



Islamorada Matters Plan

A Plan to Enhance, Preserve and Protect Our Quality of Life

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Islamorada, Village of Islands



Dear Village Residents,

I am pleased to present the Islamorada Matters Plan: A Plan to Enhance, Preserve and Protect Our Quality of Life. As we know first-hand here in the Village, climate change and sea level rise are a reality that will present unique challenges that we must face head on. We are proactively beginning to evaluate, monitor and plan for impacts expected to be felt in Islamorada.

The Islamorada Matters Plan is based on the premise that proactive planning within the Village will ensure that appropriate steps are taken, at the appropriate time, to adapt to the rising seas. To accomplish this, we – as a Village – will need to integrate sustainability and sea level rise adaptation and response into our everyday activities. We will also need to harmonize many cross departmental issues including shoreline and buffer management, transportation, land use and emergency response and preparedness.

The Village has, over the past decade, prioritized sustainability as an area of importance to Village operations and future success. With projected sea level rise impacts expected to affect Islamorada, increasing the focus on becoming more prepared to deal with these impacts continues to be of paramount importance.

The Islamorada Matters Plan concludes the results of a multi-year planning process, including a discussion of the sea level rise modeling done for Islamorada, results of Islamorada's preliminary sustainability assessment, goal priorities developed for the Village, and an implementation strategy with potential funding sources and policy recommendations to implement desired priorities.

As you will read throughout the Plan, both the vulnerability assessments and storm surge and sea level rise modeling suggest varying degrees of impact to the Village. Even under the best case scenario, residents and business owners in Islamorada will see changes in the coming years. As we move into the future, it will be critical for us – as a community – to continue the momentum generated by this project in all future planning efforts to ensure that the Village is able and ready to respond to these upcoming changes.

I look forward to working with the community as we implement the Islamorada Matters Plan and its recommendations, so that future generations are able to experience and enjoy the unique quality of life Islamorada has to offer.

Sincerely,

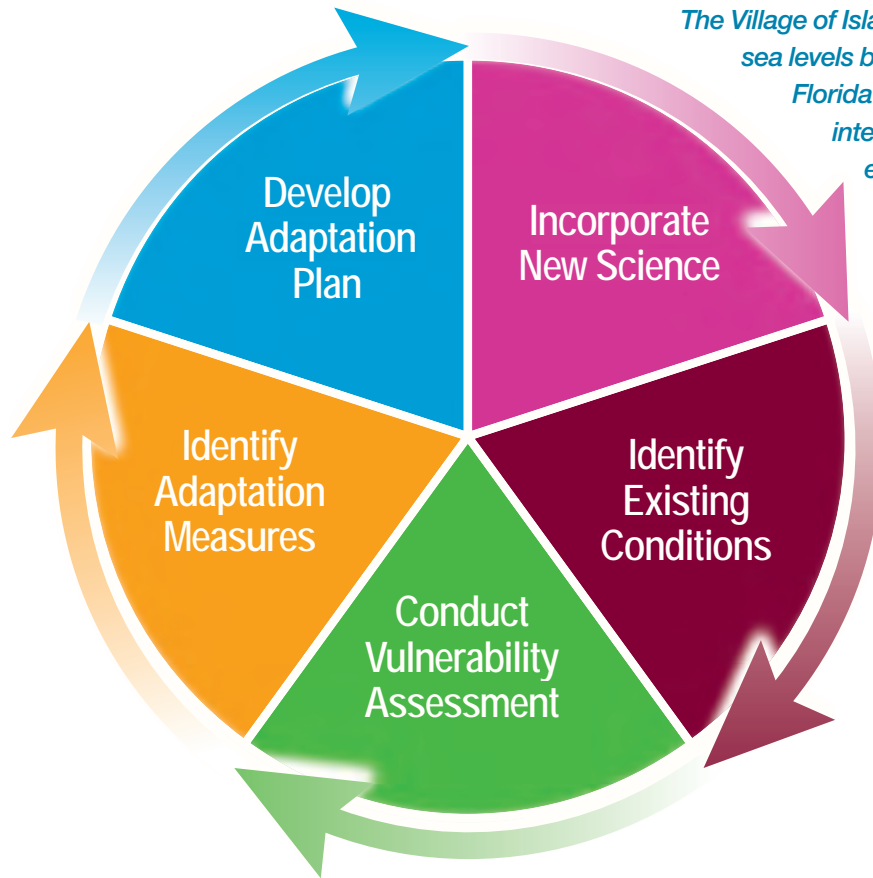
A handwritten signature in blue ink that reads "Deb Gillis".

Deb Gillis
Mayor

List of Abbreviations and Acronyms

ACSC	Area of Critical State Concern	FDEM	Florida Division of Emergency Management	LDR	Land Development Regulations
APA	American Planning Association	FDEP	Florida Department of Environmental Protection	MHHW	Mean Higher High Water
BMP	Best Management Practice	FEMA	Federal Emergency Management Agency	NFIP	National Flood Insurance Program
BPAS	Building Permit Allocation System	FDOT	Florida Department of Transportation	NOAA	National Oceanic and Atmospheric Administration
CAP	Climate Action Plan	FKAA	Florida Keys Aqueduct Authority	OFW	Outstanding Florida Waters
CIE	Capital Improvements Element of the Comprehensive Plan	FKNMS	Florida Keys National Marine Sanctuary	SFRCCC	Southeast Florida Regional Climate Change Compact
CIP	Capital Improvements Program	FWS	Fish & Wildlife Service	SLAMM	Sea Level Affecting Marshes Model
COAST	Coastal Adaptation to Sea Level Rise Tool	FY	Fiscal Year	STAR	Sustainability Tool for Assessing and Rating Communities
CRS	Community Rating System	GHG	Greenhouse Gas	TDR	Transfer of Development Rights
DEO	Florida Department of Economic Opportunity	GIS	Geographic Information Systems	USGS	United States Geological Survey

1. Executive Summary



The Village of Islamorada ("Islamorada" or "Village") faces unique challenges adapting to rising sea levels because of its low elevation and location in the island chain archipelago that is the Florida Keys. This Islamorada Matters Plan ("Plan") is the culmination of a project intended to begin the process of addressing these challenges while furthering existing efforts to make the Village more sustainable and resilient over the long term.

This Plan is the result of an ongoing public process and provides a summary of the activities conducted as part of the overall Islamorada Matters planning project, including results of the vulnerability assessment, sea level rise modeling, and an evaluation of the Village's current level of sustainability. More importantly, this document provides a comprehensive set of recommendations designed to put the Village on a proactive path towards increased sustainability and overall resilience to future sea level rise.

A key outcome of this planning process should be to better integrate decision making across multiple disciplines to incorporate sea level rise into the Village's policies and procedures. Integrated sea level rise adaptation and response will require harmonizing issues related to transportation, shoreline and buffer management, land use, building codes, infrastructure readiness and design, natural resource management and emergency preparedness.



Sea Level Rise Planning

Sea levels rise as the earth gets warmer because (1) as ocean water warms, it expands and causes the average level of the ocean to increase, and (2) as glaciers and ice-caps melt, water empties into the oceans and causes the average level of the ocean to increase. This results in a local rate of sea level rise in the Village of Islamorada. While we cannot be certain the extent to which this will occur in the future, the consensus of the scientific community is that these processes are accelerating and thus we will see higher sea levels in years to come. Knowing this, the Islamorada Matters Plan focuses on addressing the impacts from sea level rise including (1) planning and implementing adaptation measures, and (2) building adaptive capacity based on knowledge gained from a vulnerability assessment. Both are needed for successful adaptation planning.

- Adaptation measures are actions that can be taken by the Village and property owners to prepare for sea level rise in a particular location. They can include restoring environmental areas, raising buildings above flood elevations and retrofitting infrastructure. These measures are described in more detail in Section 6(d) of this Plan. In general, these adaptation measures will ultimately be planned and implemented by landowners, business owners and the Village to address projected impacts of sea level rise.
- Building adaptive capacity means developing the data and ability to assess potential impacts of sea level rise and to select and implement appropriate adaptation measures. Capacity can mean a combination of elements, including: data and information to identify adaptation measures, technical review of that data to make informed choices, funding to implement adaptation measures, assuring laws and regulations do not create obstacles for implementing adaptation measures, information about the economic benefits of adaptation, and the ability to gain public support for implementation.

Sea level rise is just one of many challenges to living in an island community. Coupled with hurricanes, extreme storm events and flooding, residents and stakeholders throughout the Village and Florida Keys, including the real estate community, need to become educated about the impacts of sea level rise in order to make informed decisions about how to best adapt in their communities.



Tea Table Key, FL
Photo Source: Project Team

Working with Uncertainty

Inherent in this type of planning is some level of uncertainty due to the predictive nature of changing conditions related to sea level rise. While it is quite conclusive that sea levels are rising (for instance based upon National Oceanic and Atmospheric Administration (“NOAA”) tide gauge data), the rate at which that change takes place is planned for based over a range of scenarios. Those ranges support the adaptation responses proposed in this planning effort. As more data becomes available, those ranges may narrow or new assumptions may be better to rely upon to make decisions in response. Revisiting the best data on sea level rise assumptions should be tied to a specific period of time, such as every (3) three years, or when an entity like the Southeast Florida Regional Climate Change Compact (“SFRCCC”) updates their projections. The continual development of better data from which to make decisions is a constant theme in this Plan. Finally, this planning effort itself has resulted in improved data-sets for use in future mapping and decision making, but there will continue to be some level of uncertainty associated with sea level rise planning that must be proactively managed.



Islamorada, FL
Photo Source: Project Team

Guiding Principles for Islamorada Matters

This planning effort is based on best available data, existing sustainability and planning initiatives, and current strategic Village goals and objectives. As a result, the following “Guiding Principles” have driven this planning effort:

- The time is now to begin adaptation planning and implementation, we can adjust and make improvements into the future as more information becomes available;
- Incorporate adaptation into existing Village programs and initiatives including procurement, design of capital improvements, land acquisition/management, and planning decisions;
- Engage the public in adaptation decisions;
- Educate Village stakeholders, including the public and business communities, as better science and Islamorada-specific data becomes available;
- Use the best available science for decision-making and adaptation actions;
- Balance protection of homes, infrastructure and conservation of natural resources;
- Strive for equity in selection of adaptation measures benefitting as many people as possible; and
- Funding options should be user-related, as appropriate.

