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## **BACKGROUND**

In October 2018, county and local government elected officials from throughout the Tampa Bay Region voted to sign a memorandum of agreement creating the Tampa Bay Regional Resiliency Coalition. The MOU calls for the creation of a Regional Action Plan with strategies for coordinated regional preparation for and adaptation to a rapidly changing global environment. The MOU also calls for the plan to identify funding strategies at the local, state and federal levels for mitigation and adaptation actions to deal with those impacts.

## **CONTEXT FOR READING THE OBJECTIVES AND ACTIONS**

The Regional Resiliency Action Plan is intended to serve as a guiding framework and provided a menu of best practices, which will be implemented locally and together as a region. TBRPC staff reviewed resiliency plans, recommendations and frameworks used around the country and state to identify promising practices that would work in our region. The TBRPC staff also received recommendations on best practices being implemented in region – so the plan builds on the priorities and work of member governments. The plan defines regional collaboration and actions that will enhance consistency in implementation across jurisdictions.

*The actions reflect a compilation of best practices, are voluntary and should be viewed by local governments as recommendations.*

Recognizing that Coalition members have different levels of resources and are at different stages in resilience planning, the plan is designed to support local governments from small to large. It includes a range of actions which will enable local governments to implement “low hanging fruit” and new innovative approaches.

## **LOCAL GOVERNMENT AND STAKEHOLDER INPUT ON THE DRAFT PLAN**

Stakeholder feedback is essential to ensure the proposed actions match local and regional priorities. The ownership of the plan belongs to the member governments of the Resiliency Coalition. As such the top priority is ensuring that the plan aligns with the priorities of member governments and is supported by the Coalition Partners.

The TBRPC asks that member government staff conduct meetings for interdepartmental teams for review, forward to staff who have not been able to participate in the workshops and share the plan with relevant advisory boards.

Coalition Partners, community stakeholders, and subject matter experts are invited to provide comments. Your input will help to ensure the plan aligns with leading practices, is consistent with leading academic research, federal and state agency goals, and supports the priorities of organizations serving the communities in the region.



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## HOW TO PROVIDE FEEDBACK

Click on the links to download the [Regional Resiliency Action Plan Draft](#) in Word or PDF format. Please use the [comment](#) feature in Word or [add comments](#) in Adobe PDF.

When reviewing the goals, objectives and actions, **please include the number**. Feel free to provide specific copy edits to help enhance public understanding. You can also indicate actions that should be consolidated or removed. Or you may also propose new actions.

If necessary, the TBRPC will also hold a meeting with Coalition Members and Partners to review and discuss key topics. We also ask that you provide written comments to support the editing process.

## DEADLINE FOR INPUT

Please submit your comments and feedback to [cara@tbrpc.org](mailto:cara@tbrpc.org) by **May 28, 2021**. The TBRPC will combine comments in June and post the updated draft in July.

## HAVE QUESTIONS?

Contact Cara Woods Serra ([cara@tbrpc.org](mailto:cara@tbrpc.org)) or CJ Reynolds ([cjreynolds@tbrpc.org](mailto:cjreynolds@tbrpc.org)).

# CHAPTER 4

## PLACE

*The region becomes more resilient by preserving and protecting natural resources, while growing equitably and sustainably.*

The region becomes more resilient by preserving and protecting natural resources, while growing equitably and sustainably.

<b>Goal 4</b>	<b>New and existing housing becomes more resilient and energy efficient.</b>
<b>Goal 5</b>	<b>The region supports a diverse array of multimodal-supporting land uses developed with resilient and energy efficient construction.</b>
<b>Goal 6</b>	<b>Resilient adaptation protects, preserves and restores thriving habitats and abundant wildlife.</b>
<b>Goal 7</b>	<b>Public infrastructure, services and assets becomes more resilient through innovative best practices.</b>
<b>Goal 8</b>	<b>The Region has a connected multimodal transportation network that is resilient to extreme weather, reduces local emissions and enhances equitable mobility and public safety.</b>
<b>Goal 9</b>	<b>Food systems become more resilient and access to healthy foods is improved.</b>

## Goal 4

### **New and existing housing becomes more resilient and energy efficient.**

Many homes throughout the region, especially those in low and moderate-income neighborhoods, are at risk from extreme weather, flooding, storm surge and future sea level rise. The region also faces a severe shortage of affordable and attainable housing, and many options such as mobile homes and older structures are not resilient.

Some local governments are beginning to conduct community vulnerability assessments. The region is in the process of developing a common framework, consistent metrics, standardized data and technical resources to fully assess risks to housing. Resiliency, neighborhood revitalization and affordable housing priorities should be integrated and addressed together.

# HOW DO WE GET THERE?

<b>OBJECTIVE 4.1</b>	Updated regulations, plans and policies increase the resilience of new affordable and attainable housing.
<b>OBJECTIVE 4.2</b>	Adopt resilient and green building best practices to guide new housing construction and rehabilitation.
<b>OBJECTIVE 4.3</b>	Programs and funding for housing mitigation and rehabilitation are increased.
<b>OBJECTIVE 4.4</b>	Reduce risks to mobile homes and mobile home parks with targeted retrofits for storm preparedness, and develop long-term plans to support resilient and equitable replacement.

## Objective 4.1

Updated regulations, plans and policies increase the resilience of new affordable and attainable housing.

Actions	
Establish housing advisory teams to recommend resilience and sustainability goals, policies, strategies, and encourage cross-departmental and multi-sectoral coordination to support retrofits and new construction that prioritize <a href="#">ALICE</a> populations.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Housing Authorities, Nonprofit Housing Developers, Private Housing Developers, United Way</p> <p><b>Comprehensive Plan Themes:</b> Housing, Future Land Use</p> <p><b>Topic Tags:</b> Housing, Land Use</p>

<p>Use <a href="#">REACH</a> tools and resources to assess and update existing planning mechanisms and supporting documents and identify lower risk areas for building.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> TBRPC, FHC  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use</p>
<p>Develop programs, policies and flexible density options to incentivize development of private affordable housing and publicly assisted housing in areas with lower risk to current and future climate impacts.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Housing Authorities, Nonprofit Housing Developers, Private Housing Developers  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use</p>
<p>Require more stringent building standards (parallel to HUD) for new private affordable housing and publicly assisted housing in areas at high risk to current and future climate impacts.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Housing Authorities, Nonprofit Housing Developers, Private Housing Developers  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use</p>
<p>Amend plans and zoning to encourage accessory dwelling units, “missing middle” housing, and mixed-use buildings in areas with less risk to the impacts of current and future climate conditions.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Housing Authorities, Nonprofit Housing Developers, Private Housing Developers  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use</p>
<p>Adopt policies to permit the use of appropriate properties for disaster recovery operations including temporary housing such as pre-approved overlay zones.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Housing Authorities, Nonprofit Housing Developers, Private Housing Developers  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use</p>
<p>Adopt best practices for ensuring sustainable utility service capacity is part of the affordable housing planning and permitting process.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use</p>

## Objective 4.2

Adopt resilient and green building best practices to guide new housing construction.

<b>Actions</b>	
<p>The Region will promote the use of the Florida Green Building Coalition's Florida Green Home Designation Standard and/or <a href="#">HUD energy efficiency</a> requirements for housing retrofits and new multi-family construction.</p>	<p><b>Lead Organization:</b> TBRPC and Local governments  <b>Partners:</b> Housing Authorities, Nonprofit Housing Developers, Private Housing Developers  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use, Equity</p>
<p>Update local plans, programs and create incentives for developers to support new multi-family buildings and sites that meet Florida Green Building Coalition and/or LEED standards, and higher flood mitigation standards.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Housing Authorities, Nonprofit Housing Developers, Private Housing Developers  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use, Sustainability  <b>Topic Tags:</b> Housing, Land Use, Sustainability</p>
<p>Local governments will strengthen their comprehensive plan's housing element to include standards for Low Impact Development, resilience, and equity strategies.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Housing Authorities, Nonprofit Housing Developers, Private Housing Developers  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use, Equity</p>
<p>The TBRPC, in partnership with ULI and Coalition members and Partners, will produce materials for developers on the financial benefits of green and healthy building design for residential projects.</p>	<p><b>Lead Organization:</b> TBRPC, ULI  <b>Partners:</b> Housing Authorities, Nonprofit Housing Local governments, Private Housing Developers  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use, Equity</p>
<p>Create a Resilient Housing Design and Construction working group which includes building associations, private sector, non-profit organizations to define incentives and recommendations for standards manual for local governments and the building community.</p>	<p><b>Lead Organization:</b> ULI, TBRPC  <b>Partners:</b> Local governments, Housing Authorities, Nonprofit Housing Developers, Private Housing Developers  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use  <b>Topic Tags:</b> Housing, Land Use</p>

Align affordable housing with public transportation.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Housing Authorities, Nonprofit Housing Developers, Private Housing Developers, United Way</p> <p><b>Comprehensive Plan Themes:</b> Housing, Future Land Use</p> <p><b>Topic Tags:</b> Housing, Land Use</p>
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### Objective 4.3

Programs and funding for housing mitigation and rehabilitation are increased.

