

# CLIMATE ACTION PLAN



Local Strategy to Address  
Global Climate Change



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## Letter from Commissioner Beam Furr

November 16, 2015

Dear Mayor and Fellow Commissioners,

As Chair of the Broward County Climate Change Task Force, I am pleased to present the 2015 Broward County Climate Change Action Plan (CCAP). The CCAP is an update to the original Broward Climate Change Action Plan (2010), and it builds upon the 2010 CCAP's recommendations for a progressive countywide climate program to reduce greenhouse gas emissions and adapt to the consequences of climate change.

A century ago, canals were dredged and the Everglades was drained to create dry land for development, which enabled the establishment of some of our oldest communities. Early residents would be astonished by the transformation of Broward's landscape over the past 100 years. As we recognize and celebrate Broward County's centennial this year, we recognize that clean air, clean water, vibrant marine resources, and healthy coastal habitats are the fundamental components upon which 100 years of accomplishments and progress have been built. All of us benefit from our unique natural resources and a sustainable society; with 1.8 million residents and 11 million annual visitors, our environment is critical for the well-being of our residents, our economy, and our ecosystems.

Therefore, with the next 100 years in mind, the Task Force is proud to present 94 actions to reduce carbon pollution and strengthen our resilience to the effects of global climate change. The Plan reflects considerable effort on the part of the Task Force members, community participants, staff, and experts who all lent support throughout the process. On behalf of Broward County Government and the residents of Broward County, I would like to thank them for their extensive contributions.

It has been my pleasure to serve as Chair of the Task Force and I look forward to continuing in this capacity as we work together as a community to implement the Climate Action Plan 2015.

***Broward County's commitment to SUNsational service means making it easier for residents and businesses to go solar. A cleaner energy option!***

**What You Can Do, see page 37.**



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## Introduction

The Broward Climate Change Action Plan (CCAP) 2015 consists of nearly 100 strategic actions for addressing the economic, environmental, and social impacts of climate change. The CCAP is a county-wide strategy, to be implemented by local government, community partners and residents alike. The actions are focused on reducing local greenhouse gas emissions, increasing community resiliency and planning necessary adaptation measures to address local impacts. By implementing these actions, Broward County moves forward on building a greener, more sustainable, and climate resilient community.

## Summary of CCAP 2015 Actions

Completing the actions in this plan will work toward building stronger communities and infrastructure, protecting critical sectors of our industry, government and natural resources and using sound science to better understand and address climate impacts. The CCAP addresses the impacts of climate change on our community.



**Policy:** Climate change will impact our community for years to come. Policies and regulations can have a substantial influence on the rate of climate change. Broward has the responsibility for making policies to address climate change at the local level. The CCAP actions will create collaborative intergovernmental practices by developing joint legislative policies which raise the awareness at State and Federal levels on the vulnerability of southeast Florida and advocate for increased state and federal funding for mitigation and adaptation projects.



**Natural Systems:** Climate change poses a significant threat to our critical natural infrastructure and ecosystems. Natural Systems CCAP actions concentrate on preserving Broward's pristine beaches, Everglades, and habitats and protecting the diverse plant and wildlife to create a community where human habitation and natural ecosystems can co-exist in a balanced style of living.



**Water Supply:** Climate change puts our vital natural resources at risk, and for Broward County in particular that means our drinking water supply. The importance of water cannot be diluted. Rising sea levels threaten our fresh water supply by forcing saltwater into our underground freshwater aquifer. The CCAP actions safeguard the water supply through conservation and adaptation, development of decision support tools, and integrated water resource management.



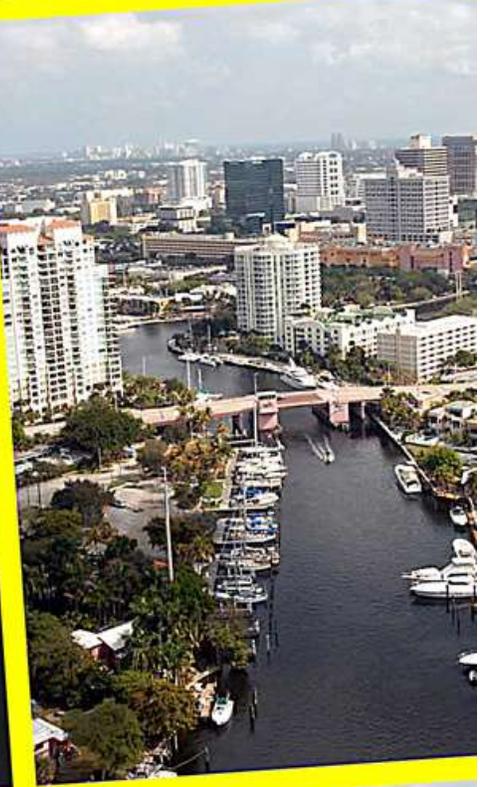
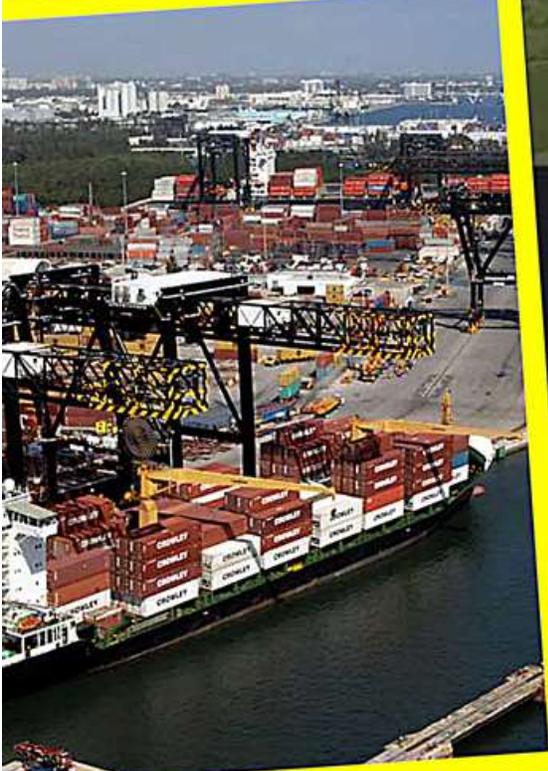
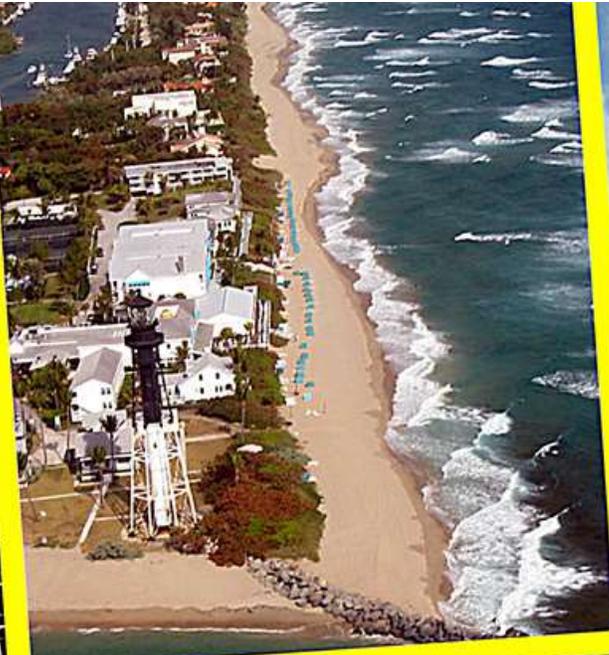
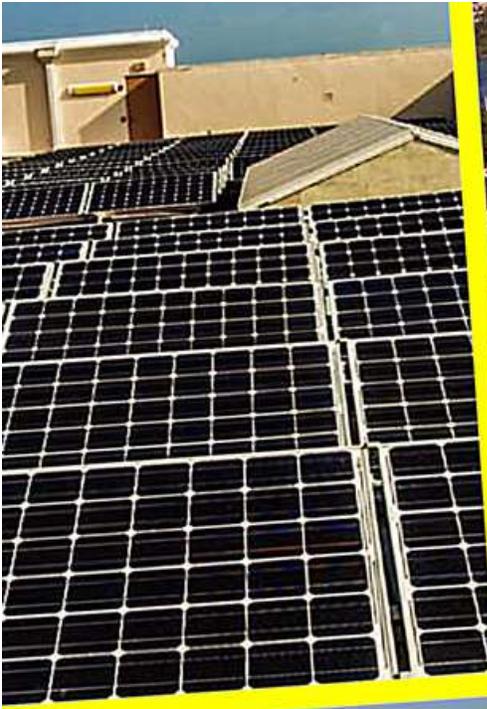
**Energy Resources:** Climate change puts energy resources at risk, in particular, the electricity system due to its vulnerability to extreme storms, coastal flooding, extreme heat, drought, and wildfires. All of which are likely to increase due to climate change. Renewable energy, such as solar, is a key component of making our electricity system more resilient, and reducing local greenhouse gas emissions. The CCAP actions will move the community toward an energy efficient future by increasing sustainable consumption through efficiency and conservation efforts, expanding renewable and alternative energy accessibility, and creating incentive programs.