Five Focus Areas

The recommendations in this Plan are separated into five Focus Areas with specific relevance to the Village. These Focus Areas were identified as important to the Village because of its unique geography, population and ecological significance. Additionally, these Focus Areas align well with Village priorities for future planning and project implementation.



Habitat

The Village consists of many unique habitats including coral reefs, tidal wetlands, mangrove forests and sea-grass beds. The Village is home to many threatened and endangered species.



Infrastructure &
Built Environment

Because of the Village's low elevation, Village infrastructure is particularly vulnerable to sea level rise.



Village Buildings and
Key Facilities

Sea level rise has the potential to impact Village buildings and key facilities. Proper planning is critical for wise economic investment.



Adaptation Strategies

The Village is committed to proactively identifying ways to increase its resiliency through adaptation to a changing environment.



Sustainability

The Village has a long history of promoting sustainable practices and remains committed to educating residents about green practices and increasing its overall level of sustainability.

What Can We Expect?

Sea level rise in the Village will produce many impacts, including nuisance flooding, fluctuations in storm severity and changes in ecosystem composition and species migrations. Climate change is also likely to have impacts on average daily temperatures, annual precipitation rates and volume, and human health. With proactive planning and informed decision making, the Village can minimize these impacts to ensure its environmental and economic viability for decades to come. Proactive planning is proven to be more effective than reacting after impacts occur. Hazard mitigation expenses typically provide very positive returns on those investments. For example, the National Institute of Building Sciences found that for every dollar spent by the Federal Emergency Management Agency (“FEMA”) on natural hazard mitigation, the result was \$4 in future benefits.¹

Nuisance Flooding

One of the many impacts of sea level rise is the increase in minor flooding events, often referred to as “nuisance floods.” Nuisance flooding events are typically associated with little or no permanent damage to human assets and recede quickly with the outgoing tide. Two (2) typical consequences of nuisance flooding include temporarily slowed or stopped traffic flow through low-lying roads and damage to saltwater intolerant landscaping plants in low-lying yards. However, it is well-known that nuisance tidal flood events can also lead to temporary, but sometimes significant, loss of stormwater drainage potential. Assessment of the Vaca Key tide gauge from 2010-2014 indicates that the 1.08 feet above mean higher high water (“MHHW”) threshold is currently being exceeded approximately four (4) times per year which is the threshold for that type of flooding at that location. In terms of increased flood inundation, we can particularly expect to see greater impacts during the Spring and Fall high tides (King Tides) which are the highest over the course of the year.



Storms and Precipitation

Rainfall levels are expected to fluctuate, though exact increases or reductions are much more difficult to predict given the number of factors at play. Islamorada has, and will continue to see, stronger storms with increased storm surge and wave heights during hurricanes as coastal water depths increase with sea level rise, amplifying the damage potential of these hurricanes. In lower lying areas, stormwater drainage will be increasingly problematic with heavy rainfall during hurricanes and other severe storms. Floods, hurricanes, and tropical storms, all of which are expected to become more frequent, will likely have tangible impacts.



Exotic Species

Changes in annual temperature and rainfall patterns, along with the movement of vegetative ecosystems due to higher sea level and increased salinity, will likely contribute to more and new invasive, exotic pests and plant/animal species becoming established throughout the Keys. Efforts to control the movement and overall distribution of both exotic plant and animal species will be crucial to the health of existing ecosystems and people in Islamorada.



Health Impacts

Within the Village, several human health impacts could occur including heat impacts, vector borne diseases, extreme weather events, air quality, and waterborne diseases. Vector borne diseases should be an important consideration in Islamorada due to the already warm climate and established vector populations (mosquitoes). Furthermore, a number of additional diseases may be able to prevail in new environments as the natural barriers of inhospitable environments to the vectors of such diseases are diminished in a warming climate. Air quality impacts may result in heightened levels of allergies and respiratory disease. Additionally, pathogens and pollutants from runoff and flooding have the potential to enter water supplies, while increased temperatures will support pathogen growth, and concentration of these agents under drought conditions will increase the threat of waterborne disease.

Heat

As the global climate changes, average annual temperatures are expected to rise in South Florida. Extreme heat, more days with temperatures over 95° F, and a longer summer season will have impacts on the Village. These impacts will range from human health impacts, increased incidence of heat-related illnesses, to increased demands for electricity. Heat stress affects human health in several ways, most frequently exacerbating chronic conditions like respiratory and cardiovascular disease. Increased temperatures will also lead to higher electricity consumption rates and resulting greenhouse gas (“GHG”) emissions. These impacts may also affect the health care system.

Erosion

Analysis shows that there is a correlation between long-term erosion rates and sea level rise rates. Therefore, we can expect that areas already exhibiting signs of erosion will continue to do so and accelerate as the amount of rise accelerates.²



Specific Focus Area Impacts and Strategies



Habitat. Tidal wetlands grow vertically by capturing sediment brought in by the tides, and by maintaining high plant production above ground and slow decomposition rates below ground. By accumulating dead plant matter and inorganic sediment, established marshes generally accrete at a rate sufficient to keep pace with sea level rise. However, the predicted accelerated rates of sea level rise will challenge this natural process. When marshes do not accrete enough sediment to keep pace with rising sea levels, vegetation may die and portions of the marsh may become open water. This results in diminished flood storage capacity and reduced marsh habitat. Coral bleaching and coral/seagrass die offs and migrations of less salt-tolerant flora are also expected as temperatures increase and the sea level rises.



Infrastructure and Built Environment. As the impacts of sea level rise continue to be felt, Islamorada's infrastructure - roads, buildings (non-publicly owned), stormwater, water, wastewater and power supply – will be tested. Systems once adequate to provide the level of service needed for the Village will become diminished as vulnerability and susceptibility to sea level rise are magnified. This will necessitate renovation, elevation, and even relocation of the most vulnerable infrastructure in the short term while intensifying the need to incorporate predicted impacts to all infrastructure improvements and planning in the long term.



Village Buildings and Key Facilities. Existing Village buildings and key facilities will become increasingly vulnerable as sea level continues to rise in the Florida Keys. For example, two (2) facilities currently show the most near-term vulnerability to enhanced flood risks by 2030 from sea level rise, the wastewater pump station located at 142 Sunshine Boulevard and the Fire Station #19 located at 74070 U.S. Highway 1. Other public facilities show susceptibility to extreme event flooding within the 2060 planning horizon, including the Islamorada Master Repump Station and Monroe County's Roth Building. Additionally, Founders Park and the S & H Inc. Debris Site, because of their elevations, show a potential for nuisance flooding impacts by 2030 (under a high sea level rise scenario) or 2060 (under a low sea level rise scenario). Because of these vulnerabilities, we can expect an increased need for the Village to consider sea level rise in future capital planning expenditures.



Adaptation Strategies for Homes and Businesses. In the shorter term, Village planning activities will increasingly need to focus on adapting to sea level rise impacts through the avoidance, accommodation and protection adaptation strategies. As more visible impacts of sea level rise occur, "managed retreat" or planning for projected increases in sea levels by relocating vulnerable buildings, infrastructure and public facilities before significant inundation occurs will need to occur. There are several ways to adapt, with a few notable strategies illustrated below.

Adaptation Strategy	 AVOID	 ACCOMMODATE	 PROTECT	 RETREAT
Short-Term	<p>Increase setback distances.</p> <p>Identify opportunities for voluntary conservation easements or increased buffering.</p>	<p>Improve evacuation plans.</p> <p>Conduct additional study on floodproofing or elevating at-risk structures.</p>	<p>Identify areas with greatest vulnerability.</p> <p>Continue discussing vulnerability with stakeholders and residents.</p>	<p>Identify areas with greatest vulnerability and relocate away from them.</p>
Medium-Term	<p>Implement conservation easements.</p> <p>Monitor setback compliance.</p>	<p>Require elevation of new homes above base flood elevation.</p> <p>Floodproof or elevate existing at-risk structures.</p>	<p>Replenish mangroves.</p> <p>Strengthen rebuilding restrictions for non-conforming uses.</p>	<p>Create special fund for voluntary purchase of frequently flooded structures.</p>
Long-Term	<p>Continue monitoring setback compliance.</p> <p>Increase conservation easements.</p>	<p>Develop incentive program for adaptation strategies.</p>	<p>Continue modeling efforts that consider adapting roads and buildings.</p>	<p>Voluntarily purchase frequently flooded areas from willing sellers and remove structures.</p> <p>Monitor rolling easement compliance.</p>



Sustainability. As impacts continue to be felt within the Village, increased focus will likely be placed on improving sustainability to help offset conditions contributing to sea level rise. These will include shifts in initiatives under the social, economic and environmental “legs” of the sustainability stool. Tourism, fishing and coastal recreation are important components of Islamorada’s economy and quality of life. Village parks and fisheries are significant assets and are a draw for tourism, new residents and businesses alike. Accelerated rates of sea level rise may necessitate larger or more frequent coastal restoration projects to preserve recreational opportunities and uses.

What's In This Plan?

This Plan contains the following sections:

- 2 Introduction and Background: Why Islamorada Matters?
- 3 History of Sustainability and Climate Change-Related Efforts to Date
- 4 Overview of Data for Development of the Plan
- 5 Use of Sustainability Tools for Assessing and Rating Communities
- 6 Islamorada Focus Area Prioritization
- 7 Public Involvement
- 8 Implementation Strategy
- 9 Conclusion

Summary of Plan Recommendations

As part of the Islamorada Matters Plan, the Team developed a comprehensive set of recommendations to help the Village continue the transition to becoming more sustainable and more resilient to sea level rise. Recommendations were developed for each of the five (5) Focus Areas in the short-, medium- and long-term.



Habitat

Habitat. Recommendations include changes to Village policies and regulations to better identify and protect living shorelines and ecological buffers, improved habitat analyses to identify priority habitat conservation and adaptation areas, better mapping of inundation areas, reduced pollutant loading and runoff to nearshore waters, and more comprehensive consideration of sea level rise in habitat management within the Village.



Infrastructure & Built Environment

Infrastructure and Built Environment. Recommendations include improved data collection for properties and infrastructure facilities, identification and documentation of road segments requiring retrofit, new policies to establish adaptation action areas, updates to best management practices ("BMPs") to reduce adverse water quality impacts from Village infrastructure, and a comprehensive review of Village regulations and incentives to address future flood risk.