Actions	
Based on housing vulnerability assessments, identify property owners interested in rehabilitation, or selling their homes for voluntary rehabilitation or buyout programs funded by FEMA grant funding.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> FEMA (grant funding)</p> <p><b>Comprehensive Plan Themes:</b> Housing, Future Land Use, Coastal Management</p> <p><b>Topic Tags:</b> Housing, Land Use, LMS</p>
Identify and allocate reoccurring funding to support housing retrofits and achieve mitigation goals.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> TBRPC, FHC, Nonprofit partners</p> <p><b>Comprehensive Plan Themes:</b> Housing, Future Land Use, Coastal Management</p> <p><b>Topic Tags:</b> Housing, Land Use, LMS</p>
Support robust housing retrofit and rehabilitation programs for LMI communities, including rental properties and supported living housing.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> TBRPC, FHC</p> <p><b>Comprehensive Plan Themes:</b> Housing, Future Land Use</p> <p><b>Topic Tags:</b> Housing, Land Use</p>

<p>Coordinate with Community organizations and workforce development programs (see goal in Chapter 3) to increase community involvement in mitigation jobs.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> TBRPC, United Way,  <b>Comprehensive Plan Themes:</b> Housing,  <b>Topic Tags:</b> Housing, Workforce Development</p>
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## Objective 4.4

Reduce risks to mobile homes and mobile home parks with targeted retrofits for storm preparedness, and develop long-term plans to support resilient and equitable replacement.

<p>Quantify flood risks for mobile homes and mobile home parks and develop targeted plans.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Nonprofits, HOAs, Neighborhood Associations  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, LMS</p>
<p>Conduct outreach and engagement with residents and mobile home unit/ park owners to review flood risks, collect information on needs, constraints and programs to support preparedness.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Nonprofits, HOAs, Neighborhood Associations  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, LMS</p>
<p>Define potential mitigation and redevelopment strategies to transform mobile and modular home parks into resilient communities, while preventing displacement.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Nonprofits, HOAs, Neighborhood Associations  <b>Comprehensive Plan Themes:</b> Housing, Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, LMS</p>

# Goal 5

## The region supports a diverse array of multimodal-supporting land uses developed with resilient and energy efficient construction.

In the Tampa Bay region recent weather events and impacts of climate change have taken a toll on some communities, and as such many municipalities are giving more attention to the role that climate plays in planning for the built environment. Using community vulnerability assessments, local governments can see how climate change may influence land-use patterns and require more stringent building and site development practices.

Growing resiliency will mean considering how climate vulnerability and resilience are related to both how we build and where we build. When building in higher risk areas, local governments will need to consider if their current building and site development standards will provide the appropriate level of hazard mitigation to current and future climate impacts.

The Regional Resiliency Action Plan will aim to take advantage of the opportunity to collaborate regionally to address these issues by investigating sustainable land use practices that can be implemented throughout the region. Local governments should align their land use and building design policies with the priorities they have set forth in their local resiliency plan.

# HOW DO WE GET THERE?

<b>OBJECTIVE 5.1</b>	Update building standards to account for current and future climate impacts.
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<b>OBJECTIVE 5.2</b>	Update site development standards to incorporate green and sustainable practices.
<b>OBJECTIVE 5.3</b>	Update land use policies and regulations to account for current and future climate impacts and discourage displacement.

### Objective 5.1

Update building standards to account for current and future climate impacts.

<b>Actions</b>	
Use healthy building design, Florida Green Building Coalition principals, and/or LEED accreditation benchmarks for new public facilities, within the Land Development Code and Energy Code.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, private developers</p> <p><b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management</p> <p><b>Topic Tags:</b> Housing, Land Use, Public Health, Building Standards</p>
Encourage alternatives to single occupancy motor vehicle travel through parking reduction techniques, transit-oriented development incentives, and pedestrian and bike-friendly development and redevelopment policies.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, private developers</p> <p><b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management</p> <p><b>Topic Tags:</b> Housing, Land Use, Site Development, Sustainability, Building Design</p>
Local governments update existing regulations and policies to require development and redevelopment in high hazard areas to build to more stringent building standards including but	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, private developers</p>

not limited to higher freeboard requirements, and/or higher wind mitigation standards.	<p><b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management</p> <p><b>Topic Tags:</b> Housing, Land Use, Site Development, Sustainability</p>
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## Objective 5.2

Update site development standards to incorporate resilience and sustainable practices.

<b>Actions</b>	
Local governments will implement regulations within Land Development Regulations buffer structures from the impact of flood hazards (sea level rise, storm surge, flooding) by requiring setbacks from identified flood hazards areas.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, private developers</p> <p><b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management</p> <p><b>Topic Tags:</b> Housing, Land Use, Public Health, Building Standards</p>
Local governments will implement regulations within Land Development Regulations buffer structures from the impact of wind hazards by requiring construction to exceed the requirements of the identified wind zone.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, private developers</p> <p><b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management</p> <p><b>Topic Tags:</b> Housing, Land Use, Public Health, Building Standards</p>
Incentivize parking and pavement reduction strategies for new development and redevelopment as a method of reducing heat island impacts.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, private developers</p> <p><b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management</p> <p><b>Topic Tags:</b> Housing, Land Use, Public Health, Site Development</p>
Encourage alternatives to single occupancy motor vehicle travel through parking reduction techniques, transit-oriented development incentives, and pedestrian and bike-friendly development and redevelopment policies.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, private developers</p> <p><b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management</p> <p><b>Topic Tags:</b> Housing, Land Use, Site Development, Sustainability, Building Design</p>

<p>Local governments update existing regulations and policies to require development and redevelopment in high hazard areas to build to more stringent site development standards including but not limited to Planned Unit Development (PUD).</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers  <b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, Site Development, Sustainability</p>
<p>Investigate the interactions between mass grading as a driver of climate change and identify best practices for mitigating the impacts of this practice.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers  <b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, Site Development, Sustainability, Building Design</p>

### Objective 5.3

Update land use policies and regulations to account for current and future climate impacts and discourage displacement.

Actions	
<p>Create a Regional Resilient Land Use and Design working group which includes diverse stakeholders including local government staff, citizens, architects, engineers, developers and others to define best practices and recommendations for community health, resilience and quality of life.</p>	<p><b>Lead Organization:</b> TBRPC  <b>Partners:</b> Local governments, academic partners, private sector partners  <b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, Public Health, Building Standards</p>
<p>Consider adopting <a href="#">Adaptation Action Areas</a> to identify areas where more stringent development standards will be applied.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers  <b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, Public Health, Building Standards</p>
<p>Consider best practices for updating coastal setbacks for development and redevelopment that mitigate the potential effects of coastal</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers</p>

<p>erosion including the possibility of requirements that are more stringent than the Florida Building Code.</p>	<p><b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, Public Health, Site Development</p>
<p>Develop incentives for developers to build outside vulnerable areas (density bonuses, expedited review, etc.).</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers  <b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, Site Development, Sustainability</p>
<p>Prioritize recreation/open space land use amendments as a flood-risk reduction technique with an emphasis on providing amenities for neighborhood residents (play areas, walking paths, etc.)</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers  <b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management, Recreation/Open Space  <b>Topic Tags:</b> Housing, Land Use, Site Development, Sustainability</p>
<p>Integrate performance metrics to ensure the objectives of the jurisdiction's resiliency plan are integrated into the Comprehensive Plan.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management  <b>Topic Tags:</b> Land Use, Site Development, Sustainability, Building Design</p>
<p>CRA plans, Downtown Development Plans, Organizational and/or Department Strategic plans, Small Area Plans. Economic Development Plans, Land Development Regulations (LDR), Post-disaster redevelopment plan (PDRP) are updated to align with the objectives of the jurisdiction's resiliency plan.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers  <b>Comprehensive Plan Themes:</b> Future Land Use, Coastal Management  <b>Topic Tags:</b> Housing, Land Use, Site Development, Sustainability, Building Design</p>

## Goal 6

### **Resilient adaptation protects, preserves and restores thriving habitats and abundant wildlife.**

Many of the region's native habitats and wildlife will be transformed by the changing climate. The Tampa Bay Estuary Program (TBEP) evaluated and published potential impacts and management implications of climate change on critical coastal habitats.<sup>1</sup> Rising temperatures are driving tropicalization of mangroves. Because of this mangrove forests will dominate the overall proportions of future coastal habitats, whereas proportions of salt marshes, salt barrens and coastal freshwater wetlands will decline. Ocean acidification associated with climate change also may affect the future health of bay scallops, mollusks and crustaceans by impairing their ability to form hard, calcified shells.

