its best effort, as a matter of public safety and environmental responsibility to proceed with the installation of additional facilities to increase the City's fuel storage capacity from the current level to five days and to include E85 fuel capability.

• October 16, 2008: The Green Task Force supports the recommendation that Grassy Waters Preserve be designated or recognized within the new City Center.

• August 21, 2008: The Green Task Force recommends to the Mayor that the City pursue participation in the Florida's Clean Marina Program and requests periodic reports from the City on their progress.

• July 17, 2008: The Green Task Force recommends to the Mayor that the City include "snipe" signs within the definition of litter under the City's anti-litter ordinance.

• July 17, 2008: The Green Task Force recommends to the Mayor that the City accept the invitation to participate in the Carbon Disclosure Project.

• July 17, 2008: The Green Task Force recommends that the Committee of Neighborhood Presidents reconvene to mobilize against the proposed Roebuck Road extension.

• July 17, 2008: The Green Task Force recommends to the Mayor that City Departments stop dispensing non-biodegradable plastic bags to the public.

• July 17, 2008: The Green Task Force recommends that the Mayor pursues establishing an Office of Sustainability, with a Manager of Sustainability, without any increase in the City Budget and that its future justification is based on savings generated.

• June 19, 2008: The Green Task Force is in support of the Intracoastal Island Proposal, South Cove Restoration Project, as presented on April 28, 2008, subject to the project manager furnishing a design description, periodic updates, and notification of any proposed changes.

• April 17, 2008: The Green Task Force recommends to the Mayor that the City of West Palm Beach urge Palm Beach County to seek alternatives to the proposed construction of the Roebuck Road extension so as to preserve and protect the City's natural resources and sensitive surface water supply, and to save critical tax dollars for necessary projects.

Appendix E - The U.S. Mayors Climate Protection Agreement

As endorsed by the 73rd Annual U.S. Conference of Mayors meeting, Chicago, 2005

A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;

B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that 1) includes clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries; and

C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:

1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.

2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;

3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;

4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology;

5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;

6. Purchase only Energy Star equipment and appliances for City use;

7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;

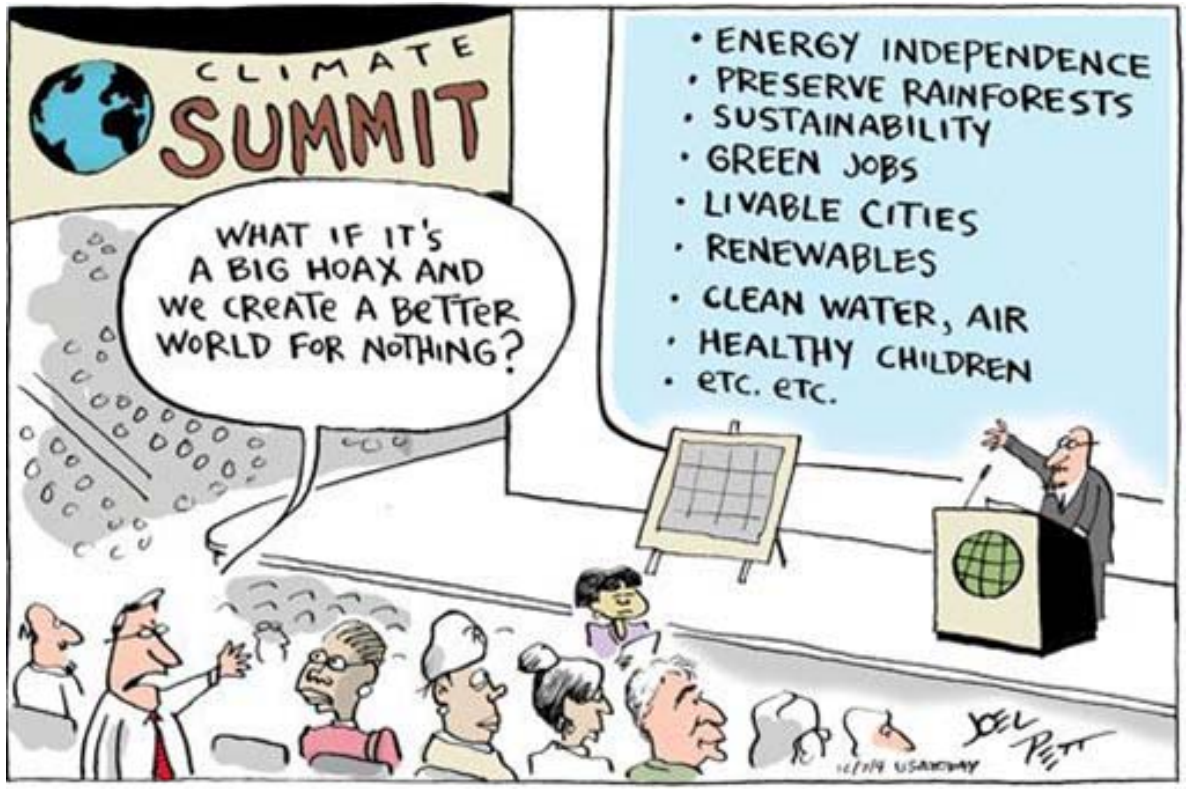
8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;

9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;

10. Increase recycling rates in City operations and in the community;

11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO_2; and

12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

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