Village Buildings and Key Facilities

Village Buildings and Key Facilities. Recommendations include consideration of sea level rise impacts in all capital planning efforts, flood audits for facilities currently identified as most vulnerable to sea level rise, development of long-term flood resilience alternatives or specific facilities, improving geographic information systems ("GIS") inventory of building footprints, and energy audits and efficiency upgrades to Village buildings and facilities.



Adaptation Strategies

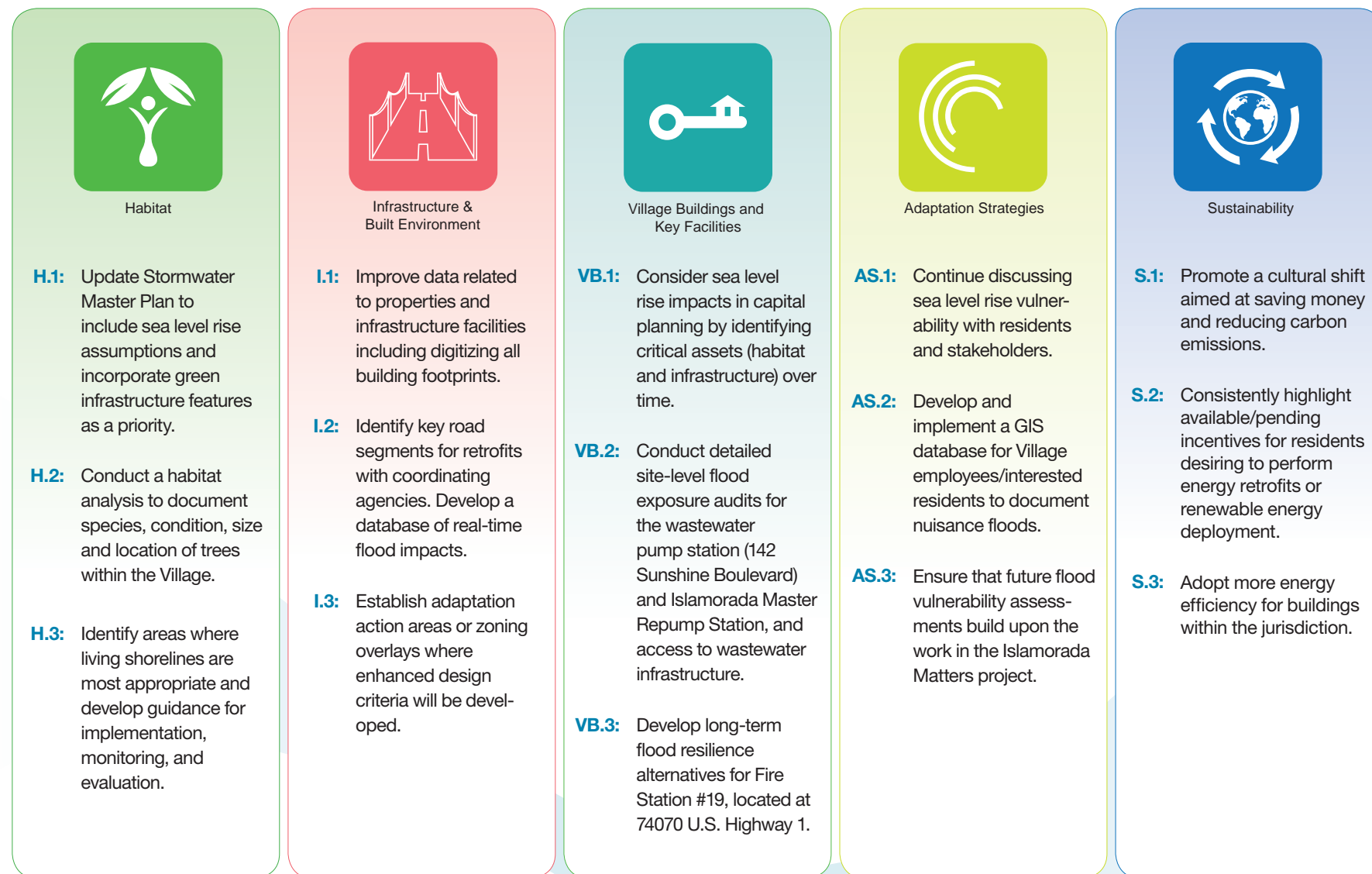
Adaptation Strategies for Homes and Businesses. Recommendations include continued discussion with residents and stakeholders about sea level rise vulnerability, ensuring that future assessment and planning activities build upon the work of this Plan, continued intergovernmental coordination to increase regional benefits and strengthen the Village's adaptation efforts, additional study on the feasibility and cost of floodproofing and elevating buildings within the Village, and policy revisions to strengthen rebuilding criteria in particularly susceptible areas.



Sustainability

Sustainability. Recommendations include promoting a cultural shifts to reduce carbon emissions, increased education of currently available energy efficiency incentives, increased training for Village inspectors on energy and water conservation techniques, more energy efficiency standards, improved waste reduction efforts community-wide, and the creation of incentives to relocate residents from high hazard areas within the Village.

The top three (3) recommendations for each Focus Area are depicted in the graphic below.



Outreach, Education and Next Steps

Education of residents, business owners and Village staff will continue to be critical in ensuring the Village is best prepared to adapt to sea level rise. Results of the Islamorada Matters planning project should continue to be highlighted in future outreach activities hosted by the Village. This will keep residents informed about changing conditions and engaged in the process of adapting to predicted impacts. Pilot projects could also be used to demonstrate or to study the effectiveness of particular recommendations in this Plan. For example, a pilot project on the effectiveness of BMPs could be used to provide guidance to land managers to better adapt to sea level rise. Similarly, pilot projects on the feasibility of floodproofing or elevating structures within the Village could be useful in the prioritization of future adaptation strategies implemented in Islamorada.

To further build upon the success of the Islamorada Matters project, the Village will also be involved in a NOAA grant entitled: *Advancing Understanding of Risk: Increasing Accuracy of Hazard Damage Assessment Tools by Improving Base Data and Analyzing Opportunities and Barriers for Use in Adaptation Planning* to be implemented in 2016-2018. This is a collaborative project involving four (4) communities from four (4) different states in the Southeast, including Florida, Georgia, South Carolina and North Carolina. This project will involve several components, including: 1) collection of stakeholder input to determine local resilience priorities, 2) creation of digital data to improve local planning capacity related to the priorities identified, 3) performance of legal and policy research to improve the implementation of adaptation measures identified by the communities, and 4) pre- and post-project knowledge assessments to evaluate the success of this method in communicating hazard vulnerability and resilience information on a regional scale. The Village of Islamorada will directly benefit from this project through continued community outreach on adaptation and resilience, creation of better base data, more accurate hazard damage assessments, and improved knowledge of local vulnerabilities and resilience.



Islamorada Matters Workshop
Photo Source: Project Team

2. Introduction and Background: Why Islamorada Matters?



Over the past decade, Islamorada, Village of Islands (“Islamorada” or “Village”) has undertaken several initiatives to implement policies and projects to become more sustainable, improve stormwater management, improve water quality, and address other threats to safety and property within the Village. This Islamorada Matters Plan (“Plan”) furthers the Village’s commitment to sustainability and sea level rise preparedness.³

This Plan evaluates the Village’s current level of preparedness and investigates the potential impacts of sea level rise, exceptionally high tides, storm surge and other sea level rise issues. This effort officially launched in April 2014 and was conducted in tandem with a general planning effort being conducted by Monroe County (“County”) on sustainability, sea level rise vulnerability and climate change. While concurrently undertaken with the County’s planning process, the initiatives discussed in this Plan were developed with specific focus on the Village and its goals.

As vulnerability and sea level rise modeling data were developed for this project, candidate adaptation strategies were developed and publicly discussed, and a series of public meetings were held to help the community understand what Islamorada will face and what can be done to manage the challenges. These workshops were instrumental in understanding the concerns related to sea level rise and addressing community priorities related to adaptation. This Plan incorporates the results of the planning process, including a discussion of the sea level rise modeling done for Islamorada, results of Islamorada’s preliminary sustainability assessment, goal priorities developed for the Village, and an implementation strategy with potential funding sources and policy recommendations to implement desired priorities.



A) Vulnerability: Geography



Alligator Reef Lighthouse, Islamorada, FL
Photo Source: Project Team

The Florida Keys chain of islands is located in the tropics, bounded by Florida Bay to the north and west and by the Florida Keys National Marine Sanctuary (“FKNMS”) to the east and west. The municipality of Islamorada is nestled in the center of this chain of islands within Monroe County. Islamorada separates the Atlantic Ocean and Florida Bay by no more than one (1) mile of land at its widest point with an average elevation of just five (5) feet above sea level. This makes the Village particularly vulnerable to more frequent flood events caused by rising sea levels, exacerbated high tides, extreme rain events, and stronger and more frequent hurricanes.

Islamorada consists of five (5) inhabited islands, Plantation Key, Windley Key, Upper Matecumbe Key, Lower Matecumbe Key, and Tea Table Key that are home to approximately 6,119 permanent residents.⁴ The combined land area of the Village’s chain of islands is approximately 6.43 square miles (4,115 acres) with boundaries extending approximately 18.3 linear miles (including the channels between the islands) from Mile Marker (“MM”) 90.9 to MM 72.6 along U.S. Highway 1. The islands of the Village are home to many threatened and endangered plant and animal species.

In addition to the populated islands within Islamorada’s waters, there are also several smaller, uninhabited islands adjacent to Islamorada that are rich in history and important natural habitats.

B) Worth Protecting: History and Rare Natural Resources

The Florida Keys are protected from the rough waters of the Atlantic Ocean by the third largest barrier reef in the world, the only living coral reef in the continental United States. The waters surrounding the Village consist of tidal wetlands, mangrove forests and seagrass habitat, all of which are unique ecosystems that provide food, shelter and nursery grounds to a multitude of fish, crustaceans, marine mammals, reptiles and bird species. A vast majority of the saltwater species found in North America are found in the waters surrounding the Florida Keys.



Florida East Coast Railway,
Key West Extension
Photo Source: <https://psiresearcher.wordpress.com>

The Florida Keys also have a unique and rich cultural history. Archeological evidence shows that Native Indian populations inhabited the islands as far back as two (2) to three (3) thousand years ago. The first historical records of the area date back to 1513 when Ponce de Leon passed through the Florida Keys to fill up on fresh water from the Matecumbes before sailing to Europe and Central America. Early settlers came from the Bahamas and New England, ultimately building ships and shipping pineapples, sponges and plundered shipwreck loot to northern markets. It is believed that Islamorada is named “purple island” for what the original settlers saw as they approached the island chain from the sea. Some people

believe the name came from the color of healthy seagrass, others say it was the thousands of native orchids or other native fauna in bloom at the time.

