

A Region Responds to a Changing Climate

Southeast Florida Regional Climate Change Compact Counties

Regional Climate Action Plan

Final Review Copy for the Staff Steering Committee
June 28, 2012

ACKNOWLEDGEMENTS

This Regional Climate Change Action Plan is the result of true collaboration – this document and its many supporting publications are the product of existing staff and resources from the various cooperating agencies. No additional public dollars were dedicated to this effort. The Southeast Florida Regional Climate Change Compact was forged during the most difficult national economy since the Great Depression. We came together with purpose and quickly realized the value of sharing resources, expertise and information. Competitors became collaborators. Challenges became successes. At a moment when local government is pressed to achieve maximum efficiency, the Compact enabled level of intergovernmental cooperation unprecedented in Southeast Florida's history. Many have contributed to the Compact process, including over 90 members of the public that took the time to submit comments to a previously published draft. While several individuals are recognized here, Appendix I contains a full list of the people and organizations that helped bring this Regional Climate Action Plan to fruition.

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-- Section 1--

I. Executive Summary

Welcome to the first Southeast Florida Regional Climate Change Action Plan. The Southeast Florida Regional Climate Compact (Compact), a unique and collaborative effort among Broward, Miami-Dade, Monroe and Palm Beach Counties, their municipalities and partners, has worked over the past two years to develop this plan with an initial five-year horizon. The plan is a critical milestone of the Compact, entered into by Broward, Miami-Dade, Monroe, and Palm Beach Counties in January 2010. Much of the Compact's work up to this point has served to unite, organize, and assess our region through the lens of climate change in setting the stage for action. Specific accomplishments include the development of regionally-consistent methodologies for mapping sea-level rise impacts, assessing vulnerability, and understanding the sources of regional greenhouse gas emissions. Collectively, these work products provide the foundation for this Regional Climate Action Plan, which calls for concerted action in reducing greenhouse gas emissions and anticipating and adapting to regional and local impacts of a changing climate. The recommendations presented here aim to accomplish those **aspirational** goals while also serving to protect the assets of the region's unique quality of life and economy, guide future investments, and foster livable, sustainable and resilient communities.

The Compact was established with a strong recognition of the region's diversity and its commonalities. It accepted the varying degrees of progress in the areas of climate change adaptation and mitigation in order to inform, to improve and to advance regional planning efforts together. This Regional Climate Action Plan too recognizes the diversity of Southeast Florida, yet provides the common framework for **Sustainable Community and Transportation Planning** to be aligned across the region, as implemented. Inevitably this will occur at various stages and varying degrees, but with the benefit of working within a regional context. This is Southeast Florida, with all its uniqueness; it recognizes the need to protect and address our vulnerable **Water Supply, Management and Infrastructure** and preserve our fragile **Natural Systems**

and Agriculture resources. The plan provides for steps to move towards resiliency and reduce emissions through exploring alternatives and decreasing our use of **Energy and Fuel**. The plan builds upon our strength as effective emergency responders and integrates climate change hazards in **Risk Reduction and Emergency Management** planning. Finally, the Regional Climate Action Plan creates a common vocabulary for public **Outreach and Public Policy** development to effectively communicate the steps from risk to resiliency with the general public, voters, elected officials and decision makers in Southeast Florida, the state and the nation.

The specific recommendations put forth in this plan were developed through a collaborative process involving nearly 100 subject matter experts from a host of professions, not only climate professionals, from the public and private sectors, area universities and not-for-profit organizations. These stakeholders brought to the table the knowledge of their “craft” as well as information on successful initiatives already underway locally or in other communities. Many of the recommendations build upon best practices sprinkled throughout our region, such as regional collaboration on transportation planning and land use regulations that foster walkable and healthy communities. Others delve into “new” frontiers in calling for the integration of climate change into planning and decision making processes in ways that no local government has yet implemented.

The overall objective was and remains to integrate climate adaptation and mitigation into existing decision-making systems and to develop a plan that can be implemented through existing local and regional agencies, processes and organizations. It is in that spirit that this plan provides the common integrated framework for a stronger and more resilient Southeast Florida starting today and for tomorrow.

There are 100 action items detailed in the plan’s six-seven goal areas to be accomplished over the next five years with annual reports to mark progress. The policy recommendations will be implemented through several approaches including:

- **existing legal structures**, planning and decision-making processes;
- the development of **new policy guiding documents** by local and regional governing bodies;
- the development of **operational guidance documents**;
- the development of **consistent goals and progress indicators** throughout the various governments in the region;
- a coordinated **multi-disciplinary outreach and education program**; and
- processes for **focused and prioritized investments**

Every organization in the region has a role to play in making Southeast Florida a resilient and sustainable community of communities.

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II. Introduction and Background: Southeast Florida Regional Climate Change Compact as Guidance for Regional Policy and Planning

Southeast Florida is considered one of the most vulnerable areas to climate change and sea level rise. In the spring of 2009, several Southeast Florida counties and cities were making the rounds in the halls of Congress to advocate for climate policy. A great deal of work had been invested individually by each jurisdiction, however each had slightly different baseline emissions figures at different points of time and different sea level rise planning scenarios. The need for regional coordination became quite evident. With 5.6 million residents within the geographic boundaries of the four counties as of the 2010 Census, exceeding the population of 30 states and representing 30 percent of Florida's population, there is an obvious and unique strength in the region's size and in numbers. That realization paved the way for a unique arrangement – the Compact – a voluntary and cooperative arrangement among governing bodies to tackle one of, if not the most, important issues facing our generation. This targeted and focused collaborative is the vision and framework for regional resiliency. It respects the diversity of the region and the autonomy of the many governing bodies.

The first steps began that fall when the four County Commissions held the 2009 Regional Climate Leadership Summit. This first Regional Summit led to the ratification of the Southeast Florida [Regional Climate Change Compact](#) by January 2010, with unanimous votes within each County Commission. Since adoption, the Counties have assigned existing staff resources to support implementation of the compact under the direction of a Compact Steering Committee.

The Compact Staff Steering Committee is comprised of two staff members from each county, one municipal representative from each County, and a non-voting member from the South Florida Water Management District was invited to participate. Municipal members ~~represent~~[include](#) the cities of Fort Lauderdale, Key West and Boynton Beach. The Staff Steering Committee is a small, core group of professional staff engaged in this process since 2009.

The Compact commitments include:

- Joint legislative policy development
- Development of a regional ~~ghg~~[greenhouse gas \(GHG\) baseline](#)
- Development of regionally consistent [sea level rise \(SLR\) mapping projections for the coming decades](#)
- Development of Preliminary Inundation Mapping
- Development of Regional Climate Action Plan
- Coordination of Annual Leadership Summits

The Compact paved the way for early work in 2010 to develop the unified regional baseline and sea level rise planning scenarios. Summaries of these work products are provided in Section IV. This early work served as the foundation for the development of this regional framework through three Working Groups: Built Environment, Transportation, and Land and Natural Systems. These Working Groups were chaired by

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Staff Steering Committee members and expanded to include local and regional experts from the public and private sectors and academia.

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III. Compact Awards and Recognitions

Since adoption, the Compact has won recognition through awards from ICLEI and the National Association of Counties, a requested white paper from the White House Domestic Policy Council, a request to host a listening session for the White House Council on Environmental Quality's (CEQ) -Interagency Adaptation Task Force, and specific references within the Task Force's Final Report to the President. Subsequent federal agency engagement in the Compact has been highlighted in CEQ reports to the President, including the most recent Task Force report submitted in October 2011.

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IV. Compact Work Completed

The adoption of the [Regional Compact](#) initiated an ambitious schedule requiring the completion of a robust body of work leading to this Regional Climate Action Plan. Since adoption in January 2010, the four Compact Counties have completed the following:

[a. Policy and Advocacy](#)

Sections 1 – 4 of the Compact, commits the Compact Counties to develop joint climate related policy positions and advocacy strategies to influence state and federal legislation. Specifically, provisions of the Compact call for urging Congress to pass legislation that recognizes the unique vulnerabilities of Southeast Florida to climate change impacts, especially sea level rise; [that](#) allocates federal climate change funding based on vulnerabilities; designates areas of Southeast Florida as uniquely vulnerable and of federal interest for the purpose of securing enhanced levels of federal participation in regional adaptation projects; and supports strengthening policies relating to global climate change.

Since the ratification of the Compact, the Compact partners have advanced policy and advocacy goals through joint positions, resolutions, letters and funding proposals and advocacy in Washington and Tallahassee. In addition, during the [244th-111th](#) and [242th 112th](#) sessions of the United States Congress, the Compact partners collaborated in the submittal of [the multi-million dollar Southeast Florida Climate Adaptation Pilot Project Proposal, a first ever regional climate related appropriations request intended to fund multi-county modeling as the technical foundation for the Southeast Florida Regional Climate Action Plan a funding request to support regional groundwater modeling needed to refine sea level rise impact projections.](#) In May of 2010, elected officials and other leaders representing the Compact Counties jointly advocated [on Capital Hill in Washington](#) to highlight the region's vulnerabilities and needs related to climate change

impacts, to seek support for greater recognition of adaptation strategies in federal climate policies and for the appropriations of projects such as the regional [Pilot Project Proposal modeling proposal](#).

On June 24, 2010 in response to the Deepwater Horizon Oil Spill that threatened the region's environment and economy, the Compact Counties conducted a well-attended conference calling for comprehensive federal energy policy and protection of Florida's state and federal waters from the impact of oil drilling. In concert with local municipalities and Leagues of Cities, the event produced the Southeast Florida Response to Deepwater Horizon Oil Spill Letter to President Obama and resolutions in support for comprehensive climate legislation, restoration of damages due to the oil spill and for a ban on oil drilling within Florida's Territorial Waters.

As a centerpiece of the Compact Counties' commitment to developing regional legislative policies and advocacy strategies, the Compact Counties adopted the 2011 and 2012 *Southeast Florida State and Federal Energy and Climate Legislative Programs* and utilized these Programs as the basis of joint advocacy to Congress and the Florida Legislature. The 2011/12 State and Federal Legislative Programs include support for:

- the [SE Florida Climate Adaptation Pilot Project Proposal regional groundwater modeling project](#),
- providing a definition of "Adaptation Action Areas (AAA)" in state law,
- greater recognition of adaptation as a critical climate strategy,
- adopting a State Renewable Energy Portfolio Standard of 20% renewable energy by 2020,
- federal legislation to create and fund new infrastructure programs to assist local governments in adapting to the impacts of sea level rise,
- federal recognition of AAA's for the purpose of funding infrastructure vulnerable to sea level rise,
- removing federal barriers to Property Assessed Clean Energy (PACE) and PACE-like programs, posed by the Federal Housing Finance Agency, to encourage energy efficiency and renewable energy improvements for residential homes and commercial buildings, and
- opposing oil drilling in federal waters on Florida's Outer Continental Shelf and the Everglades.

