

RCAPv3

EN-1 Reach net zero emissions by 2050 Advance energy efficiency and conservation Reduce GHG emissions by 50% by 2030 and reach net zero carbon emissions by 2050, or sooner.

EN-1.1 Develop local GHG emissions reduction targets through climate action plans that limit warming to 1.5 degrees Celsius and achieve net zero (as defined by the United Nations) by 2050 or sooner, aligned with regional priorities.

EN-1.2 Support and advocate for strategies to meet net zero electricity generation by 2050, consistent with utility commitments.

EN-2 Advance energy efficiency and conservation Reduce GHG emissions by 50% by 2030 and reach net zero carbon emissions by 2050, or sooner. Advance energy efficiency and conservation through technological solutions, behavioral strategies and policies in order to reduce GHG emissions as referenced in EN-1.

EN-2.1 Create incentives for above code building performance standards that align with GHG emissions reduction targets referenced in EN-1.

EN-2.2 Implement mandatory green building ordinances compliant with Florida laws.

EN-2.3 Develop policies to regularly audit, benchmark, and/ or retro-commission large, existing government and private buildings and explore building performance standards. i m p l e m e n t e r s: Local Governments, Private Sector, Non-Profit Organizations, Community-Based Organizations

EN-2.4 Develop an incentive for increasing the energy efficiency of the properties during 30- and/or 40-year building recertifications.

EN-2.5 Advance energy efficiency financing strategies through changes to local ordinances, the development of incentives and education and outreach

EN-2.6 Partner with local government and other stakeholders to assess the efficiency of the Florida Energy Code and define the responsibilities of each trade to improve compliance and enforcement, as well as any key synergies or alignment potential with the Florida Building Code.

EN-2.7 Support and advocate for the Florida Public Service Commission (PSC) for increased energy savings through utility-sponsored energy efficiency programs, such as but not limited to the Florida Energy Efficiency and Conservation Act, and develop competitive and affordable rates for energy efficiency retrofits and energy conservation measures

EN-2.8 Advocate for the Florida Building Commission to make changes to promote efficiency, renewable energy and electrification, and direct a portion of the commission's research dollars to energy and water efficiency.

EN-3 Increase accessibility to energy efficiency solutions Expand use of renewable energy Increase accessibility to energy efficiency solutions prioritizing limited-income, energy-burdened households and frontline communities.

EN-3.1 Promote and create local incentive, financing or loan programs for energy efficiency technologies or building retrofits.

EN-3.2 Prioritize existing and create new energy efficiency programs for low-to-moderate income (LMI) households that reduce the burden of upfront costs and target the reduction of high energy burden.

EN-3.3 Advocate for innovative incentive mechanisms by which renters and landlords can co-invest in weatherization and building performance improvements that are economically sound for both parties.

EN-4 Expand use of renewable energy Increase accessibility to energy efficiency solutions prioritizing limited-income, energy-burdened households and frontline communities. Increase accessibility and expand the use of distributed (on-site sources) and utility-scale renewable energy and storage technology through policies, practices and technological development.

EN-4.1 Set percent renewable energy targets that align with regional and local GHG emissions reduction targets referenced in EN-1.

EN-4.2 Expand affordability of renewable energy purchasing options by investing in inclusive financing and solar co-ops.

EN-4.3 Seek alternative funding sources for expanding renewable energy purchasing options, including public-private partnerships and regional collaboration on grant opportunities, particularly for historically under-resourced communities.

EN-4.4 Develop incentives for new properties to be solar-ready or include a minimum amount of solar energy production per property.

EN-4.5 Prepare for the use of vehicle-to-grid (V2G) technology

EN-4.6 Identify and expand opportunities that offer incentives for the private sector and academic institutions to advance research and bring to market strategies for distributed energy technologies.

EN-4.7 Advocate for state and federal laws and programs that expand all opportunities for solar energy deployment statewide including rooftop solar on residential, commercial and industrial facilities.

EN-5 Enable grid-independent energy and waste-to-energy systems Enable grid-independent energy and waste-to-energy systems.