Larger population growth did not occur in the Florida Keys until the 1900s when Henry Flagler built a railroad from mainland Florida to Key West, which opened in 1912. The first road followed in 1928, originally existing in two (2) segments – one



Hurricane derails train, 1935
Photo Source: Original uploader
E. Brown

from the mainland to Lower Matecumbe Key and the other from No Name Key to Key West – with an automobile ferry service connecting the forty-one (41) mile gap between Lower Matecumbe and No Name Keys. On Labor Day in 1935, the most devastating and deadly hurricane in Florida Keys history struck, wiping out the roadways, the train system and built environment, and killing almost 500 people. Survivors of the 1935 hurricane were dedicated people who remained and rebuilt the community.

A road spanning the entire distance of the Florida Keys was later constructed and opened in 1938 on the remnant Flagler railway bed. The determination to rebuild after such a catastrophic event led to the rebirth of Islamorada. The population of Islamorada exploded exponentially after World War II as northerners discovered the rich history of the islands, building homes and businesses throughout the Village. The Village has come a long way since 1870 when the U.S. Census showed a total of twenty-nine (29) residents in the Islamorada area (seventy-seven (77) including Indian Key) to its most recent U.S. Census (2010) population of 6,119.

C) Functionality: Governance & Budgeting

In 1975, the State of Florida legislature recognized the unique environmental sensitivity and mounting development pressures of the region and designated the Florida Keys (Monroe County and its municipalities) and Key West as an Area of Critical State Concern (“ACSC”), one (1) of only four (4) areas in the state. The ACSC Principles of Guiding Development, found in Section 380.0552, Florida Statutes (“Fla. Stat.”),⁵ limit growth potential in the County and its municipalities by restricting new development, both residential and commercial, to ensure the protection of the natural environment and allow for orderly and balanced growth. This protects natural ecosystems while maintaining safe hurricane evacuation timelines for residents and visitors. As a result, the potential growth of the permanent population in the Florida Keys – including Islamorada – is minor.

Islamorada incorporated as a municipality on December 31, 1997. Under the Council-Manager form of government, the Islamorada Village Council has the independent power to enact local legislation, adopt budgets, determine policies and appoint officers and officials. All policies and decisions must be consistent with the ACSC Principles of Guiding Development.

D) The Built and Natural Environment

The waters of the FKNMS, in Florida Bay, the Gulf of Mexico and the Atlantic Ocean, surrounding the entire length of the Florida Keys (including Islamorada), are designated as Outstanding Florida Waters (“OFW”) by the Florida Department of Environmental Protection (“FDEP”). This designation means that these waters are specially protected because of their natural attributes, subjecting them to higher regulatory standards and a greater level of protection with regard to water quality. This special protection limits, and in some cases eliminates, discharges to these waters that would lower ambient (existing) water quality.

Islamorada, known by many as the sportfishing capital of the world, is home to perhaps the world’s highest density of professional offshore charter boats, serving as the premiere location for backcountry sportfishing and saltwater fly fishing. This is due in part to the designations of both the coinciding FKNMS and OFW which together protect the unique marine ecosystem as a whole. Additionally, Islamorada has a large amount of parks and open space, including Windley Key Fossil Reef Geologic State Park, six (6) Village parks and four (4) Village beaches.

Islamorada - By the Numbers

- » 18 miles long
- » ½ mile wide
- » 11,748 total acres (land and water)
- » 51 miles of public roadway
- » 34 miles of paved bike lanes
- » 105 acres of parks
- » 65.3 acres of protected habitat
- » 102.9 miles of water lines
- » 91 miles of wastewater lines
- » 5,038 total homes (3,662 single family, 150 multi-family)

Finally, Islamorada’s geology and elevation are such that tidal influence is significant due to the porous cap rock of the land. This is a large factor for consideration in a sea level rise planning effort because “barrier” type solutions will provide little benefit to mitigate against tidal impacts.



Islamorada Chamber of Commerce Office/Visitors Center, Islamorada, FL
Photo Source: Project Team

E) Lead by the People: Public Involvement Culture

For Islamorada, public involvement and intergovernmental coordination efforts play a significant role in forming policy and long-range visioning. Coordination of public involvement opportunities is typically initiated by the Village Council and is often in response to input from the public, Village Departments, or other governmental agencies or community organizations. Islamorada's Planning Department acts as a liaison to numerous intergovernmental groups, including advisory boards, councils and committees. These groups are comprised of members of the general public whose volunteer efforts and actions help shape and influence Islamorada's policies, infrastructure and design decisions and social programs.

Current Islamorada Advisory Boards, Councils and Committees

- » Water Quality Improvement Citizens' Advisory Committee
- » Parks and Recreation Citizen Advisory Committee
- » Near Shore Water Regulation Citizens' Support Committee
- » Landscape Advisory Committee
- » Historic Preservation Commission
- » Local Planning Agency
- » Achievable Housing Citizens Advisory Committee
- » Community Development Block Grant ("CDBG") Citizens Advisory Task Force ("CATF")
- » Development Review Committee
- » Youth Council



Founders Park, Islamorada, FL
Photo Source: Project Team

3. History of Sustainability and Climate-Related Efforts to Date

The Village has been committed to protecting and upgrading its infrastructure, natural systems and quality of life. All of these goals provide a base for this effort. In recent years, Islamorada initiated several climate and sustainability-related efforts to help meet these goals, including:

- Clean Marina Program (beginning in 2004);
- Village-wide wastewater collection and transmission system was completed in December 2015;
- Environmental Sustainability Plan (2007 – 2015; updated annually);
- Canal Restoration Projects (initiated in 2014); and
- Other efforts (including water quality improvements; open space, parks and recreation enhancements; infrastructure projects; and disaster preparedness and hazard mitigation efforts).

A) Environmental Sustainability Plan

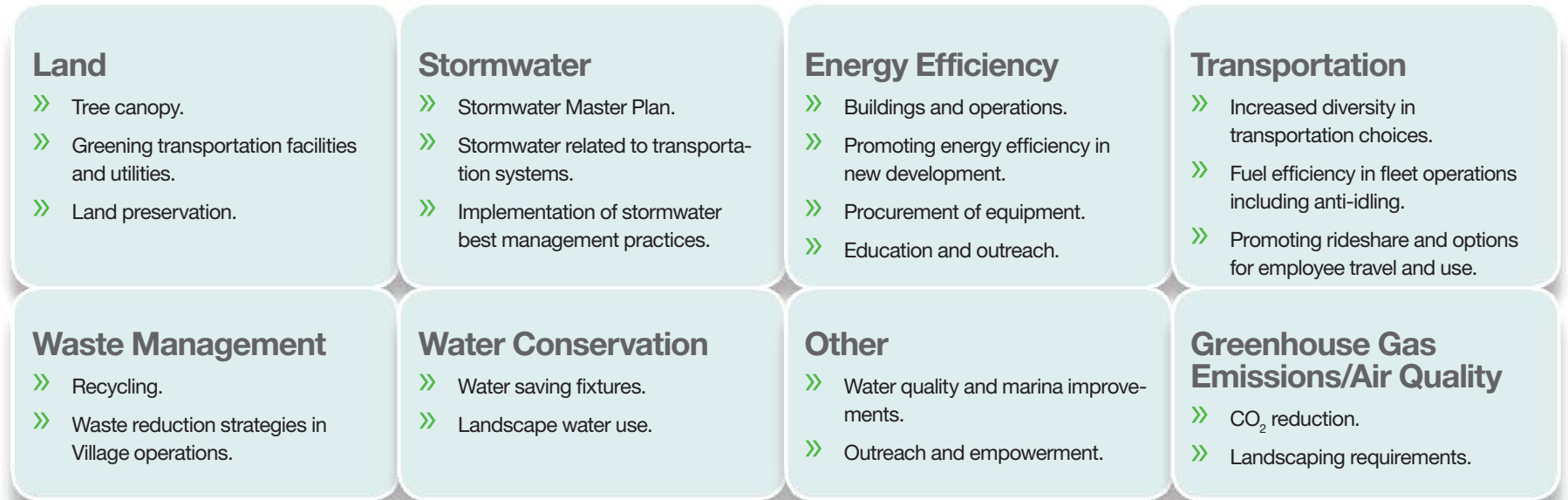
In 2007, Islamorada initiated a public input process and adopted its Environmental Sustainability Plan (“Sustainability Plan”). The Sustainability Plan has eight (8) major focus areas, the most comprehensive of which include energy efficiency and land conservation. The Sustainability Plan:

- Includes actions for implementation and goals for future implementation;
- Is intended to be utilized as a tool to monitor and review sustainability actions that have been achieved and to create a timeline for prioritizing future goals; and
- Is designed to be reviewed annually based on accomplishments, modify goals as necessary, and identify potential new goals that could be considered for implementation.



Plantation Yacht Harbor, Islamorada, FL
Photo Source: Project Team

The Environmental Sustainability Plan's eight (8) major focus areas are:



Since adoption of the original Sustainability Plan in 2007, Islamorada has made steady and continued progress implementing its goals/actions, including completing the annual review and update process. To date, eight (8) updates have been completed (Appendix A) and nineteen (19) new goals and actions added, with two (2) goals updated and four (4) goals removed. This process has captured new information related to climate change challenges, new best practices related to sustainability and new technology. Prior to implementation of the Sustainability Plan, Islamorada also developed several sustainable practices, including incorporating energy savings standards for new construction within the Village's Code of Ordinances ("Code"); the use of low energy lighting and water saving features in parks; a tree canopy expansion program; Code regulations for additional landscaping and buffers for projects requiring development orders; a Stormwater Master Plan; and receiving a Clean Marina designation.