Utilizing the Compact Counties' Legislative Programs as guidance during the 2011 Florida Legislative Session, the Compact Counties were successful in helping to amend state law to reflect priority policy goals. The regional partners helped draft and led efforts to provide for a designation of "Adaptation Action Areas" in Florida's growth management laws, thus creating a new tool for local governments to identify areas vulnerable to coastal flooding resulting from the impacts of sea level rise [for the purpose of improving resiliency in areas subject to the impact of climate change](#). Immediately following changes to state law, a Members Letter was signed by several members of Florida's Congressional Delegation requesting support for defining AAA in federal law. Subsequent to the Members Letter, the Compact Counties' lobbyists and Delegation

Members have requested the inclusion of language enabling at-risk, multi-county regions impacted by sea level rise to qualify for 2012 Energy and Water Appropriations ~~funding via the Army Corps of Engineers~~. During the 2012 Florida Legislative Session the Compact Counties were successful in helping to amend the Florida Energy Act to provide for commercial buildings to qualify for energy efficiency program funding through the Local Option Sales Tax.

The Regional Climate Action Plan contains actionable recommendations related to public policy and outreach in recognition of the fact that a continued commitment to collaborate with local, state and federal policy makers, the public and private sectors is fundamental to long term success of the Compact. Additionally, the continued and enhanced role of policy advocacy through regional collaboration, especially during tumultuous economic and political times, are important to ensure that current efforts are not undermined and the Compact Counties' future efforts to achieve sustainability are achieved.

-- Section 4a--

b. A Baseline of Greenhouse Gas Emissions for Southeast Florida

Prior to the ~~Regional~~ Compact, many jurisdictions within Southeast Florida had completed emission inventories using a variety of baseline years. The ~~Regional~~ Compact called for the identification and quantification of Greenhouse Gas (GHG) emissions across Southeast Florida "with a particular focus on emissions from inter-county travel and commerce." Consistent with this charge, staff estimated GHG emissions resulting from an inventory of select sectors – transportation and the built environment divided into residential, commercial and industrial subsectors – using the ICLEI International Local Government Protocol (IEAP) within the ICLEI Clean Air and Climate Protection 2009 (CACP 2009) software. "Non-regional" emissions such as the waste sector (including landfill and wastewater treatment) and local government operations were not included as they were deemed to be primarily under the control of individual jurisdictions. Other sectors such as natural areas and agriculture (including "sink" capacity) were not included here due to lack of local information.

As emissions track closely with economic output and as this analysis was initiated during the most significant economic downturn since the 1930's, staff decided to inventory annual emissions for each year from 2005 through 2009 (five full years) and average the results for each sector over those five years for use as a future baseline. By doing so, the inventory averages contain years of both high growth and contraction. The full Regional Inventory report is included as Appendix C to this document.

Southeast Florida peaked in total GHG emissions in 2006 and declined in the following three years, consistent with the performance of the national economy during this period (Table 1). The relative emissions contribution of each County to the aggregated regional emissions reflects population and size.

Table 1: Regional Emissions by County (MMTCO₂e)

Sector	2005	2006	2007	2008	2009
Broward	22,655,421	22,657,880	21,921,832	21,216,712	20,810,719
Miami-Dade	28,715,847	29,058,677	27,832,307	27,057,988	26,859,326
Monroe	1,504,047	1,532,500	1,465,634	1,408,288	1,417,206
Palm Beach	16,588,536	16,658,369	15,920,070	15,785,752	15,675,174
Regional Sources	254,537	250,984	237,691	222,113	155,359
Totals	69,718,390	70,158,412	67,377,537	65,690,854	64,917,785

Regional emissions, across all sectors examined, were approximately 64.9 million metric tonnes of carbon equivalent (MMTCO₂e) in 2009, down from 69.7 MMTCO₂e in 2005. The five-year average of emissions (67.6 MMTCO₂e) shows that the transportation sector is the largest single source of regional emissions. The Residential and Commercial buildings sectors jointly contribute 54% to regional emission (Table 2).

Table 2: Regional Emissions by Sector (metric tons CO₂e)

Sector	2005	2006	2007	2008	2009	Five Year Average
Residential	19,963,638	19,989,441	18,685,833	18,186,886	18,237,990	19,012,757
Commercial	17,884,892	18,212,352	17,356,620	17,314,930	17,083,809	17,570,521
Industrial	1,075,979	1,103,572	961,883	888,111	811,016	968,112
Transportation	30,793,879	30,853,046	30,373,200	29,300,926	28,784,969	30,021,204
Totals	69,718,390	70,158,412	67,377,537	65,690,854	64,917,785	67,572,596

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b.c. Unified Sea Level Rise Projection

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At the first Regional Climate Leadership Summit, the local diversity in sea level rise (SLR) projections was highlighted as a concern, and a barrier, to achieving regionally consistent adaptation policies and demonstrating a coordinated local effort to higher decision-making levels. Following the summit, the Compact Staff Steering Committee recognized the critical need to unify the existing local SLR projections to create a single regional SLR projection. Key participants in developing the existing projections and other local scientists specializing in the areas of sea level rise and climate change were invited to participate as the Regional Climate Change Compact Technical Ad hoc Work Group (Work Group). Their objective was to work toward developing a unified SLR projection for the Southeast Florida region for use by the Compact Counties and partners for planning purposes to aid in understanding potential vulnerabilities and to provide a basis for outlining adaptation strategies for the region.

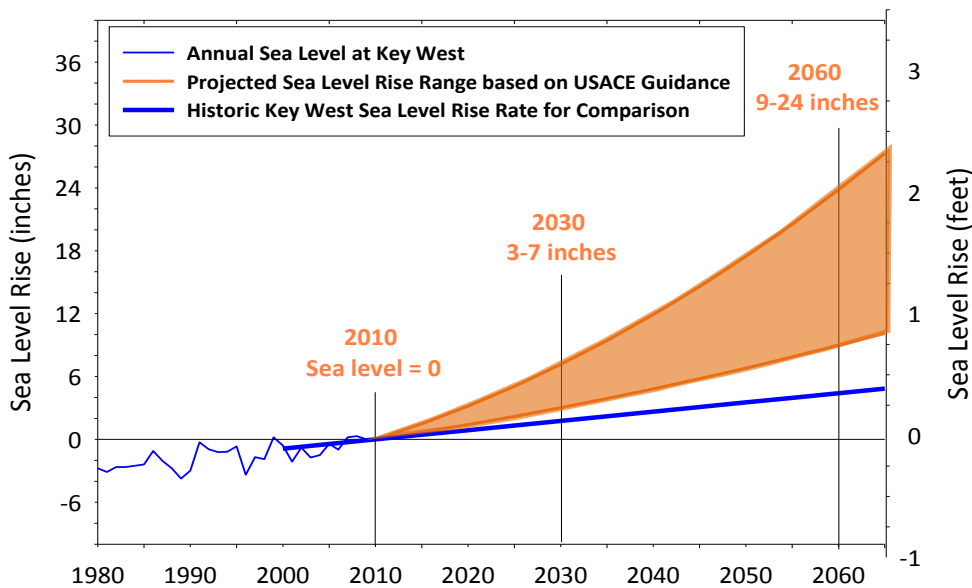


Figure ???. Unified Southeast Florida Sea Level Rise Projection for Regional Planning Purposes. This projection uses historic tidal information from Key West and was calculated by Kristopher Esterson from the United States Army Corps of Engineers using USACE Guidance (USACE 2009) intermediate and high curves to represent the lower and upper bound for projected sea level rise in Southeast Florida. Sea level measured in Key West over the past several decades is shown. The rate of sea level rise from Key West over the period of 1913 to 1999 is extrapolated to show how the historic rate compares to projected rates. Methods are described in Appendix D.

Through a series of facilitated discussions, the Work Group reviewed the existing projections and the current scientific literature related to SLR with particular emphasis on the impact of accelerating ice melt on projections. The Work Group recommended that the SLR projection be based on the USACE July 2009 Guidance Document until

more definitive information on future SLR is available. The projection uses Key West tidal data from 1913-1999 as the foundation of the calculation and references the year 2010 as the starting date of the projection. Two key planning horizons are highlighted: 2030 when SLR is projected to be 3-7 inches and 2060 when SLR is projected to be 9-24 inches. Based on the projection, a SLR of one foot is projected to occur between 2040 and 2070 with sea level continuing to rise into the future. Due to the rapidly changing body of scientific literature on this topic, the Work Group recommended that the projection should be reviewed and possibly revised four years from final approval by the Compact Staff Steering Committee and after the release of United Nations Intergovernmental Panel on Climate Change Fifth Assessment Report. "A Unified Sea Level Rise Projection for Southeast Florida" White Paper is available as Appendix D.

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6.d. Inundation Mapping and Vulnerability Assessment of Areas at Risk by Sea Level Rise

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Southeast Florida is highly vulnerable to SLR due to its peninsular geography and low topography. Mapping different SLR inundation scenarios helps to identify areas at potential risk and aids in planning for adaptation strategies. The Compact Inundation Mapping and Vulnerability Assessment Work Group was formed to perform a regional vulnerability assessment. Geographic Information System (GIS) practitioners, representing the Compact Counties as well as the South Florida Water Management District (SFWMD), local universities and federal agencies, worked with National Oceanographic and Atmospheric Administration (NOAA) Coastal Services Center (CSC) experts to understand inundation mapping methodologies, define the local challenges, review available topographic source data and create a consensus set of methods and criteria for inundation mapping. Additional discussions, surveys and workshops were used to develop planning parameters that would be part of the regional SLR vulnerability assessment. Using these commonly agreed parameters and data sources, the SFWMD produced inundation layers to represent areas potentially vulnerable to one, two and three-foot SLR scenarios. These layers were used by each of the four Compact counties to perform a vulnerability assessment for their jurisdiction. See Appendix E for the County level assessments and detailed methods for inundation mapping and the vulnerability analyses.

All of the Compact Counties are vulnerable to SLR. However, the degree and extent of potential impacts do vary across the region due to differences in land elevation and geomorphology. The southernmost counties are expected to experience the greatest direct impacts, with lessening impacts as one travels northward. Nearly 80% of the lands potentially affected regionally in the one foot scenario are conservation lands, especially coastal wetlands. Low lying natural systems made up of buttonwood, mangrove, scrub mangrove, and herbaceous coastal saline and freshwater wetlands are significantly impacted in all SLR scenarios. The upper estimate of current taxable property values in Monroe, Broward, and Palm Beach Counties vulnerable in the one

foot scenario is \$4 billion with values rising to over \$31 billion at the three foot scenario. The greater values reflected in the financial impacts are coastal residential properties with ocean access and high taxable value.