**Built Environment:** Climate change poses a significant threat to the safety and reliability of critical infrastructure systems. The CCAP actions support rethinking traditional approaches to land use and land management, building and infrastructure siting and design, and community planning in order to improve our climate resilience, reduce greenhouse gas emissions and facilitate smart science-supported public and private infrastructure investments, policies, and practices.

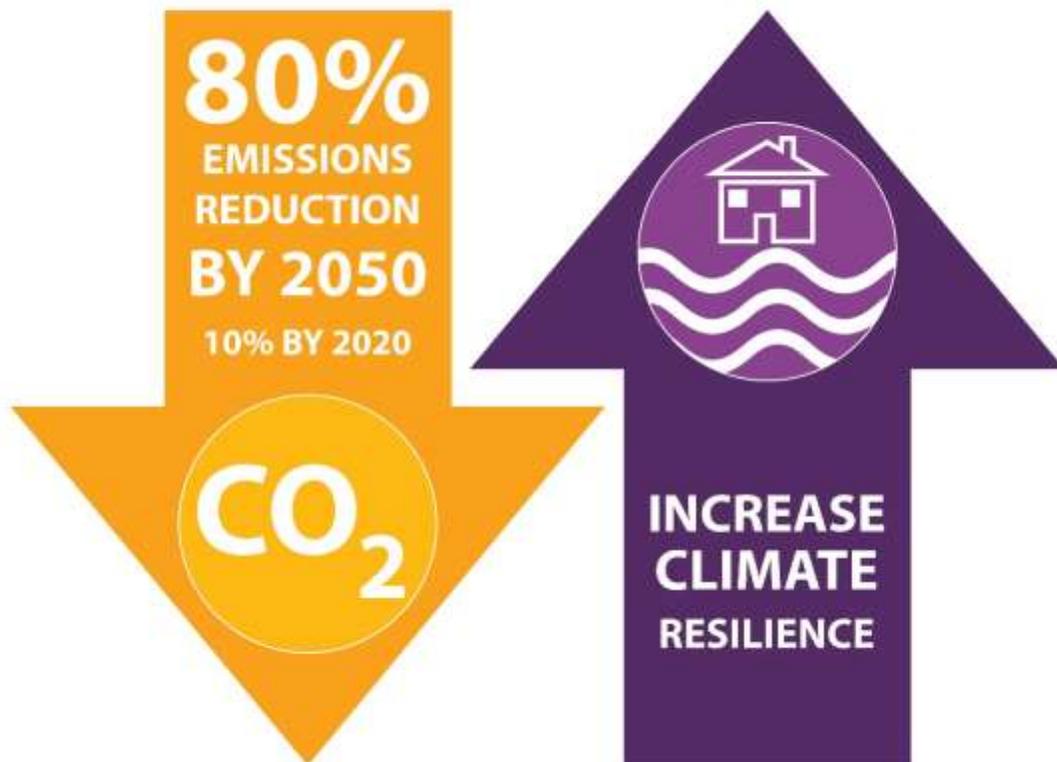


**Community Outreach:** Climate change poses significant economic risk to all sectors and communities. To successfully prepare for climate change, communities must have the capacity to recognize, understand, and assess relevant climate-related hazards, risks, and impacts. The CCAP actions will deliver climate change educational information to all audiences so as to increase awareness and mobilize action on climate change.



## Climate Change Action Plan Goals

The CCAP is meant to be simple and clear in order to support implementation. There are two overarching goals for this plan. **1. Mitigate the effects of climate change by reducing greenhouse gas emissions by 2% per year by 2020**, ultimately leading to a total 80% reduction by 2050, and **2. Increase the resilience of our community to the effects of climate change.**



In each of the six following sections, the CCAP has an objective and a series of actions that ultimately support the above two goals. Broward County will track and report on progress made in the implementation of the actions, as well as meeting specific benchmarks. Implementation of the CCAP is an evolving process, actions may be expanded and developed as needed.



## High Priority Actions



- Contribute to local, regional and state climate planning efforts (p. 11)
- Support the Southeast Florida Regional Climate Compact (p. 11)



- Lessen the cumulative impacts to natural systems (p. 15)
- Support Everglades Adaptive Restoration (p. 15)
- Develop habitat buffer zones (p. 15)
- Increase the number of miles of living shorelines and dunes (p. 16)



- Continue local water conservation programs (p. 18)
- Monitor and protect wellfields (p. 19)
- Develop alternative water supply strategies (p. 19)



- Accelerate government operations GHG reduction efforts (p. 22)
- Implement a Better Buildings Challenge (p. 22)
- Support third party retail power purchase agreements (p. 24)
- Increase rooftop solar on county facilities (p. 25)
- Actively pursue the installation of alternative fuel vehicle infrastructure (p. 25)



- Encourage FEMA to consider sea level rise in flood map updates (p.28)
- Analyze sea level rise, drainage and hurricane impacts (p. 30)
- Develop adaptive management strategies (p. 30)
- Apply models to develop resilient design standards (p. 30)



- Educate the community on climate change (p.34)
- Engage volunteer corps (p.35)

## Icons Legend

There are various icons throughout the action plan used to help the reader visualize which overall goal(s) the action relates to, the level of commitment needed to complete the action (county government operations, municipal/community/regional, state, or federal), and whether the action is high priority. Please note, actions may also include references to the original CCAP numbering system. For example, “PC-1.4” at the end of action #2 refers its identification in the original plan. Actions designated with “(New)” in the description are new and were not included in the 2010 CCAP.



**Plan actions which relate to the plan’s goal to reduce Broward’s carbon footprint are designated by this icon.**



**Plan actions which relate to the plan’s goal to increase the resiliency of the community are designated by this icon.**



**Plan actions in which Broward County governmental operations are responsible for ensuring completion of the action are designated by this icon.**



**Plan actions in which regional efforts, municipalities, and community partners are required to complete the action are designated by this icon.**



**Plan actions in which state resources and/or partners are required to complete the actions are designated by this icon.**



**Plan actions in which national resources and/or partners are required to complete the actions are designated by this icon.**



**Plan actions determined high priority by the Climate Change Task Force are designated by this icon.**



**Policy**

## Plan Element: Policy

The actions under *Policy* advocate for public policies supporting regional resilience and for advancement of transformative policy changes which will reduce emissions, build climate resilience, and align government objectives and partners i.e., community, industry, research institutions, and others.

### Policy Objective

Implement the following 15 actions to:

- Enact policies and legislation to reduce emissions from transportation, buildings, and increase community resilience through adaptation.