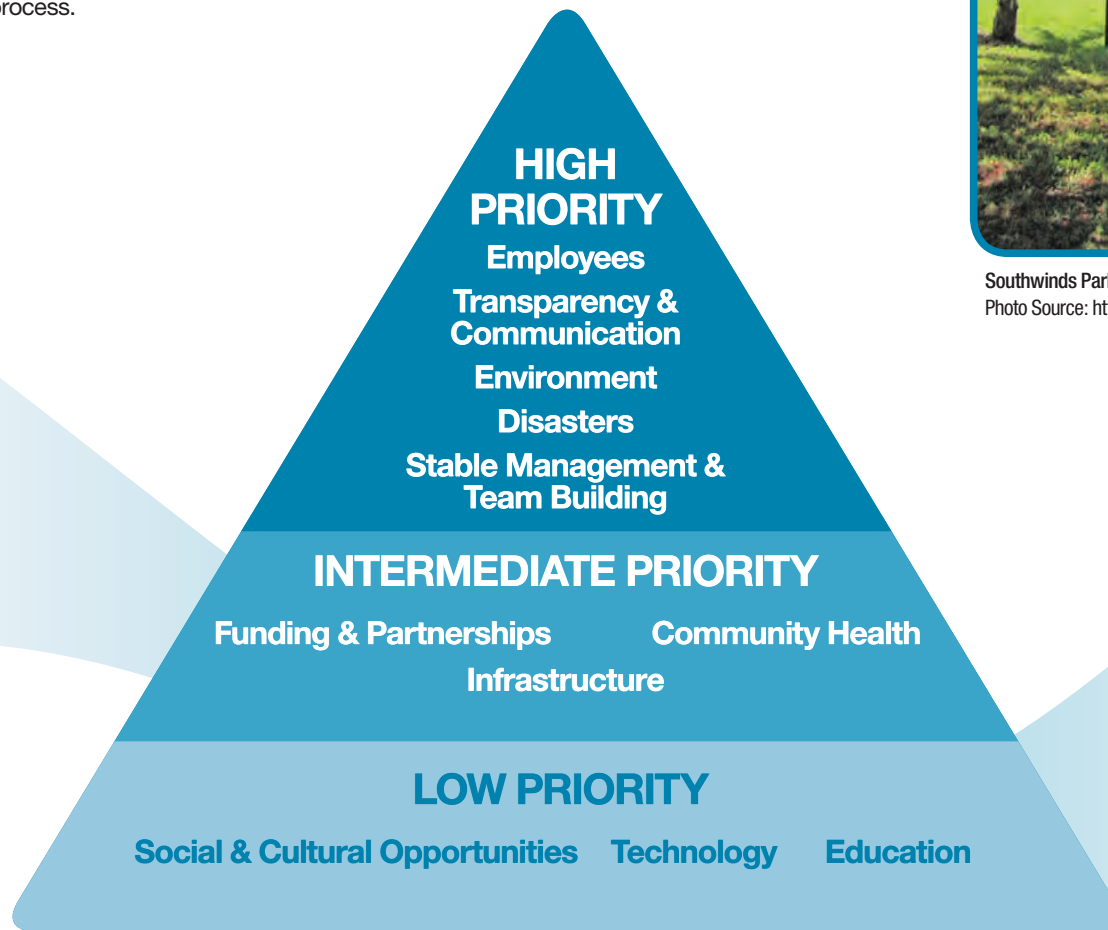
Appendix A provides a brief overview of Islamorada's major accomplishments and new, modified or eliminated goals from the Sustainability Plan since its original implementation. Although many of the actions and accomplishments below are ongoing, they may only be noted once.

B) Other Planning, Climate and Sustainability-Related Efforts

Outside of the Sustainability Plan's documented achievements, over the past few years Islamorada has completed, or has budgeted for, several other capital projects and planning efforts that can be characterized as furthering its sustainability goals.

Strategic Planning. On April 4, 2014, the Islamorada Village Council and Islamorada Department Heads participated in a Strategic Planning Workshop ("Workshop") to discuss the strengths and weaknesses of Village processes and policies. The ultimate goal of this Workshop was to develop solutions and goals to be implemented in the near and long term.

Since the Workshop, Islamorada has been using the strategic planning goals and sustainability plan goals to guide the annual budgeting process.



Southwinds Park, Islamorada, FL
Photo Source: <http://www.flkeystoday.com>

During the Workshop, the Council and staff prioritized several issues into high-, intermediate- and low-priority issues, as summarized in Table 1 below. The process and implementation of the Strategic Planning Workshop dovetails with the Islamorada Matters planning process, as reflected in the table below.

Table 1: Village Strategic Planning Goals & Priorities Related to Islamorada Matters Plan

Priority Level	Strategic Planning Workshop Goals and Priorities	Relationship to Islamorada Matters Plan
High	<p>Transparency/Communication: Disseminate information in a more transparent and timely manner to public.</p> <p>Environment: Protect and enhance the environment (water quality and natural resources) through policy.</p> <p>Disasters: Minimize vulnerability to natural disasters.</p>	<p>The planning process for the Islamorada Matters Plan involves public input, using online and in person outreach tools, surveys, public meetings, and community events.</p> <p>The Islamorada Matters Plan recommends adaptation policies covering environmental strategies.</p> <p>The Islamorada Matters Plan helps Islamorada create a community that is more resilient to natural disasters and sea level rise.</p>
Intermediate	<p>Funding/Partnerships: Build partnerships to secure funding, reduce unfunded mandates and cooperate with Monroe County on environmental issues.</p> <p>Community Health: Encourage health and wellness programs for the community.</p> <p>Infrastructure: Address infrastructure needs to include Council Chambers and Public Works facilities (funding sources must be addressed).</p>	<p>The Islamorada Matters Plan is created in collaboration with Monroe County, efficiently building upon information already being collected for that planning process, and is consistent with Monroe County's GreenKeys! project. Potential grant funds are also identified in the Plan.</p> <p>The Islamorada Matters Plan is comprehensive and will strengthen community health, safety and resiliency.</p> <p>The Islamorada Matters Plan identifies public infrastructure vulnerability and adaptation prioritization which will be incorporated into Islamorada's Capital Improvements Plan.</p>
Lower	<p>Social/Cultural: Create social and cultural opportunities beyond drinking and fishing.</p> <p>Technology: Utilize technology to provide more efficient and cost-effective services that improve quality of life without impacting quiet enjoyment of life.</p> <p>Education: Encourage educational outreach opportunities.</p>	<p>The Islamorada Matters Plan identifies social and cultural opportunities, through the STAR Community Rating System, where Islamorada could become more sustainable.</p> <p>The Islamorada Matters Plan recommends increased resource efficiency and access to human services, both of which would be benefitted by better technology within Islamorada.</p> <p>The planning process for the Islamorada Matters Plan involves significant educational outreach opportunities, including the use of electronic outreach and surveying tools, public meetings and event attendance.</p>
Other	<p>Islamorada Center/Community Character: Create an Islamorada "Center" that embraces and enhances community character while managing growth and conserving the environment.</p> <p>Wastewater: Complete wastewater projects to improve the condition of Islamorada, environmentally and aesthetically.</p>	<p>The Islamorada Matters Plan, through the STAR Community Rating System, recommends improvements to community connectivity, all of which will assist in improving community character and connectedness.</p> <p>The Islamorada Matters Plan makes numerous recommendations regarding improvements to infrastructure.</p>

Habitat, Natural Systems and Green Infrastructure. Islamorada addresses habitat, natural systems and green infrastructure improvements within policies related to protection of environmentally-sensitive areas and restoration of natural areas.

The Public Works Department continually removes invasive vegetation along the U.S. Highway 1 corridor and enhances landscaping throughout the Village's rights-of-way to facilitate the community's engagement with the natural areas. Through an Operating Agreement with Islamorada and with support from the Village Council, the Islamorada Foundation has made significant progress toward the build out project for the Southwinds Park, a passive community park of 1.1 acres on the Overseas Highway at Mile Marker 82.1 which was formerly the site of the Southwinds Motel. This effort was made possible through a 2004 Florida Communities Trust Property Acquisition Grant. The added vegetation and open space helps to improve drainage and water quality for the nearshore areas surrounding Islamorada.



Islamorada, FL
Photo Source: Project Team

In FY 2008-2009, Islamorada entered into a grant contract with the Florida Communities Trust to acquire nine (9) acres known as the Key Tree Cactus Preserve, and entered into a management plan to operate, manage and maintain the preserve. Islamorada received a donation of \$200,000 for an endowment to help pay for maintenance and other costs related to meeting the requirements of the Management Plan. Finance activities related to the Key Tree Cactus Property are also accounted for in the Capital Projects Fund. These natural areas are just two examples of Islamorada's dedication to the protection of the natural environment. The Village has acquired a total of five (5) natural areas through the Florida Communities Trust Property Acquisition Grant in addition to parcels donated by members of the public and purchased on behalf of the Village by the Monroe County Land Authority. Including the Florida Communities Trust parcels, the Village owns and manages over 170 acres of park and conservation property.

Infrastructure and Built Environment. Islamorada has made great strides towards the completion of important infrastructure projects including the wastewater disposal, canal restoration, and housing affordability projects. Historically, Islamorada was on septic systems and still had wastewater outfalls into the ocean creating sanitary and nearshore water quality issues. Islamorada, along with the County and other municipalities, was required to undertake a massive effort to design, fund and build centralized wastewater facilities and connect developed areas to sanitary sewer service. To fund the \$160 million wastewater project, Islamorada obtained a \$1.3 million reimbursement from the U.S. Army Corps of Engineers ("USACE") and a 2013 Small Cities Community Development Block Grant ("CDBG") of \$700,000 to specifically assist low- to moderate-income homeowners with sewer connection. The Village also received funds originally approved by the State Legislature in 2008 and set aside for wastewater projects through the Save Our Everglades Trust Fund ("Mayfield Grants"). Through these Mayfield Grants, the Village received \$18.7 million in FY 2012-13, \$19.5 million in FY 2013-14, and \$7 million in FY 2014-15. Islamorada recently finalized the extension of sanitary sewer service to its incorporated islands of Plantation Key (North and South Plantation Key), Windley Key, and Upper and Lower Matecumbe Keys. Completion of the project met the State of Florida mandated deadline of December 1, 2015, with substantial completion by November 20, 2015. The project furthers efforts to comply with the elimination of septic systems and discharges to nearshore waters. Wastewater is now collected from residential and commercial areas and conveyed to the Key Largo Wastewater Treatment Facility.

