

**SOUTHEAST FLORIDA
REGIONAL COMPACT**

**CLIMATE
CHANGE**



Southeast Florida Regional Climate Change Compact
DRAFT Regional Climate Action Plan 2.0

Draft for Public Comment

October 11, 2017

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The Southeast Florida Regional Climate Action Plan 2.0

Southeast Florida Regional Climate Change Compact 2017

About this Public Review Draft Document

The four counties of Southeast Florida—Broward, Miami-Dade, Monroe, and Palm Beach—have been working together with dozens of municipal governments and various regional, state, and federal government agencies and nonprofit sector partners over the past eight years under the Southeast Florida Regional Climate Change Compact (the Compact). The Compact seeks to accelerate the region toward greater climate resilience and lower carbon emissions through interlocal cooperation, coordination, and mutual leveraging of regional resources, expertise, and political will. A key component of the larger Compact enterprise is the Regional Climate Action Plan.

This document—the Draft Regional Climate Action Plan (RCAP) 2.0 for Public Comment—is in the midst of a year-long analysis, review, and discussion process to frame the regional agenda for Southeast Florida for 2018-2022. The recommendations for local government action in Southeast Florida are based on five years of implementation experience under the first [Regional Climate Action Plan](#) and the perspectives of various issue-experts from across the public, private, and nonprofit sectors, as well as local universities and colleges. This draft represents a rigorous effort to exhibit the wide variety of perspectives and priorities we heard from the residents of Southeast Florida.

This document is a draft version of the final RCAP 2.0 scheduled to be published in December of 2017. RCAP 2.0 will be published as a website rather than a traditional print document like [the first Compact RCAP](#) published in 2012. Publishing the RCAP as an online resource amplifies the usefulness of the RCAP to its various audiences: policymakers, managerial and technical staff within city and county government agencies, the general public, leaders in the private sector and civic organizations, and advocates seeking a better region for all residents of Southeast Florida. An online version of the RCAP enables this to become a dynamic, living document that embeds the capacity for taking action with the call to action itself. Experienced readers of draft public sector publications will find this draft document to be unique in both format and content.

With the publication of this document, the Compact seeks comments from all interested parties in Southeast Florida. Finally, it should be noted that the final preparations for this document occurred simultaneously with the approach, impact, and aftermath of Hurricane Irma. It is too early for a full accounting of the lessons learned during Irma, but the Compact is particularly interested in hearing thoughts from reviewers on what they believe Irma demonstrated to Southeast Florida in the way of building future resilience. **All comments may be registered with the Compact by visiting:**

<http://www.southeastfloridaclimatecompact.org/rcap2017/>

Southeast Florida and its Compact

In the 10 years since local governments across Southeast Florida began a focused effort to understand how a changing global climatic system was likely to affect the region, information that once resided only in technical publications became regularly featured in the local, national, and international press. As residents have seen the signs of rising sea level, increasing incidences of “sunny day flooding,” and other localized signals of climate change, multiple assessments count the region among those with the largest financial risk to sea level rise on the planet.

Within a state, national, and international context, Southeast Florida is critically important. With a 2016 gross metropolitan product of \$328.9 billion (USD), Southeast Florida is the 11th largest metropolitan region in the nation, larger than 31 of the nation’s 50 states. If Southeast Florida were a nation state, it would have the 33rd largest national economy ahead of Israel, Denmark, and South Africa. Southeast Florida is the widely recognized “capital of the Americas” serving as a critical hub for vital trade, finance, and commerce functions within the Western Hemisphere and beyond, while also providing surprisingly large shares of the U.S. winter food and vegetable supply.

The miles between the Loxahatchee River at Jupiter Inlet to Fort Jefferson in the Dry Tortugas holds natural treasures truly unique within the United States. From the iconic Everglades and the tropical hardwood hammocks to the Pine Rocklands and the coral and worm reefs that hug the coastline, Southeast Florida’s flora and fauna greatly enrich the nation’s biodiversity.

Southeast Florida is also home to nearly six million people whose diversity in ethnicity, first language, and country of origin is among the highest anywhere in the United States. Whether drawn by the region’s singular environmental amenities and beauty, its vibrant arts and cultural offerings, or the job opportunities afforded by the regional economy, the region continues to rapidly attract new residents. Southeast Florida remains one of the top 10 fastest growing regions in the U.S.

With so much at risk, Southeast Floridians are coming together across political party lines, professions and occupations, race, class, and city and county boundaries in a manner unique within the U.S. to address the local challenges of climate change. Just as the region’s distinct climate vulnerabilities have become a staple in the international press, the region’s unique collective response to the problem is cited nearly as often. The vehicle for this collective response is the Southeast Florida Regional Climate Change Compact (the Compact) and the means for taking action is the Regional Climate Action Plan (RCAP).

The Compact is a regional collaborative among the four counties in Southeast Florida—Broward, Miami-Dade, Monroe, and Palm Beach—to coordinate climate mitigation and adaptation across the region. Formally launched in 2010, the Compact represents a new form of regional climate governance designed to allow local governments to set the agenda for adaptation while providing efficient means for state and federal agencies to engage with technical assistance and support. Over the course of its existence,

the Compact has attracted nearly \$2.5 million in foundation, federal, and state funds. Many of the 109 municipalities in the four county region have made strides to prepare for and mitigate climate change impacts—many aided by the Compact process—and Southeast Florida has become an international model of metro-regional cooperation, influencing similar efforts in the Metro-Boston region, the Metro-Seattle region, and even as far afield as Metro-Durban in South Africa.

The Regional Climate Action Plan

The Regional Climate Action Plan (RCAP) is the Compact’s guiding document for coordinated climate action in Southeast Florida. The RCAP provides a set of recommendations for local entities to act in-line with the regional agenda. The Compact published the first RCAP in 2012 after a two-year planning process. It was designed with a five-year horizon and with the intent to update the document every five years. The current RCAP document is the second iteration of the RCAP that reflects the lessons learned and actions taken in the first five years of implementation.

The RCAP is meant to serve as a tool for municipal and county local governments, agencies, regional councils, regional resource management districts, and other local planners and practitioners. The RCAP recommendations are a broad set of best practices to guide implementation of emission reduction and resilience-building actions that each jurisdiction can implement. The RCAP is not a mandate for government action—it represents the ideal regional action to prepare for and mitigate climate change, based on the expertise of local scientists, experts, practitioners, and the perspectives of community members. The RCAP recommendations span a wide range of regional topics that are not necessarily applicable for every local context in Southeast Florida. Implementation of the document will vary based on local government structures, and geographic, hydrological, physical, and other localized contexts.

Since first publishing the RCAP in 2012, the Compact has updated the implementation of the RCAP through adaptive learning to reflect local needs. Compact leadership learned some key lessons over the past five years about how to best support local action across the region. Cities have emerged as champions and partners in implementing and promoting the regional climate priorities. In order to encourage and support action by cities, the Compact published the Mayors’ Climate Action Pledge in 2013 as a mechanism for municipalities to formally support the Compact and the RCAP. The Compact also launched a municipality working group staffed by representatives of cities from every county to provide assistance directly to cities. The Compact assessed the implementation of the RCAP on a regular basis to track the local application of RCAP recommendations and key climate actions that municipalities have taken. Starting in 2014, the [Compact surveyed municipalities](#) to gather a baseline of implementation of the RCAP two years after it was published. Over the following year, the Compact gathered case studies from municipalities on how they implemented RCAP recommendations, to share best practices and lessons learned with other cities in the region. In 2016, the Compact conducted a second municipal implementation survey to gather implementation rates over the four years since the

RCAP was published. The results, captured in the [2016 Municipal Implementation Report](#), showed an overall increase in the average rate of implementation in 2016 compared to 2014, in total responses and from respondents of both surveys.

The RCAP is a living document and since its creation in 2012, the region’s understanding and priorities for climate action have evolved. The Compact developed the first RCAP with a five-year horizon with the intention that the region would update the RCAP in five years. Over the past five years of implementing the RCAP, Compact stakeholders and partners identified areas of growing regional importance that were not fully captured in the first RCAP. Therefore, RCAP 2.0 includes three new focus areas of recommendations:

- **Regional Economic Resilience:** It has become increasingly important to the public and private sectors in Southeast Florida to account for the economic impacts of climate change and benefits of resilience. The Compact seeks to integrate strategies that strengthen regional economic health into ongoing efforts to bolster regional sustainability and resilience.
- **Social Equity:** As more cities and counties develop plans, policies, and projects to prepare for climate impacts and reduce emissions, the Compact and partner organizations have identified the importance of integrating considerations of equity into planning to ensure that climate actions align with community-based needs and solutions – particularly in “high vulnerability” communities where systemic inequality and racism can increase residents’ vulnerability to climate change.
- **Public Health:** The first RCAP included risk reduction recommendations for emergency management, but did not fully account for the human health risks associated many of the climatic and infrastructure changes. Incidences such as the spread of insect-borne Zika virus in 2016 emphasized the need for regional planning on climate-related health impacts.

Finally, RCAP 2.0 was written and structured to reflect feedback from the public and practitioners—it has actionable recommendations, simplified language, and recommendations targeted to various communities. Rather than a static print document, RCAP 2.0 will live as a web resource to enable implementation support resources to be incorporated within each recommendation as cities, counties, and other key stakeholders continue to take action over the next five years.

RCAP 2.0 Summary of Recommendations

AGRICULTURE

AG-1: Promote policies that preserve the economic viability of agriculture.

AG-2: Continue to meet the water needs of agriculture.

AG-3: Promote locally-produced foods and goods.

AG-4: Align research and extension with climate-related needs of agriculture.

AG-5: Maintain or create agriculture purchase of development rights programs.

AG-6: Assess opportunities for growers and agricultural landowners to manage land to lessen the impacts of climate change and incentivize those actions.

AG-7: Seek a national designation for Southeast Florida as a critical source of domestic agricultural products.

AG-8: Identify and reduce obstacles for enabling urban agriculture, gardening, and other backyard agricultural practices.

AG-9: Increase resources for the study and implementation of invasive, non-native pest and pathogen prevention, early detection, and rapid response.

AG-10: Promote closed-system aquaculture, perennial crops, diversified farming systems, precision agriculture, and recontouring field elevations.

COMPACT COORDINATION

CC-1: Establish and manage a regional communications strategy among business, government, and community leadership.

CC-2: Update regional unified sea level rise projections.

CC-3: Explore opportunities to better coordinate cross-agency and cross-jurisdiction reviews of major infrastructure projects.

CC-4: Continue to provide high quality implementation support resources for jurisdictions seeking to implement RCAP recommendations and other related sustainability and resilience measures.

ENERGY AND FUEL

EF-1: Reduce greenhouse gas emissions.

EF-2: Increase access to low carbon energy options.

EF-3: Increase use of renewable energy sources.

EF-4 Promote electric vehicles.

NATURAL SYSTEMS

NS-1: Foster public awareness of the impacts of climate change on the region's natural systems and ecosystem services.

NS-2: Promote collaborative federal, state, and local government conservation land acquisition programs.

NS-3: Support regional wildland fire management coordination efforts.

NS-4: Develop sustainable financing for the monitoring, protection, restoration, and management of natural areas and ecosystem services.

NS-5: Identify or create a regional group to coordinate a plan to create adaptation corridors, living collections, and other approaches to species dispersal and conservation.

NS-6: Conduct a predictive assessment of current and potential invasive species ranges and impacts.