## Policy

- |   |   |  |
|---|---|--|
| <p><b>1</b> <b>Contribute to local, regional and state climate planning efforts</b></p> | <p>Support regional entities in their efforts to develop and coordinate regional tools and planning documents which integrate regional climate change mitigation and adaptation goals into their planning processes. <a href="#">(PC-2.1)</a></p>   |  |
| <p><b>2</b> <b>Contribute to climate planning efforts for transportation</b></p>        | <p>Assist in coordinating transportation-related adaptation policies across jurisdictional boundaries and ensure alignment amongst broader planning and plan implementation efforts. <a href="#">(IP-1.4)</a></p>   |  |
| <p><b>3</b> <b>Support the Southeast Florida Regional Climate Compact</b></p>           | <p>Continue support for the Compact. Assist in the coordination, development, and implementation of Compact resources. Work with the Compact to formalize better municipal participation. Serve as a regional resource. Collaborate regionally on legislative policies. Collaborate broadly on mitigation and adaptation policies. <a href="#">(PC-1.6)</a> <a href="#">(PC-1.5)</a> <a href="#">(PC-1.4)</a></p> |  |
| <p><b>4</b> <b>Lead advocacy for climate change policies and legislation</b></p>        | <p>Advocate for climate change action and legislation to the National Association of Counties, the Florida Association of Counties, the Florida League of Cities, and Federal and state government. <a href="#">(PC-1.7)</a></p>  |  |

- 5

**Maintain Climate, Energy & Sustainability Program**

Maintain a program within County operations to oversee the implementation of the Climate Action Plan. Coordinate with the Southeast Florida Regional Climate Compact. Provide staff assistance to the Climate Change Task Force. Lead the Government Operations Workgroup. [\(PC-1.1\)](#)


- 6

**Continue Climate Change Task Force**

Continue the Broward Climate Change Task Force to advise elected officials and the County in the decision-making process. The Task Force should be comprised of County and municipal elected officials, scientists knowledgeable in the field of climate change, representatives of local Green Advisory Boards or environmental groups, regional transportation and planning authorities, water and energy utilities, and other knowledgeable individuals, guided by a staff liaison. [\(PC-1.3\)](#)


- 7

**Adopt adaptation standards which consider climate change and sea level rise**

Ensure that public and private infrastructure, such as streets and bridges, water and wastewater treatment plants, stormwater drainage systems, seawalls, hospitals, city halls, police and fire stations, and power generation facilities, are built or rebuilt considering impacts from global climate change, including rising sea levels. Encourage use of centralized stormwater systems where appropriate. [\(IP-1.2\)](#) [\(WR-1.18\)](#)


- 8

**Address mitigation and adaptation policies in Land Use Plan**

Ensure the County's Land Use Plan addresses mitigation and adaptation policies. Update the Priority Planning Map. Support linking the broad range of local and state infrastructure investments to improve and integrate multi-modal transportation and land uses that encourage a reduction in single occupancy vehicle trips and greenhouse gas emissions, improve energy efficiency, provide affordable housing proximate to urban work centers, and progress toward other sustainability and generate quality of life measures. [\(PC-2.3\)](#) [\(PC-3.1\)](#)


- 9

**Limit development in vulnerable areas**

Support state legislation to remove existing statutory barriers and authorize local governments to adopt land use regulations to limit development and redevelopment in areas vulnerable to flooding due to sea level rise, stormwater inundation, and other impacts of climate change. [\(PC-3.2\)](#)



- 10

**Promote transit-oriented development**

Promote functional, walkable mixed-use development designs and projects around transit stations by providing flexibility in development review for these projects and revising the zoning and land development codes to allow and encourage these projects. Work with municipalities to establish incentives for this type of development. [\(PC-4.1\)](#)





- 11

**Adopt a Dark Skies model ordinance**

Develop a model “Dark Skies” ordinance and encourage municipal and private sector participation to discourage light trespassing. [\(New\)](#)




- 12

**Propose Energy Code changes to the Board of Rules and Appeals (BORA)**

Convene a technical working group of practitioners in energy efficiency and renewable energy technology to identify barriers to approval, installation, and construction practices in the current code and propose recommendations to eliminate or minimize these barriers from the state code. [\(ZB-1.1\)](#) [\(ZB-3.1\)](#) [\(ZB-2.4\)](#)




- 13

**Identify local codes that conflict with resilient design**

Identify county and municipal ordinances and codes that conflict with resilient design. Coordinate efforts to make necessary amendments. [\(ZB-1.4\)](#)




- 14

**Adopt environmentally preferable purchasing policies and practices**

Employ the collective buying power of local governments to purchase products and services that conserve energy, reduce greenhouse gas emissions, have a low carbon or environmentally certified supply chain, and use recycled materials and/or minimal packaging. Provide models for businesses and other organizations. [\(RZ-2.3\)](#)



- 15

**Engage technical support of federal agencies**

Engage the support of state and federal agencies, such as the National Oceanic and Atmospheric Administration (NOAA), the U.S. Geological Society (USGS), the Federal Emergency Management Agency (FEMA), the U.S. Department of Interior, the U.S. Army Corps of Engineers (USACE), the Environmental Protection Agency (EPA), and the Department of Energy (DOE) that can provide technological and logistical support and work with state, county, and local planning bodies to develop regional scenarios for planning, vulnerability assessments and adaptation strategies. [\(MM-1.9\)](#)







# Natural Systems

## Plan Element: Natural Systems

The actions under *Natural Systems* evaluate and reduce the impacts of climate change on our natural systems and further the integration of natural systems into the urban environment to increase resilience to future climate change impacts.

### Natural Systems Objective

Implement the following 8 actions to:

- Preserve natural areas and habitats to help protect native species.
- Integrate natural systems and green infrastructure throughout the community.
- Evaluate current and future impacts of climate change on our natural resources and ecosystems.



## Natural Systems

**16** **Lessen cumulative impacts to natural systems**

Evaluate impacts of nutrient loads on water bodies and develop reduction strategies. Provide targeted water quality monitoring in areas where septic tanks and tidal influences on groundwater elevations may contribute to water quality impairments. [\(WR-1.20\)](#)



**17** **Support Everglades Adaptive Restoration**

Support adaptive management efforts of the USACE, Florida Department of Environmental Protection, US Fish & Wildlife Service, USGS, National Park Service, and South Florida Water Management District to restore the Florida Everglades. Encourage review of impacts of sea level rise on the Everglades ecosystem. Continue to support state and federal funding proposals. Evaluate impacts of restoration on water resources and climate adaptation capabilities. [\(NU-1.3\)](#) [\(NU-1.4\)](#)



**18** **Develop habitat buffer zones**

Delineate anticipated habitat transition zones and expand zones through land use changes to protect environmentally-sensitive greenways and reserves for migrating species. [\(NU-3.5\)](#)



**19 Increase number of miles of living shorelines and dunes**

Coordinate regionally to achieve a minimum criteria of 60% of coast shall have dune vegetation. This percentage shall be increased to the maximum extent feasible for effective shoreline protection. Protect existing mangrove shorelines and promote further plantings of mangroves along existing seawalls. Promote the integration of live flora and fauna alongside existing grey infrastructure in inland waters. (NU-4.3)



**20 Develop Marine Conservation Areas and guidelines**

Protect marine and coastal resources as part of a climate adaptation strategy. Support the process for nomination of County's offshore coastal waters as a marine sanctuary under the NOAA National Marine Sanctuary program. Engage local stakeholders and lobby for support from the state. (NU-3.6)



**21 Encourage urban reforestation and green infrastructure**

Identify and develop public lands as siting for urban reforestation projects and other enhancements. Plant trees and shrubs on all available public and private lands, including unused properties, school and government properties and conservation lands. Integrate green easements along transportation corridors and within highly urbanized downtowns. Utilize grants and public-private partnerships as funding sources. (NU-2.1) (New)



**22 Increase planting of diverse native vegetation**

Revise county code to require 80% native plant species on public and private property. Coordinate with municipalities to encourage adoption of Broward County landscaping code. Incentivize property owners to plant native drought-tolerant vegetation, and reduce lawn areas and irrigation requirements. Increase plant diversity requirements. (NU-2.4)



**23 Evaluate salinity impacts on natural systems**

Evaluate impacts to natural systems from sea level rise, saltwater intrusion, changes in the groundwater table, and changes in annual precipitation amounts and patterns (timing and distribution), including habitat system and nutrient cycling changes, degradation of habitats, and colonization by invasive plant species. Make recommendations to lessen these impacts or accept the resultant habitat change and adapt current management protocols to deal with the modified ecosystem. (NU-4.1)





# Water Supply

## Plan Element: Water Supply

The actions under *Water Supply* maintain adequate water supply through efficiency and conservation efforts, develop decision support tools necessary to build community resilience, and increase resilience of natural systems through water resource management.