Coastal habitats are among the first to experience these impacts, but also have an important role in mitigating their effects. Tidal wetlands and seagrass habitats take up carbon dioxide and store so-called “blue carbon” in plant biomass and associated wet soils. Blue carbon ecosystems — seagrass beds, mangroves and salt marshes — store carbon at roughly 25 times the annual rate of temperate and tropical forests. This is due to high primary productivity and efficiency in trapping sediments and associated carbon transported by runoff and tidal flow.<sup>2</sup> In addition, seagrass beds may have a localized mitigating effect on ocean acidification. Enhancements to and restoration of the region's natural systems have been shown to diminish the impacts of climate change. Healthy wetlands “fix” or capture carbon dioxide and mitigate the effects of climate change. Freshwater wetlands also absorb nitrogen and help filter stormwater runoff.<sup>3</sup>

For the region to achieve biologically diverse habitats and abundant wildlife, local governments and regional partners must work together to increase the ability of habitats to adapt, improve water quality, protect biodiversity, and protect and restore coastal natural systems.

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<sup>1</sup> Sherwood, E.T. & Greening, H.S. Potential Impacts and Management Implications of Climate Change on Tampa Bay Estuary Critical Coastal Habitats. *Environmental Management* (2014) 53: 401.

<sup>2</sup> McLeod, E., Chmura, G.L., Bouillon, S., Slam, R., Bjork, M., Duarte, C.M., Lovelock, C.E., Schlesinger, W.H., and Silliman, B.R. 2011. A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO<sub>2</sub>. *Front. Ecol. Environ.* 9(10): 552-560.

<sup>3</sup> [https://adobeindd.com/view/publications/cf7b3c48-d2b2-4713-921c-c2a0d4466632/2gv9/publication-web-resources/pdf/tbep\\_ccmp\\_2017.pdf](https://adobeindd.com/view/publications/cf7b3c48-d2b2-4713-921c-c2a0d4466632/2gv9/publication-web-resources/pdf/tbep_ccmp_2017.pdf)

# HOW DO WE GET THERE?

<b>OBJECTIVE 6.1</b>	Increase the adaptability of bay habitats and ecosystems to a changing climate.
<b>OBJECTIVE 6.2</b>	Improve or maintain water quality resulting in fishable, swimmable and drinkable water.
<b>OBJECTIVE 6.3</b>	Preserve and manage the diversity and abundance of Tampa Bay's fish and wildlife.
<b>OBJECTIVE 6.4</b>	Promote the protection and restoration of coastal natural systems and the creation of living shorelines at the regional scale.

## Objective 6.1

Increase the adaptability of bay habitats and ecosystems to a changing climate.

Actions	
Local governments will incorporate the actions of the Comprehensive Conservation and Management Plan for Tampa Bay (CCMP) into their Comprehensive Plan using the CCMP <a href="#">Model Language Guidelines</a> .	<p><b>Lead Organization:</b> Local governments, TBRPC</p> <p><b>Partners:</b> TBEP, SWFWMD, USFWS, local governments</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>
Assess the vulnerability of critical coastal habitats to sea level rise and support adaptation strategies (i.e. rolling easements, living shorelines) that promote the long-term resiliency and diversity of these habitats.	<p><b>Lead Organization:</b> TBEP</p> <p><b>Partners:</b> SWFWMD, USFWS, local governments</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>
Continue to implement Critical Coastal Habitat Assessment monitoring at permanent transects to track long-term changes from climate change and other stressors to coastal habitats and species.	<p><b>Lead Organization:</b> TBEP</p> <p><b>Partners:</b> local government and agency partners</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>
Implement the <a href="#">Tampa Bay Habitat Master Plan</a> in coordination with Resilience Coalition Members.	<p><b>Lead Organization:</b> TBEP</p> <p><b>Partners:</b> FWC, NOAA, Local cities and counties, SWFWMD, The Nature Conservancy, Tampa Bay Conservancy, private entities</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>
Continue to identify carbon sequestration benefits and economic incentives to preserve coastal habitats through voluntary carbon markets or other mechanisms.	<p><b>Lead Organization:</b> Public and private sector landowners (SWFWMD, local governments, etc.)</p>

	<p><b>Partners:</b> TBEP, Restore America's Estuaries, academic institutions, The Nature Conservancy, FDEP</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>
Assist land management agencies in developing site management plans that maximize carbon sequestration benefits of appropriate coastal habitats held in preservation or conservation.	<p><b>Lead Organization:</b> Restore America's Estuaries</p> <p><b>Partners:</b> TBEP, academic institutions, SWFMWD, local governments, FDEP</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>
Support and assist with purchase, protection and/or restoration of priority sites to serve as climate change refuges and upslope buffers for critically important habitats and species.	<p><b>Partners:</b> SWFWMD, USFWS, FDEP, other state, federal and local government land</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>
Support adoption of land management strategies such as <a href="#">rolling easements</a> , coastal construction setbacks and living shorelines.	<p><b>Partners:</b> SWFWMD, USFWS, FDEP, other state, federal and local government land</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>
Develop metrics to measure citizen outreach (conducted in Goal 3) effectiveness on topics of potential impacts of climate change on coastal habitats, for example citizen engagement in habitat restoration volunteer projects and behavior changes to adopt recommended mitigation actions.	<p><b>Partners:</b> SWFWMD, USFWS, FDEP, other state, federal and local government land acquisition programs and land trusts</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>
Maintain and enhance stopover areas for migratory birds the Global flyway. Enhance birding, ecotourism, educational opportunities	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> SWFWMD, USFWS, FDEP, other state, federal and local government land acquisition programs and land trusts</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> Habitats, CCMP</p>

<p>Implement the green infrastructure/ nature-based solutions under Goal 7.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> SWFWMD, USFWS, FDEP, other state, federal and local government land acquisition programs and land trusts  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> Habitats, CCMP</p>
<p>Identify funding sources for local governments, land holders and residents for land acquisition and conservation including public and private land/partnerships.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> SWFWMD, USFWS, FDEP, other state, federal and local government land acquisition programs and land trusts  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> Habitats, CCMP</p>

## Objective 6.2

Improve or maintain quality water from various sources resulting in fishable, swimmable and drinkable water.

<b>Actions</b>	
<p>Local governments consider development impact fees for stormwater improvements.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Water Quality</p>
<p>Local governments implement low maintenance and/or transitional zone requirements between maintained upland and stormwater areas.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Water Quality</p>
<p>Incorporate outreach or education as a tool to promote fishable, swimmable areas when implementing the community outreach and capacity building prescribed in Goal 3.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private developers</p>

	<p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Water Quality</p>
Implement the Tampa Bay nutrient management strategy.	<p><b>Lead Organization:</b> TBEP (lead)</p> <p><b>Partners:</b> with water quality data from EPCHC, local government and agency partners</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Water Quality</p>
Support federal and regional initiatives to reduce vehicle emissions, including increased fuel efficiency, mass transit, carpooling, bicycle commuting, telecommuting, and expansion of alternative/electric vehicle fueling stations. Incorporate associated reductions into the <a href="#">Nitrogen Management Consortium's Action Plan Database</a> .	<p><b>Lead Organization:</b> TBRPC (leads)</p> <p><b>Partners:</b> City/county transportation planning agencies, local commuter agencies, TBARTA, TBEP for incorporation of nitrogen reductions in baywide database</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Water Quality, Sustainability</p>
Support existing air quality monitoring programs conducted by local governments. Expand the number of long-term air quality monitoring stations for atmospheric nitrogen deposition to include at least one in the Tampa Bay watershed.	<p><b>Responsible Agencies:</b> EPA, FDEP, EPCHC, local governments</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Water Quality, Sustainability</p>
Support research to better quantify the sources, pathways and contribution of atmospheric deposition to stormwater runoff, especially in urban areas with extensive impervious surfaces.	<p><b>Responsible Agencies:</b> TBEP, local governments, USF</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Water Quality</p>
Improve outreach to the public about the link between air and water quality and foster behavior changes that reduce air pollution.	<p><b>Responsible Agencies:</b> TBEP, commuter and public health organizations, such as bay Area Commuter Services, TBARTA, local MPOs and the American Lung Association.</p>

	<p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Water Quality</p>
Identify best practices to reduce the occurrence of sanitary sewer overflows to the bay.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> NA</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Water Quality</p>

## Objective 6.3

Preserve and restore the diversity and abundance of Tampa Bay’s fish and wildlife.