NS-7: Promote the protection and restoration of coastal natural systems and the creation of living shorelines at the regional scale.

NS-8: Support coral reef protection, restoration, and sustainable-use initiatives to help Florida's sensitive reefs adapt to the changing climate and ocean acidification.

NS-9: Advocate for federal and state funding for applied monitoring and climate-related science, conducted in partnership with the Florida Climate Institute.

NS-10: Examine and propose revisions to environmental regulations to account for the effects of climate change.

NS-11: Identify the effect of climate change on fish populations, the sustainability of key fisheries, and the fishing industry, then develop adaptation plans as needed.

NS-12: Promote the protection, restoration, and creation of freshwater wetlands, open space buffer areas, and connectivity between freshwater and estuarine waters.

NS-13: Develop and implement long-term, sustainable, regional solutions to beach erosion and sediment supply.

NS-14: Maintain, create, and/or restore urban tree canopy.

NS-15: Support and advocate for continued implementation and funding on the state and federal levels for the *Comprehensive Everglades Restoration Plan (CERP)*.

PUBLIC HEALTH

PH-1: Understand and communicate the public health risks associated with flood waters and king tides.

PH-2: Adopt and update all Department of Health plans in light of the public health risks associated with climate change, sea level rise and flooding, as well as extreme heat, vector-borne disease and travel-related transmission.

PH-3: Adapt federal and state public health resources to our diverse local communities in Southeast Florida.

PH-4: Promote public health by reducing extreme heat exposure.

PH-5: Advocate policy changes and funding for local health departments to collect data more frequently to allow testing for association with monthly weather patterns such as changes in water levels, rain amounts, or temperature and for relationships with socio-economic vulnerability.

PH-6: Increase reporting of health data monitoring systems for evaluation of emerging disease related to climate change.

PH-7: Encourage local public health departments to develop tools to assess the impacts of climate change and sea level rise to existing chronic conditions and to report trends or concerns for action.

PUBLIC OUTREACH AND ENGAGEMENT

PO-1: Assess community needs to guide local government communications and the development of regionally-focused materials.

PO-2: Promote public awareness and understanding of climate science, local impacts, personal actions, and public policy options available to respond appropriately.

PO-3: Inspire community action to address causes and impacts of climate change.

PO-4: Create regional “open data” platforms and digital tools.

PO-5: Work with the leadership in high vulnerability communities to co-create culturally-and linguistically-appropriate information gathering tools and strategies, the results of which can inform decision-makers of the priorities and concerns in these communities.

PO-6: Publish major communications in the languages that represent the local demographics, and specifically include the languages of high vulnerability communities.

PO-7: Create public outreach messages in a mixture of media, including non-written forms such as verbal videos or graphic signage.

PUBLIC POLICY ADVOCACY

PP-1: Support — at all levels of government — policy, legislation, and funding to reduce greenhouse gas emissions in all sectors, use less energy and water, deploy renewable energy and low-carbon transportation, prepare for and adapt to climate impacts, build community resilience, and study climate and earth science.

PP-2: Develop common positions on climate, energy, and resilience issues, and advocate jointly as the Compact for those positions before state and federal legislatures, regulatory bodies, and the executive and judicial branches of government.

PP-3: Urge federal, state, regional, and local partners to prioritize climate change considerations in the planning, construction, and operation of the regional water management and flood control system.

PP-4: Encourage counties, municipalities, and other institutions to participate in coalitions of public-, private-, nonprofit-, and/or academic-sector actors dedicated to climate, energy, and resilience issues.

PP-5: Coordinate climate, energy, and resilience policies among counties, municipalities, school districts, and other units of government in the region.

PP-6: Prioritize climate policies that advance social and economic equity for disadvantaged communities and limited-income residents.

PP-7: Consider the direct and indirect impacts of projects, policies, and investments on relevant stakeholders.

PP-8: Encourage the general public to participate in civic discourse regarding climate, energy, and resilience issues.

REGIONAL ECONOMIC RESILIENCE

ER-1: Establish a regional communications strategy among business, government, and community leadership.

- ER-2: Advance regional resilience infrastructure standards.
- ER-3: Seek federal and state engagement to develop a resilience strategy.
- ER-4: Pursue the development of regional water models.
- ER-5: Integrate resilience and economic development at the regional level.
- ER-6: Establish funding strategies to provide for equitable investment.
- ER-7: Engage in the National Flood Insurance Program (NFIP) process.
- ER-8: Serve as a model for regional resilience.
- ER-9: Strive for equity in adaptation planning.

RISK REDUCTION AND EMERGENCY MANAGEMENT

- RR-1: Identify and quantify infrastructure and populations at risk to sea level rise and storm surge.
- RR-2: Integrate other climate scenarios, not limited to storm surge, into planning, evacuation training, and exercises.
- RR-3: Integrate climate vulnerability analysis data and climate adaptation planning and funding into existing emergency planning and funding documents.
- RR-4: Create and invest in a strategic pre-disaster plans for post-disaster recovery.
- RR-5: Identify the most advanced insurance coverage models to reduce exposure in the face of climate-related risks.
- RR-6: Prioritize adaptation investments to reduce the impact of flooding and sea level rise on transportation infrastructure, particularly on evacuation routes.
- RR-7: Ensure that local comprehensive plans align with the state Coastal Construction Control Line.
- RR-8: Continue to adopt and update consistent plans at all levels of government in the region that address and integrate mitigation, sea level rise, and climate change adaptation.
- RR-9: Review the Florida Building Code through the lens of climate vulnerability for the purpose of risk reduction.
- RR-10: Understand and communicate risk information to all residents.

RR-11: Promote and leverage existing policies and programs that are designed to reduce flood risks and economic losses.

RR-12: Increase long-term community resilience and disaster recovery through distributed renewable energy and battery storage systems.

RR-13: Use the most effective social media for emergency messaging, public health updates, and tidal flooding updates.

RR-14: Encourage individual small business recovery plans and personal home adaptation plans.

RR-15: Support disaster planning and preparedness training for city and county staff.

RR-16: Recruit members from underserved communities to better connect with vulnerable populations and build trust.

RR-17: Ensure that the emergency management definition of "communities at risk" include economically vulnerable (unable to easily prepare for and recover from an emergency) and those without easy access to personal transportation.

RR-18: Align and integrate traditional emergency management staff and responsibilities with new and emerging chief resilience officer roles in cities and counties. Create opportunity for planning support and robust long term recovery.

SOCIAL EQUITY

EQ-1: Hold meetings in high vulnerability communities to encourage deliberative dialogue about climate adaptation and mitigation needs.

EQ-2: Engage existing leaders who represent high vulnerability communities to better understand the experience, vulnerabilities, and needs of the community during decision-making and planning.

EQ-3: Encourage dialogue between municipal services staff and existing leadership in high vulnerability communities regarding infrastructure needs.

EQ-4: Support existing leaders who represent high vulnerability communities to be ambassadors of messages in their local community.

EQ-5: Support engagement strategies that involve partnering with intermediary organizations with deep community experience in the communities for which projects are being considered.

EQ-6: Create an advisory group of organizations that represent the region's climate work, equitable community development, and vulnerable populations in order to track and share best practices on equitable climate action and help shape the Compact's support of equitable climate action in the region.

EQ-7: Address social vulnerabilities in all elements of planning and development, such as regulatory frameworks, locations of initiative areas, and the costs of relocation.

EQ-8: Provide equity and social justice training for all local government staff.

EQ-9: Invest in full access of all populations to infrastructure and programs that enable economic mobility, including public transportation, energy efficiency, affordable housing, and green space.

SUSTAINABLE COMMUNITIES AND TRANSPORTATION

SP-1: Incorporate Unified Sea Level Rise Projections, by reference, into all city, county and regional agency comprehensive plans, transportation and other infrastructure plans, and capital improvement plans.

SP-2: Ensure locally produced maps for planning and project documents include the latest storm surge and sea level rise projections.

SP-3: Use vulnerability and risk assessment analyses and tools to identify priorities for resilience investments.

SP-4: Use local government authority to designate adaptation action areas, restoration areas, and growth areas as a priority-setting tool for the vulnerable areas.

SP-5: Ensure beneficial social equity outcomes in considering the impacts of land use policy, public infrastructure, and public service decisions on vulnerable populations.

SP-6: Develop localized adaptation strategies for areas of greatest vulnerability in collaboration with appropriate agencies and jurisdictions to foster multi-jurisdictional solutions and maximize co-benefits.

SP-7: Update local comprehensive plans, post-disaster redevelopment plans, building codes, and land development regulations to incorporate strategies to reduce future risk and economic losses associated with sea level rise and flooding.

SP-8: Consider the adoption of green building standards to guide decision-making and development and to provide an incentive for better location, design and construction of residential, commercial and mixed-use developments and redevelopment.

SP-9: Preserve historic and archaeological resources and increase resource resilience by implementing best practices for the identification, evaluation, and prioritization of threatened resources.

SP-10: Employ transit-oriented developments (TOD) and other planning approaches to promote higher-density development capable of supporting more robust transit.

SP-11: Modify local land use plans and ordinances to support compact development patterns, creating more walkable and affordable communities.

SP-12: Develop and implement policies and design standards that recognize the most vulnerable users and incorporate sustainable design elements.

SP-13: Conduct an assessment of unused or underutilized properties (e.g., parking garages) and develop an approach for utilizing such properties that enhances overall resilience goals.

SP-14: Adopt social equity policies including supporting equitable economic growth and increasing affordable housing opportunities in areas of opportunity (e.g., near public transit and jobs).

SP-15: Develop policies to protect and enhance the urban tree canopy to encourage walking and biking.

SP-16: Phase out septic tanks where necessary to protect public health and water quality.

SP-17: Complete, expand, and connect networks of bicycle and pedestrian facilities, including those supporting access to transit.

SP-18: Ensure that investments reduce greenhouse gas (GHG) emissions and increase the resilience of the transportation system to extreme weather and climate impacts.

SP-19: Increase the use of transit as a transportation mode for the movement of people in the region.

SP-20: Expand the use of transportation demand management (TDM) strategies to reduce peak hour/period and single-occupant vehicle (SOV) travel.

SP-21: Address resiliency, maximize efficiency, and increase the use of low-carbon transportation modes and fuels for the movement of freight in the region.

SP-22: Implement transportation system management and operations (TSM&O) strategies, intended to maximize the efficiency of the existing transportation system, in a coordinated manner across local governments and agencies in the region.

SP-23: Use evidence-based planning and decision-making for transportation system investments and management.

WATER

WS-1: Foster innovation, development, and exchange of ideas for managing water.

WS-2: Ensure consistency in water resource scenarios used for planning.

WS-3: Plan for future water supply conditions.

- WS-4: Coordinate saltwater intrusion mapping across Southeast Florida.
- WS-5: Maintain regional inventories of water and wastewater infrastructure.
- WS-6: Develop a spatial database of resilience projects for water infrastructure.
- WS-7: Modernize standards in the region.
- WS-8: Address the resilience of the regional flood control system.
- WS-9: Update the regional stormwater rule.
- WS-10: Integrate combined surface and groundwater impacts in the evaluation of at-risk infrastructure and the prioritization of adaptation improvements.
- WS-11: Encourage green infrastructure and alternative strategies.
- WS-12: Integrate hydrologic and hydraulic models.
- WS-13: Practice integrated water management and planning.
- WS-14: Advance comprehensive improvements to regional and local stormwater management practices.
- WS-15: Foster scientific research for improved water resource management.
- WS-16: Expand partnerships and resources to further innovation in water resource management.
- WS-17: Advance capital projects to achieve resilience in water infrastructure.
- WS-18: Coordinate innovation and regional funding.
- WS-19: Recognize adaptable infrastructure.
- WS-20: Support the *Comprehensive Everglades Restoration Plan (CERP)*.
- WS-21: Expand regional surface water storage.