### Water Supply Objective

Implement the following 11 actions to:

- Ensure existing water resources are protected and remain available through conservation and sustainable management.
- Preserve capacity by diversifying source alternatives.
- Balance the water needs of public consumers and natural systems.



## Water Supply

**24 Continue local water conservation programs**

Continue coordination and delivery of local water conservation programs and activities. Provide staff and financial resources to assist municipalities in implementing regional water conservation strategies as a water supply demand management tool and encourage regional partners to do the same. (WR-1.7)



**25 Include climate change in updates of Lower East Coast Plan**

Advocate for the inclusion of adaptation measures that address impacts from climate change in future updates of the South Florida Water Management District's Lower East Coast Water Supply Plan and other regional water management activities. (WR-1.1)



**26 Investigate regionalization of water supply**

Explore the development of expanded use of regional water and wastewater facilities to achieve scales of economy county-wide in addressing water supply, wastewater treatment and alternative water supply as part of climate adaptation and sustainable resource planning efforts. (WR-1.2)



- 27

**Monitor and protect wellfields**

Continue source-water (well field) monitoring and protection programs to mitigate water supply loss due to groundwater contamination from pollutants and saltwater intrusion. [\(WR-1.3\)](#)


- 28

**Develop alternative water supply strategies**

Work in coordination with all utilities and municipalities to develop and implement alternative water supply strategies to mitigate future water shortages as part of Broward’s Integrated Water Resource Plan. [\(WR-1.8\)](#)


- 29

**Model the sustainable use of the aquifer**

Continue to model the sustainable use of the Floridan aquifer for potable water supplies. [\(WR-1.14\)](#)


- 30

**Evaluate impacts of flooding of contaminated sites**

Evaluate the impacts of flooding of Brownfields and other contaminated sites for potential environmental and health impacts. [\(WR-1.19\)](#)


- 31

**Evaluate reuse water interaction with and impacts to the natural systems**

Collaborate with federal and state agencies to develop criteria for stormwater, wastewater and consumptive use management decision matrices with regard to potential impacts on natural areas and to develop mitigation strategies to ensure sufficient freshwater is available for critical natural systems. Identify opportunities for recharge. [\(NU-4.2\)](#)


- 32

**Implement reuse strategies**

Encourage coordination and prioritization of funding strategies among all levels of government and private utilities to ensure timely compliance with state-mandated reuse requirements. Implement the County’s Master Water Reuse Plan. Implement regional stormwater reuse and pursue advancement of the C51 reservoir as a flood mitigation and alternative water supply project. [\(WR-1.12\)](#)


- 33

**Evaluate reuse considering sea level rise**

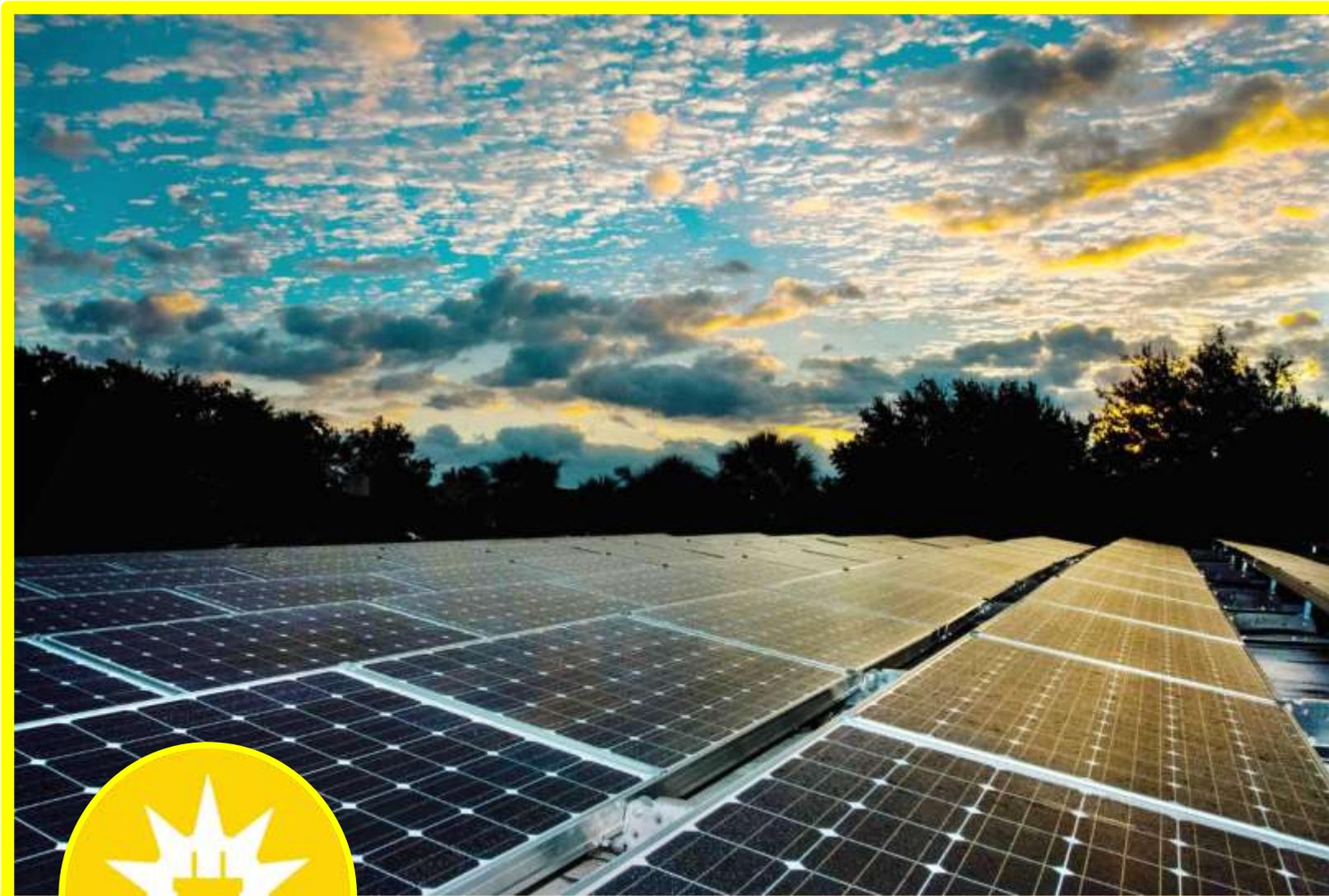
Coordinate with all utilities and municipalities to evaluate utilization of wastewater for reuse in order to offset potable water demands, mitigate for loss of coastal wellfields, and consider salinity and water quality requirements of source water for intended applications. [\(WR-1.4\)](#)



**34 Increase percentage of pervious areas**

Determine the optimum percentage of pervious area requirement. Complete a cost/benefit analysis of imposing new regulations that require expansion of pervious areas, the capture and reuse of rain water, and recharge of the Biscayne Aquifer. Propose appropriate regulations for new construction, redevelopment, additions, retrofits or modifications of property that take into account economic and environmental factors and climate change. [\(WR-1.11\)](#)





# Energy Resources

## Plan Element: Energy Resources

The actions under *Energy Resources* increase sustainable consumption through efficiency and conservation efforts, expand renewable and alternative energy accessibility, and create incentive programs.