EN-5.1 Evaluate and advocate for changes in existing land development regulations and standards regarding the installation and use of energy-efficient and small-scale distributed renewable and modular waste-to-energy systems that are grid independent, while maintaining the integrity of the urban development boundary and ensuring that such policies do not promote suburban sprawl. Waste-to-energy systems should be coupled with a zero waste plan.

EN-6 Utilize distributed renewable energy for emergency management Utilize distributed renewable energy technologies for emergency management and disaster recovery, including vehicle-to-grid (V2G) technologies.

EN-6.1 Partner with stakeholders to pilot distributed solar + distributed storage (such as V2G) energy systems at hurricane shelters, buildings that house frontline populations (e.g. nursing homes), or government operations centers for disaster recovery and emergency management.

EN-6.2 Support and advocate for the development of energy security models for solar + storage during disaster recovery, prioritizing frontline communities

EN-6.3 Prioritize renewable energy and distributed storage (such as V2G) within emergency management plans that ensure continual energy access during emergencies and disaster recovery.

EN-7 Reduce renewable energy and energy efficiency soft costs Streamline permitting and administrative processes to reduce the soft costs EN-7 associated with advancing energy efficiency, renewable energy and storage.

EN-7.1 Adjust zoning policies to provide incentives, such as expedited permitting, for energy-efficient practices and renewable energy.

EN-7.2 Reform and innovate permitting processes as they relate to renewable energy and energy efficiency, including expanded training, clarifying and making rules more accessible, expediting permitting processes, reducing or eliminating permitting fees and improving the convenience of inspections for property owners and local businesses.

WS-1 Practice integrated water resources management Practice integrated water resources management and planning.

WS-1.1 Convene forums to develop joint assessment and planning strategies involving local water utilities, National Pollution Discharge Elimination System (NPDES) permittees, wastewater service providers, water managers and partners to the Southeast Florida Regional Climate Change Compact for the coordination of:

- Stormwater use and disposal
- Rainfall-derived inflow and infiltration
- Traditional and alternative water supplies
- Wastewater disposal
- Water reuse
- Expansion of water conservation measures (e.g., maintaining adequate aquifer levels and minimizing the use of potable water for irrigation purposes)
- Amendments to applicable development codes and regulations

WS-1.2 Develop local integrated water management plans based on joint assessment and planning strategies.

WS-2 Foster innovative water management. Foster innovation, development and exchange of ideas for managing water.

WS-2.1 Develop and share water management information, methods, technical capabilities, and trends addressing climate variability and sea level rise through the Compact's collaborations with state and federal agency partners and academic institutions.

WS-2.2 Provide forums and opportunities for innovation and exchange of ideas between water resource managers, policymakers, stakeholders, scientists and researchers in collaboration with the Compact, the South Florida Water Management District and local academic partners, which could include an annual water symposium.

WS-3 Advance water resource management research. Foster scientific research for water resource management.

WS-3.1 Foster and support collaborative scientific research and investigative work through academic institutions to improve water resource management. To advance collaboration, such efforts should leverage regional and local work products, including vulnerability assessments and relevant plans. Scientific research needs may include, but are not limited to: ...

WS-3.2 Build partnerships, technology exchanges and funding opportunities with public, private, academic, domestic and international partners to bring additional experience and innovation to resilience planning, projects and decision support.

WS-4 Coordinate regional investments in water management. Coordinate innovative regional investments in water management technologies.

WS-4.1 Coordinate the implementation of innovative water management technologies and methodologies across multiple jurisdictions as a regional pilot for shared investments

WS-4.2 Share information about the results, costs and savings from water management technologies.

WS-4.3 Scale successful cross-jurisdictional technologies to reduce the potential for redundant investments and achieve economies-of-scale while fairly distributing costs and benefits across multiple project beneficiaries.

WS-5 Expand use of green infrastructure and net zero solutions. Expand the use of green infrastructure/nature-based and net zero solutions in water management.

WS-5.1 Develop and use maintainable green infrastructure including nature-based solutions and net zero greenhouse gas emission strategies for water supply, stormwater and wastewater management. Reuse/limit energy use to the amount produced on-site via renewable energy. Balance water availability and consumption.