RCAP 2.0 Recommendations for Coordinated Regional Action

AGRICULTURE

Agriculture is consistently one of the three major sectors of Florida's economy. When the economic impacts of tourism, development, and agriculture are reviewed over many years, agriculture tends to be the stabilizing component of the economy.

Southeast Florida is unlike any other growing area in the nation. A unique set of climate conditions allows for the production of more than 250 different crops, including temperate crops in the winter and tropical and subtropical crops year-round. The region contributes to the food security of the nation by supplying the entire East Coast with winter vegetables, and there is ample local market potential for common and ethnically distinct crops. The density and diversity of land uses surrounding relatively small farms, coupled with high land values due to proximity to urban areas, create a distinct set of challenges for agriculture. Another source of strain is the constant bombardment of new invasive pests and diseases.

Goal: *Ensure the continued viability of agriculture in Southeast Florida in the face of climate change through policies and actions that encourage sustainable production, remove barriers to production, promote economic incentives, improve water reliability, and promote best management practices.*

Farmers are actively adapting best management practices that efficiently utilize nutrient application and conserve water resources via groundwater recharge. They are also evaluating alternative methods to utilize and retain surface water when it is not harmful to current or projected growing practices. Properly managed agricultural land may also reduce the urban heat island effect, provide wildlife habitat, and bring other benefits. The agriculture community is committed to sustainability, and the economic viability of regional agriculture will allow farmers to remain on the land to grow food for the region's residents as well as the nation. Consideration of agricultural impacts is vital to any regional action plan, which should include efforts to address flooding, saltwater intrusion, exotic pests and disease introduction, and crop changes due to climate change.

AG-1: Promote policies that preserve the economic viability of agriculture.

Promote land use, zoning, water management, international trade, and other policies that preserve the economic viability of agriculture as the industry adapts to more drought, increased flooding, and other climate extremes, as well as sea level rise, groundwater salinization, and non-native species invasion driven by climate change.

AG-2: Continue to meet the water needs of agriculture.

Modernize infrastructure (e.g. seepage barriers, forward pumps on salinity control structures, irrigation) and other measures to maintain high-quality water supply at a reasonable cost to meet Southeast Florida’s diverse needs, including agricultural irrigation needs and crop freeze protection.

AG-3: Promote locally produced foods and goods.

Encourage use of local produce to reduce reliance on imported products—which have a larger greenhouse gas footprint due to greater “food miles travelled”—and increase food security in the face of climate change.

AG-4: Align research and extension with climate-related needs of agriculture.

Support academic research and agricultural extension services on priorities including monitoring systems, best management practices, novel food sources that may be grown as the climate changes, and management systems for agriculture in Southeast Florida.

AG-5: Maintain or create agriculture purchase of development rights programs.

Secure rights to agricultural land from willing sellers to maintain this land for its ability to lessen climate change impacts and provide for regional and national food security.

AG-6: Assess opportunities for growers and agricultural landowners to manage land to lessen the impacts of climate change and incentivize those actions.

Assess and promote options such as open space, water storage, aquifer recharge, carbon sequestration, wind farms, solar collectors, biofuels, pollinator support, and wildlife habitat.

AG-7: Seek a national designation for Southeast Florida as a critical source of domestic agricultural products.

Bolster the domestic market as a buffer for national food security from climate change-induced disruptions of production overseas.

AG-8: Identify and reduce obstacles for enabling urban agriculture, gardening, and other backyard agricultural practices.

- a) Support urban agriculture practices, which can contribute to sustainability and resilience goals by adding to local food security, enabling access to healthy foods, reducing some of the emissions associated with the transport of farm produce, mitigating urban heat islands, and creating on-site stormwater storage.
- b) Identify and reduce obstacles for permitting agricultural practices, including growing and selling of produce and keeping of chickens and/or beehives.

AG-9: Increase resources for the study and implementation of invasive, non-native pest and pathogen prevention, early detection, and rapid response.

AG-10: Promote closed-system aquaculture, perennial crops, diversified farming systems, precision agriculture, and recontouring field elevations.

Enhance food security in the face of climate change-induced disruptions of wild-caught fisheries and traditional annual crop systems.

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COMPACT COORDINATION

The Compact's experience in Southeast Florida since 2009 has demonstrated that regional coordination and collaboration by partners has enabled more rapid progress on climate change action than could have been

Goal: *Strengthen regional coordination and collaboration in Southeast Florida on climate change issues by building the capacity of the Compact to meet evolving regional needs.*

achieved otherwise. While municipalities, counties, regional agencies, and other key actors focus on their own affairs over the next five years, the Compact partners should undertake action at the regional scale to ensure all of the benefits of regional collaboration continue to accrue.

These recommendations articulate an agenda for the Compact as a whole through 2022, focusing on the key functions of the Compact outlined in its formative agreement among the four counties.

CC-1: Establish a regional communications strategy among business, government, and community leadership.

Establish a partnership among business, government, and community leadership to support and deliver a coordinated communications strategy designed to educate and engage the entire community on climate challenges and regional needs as an economic imperative and opportunity.

CC-2: Update regional unified sea level rise projections.

Convene the ad hoc sea level rise working group at a minimum of every five years to review and update the Southeast Florida unified sea level rise projections, and other established unified projections, in accordance with the latest peer-reviewed science.

CC-3: Explore opportunities to better coordinate cross-agency and cross-jurisdiction reviews of major infrastructure projects.

Assess government business processes across municipalities, counties, and regional and state agencies associated with project identification, design, and approval across agencies and jurisdictions.

CC-4: Continue to provide high quality implementation support resources for jurisdictions seeking to implement RCAP recommendations and other sustainability and resilience measures.

The Compact should prioritize resources toward supporting the efforts of municipalities, counties, and other jurisdictions in understanding RCAP recommendations and options for implementation.

ENERGY AND FUEL

The Paris Agreement pledges to pursue efforts to limit global warming to 1.5 degrees Celsius. The 1.5-degree C warming limit is critical to human health, safety, food security, water scarcity, coral reef damage, and the ability to manage adaptive capacity for climate impacts.

The vast majority of the energy consumed in the region is used to fuel vehicles and generate electricity for buildings. It is widely understood that efficiency and conservation are the most accessible and cost-effective ways to reduce energy consumption.

Goal: Reduce consumption of electricity and fuel and increase renewable energy capacity to increase regional resilience, reduce greenhouse gas emissions, and improve disaster recovery.

The recommendations in this area address these strategies and encourage the use of renewable energy. They call for public-private partnerships and addressing barriers, including regulatory processes, that currently prevent the broad application of these technologies. Recommendations are comprehensive, ranging from setting regional goals and increasing renewable energy capacity to establishing a regional framework to deliver finance options.

EF-1: Reduce greenhouse gas emissions.

Reduce greenhouse gas (GHG) emissions by advancing energy efficiency, energy conservation, and distributed renewable energy through technological solutions, behavioral strategies, and policies.

- a) Develop a climate action plan with GHG emissions reduction targets.
- b) Set percent renewable targets.
- c) Provide action examples for local governments, including changes to local ordinances, incentives, education, and energy efficiency financing strategies.
- d) Provide action examples for regional agencies, including incentives and education.
- e) Work with stakeholders to strengthen the Florida Energy Code and define the responsibilities of each trade to improve compliance and enforcement.
- f) Support and advocate for utilities to develop competitive rates for efficient lighting and retrofits.
- g) Partner with academic institutions and the Florida Climate Institute to develop new renewable energy technologies, such as biodiesel production from algae.
- h) Develop policies to regularly audit, benchmark, and/or retro-commission government and private buildings.

EF-2: Increase access to low-carbon energy options.

Increase accessibility to energy efficiency technologies and distributed renewable energy technologies and strategies through financing options, incentives, streamlined permitting and administrative processes, and reductions in soft costs.

- a) Prioritize programs for limited-income residents and communities.
- b) Improve demand for renewable technology through collaboration on grant applications.
- c) Adopt a Property Assessed Clean Energy (PACE) program or other financial platform.
- d) Promote and incentivize the state-wide adoption of the [GOSolar Florida Model Zoning Ordinance](#) and permitting platform developed by the GOSolar Florida consortium.
- e) Explore regional ways to increase access to affordable renewable energy and energy efficient home improvements.
- f) Explore foundations and other options for community solar, including co-ops.
- g) Consider public-private partnerships.
- h) Engage with Florida Power & Light and other electric providers to pilot distributed solar energy at hurricane shelters or government operations centers for disaster recovery and emergency management.
- i) Identify and create or expand incentives for businesses that research and bring to market these technologies.
- j) Reform permitting processes, reduce fees, make permitting rules clear and readily available, expedite the permitting process, and make inspections convenient for property owners.

EF-3: Increase the use of renewable energy sources.

Encourage the installation and use of energy efficient and small-scale distributed renewable energy sources, energy storage technologies, and modular waste to energy systems that are grid independent.

- a) Consult with the wider development community.
- b) Evaluate and amend where necessary existing land development regulations and development standards to encourage the installation and use of energy-efficient and small-scale distributed renewable and modular waste to energy systems that are grid independent.
- c) Revise land development regulations that act as a barrier.
- d) Implement policies and projects that support energy efficiency, distributed renewable energy, and energy storage technologies, and microgrids and/or off-grid small scale distributed solar.
- e) Promote, support, encourage, and educate on the importance of increasing the energy efficiency of buildings and retrofitting existing buildings to support renewable technologies.
- f) Partner with public and private entities to install solar demo projects on public sites and/or buildings that will support solar market development (financially and operationally) and displace significant building energy use and/or partially or fully operate certain facilities. Demo projects should consider including battery storage for emergency situations and increase overall resilience of the site or building.
- g) Adjust zoning policies to better accommodate energy efficient practices and renewable energy.
- h) Develop green building policies.
- i) Install solar panels on public buildings and encourage local governments to promote solar energy by installing solar panels and signing solar power purchase agreements for public buildings.

- j) Implement policies that support energy storage, electric vehicle smart charging, and microgrids.
- k) Develop policies requiring new properties to be solar ready or include a minimum amount of solar energy production per property.
- l) Advocate for state laws allowing power purchase agreements and community solar.

EF-4 Promote electric vehicles.

Promote electric vehicles (EV) and other fuel-efficient fleet practices.