In terms of the critical infrastructure reviewed, projected inundation is often confined to marginal areas of the properties or impacting existing drainage infrastructure on site. This is generally true for the region's ports, airports, schools, landfills and hospitals. Monroe County is the exception with predicted building and infrastructure damage to these critical resources especially at the two and three foot SLR scenarios. Three of Monroe's four hospitals, 65% of schools and 71% of emergency shelters are located on property at elevations below sea level at the one foot scenario. Power plant properties in Miami-Dade and Broward as well as energy transmission facilities in Monroe begin to become inundated at the one foot scenario. While railroads are negligibly impacted, more than 81 miles of roadway from Miami-Dade through Palm Beach are impacted at the one foot scenario, increasing to more than 893 miles at the three foot scenario.

The intent of the GIS-based analysis conducted by the Compact was to provide a preliminary assessment of SLR vulnerabilities for regional planning and policymaking purposes. This analysis did not include other possible impacts associated with SLR that require more complex modeling efforts, or indirect impacts, such as delineating what properties may become less accessible due to inundated roadways. Despite these limitations, the GIS-based vulnerability assessment conducted by the Compact serves to identify areas of potential concern for regional planning of adaptation strategies. It also highlights the need for continued mitigation of greenhouse gas emissions as a means to reduce future SLR impacts.

To prepare Southeast Florida for the likely impacts of SLR estimated by the Compact, cooperation is vital, not only among the Compact Counties, but also among the municipalities, local, regional, state and federal agencies serving the region. Strengthening this regional effort will be critical in order to coordinate public policies and adaptation measures that ensure the region's sustainability and economic growth.

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V. Southeast Florida Regional Climate Action Plan Planning Process

Members of the Compact Staff Steering Committee and representatives of numerous federal, state, and county agency partners met in February of 2011 for a workshop to review the work completed to date and plan a course of action going forward. Workshop participants brainstormed issues including the scope of the Regional Climate Action Plan, criteria to select priority issues, defining regional vs. local efforts, areas of expertise needed in issue area working groups and how best to separate issue areas to be examined into logical, workable groupings. Also discussed were the timeline for the planning process and how to incorporate feedback from the Compact Staff Steering Committee and other stakeholders.

The Staff Steering Committee organized three workgroups to develop specific recommendations for reducing GHG emissions and building climate resilience across the region. The three work groups, **Built Environment, Transportation and Land & Natural Systems** were designed to bring local experts with differing work experiences and areas of responsibility together to share knowledge and expertise. Each work group consisted of more than thirty individuals from all parts of the four county region. Work group participants included representatives of academia, non-profits, the private sector and all levels of government. After several work sessions, surveys and much correspondence, draft recommendations were presented to the Staff Steering Committee at a July 2011 workshop. After review and comment, the Staff Steering Committee provided guidance to the three workgroups in finalizing the strategies to be included in the Regional Climate Action Plan and convened a “Super Committee” to address three cross-cutting issues that emerged separately from the work groups. The full extent of recommendations from each work group is attached as Appendix F.

Structure of the Regional Climate Action Plan

To further review, consolidate, and categorize the numerous recommendations, a Super Committee was created consisting of key representatives from each Work Group, the Work Group chairs, and representative County staff. The Super Committee worked to consolidate the recommendations into seven categories, including:

- Sustainable Communities and Transportation Planning
- Water Supply, Management and Infrastructure
- Natural Systems
- Agriculture
- Energy and Fuel
- Risk Reduction and Emergency Management
- Outreach and Public Policy

The definition of each category and the recommendations are detailed as the Draft Regional Climate Action Plan.

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RCAP ... Regional and Municipal Government Collaboration and Shared Opportunities

The Southeast Florida Regional Climate Change Compact emerged in 2009 as a collaborative venture among Palm Beach, Broward, Miami-Dade and Monroe Counties and as such, served as the impetus for creating a common framework for climate change mitigation and adaptation strategies throughout the Southeast Florida region. This initial effort for the Compact Counties to collaborate on a regional scale, proved to be an important first step in gaining public and political support required for the advancement of this comprehensive planning initiative. Early on municipal government engagement and commitment was also recognized as critically important to the success of the Compact.

There are more than 100 local cities governments in the region, each at varying stages of climate mitigation and adaptation planning and implementation. To formally begin collaborative efforts among local governments, the Compact Counties met jointly with municipal government representatives at the Second Annual Climate Leadership Summit in 2010. More recently, the Compact Staff Steering Committee membership was expanded with municipal representation to ensure involvement of cities in the drafting of the Regional Climate Action Plan. Successful implementation of Climate Action Plan strategies requires this continued collaboration. In the upcoming years, the Compact Counties expect to build coalitions with more municipalities, the various Leagues of Cities, special districts and other governmental entities, including the Treasure Coast counties participating in the Sustainable Communities Initiative.

The Compact Counties and municipal partners are committed to the implementation of the Regional Climate Action Plan. Of course, implementation strategies must be sensitive to the different governance structures of counties and municipalities. Because of the variances in government structures, management policies, land use authorities, Charters (where present), and the political environments of member counties and municipalities, implementation is expected to take on different forms. This Plan should be viewed as a tool to help guide policies and projects and implementation must be flexible to address specific local conditions.

It is also important to emphasize that the Regional Climate Action Plan does not provide a mandate for any county or municipality's actions but rather serves as a living document with options that each county and/or municipal government may adopt and utilize based on their interests and vision for the future. Over time, this document will be enhanced as more data becomes available, scientific projections change, and best management practices are developed and tested.

The success of the planning efforts thus far is a testament to the political leadership and staff dedication to our common, beautiful and fragile south Florida community. We recognize that by combining our efforts and joining forces we are in a better position moving. The Compact is at an important turning point. As each partner continues to implement different initiatives, at its own pace and within the context of each individual entity, these individual steps will lead to collective results for a more resilient South Florida. Join us, no step is too big or too small.

-- Section 6 --

VI. Actionable Recommendations

Sustainable Communities and Transportation Planning:

With the establishment of a Unified SLR Projection and the Preliminary Vulnerability Analysis, the picture of the likely future of our region is coming into focus. While the specific conditions at a given point in the future are impossible to predict, the range of

potential future conditions has been defined based upon the best available science which includes an agreed upon level of uncertainty. This understanding of a likely future allows us to take action now to protect assets and invest wisely. As the science, monitoring, and modeling of impacts continue to be refined, this area of the plan recommends actions to integrate climate change consideration into existing and future policy decision making processes and municipal and county Comprehensive Plans with the goal to achieve resiliency, reduce risk and further GHG emissions reductions.

As one of many tools available in the comprehensive planning process, this section includes several recommendations addressing the designation and implementation of Adaptation Action Area which are expected to aid in focusing technical assistance and funding opportunities to areas most vulnerable to the impacts of sea level rise and coastal flooding. In 2011 the Florida Legislature amended state law to provide for Adaptation Action Area as an optional designation in local comprehensive plans for those identified areas experiencing coastal flooding due to extreme high tides and storm surge and the related impacts of sea level rise. The law also provides for the development of adaptation policies and will maximize funding opportunities for infrastructure needs associated with Adaptation Action Areas. Subsequent to recent changes to state law, members of Congress have since requested the definition of Adaptation Action Areas in federal law to provide for appropriations for adaptation planning and infrastructure needs in designated areas. It is realistic to believe that future funding opportunities will become available through federal and state appropriations and grants for Adaptation Action Areas or areas similarly designated for adaptation planning.

Goal: Southeast Florida aspires to reduce financial and physical losses in our building stock by reshaping where and how we build.

Goal?

- SP-1 Support implementation of the Regional Climate Action Plan by including recommendations from the Plan into existing land use and policy decisions and related elements of the municipal and county Comprehensive Plans, as appropriate; and recognize the Plan as a basis for the development of new goals, objectives and policies through the appropriate local government Comprehensive Plans.

- SP-2 Develop policies, strategies and standards that will serve as guidance for climate change related planning efforts. Municipal and County planning authorities are encouraged to develop policies to improve resilience to coastal and inland flooding, salt water intrusion, and other related impacts of climate change and sea level rise in their Comprehensive Plans, Sustainability Action Plans, Vision Plans, Stormwater Master Plans, Adaptation Action Area Plans, Climate Change Plans and other green planning efforts.

- SP-3 Incorporate “Adaption Action Area” definition (as provided for in Florida law) into municipal and/or county Comprehensive Plans, to provide a means to identify those 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 for the purpose of prioritized funding and adaptation planning.

- SP-4 Develop criteria in collaboration with municipal and county planning authorities for the purpose of defining Adaptation Action Areas that may include but not be limited to:
- Areas below, at, or near mean higher high water;
 - Areas which have a hydrological connection to coastal waters;
 - Areas designated as evacuation zones for storm surge; and/or
 - Other areas impacted by climate related drainage/flood control issues.
- SP-5 Conduct new or utilize existing vulnerability analysis and other technical tools as they are developed as a means for identifying Adaptation Action Areas and to provide guidance for other adaptation planning efforts for areas especially at risk to sea level rise, tidal flooding and other related impacts of climate change.
- SP-6 Develop policies, as provided for in Florida law and in collaboration with the appropriate municipal and county planning authorities, related to areas designated as Adaptation Action Areas to improve resilience to coastal flooding, sea level rise and other climate related vulnerabilities and provide guidance for other adaptation planning efforts.
- SP-7 Develop sea level rise scenario maps to be considered for inclusion into the appropriate Comprehensive Plans and/or regional planning documents as determined by the appropriate local government that may be used to focus municipal and county government climate adaptation planning efforts and continue to update regional and local planning efforts as more data becomes available and scientific projections change.
- SP-8 Identify locations within Adaptation Action Areas where targeted infrastructure improvements, new infrastructure, or modified land use and/or development practices could reduce vulnerability and/or improve community resilience within the Adaptation Action Area. Municipal and county planning authorities will coordinate on the development of projects and funding proposals to seek prioritized funding for identified infrastructure needs and specific adaptation mechanisms associated with the Adaptation Action Area or other related adaptation initiatives.
- SP-9 Work with appropriate local, regional and state authorities to revise building codes and land development regulations to discourage new development or post-disaster redevelopment in vulnerable areas to reduce future risk and economic losses associated with sea level rise and flooding. In these areas,

require vulnerability reduction measures for all new construction, redevelopment and infrastructure such as additional hardening, higher floor elevations or incorporation of natural infrastructure for increased resilience.

- SP-10 Within Adaptation Action Areas identify populations and communities most vulnerable or of special concern for the purpose of ensuring the proper consideration of individual needs and resources as part of local and regional planning activities.
- SP-11 Develop new community flood maps reflective of a 100-year storm event under future sea level rise scenarios and use this information, in conjunction with similarly updated storm surge models for revising required elevations for new and redevelopment, and in the permitting/licensing of transportation projects, water management systems, and public infrastructure.
- SP-12 Designate or otherwise recognize “Restoration Areas” to identify undeveloped areas that are vulnerable to climate change impacts for the purpose of environmental restoration, dune restoration, agriculture, conservation of natural resources or recreational open space, or as retention areas. Local governments and appropriate regional planning authorities should prioritize land acquisition in these areas.
- SP-13 Designate or otherwise recognize “Growth Areas” as areas outside of Adaptation Action Areas or other areas subject to adaptation planning efforts where growth is encouraged due to higher topographic elevation and the presence of existing transportation infrastructure. Growth Areas should be developed with Urban Design guidelines that address character of urban place and provide a high quality pedestrian experience through landscaping and the creation of public space.