<b>Actions</b>	
Identify, assess and expand monitoring programs for key species as needed to adapt to new threats.	<p><b>Partners:</b> FWC, USFWS, Audubon Florida (leads), FDEP, EPCHC, TBEP, Tampa Bay Watch</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Biodiversity</p>
Identify funding sources to explore and support programs and projects that protect and expand habitats and buffer zones for waterbirds and beach-nesting shore birds	<p><b>Partners:</b> Tampa Bay Dredging Advisory Group, Tampa Bay Migratory Bird Protection Committee, Agency on Bay Management Habitat Restoration Subcommittee, Port Tampa Bay, USACE, Audubon Florida, USFWS, FWC, Eckerd College, Audubon Florida and local Audubon chapters</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Biodiversity</p>

<p>Identify funding sources to explore and support programs and projects that protect fisheries, including no fishing/preservation zones.</p>	<p><b>Partners:</b> TBEP, Agency on Bay Management, Local governments  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Biodiversity</p>
<p>Implement the Bay Habitat Master Plan and relevant CCMP actions to achieve targets and goals for critical fish and wildlife habitats, including Actions <a href="#">BH-1</a>, <a href="#">BH2</a>, <a href="#">BH-9</a> and <a href="#">BH-10</a>.</p>	<p><b>Lead Organization:</b> TBEP  <b>Partners:</b> FWC, NOAA, Local cities and counties, SWFWMD, The Nature Conservancy, Tampa Bay Conservancy, private entities  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Biodiversity</p>
<p>Local governments will map critical habitats and limit development near critical habitats.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> TBRPC, neighboring jurisdictions, shorelines workgroup  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Biodiversity</p>
<p>The TBRPC will partner with the Tampa Bay CRS user group to identify opportunities for member governments to get CRS credit for Floodplain Species Assessments (512c).</p>	<p><b>Lead Organization:</b> TBRPC  <b>Partners:</b> CRS User group, neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Biodiversity</p>

## Objective 6.4

Support the protection and restoration of coastal natural systems and the creation of living shorelines at the regional scale.

Actions	
<p>Conserve existing natural coastal and riverine areas through implementation of policies,</p>	<p><b>Lead Organization:</b> Local governments</p>

<p>criteria, standards, methodologies and procedures.</p>	<p><b>Partners:</b> Neighboring jurisdictions, private developers  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Water Quality</p>
<p>Utilize the <a href="#">Living Shoreline Suitability Model</a> and other tools to identify locations within the jurisdiction where living or enhanced shorelines could be used in place of, or in combination with, seawalls.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> TBRPC, neighboring jurisdictions, shorelines workgroup  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Biodiversity</p>
<p>The TBRPC and Coalition Partners will develop policy guidance and recommendations to support regionally consistent shoreline protection practices, and share recommendations with elected officials.</p>	<p><b>Lead Organization:</b> TBRPC  <b>Partners:</b> TBRPC, neighboring jurisdictions, shorelines workgroup  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Biodiversity</p>
<p>Encourage interagency and public process efforts to create shoreline plans for coastal areas including consistent heights.</p>	<p><b>Lead Organization:</b> TBRPC and Local governments  <b>Partners:</b> TBRPC, neighboring jurisdictions, shorelines workgroup  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Biodiversity</p>
<p>Update plans, zoning and regulations to encourage private property owners to install living shorelines where feasible.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> TBRPC, neighboring jurisdictions, shorelines workgroup  <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination  <b>Topic Tags:</b> CCMP, Biodiversity</p>

## Goal 7

### **Public infrastructure, services and assets becomes more resilient through innovative best practices.**

Climate change risks should be considered when planning new wastewater infrastructure. For example, planners may consider locating new wastewater treatment plants away from future surge and flood-prone areas and consider increasing capacity to accommodate anticipated increases in inflow and infiltration during more intense storms. Community resilience planning is underway in several municipalities in the bay watershed.<sup>4</sup>

Local standards and guidelines can help member governments cope with future uncertainties by focusing particularly on the local context. By building the capacity to adapt into initial project design, establishing systems for monitoring impacts, and formalizing the processes for making modifications based on infrastructure performance, communities can improve their ability to adapt promptly and economically in the face of emerging but as yet uncertain future flood hazards.<sup>5</sup>

Looking forward, sustainable infrastructure practices such [Low Impact Development](#) and [Green Infrastructure](#) are viable solutions to some of the impacts of climate change, while also providing environmental and quality of life benefits.

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<sup>4</sup> [https://adobeindd.com/view/publications/cf7b3c48-d2b2-4713-921c-c2a0d4466632/2gv9/publication-web-resources/pdf/tbep\\_ccmp\\_2017.pdf](https://adobeindd.com/view/publications/cf7b3c48-d2b2-4713-921c-c2a0d4466632/2gv9/publication-web-resources/pdf/tbep_ccmp_2017.pdf)

<sup>5</sup> [https://planning-org-uploaded-media.s3.amazonaws.com/publication/download\\_pdf/PAS-Report-596-rev-2.pdf](https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/PAS-Report-596-rev-2.pdf)

# HOW DO WE GET THERE?

<b>OBJECTIVE 7.1</b>	Plan, build and manage infrastructure to maximize function and longevity under future climate conditions.
<b>OBJECTIVE 7.2</b>	Prioritize green infrastructure projects which mitigate hazards and provide environmental, social and economic benefits.
<b>OBJECTIVE 7.3</b>	Advance water management strategies, infrastructure improvements, and water conservation efforts to mitigate the potential adverse impacts of climate change on water supplies, water and wastewater infrastructure, and water management systems
<b>OBJECTIVE 7.4</b>	Plan and manage public services in the region for current and future climate impacts.
<b>OBJECTIVE 7.5</b>	Improve evacuations through technology and community outreach.
<b>OBJECTIVE 7.6</b>	Increase post-disaster power resilience for long-duration outages

## Objective 7.1

Plan, build and manage infrastructure to maximize function and longevity under future climate conditions.

<b>Actions</b>	
Local governments will update critical infrastructure policies based on community vulnerability assessments conducted in Goal 2. These updates should consider where to prioritize investment based on current and future climate hazards, health impacts and equity concerns.	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities  <b>Topic Tags:</b> LMS, Water Infrastructure</p>
Local government's comprehensive plan and/or post-disaster redevelopment plan (PDRP) identify post-disaster redevelopment policies for infrastructure including but not limited to relocation/burying of utilities, installation of additional utilities such as broadband, and/or hardening infrastructure after a disaster.	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities  <b>Topic Tags:</b> LMS, Water Infrastructure</p>
Encourage power companies to put utilities underground where feasible.	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities  <b>Topic Tags:</b> LMS, Water Infrastructure</p>
Prioritize investments in communities with failing or aging infrastructure that are also more vulnerable to flooding or extreme weather events.	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities  <b>Topic Tags:</b> LMS, Water Infrastructure</p>
Develop regional and local capacity through knowledge-sharing to conduct integrated cost-benefit analysis for adaptation and mitigation grants.	<p><b>Lead Organization:</b> TBRPC  <b>Partners:</b> Regional Partners FHA, EPA, Gulftree.org tools  <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities  <b>Topic Tags:</b> LMS, Water Infrastructure</p>

<p>Update stormwater master plan with updated project list based on cost-benefit analysis and addressing past inequities in services or repairs.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities  <b>Topic Tags:</b> LMS, Water Infrastructure</p>
<p>Identify a process or mechanism to determine what infrastructure/areas may not be upgraded or mitigated at a certain time or impact. Reference previous data/information developed on stormwater and cost/benefit analysis in this analysis to help create a legal justification of decisions</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities  <b>Topic Tags:</b> LMS, Water Infrastructure</p>
<p>Promote and advocate for the installation of cool roofs, cool pavement, and other cooling techniques, including planting more shade trees, where concrete and other hard surfaces trap and collect heat, creating “heat islands “and near bus stops.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities  <b>Topic Tags:</b> LMS, Water Infrastructure, Heat</p>
<p>Develop a comprehensive heat island mitigation strategy and implementation plan that addresses cool pavements and roofs, pavement reduction, and neighborhood greening while ensuring equitable distribution.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities, Transportation  <b>Topic Tags:</b> LMS, Infrastructure, Heat, Sustainability</p>
<p>Local government invites healthcare facility managers and public health officials to provide input when updating the Local Mitigation Strategy, Capital Improvement Plan and Capital Improvement Element of the comprehensive plan to ensure that critical healthcare infrastructure is protected.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Healthcare provider organizations, FDOH  <b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities, Transportation  <b>Topic Tags:</b> LMS, Public Health,</p>
<p>Community and business stakeholders are included in the need identification process prior to designing infrastructure projects to reduce impacts to extreme weather, green infrastructure, and water and sanitation infrastructure.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighborhood associations, HOAs, nonprofits  <b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities, Transportation  <b>Topic Tags:</b> LMS, Public Health, Equity, Emergency Management</p>

Local governments submit projects for current and future flood mitigation for FEMA BRIC funding.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities, Transportation</p> <p><b>Topic Tags:</b> LMS, Infrastructure, Emergency Management</p>
Local government has incorporated renewable energy development, production, and/or storage into the PDRP to promote post-disaster power resiliency.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities, Transportation</p> <p><b>Topic Tags:</b> LMS, Infrastructure, Sustainability</p>
Ensure that infrastructure projects are equitably dispersed to reduce risks in low-income neighborhoods and minority communities.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities, Transportation</p> <p><b>Topic Tags:</b> LMS, Infrastructure, Equity</p>

## Objective 7.2

Prioritize green infrastructure projects which mitigate hazards and provide environmental, social and economic benefits to local communities.