WS-6 Use consistent future conditions water management scenario planning Expand the use of green infrastructure/nature-based and net zero solutions in water management. Ensure consistency in water resource scenarios used for policy and planning consideration of future climate conditions.

WS-6.1 Ensure all water resource policy, planning and management decisions in the Lower East Coast Water Supply Planning Area are consistently aligned with: • The latest Southeast Florida Regionally Unified Sea Level Rise Projections • Regional climate scenarios for planning (e.g., longterm patterns of rainfall and evapotranspiration, storm surge, design storm events) • Hydrologic models used in adaptation planning from local to regional scales

WS-6.2 Ensure all water resource policies consider regional water management issues, including flooding and water availability. For flooding, vulnerability assessments should reflect observed and predicted climate variability, including the frequency, duration and intensity of flooding from sea level rise, extreme tidal excursions, storm surge and extreme rainfall events. For water availability, examine the effects of climate change and sea level rise on water availability, and groundwater vulnerability to saltwater intrusion based on potential changes in precipitation and evapotranspiration patterns and associated extreme drought and flood events.

WS-6.3 Partner with the South Florida Water Management District to integrate future climate conditions, sea level rise scenarios, and potential impacts to water quality and supply into the regional water

management models used to support the Lower East Coast Water Supply Plan, and consumptive use permitting.

WS-6.4 Identify and advocate for rule changes that integrate future climate conditions and stormwater harvesting initiatives in permitting criteria at all levels, including average wet season groundwater elevations; Regionally Unified Sea Level Rise Projections; and intensity, duration and frequency curves.

WS-7 Assess climate impacts on water infrastructure. Assess the potential of climate impacts on water infrastructure.

WS-7.1 Using technically sound approaches, assess the potential for climate change impacts on each component of water infrastructure under different climate change scenarios. Develop adaptation strategies for affected systems, including infrastructure that may require replacement, reinforcement or relocation to ensure the long-term viability of the system.

WS-7.2 Coordinate among city and county government public works agencies, water utilities, drainage and water control districts, and other operators of water infrastructure to develop and maintain local and regional inventories of existing drainage and water control facilities, potable water supply wellfields, treatment and distribution systems, wastewater treatment and collection infrastructure, and septic tanks and drain fields.

WS-8 Modernize water infrastructure development standards. Modernize infrastructure development standards in the region.

WS-8.1 Modernize planning, design standards and permitting for development and infrastructure improvements of drainage systems, surface water management systems, and finished floor elevations to reflect updates that integrate future climate conditions into groundwater table maps, flood elevation maps and tidal elevations. Consider incremental adaptations to incorporate uncertainty in future climate conditions.

WS-9 Ensure a resilient regional flood control system. Address the resilience of the regional flood control system.

WS-9.1 Advance coordination among the South Florida Water Management District and local government staff to support the completion of a comprehensive assessment by the U.S. Army Corps of Engineers of the Central and Southern Florida area and flood control system under potential climate conditions with associated recommendations.

WS-9.2 Develop and implement resilience strategies to ensure existing levels of service are maintained or improved under future conditions through joint participation and delivery of Flood Protection Level of Service (FPLOS).

WS-10 Integrate surface and groundwater impacts on infrastructure Increase resilient water infrastructure and water quality Integrate combined surface and groundwater impacts into the evaluation of at-risk infrastructure and the prioritization of adaptation improvements.

WS-10.1 Continue to utilize a combination of inundation maps, and integrated stormwater and groundwater models to identify areas and infrastructure at increased risk of flooding.

WS-10.2 Evaluate the potential impacts of changes in groundwater levels on wastewater and stormwater systems (including contaminated sites, septic systems, wastewater collection and conveyance and storage systems), with consideration of water quantity and quality. Develop appropriate public health metrics.

WS-10.3 Use the results of groundwater and surface water impact analyses as the basis for site planning regulation, and to identify and prioritize adaptation needs and strategies.