Islamorada continues to seek other funding sources for stormwater and canal restoration projects and continues to develop policies and programs to improve their existing canal system. The Village recently implemented amendments to the Comprehensive Plan and Land Development Regulations (“LDRs”) addressing bulkheads, seawalls and other hardened vertical shoreline structures to provide clarification and remedy inconsistencies with the Code, the Florida Statutes and the Florida Administrative Code. These amendments are intended to improve the drainage capabilities of the existing canal network. As the sea level rises, canals will become an increasingly important component in drainage of developed areas. Updates to the Environmental Regulations section of the LDRs are in the works for the coming year to further this effort for future development and redevelopment.



Amphitheatre, Islamorada, FL
Photo Source: Project Team

Islamorada has also made significant strides in addressing housing affordability. Islamorada’s Affordable Housing Fund was established in FY 2007-2008 for the purposes of planning, subsidizing and developing affordable housing. This Fund derives revenues from ‘in lieu of’ fees charged on building permits and from an allocation of interest earnings based upon monthly unused cash balances. The Achievable Housing Citizens Advisory Committee, formed in 2004, makes recommendations to the Village Council on ways to best utilize annual revenues and committed fund balances for affordable housing. Recommendations have included assistance to affordable housing property owners with costs related to wastewater projects and donations of land and money to Habitat for Humanity of the Upper Keys, Inc. to support the construction of single-family residences to be sold or transferred to low-income or moderate-income persons. Islamorada partnered with the Middle Keys Community Land Trust to complete a 16-unit townhouse project in 2008 for sale to low- and moderate-income households. The Village also partnered with Gorman & Company, Inc. to complete a 32-unit affordable rental housing project in 2013.

In 2013, Islamorada adopted new Comprehensive Plan and LDRs to increase the amount of square footage for the Nonresidential Building Permit Allocation System (“BPAS”) to 15,000 square feet per year. This increase was intended to alleviate stress on the BPAS system and resulted in 535 square feet of new nonresidential floor area allocated per new residential dwelling unit. Islamorada’s BPAS was originally created in 2002 (Ordinance 02-17) to facilitate implementation of Comprehensive Plan goals, objectives and policies; regulate the rate of growth in order to deter deterioration of public facility service levels, environmental degradation and potential land use conflicts; and encourage redevelopment of residential and nonresidential areas and affordable housing. Additionally, amendments to the Transfer of Development Rights (“TDRs”) ordinance (Ordinance 09-20) were adopted in 2009 to provide flexibility for the redistribution of residential dwelling units and decrease overall development, which helps remove barriers to adaptation planning.

Sustainability, Climate and Energy, Health & Safety. As part of state planning efforts for natural disaster mitigation and preparedness, Islamorada is a member of, and has actively participated in, regional plans including the 2010 Local Mitigation Strategy (“LMS”) for Monroe County and its Municipalities (and 2015 Update); the 2012 Hurricane Evacuation Management Plan and Interlocal Agreement (“ILA”) between the County, Municipalities and the state; and the 2015 Islamorada Pilot Project in order to participate in the Federal Emergency Management Agency’s (“FEMA’s”) Community Rating System (“CRS”).

» 2010 LMS for Monroe County and its Municipalities⁶ – One of the early steps for Islamorada and the County to improve resiliency to natural hazards. The LMS was prepared in accordance with FEMA Guidelines and the Florida Division of Emergency Management (“FDEM”). The LMS serves several purposes, including strategies for long-term resilience to natural hazards through actions that reduce exposure of people and property, and in doing so, LMS projects are eligible for certain state and federal grants. The LMS has been updated and was approved by the Islamorada Village Council on December 3, 2015. The LMS Update includes the Village’s identified damage reduction activities.

» Prior to 2005, the Village completed several activities including renovations to Fire Station #20 to include an emergency operations center and the Lower and Upper Matecumbe Stormwater Improvement Projects which provided drainage infrastructure for flood mitigation and the protection of sections of the islands particularly vulnerable to heavy flooding during mild rain events. From 2005-2014, the Village completed a new Village Hall and Fire Station #21 and Sheriff’s Substation, North Plantation Key Wastewater Treatment Plant, Lower Matecumbe Key Fire Station #19, Tollgate Shorts Stormwater Improvement Project, a study on the vulnerability of U.S. Highway 1 to storm surge at Sea Oats Beach, permanent installation of emergency generators in Coral Shores High School, adoption of a staged evacuation plan coordinated with the County and others, and acquisition of computer weather equipment for hurricane tracking purposes. Projects planned or currently underway include new Light Detection and Ranging (“LIDAR”) mapping of the Village to update flood base and storm surge vulnerability information, installation of emergency generators at Island Christian School, and the Islamorada Matters planning project.

Monroe County and Incorporated Municipalities

Key West, Marathon, Key Colony Beach, Layton,
and Islamorada Village of Islands

Local Mitigation Strategy 2015 Update



Florida Keys 1935 Hurricane Memorial

Monroe County LMS 2015 Update

Additionally, the Village is committed to the continued inspection of enclosures below elevated lowest floors and the continued identification and implementation of hazard mitigation projects for critical infrastructure. The projects completed by the Village as part of the LMS align well with the recommendations in this Plan. Efforts to mitigate against flooding and storm surge, increase emergency response capabilities, and improve stormwater treatment all serve to increase the overall sustainability and resiliency of the Village.

- » 2012 Hurricane Evacuation Plan/ILA between County, Municipalities and the State – In 2010, Islamorada, along with the County and other municipalities, the Florida Department of Economic Opportunity (“DEO”) and FDEM entered into a planning process to update the Hurricane Evacuation Model for the region. Pursuant to Section 380.0552, Fla. Stat., evacuation of all permanent residents of the Florida Keys must not exceed 24 hours. As a result, limited additional residential and commercial development is permitted in the Florida Keys for the next ten (10) years, and an updated evacuation plan was executed. This is memorialized in the 2012 Hurricane Evacuation Management Plan and ILA.
- » 2015 Islamorada Pilot Project – In 2014, Islamorada completed the requirements for compliance with the FEMA mandated “Islamorada Pilot Project” as required by 44 CFR §59.30 which is an inspection procedure. FEMA requires all communities in Monroe County to correct all deficiencies identified from the Pilot Program in order to participate in the National Flood Insurance Program (“NFIP”). The purpose of this Pilot Program was to provide communities with an additional means to identify whether structures built in Special Flood Hazard Areas (“SFHAs”) after the effective date of the initial Flood Insurance Rate Map (“FIRM”) comply with the community’s floodplain management regulations. The Pilot Program also assisted FEMA in verifying that structures insured under the NFIP’s Standard Flood Insurance Policy were properly rated. With successful completion of the Pilot Program, Islamorada has been accepted to FEMA’s CRS Program with a Class 7 rating and effective date of October 1, 2015.



The purpose of the CRS program is to provide incentives for community activities and programs that go above and beyond the minimum requirements for participation in the NFIP. While the NFIP typically regulates to the 100-year flood event or “base flood,” a community that participates in the CRS and works to reduce flood damage to existing buildings, manages development in areas not mapped by NFIP, protects new buildings beyond the minimum NFIP protection level, and preserves and restores natural functions of floodplains helps insurance agents obtain flood data and people to obtain discounts on flood insurance premiums. With the Village’s Class 7 rating, residents can expect to see NFIP premium reductions from 5-15%, with 5% for non-SFHA properties and 15% for SFHA properties.

In order to improve the health and safety of Village residents, Islamorada made several recent accomplishments and commitments including:

- Policy amendments regarding ordinances to address guidelines for noise pollution;
- Enforcement of “No Discharge” and other water quality regulations in the nearshore waters;
- Quarterly shoreline cleanups with Islamorada residents;
- Continued support of the Islamorada Community Emergency Response Team (“CERT”) during an emergency or disaster recovery with assistance from volunteers from the community; and
- Implemented staff training including licensing of the Building Inspector as Building Plans Examiner, Single Family Dwelling Inspector and Coastal Construction Inspector while the Permit clerk will obtain International Code Council certification, as a permit technician.

Education. An essential key to a community's health and safety success can be found in its school system. Islamorada's close-knit, family-friendly culture lays the foundation for the outstanding education offered by four (4) top-notch schools within the boundaries of Islamorada. On Plantation Key are two (2) of the top rated public schools in Florida: Coral Shores High School and Plantation Key Elementary School. Each of these schools traditionally and consistently receives an "A" rating and offers state-of-the-art programs and facilities for the families of the Upper Keys.

The Islamorada Matters Plan enhances and supports the original Sustainability Plan and other sustainability efforts implemented by Islamorada in recent years. As highlighted above, the most recent annual review process for the Sustainability Plan was conducted in September 2014 after the April 2014 Strategic Planning Workshop. The goals and priorities identified in the Workshop, many of which reflect Sustainability Plan goals, were used to influence the FY 2014-2015 and FY 2015-2016 budget process.

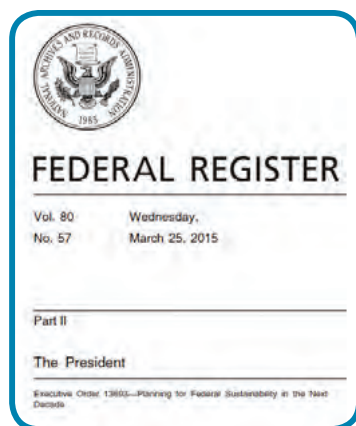


C) Policy and Regulatory Overview on Sea Level Rise, Sustainability and Climate Planning

Several policies have been implemented at the Federal level to address the potential impacts from climate change. While not binding at the local government level, they do provide guidance on where Federal agencies are becoming more efficient and resilient in their operations which can serve as an example for other levels of government. A Federal Executive Order signed in 2009 created the Interagency Climate Change Adaptation Task Force (“Task Force”).⁷ Eight (8) Guiding Principles were developed by the Task Force for consideration by governments, communities and private sector organizations when designing and implementing sustainability measures and climate change adaptation policies. The Council on Environmental Quality (“CEQ”) expanded the policies and incorporated them into the planning requirements for all Federal agencies. These principles include:



- 1 Adaptation of an integrated sustainability approach into the core policies, planning and practices of the agencies;
- 2 Prioritizing planning approaches for the most vulnerable people, places and infrastructure;
- 3 Using best available science when implementing adaptation protocols even though there will always be risk of uncertainty;
- 4 Building strong partnerships by coordinating among geographical scales and levels of government based on the varying and unique risks of the locality and region;
- 5 Applying standard risk management tools that most governments already have in place to aid in critical decisions for potential consequences of inaction as well as options for risk reduction;
- 6 Maximizing mutual benefits by coordinating with and supporting other climate or environmental initiatives such as disaster preparedness, resource management, and cost-effective technologies to reduce greenhouse gases (“GHGs”);
- 7 Applying ecosystem-based approaches by integrating biodiversity and ecosystem services into adaptation strategies; and
- 8 Continuously evaluating performance by measuring goals and metrics to evaluate whether adaptive measures are achieving goals.⁸



Executive Order 13693

Similarly, Federal Executive Order 13693⁹ was signed in March 2015 and takes the planning concepts a step further by enumerating twelve (12) specific sustainability goals for Federal agencies. It also encourages parallel changes “across the federal supply chain.” Some of these new goals include setting building efficiency targets for renewable or alternative energy use, reducing energy intensity in Federal buildings by certain percentages, and establishing alternative energy acquisition in government procurement policies. While these more specific goals are not met with regulatory compliance consequences, the goals are a step towards establishing identifiable sustainability metrics and again serve as a great example for other levels of government seeking to “formalize” sustainability and climate policies and initiatives.