- a) Explore funding sources for infrastructure improvements.
- b) Designate solar charging with battery storage and other renewable options as a priority to maximize emission-reduction benefits and improve the community's emergency preparedness and resilience for disaster recovery during power grid outages.
- c) Engage with the Clean Cities Coalition.
- d) Develop solar carports and fast charging, and consider cogeneration as a second energy source.
- e) Identify and expand EV charging infrastructure, including supporting a regional framework for locating public EV charging stations and expanding EV opportunities at multi-family buildings, workplaces, and commercial and retail centers.
- f) Consider public-private partnerships.
- g) Designate solar charging and other renewable options as a priority to maximize emission-reduction benefits and improve the community's emergency management preparedness in times of power outages.
- h) Develop policies to provide incentives for the deployment of infrastructure to complement transit-oriented corridors, including preferred and/or reduced parking fees for riders accessing transit facilities by electric or other renewable fuel vehicles. Transit facilities develop plans to establish EV charging infrastructure.
- i) Require new properties to have EV-ready electrical infrastructure and dedicate a minimum amount of parking spaces to EV parking.
- j) Encourage government fleet to maximize miles per gallon (MPG) fuel efficiency for all non-specialty vehicle procurement. Develop a vehicle procurement process that ensures city- and county-owned vehicles increase their MPG by 5% annually per vehicle-class whenever higher MPG vehicles are available. Use sources such as the Environmental Protection Agency's Green Vehicle Guide as a procurement guide and include the cost of carbon emissions in the life-cycle cost analysis process.
- k) Encourage transit agencies to reduce greenhouse gas emissions by procuring renewable fuel and electric buses.
- l) Encourage the use of renewable fuels.
- m) Establish anti-idling policies.
- n) Support regional efforts to establish a framework for locating public EV charging stations.

NATURAL SYSTEMS

Southeast Florida's natural communities exist within specific climate, water, and salinity conditions; coral reefs and seagrasses grow in clear, shallow seawater with abundant sunlight and stable temperatures, while mangroves thrive in the brackish areas between the low- and high-tide lines.

Freshwater-dependent hardwood hammocks and pine rockland forests support an abundance and diversity of rare plants and animals unique to the region. Similarly, Everglades tree islands depend on seasonal rainfall patterns that have existed for centuries. Climate change threatens many of the native plants and animals important to Southeast Florida's culture, economy, and distinctive sense of place.

Goal: Implement monitoring, management, and conservation programs designed to protect natural systems and the services they provide to society while improving their capacity for climate adaptation.

Changing weather patterns are not new to the native flora and fauna of Southeast Florida. Plants and animals are always living and competing on the edge of their limits. Wetland plants gain ground, moving up the slope in wet years, then lose ground in dry years. But in many climate change scenarios, the speed and direction of such changes are unprecedented. Climate change may exceed the capacity of native species to keep pace. By taking specific action now, the native flora and fauna may not lose species diversity and or face potentially harmful species.

Coral reefs are vital to local fisheries and the economy. Healthy oceans provide most of the oxygen in the air we breathe. Much research is already underway regarding the impact of climate change on the world's oceans. Locally, strategies are being developed to maintain the ocean in the face of climate change. In estuarine systems, mangroves and seagrasses are primary converters of sunlight energy to food energy. However, they are both limited by water depth. As seas rise, they may not survive in their current locations. It will be incumbent on the region's ability to ensure some newly inundated areas are available for them to colonize. The fate of freshwater wetlands is currently harder to predict. Tide water may reach further inland and some freshwater sources may become more brackish. These 'lightly salty' estuaries can be biologically healthy habitats but we must ensure that other land uses, including drinking water supplies, are not threatened.

Most of the region's freshwater wetlands and native uplands are supplied with rainwater. At this time, rainfall patterns are uncertain. Freshwater storage is an important mitigation option, whether rainfall is too much or too little. Having freshwater storage options allows residents to collect flood waters and hold them for later release during drought.

Given the opportunity, some species can adapt, migrate, or transition. Adaptation, migration, and transition require thoughtful planning. Land use planning and land acquisition programs should allow for such transitions. Hardened shorelines may be transformed to living shorelines. Open lands or vacant parcels may be suitable locations for habitat restoration.

In addition to the ecological functions discussed above, these natural systems provide many benefits to communities and society as a whole. Known as ecosystem services, these benefits include flood attenuation, aquifer recharge and water filtration by wetlands, and erosion control provided by vegetated shorelines such as mangroves. A healthy coral reef sustains vital fisheries and protects coastal property from erosion, while also serving as a global draw for ecotourism, directly contributing to the South Florida economy.

The following strategies recommend ways in which all levels of government can share information necessary to maintain natural areas, rare and endangered native species populations, and the nature-dependent industries necessary for the local economy.

NS-1: Foster public awareness of the impacts of climate change on the region's natural systems and ecosystem services.

NS-2: Promote collaborative federal, state, and local government conservation land acquisition programs.

NS-3: Support regional wildland fire management coordination efforts.

NS-4: Develop sustainable financing for the monitoring, protection, restoration, and management of natural areas and ecosystem services.

NS-5: Identify or create a regional group to coordinate a plan to create adaptation corridors, living collections, and other approaches to species dispersal and conservation.

Encourage backyard habitat and utilize landscaped medians as opportunities for corridor creation.

NS-6: Conduct a predictive assessment of current and potential invasive species ranges and impacts.

NS-7: Promote the protection and restoration of coastal natural systems and the creation of living shorelines at the regional scale.

Identify specific locations and general conditions that could use living shorelines in place of or in combination with seawalls. Write regulations encouraging the use or integration of living shorelines where feasible.

NS-8: Support coral reef protection, restoration, and sustainable-use initiatives to help Florida's sensitive reefs adapt to the changing climate and ocean acidification.

NS-9: Advocate for federal and state funding for applied monitoring and climate-related science, conducted in partnership with the Florida Climate Institute.

NS-10: Examine and propose revisions to environmental regulations to account for the effects of climate change.

NS-11: Identify the effects of climate change on fish populations, the sustainability of key fisheries, and the fishing industry, then develop adaptation plans as needed.

NS-12: Promote the protection, restoration, and creation of freshwater wetlands, open space buffer areas, and connectivity between freshwater and estuarine waters.

NS-13: Develop and implement long-term, sustainable, regional solutions to beach erosion and sediment supply.

NS-14: Maintain, create, and/or restore urban tree canopy.

Focus on trees able to withstand hurricanes, provide wildlife benefits, and provide shade.

NS-15: Support and advocate for continued implementation and funding on the state and federal levels for the *Comprehensive Everglades Restoration Plan (CERP)*.

PUBLIC HEALTH

Protecting the health and welfare of residents is a fundamental role for local governments. This task is made all the more challenging by the impacts of climate change in Southeast Florida, such as exposure to extreme weather events, rising temperatures, and the emergence of new vector-borne disease. The 2016 appearance of Zika in Southeast Florida elevated public health concerns in the region. Local officials—bolstered by state and federal agencies—mobilized an unprecedented response to a fear-inducing public health emergency. By including public health considerations in RCAP 2.0, the Compact recognizes the importance of proactive efforts to build resilience into the local and regional public health systems.

Goal: Build regional capacity to mitigate climate-related health risks in Southeast Florida.

PH-1: Understand and communicate the public health risks associated with flood waters and king tides.

Communicate in different languages, including American Sign Language, and use traditional and social media as appropriate to engage with the community.

PH-2: Adopt and update all Department of Health plans in light of the public health risks associated with climate change, sea level rise, flooding, extreme heat, vector born disease, and travel-related transmission.

PH-3: Adapt federal and state public health resources to the diverse local communities in Southeast Florida.

Review tools and resources developed by federal agencies such as the Centers for Disease Control, the National Institutes for Health, and the Environmental Protection Agency, as well as the Florida Department of Health and other state and local health agencies, for applicability within a given jurisdiction.

PH-4: Promote public health by reducing extreme heat exposure.

- a) Increase urban tree canopy to reduce extreme heat and provide shade.
- b) Reduce the urban heat island effect by encouraging and/or requiring highly reflective paving and roofing materials.
- c) Work with community groups – especially in high vulnerability communities – to identify households with inadequate air conditioning.
- d) Ensure the availability of and access to public cooling centers.

PH-5: Advocate for policy changes and funding for local health departments to collect data more frequently to allow testing for association with monthly weather patterns such as changes in water levels, rain amounts, or temperature and for relationships with socio-economic vulnerability.

PH-6: Increase reporting of health data monitoring systems to evaluate emerging disease related to climate change.

Recognize the numerous public health risks carried by sea level rise, either directly or through mediators. New health threats can be linked to water quality changes (i.e. salt water intrusion and increased urban runoff) and lowered drainage capacity due to high groundwater levels.

PH-7: Encourage local public health departments to develop tools to assess the impacts of climate change and sea level rise on existing chronic conditions and to report trends or concerns for action.

Improve data collection and reporting (both granular and geographic) to make health outcome projections about exposure to mold, infectious disease, impacted chronic conditions, occurrence of exposure to contaminated water supplies, occupancy of flooding-related injury, and mental health issues related to property damage and displacement for accurate health projections by community.

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PUBLIC OUTREACH AND ENGAGEMENT

An informed and engaged public is critical for the success of nearly every recommendation contained within RCAP 2.0. The Compact partners recognize that regionally coordinated efforts can add tremendous value to the

communications and engagement undertaken by each county, city, and regional agency. Regionally-consistent science and planning assumptions ensure each jurisdiction is

communicating consistent core facts in order to inform rather than confuse. Regional efforts must, however, respect the roles of localized communications regarding municipal actions affecting that municipality's residents alone.

GOAL: Build public awareness of the risks for Southeast Florida associated with climate impacts and the opportunities for early, coordinated action to address these risks.

PO-1: Assess community needs to guide local government communications and the development of regionally-focused materials.

Engage with representative organizations such as advocacy organizations, academic institutions, professional associations, faith-based organizations, and the broader public.

PO-2: Promote public awareness and understanding of climate science, local impacts, personal actions, and public policy options available to respond appropriately.

- a) Develop and promote a well-curated online library of resources for use by local governments, associations, and other stakeholders, consisting of regionally consistent, rigorous, and multilingual materials.
- b) Collect data to help create resources and identify key resources to contribute to an online library.

PO-3: Inspire community action to address the causes and impacts of climate change.

- a) Engage residents and visitors through the creative power of the arts, signage, and other installations and participatory events.
- b) Partner with local organizations, public health agencies, and academic institutions to maximize outreach to diverse audiences.

PO-4: Create regional "open data" platforms and digital tools.

- a) Share data sets from federal, state, and local government; academic research; and community-based participatory research.
- b) Encourage third parties to build digital tools using open data that communicates adaptation efforts, mitigation goals, and community and environmental trends and enables community-based participatory research.

- c) Continue to report regional climate indicators including rate of sea level rise, saltwater intrusion boundaries, monitoring wells, landscape-level vegetation patterns, percent coral cover, offshore reef zone conditions, water temperature and pH, and occurrence and range of invasive exotic plant and animal species.

PO-5: Work with the leadership in high vulnerability communities to co-create culturally- and linguistically-appropriate information gathering tools and strategies, the results of which can inform decision-makers of the priorities and concerns in these communities.

PO-6: Publish major communications in the languages that represent the local demographics, and specifically include the languages of high vulnerability communities.

PO-7: Create public outreach messages in a mixture of media, including non-written forms such as verbal videos or graphic signage.

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PUBLIC POLICY ADVOCACY

Advocacy at the state and federal levels is one of the fundamental functions that led to the creation of the Compact; in fact, more clauses within the original Compact resolution are dedicated to joint advocacy than any other purpose. The region is represented by nine congressional districts in the United States House of Representatives, 13 districts in the Florida Senate, and 35 districts in the Florida House of Representatives. The Compact seeks to work with elected representatives at the state and federal levels in a bipartisan fashion to advance resilience.

Goal: Guide and influence all levels of government to address climate change in relevant policies, programs, and legislation.

Increasingly, the Compact is engaging with other sub-national governments—state, provincial, and local governments around the world—in addressing climate change. Engaging with other local governments enables shared learning about new strategies and technologies that can be applied in Southeast Florida. It also enables the Southeast Florida region to share what it has learned.