~~Additions from Debbie Griner~~

- SP-~~44~~14 Modify or develop new design standards for transportation infrastructure located in identified vulnerable areas to include environmentally supportive road materials, bridge design, elevation, and stormwater management. Include different pitches combined with stormwater design to effectively remove water from the roadway; explore roadway materials that may be utilized in road construction that are more tolerant of extended periods of extreme temperatures.
- SP-~~48~~5 Develop policies to address new transportation infrastructure development in light of anticipated future climate impacts, such as consideration of future

floodplain conditions and vulnerable areas which could require the rerouting of roads because of potential flooding and related damage.

Goal: Reduce GHG emissions by planning, designing, and prioritizing walkable, affordable communities supported by sustainable multi-modal transportation options.

The transportation sector contributes 45% of the region's GHG emissions, with the majority of trips taken for family and personal purposes in single occupancy vehicles. Reducing vehicle miles traveled (VMT), which reduces emissions, can be achieved by shifting trips taken in the personal vehicle to walking, biking, and public transportation, and shortening or avoiding trips altogether through community design and sustainable development strategies. Recent studies demonstrate the significant impact this approach can have on avoiding GHG emissions - estimating that the five "Ds" of compact development – density, diversity, design, destination and distance to transit are expected to reduce VMT by 12 to 18 percent (Urban Land Institute). Clearly, the success of this reduction is dependent on the extent and timing of implementation. While recommendations in this area call for increased funding for mobility solutions that achieve a reduction in GHG emissions and also increase the livability and economic strength of the region by reducing our dependence on the personal vehicle, others focus on more immediate strategic service improvements as well as initiatives to attract individuals who could drive their cars but who choose to ride transit or share a ride because of the conveniences and other benefits represented by these choices.

Over one hundred entities in the four-county region, including municipalities, county and state governments, Metropolitan Planning Organizations, and regional planning bodies, exercise governance over transportation planning, operation, and investment decisions. A continued and expanded collaborative approach to these activities will be a cornerstone to implementing these recommendations that not only serve to reduce GHG emissions but will realize cross-cutting benefits of more livable and desirable communities within our region.

| **EFSP-4016** Identify means to effectively engage the multiple public and private sector entities with roles and responsibilities involving the provision and maintenance of transportation infrastructure and the delivery of transportation services in the region. Document current and evolving coordination efforts among these entities.

| **SP-4017** Focus transportation investments and service expansions on projects and strategies contributing to GHG emissions reductions and enhancing resilience to climate change.

- a. Continue to enhance and implement regionally coordinated transportation planning through the Regional Long Range Transportation Plan (RLRTP). Identify goals and objectives in the RLRTP which, as they are attained, reinforce the desired achievement of GHG emission

reductions and enhanced resilience to climate change. Articulate the supportive role of these goals and objectives for emissions reductions and climate resiliency.

- b. Give higher investment priority to and advocate for state and federal transportation infrastructure investments, programs and services that will reduce GHG emissions and enhance resiliency and adaptability to climate change. Performance standards for climate and related metrics, such as reduced VMT and increased mode split, should be incorporated in transportation plans and programs. Transportation planning should include performance measures* in major decision-making phases such as land use visioning, long-range transportation plans, corridor studies, programming, environmental review, and performance monitoring.
- c. Incorporate evaluation criteria and processes to prioritize projects that meet RL RTP goals and objectives, into local and regional planning and programming processes, with an initial emphasis on evaluation criteria that reduce VMT and increase use of transportation modes other than the personal vehicle. 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. Prioritize studies funded through existing programs and other sources addressing effective climate adaptation and mitigation strategies, particularly those addressing barriers to adaptation and assisting in integrating land use and transportation planning.
- e. Improve coordination among economic development, land-use/housing, transportation and water resource planning activities. Review local and regional planning and decision making processes to ensure a complementary approach towards developing and maintaining a transportation network, including for purposes of reducing VMT and providing more transportation choices.

**The following is a compilation of examples of incorporating sustainable transportation performance measures into existing planning processes: Environmental Protection Agency's Guide to Sustainable Transportation Performance Measures (EPA 231-K-10-004, August 2011).*

| SP-~~44~~-18 Require that new development and redevelopment in areas with existing and planned multimodal corridors that connect urban and other centers in the region be planned and designed to support walking, biking and transit use.

| (Supporting Recommendation NS-~~25~~-15 Tree Canopy)

| SP-~~43~~-19 Support effective planning and implementation of transit oriented developments (TODs)*, from both a local and regional scale, in coordination with effective planning and delivery of transit services, particularly transit stations**, to maximize ridership.

Comment [DG8]: Note to final editor: please check for correct rec # reference.

- a. Recognize that planning for TOD requires consideration of transit and land use issues at the system, corridor and station levels, as well as evaluation of adequate infrastructure such as water and sewer mains.
- b. Develop policies to streamline approval processes involving TODs.
- c. Ensure equitable distribution of the benefits of TOD and premium type transit services**.

** Transit oriented developments (TODs) are compact moderate to high intensity and density mixed use areas, within one-half mile of transit stations, designed to maximize walking trips and access to transit.*

*** A transit station in this context means one serving a premium type of transit including commuter rail, light rail, express bus service such as the 95 Express Bus, bus rapid transit service (as defined by the Federal Transit Authority), or a station that functions as a local bus hub or transfer station, serving a minimum of three fixed routes operating with headways of 21-30 minutes or less.*

| SP-~~44~~20 Introduce a new activity-based regional travel demand forecast model to directly simulate individual trip making and mode choice behaviors. Simulations done using the model will allow for robust tests of the effectiveness of policy alternatives.

| SP-~~46~~21 Consider regional implementation of rapid transit zones to maintain land use control around a station with multiple jurisdictions. Modify local land use plans and ordinances to support compact development patterns, creating more walkable and affordable communities.

- a. Identify potential future land use map and other comprehensive plan changes at the local level. Also address the subject in regional level plans.
- b. Adopt form-based codes that have physical form, design of buildings and the public realm, and an emphasis on mixed and evolving land uses as organizing principles.
- c. Consider regional implementation of rapid transit zones or other such designations to maintain land use control around transit stations, including ones with multiple jurisdictions.

| SP-~~47~~22 Consider the adoption of green neighborhood certification programs, such as LEED ND (Neighborhood Development) to guide decision making and development and to provide an incentive for better location, design, and construction of new residential, commercial, and mixed-use developments with the goal of increasing transportation choices while reducing household transportation costs. 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.

~~EFSP-1523~~ Adopt or create a green rating system for roads to reduce emissions from construction, maintenance, and agency operations through practices such as using recycled materials, purchasing materials found or manufactured in the region, and requiring construction contractors to implement emissions reductions practices such as using alternative fueled vehicles and clean diesel practices.

~~SP-15-24~~ Improve movement and safety for non-motorized modes through the adoption and implementation of best practice models including Complete Streets.

- Develop policy, ordinances, guidelines, models and projects to accelerate implementation.
- Identify partners and resources to support training and the research into new techniques for transportation design and other professionals.

~~EFSP-825~~ Complete, expand and connect networks of bicycle and pedestrian facilities, including supporting access to transit.

- Prioritize implementation of planned bicycle and pedestrian networks. Improve overall coordination of local and regional agency planning and implementation efforts. Evaluate whether these facilities are connected regionally and on a local scale to major employment, education, and recreation centers.
- Implement a roadway design project checklist that includes measures of pedestrian, bicycle, and transit (e.g. bus bay) accommodation.
- Work regionally to improve safety for pedestrians and bicyclists
- Consider regional adoption of Transit, Pedestrian, and Biking programs that aim to improve access to transit.
- Develop policies to increase designated bike parking facilities at office and retail developments.

(Supporting Recommendation NS-25-15 Tree Canopy)

Comment [DG9]: Note to final editor: please check for correct rec # reference.

~~EFSP-1326~~ Agencies across the region continue to implement strategies aimed at maximizing the efficiency of the existing transportation network. Many of these strategies also result in GHG emissions reductions. There is a need for a toolbox of successful strategies that can be duplicated across the region. Agencies should make an effort to collect information that will allow for evaluation of the effectiveness of a strategy in reducing GHG emissions. Information collected by implementing agencies should include emissions reductions, fuel reductions, VMT impacts, or other performance measures as appropriate. Information collected should also include steps for implementation, costs, and lessons learned. Among the strategies to consider are use of roundabouts, real time operation of the traffic signal system, traffic signal prioritization and queue jumps for transit, interstate ramp metering, and employment of a virtual freight network (freight network managed in real time using intelligent transportation systems).

| **EFSP-627** Increase transit ridership by providing premium transit service* on targeted regional corridors. Examples of successful routes include the I-95 Express bus service and “The Flyer” route from Miami International Airport to Miami Beach. The goal of these routes is to bring people who might otherwise drive to work (known as “choice riders”) from residential areas to regional centers of employment. Agencies should review levels of service policies and service standards and modify as necessary to prioritize increasing services along corridors with dense land use. Improve quality of service by continuing to monitor and address safety and performance.
** The term premium transit service in this context means rail, express bus service, or the Federal Transit Authority definition of Bus Rapid Transit service, which are routes predominantly on fixed guideways or high frequency bus service with the following elements: substantial transit stations, traffic signal priority or preemption, low-floor vehicles or level platform boarding, and separate branding of the service. High-frequency service is defined as 10-minute peak and 15-minute off-peak headways for at least 14 hours of service operations per day.*

| **EF-9SP-28** Increase the amenities and infrastructure available to transit riders, such as shade, shelters, kiosks utilizing solar power when feasible, and route and real time boarding information.

| **EF-16SP-29** Provide seamless transitions to increase the use of low carbon modes for the movement of people and freight in the region.

- a. Improve connections among Tri-Rail and county transit service, municipal trolley and community shuttle bus services which may include re-alignment of routes. District circulators, such as the Metro Mover in downtown Miami which connects to Metro Rail provide the last leg of a commute for transit riders and should have high frequency and ease of transfer.
- b. Implement seamless regional transit fare and transfer media (traditional or virtual) across transit services in the region while improving walking and biking access to transit.
- c. Develop planning strategies to address planning for the “First and Last Mile” of transit trips, which act as barriers for commuters who could potentially take transit but whose starting point or final destination cannot be conveniently accessed from the nearest transit stop/station due to distance, terrain (street patterns), or real or perceived safety issues (traffic, crime).
- d. Partner to implement a Virtual Freight Network as part of the region’s comprehensive Intelligent Transportation System/ Transportation System Management and Operations Programs. Establish a software application to provide “load matching” for shippers and truckers to alleviate “deadheading” of empty trucks traveling back to destination.
- e. Incorporate climate adaptation strategies and GHG emissions inventories into Seaport and Airport Master Plans and 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 that function of roadway segments connecting seaports and airports (hubs) to corridors, such as interstates.