### Energy Resources Objective

Implement the following 23 actions:

- Reduce energy intensity of county buildings by at least 20% by 2025 through the Better Buildings Challenge.
- Achieve a renewable energy portfolio of 30% by 2030.
- Decrease fuel consumption by 10% by 2020.



### Efficiency and Conservation

**35 Accelerate government operations GHG reduction efforts**

Report the greenhouse gas (GHG) emissions inventory bi-annually. Work in coordination with Compact partners. Reduce carbon footprint of employees by focusing on behavioral changes and pursue grant opportunities to reduce county emissions. Improve energy efficiency in all county government operations. (PC-1.2)



**36 Implement Better Buildings Challenge**

Publicly pledge to reduce energy intensity of County's building portfolio, assign a primary point of contact, and develop an energy efficiency plan within 6 months of the pledge, including the recommendation of an initial showcase project. Expedite the implementation of the county energy services contract. (New) (PC-1.10)



**37 Install LED streetlights and garage lighting**

Install LED lighting on new roadway and parking facility projects when LED lighting is suitable for the project requirements. Systematically convert existing roadway and parking facility lighting to LED when a life-cycle and power consumption analysis demonstrates that the conversion is cost-effective. Install LED lighting to reduce light pollution in accordance with best practices outlined by the



International Dark Sky Association. Exchange technical data, design criteria, product research, and pricing of LEDs with other agencies and municipal partners. (New)

**38 Reduce utility carbon footprint**

Ensure that water and wastewater service planning and policy development considers methods for reducing utilities' carbon footprint. Establish best management practices that coincide with water infrastructure needs exemplified by American Waterworks Association Florida Vision 2030. Make water supply decisions that are carbon sensitive. Emphasize conservation strategies. Appropriately weigh carbon emissions or energy demands as part of water supply alternatives. (WR-1.6) (WR-1.15)



**39 Increase share of trips made on transit**

Dedicate funding for a sustainable transportation public education program. Develop an implementation plan. Ensure the following specific focal components are included in the program: alternative fuels, vehicle efficiencies, use of mass transit, pedestrian and alternative vehicle uses, and public capacity to bring about change. (OC-1.2)



**40 Integrate bike share program with Complete Streets**

Integrate the B-Cycle Bike Share Program with Broward County Complete Streets initiatives. Seek opportunities to install new and/or enhanced bike facilities, including buffered bike lanes, bicycle signage and pavement markings in transportation projects to improve bike accessibility and safety. (MT-2.1) (MT-2.2)



**41 Build local food systems**

Stimulate local food production through the community agriculture network to reduce the transportation carbon footprint of produce also known as food miles. (New)



**42 Reduce carbon footprint of local events**

Increase urban reforestation through the "Plan It Green" carbon offset program with priority planting on public lands. Market the program to entities looking for opportunities to offset carbon emissions and become carbon neutral. Create a green events and meeting guide. Coordinate with the convention center and airport for a "Plan It Green" kiosk. (New)



- 43

**Reduce urban heat island effect**

Increase the regional tree canopy to 40%. Perform a tree canopy study every 5 years. Require solar reflective roof materials. Encourage green roofing where feasible. Partner with the Broward County School District to advance cool roof practices. (NU-2.2)





- 44

**Increase county recycling rate**

Meet the state waste recycling goal of 75% by 2020 for government facilities waste streams, including construction related waste. (New)



- 45

**Reduce clothing and textile waste going to landfills**

Coordinate annual clothing and textile recycling drives. Initiate creation of a Reuse Network and design a targeted campaign to connect this community's service to reduced greenhouse gases and climate impact. (RZ-3.4)




- 46

**Create program to encourage backyard composting**

Create program to encourage backyard composting, set up a "leave grass clippings" community garden network, and link with educational outreach in order to reduce consumption, emissions, and toxins across land and in water. (RZ-3.7)







## Alternative Energy

- 47

**Pursue emerging technologies**

Pursue emerging technologies through pilot projects for example e.g., anaerobic digestion to generate electricity and heat from waste. Work with stakeholders to evaluate opportunities and develop a strategy. (New)




- 48

**Support third party retail power purchase agreements**

Continue to support legislative amendments that would enable third party power purchase agreements. (New)







**49 Increase rooftop solar on county facilities**

Study renewable energy feasibility for each new construction and major roof renovation project, install rooftop solar whenever feasible. Build renewable energy components into building budgets. (PC-2.6) (PC-2.7)



**50 Actively pursue the installation of alternative fuel vehicle infrastructure**

Complete countywide electric vehicle (EV) infrastructure survey and implement the EV Infrastructure Strategy. Pursue public-private partnerships in order to develop an infrastructure network that provides public access to alternative fuels and EV charging. Establish interlocal agreements with County, State, municipal and private entities to share existing and proposed infrastructure that supports and promotes alternative fuel use. Reach out to South Florida Commuter Services program to encourage use of alternative fuels in the van pool program. Engage rental car dealerships to increase promotion and alternative fuel options. Expand charging network, or alternative fuel stations. (MT-1.3) (RA-1.2)



**51 Reduce fuel consumption of county fleet**

Require County fleet vehicles, including transit, airport and port, to use alternative fuels, where not precluded by function. Purchase the most efficient vehicle that meets work requirements. Encourage efficient driving behavior and reduce idling. Compete for "Top 100 Green Fleets" in America. Strive for carbon neutral fleet by 2050. (RA-1.4) (RA-1.6)



**52 Fully utilize WTE capacity for county solid waste**

Require County operations' solid waste be directed to Waste-to-Energy (WTE) where possible. Continue to play a prominent role in local WTE and encourage continuous participation in recycling and waste reduction programs. (RZ-1.1)



**53 Support local alternative energy research**

Maintain policy environment that encourages alternative energy installations and pursues diversity in alternative energy as part of agency and community projects. Open a request for statements of interest (SOI) on development of onshore and offshore wind installations, including adding meteorological stations to test wind speeds for distributed wind generation. (RA-3.1)





## Incentives

- 54 Create renewable energy offset revenue**

Create a renewable energy offset revenue by having a volunteer check box on property tax bills, car registrations, or other billing instruments to pay for specific renewable energy programs. Pursue crowd-funded project or voluntary contributions. [\(MI-2.2\)](#)

  
- 55 Encourage regional, private financing options**

Lead regional collaboration in development of countywide and regional energy efficiency and renewable energy finance strategies and programs to expand access and deployment. Implement countywide Property Assessed Clean Energy (PACE) program or similar program. [\(MI-3.2\)](#) [\(PC-2.5\)](#)