PP-1: Support—at all levels of government—policy, legislation, and funding to reduce greenhouse gas emissions in all sectors, use less energy and water, deploy renewable energy and low-carbon transportation, prepare for and adapt to climate impacts, build community resilience, and study climate and earth science.

PP-2: Develop common positions on climate, energy, and resilience issues, and advocate jointly as the Compact for those positions before state and federal legislatures, regulatory bodies, and the executive and judicial branches of government.

- a) Continue developing joint federal and state climate, energy, and resilience legislative programs to guide united advocacy by the Compact in Tallahassee and Washington.
- b) Pursue joint representation as an intervener in Florida Public Service Commission proceedings relevant to the Compact region.
- c) Support the continued incorporation of climate-related policies and programs in state and federal infrastructure funding programs.
- d) Support and advocate for full state and federal funding of the Comprehensive Everglades Restoration Plan and related Everglades restoration projects in recognition of the crucial role a restored Everglades ecosystem will play in protecting Southeast Florida’s water supply.
- e) Support the defense and maintenance of strong federal policies and programs to reduce greenhouse gas emissions, adapt to climate impacts, and build community resilience.
- f) Support development of strong state policies and programs to reduce greenhouse gas emissions, adapt to climate impacts, and build community resilience.

- g) Support continued U.S. participation in global climate accords and continued action to meet national goals under global agreements.

PP-3: Urge federal, state, regional, and local partners to prioritize climate change considerations in the planning, construction, and operation of the regional water management and flood control system.

Engage with partners such as the U.S. Army Corps of Engineers and the South Florida Water Management District.

PP-4: Encourage counties, municipalities, and other institutions to participate in coalitions of public-, private-, nonprofit-, and/or academic-sector actors dedicated to climate, energy, and resilience issues.

PP-5: Coordinate climate, energy, and resilience policies among counties, municipalities, school districts, and other units of government in the region.

- a) Share information among counties, municipalities, school districts, and other units of government.
- b) Adopt regional tools and policy commitments, such as the Compact Unified Sea Level Rise Projection and the Mayors' Climate Action Pledge.
- c) Foster collaboration among elected officials and local government staff.
- d) Collaborate in the pursuit external funding and technical assistance opportunities.
- e) Train staff on climate issues.

PP-6: Prioritize climate policies that advance social and economic equity for high vulnerability communities and limited-income residents.

PP-7: Consider the direct and indirect impacts of projects, policies, and investments on relevant stakeholders.

Develop processes for regional and/or intergovernmental review, coordination, and harmonization of climate, energy, and resilience projects.

PP-8: Encourage the general public to participate in civic discourse regarding climate, energy, and resilience issues.

Create citizen climate advisory boards or green teams to advise local governments.

REGIONAL ECONOMIC RESILIENCE

As climate impacts have become more apparent in Southeast Florida over the past decade, there is a growing awareness that the regional collaborative efforts to-date must expand to include a greater degree of collaboration between governments and the private sector to protect the region’s economy. Proactive efforts to address climate change—both in building resilience and reducing emissions—represent very specific economic development opportunities for the region. Protecting regional prosperity is a co-equal and integrated goal with protecting natural resources, infrastructure, and quality of life for all who live, work, and play in Southeast Florida.

Goal: Establish a regional resilience strategy involving elected and business leadership, inclusive of funding mechanisms to guide, incentivize, protect, and promote public and private investments and the economic integrity of the region.

ER-1: Establish a regional communications strategy among business, government, and community leadership.

Establish a partnership among business, government, and community leadership to support and deliver a coordinated communications strategy designed to educate and engage the entire community on climate challenges and regional needs as an economic imperative and opportunity.

ER-2: Advance regional resilience infrastructure standards.

Advance and promote a Southeast Florida resilience strategy that includes regionally coordinated resilience standards as the basis for planning, development, and infrastructure investments to proactively address flood risk associated with sea level rise and predicted changes in coastal water levels, groundwater tables, flood elevations, and storm surge.

ER-3: Seek federal and state engagement to develop a resilience strategy.

Coordinate a regional request by business and elected leadership for the federal government, the U.S. Army Corps of Engineers, and the South Florida Water Management District to undertake a comprehensive study and develop a resilience strategy to address service levels of the Central and South Florida Flood Control System under current and future conditions, inclusive of inland and coastal reaches.

ER-4: Pursue the development of regional water models.

Engage the South Florida Water Management District and other water officials in the development and update of regional water management models to account for future climate conditions. Guide planning and investments for future flood and climate conditions based on outputs, including anticipated adjustments to water management operations, storage, and water supply needs.

ER-5: Integrate resilience and economic development at the regional level.

Create a regional economic development plan focused on regional resilience and organized investment in associated infrastructure, planning, small business economic sustainability, and equitable futures.

ER-6: Establish funding strategies to provide for equitable investment.

Identify, create, pursue, and establish funding strategies, including foreign and green investments, needed at the regional and local scale to ensure organized and timely investment in the infrastructure improvements that safeguard the public, the region's diverse communities, and shared economies in the face of sea level rise and other climate impacts.

ER-7: Engage in the National Flood Insurance Program (NFIP) process.

Organize regionally to advocate for long-term affordability and sustainability of flood insurance coverage and options within the NFIP and private insurers that properly credit communities and individual policyholders for investments in resilience.

ER-8: Serve as a model for regional resilience.

Establish Southeast Florida as the epicenter for innovation, affordable clean energy, and resilient design with prominent integration and promotion of renewable energy and green technologies as part of economic development strategies, infrastructure improvements, training, and community design.

Support small, locally-owned businesses when employing emergency services funding.

ER-9: Strive for equity in adaptation planning.

Work with community groups to fund and commission a credible third-party study to assess the risk and extent of climate gentrification, and possible solutions.

RISK REDUCTION AND EMERGENCY MANAGEMENT

Extreme weather events—namely hurricanes—punctuate the modern history of Southeast Florida’s settlement and development. From the “Great Miami” hurricane of 1926 that interrupted the first land development boom and the 1935 Labor Day hurricane that heavily damaged the overseas railroad in the Middle Keys, to the more significant storms of modern Southeast Florida—Andrew, Wilma, and now Irma—they have all written their names within the region’s history and shaped the way the region has grown. As a region that experiences extreme weather fairly routinely, we like to think of our expertise in this area as being among the best in the country. While the region holds this leadership position, climate change will continue to expose Southeast Florida to more extreme weather—more frequently and of greater severity. Accordingly, resilience efforts must be integrated into emergency management efforts. The recommendations in this chapter are designed to keep our region at the forefront of excellence.

Goal: Prepare for the inevitable shocks and stresses experienced in Southeast Florida through coordinated and interdisciplinary emergency management and public health collaboration, planning, and investment.

RR-1: Identify and quantify infrastructure and populations at risk to sea level rise and storm surge.

- a) Perform local vulnerability analyses to identify and quantify infrastructure and populations at risk under various sea level rise scenarios and other climate change scenarios.
- b) Use the best available data, models, and resources to inform planning, prioritizing, and annual funding.

RR-2: Integrate other climate scenarios, not limited to storm surge, into planning, evacuation training, and exercises.

RR-3: Integrate climate vulnerability analysis data and climate adaptation planning and funding into existing emergency planning and funding documents.

Consider utilizing the Local Mitigation Strategy and Threat and Hazard Identification and Risk Assessment.

RR-4: Create and invest in strategic pre-disaster plans for post-disaster recovery.

Create a pre-disaster plan that includes neighborhood, business, and government-accelerated recovery and resilience information. These strategic plans should cover critical infrastructure systems, land use, housing, economic development, and public health.

RR-5: Identify the most advanced insurance coverage models to reduce exposure in the face of climate-related risks.

RR-6: Prioritize adaptation investments to reduce the impact of flooding and sea level rise on transportation infrastructure, particularly on evacuation routes.

RR-7: Ensure local comprehensive plans align with the state Coastal Construction Control Line.

Build goals, objectives, and policies related to Coastal High Hazard Area designations for the highest protection possible.

RR-8: Continue to adopt and update consistent plans at all levels of government in the region that address and integrate mitigation, sea level rise, and climate change adaptation.

Ensure consistency among the following plans: strategic plans, disaster recovery and redevelopment plans, comprehensive plans, long-range transportation plans, comprehensive emergency management plans, capital improvement plans, economic development plans, local mitigation strategies, climate change action plans or resilience strategies, future land use plans, and threat and hazard identification and risk assessments.

RR-9: Review the Florida Building Code through the lens of climate vulnerability for the purpose of risk reduction.

Develop and adopt recommendations specific to Southeast Florida counties to strengthen the code and the built environment particularly in regard to flooding hazards.

RR-10: Understand and communicate risk information to all residents.

Use data on flood risks posed by storm surge, flooding, and king tide sunny day flooding provided by the National Hurricane Center, the Federal Emergency Management Agency, and elsewhere to make communication accessible in different languages, including American Sign Language, through traditional and social media as appropriate to the community.

RR-11: Promote and leverage existing policies and programs that are designed to reduce flood risks and economic losses.

Promote resource programs such as Local Mitigation Strategy activities and the Federal Emergency Management Agency Community Rating System.

RR-12: Increase long-term community resilience and disaster recovery through distributed renewable energy and battery storage systems.

Provide power backup with initial prioritization at emergency command centers, shelters, senior living centers, and multifamily affordable housing units.

RR-13: Use the most effective social media for emergency messaging, public health updates, and tidal flooding updates.

RR-14: Encourage individual small business recovery plans and personal home adaptation plans.

RR-15: Support disaster planning and preparedness training for city and county staff.

Promote training from the National Disaster Preparedness Training Center, the National Oceanic and Atmospheric Administration, the Florida Division of Emergency Management, the Association of Climate Change Officers, and others for emergency managers, planners, engineers, and others contributing to disaster planning and preparedness.

RR-16: Recruit members from underserved communities to better connect with high vulnerability communities and build trust.

Work with programs like the Community Emergency Response Team and AmeriCorps.

RR-17: Ensure the emergency management definition of "communities at risk" includes economically vulnerable people (people unable to easily prepare for and recover from an emergency) and those without easy access to personal transportation.

RR-18: Align and integrate traditional emergency management staff and responsibilities with new and emerging chief resilience officer roles in cities and counties. Create opportunity for planning support and robust long term recovery.

SOCIAL EQUITY

As cities and counties across Southeast Florida strive to build a sustainable, resilient, and prosperous region, climate efforts must produce benefits that are shared by all. The Compact recognizes that climate vulnerabilities are exacerbated by inequities and injustice, and so this RCAP explicitly acknowledges, and seeks to address, the socioeconomic challenges to building resilience in these “high vulnerability” communities (often limited-income communities and/or communities of color). The Compact shares the Southeast Florida Regional Partnership’s definition of equity, as outlined in the *Seven50: SE Florida Prosperity Plan*:

***Goal:** Guide and support municipalities and counties in the Compact region to create equitable climate policies, programs, and decision-making processes that consider the local socio-economic and racial inequalities and ensure all can participate and prosper.*

***Equity:** Just and fair inclusion. The goals of equity must be to create conditions that allow all individuals and communities to reach their full potential to the benefit of the individual and the larger regional community. An equitable region is one in which all can participate and prosper in their communities and in the regional economy, and where benefits and burdens are shared fairly.*

Equity should be an integral part of all policymaking at every level of government within Southeast Florida.