Several policies have also been implemented at the state level over the past decade to address GHG mitigation and climate change. In 2006, the Florida Renewable Energy Technologies and Energy Efficiency Act (“Florida Energy Act”)¹⁰ was passed which created the Florida Energy Commission (“FEC”), renewable energy grants and a solar rebate program. In 2007, a series of executive orders were signed aimed at reducing GHG emissions.¹¹ Other 2007 legislation¹² directed the Florida Building Commission to create a model green building ordinance. In 2008, legislation was passed directing local governments to include GHG reduction strategies into the Local Government Comprehensive Plans.¹³ That same year, legislation also required municipal governments and state agencies to construct new buildings to a recognized green third party rating system standard, such as the U.S. Green Building Council’s Leadership in Energy & Environmental Design (“LEED”) or Florida Green Building Coalition standards.¹⁴ This still applies today for any government buildings constructed after 2008.

In 2011, Chapter 163, Fla. Stat. was revised to include the concept of “adaptation action areas” (“AAAs”).¹⁵ Adaptation action areas are a permissive option for local governments to address sea level rise adaption as part of the Coastal Management Element in their Comprehensive Plan. Adaptation action areas or “adaptation areas” are defined as:

...a designation in the coastal management element of a local government’s comprehensive plan which identifies one or more areas that experience coastal flooding due to extreme high tides and storm surge, and that are vulnerable to the related impacts of rising sea levels for the purposes of prioritizing funding for infrastructure needs and adaptation planning.¹⁶

Most recently, legislation passed in 2015 amending Section 163.3178, Fla. Stat.,¹⁷ expanded the requirements in the redevelopment component of Coastal Management Element of a local government’s Comprehensive Plan. Effective July 1, 2015, all required Coastal Management Elements must include development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in coastal areas which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea level rise. This amendment is significant in that for the first time Comprehensive Plans must consider the impacts of sea level rise in long-range comprehensive planning efforts.



Islamorada, FL
Photo Source: Project Team

4. Overview of Other Data for Development of the Plan

As part of the Islamorada Matters project, sea level rise modeling was conducted to determine the vulnerability of Islamorada infrastructure and habitat to both nuisance flooding and sea level rise at select intervals. This section discusses in more detail the modeling approach, data identified for use in the modeling runs, identified data gaps and adjustments made to address missing or insufficient data.

A) Modeling Approach and Data Utilized in this Effort

A key component of the Islamorada Matters planning process was the performance of a vulnerability assessment for sea level rise scenarios in the years 2030 and 2060 based on existing data. The vulnerability assessment included a comprehensive evaluation of ground elevation relative to current and future tidewater heights for roads, public buildings and other critical building infrastructure, wastewater facilities, water supply, and electrical utility infrastructure using geographic information systems (“GIS”) and other tools. Assessments of habitat change vulnerability were also performed using both tidewater inundation and the Sea Level Affecting Marshes Model (“SLAMM”).

**SOUTHEAST FLORIDA
REGIONAL COMPACT
CLIMATE
CHANGE**



The Southeast Florida Regional Climate Change Compact (“SFRCCC”) currently plans for a 2030 sea level rise planning scenario minimum of three (3) inches and a maximum of seven (7) inches for all communities within Monroe, Miami-Dade, Broward, and Palm Beach counties.¹⁸ The minimum 2060 sea level rise planning scenario is nine (9) inches, while the maximum is twenty-four (24) inches. The base planning year, or the assumed zero elevation point, for sea level rise under all SFRCCC scenarios is 2010. More recently, the SFRCCC has developed additional projected scenarios incorporating a wider range of sea level rise projections including a new National Oceanic and Atmospheric Administration (“NOAA”) “High Risk” projection that should be used for long-term risk intolerant planning. This would be relevant to infrastructure and/or habitat-related decisions with a longer useful life beyond the 2030 or 2060 timeframe or where significant capital investment is required. During the drafting of this document, those High Risk projections were developed, but since they are not recommended for use in all infrastructure and habitat planning, the SFRCCC’s previous 3 - 7” (2030) and 9-24” (2060) projections remain the most appropriate range within those timeframes. For further discussion on the use of these High Risk projections, please see the Village of Islamorada: GIS Vulnerability Assessment for Sea Level Rise Planning report included in Appendix B.

The first step in developing the sea level rise vulnerability assessment was compilation of existing geo-spatial, elevation and tabular datasets. Data obtained for use in this vulnerability assessment included LIDAR Digital Elevation Model (“DEM”) data, property parcels, Monroe County sections, aerial photography, land cover and habitat data, road centerline data, critical facilities data, parcels with County and/or Village facilities, government building data, correctional facilities data, law enforcement data, schools data, Islamorada critical facilities data, and stormwater infrastructure data. A full description of those datasets, including the sources of the data, is provided in the Village of Islamorada: GIS Vulnerability Assessment for Sea Level Rise Planning report included in Appendix B.

i. Infrastructure including Government Buildings and Facilities

For this project, the Team developed a building footprints GIS layer for eighty (80) parcels including the visible outlines of structures that various sources (i.e., Monroe County, Village of Islamorada, and UF GeoPlan) have identified and listed as public. This includes all critical infrastructure located within Islamorada such as schools, law enforcement, fire stations, other government buildings, electric and water utilities, and disaster response staging areas. Most buildings in Islamorada, including those that are not elevated on piers or stilts, are built to exceed base flood elevation.

The Team utilized the master road center lines from the Monroe County Property Appraiser's office, a shapefile with new road condition data from the County GIS office, and a series of tidal inundation maps for road infrastructure as developed through the Florida Department of Transportation ("FDOT") Sketch Tool. The FDOT Sketch Tool uses low, intermediate, and high sea level rise curves based upon the USACE sea level rise projection methodology which is also the basis for the low and high curves defined by the SFRCCC's unified sea level rise projections. The low USACE curve is based on a linear extrapolation of tide gauge records. Road segments with inundation risk for the USACE low, intermediate, and high curves are delineated for the years 2040, 2060, 2080, and 2100. To conform with the SFRCCC recommendations for sea level rise projections, the Team only evaluated road inundation risks for the intermediate and high sea level rise scenarios in the FDOT Sketch Tool.

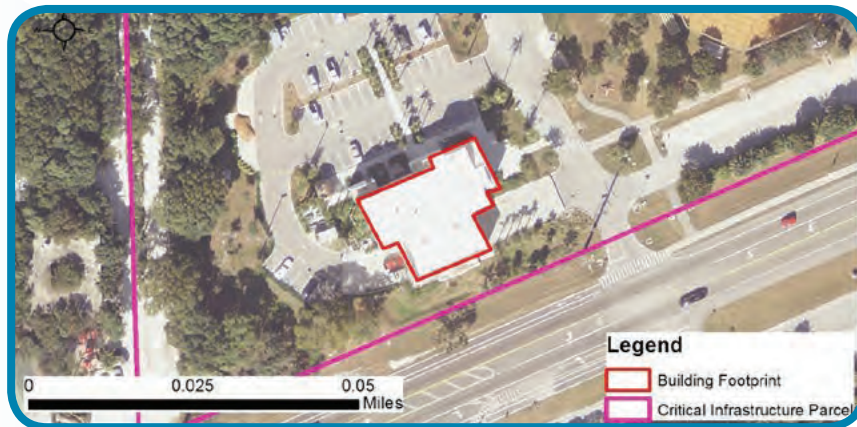


Figure 1: Building footprint outline of the Village of Islamorada Administration Center

recommendations for addressing current impacts were made particular to that site. The goal was to potentially evaluate new stormwater management practices and capital projects limited to these sites that could be implemented in the future. Because that assessment focused on particular rainfall ponding issues, not daily tidal flooding, specific recommendations for areas identified in that assessment are not made in this Plan. Identifying the interaction between higher tides and stormwater drainage potential requires very detailed hydrologic modeling which exceeds the scope of recommendations being made in this Plan.

ii. Habitat

The Team also performed an analysis of potential inundation of land cover types within the Village due to sea level rise using low and high sea level scenarios at 2030 and 2060. This analysis was conducted using habitat and land cover type data, with extracted elevation data from the LIDAR DEM. Land cover types evaluated include freshwater, upland and anthropogenic land covers within the Village.

The SLAMM, an advanced land cover and ecosystem change tool, was used to simulate the impacts of future sea level rise on wetland and upland ecosystems. The SLAMM analysis conducted as part of the Islamorada Matters project builds upon a previous iteration of SLAMM runs performed by the Florida Fish and Wildlife Conservation Commission ("FWC") for the Florida Keys portion of Monroe County. This analysis updates this prior FWC work by using a later version of SLAMM (version 6.2) and revised sea level rise curves that conform precisely to the lower and upper bounds of the SFRCCC.



Islamorada, FL
Photo Source: Project Team

iii. Buildings and Homes

The Coastal Adaptation to Sea level rise Tool (“COAST”) modeling software was utilized to mimic floods from storms and sea level rise on community assets, including homes and businesses within Islamorada. Modeling was performed to determine potential impacts on these assets from storm surge and sea level rise in 2030 and 2060, based on SFRCCC high and low sea level rise scenario projections. The software was also used to calculate the cumulative damages to homes and businesses over time, considering both nuisance flooding and Wilma-sized storm events, to help the Village better understand the cost of not adapting, as well as the costs and benefits of implementing various adaptation strategies.