- f. Establish performance measures including VMT reduction and emissions reductions monitoring for freight projects such as ship to rail projects which remove drayage truck operations (*truck container pickup from or delivery to a seaport terminal with both the trip origin and destination in the same urban area*).
- g. Support clustering of distribution facilities to promote intermodal centers and economic development.

EF-7SP-30 Use and expand Transportation Demand Management (TDM) strategies, which reduce peak hour and single-occupant vehicle travel.

- a. Vanpool and Carpool Programs - Work with MPOs, South Florida Commuter Services and South Florida Vanpool to identify and pursue opportunities to more fully utilize and expand these programs.
- b. Car and Bike Sharing Programs - Work with companies providing these services and strategic partners (universities, municipalities, large employers, etc.) to establish zip car, bike sharing and personal vehicle sharing programs.
- c. Employee Benefits – Encourage sharing of information on and use of employee benefits that support use of walking, biking and transit modes for work commutes (e.g., pre-tax benefits and Emergency Ride Home program).
- d. Commute Trip Reduction Programs - Local governments should promote participation in programs such as the EPA Commuter Choice Program and explore the adoption of commute trip reduction ordinances.

(Supporting Recommendation [NS-2415](#), Tree Canopy)

Comment [DG10]: Note to final editor: Pls make sure this is correct rec #

SP-49SP-31 Coordinate initiatives with those of the seven-county SE Florida Prosperity Plan, Seven50. Maximize the opportunities presented as **Seven50** is developed (e.g., sharing data and analysis; participating in alternative future scenario planning; engaging a myriad of public, private and civic partners) and actively engage in Seven50 implementation efforts, designed to address the following Livability Principles:

- Provide more transportation choices
- Promote equitable, affordable housing
- Enhance economic competitiveness
- Support existing communities
- Coordinate policies and leverage investment
- Value communities and neighborhoods
- Enhance community resiliency to the impacts of Climate Change

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[There should be a particular focus on tourists, since they add to the carbon burden of the state by flying in and renting cars to reach their destination(s). The region should make it

easy for individuals to be "green tourists" without the burden of research and giving up convenience.]

Comment [sa11]: Recommend not

Comment [g12]: !!!! Don't think this comment was discussed at the Steering Cte Meeting. Need to decide if a rec is needed.

-- Section 7--

Water Supply, Management and Infrastructure:

~~Goal: Advance water management strategies and infrastructure improvements needed to mitigate for adverse impacts of climate change and sea level rise on water supplies, water and wastewater infrastructure, and water management systems.~~

Climate change presents serious challenges for water managers with impacts on the quality and abundance of water supplies, water and wastewater infrastructure, and drainage and flood control operations. An effective response will require the coordinated efforts of governmental agencies and service providers and a holistic approach that treats water supply, disposal and management as integrated systems.

In southeast Florida, climate change is predicted to influence precipitation patterns with both water supply and water management implications. Fewer storm events, drier winter and spring months, and an increase in local evapotranspiration rates (water lost to the atmosphere through evaporation and plant transpiration) will increase the frequency and severity of droughts while less frequent but more intense storms will tax water management systems causing both inland and coastal flooding. Impacts will be compounded by SLR with the loss of coastal wellfields due to saltwater intrusion and constraints on water management operations due to increases in groundwater levels and reduced discharge potential at canal water control structures. Addressing the impacts of climate change will require: finding solutions to consistently maintain high quality and adequate water supplies for all local communities; strategies to reduce the cost and energy demands of alternative water supplies; consideration of future conditions with respect to the placement of infrastructure; and investments in new and upgraded infrastructure to maintain essential drainage and flood control operations. Additionally, SLR from climate change is threatening the Florida Everglades, the backbone of our natural resource system, highlighting the urgent need for restoration of the Everglades with improved delivery and distribution of water flow to provide both natural resources and water supply benefits.

Given these challenges, it is essential to identify practical solutions today to help mitigate the impact of climate change on our future water supply. The Regional Climate Action Plan proposes recommendations to provide regionally coordinated water management plans that address stormwater use and disposal, traditional and alternative water supplies, wastewater disposal and reuse, water conservation measures, and continued support for Everglades restoration efforts.

A unified effort among government, businesses, and consumers is needed to implement near-term solutions and develop long-term strategies to mitigate adverse impacts of climate change on water supplies while developing new sources that add diversity to our water supplies. Efforts will require optimized use of all water resources,

with conservation being paramount, along with development of new sources less vulnerable to changing climate conditions. The challenge will be to implement these necessary projects without marked increases in energy consumption, a difficulty that underscores the value of conservation as priority strategy. Policy and regulatory changes, funding for infrastructure, development of alternative water supplies, and public education will all be necessary in order to make significant progress. The issues are vast and the investments to be great, with effective response requiring the collaboration of the public, financial participation of state and federal governments, and the exploration of new finance strategies.

Goal: Advance water management strategies and infrastructure improvements needed to mitigate for adverse impacts of climate change and sea level rise on water supplies, water and wastewater infrastructure, and water management systems.

- WS-1 Develop local and, where appropriate, regional inventories of existing potable water supply delivery and collection systems, vulnerable wellfields, wastewater collection and/or treatment infrastructure, septic tanks/drainfields, and stormwater drainage and treatment facilities; assess the potential impact from climate change of each component; and develop different climate change scenarios and adaptation strategies for high-risk utilities and/or infrastructure which may require replacement, reinforcement, or relocation to ensure the long term viability of the system (e.g., modified site, depth, elevation, materials, or connection requirements).
- WS-2 Develop a regional saltwater intrusion baseline and utilize saltwater intrusion models to identify wellfields and underground infrastructure at risk of contamination/infiltration by saltwater with increases in sea level.
- WS-3 Utilize existing and refined inundation maps and stormwater management models to identify areas and infrastructure at increased risk of flooding and tidal inundation with increases in sea level, to be used as a basis for identifying and prioritizing adaptation needs and strategies. .
- WS-4 Evaluate the impacts of rising sea and groundwater levels on soil storage, infiltration rates and inflow to stormwater and wastewater collection and conveyance systems; consider longer-term influences on water quality; and develop strategies for implementing reclaimed water and stormwater reuse projects that account for current and future conditions.
- WS-5 Develop and apply appropriate hydrologic and hydraulic models to further evaluate the efficacy of existing water management systems and flood control/drainage infrastructure under variable climate conditions. Quantify the capacity and interconnectivity of the surface water control network and develop feasible adaptation strategies.

- WS-5 Coordinate with the South Florida Water Management District, Drainage/Water Control Districts, and utilities/public works officials to identify flood control and stormwater management infrastructure already operating below the design capacity. Further examine water control structures to ensure that they can provide for inland or upstream migration of riparian species as freshwater habitats become more saline.
- WS-6 Develop Integrated Water Management Plans that present 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, traditional and alternative water supplies, wastewater disposal and reuse, and water conservation measures for use by local leadership to guide planning decisions as well as amendments to applicable codes and regulations.
- WS-7 Develop and test water management and drainage system adaptation improvements needed to maintain existing levels of service relating to drainage, flood control, and water supply, and use a cost-benefit analyses to prioritize potential improvements.
- WS-8 Incorporate and prioritize preferred climate adaptation improvement projects in capital improvement plans and pursue funding.
- WS-~~98~~ Encourage, foster, and support investigative work and scientific research that improves the understanding of local and regional climate change impacts specific to south Florida including:
- Improved down-scaling of global climate models for representation of precipitation at the regional/local scales.
 - Identification and targeting of gaps in monitoring to improve quantification of the hydrologic system and its response to climate change, such as evapotranspiration, groundwater levels, and precipitation, and local sea level;
 - Development of risk-based decision support tools and processes for application in analysis of infrastructure design, water resource management, natural systems management, and hazard mitigation alternatives. Tools should provide for consideration of potential economic costs of comparative planning scenarios, management decisions, and infrastructure investments and the evaluation of potential tradeoffs;
- WS-~~409~~ Undertake efforts to fill identified data gaps through local program efforts, agency collaborations, and advocacy for additional state/federal resources, as needed.
- WS-~~44-10~~ Foster the development and exchange of new information, methods and technical capabilities to address key questions of concern related to climate variability and sea level rise to support management decisions:

- Assess impacts of observed and predicted climate variability and sea level rise on the frequency, duration, and intensity of flooding as a result of extreme tidal excursions, storm surge, and 100-year storm events, and where impacts are likely to be greatest.
- Examine the effects of climate change on water availability and groundwater vulnerability due to sea level rise, and predicted changes in precipitation and evapotranspiration patterns and rates.
- Establish a venue for a periodic exchange of ideas between resource managers, policy makers, and researchers.

| WS-42-11 Develop agency capabilities to provide rapid deployment of resources in immediate response to intense precipitation and storm events through use of Next RAD technology.

| WS-43-12 Cultivate partnerships with federal and state agencies, and professional associations with expertise in integrated water resource planning (such as the U.S. Army Corps of Engineers Institute for Water Resources, the United States Geological Survey, and Water Foundations) as sources of important research, reports and information regarding climate change, and efforts being undertaken in other communities.

| WS-44-13 Monitor changes in rainfall patterns, temperature means and extremes and SLR through coordination with NOAA, and other key organizations/partners, to better predict future wet-season and dry-season rainfall. Monitor emerging science in order to assess the adequacy of regional climate models. Choose an annual conference or other venue at which such trends can be reviewed at regular intervals.

| WS-45-14 Manage water storage in the region's publicly-owned uplands and wetlands and in other land uses compatible with water storage, including wetland restoration, certain agricultural operations and certain renewable energy production facilities. This will further serve to protect high quality drinking water supply, increase aquifer recharge, and as a means for managing saltwater intrusion.

| WS-46-15 Support and advocate for complete implementation and funding for the Comprehensive Everglades Restoration Plan (CERP) and its updated versions as fundamental to Everglades restoration, to include increased freshwater flows to the Everglades system, thereby improving water quality, maximizing regional freshwater storage and aquifer recharge, and providing potential to abate saltwater intrusion, which will become increasingly important under variable climate conditions and in the face of sea level rise.

WS-17-16 Combine existing and develop new land acquisition priorities in a regional setting to protect high quality drinking water supply.

