

MIAMI-DADE COUNTY greenPrint PROGRESS REPORT 001



SOCIAL



ENVIRONMENTAL



SUSTAINABLE

ECONOMIC



MIAMI-DADE COUNTY

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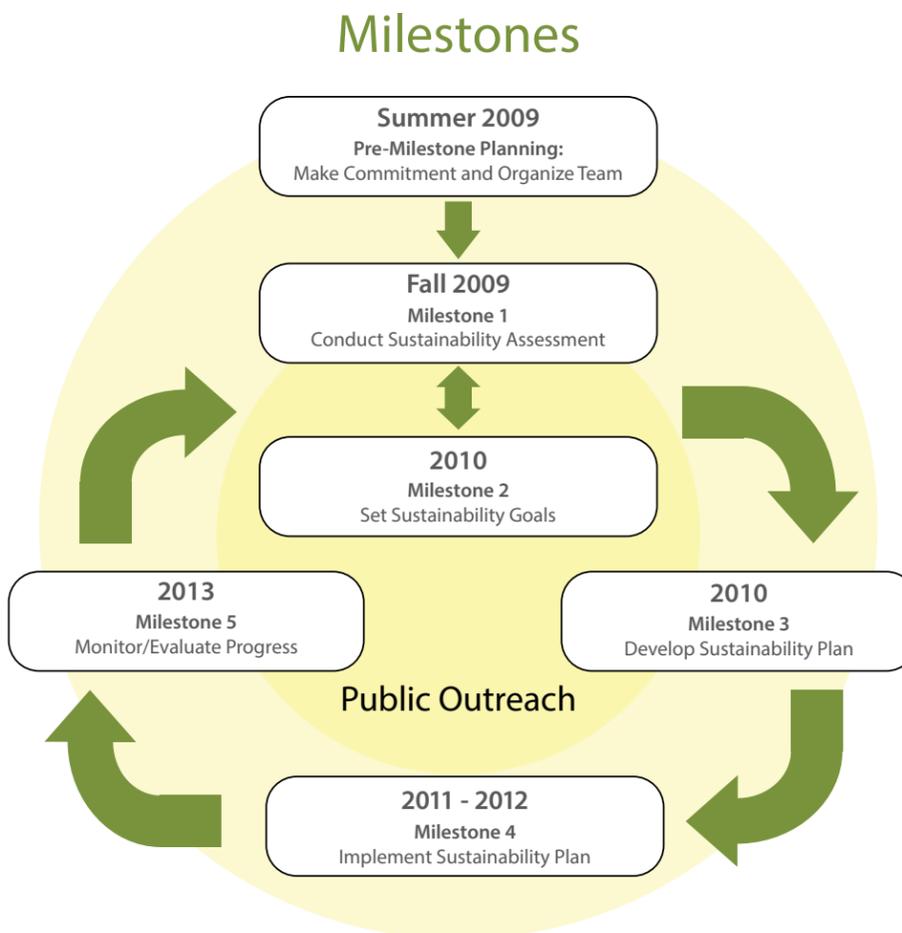
Robert A. Cuevas Jr.
County Attorney



Released January 2014

GreenPrint: Our Design for a Sustainable Future, lays out a vision for a community with a robust economy, a healthy environment, and a better quality of life for the people who live and visit Miami-Dade County. GreenPrint is also an action plan with 5-year cycles, focused on measurable goals and specific targets within its 7 interconnected goal areas and 137 initiatives. It contains many new initiatives, but also aims to elevate and intensify efforts related to existing initiatives and plans. Together, the existing and new initiatives strive to achieve aggressive water conservation, energy, climate change, and greenhouse gas reduction goals to sustain ourselves and our natural resources. GreenPrint was developed in collaboration with many community stakeholders: experts from the business community and academia, individual residents, nonprofit organizations, municipal representatives, and County staff. GreenPrint is a community-wide plan. It is a map to achieving goals that benefit the economy, the environment, and society – because that is what sustainability is all about!

The purpose of this specific report is to highlight the progress of a few key GreenPrint initiatives during the period 2011 - 2012. This was a period of recovery for the economy and housing market in Miami-Dade County, as well as a time of continued population growth. During this challenging time, GreenPrint stakeholders continued their hard work on behalf of our community. One important achievement since the initial release of GreenPrint in 2010, was the creation of an internal web-based tracking tool, developed with the assistance of the County's Information Technology Department. To measure such progress, the tracking tool maintains key information and records updates for each initiative. This tool allows us to more easily report on the progress of each initiative. As initiatives are completed and situations change, initiatives incorporated into GreenPrint will change as well.





Dear Fellow Residents of Miami-Dade County:

This Progress Report highlights some of the achievements we have been tracking as part of our community-wide sustainability plan, "GreenPrint, Our Design for a Sustainable Future." It is with great pleasure that I share with you our progress to date.

Over decades, visionary businesses, universities, nonprofits, individuals, and municipal and county agencies have helped shape our region for the better. The GreenPrint difference is to connect all of these individual efforts and weave them together into a strategic framework and plan of action to help ensure that our community attains even better and lasting economic, environmental, and community health. GreenPrint uses a "big picture," collaborative, and long-term approach that is helping us to keep moving in the right direction, as we turn the pressing challenges of today into opportunities for sustainable economic growth and a better quality of life.

Every initiative that you will read about in this report is being achieved through hard work, dedication, and collaboration. I am proud of all of the accomplishments in our community, and look forward to sharing additional achievements from other community stakeholders in the years ahead.

Sincerely,

Carlos A. Gimenez
Mayor

2012 SUSTAINABILITY HIGHLIGHTS

- 110 initiatives completed and in progress to enhance our community's sustainability
- \$1.2 million in energy efficiency rebates provided to 140 commercial businesses through the Miami-Dade County Commercial Rebate Program
- 8.3 million additional average annual boardings on County public transit system
- 1.74 million gallons of water conserved per day
- 33.6 miles of new bicycle trails and lanes
- 530 hybrids in our County fleet
- 70 Energy Star certified buildings in our community
- 23,600 acres preserved through our County Environmentally Endangered Lands program, storing over 5 million metric tons of carbon dioxide (CO₂)
- 88% days with an Air Quality Index best rating
- 358.8 pounds recycled per year per household through County curbside recycling

Acknowledgements6

Aspirational Goals7

The Report

<p>Strong Leadership, Connections & Commitment</p>	<ul style="list-style-type: none"> • Create the next generation of green leaders8
<p>Water & Energy Efficiency</p>	<ul style="list-style-type: none"> • Use less water and energy14
<p>Our Environment</p>	<ul style="list-style-type: none"> • Maintain exceptional quality of air, drinking water, and coastal waters used for recreation • Protect and enhance Biscayne Bay, the Everglades, and vital ecosystems • Reinvent our solid waste system22
<p>Responsible Land Use & Smart Transportation</p>	<ul style="list-style-type: none"> • Use our land wisely, creating and connecting strong sustainable neighborhoods • Provide more transportation options, reducing the time we spend in our cars28
<p>Vibrant Economy</p>	<ul style="list-style-type: none"> • Create green jobs • Build on our international reputation to become a green enterprise destination34
<p>Healthy Communities</p>	<ul style="list-style-type: none"> • Raise awareness that sustainable living is healthy • Plant more Florida-friendly and native trees and landscapes.....42
<p>Climate Change Action Plan</p>	<ul style="list-style-type: none"> • Understand and respond to current and future climate change impacts • Reduce greenhouse gas emissions48

Looking Forward 55

Sustainability Scorecard..... 56

References..... 62

In Recognition of our GreenPrint Partners

I would like to personally thank the many people who helped us prepare this report. Your passion and dedication are admirable. Each of you, including those who are not specifically on the GreenPrint Implementation Team yet provided important contributions nonetheless, helped ensure that our GreenPrint Progress Report was completed in a thorough and professional manner. I am thankful to have so many colleagues who are collectively committed to our sustainability goals. It is a pleasure to work with all of you and I look forward to our continued collaboration and success!

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• Create the next generation of green leaders

Work with more than 100 GreenPrint partners to integrate sustainability into local, regional and national strategic decision-making, policies and operations.



• Use less water and energy

Reduce per capita non-renewable energy use to 20 percent below 2007 baseline by 2015. Reduce water consumption by 1.5 million gallons a day. Reduce government electricity use by 20 percent from 2007 to 2014 in accordance with Board of County Commissioners legislation.



• Maintain exceptional quality of air, drinking water, and coastal waters used for recreation

Continue to achieve the best air quality rating at least 90 percent of the year and exceed drinking water quality standards. Prevent degradation of our Outstanding Florida Waters.

• Protect and enhance Biscayne Bay, the Everglades, and vital ecosystems

Restore and enhance more than 500 acres of coastal habitats and wetlands, and preserve more than 24,000 acres of environmentally endangered lands.

• Reinvent our solid waste system

Reduce or divert 75 percent of our solid waste from landfills by 2020 through reusing, recycling, and generating electricity.



• Use our land wisely, creating and connecting strong sustainable neighborhoods

Develop 15 urban center area plans and six multi-modal corridor master plans. Create four transit-oriented developments on heavy rail and bus corridors. Develop level of service metrics to identify resident accessibility to parks and open space areas. Improve access through an interconnected network of shaded and safe bikeways and trails connected to neighborhoods, schools, employment centers, civic buildings, and other community destinations.

• Provide more transportation options, reducing the time we spend in our cars

Add 10 million boardings to our public transportation system through increased services, and enhancing convenience, comfort, and timely service. Increase the percentage of total trips taken by walking or bicycling from 10 percent to 16 percent of all travel trips. Increase resident satisfaction with the availability of sidewalks for pedestrians to 65 percent or more and add 40 miles of bicycle trails and lanes.



• Create green jobs

Cultivate an innovative and sustainable economic infrastructure that creates 20,000 green jobs by 2020 while building on our economic strengths and adding to our competitiveness in the global economy.

• Build on our international reputation to become a green enterprise destination

Increase the percentage of green hotels, eco-tourism, and hospitality related businesses.



• Raise awareness that sustainable living is healthy

Decrease our community's lifestyle disease rates such as diabetes and heart disease through healthy eating and exercise. Provide access to fresh, local and/or organic food in all neighborhoods through grocery stores, farmers markets and community gardens supported by local agriculture. Increase the number of short walking and biking trips through safety and other programs. Reduce barriers for disabled and elderly residents.

• Plant more Florida-friendly and native trees and landscapes

Plant half a million trees by 2015 to achieve a 30 percent tree canopy by 2020 and encourage native, drought-tolerant landscaping to cool our communities, capture greenhouse gas emissions, beautify our neighborhoods, and provide wildlife habitat.



• Understand and respond to current and future climate change impacts

Integrate local climate change indicators with existing emergency management, storm water planning, and infrastructure planning.

• Reduce greenhouse gas emissions

Reduce GHG emissions by 10 percent by 2015, working towards 80 percent reduction by 2050 to advance the Cool Counties Program commitment.



Strong Leadership, Connections & Commitment

The leadership goal area has connections to all goal areas, as leadership can make or break the success of an initiative. Leadership, connections, and commitment come into play whenever decision-makers are faced with competing environmental, social, and economic needs. Ideally, informed decisions are made in a way that ensures Miami-Dade County residents will have a sustainable, high quality of life for the long term.

Leadership and community commitment are essential to developing consistent, reliable, and enduring policies that can truly impact the sustainability of our community. Examining problems and potential solutions with the long-term approach and the broad and multi-faceted lens of sustainability is more complicated than normal decision-making strategies. However, the benefits of using this strategy to help make decisions is worth it – because it helps to ensure that solutions will benefit our people (society), planet (the environment), and profit (the economy) far into our future.