WS-11 Increase resilient water infrastructure and water quality Integrate combined surface and groundwater impacts into the evaluation of at-risk infrastructure and the prioritization of adaptation improvements. Implement strategies and capital projects to increase adaptive and resilient water infrastructure, and improve water quality.

WS-11.1 Ensure that capital planning, design and construction of water infrastructure projects incorporate resilience and water quality considerations.

WS-11.2 Identify, incorporate and prioritize preferred climate adaptation improvement projects for water supply, wastewater systems, stormwater management and flood protection as part of capital improvement plans. Advance new projects and include resilience as part of all infrastructure investments. Consider utilizing business cases to help diversify methods and projects.

WS-11.3 Identify existing underperforming water infrastructure (e.g. coastal water control structures) and implement adaptation strategies, potentially using dynamically adaptive strategies that facilitate targeted investments, support managed performance, and achieve greater flexibility in system operations and future water resource management alternatives.

WS-11.4 Mitigate additional inputs to the wastewater systems by encouraging greywater reuse systems in new developments.

WS-11.5 Increase capacity for greywater reuse at the municipal level and the use of treatment wetlands to manage additional wastewater.

WS-12 Phase out septic systems. Phase out septic systems where appropriate to protect public health and water quality....

WS-13 Coordinate saltwater intrusion mapping Develop a database of resilient water projects Coordinate saltwater intrusion mapping across Southeast Florida...

WS-14 Develop a database of resilient water projects Coordinate saltwater intrusion mapping across Southeast Florida. Develop a spatial database of resilience projects for water infrastructure....

WS-15 Support the Comprehensive Everglades Restoration Plan (CERP)...

WS-16 Expand surface water storage. Expand regional surface water storage.

WS-16.1 Develop new and combine existing land acquisition priorities to protect, preserve and enhance regional water storage.

WS-16.2 Develop regional and distributed surface water storage (e.g., C-51 reservoir and interconnected urban systems) to increase the potential for stormwater capture and reuse for water supply, aquifer recharge, flood management and environmental benefits.

WS-17 Support private property adaptation. Expand information and engagement with property owners to support adaptation WS-17 on private property to contend with increased flooding and higher groundwater.

WS-17.1 Integrate flood awareness and preparedness into communications strategies and provide information about flood zones, sea level rise and flood risks.

WS-17.2 Encourage property owners to take action to mitigate flood risk and minimize damage through strategies, such as but not limited to education, grants, innovative financing and organizing bulk-purchasing co-ops.

City of Boca Raton

Electricity and Water

Projects and Programs Previously Completed by the City

- Use of Energy Management Systems (EMS) in City Facilities since 1990s.
- Building energy efficient buildings such as the LEED Silver Fire Station 5 and Downtown Library.
- Replacement of streetlights to LED.
- Capture and reuse of methane gas at the wastewater treatment plant.
- Solar panels generating electricity at Gumbo Limbo Nature Center and Lake Wyman Park.
- Access to Property Assessed Clean Energy (PACE) financing.
- Reduction of per capita water use by 26% since 2005.
- Reuse of 100% of the City's wastewater through Project IRIS

Goals and Targets

1. Reduce electricity used by the City - Reduce City electricity use by 10%
2. Reduce electricity used in the community - Reduce community per capita electricity use 10%
3. Increase electricity sourced by clean renewable sources - 20% of City electricity from renewable sources.
4. Reduce consumption of potable water - Reduce per capita water consumption by 5%

Actions

Reduce Electricity Used by the City

Identify opportunities to retrofit City facilities for energy efficiency.

Educate City staff in sustainability and energy and water conserving behaviors.

Reduce electricity used in the community.

Partner with building owners to measure and disclose energy and water usage.

Assess strategies to increase high impact building improvements.

Offer incentives for home energy audits.

Provide education to homeowners and renters on energy efficiency.

Conduct outreach and gather input regarding community energy goals.

Increase electricity sourced from renewable sources.

Certify as a SolSmart community.

Create a solar policy for new City construction.

Identify opportunities to include solar energy on existing City facilities.

Utilize solar + storage for post hurricane resiliency.

Create incentives for solar energy systems.

Create requirements for solar energy systems.