<b>Actions</b>	
Develop a list of high potential green infrastructure projects which provide community co-benefits.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> TBEP, FDEP, SWFWMD, local governments, private landowners</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p> <p><b>Topic Tags:</b> CCMP, Water Quality</p>
Develop and deliver information and tools needed to expand Green Infrastructure implementation within the watershed.	<p><b>Lead Organization:</b> TBRPC</p> <p><b>Partners:</b> TBEP, FDEP, SWFWMD, local governments, private landowners</p> <p><b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination</p>

	<b>Topic Tags:</b> CCMP, Water Quality
The TBRPC and TBEP host trainings on implementing green infrastructure best practices.	<b>Lead Organization:</b> TBRPC <b>Partners:</b> TBEP, FDEP, SWFWMD, local governments, private landowners <b>Comprehensive Plan Themes:</b> Conservation, Coastal Management, Intergovernmental Coordination <b>Topic Tags:</b> CCMP, Water Quality
Coordinate regionally to encourage State roadway projects planned in the Tampa Bay Region to align with the goals of the Regional Resiliency Action Plan (RRAP).	<b>Lead Organization:</b> MPOs, Local governments <b>Partners:</b> TBRPC <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities <b>Topic Tags:</b> LMS, Water Infrastructure
Local governments update their comprehensive plan and/or land development regulations to include policies or regulations that prioritize green infrastructure and assess nature-based adaptation strategies as a first step.	<b>Lead Organization:</b> Local governments <b>Partners:</b> Neighboring jurisdictions <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities <b>Topic Tags:</b> LMS, Water Infrastructure
Develop stormwater master plan projects that utilize an interconnected system of green infrastructure and open green space to reduce stormwater impacts.	<b>Lead Organization:</b> Local governments <b>Partners:</b> Neighboring jurisdictions <b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities <b>Topic Tags:</b> Water Infrastructure

## Objective 7.3

Advance water management strategies, infrastructure improvements, and water conservation efforts to mitigate the potential adverse impacts of climate change on water supplies, water and wastewater infrastructure, and water management systems.

<b>Actions</b>	
Assess the benefits and limitations of implementing One Water as a driving principle	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities</p> <p><b>Topic Tags:</b> Water Infrastructure</p>
The TBRPC advocates for Statewide regulatory standards to promote potable water reuse.	<p><b>Lead Organization:</b> TBRPC</p> <p><b>Partners:</b> Local governments</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities</p> <p><b>Topic Tags:</b> Water Infrastructure</p>
Identify key protection areas to ensure sustainable water supply for consumption.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities</p> <p><b>Topic Tags:</b> Water Infrastructure</p>
The TBRPC, with input from local governments, will work with regional partners to advocate for policies to reduce ground water usage as sea level rise paired with increased ground water usage causes saltwater intrusion, rendering wells unusable.	<p><b>Lead Organization:</b> TBRPC</p> <p><b>Partners:</b> SWFWMD, local governments</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities</p> <p><b>Topic Tags:</b> Water Infrastructure</p>
Incorporate the pavement reduction strategies in Goal 5 for public projects.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities</p> <p><b>Topic Tags:</b> Water Infrastructure</p>
Develop a set of regional best practices and design standards for stormwater management that consider more frequent and severe flooding, high-wind events, and saltwater inundation, and extreme heat.	<p><b>Lead Organization:</b> TBRPC</p> <p><b>Partners:</b> Local governments</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities</p> <p><b>Topic Tags:</b> Water Infrastructure</p>
Utilize the messaging tools provided in the <a href="#">Be Floridian</a> campaign to educate communities about best management practices (BMP's) for reducing nutrient loads flowing into surface waters via residential landscaping.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Stormwater, Public Facilities</p> <p><b>Topic Tags:</b> Water Infrastructure</p>
Local governments will plan for future water supply by integrating potential future climate conditions and sea level rise scenarios.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Tampa Bay Water, Florida Water and Climate Alliance, Neighboring jurisdictions</p>

**Comprehensive Plan Themes:**  
Stormwater, Public Facilities  
**Topic Tags:** Water Infrastructure

## Objective 7.4

Plan and manage public services in the region for current and future climate impacts.

<b>Actions</b>	
Local government adopts a Forestry Master Plan - which includes an overall tree planting goal and annual target to expand regional forestry and provide a variety of benefits, including improving air quality and carbon sequestration.	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Public Facilities, Parks/Open Space  <b>Topic Tags:</b> Public Health, Sustainability</p>
The TBRPC with input from local governments will advocate for carbon sequestration areas alongside state and national highways.	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Public Facilities, Parks/Open Space  <b>Topic Tags:</b> Public Health, Sustainability</p>
Assess projected costs of mosquito and pest control to mitigate vector-borne illness including considerations of the northward migration of sub-tropical and tropical species especially those that may be a public health concern.	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Coastal Management, Sanitary Sewer, Stormwater, Water Conservation, Public Facilities  <b>Topic Tags:</b> LMS, Water Infrastructure, Heat</p>
Local governments will provide services to protect public health on extreme heat days that may include but need not be limited to cooling shelters.	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Health  <b>Topic Tags:</b> LMS, Public Health</p>
Local governments will partner with utility providers and nonprofit organizations to provide relief for utility disconnections for extreme heat days.	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Nonprofits  <b>Comprehensive Plan Themes:</b> Public Facilities, Health  <b>Topic Tags:</b> Public Health, Heat, Equity</p>

## Objective 7.5

Improve evacuations through technology and community outreach.

<b>Actions</b>	
Engage transit-dependent areas in evacuation plans to expedite assistance in evacuation and re-entry.	<p><b>Lead Organization:</b> County governments with data from TBRPC</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Emergency Management, Transportation, Equity</p>
Coordinate to improve traffic flow between jurisdictions to decrease evacuations times.	<p><b>Lead Organization:</b> Local jurisdictions, FDOT</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Emergency Management, Transportation</p>
Study and continue to assess and identify gaps or inefficiencies in our evacuation routes.	<p><b>Lead Organization:</b> County governments with data from TBRPC</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Emergency Management, Transportation</p>
Reduce evacuation times by improving and expanding public information related to evacuation planning to achieve regional compliance with evacuation standards.	<p><b>Lead Organization:</b> TBRPC &amp; Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Emergency Management, Transportation, Equity</p>

## Objective 7.6

Increase post-disaster power resilience for long-term and short-term outages.

<b>Actions</b>	
Local governments will conduct <a href="#">Black Sky</a> planning for <a href="#">community lifelines</a> for long-duration, widespread power outages.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> TBRPC, Utilities, Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Public Facilities, Utilities</p> <p><b>Topic Tags:</b> Emergency Management, Utilities, Energy</p>
Local governments will conduct energy and power-resilience assessments for their operations, emergency systems to understand essential equipment energy needs	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, Utilities</p> <p><b>Comprehensive Plan Themes:</b> Public Facilities, Utilities</p> <p><b>Topic Tags:</b> Emergency Management, Utilities, Energy</p>
Local governments will incorporate plans for energy hardening upgrades and reduce reliance on diesel generators for backup power into existing emergency management plans.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Utilities, Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Public Facilities, Utilities</p> <p><b>Topic Tags:</b> Emergency Management, Utilities, Energy</p>
Local governments will re-assess power requirements to determine if additional generator capacity, battery banks or on-site renewable energy.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Utilities, Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Public Facilities, Utilities</p> <p><b>Topic Tags:</b> Emergency Management, Utilities, Energy</p>
Local governments will use ClearSky tools and resources to identify critical systems and facilities which are candidates for solar and backup battery and micro-grids.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> TBRPC, Utilities, Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Public Facilities, Utilities</p> <p><b>Topic Tags:</b> Emergency Management, Utilities, Energy</p>

## Goal 8

**The Region will have connected multimodal transportation network that is resilient to extreme weather, reduces local emissions, reduces automobile congestion and enhances equitable mobility and public safety.**

Regional resilient transportation priorities include making the existing transportation infrastructure network can sustain the impacts of extreme weather, improving regional transportation options to reduce emissions, and improving health outcomes related to transportation.

In March 2019, the Tri-County TMA (Transportation Management Area) comprised of the Hillsborough, Pinellas, and Pasco MPOs, FDOT, and TBPRC received a FHWA administration grant to conduct a regional transportation vulnerability analysis. The results of the analysis will provide information and recommendations to ensure the region's transportation system meets the near and long term functional, economic, and quality of life goals of Tampa Bay's residents, businesses, and visitors in the face of weather and climate changes.

## HOW DO WE GET THERE?

<b>OBJECTIVE 8.1</b>	Prioritize transportation infrastructure investments that mitigate the impacts of current climate hazards and adapt to future climate conditions.
<b>OBJECTIVE 8.2</b>	Accelerate the Transition to Clean, Accessible, Resilient, and Equitable Mobility Systems.

<b>OBJECTIVE 8.3</b>	Invest in low-emissions transportation infrastructure and air quality improvements to improve health outcomes.
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## Objective 8.1

Prioritize transportation infrastructure investments that mitigate the impacts of current climate hazards and adapt to future climate conditions.