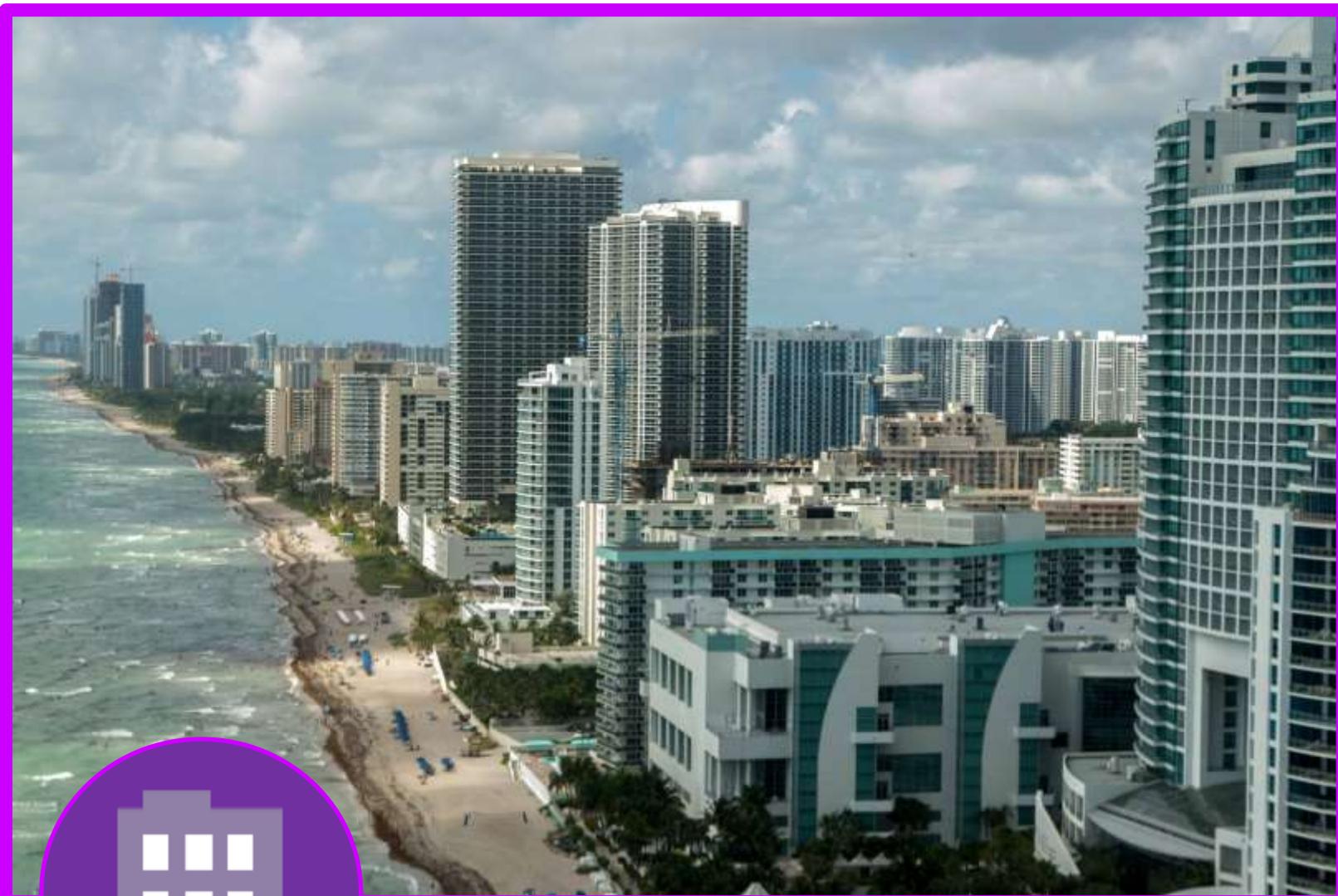
    
- 56 Develop permitting fee incentives**

Identify reasons for high soft costs on solar photovoltaic installations. Continue work with Go Solar Florida to reduce soft costs where applicable. [\(RA-2.1\)](#)

    
- 57 Incentivize employee carpooling and alternative fuel vehicles**

Provide incentives to increase the number of county employee carpools and vanpools, such as free and/or priority parking for employee carpools, hybrid, and alternative fuel vehicles at county facilities. Increase electric vehicle charging infrastructure at county facilities as part of the Workplace Charging Challenge. [\(RA-1.5\)](#)



# Built Environment

## Plan Element: Built Environment

The actions under *Built Environment* build stronger communities and infrastructure, protect critical sectors of our industry, government and natural resources and use sound science to better understand and address climate impacts.

### Built Environment Objective

Implement the following 20 actions to increase the resilience of the built environment:

- Assess the impacts of climate change on the built environment.
- Provide tools for climate resilience and support climate-resilient investments.
- Reduce risk through pro-active planning for transportation, energy and natural infrastructure.



## Adaptation Planning

### 58 Improve inundation mapping capabilities

Improve analysis and mapping capabilities for identifying areas of the County vulnerable to sea level rise by utilizing the most recent LiDAR data. Update maps of potential impacts of sea level rise to the natural and built environments at 1-ft, 2-ft, and 3-ft levels and consider this information in long-term planning. [\(MM-1.5\)](#)



### 59 Encourage FEMA to consider sea level rise in flood map updates

Request that the Federal Emergency Management Agency (FEMA) take into consideration sea level rise projections for at least a 25-year period for use in a planning and regulatory map for reference when updating the Flood Insurance Rate Maps (FIRM) which establish base flood elevations, flood zones and flood plain boundaries. [\(MM-1.8\)](#)



### 60 Develop new 100-year storm maps

Set new parameters for water management by developing new 100-year storm elevation projections in the Broward County 100-year flood map for use in stormwater management permitting which reflect current and projected conditions for sea level and groundwater level rise. [\(MM-1.6\)](#)



- 61

**Incorporate sea level rise/storm surge impacts into maps of hazard areas**

Incorporate sea level rise and increasing storm surge impacts into hazard areas in coastal zones. Revised hazard area designations should better reflect the risks to communities associated with climate change and allow reevaluation of suitability for development in these areas. [\(MM-1.7\)](#)


- 62

**Re-evaluate CCCL and CHHA for climate change impacts.**

Determine whether existing construction siting and design requirements for the Coastal Construction Control Line (CCCL) Program and the Coastal High Hazard area sufficiently address avoidance of “significant adverse impacts” due to climate change. If found to be insufficient, programs and design requirements need to be revised. [\(IP-1.6\)](#)


- 63

**Acquire Tidal Monitoring Station**

Identify funding and partnerships to acquire a tidal monitoring station in Broward County to provide operationally sound observations and monitoring capabilities. [\(New\)](#)


- 64

**Provide and dedicate funding for long-term and regional monitoring and modeling**

Provide and/or participate in the long-term continuous data collection and regional monitoring of critical parameters to support related modeling efforts and climate indicator tracking including: evapotranspiration in the urban areas, water quality (especially temperature), hydrologic, geologic, and groundwater quality and levels, precipitation, and groundwater withdrawals. Encourage dedicated county, state, and federal funding for modeling efforts that improves our knowledge climate change impacts [\(MM-1.3\)](#) [\(MM-1.1\)](#)[\(MM-1.2\)](#)


- 65

**Support research on vulnerability of built environment**

Promote partnerships for connecting research with applications for adaptation of the built environment, focusing on the vulnerability of building structures to climate change and adaptation methodologies. [\(ZB-2.2\)](#) [\(ZB-2.1\)](#)


- 66

**Collect LiDAR data**

Collect updated LiDAR by 2017 or sooner, consider all potential applications for its use. Use LiDAR elevation data in the development of land use policies, and modeling. [\(New\)](#)



**67 Research water resources adaptive technologies**

Participate in comprehensive research programs for resilient adaptation technologies for the region's water resources. [\(WR-1.13\)](#)



## Adaptation Strategies

**68 Analyze sea level rise, drainage and hurricane impacts**

Coordinate regionally with other Southeast Florida counties, academia, and government agencies in the analysis of sea level rise, drainage and hurricanes impacts and the planning of adaptation measures. [\(MM-1.10\)](#)



**69 Develop adaptive management strategies**

Develop policies and comprehensive plans that set short-, intermediate-, and long-range goals and establish adaptive management implementation strategies for water resources that address potential impacts of climate change and are consistent with the recommendations of the Lower East Coast Water Supply Plan and address the potential impacts of climate change. [\(WR-1.5\)](#)



**70 Apply models to develop resilient design standards**

Develop and apply regional integrated hydrologic and climate models to support the development and application of updated infrastructure and design standards and adaptive response plans with regional partner support. [\(WR-1.17\)](#)



**71 Enhance the resiliency of County-owned infrastructure**

Inventory county-owned public infrastructure at risk from the impacts of climate change. County agencies (and agencies that receive County funding for significant infrastructure or built investments) should assess impacts on the agency's or entity's responsibilities. Incorporate assessments into infrastructure master planning processes. Identify vulnerabilities to guide strategies for mitigation and adaptation. Determine as to whether, when, and where projected impacts might be significant. [\(IP-1.3\)](#)



**72 Improve resilience of buildings and structures**

Establish an ongoing process to address local zoning and building code requirements and make recommendations regarding optimization for the resilience of existing and proposed structures in areas at risk to inundation and climate change. (ZB-2.3)



**73 Protect systems from infiltration and inflow**

Work in coordination with all utilities and municipalities to protect underground pipe systems from groundwater infiltration and to minimize runoff into sewer systems resulting in additional water treatment needs. (WR-1.9)