Conduct outreach and gather input regarding solar goals.

Reduce consumption of potable water.

Continue community education regarding water conservation.

Create a policy to require drought resistant landscaping in City properties.

Revise the landscape ordinance to increase water conservation.

City of Boynton

Strategies for Government Operations:

2. Buildings & Facilities

- Building Efficiency
- Water Infrastructure Efficiency
- Renewable Energy in Government Facilities

Strategies for Boynton Beach Community:

2. Buildings

- Green Building Standards
- Energy Efficiency & Conservation
- Water Efficiency & Conservation
- Renewable Energy Planning & Promotion

Vision Statements

- Become a leader in energy efficiency and clean energy that comes from the sun, wind, or other renewable technologies.

Co-Benefits

Cost Savings: Many of the measures in this plan pay for themselves by reducing costs to the City and its residents. Encouraging energy efficiency, water efficiency, and adoption of renewable energy will lower utility bills for residents and businesses. Promoting use of alternative transportation such as bicycling, walking, public transit, ridesharing, and electric vehicles will lead to cost savings compared to fueling and maintaining a gasoline or diesel vehicle. City government can also enjoy substantial savings through increased efficiencies in buildings, facilities operations, and vehicle fleets.

Community Engagement

To directly engage the community in the development of this plan, the City held a Climate Action Workshop on October 29, 2019, from 6:30 to 8:00 pm at the Boynton Beach Senior Center. After an introductory presentation by the Sustainability Coordinator, participants rotated among five discussion tables on the following topics: Transportation, Energy & Water, Waste & Consumption, Trees & Greenspace, and Climate Adaptation.

Greenhouse Gas Emissions

Government GHGI Results: The most significant reductions occurred in Scope 2 purchased electricity. This can be attributed to both 1) a decline in electricity consumption by the City and 2) an increase in the percentage of electricity in FPL's electrical grid that is generated from renewable sources such as solar. For example, City electricity consumption declined from 38,080,000 kilowatt hours in 2017 to 36,390,000 kilowatt hours in 2018. The electricity grid emissions factor also improved, declining from 0.555789 in 2017 to 0.4611047 in 2018.

Community GHGI Results: Scope 2 emissions decreased. Thus, the decline in emissions can be attributed to Scope 2 reductions due to both 1) a reduction in community

electricity consumption in the residential sector (from 510,000,000 kilowatt hours in 2015 to 502,000,000 in 2017), and 2) an increase in the percentage of electricity in the electrical grid that is generated from renewable sources such as solar (see decline in grid emissions factor described in the Government GHGI section above). The reduction in residential electricity consumption is notable given that the Boynton Beach population increased 1.7% over this time period, from 72,784 in 2015 to 73,992 in 2017. Per capita GHG emissions thus decreased from approximately 12.4 MTCO₂e in 2015 to 12.2 MTCO₂e in 2017.

Emission Reduction Targets

The GHG emission reduction targets for the City of Boynton Beach are as follows:

- **50% reduction from 2015 levels by 2035**
- **Net zero GHG emissions by 2050**

Greenhouse Gas Reduction Strategies:

GOVERNMENT:

Building Efficiency - Retrofit existing government buildings to optimize energy and water efficiency, and build new facilities to energy-efficient standards.

Water Infrastructure Efficiency - Manage and upgrade water and wastewater infrastructure to maximize operational efficiency, reduce system water loss, reduce energy use, and conserve water supplies.

Renewable Energy in Government Facilities - Install solar panels on City buildings, utilize solar energy and energy storage technologies for emergency management and disaster recovery, and consider purchasing renewable energy credits for off-site production.

COMMUNITY:

Energy Efficiency & Conservation - Advance energy efficiency and conservation throughout the Boynton Beach community through technological solutions, policies, financial incentives, and educational programs.

Water Efficiency & Conservation - Advance water efficiency and conservation throughout the Boynton Beach community through technological solutions, policies, financial incentives, and educational programs.

Renewable Energy Planning & Promotion - Promote community access to and adoption of renewable energy through education, incentives, permitting processes, zoning codes, partnerships, and advocacy.