Climate change and sea level rise are relatively new challenges that leaders must grapple with in all coastal areas, including Miami-Dade County. Fortunately, decision-makers at all levels in our community have a strong record of environmental leadership and stewardship that dates back to the early 1990's. That rich history and local commitment in a community with obvious vulnerabilities to climate change has given Miami-Dade a voice on a national and international level, and we are there, at the global table, helping to shape policy. We must continue to work, not only at the level of international discussion, but also at the level of individual and personal commitments.

Goal

- *Create the next generation of green leaders*



STRONG LEADERSHIP, CONNECTIONS & COMMITMENT

Strengthen regional and local community partnerships *(4 in progress initiatives)*



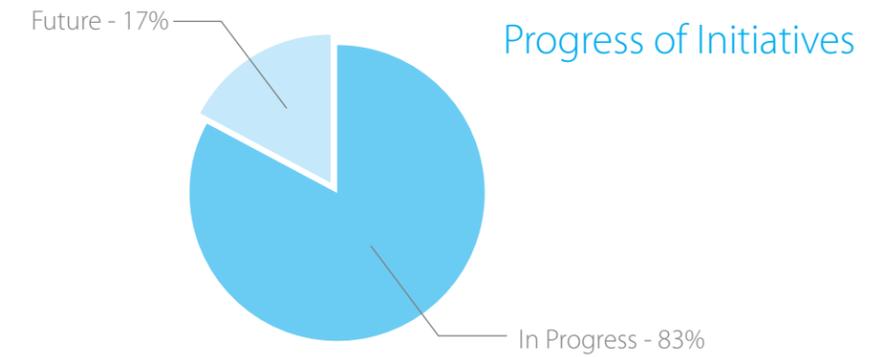
Integrate sustainability into all leadership systems *(2 in progress initiatives)*



Be green government role models *(3 in progress and 1 future initiative)*



Create ongoing outreach, education, and dialogue with the community about the implications of climate change and the benefits of sustainability *(1 in progress and 1 future initiative)*



Initiative 1: Implement the Southeast Florida Regional Climate Change Compact

The Southeast Florida Regional Climate Change Compact (Compact) represents a joint commitment of Miami-Dade, Monroe, Broward and Palm Beach Counties to partner in fostering sustainability and climate resilience at a regional scale. The Compact was formalized following the 2009 Southeast Florida Climate Leadership Summit, when elected officials came together to discuss challenges and strategies for responding to the impacts of climate change. It outlines goals and an ongoing collaborative effort among the Compact counties, and is guided by a Staff Steering Committee with representatives from each of the four counties and a municipality representative from each county. Non-voting advisors include the Institute for Sustainable Communities, the South Florida Water Management District, the South Florida Regional Planning Council and The Nature Conservancy. The efforts of the Compact Counties have garnered attention, collaboration and resources from a variety of local, national and international sources. The following are some of the accomplishments to date:



- Development of a regionally consistent unified sea level rise projection for the coming decades, preliminary inundation mapping, and a regional greenhouse gas baseline, all completed with assistance from local, regional, state, and federal agencies

- Creation of a Regional Climate Action Plan (RCAP) - the RCAP contains 110 action items aimed at reducing greenhouse gas emissions and adapting to the effects of climate change
- Obtaining a nearly \$1 million grant from the Kresge Foundation to implement recommendations in the RCAP through 2015
- Annual coordination and development of joint state and federal legislative policy
- Helping to amend the Florida Energy Act to allow commercial buildings to qualify for energy efficiency program funding through the Local Option Sales Tax



A Region Responds to a Changing Climate

Southeast Florida Regional Climate Change Compact Counties

Regional Climate Action Plan

October 2012



The four county Regional Climate Action Plan, released in 2012.

Another important accomplishment of the four-county Compact has been the successful creation of an amendment to Florida law creating "Adaptation Action Area (AAA)" designation for areas that experience coastal flooding and are uniquely vulnerable to climate impacts, including sea level rise. The Compact helped draft and lead joint legislative advocacy efforts to provide for this designation in order to help local governments identify areas that are vulnerable to coastal flooding from sea level rise. The new designation will prioritize infrastructure improvements, improve technical and funding assistance for increasing resilience, and serve as a planning tool. We are working with the State and Compact partners on initiatives to guide designation of Adaptation Action Areas, as called for in the County's Comprehensive Development Master Plan.

Initiative 3: Encourage all municipalities to adopt GreenPrint

Our municipalities continue to be an essential partner in achieving sustainability because neighborhood-level decisions often have the most direct impact on the quality of life of our residents and the success of our businesses. The Miami-Dade County League of Cities (League) has embraced this role with its recent adoption of a resolution encouraging member cities to formally adopt GreenPrint as a planning framework for each of their cities, and to work collaboratively with Miami-Dade County on sustainability initiatives. The resolution also urged members to sign on to the Mayor's Climate Action Pledge, in support of implementation of the Compact's SE Florida Regional Climate Action Plan. We would like to congratulate and thank the five municipalities that have adopted the Pledge as of this Progress Report:

- The Town of Surfside
- The City of Miami Beach
- The Village of Pinecrest
- The City of South Miami
- The Town of Bay Harbor Islands



The League's Energy, Environment and Natural Resources Committee is working in partnership with the County's Office of Sustainability to coordinate much of this increased collaboration, including:



Third annual Miami-Dade League of Cities Best Practices Workshop.

- Developing a panel for a two-day meeting of the National Energy, Environment and Natural Resources Committee that focused on developing key issues, positions, and legislative language for policy at the national level
- Developing two sustainability-themed speaker panels at the League's Third Annual Best Practices Workshop
- Developing a sustainability survey to inventory green initiatives taken by municipalities. The survey is intended to facilitate sharing of best practices and to target future collaborative opportunities, and therefore may be the achievement with the most long term benefits. The survey results will be posted online on the County's green webpage (<http://www.miamidade.gov/green/>) and presented in the next progress report.

Initiative 4: Pursue more public-private partnerships to implement policies identified in County plans that improve County services

Public-private partnerships (P3s) are becoming an effective strategy of choice in addressing the challenge of improving our community's infrastructure (such as canals, parks, bridges, public transit stations, and public housing), in the face of ever-shrinking municipal and County budgets. Below are three different examples of our P3 efforts.

Brickell CityCentre, a \$1.05 billion privately financed mixed-use development, is currently being constructed in the center of the Brickell financial district in downtown Miami. It has been the catalyst for two public private partnership projects and incorporates several sustainability aspects in the design and planning. Swire Properties and Arquitectonica, the development and architectural firms for the project, have actively worked with Miami-Dade Transit to incorporate the adjacent 8th Street Miami-Dade Transit Metromover station into the Brickell CityCentre project design. The Brickell Metromover station will undergo several modifications, designed and built by these private sector partners, in order to facilitate the use of public transportation by CityCentre residents and businesses, as well by the surrounding community. In addition, Miami-Dade Parks, Recreation, and Open Spaces Department (MDPROS) is developing Brickell Promenade, a linear park along the Metrorail guideway, connecting the Metrorail Brickell Station with the Miami River Greenway in the vicinity of Brickell CityCentre.



Brickell CityCentre is a new public private partnership that will benefit our local economy, public transportation, and parks and open spaces.

Working through public private partnerships, Miami-Dade Parks, Recreation and Open Spaces and the Parks Foundation of Miami, have improved facilities and expanded programming that supports children and adults, seniors, and people with disabilities. MDPROS has over 50 agreements with private for-profit organizations, generating over \$6.5 million dollars annually. Additionally, MDPROS has over 40 agreements with nonprofit organizations generating over \$150,000 annually. During the reporting period, the Parks Foundation, in partnership with MDPROS, has also successfully pursued and secured revenues from an additional 125 non-governmental sources to support their programs, projects, and special events. Agreements signed in the past two years include a variety of services to enhance the park experience for residents and visitors, including restaurants, mini soccer fields, cable wakeboarding and dry boat storage facilities.



As part of a Coca-Cola Troops for Fitness grant, veterans are being hired to enhance fitness and recreation programming. Army National Guard veteran and amputee Laura Ortiz is among the first veterans hired to help Miami-Dade residents get fit and rediscover the joys of being active.

The Miami-Dade County Clean Diesel Repower Program for local farmers is an example of smaller scale public private partnerships. For this program, local farmers invested their own money to replace their aging diesel irrigation engines with new less-polluting engines of similar horsepower.

Working through the Agricultural Manager of Miami-Dade County, the federal Environmental Protection Agency National Clean Diesel Program provided each participating farmer with up to 65 percent of the cost of the new engine and parts. The goals of this successful program were to reduce fuel consumption and air pollutants, and to improve the working environment of farmers and farm workers. In total, the federal government provided \$2 million in funding and the private farmers spent \$700,000 for the engine upgrades, successfully replacing 227 old engines with 223 new engines.

"The new engine's exhaust, compared to the old one that belched black smoke, is incredibly clean and its efficiency saves us thousands of dollars in fuel expenses every year because we simply burn less."

- Eric Tietig, Local Farmer and National Clean Diesel program rebate recipient

Additional public private partnerships are discussed in the Responsible Land Use and Smart Transportation Goal Area in the discussion of Miami-Dade County's Transportation-Oriented Developments (TODs). Existing Transit Oriented Developments bring the County an additional \$3 million in annual revenue that is critical to supporting operations and maintenance of our world-class public transportation system.

Challenges and Opportunities

Because sustainability is a relatively new, and somewhat complex, concept and problem-solving strategy, it will take time for our community to learn to recognize what sustainability is and begin to truly integrate this thinking into existing programs and future planning. An important next step would be for our community to dialogue and develop community consensus about the importance of investing in long-term sustainability-oriented solutions. Arriving at these solutions is rewarding, but can also be challenging because they require people to think and work across sectors, across jurisdictional boundaries, and across generations. This is no small task and can be further complicated if the decisions require tough choices for the present that will result in broader, more beneficial results for the longer term.

This is particularly true during difficult financial times, as we have been experiencing for several years now. However, during adversity, there is also opportunity. By looking at things through a sustainability lens, we can often find additional benefits and opportunities that can be quantified and factored into the overall equation, often justifying a trade-off in the present in order to obtain the additional, longer-term, benefits. GreenPrint provides an excellent platform upon which we can identify and build upon those additional opportunities, and it is through our leadership, connections, and commitment that we will lead the way by further engaging our community stakeholders and thinking outside of the box.



Water & Energy Efficiency

Detailed studies and analyses have proven that the cheapest way to securing a more stable supply of water and energy is by using less energy (fuel and electricity), and water (lowering demand) through efficiency and conservation. While we can and, in some cases, should seek to develop new, environmentally safe, and cost-effective alternatives to increase supply, the basic, common sense approach of using less is a more cost-effective approach that can be accomplished even in communities with growing populations like Miami-Dade County.

Water and energy are also linked to each other in terms of generation, supply and distribution. As we use less water, we use less energy, and vice versa. So, economically, the benefits of reducing demand are magnified whenever we reduce our use of water, energy, or both. Saving water and energy also has environmental and health benefits for our community. Using electricity requires electric companies to burn more fuel, and burning fuel releases pollutants into the air. Therefore, reducing these pollutants by lowering our electricity demand can benefit both public health and the health of our ecosystems on which we depend.