Actions	
Consider impacts of future inundation and nuisance flooding to roadway projects in Goal 2.	<p><b>Lead Organization:</b> Local governments with regional data</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>
Consider employing existing development strategies to improve the resilience of roadways, such as raising roads, permeable pavements, green infrastructure.	<p><b>Lead Organization:</b> Local governments with regional data</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>
Establish a regional coordination mechanism to prioritize roadway adaptation projects, develop multi-jurisdiction proposals, and obtain funding for local projects.	<p><b>Lead Organization:</b> TBRPC</p> <p><b>Partners:</b> Local governments</p> <p><b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>

<p>Prioritize and implement mitigation efforts on multiuse trails within the Adaptation Action Area and other vulnerable areas to provide alternative modes of transportation to single occupancy vehicles and transportation options that are less vulnerable to flooding.</p>	<p><b>Lead Organization:</b> Local governments with regional data  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management  <b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>
<p>Create a research committee consisting of FDOT, regional MPOs, academia, and environmental experts to develop research innovative transportation techniques to include causeway designs, mass transit, and water transportation to minimize and mitigate the impacts of sea-level rise, flooding, and storm surge.</p>	<p><b>Lead Organization:</b> TBRPC  <b>Partners:</b> Academic and regional partners  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management  <b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>
<p>Include bicycle and pedestrian improvements when implementing mitigation and adaptation projects, where appropriate, to encourage alternatives to single-occupancy vehicles as transportation.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management  <b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>

## Objective 8.2

Accelerate the transition to renewable, accessible, resilient, and equitable mobility systems.

Actions	
<p>Convene a Resilient Transportation working group to review/update the <a href="#">Regional Transit Development Plan</a> and define assessments</p>	<p><b>Lead Organization:</b> TBARTA, TBRPC  <b>Partners:</b> MPO and Transit Authority partners  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management  <b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>

<p>The TBRPC will convene a meeting of the Management Planning Committee to develop a process to coordinate as a region to prioritize regional investments in transportation projects.</p>	<p><b>Lead Organization:</b> TBARTA, TBRPC  <b>Partners:</b> MPO and Transit Authority partners  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management  <b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>
<p>The TBRPC alongside regional partners will collect best practices for carbon sequestration that can be implemented by local governments and transportation partners within the region.</p>	<p><b>Lead Organization:</b> TBARTA, TBRPC  <b>Partners:</b> MPO and Transit Authority partners  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management  <b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>
<p>Host a regional workshop focused on green transportation infrastructure, multi-modal transportation, and funding strategies including preparing for funding opportunities from federal government.</p>	<p><b>Lead Organization:</b> TBRPC  <b>Partners:</b> MPO and Transit Authority partners  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management  <b>Topic Tags:</b> Infrastructure, Transportation, Capital Improvement</p>
<p>The TBRPC will host special topic meeting of the Management Planning Committee to discuss collaboration on local funding initiatives and assess feasibility of voluntary regional coordination on countywide transportation taxes for those counties wishing to opt-in</p>	<p><b>Lead Organization:</b> TBRPC  <b>Partners:</b> Local governments, and regional partners  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management  <b>Topic Tags:</b> Infrastructure, Transportation, Capital Improvement, Funding</p>
<p>The TBRPC will update the its webpage to provide resources for fuel consumption assessments, fuel reduction goals and conducting cost-benefit analysis.</p>	<p><b>Lead Organization:</b> TBRPC  <b>Partners:</b> Local governments  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management  <b>Topic Tags:</b> Infrastructure, Transportation, Capital Improvement, Funding</p>
<p>Conduct a cost-benefit analysis to assess the outcomes of Greenhouse Gas (GHG) reductions to develop local plans for transition municipal vehicles and fleets to fuel efficient hybrid or electric vehicles.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> NA  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management, Sustainability</p>

	<p><b>Topic Tags:</b> Infrastructure, Transportation, Capital Improvement, Funding, Sustainability</p>
<p>Local government will use local data to define charging infrastructure needs for public and private properties within the jurisdiction.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Tampa Bay Clean Cities  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management, Sustainability  <b>Topic Tags:</b> Infrastructure, Transportation, Capital Improvement, Funding, Sustainability</p>
<p>Local governments set a goal to increase their electric mobility by a defined percentage within a specific time period (i.e. an increase of 25% by 2025)</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Tampa Bay Clean Cities  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management, Sustainability  <b>Topic Tags:</b> Infrastructure, Transportation, Capital Improvement, Funding, Sustainability</p>
<p>Local governments add policies or regulations in their comprehensive plan or Land Development Regulations to encourage installation of charging infrastructure for developments of a certain size.</p>	<p><b>Lead Organization:</b> Local governments, private property owners  <b>Partners:</b> NA  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management, Sustainability  <b>Topic Tags:</b> Infrastructure, Transportation, Capital Improvement, Funding, Sustainability</p>
<p>Local governments develop and provide guides to encourage electric vehicle charging infrastructure installments on private property</p>	<p><b>Lead Organization:</b> Local government  <b>Partners:</b> TBD  <b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management, Sustainability  <b>Topic Tags:</b> Infrastructure, Transportation, Capital Improvement, Funding, Sustainability</p>

### Objective 8.3

Invest in low-emissions transportation infrastructure and air quality improvements to improve health outcomes.

<b>Actions</b>	
Local governments will use data from regional emissions study to update regional and local transportation plans and policies to define targets for transportation electrification strategies to reduce emissions.	<p><b>Lead Organization:</b> Local governments with regional data</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Infrastructure</p>
Utilize infrastructural improvements that will improve air quality and protect vulnerable populations from poor air quality, such as landscape buffers, tree scaping, etc.	<p><b>Lead Organization:</b> Local governments with regional data</p> <p><b>Partners:</b> Neighboring jurisdictions</p> <p><b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Infrastructure</p>
Prioritize accessory facilities for bus stops, sidewalks and trails (shelters, trees in right of way, cooling stations) to mitigate impacts of heat and extreme rain especially in transit-dependent neighborhoods.	<p><b>Lead Organization:</b> Transit authority</p> <p><b>Partners:</b> Local governments and private developers</p> <p><b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>
Regional public health partners will document the public health cost of air pollution especially on certain communities especially as it relates to the onset of asthma.	<p><b>Lead Organization:</b> Regional public health partners</p> <p><b>Partners:</b> TBRPC, FDOH</p> <p><b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management, Sustainability</p> <p><b>Topic Tags:</b> Infrastructure, Transportation, Capital Improvement, Funding, Sustainability</p>
Local governments will prioritize alternative modes of transportation other than single-occupancy vehicles (e.g., transit, walking, biking, etc.) through comprehensive plan policies, such as Complete Streets, Vision Zero.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> MPO and Transit Authority partners</p> <p><b>Comprehensive Plan Themes:</b> Capital Improvement, Transportation, Coastal Management</p> <p><b>Topic Tags:</b> Infrastructure, Transportation, Equity, Capital Improvement</p>

<p>Local governments will prioritize low-to-zero emission transportation modes such as electric and natural gas vehicles in policy plans and ordinance development.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Transit Authorities, Private Transportation businesses, Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Public Facilities, Transportation  <b>Topic Tags:</b> Public Health, Sustainability</p>
<p>Local governments will create or expand bikeshare programs to connect more residents in neighborhoods historically disadvantage communities.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Transit Authorities, Private Transportation businesses, Neighboring jurisdictions  <b>Comprehensive Plan Themes:</b> Public Facilities, Transportation  <b>Topic Tags:</b> Public Health, Sustainability</p>
<p>Local governments will implement outreach and education programs that promote emission reduction techniques and other sustainable practices that improve air quality for all communities.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Transit Authorities, Private Transportation businesses, Neighboring jurisdictions, neighborhood associations, HOAs  <b>Comprehensive Plan Themes:</b> Public Facilities, Transportation  <b>Topic Tags:</b> Public Health, Sustainability</p>

# Goal 9

## **Food systems become more sustainable and resilient, and access to healthy foods is improved.**

Climate change and extreme weather events are likely to lead to local availability limitations and price increases, interrupted transportation and storage. Climate change can also affect food availability, access, utilization, and the stability of each of these, over time. Constrictions at any point can lead to food insecurity through the activities of the food system, including food production, transportation, and storage.<sup>6</sup>

Reducing food waste is an important component of mitigating climate change. According to the U.S Environmental Protection Agency, food waste is the single largest category of material placed in municipal landfills, where it emits methane, a powerful greenhouse gas. Municipal solid waste landfills are the third-largest source of human-related methane emissions in the United States, accounting for approximately 14.1 percent of these emissions in 2017.<sup>7</sup>

## HOW DO WE GET THERE?

<b>OBJECTIVE 9.1</b>	Implement a holistic approach to reduce risks, gaps and disconnects with the regional food system to improve access and security.
<b>OBJECTIVE 9.2</b>	Update policies, codes and incentives to support farms and local fresh food processing, distribution and retail.
<b>OBJECTIVE 9.3</b>	Reduce food waste and methane emissions.