**74 Maintain beaches**

Continue the appropriate use of beach nourishment and sand bypassing at Port Everglades and the Hillsboro Inlet. Target application of erosion control structures, such as seawalls, dunes, groins and breakwaters. Revisit redevelopment policies with the objective of providing additional coastal buffer area between developed areas and the shoreline. (IP-1.1)



**75 Retrofit flood control gates for sea level rise**

Develop strategies, cost/benefit analyses, and schedules for raising or retrofitting and building flood control gates within the canal system and associated flood control system in anticipation of sea level rise and other potential effects of climate change. Reference the updated regional sea level rise projection from the Compact. Plan adaptation improvements for flood control infrastructure at high risk. (IP-1.5)



**76 Engage private sector to strategize adaptation of vulnerable railroads**

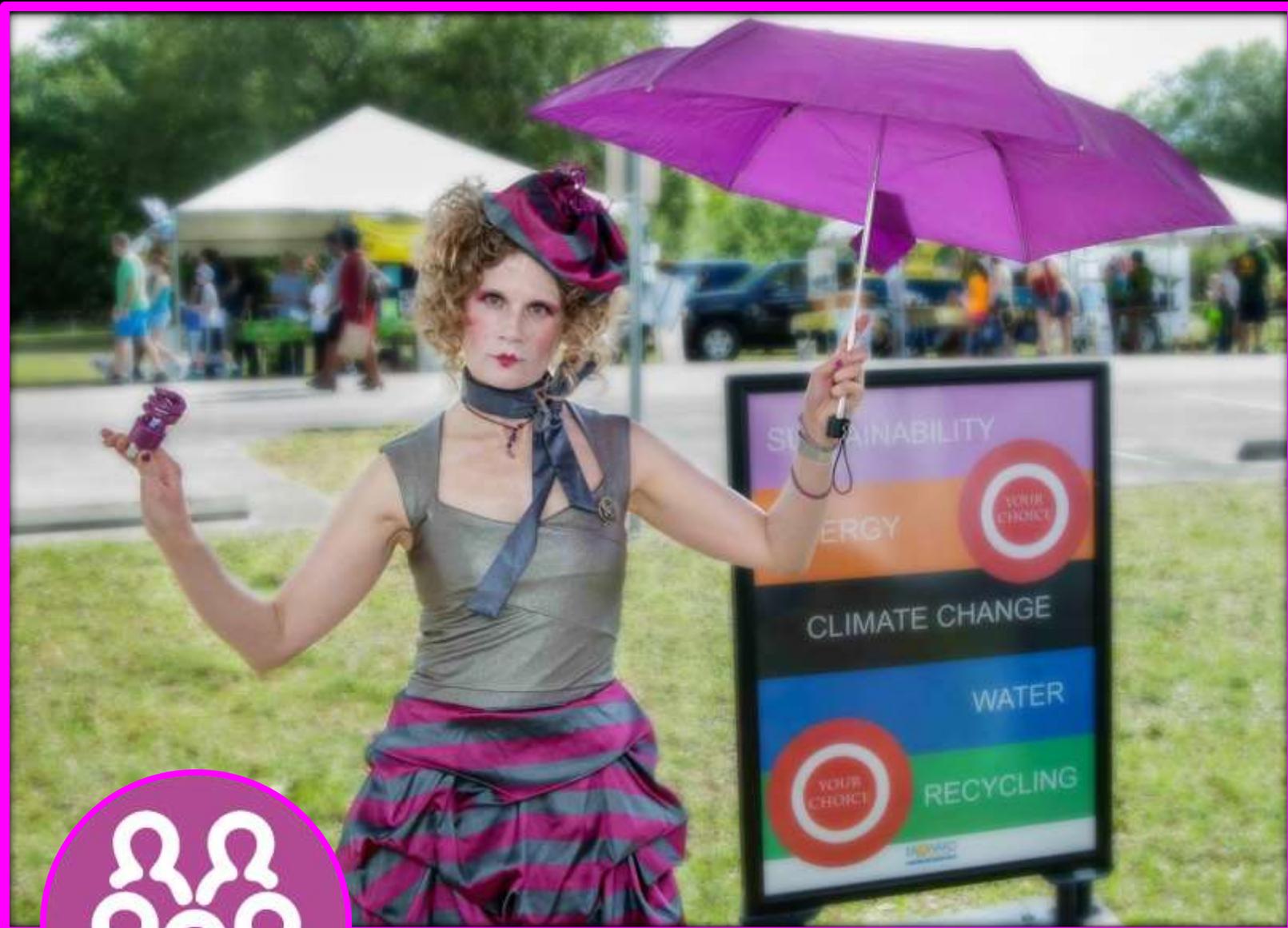
Engage private sector to encourage their development of strategies, cost/benefit analyses, and schedules for raising or relocating railroad tracks in anticipation of accelerated sea level rise and other potential effects of climate change. (IP-1.9)



**77 Engage private sector to develop strategies for adapting energy infrastructure**

Encourage energy utilities and providers to develop alternatives for fortifying existing regional power generation facilities, power transmission infrastructure and fuel conveyance infrastructure against the potential impacts of climate change including increased temperature and sea level rise. Locate new regional power generation facilities, power transmission infrastructure, natural gas and fuel distribution systems and pipelines appropriately to accommodate future climate change impacts. (IP-1.7) (IP-1.8)





## Community Outreach

## Plan Element: Community Outreach

The actions under *Community Outreach* provide broad community outreach and education on such climate change related topics as mitigation and adaptation strategies, the expected cost of inaction and promotion of green public education. Also, the actions deliver climate change educational information to all audiences so as to increase awareness and mobilize action on climate change.

### Community Outreach Objective

Implement the following 17 actions to:

- Grow community awareness on climate change issues by increasing number of community partners annually.



## Community Outreach

- |    |   |   |   |
|----|---|---|---|
| 78 | <b>Pursue grants for community education projects</b> | Pursue grants for Climate, Energy & Sustainability Program initiatives. Collaborate with other local agencies and nonprofits in the community on grant proposals.   |     |
| 79 | <b>Educate employees on climate change</b>            | Develop a program to educate county employees on the impacts of climate change, and how it relates to their work and community. <i>(New)</i>  |      |
| 80 | <b>Engage employees on climate change</b>             | Educate senior administrators and department and division directors on climate change. Ensure each division has at least one climate mitigation or resiliency related goal in their performance measures. 100% = 42 divisions. <i>(New)</i> |      |

**81 Educate community on climate change**

Educate the community through a major public outreach and education campaign using high profile media and other appropriate communication outlets to raise general awareness of climate change impacts. Develop and deploy curricula and programs working with public and private schools. Install public demonstration sites. Develop 3D visualization tools for communication of food risks. Continue support for the Compact’s annual Southeast Florida Regional Climate Leadership Summit (OC-1.1) (OC-1.7)



**82 Assist municipalities with climate initiatives**

Provide guidance to municipalities on climate/green initiatives using existing web resources and greenhouse gas inventory. Educate partners through Sustainability Stewards Workshops. (PC-1.8)



**83 Coordinate strategic planning efforts**

Actively engage and coordinate with state, regional and federal strategic planning efforts to prepare for climate variability and change, including the Florida Climate Institute, US Global Change Research Program, U.S. Fish & Wildlife Service Climate Change Program, Department of Interior and Florida State Agricultural Response Team, Department of Energy, Florida Department of Environmental Protection, and U.S. Environmental Protection Agency Adaptation Programs. (NU-1.2)



**84 Inform public on climate indicators**

Eleven climate indicators were selected as quick, simple, and visual tools to show what climate change means in South Florida. Support the development and maintenance of the region’s Climate Indicators website including other public education activities, and materials. (MM-1.4)



**85 Educate homeowners on climate risk**

Provide homeowners with understanding of risk. Develop a toolkit to educate homeowners on climate change adaptation i.e., flood proofing, elevation data, sea level rise information, etc. to help homeowners prepare for impacts, make sound investments, and reduce property hazard insurance premiums. (New)