Goal

- *Use less water and energy*



WATER & ENERGY EFFICIENCY

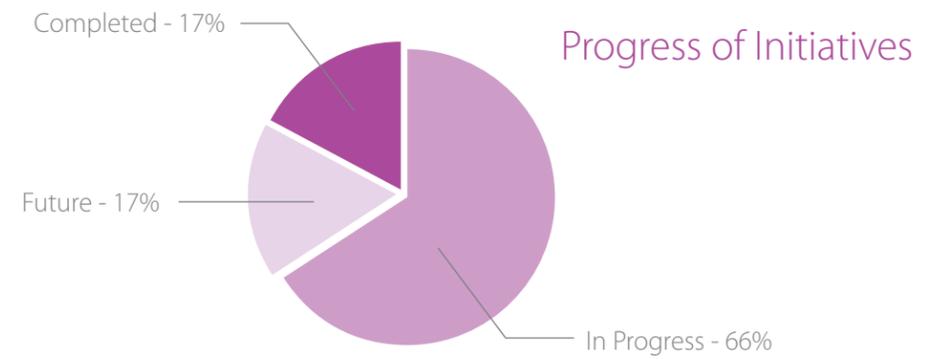
Reduce energy and water consumption through increasing efficiency *(1 completed and 3 in progress initiatives)*

Improve energy planning through public-private partnerships *(1 future initiative)*

Continue water and energy efficiency and conservation campaigns *(1 in progress initiative)*

Expand alternative fuel (bio-diesel/waste-based bio-diesel) and renewable energy industries *(1 in progress and 1 future initiative)*

Be government leaders in energy, fuel and water efficiency *(2 completed, 7 in progress and 1 future initiative)*



Initiative 13: Continue to implement the Water Use Efficiency Plan and the Non-Revenue Water Loss Plan initiatives to meet established reduction targets

Description	Unit of Measure	2015 Target	Quantity to date
Water efficiency reduction	MGD*	1.50	3.66
# of Residential landscape evaluations	number	600	557
# of Multifamily/Commercial landscape irrigation evaluations	number	235	201

* million gallons per day

The County's Water Use Efficiency Plan and Non-Revenue Water Loss Plan are perfect examples of how conservation strategies can help our community use less water and cut costs for individual homeowner and public spending as well. Together, these two plans help the County implement and track different water conservation strategies such as (but not limited to):

- Comprehensive outreach campaigns including in-school education efforts to promote water conservation
- Permanent landscape irrigation restrictions that limit landscape irrigation to two days a week
- New construction standards that codify high efficiency plumbing fixtures in properties built in 2009 or after
- New landscaping ordinances that require the use of drought-tolerant plants
- A tiered water use fee structure which charges more for higher water usage
- High efficiency toilet, faucet and showerhead rebates
- High efficiency toilet and retrofit kits for seniors and low income residents
- High efficiency clothes washer rebates



A high efficiency shower head and lightbulb change for residents

- Exchange program for high efficiency showerheads
- Retrofit kit with high efficiency faucet aerators
- Landscape and irrigation evaluations with rebates for residents, commercial, and institutional entities
- Green restaurant and green lodging evaluations
- Leak detection and repairs in the water supply and distribution systems
- Reduction of water loss from water treatment plants
- Elimination of water theft

Through these conservation efforts and others, Miami-Dade residents have become more efficient in their water use, contributing to an unprecedented drop in water consumption. The current demand for treated water is 44 million gallons per day lower than what was projected in November 2007. Per person, usage has dropped from 158 to 134 gallons per day during the same period of time. Overall, the projected water savings for 2012 has exceeded expectations, with an annual savings of more than 1.74 million gallons per day (MGD). Estimated community-wide annual water savings are 3.2 billion gallons per year, associated with an estimated annual electricity savings of 3.6 million kilowatt hours (kWh) per year and average cash savings of \$324,000 in electricity costs alone.

As of now, Miami-Dade is on track to save more than 14.25 million gallons of water per day by 2017. By supplying water in a sustainable manner and reducing and controlling losses, our community will not have to invest in developing expensive new water supply sources. The Water and Sewer Department has been able to cancel or delay costly capital projects to provide alternative water supply. Fixing leaks and similar strategies also provides additional cost savings by decreasing water treatment and distribution costs. Local contractors and retail stores that provide water saving fixtures and devices also benefit economically from conservation programs. The adjacent table reflects the effectiveness of all of MDWASD's water efficiency strategies.

Year	Water Savings (MGD*)	
	Planned	Reported
2007	1.09	1.21
2008	2.24	3.48
2009	3.53	4.90
2010	4.82	6.54
2011	6.10	8.47
2012	--	10.07
2016	11.7	--
2021	15.67	--
2026	19.6	--

* million gallons per day

Miami-Dade's WASD's water efficiency strategies have exceeded expectations.



Solar panel roof systems were installed at three Miami-Dade County parks.

Initiative 15: Implement EECBG projects

Projects funded by the federal Energy Efficiency and Conservation Block Grant (EECBG) Program jump-started many of our governmental energy-savings initiatives and will continue to benefit the County by saving millions of dollars every year going forward. EECBG funding was coordinated through the Miami-Dade County Office of Sustainability to support twelve projects managed by eight county departments. These projects also aligned perfectly with the County's commitment to reduce electricity consumption in County facilities by 20 percent from 2007 levels by 2014. The complete list of projects benefiting our community, and the associated departments are listed in the table below:

EECBG Project Name	County Lead Departments
1 Energy Management Systems Upgrade for County facilities	ISD, ITD, CIAO, RER
2 Public Energy Efficiency Education Campaign	CIAO, RER, PWWM, WASD
3 Energy Efficiency Grants to Community and Faith-Based Organizations	OMB, RER
4 Development of Procedures to Facilitate Sustainability in County Capital Investments	RER, ISD, OMB
5 Using Methane to Power Government Facilities	WASD
6 Evaluation Codes and Permitting Processes to Facilitate Energy Efficiency in Buildings	RER, ISD, OMB
7 Daylight Harvesting Project	MDPLS
8 Cool Roof Project	MDPLS
9 Desktop Virtualization Project (Thin Clients)	ITD, RER
10 "Green Roadway" Lighting Project	PWWM
11 Solar Power Installations at Three County Parks	PROS
12 Sustainable Technologies Demonstration Program	ISD

Internal Services Department (ISD), Information Technology Department (ITD), Community Information and Outreach Department (CIAO), Regulatory and Economic Resources Department (RER), Office of Management and Budget (OMB), Water and Sewer Department (WASD), Miami-Dade Public Library System (MDPLS), Public Works and Waste Management Department (PWWM), Parks, Recreation and Open Spaces Department (PROS).

"I wanted to let you know how successful the [EECBG] grant to conserve energy was. In comparison for the same month last year, our electric bill has been reduced by approximately \$500 per month. This will result in about a \$6,000 reduction in energy costs per year! Again, thank you so much for everything, the program really made a substantial difference in our energy consumption. Hopefully they will fund this type of assistance again."

- Shelley Gottsagen, Center for Independent Living of South Florida, Inc.



The Center for Independent Living of South Florida received an EECBG grant to make their building more energy efficient.



Photographs showing lighting improvements at the gym of the Boys and Girls Club of Miami-Dade, made possible by an EECBG grant.

One of the most successful projects was the installation of utility billing management software across all County departments. This project is anticipated to save the county \$2 million in the first two years and to continue saving money and electricity every year from now on. Until this project was completed, Miami-Dade did not have a streamlined and homogenous process for dealing with the thousands of electricity invoices received every month (54,000 electricity bills each year) from our 4,500 electricity meters located at over 1,500 facilities. Miami-Dade is Florida Power and Light's (FPL) largest client in the State of Florida in terms of electricity consumption, with one billion kilowatt hours (kWh) of electricity consumption per year costing over \$100 million in annual electricity expenses.



For a solution to take hold, more than 200 employees across 24 County departments were trained on the new billing software. The software, known as EnergyCAP, provides a single billing management system for utility bills, such as electric bills. The software translates and audits the billing data and interfaces with all of the County's financial systems. In addition, EnergyCAP automatically uploads electricity consumption data to a U.S. Environmental Protection Agency's (EPA) system called ENERGY STAR Portfolio Manager, which calculates an energy performance score for registered buildings and sends it back to EnergyCAP. This allows the County to prioritize energy performance improvement projects, use actual data to measure savings resulting from energy performance improvement projects, and seek ENERGY STAR building certification for the highest scoring buildings. In the future, the County is planning to use this new system to track water and sewer utility bills and garbage bills.

Initiative 28: Continue to purchase hybrid-hydraulic diesel garbage trucks

Description	Unit of Measure	2015 Target	Quantity to date
Hybrid-hydraulic diesel garbage trucks	Trucks	126	35

The County has several initiatives related to alternative fuel vehicles that have helped the southeast Florida region to reduce the emission of carbon dioxide pollutants by approximately 3,500 tons over the past two years. Miami-Dade County operates the largest municipal hybrid fleet in the State of Florida and has the third largest municipal hybrid fleet in the United States, according to the U.S. Department of Energy. The county utilizes a variety of electric vehicles, including 441 hybrid-electric sedans, six hybrid pickups, three plug-in hybrid electric sedans, two electric sedans and 43 diesel-electric hybrid buses.

One focus of our fleet efforts has been our garbage trucks. In 2010, the County's Department of Public Works and Waste Management began to purchase hybrid hydraulic-diesel garbage trucks to replace diesel-only trucks. Federal funding from the U.S. Environmental Protection Agency helped to pay for the initial 15 trucks, and the County now owns 35 hybrid garbage trucks that are saving an average of 57,000 gallons of diesel fuel per year. The hybrid system stores energy captured during braking and releases that stored energy during acceleration, allowing the vehicle to run without using fuel. The application is most efficient during frequent stop-and-go use, such as trash pickup. These trucks also require fewer repairs, bringing additional savings into the equation. In addition to cost savings, this initiative also has health and environmental benefits because using less fuel means that these trucks generate less air pollution than traditional diesel-only trucks. These vehicles emit significantly less particulate matter, hydrocarbons, carbon monoxide, and carbon dioxide pollutants, and we estimate that each hybrid hydraulic garbage truck is reducing carbon dioxide emissions by as much as 40 tons per year.



"We still see about a 40% to 45% fuel reduction which allows us to save on our carbon footprint. The trucks run great."

- Daniel Diaz, Miami-Dade Public Works and Waste Management Department

Each garbage truck makes an average of about 1,000 stops per day, which is tough on brakes. A typical garbage truck requires new brakes every three months, but the hybrids only require new brakes once or twice a year. Additional savings are expected for tires.

Challenges and Opportunities

One of the primary challenges of this goal area is to make conservation and efficiency strategies for fuel, electricity, and water a priority, since they have been proven to be the most cost-effective and efficient techniques for reducing usage (demand). Many are unaware of the true advantages of these strategies, and instead tend to focus on repairs using traditional methods, supply-side solutions, such as building new water treatment facilities or looking to alternative fuels with unproven or short-term sustainability benefits. Supply-side solutions are seen as "cutting-edge" and "innovative" and since they require large financial investments, many businesses spend enormous sums of money on lobbying and marketing efforts to try to sway decision-makers to pursue these sometimes costly options. It is important for Miami-Dade to provide more education regarding the benefits of conservation. In addition, savings achieved through conservation should be prudently reinvested in further efficiency and conservation measures.

Technology can change very quickly and this can be both a challenge and an opportunity. Governments are typically very conservative about trying new technologies because of diligence in safeguarding the uninterrupted and consistent delivery of services, taxpayer dollars and reducing liability risks. Most governments do not have the resources to do the comprehensive, complex, multi-faceted analyses that are required to make sure that these new technologies are truly sustainable from an economic, environmental, and social perspective over the long-term. Collaborating with peers and sharing best practice experiences has helped to facilitate the implementation of new conservation techniques; however additional support from decision-makers is also critical.



Our Environment

At the most basic level, plentiful clean water, air, and land, are the foundation of Miami-Dade County's economy. Many businesses and people make Miami-Dade a destination to live, work, and play because of our clean breezes, abundant and clean drinking water, beautiful coastline and beaches, and unique ecosystems. Our ecosystems provide many economic, social, and environmental benefits that are often taken for granted. For example, coastal mangrove habitats help stabilize shoreline sediments, play a critical role as spawning and sheltering areas for many marine species (including those that are important to our commercial and recreational fisheries), and form a protective line of defense against storm surges. In addition to climate change, our natural systems remain vulnerable to other impacts from which they might not be able to recover. That is why many diverse stakeholders in our community are committed to monitoring, restoring, and protecting our invaluable natural resources and ecosystems.