--Section 8--

Natural Systems

Climate change threatens natural areas, regional populations of native plants and animals important to southeast Florida's culture and economy and sustainable local industries including ecotourism and farming. South Florida natural communities exist within specific climate, water and salinity regimes. Coral reefs and seagrasses grow in clear, shallow seawater with abundant sunlight and stable temperatures and mangroves thrive in the often 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 unrivaled in the United States. Similarly, both Everglades tree islands and agricultural lands depend upon wet and dry seasonal rainfall patterns that have existed for centuries.

Changing weather patterns is not new to the native flora and fauna of south 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 and perhaps losing that same ground in dry years. Salt tolerant plants may move up river in dry years and lose that ground in wet years. However, in many climate change scenarios, the expediency of such change may be unprecedented. Climate change may exceed the capacity of native flora and fauna to keep pace with such change. By managing abiotic factors, we may be able to see a transition and migration of native flora and fauna without the loss of species diversity and without introduction of potentially harmful species.

Given the opportunity, some species and industries can adapt, migrate, or transition. Adaptation and migration or transition, necessary for sustaining natural plant and animal communities as well as those farmed communities upon which people depend, will require careful and thoughtful planning. Land use regulations and land acquisition programs will have to allow for such transitions. Hardened shorelines may be transformed to living shorelines. Open lands or vacant parcels may be suitable locations for agriculture, urban gardens, or habitat restoration.

Currently, most Floridians enjoy access to healthy oceans, estuaries, wetlands and forests as well as locally grown farm products. 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 our 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 us to ensure that 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 regions' freshwater wetlands and native uplands are supplied with rainwater. At this time, no one knows exactly what changes in rainfall patterns are in store for us. What we do know is that storage of freshwater is an important mitigation option whether rainfall is too much or too little – or both. Having freshwater storage options allows us to collect flood waters and hold them for later release during drought.

Agricultural lands too will depend on freshwater storage. As is true for estuaries and wetlands, changes in salinity regimes and rainfall patterns will likely bring about changes in how current farm lands are managed and which lands will be viable for crop production in the future. There is little doubt that continuity of food production is critical to everyone living in south Florida. As is true for natural systems, farm land will be made more healthy and productive with careful planning of freshwater storage. Fortunately, the continuation of farm land and natural systems is not just a goal, but is also part of the solution. Plants absorb greenhouse gasses.

Interagency cooperation, data collection data sharing and resource sharing will be among the first accomplishments. Climate change will not recognize geopolitical boundaries and nor should our response. Second tier performance measures will include examination of existing natural area and open space management plans, laws, ordinances and land uses to provide for continuity of native flora and fauna and a thriving agricultural economy. Ultimately, success may be measured by the maintenance of genetic diversity, absence of harmful species, quantity of freshwater stored and acres of land maintained as green space.

The following strategies recommend ways in which all levels of government can share information necessary to plan for and implement the maintenance of natural areas, rare and endangered native species populations as well as the green industries necessary for our local economy.

Goal: ?

NS-1 Develop a vital signs status and trends monitoring program for biological communities. Key parameters may include rate of sea-level rise; saltwater intrusion boundary and monitoring wells; landscape-level vegetation patterns; percent coral cover and condition in offshore reef zones; water temperature and pH in areas; and occurrence and range of invasive exotic plants and animal species.

- NS-2 Promote collaborative federal, state and local government conservation land acquisition programs. Explore fee simple and less-than-fee approaches which reflect regional acquisition priorities and result in conserving a diversity of natural areas including hot spots of biological diversity, protecting open space and buffer areas to create or maintain resilience and adaptive capacity of existing natural areas to transition inland/upslope.
- NS-3 Support regional fire management coordination efforts emphasizing frequent, low intensity fire regimes in wetland and pine forest systems to maximize habitat quality, resilience to change and carbon neutrality while preventing hazardous fuel load build up that leads to major carbon releases.
- NS-4 Quantify monetary values of hazard mitigation and adaptation provided by natural systems using Ecosystem Services Valuation or comparable model. Create a sustainable funding mechanism for their protection and management.
- NS-5 Maintain or restore multiple areas of habitat and large-scale connectivity to facilitate native species population stability and habitat shifts resulting from climate change.
- NS-6 Coordinate and implement regional invasive exotic species prevention and control efforts to minimize the diversity and abundance of habitat-homogenizing exotic plants and animals by emphasizing prevention of new invasions and early detection/rapid response to nascent invasions.
- NS-7 Coordinate “living shorelines” objectives at regional scale to foster use of natural infrastructure (e.g. coral reefs, native vegetation and mangrove wetlands) instead of or in addition to grey infrastructure (e.g. bulkheads).
- NS-8 Leverage existing work of the Florida Reef Resilience Program’s “Climate Change Action Plan for Florida’s Coral Reef System 2010-2015 for protection of marine habitat.
- NS-9 Engage and cooperate with marine resource agencies to maintain coral reef (e.g., selective breeding) and mangrove ecotones as estuarine habitat and natural barriers to storm surge that also maintain coastal biodiversity.
- NS-10 Advocate for federal and state funding for applied monitoring and climate related science:
- identify economic and physical linkages between marine systems (e.g. reefs and mangroves) and hazard risk/damage claim reduction
 - monitor coastal and freshwater marsh vegetation tolerance to changing salinity, depth and other climate variables

- improve data on estuarine bathymetry and use appropriate models to help identify habitats at risk
- develop refined climate projections, hydrologic and ecological models to aid in planning

NS-11 Support regulatory requirements that provide for ecologically beneficial uses of clean, dredged materials.

NS-12 Develop long-term turtle-nesting beach preservation and management strategies to reduce nest vulnerability and mortality

NS-13 Identify zoos, aquariums, herbariums and gardens that might be the repository for seed stock and captive breeding programs for those listed plants and animals under imminent threat of local extirpation due to climate change impacts and sea-level rise.

NS-14 Compile species information for rare plant species in threatened natural communities and develop adaptation plans that include, at a minimum, seed bank repository collection and assisted propagation.

NS-15 Maintain/restore urban tree canopy.

--Section 8a--

Agriculture

Goal/Mission

~~To ensure the continued viability of agriculture in southeast Florida through policies which remove barriers to production, promote economic incentives, improve water reliability, and provide research on best management practices, thereby encouraging sustainable production in the face of a changing climate.~~

Agriculture is consistently one of the three economic drivers to Florida's economy. When the economic impact 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 due to a 12-month growing season and ample local market potential. More than 250 different and unique crops grow in Southeast Florida. These crops supply the entire east coast of the United States with winter vegetables, contributing to the food security of the nation. Many tropical and ethnic crops are also grown and marketed to the diverse population of the region.

Comment [sa13]: Wondering if this should be a stand-alone section or integrated into Natural Systems above in format parallel to the two-part SP section above – I welcome your thoughts

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Farmers are actively adapting Best Management Practices that efficiently utilize nutrient application (right time, right place) and conserve water resources. They are also evaluating alternative methods to utilize and retain water when it's not harmful to current or projected growing practices.

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Agriculture is committed to sustainability, and the economic viability of regional agriculture will allow farmers to remain on the land to grow food, fuel and fiber for area residents as well as the nation. Consideration of agricultural impacts is vital to any regional action plan which should include action plans to address flooding, salt-water intrusion, exotic pests and disease introduction and crop changes due to climate change.

Goal: To ensure the continued viability of agriculture in southeast Florida through policies which remove barriers to production, promote economic incentives, improve water reliability, and provide research on best management practices, thereby encouraging sustainable production in the face of a changing climate.

- AG-1 Promote policies which preserve the economic viability of agriculture as the industry adapts in the face of climate change.
- AG-2 Develop and seek regional, state, and county-based funding for willing buyer/willing seller Agriculture Purchase of Development Rights Program to maintain agricultural land for its ability to lessen climate change impacts and provide for national food security.
- AG-3 Support academic research in the agriculture sector on best management practices for crops presently grown or new crops which may be grown as climate conditions change in southeast Florida.
- AG-4 Provide incentives to growers/land owner to manage agricultural lands to lessen impacts of climate change regionally, and provide environmental- benefits which may include, but not be limited to: open space, water aquifer recharge and storage, carbon sequestration, wind farms, biofuels, and wildlife habitat.

-- Section 9 --

Energy and Fuel:

~~Goal: Increase renewable energy capacity and reduce consumption of electricity and fuel.~~

The vast majority of the energy consumed in the region is to fuel our vehicles and to generate electricity for our buildings. It is widely understood that the most accessible and cost-effective way to reduce energy consumption is through efficiency and conservation. The recommendations in this area address these important strategies and also take the next step by encouraging the use of alternative and renewable energy. They call for public-private partnerships and addressing barriers, including regulatory processes, which currently prevent the broad application of these technologies. Recommendations are comprehensive, ranging from setting regional goals, increasing renewable energy capacity to establishing a regional framework to deliver finance options. Recommendations also aim to reduce idling and preparing our region for the shift to plug-in electric vehicles.

Goal: Increase renewable energy capacity and reduce consumption of electricity and fuel.

- EF-1 Undertake regional efforts to advance energy-efficiencies, energy conservation and the deployment of alternative and/or renewable energy technologies in existing and proposed developments through local ordinance, incentives, education, and energy efficiency financing strategies. (EF-11, supporting recommendation)
- EF-2 Work toward the establishment of a regional framework to deliver Energy Efficiency and Renewable Energy finance options, in addition to other local government initiatives and partnerships, to achieve regional GHG emissions reduction, the use of alternative and renewable energy technologies, in furtherance of green sector economic development.
- EF-3 Set a recurring five-year regional goal to increase renewable energy capacity and conservation – which includes the co-benefits of economic development and job creation -- through revising building and zoning codes and architectural design guidelines to allow for, encourage, and integrate renewable energy sources into the power supply.
- EF-4 Seek amendments to existing land development regulations and development standards and revise or eliminate provisions that act as a barrier to the installation and use of renewable energy systems pursuant to Section 163.04, F.S.
- EF-5 Develop policies to facilitate and streamline the deployment of energy efficient and renewable energy such as the installation of LEDs and use of solar power for public infrastructure such as street lighting, parks, and parking facilities. Survey counties, cities and regional agencies with lighting infrastructure to determine the level of deployment and to gather best practice policies and implementation steps to facilitate the application of

efficient, environmentally sensitive (sea turtles), responsive, lighting practices in additional infrastructure.