86

**Engage volunteer corps**

Develop key partnerships with local volunteer networks. Enlist a volunteer corps for assistance with climate outreach goals. Educate volunteer force as “climate ambassadors” for the community. Prioritize engaging vulnerable populations. (PC-2.8)



87

**Increase plant diversity and reduce water consumption through NatureScape**

Increase the diversity of plant species and reduce water used for landscape purposes. Require that 75% of county facilities’ landscaping consist of recommended native and Florida-Friendly trees. Work with utilities to identify the biggest water users, and reach out to reduce usage, develop an outreach plan and provide landscape recommendations. (NU-2.3)



88

**Increase connection to nature and the community**

Provide nature-based educational experiences and promote physical and emotional well-being. Collaborate with Broward Addiction Recovery Center, Rebuilding Together, Broward Sherriff’s Office Community Service Program, community redevelopment agencies, schools and hospitals. Natural elements that promote well-being include trees, diverse vegetation, local biodiversity, water features, parks, natural playscapes, and community and school gardens. (OC-1.5)



89

**Engage academia in research**

Encourage and collaborate with public and private universities, colleges and technical schools in the region to develop research, assessment tools and educational programs. Report environmental trends. Collaborate with academic institutions to identify, evaluate, and prepare proposals for research grants and other funding opportunities.



90

**Provide resilient redesign tools for community**

Develop resilient design criteria for buildings based on avoided damage costs. Create a checklist for prospective homebuyers during property transfer and for the business and development community for use in designing resiliently. Convene a technical expert group to develop a resiliency rating system for buildings. (New)



**91 Encourage climate resilient construction**

Encourage greener, more efficient, and more durable construction practices locally by establishing an ongoing process to encourage local zoning and building code requirements to incorporate U.S. Green Building Council's LEED standards in building and community design. (ZB-1.2)



**92 Develop local adaptation skills**

Participate in the exchange of information on resources and best practices which address climate adaptations to infrastructure, property, and public services among government, the private sector, and other stakeholders. Work with experts in climate change adaptation to develop needed skills in applying adaptation concepts by providing training and assistance using adaptation tools. (OC-1.3) (PC-2.4)(WR-1.10)



**93 Collaborate on air quality monitoring, education and health risk outreach**

Expand and improve air quality monitoring and public information programs. Adopt standardized air health risk communication strategies. Improve outreach and education. Improve coordination among governmental agencies at all levels and non-governmental health care organizations. (OC-1.8) (OC-1.9)



**94 Educate and prepare for public health impacts**

Develop plans and programs to educate the community and develop plans to mitigate climate impacts on public health, with special attention to vulnerable populations. Such measures could include: establishment of public health information call centers and media campaigns, opening cooling centers during heat waves at public locations, and ensuring emergency medical services have available staff with appropriate training to deal with climate-related public health concerns. (EM-3.1)





## What You Can Do!

The success of this Climate Action Plan also depends on individuals – 1.8 million individuals living, working and playing in Broward County.

You can help by checking off as many of these actions as possible!

- Be an informed voter and VOTE!** Also, actively participate in community workshops and commission meetings.
- Switch to LEDs (Light Emitting Diodes):** LEDs use 75% less energy than regular light bulbs, last up to 10 times longer, and pay for themselves in the first four months.
- Cool your home at 78°F or warmer with the thermostat fan switched to auto:** For additional savings, raise your thermostat to 82°F when you're away. Savings can be \$200-\$300 per year. For those that like to keep it cooler, consider installing renewable energy with a solar photovoltaic (PV) rooftop array to help offset the environmental impact of running your AC.
- Adjust your water settings:** Turn the hot water heater down to 120°F, and combine that with washing your clothes in cold water and your savings can be \$200-\$300 per year.
- Install a solar thermal water heater or photovoltaic:** Though initially more costly to install, solar water heaters can cut energy bills by 50-80% within the first year.
- Buy a fuel-efficient car:** Compared to a 20 mpg car, a 30 mpg car will save the average driver about \$1000 per year in fuel costs. Go even greener with an all-electric vehicle!
- Choose and use your appliances wisely:** Maximize your use of water consuming appliances. Choose high efficiency appliances, such as Energy Star rated clothes or dishwashers, when replacements are needed.
- Make sure every tap in your home has a high efficiency faucet aerator:** Faucet aerators are the little pieces of hardware that screw into the bottom of faucets, they cost about \$6.
- Harvest rainwater for irrigation:** Collect and save rainwater from your gutters and use it to water your flowers and plants. Check with your local hardware stores and home improvement centers to purchase and help you install rain barrels.
- Replace your shower head:** High efficiency shower heads are designed to maintain water pressure while using much less water than the old-fashioned sort. This quick fix will reduce your shower water use by 20 to 60 percent.
- NatureScape your yard:** Many beautiful shrubs and plants thrive with far less watering than other species. Native plants will use less water and be more resistant to local plant diseases. Layering with mulch also prevents rapid water loss and, as a result, reduces frequency of watering.

Learn more by liking our “Broward County Environment” page on Facebook, or by following us on Twitter @BrowardEnv. Visit [Broward.org/Naturalresources](http://Broward.org/Naturalresources) for information and resources in the climate toolbox.



## What We Have Done So Far...

### Recent Actions in Preparing for Climate Change

From higher than normal tidal flooding to increasing temperatures and drought, climate change is effecting our community now. Broward County is at the forefront of dealing with these impacts and preparing our community for future changes. The Broward County Board of County Commissioners recognizes the need to plan, invest and act now to protect our community, and are doing so with policies, programs, and projects while coordinating with multiple levels of government, industry and community organizations in order to leverage resources.

### Highlights of Accomplishments from the Last Five Years

- [2010 Broward County Climate Change Action Plan](#)  
Broward County has completed or initiated over 85% of the actions in the initial Climate Change Action Plan.
- [Broward County Greenhouse Gas \(GHG\) Emissions Inventory Report](#)  
Countywide inventories were developed for emissions generated in years 2007, 2009 and 2010 with projections to 2050 in an initial report released in 2012. The next GHG Emissions Inventory report is anticipated to be published in 2016.
- [Broward Climate Change Government Operations Workgroup](#)  
The Workgroup is comprised of representatives from all County departments and is tasked with reducing County government greenhouse gas emissions. The Workgroup biannually reports on progress. To meet County targets, average annual reductions of approximately 7,000 tonnes of eCO<sub>2</sub> are necessary for the next four years.
- [Climate Change Element](#)  
The Climate Change Element was added into the Broward County Comprehensive Plan. The Priority Planning Areas Map, highlighting areas vulnerable to two feet of sea level rise, was added to the land use plan to incorporate adaptation strategies into the planning and development process.
- [Coastal Community Vulnerability Assessments](#)  
Grant funding allowed for vulnerability assessments of 13 coastal communities in Broward County. The information includes county and regional policy, and technical documents to aid in the development of local mitigation and adaptation strategies. The information includes vulnerability assessments that identify infrastructure vulnerable to the effects of sea level rise.

- [Tidal Flooding Webpage](#)  
Low-lying coastal areas of Broward County can be impacted by flooding from high-tide events. This year, a webpage was created to advise residents of the upcoming dates for high-tide events when communities may see flooding not associated with a major rain event. Tidal flooding is expected to become a regular occurrence as sea levels continue to rise.
- [Southeast Florida Regional Compact Climate Action Plan](#)  
Based on a collaborative, multi-jurisdictional process, the regional climate action plan provides over 100 recommendations to prepare the Southeast Florida region to the detrimental effects of climate change.
- [Southeast Florida Regional Compact Unified Sea Level Rise Projection](#)  
The projection is for use by the Climate Compact Counties and partners for planning purposes to aid in understanding of potential vulnerabilities and to provide a basis for developing risk informed adaptation strategies for the region.



**Environmental Planning and Community  
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**Climate, Energy & Sustainability Program**

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