Goals

- *Maintain exceptional quality of air, drinking water, and coastal waters used for recreation*
- *Protect and enhance Biscayne Bay, the Everglades, and vital ecosystems*
- *Reinvent our solid waste system*



Our Environment

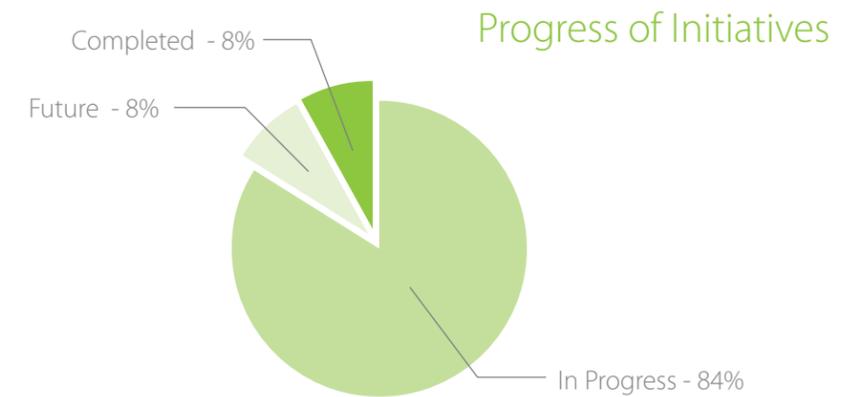
Implement wastewater reuse to provide future water supply and benefit the environment *(1 completed and 2 in progress initiatives)*

Address salt intrusion that threatens drinking water wellfields and sensitive natural areas *(1 completed, 2 in progress and 1 future initiative)*

Protect, enhance, and restore our natural resources *(6 in progress and 1 future initiative)*

Protect environmental and other lands that may be important for ecosystem and community resilience *(2 in progress initiatives)*

Develop a sustainable Solid Waste System and Master Plan, using waste to benefit our economy and environment *(8 in progress initiatives)*



Initiative 35: Monitor the isochlor line and address spatial gaps in salt intrusion data gathering

Description	Unit of Measure	2015 Target	Quantity to Date
Monitoring well installations	Number of wells installed	8	8
Revision and publication of isochlor line	# of projects completed	1	1
Monitor chlorides	# of monthly monitoring events	60	24

In our community, the source of our fresh drinking water lies under our feet. The Biscayne Aquifer, an underground shallow layer of limestone rock, contains enough tiny holes and cracks to hold billions of gallons of fresh water. This water is often referred to as groundwater, or the water table, and it provides virtually all of the fresh water that is used by South Florida residents, visitors, and businesses every day. One way to help protect this critical resource is to monitor potential impacts, which is why the County has been continuously tracking (for over 35 years) the extent that salt water has intruded from our surrounding coastlines into our fresh water supply. The extent of intrusion is known as the salt water front, or isochlor line. Miami-Dade County Water and Sewer Department (MDWASD), in conjunction with Miami-Dade Department of Regulatory and Economic Resources (RER), and the United States Geological Survey (USGS), are currently monitoring a network of 165 monitoring wells to identify movement of the salt front, and to map the location of the saltwater-freshwater interface.

Recent successfully completed efforts have included the installation of eight additional wells to help better track the salt water line, to publish an updated salt front line, and to make sure that monitoring data is accessible for online review by the public (<http://www.envirobase.usgs.gov/FLIMS/SaltFront/>). In general, there was no significant change between the 2008 and 2011 salt front line in the north and central areas of the County. However, the line has moved further inland in the south, compared to the original 1995 line. Chloride concentrations remained within historical range for most of the sampled stations.



Installation of a monitoring well for salt water front monitoring.

Initiative 45: Continue to acquire important lands through the Environmentally Endangered Lands (EEL) program

Description	Unit of Measure	Target	Quantity
Cumulative Acreage EEL properties	Acres	24,000	23,600

Recognizing the historic loss, fragmentation, and degradation of native ecosystems, Miami-Dade voters approved a referendum in 1990 that established the Environmentally Endangered Lands (EEL) Program. This program works to acquire, restore, and maintain important natural lands for the benefit of present and future generations. Since the program was created, the value of our natural areas has been recognized to provide many other critical public services to our residents and visitors, such as:

- Replenishing our drinking water supply
- Protecting against saltwater intrusion
- Reducing stormwater runoff
- Helping regional restoration efforts
- Conserving native wildlife and habitats and helping species migrate from one part of the world to another
- Supplying services and products such as shading, pollination, and food
- Providing recreational space
- Increasing property values
- Helping maintain options to adapt to climate change effects over the long-term
- Providing carbon sequestration



Participants at an Environmentally Endangered Lands volunteer work day.

As of July 2013, the EEL Program funds active management of over 23,600 acres of natural habitat that have been purchased or designated under the EEL program. In 2004, \$40 million was approved for EEL acquisitions as part of the Building Better Communities Bond (GOB). However, the \$13 million remaining in the 2004 allocation will not be available until FY 2016-17 at the earliest because other bond funded projects now have higher priority. Therefore, while the 2015 GreenPrint target of 24,000 acres by 2015 may not be met, funding should be available for additional land acquisition in the next 5 to 10 years. Unfortunately the ecosystem, health, and economic benefits of these un-acquired lands remain vulnerable to conversion to other uses or development as long as they are not in public ownership.

Initiative 51: Continue to increase participation in the residential recycling program

Description	Unit of Measure	2015 Target	Quantity to Date
Cumulative tons of recyclables collected	Tons	303,282	167,187
Pounds per household annually 2011	Pounds	375	352
Pounds per household annually 2012	Pounds	375	359

How we manage and treat the waste we generate in our community greatly affects human health and the health of our environment (land, water, and air resources). In 2010, a bill was passed by the Florida Legislature which sets a goal for all counties in Florida to recycle 75 percent of their solid waste by 2020. One of the primary ways to achieve this goal is through our Miami-Dade Public Works and Waste Management (PWWM) recycling programs. In 2008 Miami-Dade introduced a new program that collected all residential recyclable materials mixed together, otherwise known as a single-stream approach. This new curbside residential recycling program has been steadily increasing the amount of our waste stream that is recycled every year. Under this initiative, the County is tracking the total number of tons of materials being recycled by unincorporated areas and the 20 municipalities to which we provide recycling services. In addition, the County is tracking monthly recycling rates per household. During the reporting period, the average pounds of recycled materials being collected per household per month went up from 29.31 pounds in 2011 to 29.90 pounds in 2012.



Challenges and Opportunities

One of the main challenges in this area is simply lack of awareness. Many people in our community take our natural resources for granted and do not understand that they are the basis for the livability and sustainability of our community and economy. Our population continues to grow steadily, thereby increasing pressure on these natural resources that support our region's unique quality of life. Our natural systems have historically been impacted over the years by flood control canals and other infrastructure that have altered natural freshwater flow and ecosystem functioning. Our porous high quality aquifer is vulnerable to sea-level rise and contamination, and if weather patterns become much drier, freshwater supply in the aquifer could be depleted. Our natural ecosystems must contend with invasive species and piecemeal protection. Our solid waste management system is challenged by an ever increasing waste stream (exacerbated in the aftermath of tropical storms and hurricanes), that must be responsibly and effectively managed. A renewed focus on waste reduction and reuse would benefit County residents, businesses, and natural resources. Therefore, as we continue implementation of GreenPrint, a primary need and opportunity will be to provide more effective education and outreach to all sectors and stakeholders in the community, about the multi-faceted value of our unique natural resources.



Responsible Land Use & Smart Transportation

As our population continues to grow, so does our desire for a livable and vibrant community. The U.S. Dept. of Transportation estimates that most trips (72 percent) are not work-related, but are personal trips such as those for errands, shopping, socializing, or recreation. A third of these personal trips are a mile or less, making them ideal for shifting to walking or biking trips given supportive infrastructure and design. Through its Comprehensive Development Master Plan (CDMP), the County designates urban centers, which serve as hubs for development intensification in Miami-Dade County, around which a more compact and efficient urban structure will evolve.

The CDMP also establishes mixed-use corridors connecting the designated urban centers. We are witnessing the fruits of almost 20 years of this effort in land use planning policies. Our urban core is developing at a breakneck pace: more people are living, working and playing in an area that stretches roughly from Midtown down to Brickell, between Biscayne Bay and I-95. And this unprecedented growth is also beginning to spread around the balance of the County's infill area and along the urban centers and mixed-use corridors located on the eastern side of the County. The importance of community design in shifting automobile trips to transit, walking and biking trips can not be overstated, and the inclusion of complete streets supportive policies in the CDMP, as well as a current study are laying the groundwork for formalizing guidance and advancing our progress in this area. The initiatives in this goal area aim to plan, design, and prioritize walkable, affordable communities supported by multimodal transportation options.

Goals

- *Use our land wisely, creating and connecting strong sustainable neighborhoods*
- *Provide more transportation options, reducing the time we spend in our cars*



RESPONSIBLE LAND USE & SMART TRANSPORTATION

Better integrate planning and prioritize investments (6 in progress and 2 future initiatives)



Support existing communities and value neighborhoods (9 in progress and 1 future initiative)



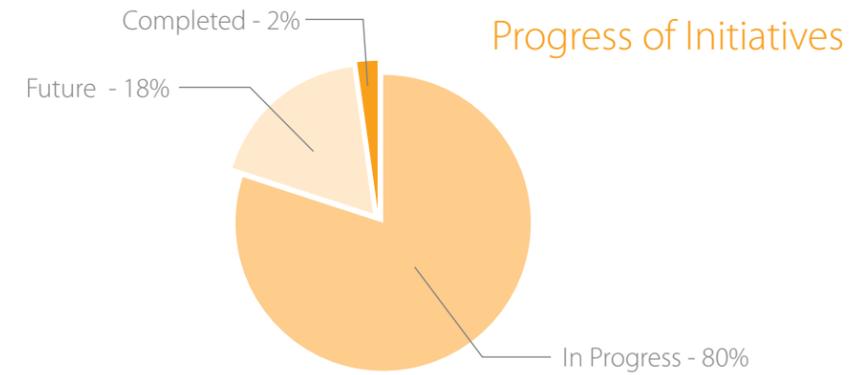
Increase bicycling & walking (12 in progress and 2 future initiatives)



Increase transit ridership (1 completed and 6 in progress initiatives)



Improve connectivity and mobility on the existing system (3 in progress and 3 future initiatives)



Initiative 56: Increase transit-oriented development (TOD)

The County is recognized nationally for its model of leasing land to create mixed-use developments around Metrorail and South Miami-Dade Busway stations. This type of development is commonly known as Transit Oriented Development (TOD), due to the relationship between a public transit facility and the surrounding development. TODs provide our residents and visitors with “one-stop-shops” – where they can live/stay, work, shop, recreate, and socialize. Roadways, landscaping, building orientation and building features within TODs establish the framework to support a higher density mix of land uses to create a bicycle and pedestrian friendly environment.

TODs provide more travel choices, save time, reduce household transportation costs, increase safety, reduce traffic congestion, and support our unique economic engines. A mix of housing, centers of employment, and shopping around transit allows residents to walk or bike for some short trips and encourages transit use to reach other destinations. Increasing populations living along these major transit corridors also helps support the cost of premium transit improvements. Zoning regulations specific to areas around transit hubs also promote the building of TODs by private developers, such as we see in areas like Downtown Dadeland and Brickell (see description of the CityCentre project in the Leadership Connections and Commitment Section).