EQ-1: Hold meetings in high vulnerability communities to encourage a deliberative dialogue about climate adaptation and mitigation needs.

Hold meetings for elected officials and staff in places these communities value (e.g., community centers and cultural centers) in order to learn unique climate challenges and opportunities present in the community. Such meetings provide a chance to learn and plan from community-driven priorities.

EQ-2: Engage existing leaders who represent high vulnerability communities to better understand the experience, vulnerabilities, and needs of the community during decision-making and planning.

Actively engage with leaders of churches, schools, community organizations, and other culturally significant groups, either formal or informal, in the process of decision making and planning. Reach out to those leaders to inform them of public hearings and hold hearings in locations convenient to the targeted community. Encourage communication between the existing leadership in vulnerable communities and elected officials serving as their representatives.

EQ-3: Encourage dialogue between municipal services staff and existing leadership in high vulnerability communities regarding infrastructure needs.

Include high vulnerability communities—even in the absence of resident complaints—in regular comprehensive reviews of wastewater and stormwater infrastructure.

EQ-4: Work with existing and future leaders of high vulnerability communities to serve as representatives, conveners, and a bridge to local communities in support of meaningful dialogue and information exchange.

Host trainings and/or workshops for existing leaders to disseminate climate and energy information and to support these leaders in developing messaging and selecting a medium relevant to their communities.

EQ-5: Support engagement strategies that involve partnering with intermediary organizations with deep community experience in the communities for which projects are being considered.

Work with community groups to engage high vulnerability communities and communities of color in the design of meetings to improve and facilitate attendance by providing food, childcare, and transportation support; by convening meetings in high vulnerability neighborhoods; and by providing translation for non-English speakers. Engage with groups that have demonstrated successes and social capital in the community.

EQ-6: Create an advisory group of organizations that represent the region's climate work, equitable community development, and vulnerable populations in order to track and share best practices on equitable climate action and help shape the Compact's support of equitable climate action in the region.

EQ-7: Address social vulnerabilities in all elements of planning and development, such as regulatory frameworks, locations of initiative areas, and the costs of relocation.

Draw on recent and relevant social vulnerability information and tools that already exist, such as Florida Institute of Health Innovation reports, Center for Disease Control reports, census data, the U.S. Global Change Research Program Climate and Health Assessment, county and municipal data, Seven50 SE Florida Prosperity Plan, and others.

EQ-8: Provide equity and social justice training for all local government staff.

Develop curricula for training, including topics on why systemic racism and inequity is a threat-multiplier for climate change and how to design and implement equitable climate solutions, through collaboration between community groups and city and county leaders.

EQ-9: Invest in full access of all populations to infrastructure and programs that enable economic mobility, including public transportation, energy efficiency, affordable housing, and green space.

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SUSTAINABLE COMMUNITIES AND TRANSPORTATION

The [Unified Sea Level Rise Projection](#) and the Preliminary Vulnerability Analysis show the region's vulnerabilities to the impacts of climate change. While the specific conditions at a given point in the future are impossible to predict, the range of potential future conditions has been outlined using the best available science and an agreed upon level of uncertainty. The informed predictions allow immediate action to protect assets and invest wisely. As the science, monitoring, and modeling of impacts continue to be refined, the RCAP integrates the latest climate change considerations into existing and future policy decision-making processes, including municipal and county comprehensive plans and transportation plans. The ultimate goal is to achieve resilience, limit risk, and reduce greenhouse gas emissions.

The Sustainable Communities and Transportation section includes recommendations related to comprehensive planning, such as the designation and implementation of Adaptation Action Areas

GOAL: Adapt to the impacts of climate change and reduce greenhouse gas emissions by reshaping where and how to build and move from place to place.

(AAAs), which are expected to aid in focusing technical assistance and funding opportunities to areas most vulnerable to the impacts of sea level rise and associated coastal flooding. In 2011, the Florida Legislature amended state law to provide for AAAs as an optional designation in local comprehensive plans for those identified areas experiencing coastal flooding due to extreme high tides, storm surge, and the related impacts of sea level rise. The law also provides for the development of adaptation policies for the purpose of prioritizing funding opportunities. In 2015, the Florida Legislature amended state law to require local governments to include development and redevelopment principles, strategies, and engineering solutions that reduce flood risks and losses within coastal areas into their comprehensive plans.

In addition to comprehensive planning, this section provides recommendations to promote effective engagement of the multiple public- and private-sector entities involved in the provision and maintenance of transportation infrastructure and the delivery of transportation services in the region for climate adaptation and mitigation. Currently, the transportation sector contributes 45% of the region's greenhouse gas emissions. The plan's strategies—such as reducing vehicle miles traveled by shifting trips taken from autos to walking, biking, or public transportation—will work to reduce emissions and realize the cross-cutting benefits of more livable and desirable communities in the region.

To accomplish the goal, current and evolving coordination efforts between transportation and planning entities rely significantly on data sharing and analyses, from studies and tools identifying vulnerable and/or at risk transportation infrastructure to performance metrics. This section highlights the need for local and regional planning and decision-making processes to ensure a complementary approach toward developing and maintaining a system of land use and transportation that is more resilient while also

reducing vehicle miles traveled, providing more transportation choices, and dealing with future uncertainty.

Recommendations for Sustainable Communities and Transportation are divided into five sections:

1. Incorporate vulnerability and risk information into land use and transportation planning decisions
2. Use all available planning tools to adapt to climate change impacts and increase community resilience
3. Promote resilient, low-carbon communities
4. Promote efficient low-carbon movement of people and freight
5. Evaluate, assess, and improve planning and implementation

1. Incorporate vulnerability and risk information into land use and transportation planning decisions

SP-1: Incorporate Unified Sea Level Rise Projections, by reference, into all city, county, and regional agency comprehensive plans, transportation and other infrastructure plans, and capital improvement plans.

SP-2: Ensure locally produced maps for planning and project documents include the latest storm surge and sea level rise projections.

- a) Develop sea level rise scenario maps and updated storm surge maps based on sea level rise projections published by the Southeast Florida Regional Climate Change Compact to be included in appropriate comprehensive plans and/or regional planning documents that will guide municipal and county government climate adaptation planning efforts related to the built environment, transportation infrastructure and services, historic and archaeological resources, water management systems and public infrastructure, and natural resources.
- b) Continue to update local and regional planning efforts as more data becomes available and scientific projections are refined. Local governments and organizations should use best available data and tools for land use and other planning.

SP-3: Use vulnerability and risk assessment analyses and tools to identify priorities for resilience investments.

- a) Conduct new or utilize existing vulnerability and risk analyses and other technical tools to identify areas requiring adaptation strategy development.
- b) Document, inventory, and share data sources, thresholds, criteria, and models used to encourage the use of common approaches to vulnerability analysis and ultimately adaptation strategy development that will complement one another across infrastructure sectors and result in a cohesive resilient built environment.

SP-4: Use local government authority to designate adaptation action areas, restoration areas, and growth areas as a priority-setting tool for the vulnerable areas, and as a means to maximize benefits to natural systems while guiding people and commerce to less vulnerable places in the region.

- a) Designate or otherwise recognize adaptation action areas to provide a means to identify areas deemed most vulnerable to sea level rise and other climate change impacts (including, but not limited to, extreme high tides, heavy local rain events, and storm surge) and prioritize funding and adaptation planning. Such areas may include, but not be limited to:
 - i. Areas below, at, or near mean higher high water
 - ii. Areas with a hydrological connection to coastal waters
 - iii. Areas designated as evacuation zones for storm surge
 - iv. Other areas impacted by climate-related drainage and/or flood control issues
- b) Designate or otherwise recognize restoration areas in local comprehensive plans and post-disaster redevelopment plans to identify undeveloped areas vulnerable to climate change impacts for the purpose of environmental restoration, dune restoration, beach restoration, agriculture, conservation of natural resources or recreational open space, or designation as stormwater retention areas. Local governments and appropriate regional planning authorities should prioritize land acquisition in these areas. These areas could also be established or acquired through mitigation or transfer-of-development rights initiatives.
- c) Designate or otherwise recognize growth areas in local comprehensive plans and post-disaster redevelopment plans as areas outside of vulnerable areas where growth is encouraged due to higher topographic elevation and the presence of existing infrastructure, such as transportation, water, and sewer infrastructure. Growth areas should be developed with urban design guidelines that address the character of the urban place and provide a high-quality pedestrian experience through landscaping and the creation of public spaces.

2. Use all available planning tools to adapt to climate change impacts and increase community resilience

SP-5: Ensure beneficial social equity outcomes in considering the impacts of land use policy, public infrastructure, and public service decisions on high vulnerability populations.

SP-6: Develop localized adaptation strategies for areas of greatest vulnerability in collaboration with appropriate agencies and jurisdictions to foster multi-jurisdictional solutions and maximize co-benefits.

- a) Develop policies and capital plans related to vulnerable areas (including those designated as adaptation action areas (AAAs)) to improve resilience to coastal flooding, sea level rise, and other climate-related vulnerabilities.

- b) Identify locations within AAAs or similarly vulnerable areas where targeted infrastructure improvements, new infrastructure, or modified land use and/or development practices could reduce vulnerability and/or improve community resilience.
- c) Coordinate regionally across municipalities and county planning authorities to develop projects and funding proposals seeking prioritized funding for identified infrastructure needs and specific adaptation improvements required in AAAs or other related adaptation planning areas.
- d) Identify populations and communities that are most vulnerable or of special concern within AAAs and similarly vulnerable areas in order to ensure the proper consideration of individual needs and resources as part of local and regional planning activities.
- e) Utilize technical workshops and collaborative design charrettes, such as the Compact's [Resilient Redesign](#), to help develop adaptation strategies, including those focused on living with the water. Include case studies of green (e.g., natural stormwater retention) and grey (e.g., road elevation) solutions that provide information on planning, design, construction, and communication experiences.

SP-7: Update local comprehensive plans, post-disaster redevelopment plans, building codes, and land development regulations to incorporate strategies to reduce future risk and economic losses associated with sea level rise and flooding.

- a) Incorporate strategies into local comprehensive plans and post-disaster redevelopment plans to discourage new development or post-disaster redevelopment in vulnerable areas in order to reduce future risk and economic losses associated with sea level rise and flooding.
- b) Work with the appropriate local, regional, and state authorities to revise building codes and land development regulations to require vulnerability reduction measures for increased resilience (e.g. additional hardening, higher floor elevations, the incorporation of natural infrastructure) of all new construction, redevelopment, and infrastructure.

SP-8: Consider the adoption of green building standards to guide decision-making and development and to provide an incentive for better location, design, and construction of residential, commercial, and mixed-use developments and redevelopment.

Incorporate sustainable building and neighborhood ratings or national model green building codes, including, but not limited to, those defined in [Section 255.253\(7\)](#), Florida Statutes, into municipal codes region-wide.

SP-9: Preserve historic and archaeological resources and increase resource resilience by implementing best practices for the identification, evaluation, and prioritization of threatened resources.

- a) Identify and map at-risk historic and archaeological resources (i.e., resources susceptible to sea level rise and the effects of natural disasters), and continue to update these maps as more data become available and scientific projections are refined. Include the maps in comprehensive plans and/or regional planning documents to guide municipal and county government climate adaptation planning efforts.