- EF-6 Support or facilitate development and distribution of *local* sources of sustainable fuels and availability of fueling infrastructure. Adopt policies to facilitate the development of *locally sourced* sustainable alternative fuels, those achieving a reduction in lifecycle greenhouse gas emissions when compared to conventional fossil fuels (including but not limited to waste-based bio-diesel and methane gas from sources like landfills). Include these policies in regional plans and Local Comprehensive Plans. Identify incentives and modify local code to encourage the establishment of a local alternative energy industry (EF-1, supporting recommendation).
- EF-7 Establish a working group of public and private stakeholders to develop a strategy to promote the use of Plug-in Electric Vehicles in the region.
- a. Establish locations where infrastructure and/or battery switching stations are needed. Solar charging and other renewable options should be designated a priority to maximize emission reduction benefits and to improve the community's emergency management preparedness in times of power outages.
 - b. Develop policies to provide incentives for the deployment of infrastructure to complement transit oriented corridors. Preferred and/or reduced parking fees should be a consideration for riders accessing transit facilities by electric or other alternative fuel vehicles. Transit facilities should develop plans to establish electric vehicle charging infrastructure.
 - c. Work with relevant stakeholders to streamline permitting processes associated with charging equipment to encourage the safe and expeditious installation on customer premises and elsewhere.
 - d. Coordinate monetary and non-monetary incentives available to the general public and organizations purchasing electric vehicles.
 - e. Support regional efforts to establish a framework for siting/locating public electric vehicle charging stations.
- EF-8 Develop a strategy to promote the development of truck parking with electrification facilities and the use of auxiliary power units to reduce extended idling by trucks.
- a. Survey state, local and regional transportation agencies for existing studies identifying trucking patterns and needs.
 - b. Identify strategic locations for truck parking facilities and seek competitive funding opportunities as a region.

-- Section 10 --

Risk Reduction and Emergency Management.

~~Goal: Provide a more resilient natural and built physical environment in light of climate change.~~

The recommendations presented in this section of the Southeast Florida Regional Climate Action Plan provide a foundation for establishing a more predictable physical environment in the face of climate change through regulations, adaptation strategies, and emergency operations, with the goal of reducing future economic losses and threats to public safety. South Florida is no stranger to the devastating effects of hurricanes and other severe weather. Our experience has made us experts in planning, preparedness, response, mitigation, and recovery. Our emergency managers are trained in an all risk-based, all hazards approach. Disaster can strike anytime, anywhere. It takes many forms -- a hurricane, a tornado, a flood, a fire or a hazardous spill, an act of nature or an act of terrorism. In fact, in the aftermath of September 11, homeland security preparedness was easily incorporated into Southeast Florida's all hazards approach to emergency management. An emergency can build over days or weeks, or hit suddenly, without warning. Southeast Floridians are resilient and accustomed to this and can mitigate, prepare, respond, recover, and return to better than normal.

Climate change differs, however, with impacts that may not be immediately evident as the changing conditions are slower and occur over longer time scales. With climate change there is no overnight return to "normal". SLR does not appear on the on 6 o'clock news weather map moving towards the coast of Florida. It is that difference that makes it more difficult for the general public to understand and to react to climate change. Yet, we are already experiencing more extreme weather conditions – from extreme rain to extreme droughts, from unseasonable heat waves to early cold fronts. Climate is changing. Adapting and planning for more and possibly new weather-related threats needs to be incorporated into preparedness procedures, and one step further is to include climate change in our emergency preparedness and hazard mitigation plans.

The collection of strategies and actions in this area is aimed at integrating climate change risk into all-hazards emergency management planning and response models. This approach provides support for the objectives of the Coastal Zone Management Act of 1972 which recognizes sea level rise as a threat to coastal communities and encourages strategies for improved protection of life and property, and builds upon requirements of Section 163.3178 and Chapter 252 F.S. relating to coastal and emergency management plans.

Goal: Provide a more resilient natural and built physical environment in light of climate change.

- RR-1 Perform vulnerability analysis to identify and quantify the economic value of regional infrastructure at risk under various sea level rise scenarios and other climate change scenarios utilizing inundation mapping, modeling, and other appropriate tools. While the initial regional vulnerability assessment completed by the Compact Counties for use in this Regional Climate Action

Plan has yielded important new insights on regional risk, additional and ongoing analysis is required to further refine our current understanding and to monitor changes in Southeast Florida's risk profile over time.

- RR-2 Evaluate and improve adaptation responses for communities at risk, to include:
- Development and implementation of methodologies for the assessment and evaluation of evacuation and relocation options
 - Development of model evacuation policies and procedures for communities at increased risk of flooding
 - Development of model relocation policies for affected communities.
- RR-3 Incorporate climate change adaptation into the relevant Local Mitigation Strategy (LMS) to reduce or eliminate long-term risk to human life and property from disasters. Within the LMS, update local risk assessments to include climate change in the hazard analysis and vulnerability assessment section. Develop strategies for hazard mitigation and post-disaster redevelopment planning.
- RR-4 Identify transportation infrastructure at risk from climate change in the region; determine whether, when, where, and to whom projected impacts from climate change might be significant. Employ inundation mapping, modeling and other appropriate tools to assess the vulnerability of transportation infrastructure to the projected impacts of climate change under various sea level rise and other climate change scenarios. At a minimum, assess the vulnerability of the following transportation infrastructure:
- local transportation networks of the Compact Counties
 - the Regional Transportation Network designated by the Southeast Florida Transportation Council composed of interconnected, strategic corridors (roadway, rail line, waterway), hubs (airports, seaports, intermodal terminals, freight terminals, passenger rail and intercity bus terminals) and connectors critical to the mobility of people and freight and the region's economic competitiveness and quality of life; and evacuation routes adopted under the Statewide Regional Evacuation Corridor Program.
- RR-5 Enforce Coastal Construction Line and build upon goals, objectives and policies related to Coastal High Hazard Area designations in Comprehensive Plans.
- RR-6 Adopt consistent plans at all levels of regional government that adequately address and integrate mitigation, sea level rise and climate change adaptation. The following plans must all be consistent: Disaster recovery and redevelopment plans; Comprehensive plans; Long range transportation plans; Comprehensive emergency management plans; Capital improvement

plans; Economic development plans, Local Mitigation Strategy, Climate Change Action Plan; Future Land Use Plan.

RR-7 Continue to implement and enforce strong building codes that require new construction and substantial improvements to existing structures to mitigate against the impacts of flooding, severe winds, and sea level rise, and which are consistent with Climate Change Adaptation policy

-- Section 11 --

Outreach and Public Policy:

Outreach and Public Policy recommendations are combined in recognition of the fact that the best planning efforts in the world will not be implemented or reach their full potential without the support of the public, often through local government public outreach programs, and without the leadership of local, state and federal policy makers and private sector decision makers who are committed to a sustainable planet.

Public Outreach (PO): Communicating the risks related to climate change and the value of adapting policies and practices to become more resilient is extremely challenging. Today's world is marked by instant communication, immediate information and multi-tasking behaviors. News and information related to climate change is difficult to communicate in a sound bite. It's relatively easy to communicate the threat of an imminent storm, tornado or other natural disaster, but much more difficult to mobilize the public to hazards that unfold over years and decades. The state of the current economy also makes a long term discussion on climate change more difficult when many Americans are thinking about short term housing, employment and other immediate needs. And, of course, the science of climate change is still contested by some.

The strategies and actions in this area aim to educate stakeholders in all sectors and at all levels – from the general public and voters to elected officials, professionals and other decision makers. These are initiatives to inform and create a common understanding of the benefits of energy independence, energy use reduction, water conservation, smart growth, and natural area protection that will create demand for a healthy, sustainable and resilient region.

~~Public Policy (PO): The Compact was born out of a need to guide and influence local, regional, state and federal climate change related policies and programs. Policy development and advocacy are core components of the Compact and commitments that the Compact partners have fulfilled. Recent amendments to Florida law that provide for Adaptation Action Area designation for areas vulnerable to the impacts of climate change, and the subsequent request by members of Congress to amend federal law to mirror this action are just a few examples of the Compact's success to influence policies. The Regional Climate Action Plan provides the next step to gain support for ordinances, regulations and state and federal policies on behalf of the region. The~~

~~Public Policy goal compliments numerous other recommendations noted in the Sustainable Communities and Transportation Planning sections of this Plan.~~

~~Additionally, the continuation and enhancement of public policy development and joint advocacy efforts through regional collaboration, partnerships, coalition building, and with the support of public outreach programs are necessary to ensure that state and national policies considered during these uncertain times do not impede regional efforts already underway. Compact successes to date can easily be undermined without vigilance in monitoring policy developments, election cycles and by positively influencing public policies supported by the Compact and the Regional Climate Action Plan. Indeed, future implementation of the Regional Climate Action Plan may depend on it.~~

Public Outreach:

- PO-1 Provide outreach to residents, stakeholders and elected officials on the importance of addressing climate change adaptation and preparedness and develop a program to educate specific interest groups about the Compact, Regional Climate Action Plan, and the benefits of Adaptation Action Area. Consider utilizing the Academy concept to educate elected leaders, academic interests and other decision makers.
- PO-2 Counties, municipalities and appropriate agencies will collaborate to develop and carry out outreach/educational programs to increase public awareness about hazards exacerbated by climate change, mitigation efforts, and adaptation strategies to minimize damage and risk associated with climate change.
- PO-3 Provide education and improve communications on energy conservation and available technologies with a focus on both short-term and life-cycle economic benefits, and incentives available within the region.
- PO-4 Modify existing and encourage new public outreach, education and messaging programs associated with natural areas including upland, wetland, marine, coastal and nearshore environments and the Everglades to include climate change mitigation and adaptation messaging and volunteer opportunities to create an awareness about the impacts of climate change on the environment.
- PO-5 Initiate a regional public education campaign to educate residents, business owners, policy makers on the merits of preserving open land as an 'insurance policy' for adaptation to sea level rise in Southeast Florida.
- PO-6 Develop early warning systems and social media applications to both inform residents and visitors of extreme high-tide events and to raise overall awareness on sea level rise and climate change issues. Also consider roadway signage for tidal flooding zones.

- PO-7 Leverage resources for campaign and promotional advertisements by coordinating public transportation messaging in the region to attract non-transit-dependent (choice) riders. Messages should focus on making riding transit “cool.”
- PO-8 Deploy social media applications, to facilitate use of transit including access to real-time information such as arrival times.
- PO-9 Develop strategies to promote fuel efficient driving habits, including anti-idling practices, and to raise awareness of rules and safety practices for sharing the road with bicyclists and pedestrians. Conduct best practice research on existing campaigns and look for opportunities to integrate tools into existing high school, county and municipal driver education courses, traffic school curriculum, truck driver training, and fleet associations. Also include messaging on the benefits of purchasing fuel efficiency vehicles.
- PO-10 Identify means to effectively engage the multiple public and private entities with roles involving the provision and maintenance of transportation infrastructure and the delivery of transportation services on addressing climate change. Document current and evolving coordination efforts among these entities, and identify opportunities to improve that coordination.
- PO-11 Coordinate outreach efforts with states, regions and counties that are subject to the impacts of climate change with special emphasis on coastal entities experiencing sea level rise and coastal flooding to create a national Climate Adaptation Coalition for the purpose of impacting public policy and influencing appropriations requests.