Brownsville Transit Village residents benefit from their proximity to Metrorail.

Miami-Dade County, through its Transit Department, has been actively promoting Transit Oriented Development for over 27 years. As a whole, the County has twelve developments near transit stations that are either complete or currently under construction. Two of the four Transit Oriented Developments identified in the first 5-year cycle of GreenPrint are nearing completion or are under construction. The Brownsville Transit Village is a 5.8-acre joint development project that currently includes more than 400 workforce-housing units, with mid-rise apartment buildings, townhomes, a parking garage, ground-floor commercial space, and Metrorail station improvements. Residents benefit from immediate access to Metrorail and on-site amenities such as a community center, a computer lab and an exercise room. In addition, on-site community programs offer literacy training, health and nutrition classes, and first-time homebuyer seminars. The fifth and final project phase of the Brownsville Transit Village includes the addition of 65 more workforce-housing units.

Trip boardings at the Brownsville Metrorail station have increased by 29 percent.

Initiative 77: Fund and construct priority non-motorized multi-use trails

This initiative focuses on bringing enjoyable recreational areas and open spaces into more neighborhoods to help create closer-knit neighborhoods that are pedestrian and bicycle friendly. By making bicycling and walking viable options for everyday travel, we can cost-effectively improve our mobility, protect our climate, enhance energy security and improve public health. Multiple County and municipal agencies have designed and built many trails that lace our community together. Trails are one of the elements to creating a proper bicycle network which typically consists of bicycle lanes, bicycle boulevards, shared streets and off-street paths or trails. Bicycle mode-share is not likely to increase without a sufficient network in place.

Our Parks Recreation and Open Space Department, through the Open Space Master Plan, has built several miles of trails in the last few years, with 10 more miles planned by 2015. One such neighborhood improvement is the recent construction of the Snake Creek Trail, a 3.4 mile paved multi-use trail with enhanced landscaping designed for non-motorized use by cyclists, skaters, wheelchair users, walkers, runners, and people pushing baby strollers. This project is located on the south side of Snake Creek (C-9) Canal running from NE Miami Gardens Drive to Florida's Turnpike. The new trail is composed of a linear park and two mini-parks, each containing adult fitness stations, play climbers for tiny tots, bicycle racks, trash receptacles, a rain shelter, and benches. The new Snake Creek Trail connects to an existing 2 mile trail in North Miami Beach and to six other proposed trails. Investing in bicycling and walking projects like Snake Creek Trail offers unique opportunity to integrate physical activity into our daily routines.

The Miami-Dade Metropolitan Planning Organization's (MPO's) Complete Streets study will develop a Complete Streets Manual as well as apply the Complete Streets concepts to three corridors within the County.



Community members enjoying the newly opened Snake Creek Trail.

Challenges and Opportunities

One of the principal challenges in this goal area is the existing physical structure of our community. Like many regions across the United States, the advent of the automobile in combination with the availability of open land changed the urban form of our community to one of low density sprawling urban development. Although County policies and programs are beginning to re-institute sensible community designs of prior generations, vehicle trips are expected to increase by 47 percent over the next 25 years and there is a real need to alleviate congestion on our roads. However, projects to increase capacity by putting more cars on the road are the type receiving the majority of funding. Therefore, long term multi-modal mobility solutions are going to be essential in successfully accommodating our growing population.

In addition, new funding models are needed. Direct revenue streams are declining, primarily because gas tax collections in Florida were down \$1.2 billion as of 2012 and \$8 billion cumulatively since 2006. People are buying more fuel efficient vehicles, which is good in terms of air pollution emissions but not so good for infrastructure projects that rely on gas tax collections for funding. Another funding related challenge is the multi-year federal surface transportation bill known as Moving Ahead for Progress in the 21st Century, or MAP-21, which has significantly changed the way funding is provided for bike and pedestrian projects. Overall funding is 33 percent less than the funding previously provided for these types of programs.

While there are many challenges, there are also some positive trends that may begin impacting the types of infrastructure projects we fund. The first positive trend is the projections of where people will live versus where new jobs are expected. To understand the transportation needs of the county and identify and prioritize projects, the Long Range Transportation Planning (LRTP) process includes developing projections of where population and employment growth is expected to occur over the next thirty years. The recent projections show a considerable difference compared to those completed during the last planning cycle, five years ago. It conveys a shift in population growth to the urban core and other areas, indicating there may be fewer people than anticipated taking longer trips to work. Our transportation projects, including modes and locations, should be prioritized according to this shift in where we expect people to live and work.

One of the causes of this shift, and the second "positive" trend, could be the new lifestyle preferences that are developing in our community. In addition to people seeking a generally more active lifestyle, the new generation, "millennials" favor an urban lifestyle. Respondents to a recent APTA survey described their generation as "financially strapped", and "happy with biking or walking, and see public transit as a way to meet people, connect, and have extra time to do work while commuting...and with smartphones it's easy to figure out bus schedules and keep connected while commuting" (American Public Transportation Association 2013).

Government by itself simply can't provide the multi-modal system these trends demand; federal dollars are drying up and the County is already doing more with less. Therefore, we should look for opportunities to collaborate and leverage resources, such as the Seven50 Prosperity Plan, a seven-county visioning plan for economic prosperity over the next 50 years. Another example is the recent "Compact" adopted by Miami-Dade, Broward and Palm Beach Counties, which formalized an agreement to work together on the issues of Transportation, Economic Development, Climate Change, and Everglades Restoration. Partnering with the private sector and other local governments in the region will help to deliver more efficient and effective solutions for our community.



Millennials are returning to walkable cities with multiple transportation options.

Miami is ranked the 5th most congested metropolitan area in the nation, costing \$3.7 billion a year in time and fuel. \$250 million would be added to the cost of congestion if public transportation were not in place (Texas A&M Transportation Institute 2012).



Vibrant Economy

Global, national and local demand for green products and services, green buildings and infrastructure, green economic growth and green jobs is already impacting the business models and practices of Miami-Dade's businesses and industries. The local businesses and industries that drive Miami-Dade's economy can contribute to a more sustainable community through material selection, supply-chain management, businesses practices, and production of goods and services.

In addition to improving the sustainability of our community through its own procurement of environmentally preferable goods and services, government policies also have a direct impact on industry as well. For example, the County's Comprehensive Development Master Plan directs land development towards a more compact urban form, and we must effectively work with industry to implement that vision. These emerging trends that build local demand for sustainability will likely have a permanent impact on how businesses perceive their role in contributing to the welfare of the larger society beyond their own financial bottom line.

Goals

- *Create green jobs*
- *Build on our international reputation to become a green enterprise destination*



VIBRANT ECONOMY

Build a sustainable economy and promote green business (1 completed, 1 in progress and 2 future initiatives)



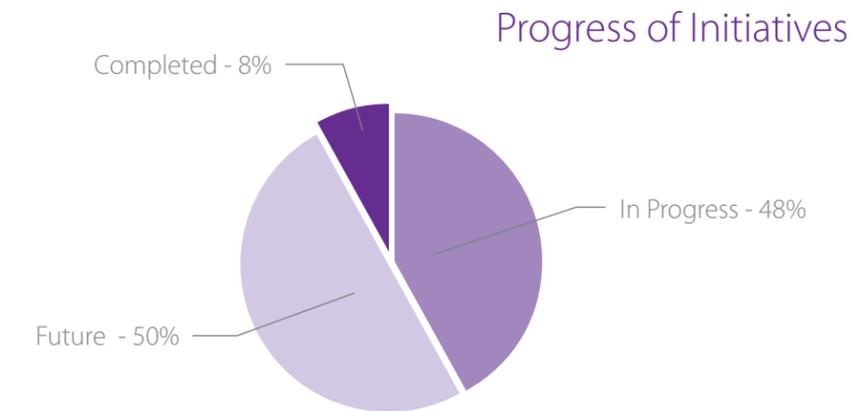
Expand our successful tourism and trade industries (2 in progress and 2 future initiatives)



Support educational institutions in their initiatives to develop a workforce for a sustainable economy (2 future initiatives)



Increase the sustainability of agricultural practices (2 in progress initiatives)



Initiative 101: Develop a Green Business Certification Program

Description	Unit of Measure	2015 Target	Quantity to date
# of businesses certified	# of businesses	750	15

The Miami-Dade County Green Business Certification (GBC) Program is a voluntary program designed to help and recognize local businesses that are comprehensively incorporating environmental stewardship into their operations. The program was launched the first quarter of 2011 with the goal of offering the Miami-Dade business community an opportunity to examine their current business practices and to implement green initiatives, such as minimizing waste, energy and water consumption, that will save money and increase their marketability while protecting natural resources (often referred as minimizing their ecological footprint). Certification from Miami-Dade's Green Business Program serves as an indicator that a particular business is considered to be a leader in developing more sustainable operations. Further benefits to going through the certification process include:

- Helps ensure efficient operations, thereby strengthening financial bottom line
- Improves employee morale, health, and productivity
- Provides a marketing edge over the competition
- Fosters compliance with current regulations and commitment to continue green practices after certification

The program's emphasis is on day-to-day operations and policies. The program's application involves an online, user-friendly process, and certification is based on a checklist of sustainability-related actions. At the end of the pilot program period, two hundred ninety-four (294) complete applications have been reviewed, and of these, 15 businesses qualified and were granted certification through our comprehensive process. Currently the Certification Program is designed for the restaurant, hotels, retail, office, and garment cleaning business sectors, but is anticipated to expand to other sectors during full-scale implementation.



Miami-Dade Green Business Certification steps



Cliffhanger Janitorial was proudly certified as a Miami-Dade Green Certified Business in 2012.

"We chose to set up our business and invest in Miami-Dade and raise our families here, so we think it is important to help protect the environment where we live and work. For example, our company uses rags that can be washed and reused instead of paper towels. Our decision helps the environment, but also helps to save us money. Going green and getting our certification is helping us to build on our success because it sets us apart from our competition."

-Yvonne Estrada, President Cliffhanger Janitorial

Initiative 107: Make our Airport and Seaport sustainability leaders

In size, the Miami International Airport (MIA) and PortMiami resemble small cities, meeting the needs of hundreds of thousands of travelers and the movement of thousands of tons of freight that pass through them each day. As two of the County's primary economic engines they can have a huge impact on the sustainability of our County. While both of these ports have achieved many green accomplishments over the years, this progress report focuses on activities implemented since 2010. However, our ports are not islands, therefore those who plan and build the roads and rail that connect our ports to our communities, and the private industries that move goods through them, are key partners in this endeavor.

Airport

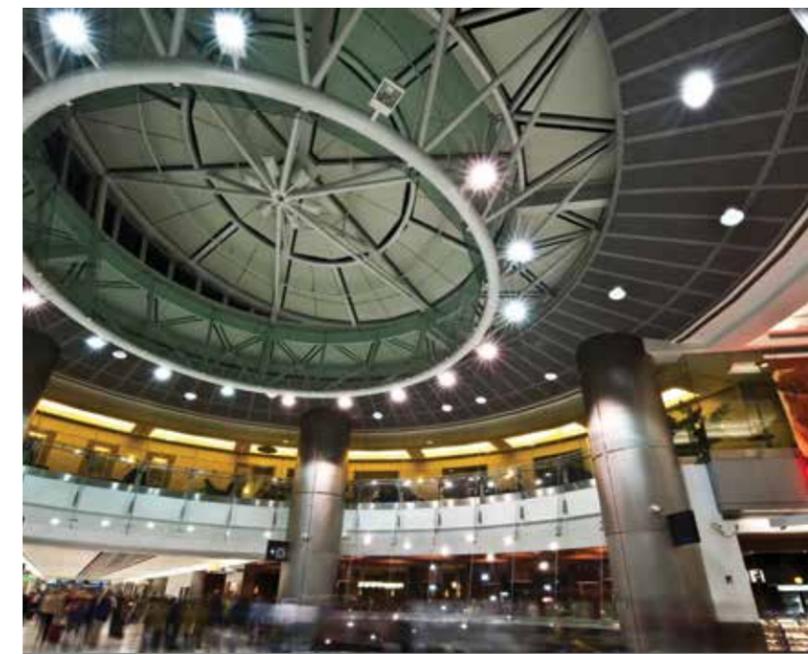
Several recent projects have increased the sustainability of airport operation, as well as reduced the emissions produced by the people and goods that move through it. The NW 25th Street Viaduct project is improving the movement of trucks carrying freight between Miami International Airport (MIA) and off-airport freight facilities, such as warehouse, and truck transfer stations. The project includes constructing a new viaduct (an elevated bridge) for dedicated air cargo transport. The first (eastern) phase of the project is completed and includes roadway improvements and partial viaduct construction. The second phase includes additional roadway improvements along the western part of the project and completes the viaduct construction. Phase 2 is expected to be complete by 2016.