- b) Establish a ranking of at-risk regional historic and archaeological resources based on a matrix of vulnerability, historical significance, scientific and economic value, and other criteria as determined by the appropriate historic preservation entities, and prioritize adaptive preservation and mitigation strategies to increase the resilience of resources against sea level rise and natural disasters.
- c) Develop adaptive sustainable preservation strategies, including existing best-practice models available from national and state preservation authorities that are flexible and regularly evaluated and updated, including in-situ and mitigation alternatives.
- d) Utilize available national and state emergency management funding to facilitate the implementation of the above recommendations, and establish local and regional incentives for the pre-disaster hardening of threatened resources.

3. Promote resilient, low-carbon communities

SP-10: Employ transit-oriented developments (TOD) and other planning approaches to promote higher-density development capable of supporting more robust transit.

- a) Support effective planning and implementation of TOD at the local and regional levels—in coordination with the effective planning and provision of transit services and stations—to maximize ridership, economic development, and other desired outcomes.
- b) Recognize that planning for TOD requires consideration of transit and land use issues at the system, corridor, and station levels, as well as the evaluation of adequate infrastructure, such as water and sewer mains.
- c) Create and refine station area plans, and develop policies to streamline approval processes involving TOD.
- d) Ensure the equitable distribution of the benefits of TOD and premium transit services, including through the retention or incorporation of affordable and workforce housing in TODs.

SP-11: Modify local land use plans and ordinances to support compact development patterns, creating more walkable and affordable communities.

- a) Identify potential changes to future land use maps and comprehensive plans, and strategies such as reduced parking requirements for TOD at the local level, and address these issues in regional level plans.
- b) Adopt form-based codes with physical form, the design of buildings and the public realm, and an emphasis on mixed and evolving land uses as organizing principles.
- c) Consider the regional implementation of rapid transit zones or other such designations to maintain land use control around transit stations, including ones with multiple jurisdictions.

SP-12: Develop and implement policies and design standards that recognize the most vulnerable users and incorporate sustainable design elements.

- a) Collaborate on the implementation of a system of Complete Streets that is context sensitive and safely serves the transportation needs of transportation system users of all ages and abilities, including pedestrians, bicyclists, transit riders, motorists, and freight handlers. Continue to support Complete Streets implementation with policies, guidelines, and funding programs and with advancements in the design of transportation projects.
- b) Catalyze a shift to non-motorized modes through adopting [a goal of fatality-free streets](#), which recognizes that crashes can be prevented through coordinated engineering, education, evaluation, encouragement, and enforcement solutions.
- c) Incorporate green infrastructure and low-impact development considerations in policy and project design. Ensure projects include urban heat island and/or urban tree canopy considerations to cool cyclists, pedestrians, and other transit system users. Promote consistent incorporation through tools such as the [Greenroads Rating System](#) and the Federal Highway Administration [Infrastructure Voluntary Evaluation Sustainability Tool](#).
- d) Require new development and redevelopment to be planned and designed to support and enhance walking, biking, and transit use in areas with existing and planned multimodal corridors connecting urban and other centers in the region.

SP-13: Conduct an assessment of unused or underutilized properties (e.g., parking garages) and develop an approach for utilizing such properties that enhances overall resilience goals.

SP-14: Adopt social equity policies including supporting equitable economic growth and increasing affordable housing opportunities in areas of opportunity (i.e., near public transit and jobs).

SP-15: Develop policies to protect and enhance the urban tree canopy to encourage walking and biking.

Create incentives for developers to maintain existing tree canopy on sites.

SP-16: Phase out septic systems where necessary to protect public health and water quality.

- a) Develop funding mechanisms to help homeowners with the cost of septic to sewer conversion.
- b) Mitigate the additional inputs to the wastewater systems by encouraging greywater reuse systems in new developments.
- c) Increase capacity for greywater reuse at the municipal level and the use of treatment wetlands to manage additional wastewater.

4. Promote efficient low-carbon movement of people and freight

SP-17: Complete, expand, and connect networks of bicycle and pedestrian facilities, including those supporting access to transit.

- a) Prioritize the implementation of planned networks of bicycle and pedestrian facilities that connect people to various destinations and provide recreational opportunities. Improve the overall coordination of local and regional agency planning and implementation efforts.
- b) Use roadway design project checklists that include measures of pedestrian, bicycle, and transit (e.g., bus bay) accommodations.
- c) Consider the regional adoption of transit, pedestrian, and biking programs that improve access to transit.
- d) Develop policies to increase designated bike parking facilities at office and retail developments.

SP-18: Ensure investments reduce greenhouse gas (GHG) emissions and increase the resilience of the transportation system to extreme weather and climate impacts.

- a) Continue to enhance and implement regionally coordinated multimodal transportation planning by metropolitan planning organizations, transit agencies, and local governments. Include goals and objectives in the Southeast Florida Transportation Council's Regional Transportation Plan and other transportation plans that reinforce desired GHG emission reductions and the desired increase in transportation system resilience. Incorporate climate and related performance metrics, such as reduced vehicle miles traveled (VMT) and increased mode split, in transportation plans and programs.
- b) Give higher investment priority to local, state, and federal transportation infrastructure investments, programs, and services that will reduce GHG emissions and increase resilience and adaptability to climate change.
- c) Incorporate evaluation criteria and processes to prioritize projects that meet transportation plan goals and objectives, initially emphasizing evaluation criteria that reduce VMT and increase the use of non-auto transportation modes. Projects that enhance economic vitality should also be given priority, such as projects and service expansions along transit-oriented corridors and those that improve connections to major airports and seaports.
- d) Utilize data and tools identifying vulnerable and/or at-risk transportation infrastructure and test scenarios as a part of long-range transportation planning processes. An example is the [Sketch Planning Tool](#), which assists users in assessing the effects of sea level rise and other flooding risks on transportation infrastructure. Also, utilize these data and tools to inform approaches to the design of transportation projects and operation and maintenance of the transportation system.
- e) Identify and expand electric vehicle (EV) charging infrastructure, including expanding EV opportunities at multi-family buildings and at commercial and retail centers.
- f) Secure adequate and sustainable funding for transportation facilities and services, including additional dedicated funding for transit operations and maintenance. Rely less on revenue

sources based on fuel consumption and more on other funding sources such as sales surtaxes, value capture from development benefitting from transportation investments, mobility fees, and public-private partnerships.

SP-19: Increase the use of transit as a transportation mode for the movement of people in the region.

- a) Continue efforts, such as periodic comprehensive operational analyses, to maximize existing transit services. Increase the amenities and infrastructure available to transit riders, including shade, shelters, benches, and lighting and bicycle racks utilizing solar power where feasible, and increase access to route and real-time boarding information.
- b) Implement seamless regional transit fare and transfer media (traditional or mobile) across transit services in the region. Improve connections among Tri-Rail and county transit services, municipal trolleys, and community shuttle bus services, which may require a realignment of routes.
- c) Develop and implement planning and other strategies to address the first and last mile of transit trips, which act as barriers for people who could potentially take transit but whose starting point or final destination cannot be conveniently accessed from the nearest transit stop or station due to distance, terrain, street patterns, or safety issues (e.g., traffic or crime). Consider innovative partnerships with transportation network providers, ride-sharing providers, taxis, or jitneys, or through the use of autonomous vehicles.
- d) Encourage transit agencies to reduce greenhouse gas emissions by procuring renewable fuel and electric buses.
- e) Plan for and increase transit ridership by providing premium transit services on targeted regional corridors. Maximize access to these services by walking, biking, or taking other transit services in the transit network by promoting affordable and mixed income housing in and near station areas. Premium transit service will provide a more convenient service for commuters traveling from residential areas to regional employment centers and be attractive for trips for other purposes. Maintain or improve quality of service by continuing to monitor and address safety and performance.
- f) Consider the regional implementation of rapid transit zones or other such designations to maintain land use control around stations, including ones with multiple jurisdictions.

SP-20: Expand the use of transportation demand management (TDM) strategies to reduce peak period and single-occupant vehicle (SOV) travel.

- a) Include TDM strategies in local government and agency plans and evaluate their effectiveness.
- b) Work with municipal planning organizations, [South Florida Commuter Services](#), [South Florida Vanpool](#), transportation network companies, and others to identify and pursue opportunities to increase use of carpools and vanpools, maximize use of available parking, and promote working remotely and/or telecommuting.
- c) Provide support for transportation management initiatives and transportation management associations.

- d) Work with companies and strategic partners (e.g., universities, municipalities, large employers) to establish or expand car, bike, and personal vehicle sharing programs.
- e) Encourage the use of employee benefits that support walking, biking, and transit modes for work commutes (e.g., pre-tax benefits and emergency ride home programs).
- f) Promote participation in programs encouraging non-SOV work commutes (e.g., South Florida Commuter Challenge) and encouraging local governments to explore adoption of commute trip reduction ordinances.

SP-21: Address resilience, maximize efficiency, and increase the use of low-carbon transportation modes and fuels for the movement of freight in the region.

- a) Incorporate climate adaptation strategies and greenhouse gas (GHG) emission inventories into seaport and airport master plans and county and/or regional freight plans. Plans should address the critical last mile to and from major seaports and airports in part by providing comprehensive plan land use designations, policies, and standards that protect the function of roadway segments connecting seaports and airports (hubs) to corridors (e.g., interstate highways).
- b) Implement strategies designed to improve the efficiency of freight movement as part of the region’s comprehensive Intelligent Transportation Systems (ITS)/Transportation System Management and Operations programs. One example is partnering to implement communications applications through a virtual freight network (managed in real time using ITS) which, among other things, can identify available truck parking, schedule appointments for trucks to pick up loads, and provide load matching for shippers and truckers to alleviate “deadheading” of empty trucks traveling back to their destinations.
- c) Establish performance measures (e.g., for GHG emissions) for freight projects and initiatives and monitor performance.
- d) Support the clustering of distribution facilities to promote intermodal centers and economic development.
- e) Explore how best to optimize the use of existing rail corridors and consider new rail corridors to support increased use of the rail mode for the movement of freight.
- f) Enhance approaches to the delivery of goods in urban or downtown areas in collaboration with the freight community, including strategies such as designated routes, the use of smaller trucks, and establishing loading and unloading zones and times.
- g) Monitor and encourage advances in technology that could improve efficiency and reduce GHG emissions from freight movement (e.g., platooning of connected and/or autonomous trucks and use of unmanned aerial vehicles for deliveries).

SP-22: Implement transportation system management and operations (TSM&O) strategies, intended to maximize the efficiency of the existing transportation system, in a coordinated manner across local governments and agencies in the region.

Develop a toolbox of successful strategies that can be replicated across the region. Examples of strategies include integrated corridor management, use of roundabouts, real-time operation of the

traffic signal system, traffic signal prioritization and queue jumps for transit, interstate ramp metering, and freight signalization and optimization techniques. Collect and share information on implementation steps, costs, lessons learned, and the effectiveness of strategies in reducing greenhouse gas emissions (e.g., on emissions reductions, fuel reductions, and vehicle miles traveled impacts).

6. Evaluate, assess, and improve planning and implementation

SP-23: Use evidence-based planning and decision-making for transportation system investments and management.

- a) Improve information on how travel behaviors are influenced by development patterns, emerging technologies such as autonomous vehicles, enhanced multimodal infrastructure and services, and other factors.
- b) Collaborate on the collection and use of transportation-related data with an emphasis on enhancing currently available data or filling data gaps (e.g., on walking and biking trips). Collaborate on performance metrics for transportation facilities and services that are multimodal, address the linkage between transportation and land use, and reflect intergovernmental and interagency coordination.
- c) Explore and enhance the capabilities of the region's activity-based travel demand forecast model for long-range transportation planning and other purposes (e.g., to simulate trip making and mode choices, test policy alternatives and scenarios, and project greenhouse gas emissions).
- d) Identify and build capacity in the use of additional tools for assessing travel demand from a multimodal perspective, including ones used in conjunction with local government reviews of proposed land use changes and (re)development projects.