<sup>6</sup> <https://www.usda.gov/oce/energy-and-environment/food-security>

<sup>7</sup> <https://www.usda.gov/foodlossandwaste/why>

## Objective 9.1

Implement a holistic approach to reduce risks, gaps and disconnects with the regional food system to improve access and security.

Actions	
Local governments will develop an inventory of the community's agricultural lands, current number of farms, vacant lands and production outputs to understand potential opportunities.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, Neighborhood Associations, TBRPC</p> <p><b>Comprehensive Plan Themes:</b> Future Land Use</p> <p><b>Topic Tags:</b> Public Health, Food Systems, Community Vulnerability</p>
The Region will identify and map food accessibility and proximity for LMI communities for all fresh food outlets and community feeding networks to identify food deserts and areas with low access,	<p><b>Lead Organization:</b> TBRPC, Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, Neighborhood Associations, TBRPC</p> <p><b>Comprehensive Plan Themes:</b> Future Land Use</p> <p><b>Topic Tags:</b> Public Health, Food Systems, Community Vulnerability</p>

## Objective 9.2

Update policies, codes and incentives to support farms and local fresh food processing and distribution.

Local governments develop and provide incentives to increase sustainable local food production, processing and distribution, to support LMI community and economic goals.	<p><b>Lead Organization:</b> Local governments</p> <p><b>Partners:</b> Neighboring jurisdictions, Neighborhood Associations, TBRPC</p> <p><b>Comprehensive Plan Themes:</b> Future Land Use</p>
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	<b>Topic Tags:</b> Public Health, Food Systems, Community Vulnerability
Local governments will update zoning codes to support local food production.	<b>Lead Organization:</b> Local governments <b>Partners:</b> Neighboring jurisdictions, Neighborhood Associations <b>Comprehensive Plan Themes:</b> Future Land Use <b>Topic Tags:</b> Public Health, Food Systems

### Objective 9.3

Reduce food waste and methane emissions.

Implement sustainability outreach and education efforts to develop a local culture which reduces food waste.	<b>Lead Organization:</b> Local governments <b>Partners:</b> Extension, Universities, others <b>Comprehensive Plan Themes:</b> <b>Topic Tags:</b> Public Health, Food Systems, waste reduction, emissions reduction
Local governments convene large commercial producers of food waste to discuss and define onsite reduction and/or energy reuse strategies.	
Local governments develop collaborations with universities, schools, and hospitals to encourage implementation of programs that support the EPA Food Recovery Hierarchy (waste diversion).	<b>Lead Organization:</b> Local governments <b>Partners:</b> Business Districts, Higher Ed, School Districts and health organizations <b>Comprehensive Plan Themes:</b> Health <b>Topic Tags:</b> Public Health, Food Systems
Local governments encourage companies to collect data, conduct	<b>Lead Organization:</b> Local governments

<p>systems audits and measure their contribution to methane emissions.</p>	<p><b>Partners:</b> private waste management  <b>Comprehensive Plan Themes:</b> Health  <b>Topic Tags:</b> Public Health, Food Systems</p>
<p>Local governments implement programs to encourage composting among residents.</p>	<p><b>Lead Organization:</b> Local governments  <b>Partners:</b> Neighboring jurisdictions, private waste management  <b>Comprehensive Plan Themes:</b> Health  <b>Topic Tags:</b> Public Health, Food Systems</p>

# Regional Targets

## Goal 4

1. The TBRPC produces a regionally consistent series of outreach materials to educate developers on the financial benefits of green and healthy building design for affordable housing projects.
2. The TBRPC creates a Resilient Housing Design and Construction working group which includes building associations, private sector, non-profit organizations to define best practices and recommendations for resilience and green standards manual for local governments and the building community.
3. The Resiliency Coalition's Management and Planning Committee convened to discuss Sadowski Act funding and explore regional funding and advocacy.

## Goal 5

1. The TBRPC, with local government input, compiled best practices for healthy and green building design.
2. The TBRPC convenes a Regional Resilient Land Use and Design working group.

## Goal 6

1. Regional partners implemented one or more of the following actions: (1) assessed the vulnerability of critical coastal habitats to sea level rise and support adaptation strategies (i.e. rolling easements, living shorelines) that promote the long-term resiliency and diversity of these habitats (2) continue to implement Critical Coastal Habitat Assessment monitoring at permanent transects (3) implemented the [Tampa Bay Habitat Master Plan](#) (4) continued to identify carbon sequestration benefits and economic incentives to preserve coastal habitats through voluntary carbon markets or other mechanisms (5) assisted land management agencies in developing site management plans that maximize carbon sequestration benefits of appropriate coastal habitats held in preservation or conservation (6) supported and assist with purchase, protection and/or restoration of priority sites (7) supported adoption of land management strategies such as [rolling easements](#), coastal construction setbacks and living shorelines (8) developed metrics to measure citizen outreach effectiveness.
2. Regional partners implement one or more of the following actions: (1) implemented the Tampa Bay nutrient management strategy (2)

supported existing air quality monitoring programs conducted by local governments (3) expanded the number of long-term air quality monitoring stations for atmospheric nitrogen deposition (2) supported research to better quantify the sources, pathways and contribution of atmospheric deposition to stormwater runoff (3) improved outreach to the public about the link between air and water quality.

3. The TBRPC supported federal and regional initiatives to reduce vehicle emissions, including increased fuel efficiency, mass transit, carpooling, bicycle commuting, telecommuting, and expansion of alternative/electric vehicle fueling stations. Incorporate associated reductions into the Nitrogen Management Consortium's Action Plan Database.
4. Regional partners have implemented one or more of the following: (1) identified, assessed and expanded monitoring programs for key species as needed to adapt to new threats. (2) identified funding sources to explore and support programs and projects that protect and expand habitats and buffer zones for waterbirds and beach-nesting shore birds (3) identified funding sources to explore and support programs and projects that protect fisheries, including no fishing/preservation zones (4) implemented the Bay Habitat Master Plan and relevant CCMP actions to achieve targets and goals for critical fish and wildlife habitats, including Actions [BH-1](#), [BH2](#), [BH-9](#) and [BH-10](#).
5. The TBRPC has partner with the Tampa Bay CRS user group to identify opportunities for member governments to get CRS credit for Floodplain Species Assessments (512c).
6. The TBRPC will develop policy recommendations for regionally consistent shoreline hardening practices and share these recommendations with elected officials.

## Goal 7

1. The TBRPC, with the assistance of regional partners, update the TBRPC webpage to provide tools needed to expand Green Infrastructure implementation within the watershed.
2. The TBRPC and TBEP host a total of two (2) trainings on implementing green infrastructure best practices.
3. Coordinate regionally to encourage State roadway projects planned in the Tampa Bay Region to align with the goals of the Regional Resiliency Action Plan (RRAP).
4. The TBRPC developed a set of regional best practices and design standards for stormwater management.
5. The TBRPC supported Statewide regulatory standards to promote potable water reuse.

6. The TBRPC, supported policies to reduce ground water usage as sea level rise paired with increased ground water usage causes saltwater intrusion, rendering wells unusable.
7. Evacuation times are reduced for each county.
8. The TBRPC with input from local governments will advocate for carbon sequestration areas alongside state and national highways.

#### Goal 8

1. A regional coordination mechanism to prioritize roadway adaptation projects, develop multi-jurisdiction proposals, and obtain funding for local projects is established.
2. A research committee consisting of FDOT, regional MPOs, academia, and environmental experts to develop research innovative transportation techniques is established.
3. The TBRPC convenes a meeting of the Management Planning Committee to develop a process to coordinate as a region to prioritize regional investments in transportation projects.
4. The TBRPC convenes a Resilient Transportation working group to review/update the [Regional Transit Development Plan](#) and define assessments.
5. The TBRPC collects best practices for carbon sequestration and publishes the resources online for local government use.
6. The TBRPC hosts a regional workshop focused on green transportation infrastructure, multi-modal transportation, and funding strategies including preparing for funding opportunities from federal government.
7. The TBRPC holds a special topic meeting of the Management Planning Committee to discuss collaboration on local funding initiatives and assess feasibility of voluntary regional coordination on countywide transportation taxes for those counties wishing to opt-in.
8. The TBRPC website is updated with resources for fuel consumption assessments, fuel reduction goals and conducting cost-benefit analysis.
9. Regional public health partners produce a report to document the public health cost of air pollution especially on certain communities especially as it relates to the onset of asthma.