Several advancements in the development of the Miami Intermodal Center (MIC), located just east of MIA, took place during this reporting period. The MIC is a massive \$2 billion ground transportation hub being built by the Florida Department of Transportation. The MIC consists of several components including the MIA Mover, the Rental Car Center, and the Miami Central Station (MCS). The MCS includes the AirportLink Metrorail extension, a Metrobus terminal, a Tri-Rail / Amtrak terminal, and an intercity bus terminal. The MIA Mover became operational in September 2011 and connects MIA to the MCS and the Rental Car Center. It is the first U.S. transit project to receive a Leadership in Energy and Environmental Design (LEED) Gold certification by the U.S. Green Building Council in March of 2012. The Mover has the capacity to transport more than 3,000 passengers per hour and eliminates more than half a million shuttle bus trips each year, reducing carbon emissions from Airport roadways by 30 percent.

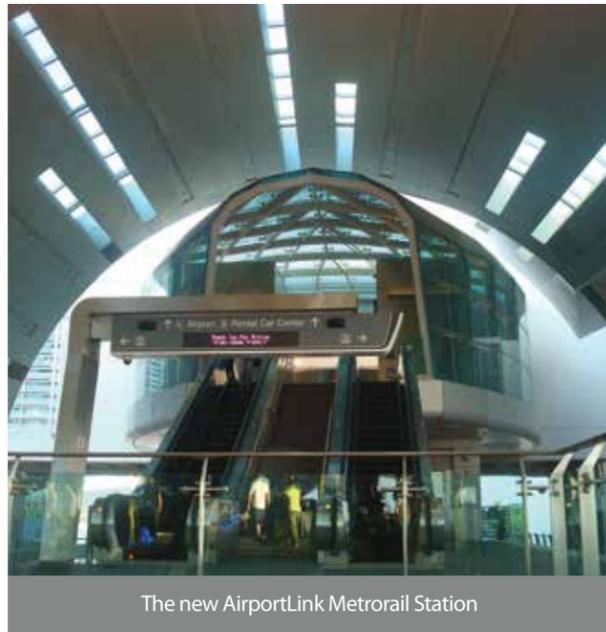
The NW 25th street viaduct is expected to reduce carbon emissions by more than 19,000 tons and save the freight industry \$630,000 annually in fuel costs. By 2035, this is expected to increase to 21,400 tons of carbon emissions reduced, with an associated fuel cost savings to the freight industry of \$705,000.

Another accomplishment is the completion of the AirportLink, a 2.4-mile extension of Miami-Dade Transit's Metrorail system to Miami International Airport. It was built using County and State funds and opened to the public in July 2012. This project provides our community with an affordable, car-free, and carefree option to travel to the airport, including the Airport's almost thirty-eight thousand public and private employees.

Construction of the AirportLink is estimated to have created over 2,000 jobs (95 percent in the private sector) and injected \$561 million into our local economy. Since opening in July 2012, the AirportLink Metrorail station is the gateway for over 1,300 additional daily Metrorail boardings.



Over the past ten years Miami-Dade Aviation Department has saved over \$12 million through energy performance contracting



The new AirportLink Metrorail Station

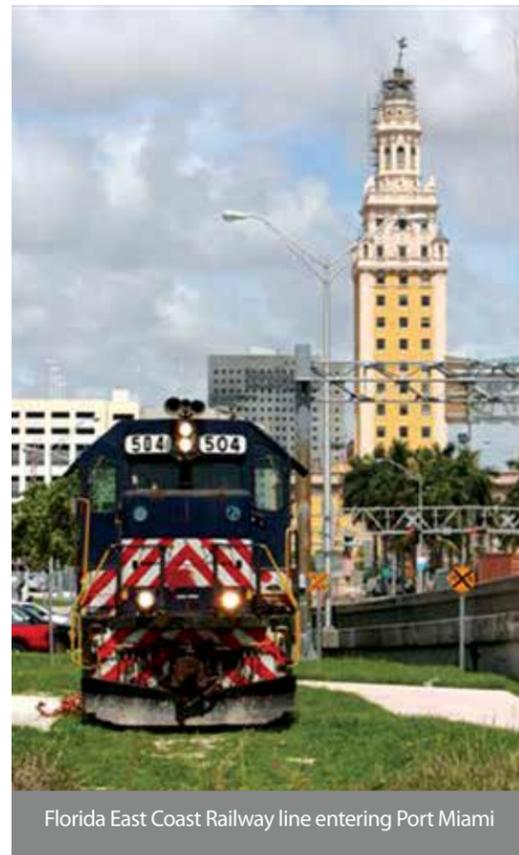
"We were impressed with the new MIA Metrorail extension. The train and station were clean and felt very safe. The trip was fast and we were able to relax and use the free Wi-Fi which performed well. The cost was a big savings compared to overnight parking. After returning from modern airports abroad I used to feel embarrassed by the lack of public transportation offered to visitors. Now I feel like Miami has finally taken a step toward becoming a modern world-class city."

-Daniel Benavides, Miami-Dade County resident

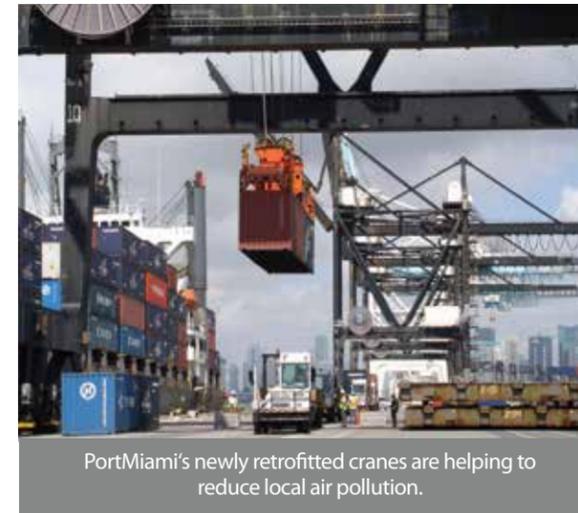
PortMiami

Several projects to facilitate freight movement were underway during this reporting period, including a \$50-million rail reconnection project funded in part by a \$23 million U.S. Department of Transportation grant (Transportation Investment Generating Economic Recovery - TIGER 2). Historically, a rail line was in use at the port since the 1960s, but was damaged in 2006 by Hurricane Wilma, and abandoned. Today shippers must rely solely on trucks to move containers in and out of the port. The rail reconnection project has three components, the first of which was completed in 2012. This phase involved upgrading a 4.5 mile long segment of a 12 mile long track line that leads from the port to the Hialeah intermodal rail yard terminal, owned by the Florida East Coast Railway LLC (FEC). Through the Hialeah intermodal rail yard terminal link, the completed project will have access to rail yards in Jacksonville, providing a tie-in to the national rail system. The second phase of the project will repair a damaged bascule bridge and the third phase will be to construct a new intermodal rail yard on the port island. This project is expected to be completed in 2014, contributing to several sustainability goals:

- Adding 822 construction jobs to the local economy
- Avoiding 34 million gallons of fuel and 200,000 tons CO₂ over the next 20 years
- Increasing container traffic by 15 percent through improved access
- Improving local redevelopment through increased pedestrian traffic and overall activity
- Increasing transportation choices with the potential future passenger rail service on the FEC corridor and linkage to the Metrorail



Florida East Coast Railway line entering Port Miami



PortMiami's newly retrofitted cranes are helping to reduce local air pollution.

Other freight related accomplishments during 2011 and 2012 were led by PortMiami and made possible by a partial grant from the National Clean Diesel Funding Assistance Program from the Environmental Protection Agency (EPA). The first project was the repowering of four existing Port gantry cranes that handle cargo containers. The diesel engines powering those cranes were removed and the units retrofitted to be run on electricity. In addition to the emissions benefit from eliminating diesel use by 100 percent, the project provides health benefits by reducing exposure to air pollutants and noise. An additional economic benefit is the reduced maintenance costs associated with diesel engines. The second project involved a partnership with Seaboard Marine, the Port's largest cargo tenant, to install diesel particulate filters (DPF) on twelve cargo container handler vehicles, known as mules. These are designed to achieve a 90 percent reduction in particulate matter from diesel emissions.

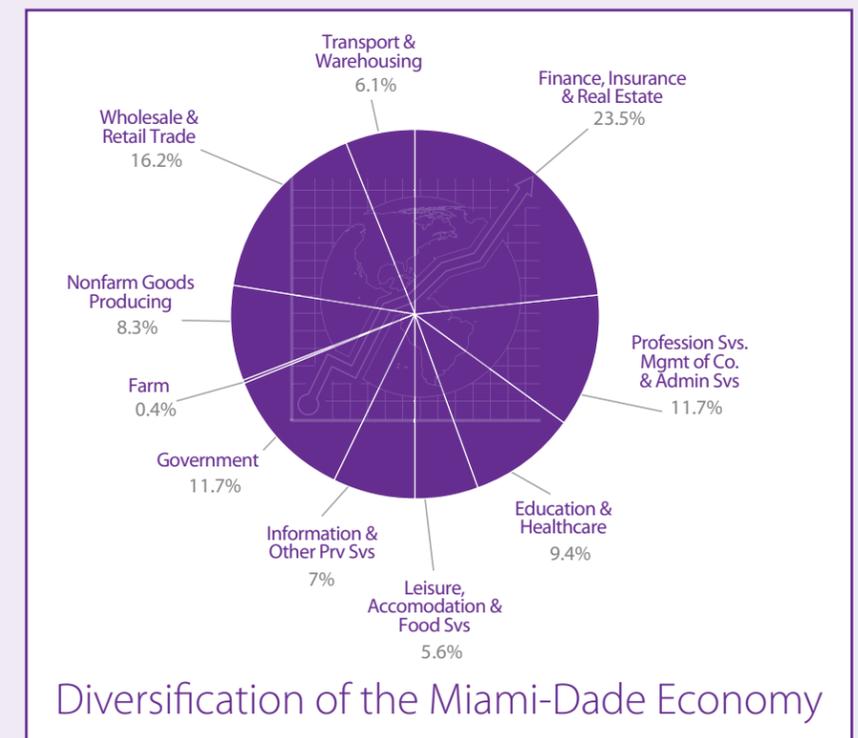
Challenges and Opportunities

Standard business plans project three to five years into the future. Sustainability planning uses lifecycle approaches and considers resources well into the future. Typical business plans focus on the financial bottom line. Sustainability plans focus on a triple bottom line that considers social, environmental, and economic factors. Reconciling the two models can be difficult.