WATER

Water figures prominently in building the future resilience and sustainability of Southeast Florida. Efforts to protect drinking water supplies, prevent water pollution, and manage stormwater must continue within the context of rising sea

levels. The recommendations for regional action around water derive from four overarching principles. First, as the regional agency responsible for the operation and maintenance of the Central and South Florida flood control system and the infrastructure changes that affect system performance, the South Florida Water Management

Goal: Advance the water management strategies and infrastructure improvements needed, in parallel with existing water conservation efforts, to mitigate the potential adverse impacts of climate change and sea level rise on water supplies, water and wastewater infrastructure, and water management systems, inclusive of regional canal networks, pumps, control structures, and operations.

District, jointly with local governments, should play a prominent role in a) developing regional and sub-regional models and b) creating a framework to inform local models and ensure coordinated water management planning, system improvements, and resilience investments across the region. Second, resilience requires consistency in the use of current science and technology to support planning, management, and investment decisions across all agencies and the region. Third, resilience planning must address spatial and temporal dimensions, ranging from local to regional perspectives, inland to coastal to barrier island settings, chronic to acute stressors, and short- to long-term impacts. Fourth, regional resilience strategies should be developed with consideration of upstream and downstream consequences, including regional water quality and quantity implications, to avoid unintended effects on neighboring communities.

Recommendations for water are divided into five sections:

1. Coordination of Science, Policy, and Planning
2. Infrastructure Assessments and Data Management
3. Planning Priorities and Sustainable Design Standards
4. Coordinated Research and Technology
5. Capital Projects, Funding, and Investments

1. Coordination of Science, Policy, and Planning

WS-1: Foster innovation, development, and exchange of ideas for managing water.

- a) Continue to develop and share new information, methods, technical capabilities, and trends addressing key climate variability and sea level rise concerns through the Compact's collaboration with state and federal agency partners and academic institutions to support management decisions and reduce duplication of efforts.

- b) Establish a medium for a periodic 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.

WS-2: Ensure consistency in water resources scenarios used for planning.

Ensure all water resource policy, planning, and management decisions in the [Lower East Coast](#) water supply plan region are consistent with the latest [Southeast Florida unified sea level rise projection](#); uniformly use regional climate scenarios for planning (e.g., storm surge, design storm events); and are coordinated to align the hydrologic models used in adaptation planning, from local to regional scales, to include:

- a) Impact assessments for observed and predicted climate variability on the frequency, duration, and intensity of flooding connected to sea level rise, extreme tidal excursions, storm surges, and 100-year rainfall events, and determinations of where impacts are likely to be greatest.
- b) Examinations of 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-3: Plan for future water supply conditions.

Seek the South Florida Water Management District's integration of potential future climate conditions, sea level rise scenarios, and potential impacts to water quality and water supply in regional water management models used to support the [Lower East Coast water supply planning process](#), [environmental resource permitting](#), and [consumptive use permitting](#).

WS-4: Coordinate saltwater intrusion mapping across Southeast Florida.

Ensure consistency in efforts to map saltwater intrusion across the region to create better information and better management decisions for protecting regional freshwater aquifers.

- a) Coordinate the methodology and schedule for saltwater intrusion mapping used for the maintenance and updating of the regional saltwater intrusion baseline mapping conducted by the South Florida Water Management District and the U.S. Geological Survey, at a minimum of every five years.
- b) Utilize saltwater intrusion models and validated data to identify wellfields and underground infrastructure at risk of contamination or infiltration by saltwater from rising sea levels.

2. Infrastructure Assessments and Data Management

WS-5: Maintain regional inventories of water and wastewater infrastructure.

- a) Coordinate among city and county government public works agencies, water utilities, and other operators of water infrastructure to develop and maintain local and regional inventories of existing potable water supply wellfields, treatment and distribution systems, wastewater treatment and collection infrastructure, and septic tanks and drain fields.
- b) Assess the potential for climate change impacts on each component of water infrastructure under different climate change scenarios and 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-6: Develop a spatial database of resilience projects for water infrastructure.

- a) Track the climate resilience projects being designed and built by local governments and utility districts across Southeast Florida to aid in learning; beginning with water infrastructure as a pilot, create a database of resilience projects for all kinds of infrastructure (e.g., communications, transportation, and energy).
- b) Develop a regionally-coordinated geodatabase to illustrate and catalog local and regional resilience projects, planning tools, and infrastructure investments, and a formal data management strategy for water infrastructure projects that could be scaled to include other infrastructure in the future.

3. Planning Priorities and Sustainable Design Standards

WS-7: Modernize standards in the region.

Modernize permitting, planning, and design standards for development and infrastructure improvements to drainage and surface water management systems and finished floor elevations based on updates to groundwater table maps, flood elevation maps, and tidal elevations, with a focus on project compatibility, infrastructure connectivity, and preservation of the level of service under potential future climate conditions.

WS-8: Address the resilience of the regional flood control system.

Coordinate with the South Florida Water Management District and local public officials to request a comprehensive assessment of the Central and South Florida flood control system by the U.S. Army Corps of Engineers to determine the system's performance under potential future climate conditions and to develop a resilience strategy that will ensure existing levels of service are maintained or improved under future conditions.

WS-9: Update the regional stormwater rule.

Pursue an update of the Florida Department of Environmental Protection's Stormwater Management Rule, "[SFWMD Environmental Resource Permit Applicant's Handbook – Volume II](#)," to ensure the integration of potential future climate conditions and stormwater harvesting initiatives in permitting criteria at all levels, including average wet season groundwater elevations; unified sea level rise projections; and intensity, duration, and frequency curves.

WS-10: Integrate combined surface and groundwater impacts in the evaluation of at-risk infrastructure and the prioritization of adaptation improvements.

- a) Continue to utilize a combination of inundation maps and stormwater models to identify areas and infrastructure at increased risk of flooding.
- b) Evaluate the potential impacts of changes in groundwater levels on wastewater and stormwater systems (including septic systems, wastewater collection, and conveyance and storage systems), with consideration of water quantity and quality (including public health-related metrics).
- c) Use the results of above-stated analyses as the basis for site planning and regulation, and for identifying and prioritizing adaptation needs and strategies.

WS-11: Encourage green infrastructure and alternative strategies.

- a) Promote the development of green infrastructure and alternative, net-zero greenhouse gas emission strategies for water supply, stormwater, and wastewater management focused on achieving a balance between water availability and consumption, limiting energy use to the amount produced on-site via renewable energy, and eliminating solid waste sent to landfills.
- b) Create comprehensive strategies to advance the multiple benefits and sustainability of services provided by net-zero practices.

WS-12: Integrate hydrologic and hydraulic models.

- a) Continue to coordinate across agencies (regional, state, and federal) to develop and apply appropriate hydrologic and hydraulic models to further evaluate the efficacy of existing water management systems and flood control and drainage infrastructure under variable climate conditions.
- b) Quantify the capacity and interconnectivity of the surface water control network and develop feasible adaptation strategies.
- c) Develop common data standards and database protocol for maintaining water management system components.

WS-13: Practice integrated water management and planning.

Continue to develop integrated water management plans and/or convene forums to promote a joint assessment and planning strategy involving local water utilities, wastewater service providers, water managers, and partners to the Southeast Florida Regional Climate Change Compact for coordinated consideration of stormwater use and disposal, rainfall-derived inflow and infiltration, traditional and

alternative water supplies, wastewater disposal, expansion of reuse and water conservation measures (e.g. maintaining adequate aquifer levels and minimizing the use of potable water for irrigation purposes), and amendments to applicable development codes and regulations.

WS-14: Advance comprehensive improvements to regional and local stormwater management practices.

- a) Undertake a comprehensive evaluation of stormwater improvements necessary to expand surface water storage, enhance water quality treatment, and reduce stormwater discharges in delivery of flood protection needs and environmental priorities for the Everglades and estuarine and coastal ecosystems.
- b) Improve stormwater management through distributed storage, integrated stormwater systems, and additional best management practices.

4. Coordinated Research and Technology

WS-15: Foster scientific research for improved water resource management.

- a) Encourage collaborative programs with local universities—including the Compact’s partnership with the Florida Climate Institute—to improve community and stakeholder communication and education efforts regarding potential local and regional climate change impacts.
- b) Continue to encourage, foster, and support collaborative investigative work and scientific research, including:
 - i. Downscaling global climate models to represent precipitation patterns at the regional and local scale and to develop standardized precipitation scenarios for the region.
 - ii. Identifying and targeting gaps in monitoring and data availability (e.g., light detection and ranging, environmental and water quality data, or data supporting regional climate indicators) to improve the quantification of the hydrologic system and its response to climate change (e.g., evapotranspiration, surface and groundwater levels, water quality, precipitation, and local sea level) through local program efforts, agency collaborations, and advocacy for additional state and/or federal resources, as needed.
 - iii. Building partnerships and technology exchanges with public, private, academic, domestic, and international partners to bring additional experience and innovation to resilience planning, projects, and decision support.
 - iv. Developing integrated risk-based decision-support tools and processes for application in the analysis and selection of infrastructure design, water resource management, natural systems management, and hazard mitigation alternatives. Tools should facilitate the consideration of the potential economic costs of comparative planning scenarios, management decisions, and infrastructure investments and the evaluation of potential tradeoffs.

WS-16: Expand partnerships and resources to further innovation in water resource management.

Continue to cultivate partnerships with regional, federal, and state agencies and professional associations with expertise in integrated water resource planning (e.g., U.S. Army Corps of Engineers Institute for Water Resources, the United States Geological Survey, the United States Environmental Protection Agency, the National Oceanic and Atmospheric Administration and Water Foundations) as sources of important research.

5. Capital Projects, Funding and Investments

WS-17: Advance capital projects to achieve resilience in water infrastructure.

- a) Identify, incorporate, and prioritize preferred climate adaptation improvement projects pertaining to water supply, wastewater systems, stormwater management, and flood protection as part of capital improvement plans.
- b) Develop projects, pursue funding options (including independent funding mechanisms), and implement projects.

WS-18: Coordinate innovation and regional funding.

Coordinate the implementation of innovative technologies as part of piloted and large-scale adaptation solutions to foster shared investments across multiple jurisdictions. Reduce the potential for redundant investments, achieve economies-of-scale, and maximize knowledge sharing while fairly distributing costs and benefits across multiple project beneficiaries.

WS-19: Recognize adaptable infrastructure.

Identify existing underperforming infrastructure and implement adaptable infrastructure strategies that facilitate targeted investments, allow managed performance, and achieve greater flexibility in system operations.

WS-20: Support the *Comprehensive Everglades Restoration Plan (CERP)*.

Continue to support the implementation and funding of the Comprehensive Everglades Restoration Plan (CERP) and its updated versions as fundamental to Everglades restoration. CERP includes an increase in freshwater flows to the Everglades system, which improves water quality, maximizes regional freshwater storage and aquifer recharge, and creates the potential to abate saltwater intrusion, an increasingly important effort under variable climate conditions and in the face of sea level rise.

WS-21: Expand regional surface water storage.

- a) Develop new and combine existing land acquisition priorities in a regional setting to protect, preserve, and enhance water storage.

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

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