Public Policy (PP): The Compact was born out of a need to guide and influence local, regional, state and federal climate change related policies and programs. Policy development and advocacy are core components of the Compact and commitments that the Compact partners have fulfilled. Recent amendments to Florida law that provide for Adaptation Action Area designation for areas vulnerable to the impacts of climate change, and the subsequent request by members of Congress to amend federal law to mirror this action are just a few examples of the Compact’s success to influence policies. The Regional Climate Action Plan provides the next step to gain support for ordinances, regulations and state and federal policies on behalf of the region. The Public Policy goal compliments numerous other recommendations noted in the Sustainable Communities and Transportation Planning sections of this Plan.

Additionally, the continuation and enhancement of public policy development and joint advocacy efforts through regional collaboration, partnerships, coalition building, and with the support of public outreach programs are necessary to ensure that state and national policies considered during these uncertain times do not impede regional efforts already underway. Compact successes to date can easily be undermined without

vigilance in monitoring policy developments, election cycles and by positively influencing public policies supported by the Compact and the Regional Climate Action Plan. Indeed, future implementation of the Regional Climate Action Plan may depend on it.

Public Policy:

- PP-1 Compact Partners will continue the support for the core Compact policies and the role of joint advocacy as provided for in Sections 1 – 4 of the Compact calling for changes to federal law that better recognize the unique vulnerabilities of Southeast Florida to climate change and for providing appropriations based on vulnerabilities, with special attention to funding infrastructure projects to adapt to sea level rise.
- PP-2 Compact partners will continue to develop State and Federal Legislative Programs on a yearly basis that will serve as guidance for advocacy in Tallahassee and DC. Regional programs will be considered for inclusion into Compact partners' legislative packages and joint advocacy in Tallahassee and DC is encouraged when appropriate.
- PP-3 Continue to seek the support of other municipal and county jurisdictions including the Leagues of Cities, Florida Association of Counties (FAC), etc. within Florida and the National Association of Counties (NACo) and other entities that influence national policy for the purpose of building coalitions, sharing resources, and influencing state and national policy on mutual climate related issues through joint advocacy.
- PP-4 Counties, municipalities, regional agencies and other appropriate government and private sector partners should integrate consideration of climate change impacts and adaptation strategies into existing and future systemwide planning, operations, policies, and programs. The guiding principles developed by the Interagency Task Force on Climate Change Adaptation for federal agencies should be incorporated by entities when designing and implementing adaptation strategies:
- Prioritize the most vulnerable
 - Use best-available science
 - Build strong partnerships
 - Apply risk-management methods and tools
 - Apply ecosystem-based approaches
 - Maximize mutual benefits
 - Continuously evaluate performance
- (<http://www.fedcenter.gov/programs/climate/guidingprinciples/>)
- PP-5 Federal Surface Transportation Authorization. Advocate for new authorization of the federal surface transportation programs with increased priority for funding public transit and non-motorized travel and integrated regional and local planning as means to reduce the greenhouse gas

Comment [sa14]: Make this a footnote in final layout

emissions from the transportation sector. Such a federal program should explicitly incorporate climate change and shift priorities toward programs that encourage reinvestment in existing infrastructure and communities (“fix-it-first” programs), support public transportation and transit-oriented development, and address congestion management through means other than new road building.

- PP-6 Support federal actions to reform transportation models and enhance the National Environmental Policy Act (NEPA) processes to integrate climate change analysis. The essential purpose of NEPA is to ensure that environmental factors are weighted equally when compared to other factors in the decision making process. NEPA processes are central to highway and transit project investment analysis.
- PP-7 Advocate for stronger Corporate Average Fuel Economy (CAFE) Standards and other initiatives to promote clean fuel alternatives and encourage more stringent vehicle emission standards in recognition of the value of these initiatives to mitigate the impacts of climate change by reducing greenhouse gas emissions.
- PP-8 Support and advocate for continued implementation and funding on the state and federal levels for the Comprehensive Everglades Restoration Plan (CERP) in recognition of the important role of CERP in climate adaptation planning and local water resource management related to regional water storage and aquifer recharge, important under variable climate conditions and sea level rise.
- PP-9 Advocate to interests in Tallahassee for the preservation of the authority and resource capacity of the Water Management Districts in support of their continued participation in integrated water resource planning, particularly in southeast Florida where climate change and sea level rise pose additional challenges to the complex issues of alternative water supply development, Everglades restoration, salt water abatement, and drainage and flood control operations.
- PP-10 Encourage federal support for research and investigations of potential energy efficiencies in pumping and water treatment processes necessary for meeting energy reduction goals concurrent with a growing reliance on pumps and advanced treatment technologies for drainage and flood control, water production and wastewater operations.
- PP-11 Urge Congress to provide recognition of an “Adaptation Action Area” designation in federal law for the purpose of prioritizing funding for infrastructure needs and adaptation planning, with special attention to modifications in law that enhance funding opportunities through USACE and EPA appropriations processes.

Comment [sa15]: Not sure why we are specifically looking at USACE and EPA to exclusion of others such as DOT, HUD, etc – perhaps strike this last clause?

PP-12 Urge Congress to pass legislation that would create a permanent funding source to finance infrastructure projects to adapt to the impacts of climate change with emphasis on investments in areas such as water management, water supply, transportation and other projects that serve to reduce risks to urban infrastructure from extreme weather events and rising sea levels.

PP-13 Urge Congress to pass legislation that removes federal barriers posed by the Federal Housing Finance Agency to Property Assessed Clean Energy (PACE) residential initiatives that are intended to assist property owners to finance energy efficiency and renewable energy improvements.

-- Section 12 --

VII. Conclusions

This Regional Climate Action Plan provides the initial framework for an ongoing regional commitment to building resilience and sustainability as cornerstones of Southeast Florida's regional economic, social and ecological system. The five-year scope of this document is indicative of the fact that this is the beginning rather than the end of the Regional Compact process. The Compact Counties recognize that a given document is less important than the ongoing collaborative process of assessing progress over time, developing new policies and collaborations among the public, private and nonprofit sectors to adjust accordingly and incorporating new knowledge provided by ongoing scientific endeavors. While much can be learned about sustainability and resilience from past experience, new technologies, changes in the regional economy and changes in the historical climatic conditions within Southeast Florida require active learning over the decades to come. The Southeast Florida Regional Climate Compact has developed the institutional capacity to enable the collaborative learning required to meet these challenges over time.

Next Steps

The release of this Regional Climate Action Plan is the first of several subsequent steps to follow in the Regional Compact process. The following provides an overview of these subsequent next steps:

- Upon completion of the final Regional Climate Action Plan, the Compact Staff Steering Committee will transmit the final plan to the four Boards of County Commissioners for the acceptance and/or approval of the final recommendations.
- The Compact Counties will continue development of a set of progress indicators for use in monitoring and evaluating the impact of implemented recommendations in building resilience and sustainability in Southeast Florida.
- The Compact Counties will continue to collaborate with the Southeast Florida Regional Sustainable Communities Partnership funded by the US Department of Housing & Urban Affairs in addressing a wide range of sustainability and livability

considerations for Southeast Florida. The Compact Counties will continue to collaborate with the Southeast Florida Regional Partnership in addressing a wide range of sustainability and livability considerations for the region, including through development and implementation of the 750 Regional Vision and Blueprint for Economic Prosperity.

- Annually, the Compact Policy Coordination Team will continue the Compact energy and climate policy coordination process for state and federal legislation and will continue to monitor legislative developments in both levels of government.
- In early 2013, the Sea Level Rise Projections Technical Advisory Committee will reconvene following the December 31, 2012 publication deadline for peer-reviewed scientific literature to be used in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change due in 2014. Members of the technical advisory committee have advised that they anticipate many new publications in 2012 that will have significant bearing on mid to longer-term rates of sea level rise as an issue of concern for Southeast Florida. At that time, the technical committee will provide regionally consistent sea level rise projections for use in the Compact process through 2100 while adjusting guidance provided for 2030 and 2060 as warranted by the science.

The Significance of the Southeast Florida Regional Climate Change Compact

While providing direct benefits to the region, the Compact has provided a national model for state and federal agency engagement with local government around the specific issues of place. As the Compact is led by local government and further, as the Compact represents a significant aggregation of effort by four counties containing over 100 municipalities, it has become a highly efficient mechanism for state and federal agency engagement in the local process. Since its adoption in early 2010, the Compact has received extensive technical support from NOAA, the United States Geological Survey, the Army Corps of Engineers, EPA Region IV as well as the Florida Department of Transportation, the Florida Department of Economic Opportunity and the South Florida Water Management District.

The regional scale of the Compact has enabled participants to develop resilience strategies that effectively integrate human and natural systems. The Regional Action Plan has effectively connected resilience efforts within the urban core of Southeast Florida with broader ecosystem scale efforts including comprehensive Everglades restoration, protection of the Southeast Florida coral reef tract, and regionally important threatened and endangered species and habitats. The ecosystem services provided to the human settlements of the region are evident in the nature of projected vulnerabilities such as salt water intrusion into local drinking water supplies and the increased exposure to storm surge impacts associated with the loss of natural barriers. And the strategies developed to enhance environmental and habitat quality fully recognize the benefits these strategies will have for the ongoing livability of the region.

The Compact has enjoyed stable, bi-partisan political support since its initiation in 2009 despite the swings in the political salience of global climate change observed over this time in state and federal political dynamics. This stability has remained despite the departure of early champions of the Regional Compact from County Commission seats and a change of administration within one of the four Compact Counties. The scope and extent of regional engagement made possible by the Regional Compact has served to foster on-going bi-partisan support as the Compact continues to enjoy strong political leadership from each of the Compact Counties.

As an ongoing collaboration, the Compact provides a formal framework for policy development, implementation and evaluation that is so critical to enable learning over time. Implementation of this Regional Climate Action Plan will require the active participation of many actors, not least of which are the many municipalities within the four county region who have primacy in many cases for the decisions that will determine the shape of Southeast Florida in the years to come. The Regional Compact process has benefited greatly from the active participation of municipal representatives who've contributed much perspective and many insights thus far. As implementation progresses, this ongoing collaboration will be all the more critical for success.

This first Regional Climate Action Plan recommends several first steps toward reducing emissions and building resilience to climatic impacts across Southeast Florida, but it isn't the final outcome of the Compact. Compact participants have the opportunity to learn from early implementation: what works and what doesn't, what are the implications of new science, and what are the implications of changes in state and federal policy. Over the next few months, the Compact Counties will continue working with the Coastal Services Center at NOAA to develop a set of performance indicators for use in monitoring and evaluating progress made in implementing this first Regional Climate Action Plan. By implementing an ongoing set of performance metrics for this Regional Plan and by remaining engaged with leading practitioners of science and public policy, the Compact will be well positioned to capitalize on success, learn from challenges, and produce subsequent future iterations of this Regional Climate Action Plan as a means to securing a more prosperous and secure Southeast Florida.