The long-term perspective embraced by sustainability considers more factors including long-term livability, viability and prosperity of the community. But due to the newness of sustainability concepts and analysis, and general aversion to change, there is a tendency for business and government to continue to make short-term decisions and prioritize actions, without fully accounting for all benefits, even though these decisions may have long-term consequences. Therefore, one of the primary challenges is to transform the standard notion of economic impact, so that there is a broader understanding

of the basic connections between the health of our natural resources and the health of our economy and people. Once this recognition becomes widespread, it can foster a culture of change that will transform the economy. In terms of opportunities, Land use and zoning activities are also contributing to the sustainability of the airport area. In September of 2013, the Miami-Dade Board of County Commissioners rezoned a 220-acre area to create the Palmer Lake Metropolitan Urban Center (PLMUC). The Center will include the joint-development portion of the MIC and will contain a mix of residential, retail, hotel, office, and industrial uses.

The Airport and Seaport will continue to be hubs of increased economic development and will provide connectivity via various modes of transportation making regional travel for passengers and cargo easier.



Diversification of the Miami-Dade Economy



Healthy Communities

Being green is healthy, and this plan includes a focus on our daily quality of life as individuals. The growing cost of health care, especially preventable conditions associated with obesity and lifestyle disease, is an expensive problem for our community, and our nation. This plan also focuses on overall neighborhood-level health through community design initiatives that incorporate an abundance of trees and gardens, parks and open spaces, safe paths for biking and walking, and access to healthy foods. Focusing on and investing in the social aspects of personal health and quality of life are also beneficial to our local environment and economy. Diet and exercise have a clear link to reducing greenhouse gas emissions, by promoting walking and biking over driving, and by increasing consumption of locally grown food that requires little transportation for shipment.

Goals

- *Raise awareness that sustainable living is healthy*
- *Plant more Florida-friendly and native trees and landscapes*



HEALTHY COMMUNITIES

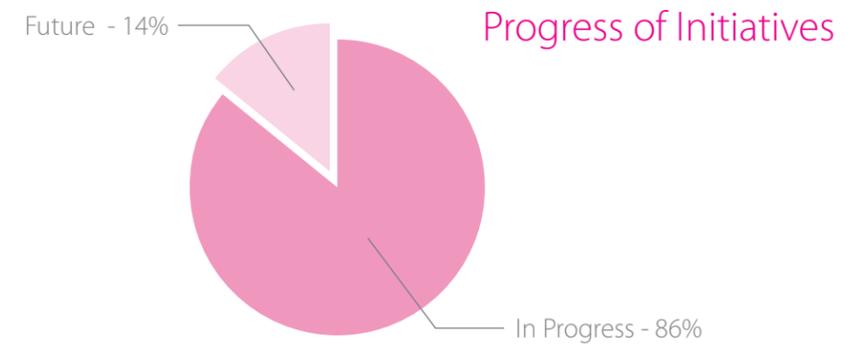
Facilitate active and safe lifestyles for residents through the Open Space Master Plan and other community initiatives
(5 in progress and 2 future initiatives)



Plant more trees (3 in progress initiatives)



Promote fresh, local, organic food in all neighborhoods through grocers, farmers' markets, and community gardens
(4 in progress initiatives)



Initiative 116: Increase safe walking, bicycling and driving behaviors through educational, public awareness and social marketing programs

Description	Unit of Measure	2015 Target	Quantity to Date
Residents served through MDPD bike/pedestrian educational programs	# of residents	599,000	308,149
Annual average number of schools served	# of schools served (average)	130	130

A community with safe, walkable and bikeable streets is a healthier community. These kinds of streets are still not the norm in Miami-Dade, which were built with the car in mind, and our culture still gives priority to cars for transportation. Fortunately, there are many stakeholders in our community advocating for pedestrians and bicyclists, such as the South Florida Bike Coalition and Miami Bike Scene. Novel ways to encourage more biking are being tried such as the 2013 New World Symphony's partnership with the Green Mobility Network and Emerge Miami to create a cycling-themed evening at the symphony, including complimentary valet bicycle parking! There are also many community partners providing education and outreach on bike and pedestrian safety, primarily to school age children, such as the University of Miami School of Medicine, the Miami-Dade Public School system, the Federal Department of Transportation, the U.S. Department of Health and Human Services, the Miami Dade Health Department, the Miami-Dade Police Department and the Miami-Dade Parks, Recreation and Open Space Department.

The Miami-Dade Police Department has three separate programs that provide bicycle and pedestrian safety trainings to students in private and public elementary schools and daycare centers, as well as to the general public. In addition, they provide school crossing guards at elementary schools and support pedestrian and bicyclist safety programs managed by other community partners such as local participation in International Walk to School Day. This type of education can encourage our community to participate in activities that can help combat hypertension, diabetes, and other medical conditions. In addition, every time our residents choose to walk or bike to a destination instead of driving, tail-pipe emissions are avoided.



Miami-Dade Police Department and other community organizations provide bicycle and pedestrian safety training to County residents.

Bike and Pedestrian Injuries and Fatalities



Bike and Pedestrian injuries and fatalities data (Florida Department of Highway Safety and Motor Vehicles 2013)

Initiative 121: Promote landscaping and gardening suitable for South Florida

Description	Unit of Measure	2015 Target	Quantity to date
Classes about South Florida friendly gardening & landscaping	# of classes	1,585	974
Participation in classes referenced above	# of attendees	55,000	18,416
Educational contacts	# of contacts	150,000	125,969

Planting more vegetation and taking care of our existing trees, landscapes, and gardens is another important initiative in this goal area. The Miami-Dade County Cooperative Extension is a partnership between the County's Department of Regulatory and Economic Resources and the University of Florida/Institute of Food and Agricultural Sciences Extension. It is an excellent community resource that educates homeowners about how to design, install, and maintain healthy landscapes in our South Florida climate by using a minimum of water, fertilizer, and pesticides. The result: low-cost, low-maintenance, attractive landscapes that add value to the sustainability of our community in the following ways:

- Plants make the outdoor environment shadier and cooler
- Landscaping can increase property values
- Cooler streets attract more neighbors to the outdoors which lowers crime rates
- Consumers spend more money and return more frequently to shopping areas with street trees
- Plants help retain rain water and reduce surface water runoff and erosion
- Vegetated areas help replenish our aquifer and help filter out some pollutants
- Vegetated areas create habitat for wildlife, including food pollinators
- Gardening activities provide cardiovascular exercise benefits



Teaching county residents about Florida-friendly landscape care

Summer daytime air temperatures can be 3–6 degrees cooler in tree-shaded neighborhoods compared to treeless areas (U.S. Department of Energy 2007).

The Cooperative Extension has many programs that serve a wide range of audiences including homeowners, commercial landscapers and nurseries, municipal departments, developers and builders, and pest control operators. Over one million website users accessed online educational materials provided by the Miami-Dade Cooperative Extension Service during the reporting period. A survey conducted by the Extension Service (University of Florida Institute of Food and Agricultural Sciences Extension 2013) indicated that interest in backyard vegetable gardens has increased significantly in recent years. The most important reason cited by the survey respondents was a desire for safe and healthy food.

Challenges and Opportunities



Miami-Dade County Extension staff educates homeowner about gardening techniques that save water

Carefully positioned trees can save up to 25% of the energy that a typical household uses for cooling (U.S. Department of Energy 2007).

One of our primary challenges in this goal area is tracking the progress of our initiatives. This is because many of the initiatives are led by nonprofit or community-based organizations that do not have the staff or technological resources to track the data needed to assess the progress. In addition, often there is not a designated entity that has been historically responsible for collecting data of interest.

For example, there is no individual group or entity in our community that tracks bike and pedestrian education and outreach activities that are conducted by all of the different individual organizations who coordinate them. Even though some

initiative-specific data is hard to come by, we have other data that help us to understand our overall progress. For example, we can look at broader data that is collected on pedestrian and bicyclist accidents to see whether injuries and fatalities are diminishing. This can be used as an indicator as to whether our community is successful in prioritizing pedestrian and bicyclist safety. Unfortunately, the South Florida metropolitan area (including Miami-Dade, Fort Lauderdale, and Pompano Beach) was ranked as the fourth most dangerous place to walk in the United States in 2011 (Transportation for America 2011), demonstrating that we need to make more progress in this area. Other important statistics to look at are the percent of local food production that stays local, currently assessed at less than 10 percent, and the percent of local food production that is organic, currently assessed at 1 percent (LaPradd 2013).

In 2012, Miami-Dade County's Office of Sustainability, nonprofit "ioby" (which stands for "in our back yards"), and the Health Foundation of South Florida partnered together and obtained grant funding from the Funders' Network for Smart Growth and Livable Communities. As part of the grant, ioby established a Miami office to bring a web-based crowd-resourcing platform that supports community-led, neighbor-funded projects such as the creation of community gardens, farmers markets, and mini parks for stronger, more sustainable neighborhoods. This organization's online tools allow a much broader audience (crowd) to see and access the projects via a web page, facilitating contributions of needed resources such as funds, supplies, and volunteer time. It is anticipated that this partnership will facilitate more community projects and involvement in support of the Healthy Communities goal area.



The Opa Locka Community Development Corporation has partnered with ioby to help develop a Kaboom! Playground at this location.



Climate Change Action Plan

Our community has long been recognized as one of the most vulnerable to the impacts of climate change. Some of our greatest challenges include sea level rise, more frequent extreme weather events, and changes in rain patterns and intensities. The good news is that Miami-Dade County is already familiar with planning for and addressing damages from severe thunderstorms, tropical storms, and hurricanes, and as a result, existing programs and initiatives position us well for addressing the challenges that climate change brings. Yet there is much more to do. As a community built essentially at sea level, rain and tidal events are current stressors that will worsen with rising seas, changing precipitation patterns, and extreme weather events. This Climate Action Plan was developed in recognition of the need for continued and coordinated action on this front. It was designed to help us use science as a foundation for planning, to fortify partnerships, and to lay the groundwork for well-informed and responsible capital, operational, and land use decision-making by both government and the business community.

As discussed in the Leadership, Commitments, and Communication Goal Area, there has been quite a bit of focus on organizing regionally and developing a framework that complements and enhances the actions of individual cities and counties. Much of the earlier efforts of task forces, advisory committees and plans from individual counties, such as this Miami-Dade Climate Action Plan, have been woven into the work being done at the regional level.

The initiatives presented here focus on adapting to change and building resiliency. Many of the initiatives highlighted in other GreenPrint goal area sections contribute to reducing our emissions. Both types of strategies are critical to a comprehensive Climate Action Plan.

Goals

- *Understand and respond to current and future climate change impacts*
- *Reduce greenhouse gas emissions*



CLIMATE CHANGE ACTION PLAN

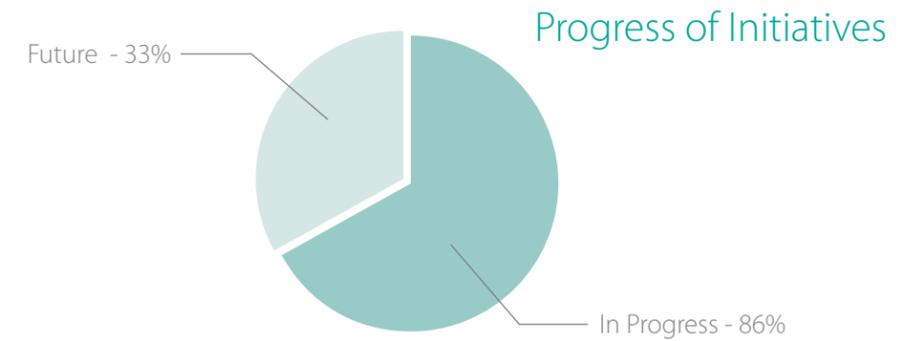
Track local and regional climate change indicators and trends *(2 in progress and 3 future initiatives)*



Develop local and regional climate change scenarios depicting various impacts and time frames *(3 in progress initiatives)*



Integrate future climate change impacts into community and government decision-making for capital, operational, and land-use issues *(3 in progress and 1 future initiative)*



Initiative 133: Continue existing local surface water, ground water, and salt water intrusion modeling projects, incorporating expected climate change impacts (i.e. changes in temperature, precipitation, sea level rise, etc.) and integrating with regional water modeling projects from the South Florida Water Management District and other SE FL Climate Change Compact partners.