## Local Targets

#### Goal 4

#### Local Targets:

1. Local governments adopt policies for one or more to increase affordable housing stock: (1) flexible density options to incentivize development of private affordable housing and publicly assisted housing in areas with low risk to current and future climate impacts (2) align affordable housing with public transportation (3) allow homeowners to add accessory dwelling units in areas with low risk to the impacts of current and future climate conditions (4) a robust, ongoing housing retrofit program.
2. Local governments use one or more of the following regulatory practices to improve the quality of regions housing stock: (1) more stringent standards for development of private affordable housing and publicly assisted housing in areas at high risk to current and future climate impacts (2) water efficiency and [HUD energy efficiency](#) requirements for new construction to all multi-family properties.
3. Local government continued to build on existing housing policies using one or more of the following: (1) established community-based working groups to recommend policies (2) used [REACH](#) tools and resources to assess and update existing planning mechanisms and supporting documents.
4. Local government has adopted policies to permit the use of appropriate properties for disaster recovery operations including temporary housing
5. Local government has adopted best practices for ensuring sustainable utility service capacity is part of the affordable housing planning and permitting process.
6. Local government has implemented one or more of the following actions: (1) comprehensive plan includes policies to encourage Low Impact Development in affordable housing projects (2) incentivized new residential buildings and sites to be designed to green and healthy standards and mitigate flood risks and heat impacts.
7. Local government has implemented one or more of the following actions: (1) identified property owners interested in rehabilitation or selling their homes for voluntary rehabilitation or buyout programs funded by FEMA grant funding (2) identified alternative sources of funding for rehabilitation or buyout program (3) developed standardized process for conducting holistic risk assessment for mobile homes in low risk areas (4) collaborated with non-profits and residents to support the transformation of mobile and modular home parks into resilient and sustainable communities.

## Goal 5

1. Local government has implemented one or more of the following actions: (1) included polices or regulations to encourage new development to use

healthy building design, Florida Green Building Coalition principals, and/or LEED accreditation benchmarks (2) included policies or regulations to encourage alternatives to single occupancy motor vehicle travel through one or more of the following (3) included regulations to require development and redevelopment in high hazard areas to build to more stringent building standards.

2. Local government has implemented one or more of the following actions: (1) included regulations to buffer structures from the impact of flood hazards (2) included regulations to buffer structures from the impact of wind hazards (3) incentivized parking and pavement reduction strategies for new development and redevelopment (4) encouraged alternatives to single occupancy motor vehicle travel through parking reduction techniques, transit-oriented development incentives, and pedestrian and bike-friendly development and redevelopment policies (5) included regulations or policies to require development and redevelopment in high hazard areas to build to more stringent site development standards (6) investigated the interactions between mass grading as a driver of climate change and identify best practices for mitigating the impacts of this practice.
3. Local government has implemented one or more of the following actions: (1) adopted [Adaptation Action Areas](#) (2) considered best practices for updating coastal setbacks for development and redevelopment (3) developed incentives for developers to build outside vulnerable areas (density bonuses, expedited review, etc.) (4) prioritized recreation/open space land use amendments (5) integrated performance metrics to ensure the objectives of the jurisdiction's resiliency plan are integrated into the Comprehensive Plan (6) updated CRA plans, Downtown Development Plans, Organizational and/or Department Strategic plans, Small Area Plans. Economic Development Plans, Land Development Regulations (LDR), Post-disaster redevelopment plan (PDRP) are to align with the objectives of the jurisdiction's resiliency plan.

## Goal 6

1. Local government has completed one or more of the following actions: (1) incorporated the actions of the Comprehensive Conservation and Management Plan for Tampa Bay (CCMP) into their Comprehensive Plan using the CCMP [Model Language Guidelines](#) (2) maintained and enhanced stopover areas for migratory birds the Global flyway (3) enhanced birding, ecotourism, educational opportunities (4) implemented the green infrastructure/ nature-based solutions under Goal 7 (5) identified funding sources for local governments, land holders and

residents for land acquisition and conservation including public and private land/partnerships.

2. Local government has implemented one or more of the following actions (1) imposed a development impact fee for stormwater improvements (2) included policies or regulations to implement low maintenance and/or transitional zone requirements between maintained upland and stormwater areas (3) conducted outreach on an ongoing basis to promote fishable, swimmable areas (4) implemented the green infrastructure actions under Goal 7 (5) identified best practices to reduce the occurrence of sanitary sewer overflows to the bay.
3. Local government has mapped critical habitats and limit development near critical habitats.
4. Local governments has implemented one or more of the following actions (1)utilized the [Living Shoreline Suitability Model](#) to identify specific locations within the jurisdiction where living shorelines could be used in place of, or in combination with, seawalls (2) create shoreline plans for coastal areas including consistent seawall height requirements (3) adopted policies to encourage the appropriate use or integration of living shorelines where feasible (4) adopted policies or regulations to conserve existing natural areas on shorelines.

#### Goal 7

2. Local government has completed one or more of the following actions to protect public infrastructure (1)update critical infrastructure policies based on community vulnerability assessments conducted in Goal 2, (2) include policies to prioritize investments in communities with failing or aging infrastructure (3) created a stormwater master plan project list which includes cost-benefit analysis and addressing past inequities in services or repairs (4) submitted flood mitigation projects for FEMA BRIC funding (5 ) incorporated renewable energy development, production, and/or storage into the PDRP (6) updated comprehensive plan to ensure that infrastructure projects are equitably dispersed to reduce risks in low-income neighborhoods and minority communities.
3. Local governments post-disaster redevelopment plan (PDRP) identifies policies for infrastructure including but not limited to relocation/burying of utilities, installation of additional utilities such as broadband, and/or hardening infrastructure after a disaster.
4. Local government has a comprehensive heat island mitigation strategy and implementation plan that addresses cool pavements and roofs, pavement reduction, and neighborhood greening while ensuring equitable distribution.

5. Local government engaged healthcare facility managers and/or businesses stakeholders in the infrastructure planning process.
6. Local government's comprehensive plan and/or land development regulations include policies or regulations that prioritize green infrastructure and assess nature-based adaptation strategies as a first step.
7. Local government has implemented one or more of the following water management actions (1) identified key protection areas to ensure sustainable water supply for consumption (2) Utilize the messaging tools provided in the [Be Floridian](#) campaign for community education (3) implemented the pavement reductions strategies from RRAP Goal 5 (4) assessed the benefits and limitations of implementing One Water as a driving principle.
8. Encourage stormwater master plan designs that utilizes an interconnected system of green infrastructure and open green space to reduce stormwater impacts.
9. Local government has one or more of the following policies (2) to consider future water supply by integrating potential future climate conditions and sea level rise scenarios.
  1. Local government provides one or more of the following programs or services: (1) Forestry Master Plan with an overall tree planting goal and annual target (2) services to protect public health on extreme heat days (3) relief for utility disconnections for extreme heat days.
  2. Local government has assessed projected costs of mosquito and pest control to mitigate vector-born illness.
  1. Local government is implementing on or more of the following actions to improve evacuation times: (1) Engage transit-dependent areas in evacuation plans (2) coordinate to improve traffic flow between jurisdictions (3) assess and identify gaps or inefficiencies in evacuation routes, and/or (4) improving and expanding public information related to evacuation planning.
  2. Local government has conducted one or more of the following actions: (1) conducted Black Sky planning for community lifelines (2) conducted energy and power-resilience assessments (3) re-assessed power requirements to determine if additional generator capacity, battery banks or on-site renewable energy (4) used ClearSky tools and resources to identify critical systems and facilities which are candidates for solar and backup battery and micro-grids.
  3. Local government has incorporated plans for energy hardening upgrades and reduce reliance on diesel generators for backup power into existing emergency management plans.

## Goal 8

1. Local government has one or more of the following polices or regulations: (1) development strategies to improve the resilience of roadways, such as raising roads, permeable pavements, green infrastructure (2) prioritize multiuse trails within the Adaptation Action Area and other vulnerable areas (3) encourage bicycle and pedestrian improvements when implementing mitigation and adaptation projects.
2. Local government has implemented one or more of the following actions: (1) conducted a cost-benefit analysis to transition municipal vehicles and fleets to fuel efficient hybrid or electric vehicles (2) defined charging infrastructure needs for public and private properties within the jurisdiction (3) set a goal to increase their electric mobility by a defined percentage within a specific time period (4) included policies or regulations to encourage installation of charging infrastructure for developments of a certain size (5) developed and provide guides to encourage electric vehicle charging infrastructure installments on private property.
3. Local government has one or more of the following policies or regulations in their comprehensive plan or Land Development Regulations: (1) to use infrastructure to improve air quality and protect vulnerable populations from poor air quality (2) to encourage accessory facilities for bus stops, sidewalks and trails to mitigate impacts of heat and extreme rain (3) to protect vulnerable populations from roadway air pollution (4) to prioritize alternative modes of transportation other than single-occupancy vehicles (5) to prioritize low-to-zero emission transportation modes such as electric and natural gas vehicles (6)to create or expand bikeshare programs to connect more residents in neighborhoods historically disadvantage communities.
4. Local government has implemented outreach and education programs that promote emission reduction techniques and other sustainable practices that improve air quality for all communities.

## Goal 9.

1. Local government has evaluated current conditions through the creation of an inventory of the community's agricultural lands, current number of farms, vacant lands and parcels, retail local/fresh food outlets, food deserts/low access areas, commercial land availability, etc.
2. Local government permits or encourages local food production through zoning or property tax rebates.

3. Local governments provide a compost program for private residents and businesses.