This initiative captures the need for more robust modeling to better guide our responses as we continue to experience the effects of climate change. Our County has great expertise and skill in addressing flooding impacts, primarily through the development of our Stormwater Master Plan. Because maintenance of our stormwater infrastructure and the preservation of our coastal habitat play such a critical role in minimizing flooding impacts, they are both addressed in the Stormwater Master Plan. Saltwater intrusion, accelerated by sea level rise, is another concern that the County is already addressing because it affects the source of our drinking water, the Biscayne Aquifer.

The County has continued to work with local, regional, and federal partners to make progress on this initiative. As discussed briefly in the Leadership, Commitments and Connections Section, a preliminary analysis of vulnerability to sea level rise was developed in August 2012 through the four-county SE Florida Regional Climate Change Compact partnership. This analysis and others only take land elevation into account, and do not consider drainage systems or surface and groundwater interactions with rising seas or rain events. The preliminary analysis has value in identifying low-lying areas that are vulnerable to tidal influence and sea level rise. However, models that also incorporate interactions of surface water and ground water and their impacts on our infrastructure (canals, pump stations, drains) are necessary in order to better assess projected impacts. It is these projections that we need in order to guide capital investment decisions and develop long-range plans for providing services.

Miami is ranked number one in the world in terms of assets exposed to coastal flooding projected by 2070, and among the top ten for populations exposed to coastal flooding (Organisation for Economic Co-operation and Development 2007).



Severe local flooding from natural high tides will be exacerbated by sea level rise.



Typical canal salinity structure.

The United States Geological Survey (USGS), in partnership with the County, is in the final stages of developing such a model – one that assesses existing and future impacts on water resources in South Florida. The model, which is currently undergoing a rigorous peer review process as required by USGS, will more accurately represent surface water flow through the regional canal network and canal-aquifer interactions in future model scenarios. Studies indicate that rain will be concentrated in more storm events, with longer and drier periods in between, producing a considerable impact on water availability, drainage, and canal operations. The model was developed at a total cost of over three million dollars, and with the input of many organizations to ensure that it meets the expectations of the County, regulatory agencies, and other interested stakeholders. Once fully developed, the tool will become available for anyone to use. Some of the outputs, uses, and benefits of this project include:

- Modeling the effect of sea level rise on saltwater intrusion into the Biscayne Aquifer, our primary source of fresh drinking water
- Modeling canal system function and response that might change with different rain patterns and groundwater levels
- Identification of canals and structures at risk of exceeding operational capacity
- Evaluation of adaptive techniques that can be used on canal structures, such as increasing pump size, to compensate for impacts
- Evaluating how land use (agricultural, suburban, and urban) affects the model scenarios and outputs
- Providing a scientific basis for establishing new groundwater level conditions for use in the County's Storm Water Master Planning process
- Integrating with models being developed in Broward County, to better coordinate regional water resource planning.

Initiative 136: Develop mechanisms for organizations to integrate potential climate change impacts into capital and operational decision making

After policy analysis in 2011, the County completed a public engagement and policy analysis process known as Evaluation and Appraisal Report (EAR)-Based Amendments to address the issue of climate change in October 2012. The EAR Report maintains that issues known to impact the development and infrastructure investments of and within the County should be addressed, or at least duly considered, in the formulation of the County's policy statements regarding development. While there are some early examples of County departments factoring future sea level rise into planning and designing projects, this practice became official County policy on October 2, 2013, with the adoption of these amendments to the County's Comprehensive Development Master Plan (CDMP) by the Board of County Commissioners. Therefore, the following policies addressing climate change have been integrated throughout the CDMP in order to institutionalize its consideration:



- Analyze impacts on the built environment
- Address development standards and regulations to be used to guide investments in public infrastructure development, redevelopment, and operations in hazard prone areas
- Analyze the vulnerability of public infrastructure, such as public buildings, water utility facilities, roads, bridges, ports, and transit stations
- Determine the feasibility of designating areas as Adaptation Action Areas (AAA), a voluntary designation available in Florida Statutes that can be used by local governments in their coastal hazard management program for areas at risk for of coastal flooding and tidal inundation
- Engage and educate the public as well as use advocacy, and incentives to shift residents' everyday transportation decisions and housing choices to support transit-oriented development
- Consider climate change and sea level rise in public investment processes and decisions, specifically in fiscal decision-making and in project review, design, and funding prioritization



- Require all County departmental master plans and strategic business plans to include and prioritize different strategies to address climate change impacts and to create plans with longer time-frames (i.e. 30, 50, 75-year plans)
- Redirect future population concentrations away from vulnerable areas
- Continue active participation in the Southeast Florida Regional Climate Change Compact

These CDMP changes are the County's first formal step toward institutionalizing climate change considerations into County planning and operations, and are an important move toward developing a sustainable community.



A newly constructed earthen plug along Card Sound Road will help limit salt water intrusion

Challenges and Opportunities

The impacts of climate change are not always obvious, and our response to climate change might not be obvious either. Walls to keep out rising seas will not work in our community due to our porous geology. Therefore, we must adapt using different approaches. We can build resiliency into our landscape in more subtle ways, and weave it into policies, programs and practices, for example, continuing and enhancing acquisition and restoration of coastal wetlands and exploring refinements of the building code or flood criteria. In order to do so strategically, we must have a better understanding of the cost and timing of adaptation strategies, as well as the cost of taking delayed or no action at all.

A 2005 study found that on average, a dollar spent by the Federal Emergency Agency on hazard mitigation (actions to reduce disaster losses) provides the nation about \$4 in future benefits (Multihazard Mitigation Council 2005).



Sustainability Scorecard

Tracking the progress of initiatives is an important component of our data driven results-oriented sustainability plan. Measuring progress is crucial to GreenPrint's success. Other high-level key performance indicators were selected to be included below in some instances where initiative-specific data is not available, in order to better assess current progress. Stoplight indicator colors are included to provide an understanding of progress relative to targets and/or intermediate milestones.

sustainability scorecard

Strong Leadership, Connections, and Commitment

• Create the next generation of green leaders

Indicators	2015 Target	2011/2012	Progress
County sustainability legislation	>100	>100	●
Stakeholder meetings	Quarterly	<4	●
Sustainability grant funding related to GreenPrint initiatives and scorecard measures (number of grants)	Based on availability	118	●

Water and Energy Efficiency

• Use less water and energy

Indicators	2015 Target	2011/2012	Progress
Community water conservation (in Million Gallons per Day)	1.5 million gallons	2011-1.92 MGD 2012-1.74 MGD	●
County government energy use (in Mega Watt Hours)	20% reduction	2011 – 1,202, 970,695 MWh 2012 – 1,243,609,792 MWh	●
Renewable energy produced from County government operations	5% increase	CY 2011 – 301,603 MWh CY 2012 – 330,159 MWh	●
Community Energy Star facilities	>132	70	●
Combined Greenhouse Gas Emissions Reduction (metric tons) for the Energy Efficiency Block Grant (EECBG) in Carbon Dioxide Equivalents	54,000 mt CO ₂ e	36,442 mt CO ₂ e	●
Energy Efficiency Block Grant (EECBG) funding	\$12,523,700	\$12,523,700	●

 Our Environment

• Maintain exceptional quality of air, drinking water, and coastal waters used for recreation

Indicators	2015 Target	2011/2012	Progress
Air quality index best rating	90%	2011 – 91% 2012 – 88%	
Drinking water quality rating	100%	2011 – 100% 2012 – 100%	
Biscayne Bay water quality rating	95% to 100%	2011 – 100% 2012 – 100%	

• Protect and Enhance Biscayne Bay, the Everglades, and vital ecosystems

Indicators	2015 Target	2011/2012	Progress
Coastal habitats and wetlands restored	525 acres	FY2011 – 560 FY2012 – 577	
Environmentally endangered lands preserved (cumulative)	24,000 acres	23,600 acres	

• Reinvent our solid waste system

Indicators	2015 Target	2011/2012	Progress
Household curbside recycling	375 lbs	2011 – 351.69 lbs 2012 – 358.77 lbs	

 Responsible Land Use and Smart Transportation

• Use our land wisely, creating and connecting strong sustainable neighborhoods

Indicators	2015 Target	2011/2012	Progress
Urban center area plans	15	4	
Multi-corridor master plans	6	2	
Transit-oriented developments	4	1	
Enhanced Bus Corridors and transit line improvements	4	0	
Park and ride lots	6	4	
Park and open spaces accessibility metrics	Develop	New Equity Access Criteria Developed	

• Provide more transportation options, reducing the time we spend in our cars

Indicators	2015 Target	2011/2012	Progress
Transit ridership (Additional annual boardings)	10 million boardings	2011 – 7.1 million 2012 – 9.5 million	
New bicycle trails and lanes	40 miles	2011 – 20.6 miles 2012 – 13.6 miles	

 Vibrant Economy			
• Create Green Jobs			
Indicators	2015 Target	2011/2012	Progress
Green Business Certifications	750	15	
Unemployment rate	<12.5%	2011 – 11.10% 2012 – 9.3%	
Educational attainment	Improve	2011 – 78% 2012 – 80.4%	
• Build on our international reputation to become a green enterprise destination			
Indicators	2015 Target	2011/2012	Progress
Green hotels	132	2010 – 48 2011 – 49 2012 – 50	

 Healthy Communities			
• Raise awareness that sustainable living is healthy			
Indicators	2015 Target	2011/2012	Progress
Diabetes rate	Decrease	2007 – 9.1% 2012 – 10.8%	
Heart disease death rate	Decrease	2009 – 211.3 per 100K 2012 – 201.4 per 100K	
Adult obesity rate	Decrease	2008 – 22.3 per 100K 2012 – 24.8 per 100K	
Farmers Markets	Increase	2010 – 15 2012 – 16	
Community Gardens	Increase	2012 – 18	
• Plant more Florida-friendly native trees and landscapes			
Indicators	2015 Target	2011/2012	Progress
Tree plantings (cumulative)	500,000	135,000	

 Climate Change Action Plan			
• Understand and respond to current and future climate change impacts (Adaptation)			
Indicators	2015 Target	2011/2012	Progress
FEMA flood rating	5	5	
Local & regional Sea Level Rise Maps for planning	Complete by 2012	Completed	
Initial sea level rise vulnerability assessment using agreed upon Climate Change Compact parameters	Complete by 2011	Completed	
Groundwater modeling projects	Complete by 2012	In Progress	
• Reduce greenhouse gas emissions (Mitigation)			
Indicators	2015 Target Reduction (mt CO ₂ e)*	2011 & 2012 Reduction (mt CO ₂ e)*	Progress
Strong Leadership, Connections, and Commitment	17,000	0	
Water and Energy Efficiency	574,000	28,402	
Our Environment	20,400	4,888	
Responsible Land Use and Smart Transportation	532,000	125,387	
Vibrant Economy	326,000	958	
Note: There were no emissions reductions initially projected for the GreenPrint Healthy Communities Goal Area, so it is not represented in this table.			

* Metric Tons Carbon Dioxide Equivalents (CO₂e)

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Check out the complete
GreenPrint Sustainability Plan
and list of initiatives at:





HELP US KEEP MOVING FORWARD!

Check out GreenPrint along with a complete list of initiatives at
www.green.miamidade.gov