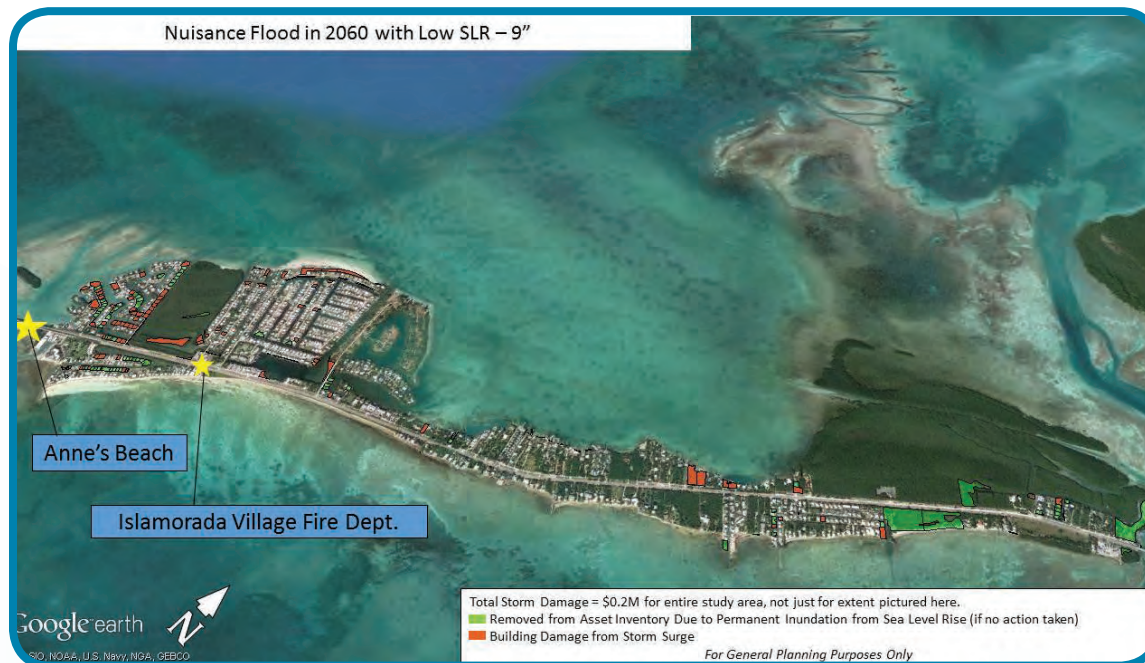


Figure 2. Google Earth image of potential flooding damages from a nuisance flood (low sea level rise scenario) in 2060 for a section of Islamorada, FL. Coral parcels indicate those flooded from storm surge, with the height of the coral extrusions representing relative damage amounts (in dollars). Parcels in green indicate those permanently inundated from sea level rise. (See Appendix D for larger image)

B) Identified Data “Gaps” and Process for Addressing

Some analyses could have benefitted from improved data sources at a much greater cost, but in order to develop general vulnerability recommendations, the Team worked to utilize existing data sets as beneficially as possible. A few key areas where the Team had to address missing or insufficient data (data gaps) are provided below.

Vulnerability Assessment Data. Monroe County and the Village of Islamorada initially lacked a GIS building footprint layer. Elevation Certificates were located for a total of twelve (12) public facilities within the jurisdictional boundaries of Islamorada. Elevation Certificates were not located for an additional sixty-eight (68) structures contained on parcels with critical infrastructure or other public facilities within the Village. While the finished flood elevations from Elevation Certificates provides the most definitive basis for evaluating a structure’s flood damage vulnerability, use of LIDAR elevation calculations with building footprints (developed for this project for certain public or critical structures) conforms with methods that FEMA has evaluated when Elevation Certificates are not available.

COAST Modeling Data. Several limitations were identified for the COAST modeling results. First, values for individual buildings were sometimes not available, as Monroe County Property Appraiser assessing records combine the values of all buildings on a particular lot into one number. Similarly, total loss of building value and land value for the lot was assumed to occur when daily tidal waters (without any surge) reached the imaginary point centered in the parcel polygon (parcel “centroid”). Third, only structural damage to buildings was included, based upon USACE Depth Damage Functions for still water or static flooding. Fourth, damage to building contents or damage from wind or wave action was not included, meaning that damage figures are conservative in quantifying true loss. Structural Building Value was the only asset analyzed for this type of analysis.



US 1 Near White Marlin Boulevard
Photo Source: Project Team

Roads. The Team replicated the FDOT method to develop a new road segment inundation surface corresponding to low and high sea level rise projections for 2030 and 2060 as defined by the SFRCCC. The FDOT Sketch Planning Tool does not model effects of sea level rise on bridges. GIS data supplied by Monroe County provided point locations to identify bridges, but did not contain the footprint information necessary for more detailed analysis of raw LIDAR returns associated with bridge elevations.

Water Supply. The Florida Keys Aqueduct Authority (“FKAA”) provided a full set of data showing the locations of water supply lines, pumps, and other distribution infrastructure. Above ground and below ground (invert) elevations were not provided for water supply infrastructure. GIS data can be used to develop general vulnerability assessments that overlay geographic inundation risk at the years 2030 and 2060 with the locations of FKAA infrastructure. However, current data were not sufficient to conduct comprehensive damage assessments for water supply infrastructure due to saltwater corrosion or other sea level rise stressors.

Despite this challenge, site vulnerability to sea level rise flooding for above ground water infrastructure was modeled for 2030 and 2060. Visualizations and assessments of possible saltwater intrusion risks to FKAA wellfields at SFRCCC sea level rise values for 2030 (3-7 inches) and 2060 (9-24 inches) were assessed using the U.S. Geological Survey (“USGS”) scenarios that correspond closest to the low and high values.

Wastewater. The Village provided data with locations of the master repump stations and an elevation certificate for the one wastewater pump station that was functional at the time the Plan was developed. The three (3) additional wastewater pump stations were in various phases of construction during Plan development. These data supported a vulnerability assessment of these facilities. Development of survey-quality electronic datasets of underground wastewater sewer pipe systems, electronic components of wastewater systems, and other components with vulnerability to saltwater exposure is recommended as a next step to support engineering assessments and adaptive maintenance of the wastewater system that address long-term sea level rise stressors.

C) Recommendations for Additional Data Development in the Future

For future planning efforts in the Village, additional data should be developed for more detailed vulnerability analyses in the future. Further recommendations related to data development occur in the individual Focus Area discussions as well.

Building Footprints. The building footprints datasets developed for the Plan provide detailed guidance as to where public structures and critical infrastructure may be at risk of future flooding from sea level rise. It is highly recommended that future flood vulnerability assessments build upon the work in the Plan and continue efforts to develop a more complete digital record of Elevation Certificates for public facilities. Use, integration, and improvement of this Elevation Certificate record will promote higher confidence in flood risk assessments, thereby providing a basis for development of a building by building prioritization for flood retrofit and/or rebuilding as conditions warrant.

Because tidal flooding from sea level rise is a hazard that develops progressively, issues such as unacceptable loss of access and the eventual vulnerability of an individual structure due to tidal flooding will be preceded by many minor, but visible, nuisance flooding events. For this reason, the Team recommends the development and implementation of a geographic database for Islamorada staff (and interested residents) to document the time and location of nuisance flood events that affect parking lots, access roads, commercial and residential areas, and landscapes of public facilities. Coupled with the building footprint layer and associated vulnerability assessment, such a geographically explicit and temporally documented nuisance flood record will provide a strong basis for implementation of targeted and justified public investments to mitigate tidal flooding vulnerabilities.



Ron Levy Aquatic Center at Founders Park, Islamorada, FL
Photo Source: Project Team

Habitat. Summary results for the 2030 and 2060 SLAMM land cover analyses in Islamorada are provided in Appendix B. Although SLAMM is an advanced ecosystem and land cover change model, the Team notes that caution is warranted in terms of how the results of SLAMM should be interpreted within the Florida Keys, including the Village. In particular, further calibration of the model with historic land cover change and field observations is warranted to provide guidance for further updates and revisions of the modeling input parameters. The current results do, however, provide a potential basis for discussing and comparing the magnitude of potential ecosystem changes from sea level rise in the Keys.



D) Peer Review

A Peer Review process was conducted on the Plan's technical methodologies in conjunction with the County's planning process. Specific comments were received by the following individuals to assist in refinement of the vulnerability analysis:

1. Jayanatha Obeysekara, PhD, PE, DWRE, Chief Modeler, Hydrologic & Environmental Systems Modeling, South Florida Water Management District;
2. Jennifer Jurado, PhD, Director, Environmental Protection and Growth Management Department, Environmental Planning and Community Resilience Division, Broward County; and
3. Nicholas G. Aumen, PhD, Regional Science Advisor, USGS.

The Team also received comments and periodic feedback from Jerry Lorenz, PhD, State Research Director, Audubon of Florida and reviewed related work completed by Billy D. Causey, PhD, Regional Director, Southeast Atlantic, Gulf of Mexico and Caribbean Region, NOAA Office of National Marine Sanctuaries. Other Monroe County and Village staff also provided comments at numerous points throughout the planning process, and in particular, to the technical foundation to support the planning process. Appendix C describes and includes responses to Peer Review comments.

E) Vulnerability Assessment Results for Habitat and Facilities

Results for habitat and land cover areas potentially lost to tidal inundation for each 2030 sea level rise scenario revealed that habitats dominated by exotic species are the most vulnerable to sea level rise inundation. Land cover classified as developed showed the greatest amount of possible or likely acreage loss for both 2030 scenarios. Built areas denoted by impervious surface land cover showed a comparatively low percentage of area subject to tidal inundation by 2030 (predominately composed of roads and parking areas). More than 10% of the freshwater wetlands in Islamorada (less than four (4) acres total) could be affected by regular saltwater intrusion under the low sea level rise scenario (3 inches) by 2030. Under the high scenario (7 inches), this percentage increases to 20%.

For 2060, habitats dominated by exotic species continued to show high exposure to sea level rise inundation under both scenarios. Developed land again showed the greatest acreage lost under both 2060 scenarios. Approximately 7.2% (32.7 acres) of tropical hammock forest in Islamorada will likely be lost with two (2) feet of sea level rise. Large habitat areas adjacent to the Atlantic and Florida Bay coasts and much of Lower Matecumbe Key show widespread exposure to possible or likely inundation effects with the higher scenarios of sea level rise because they are not protected by the existing relatively high ridge.



Figure 3: Road segments predicted as vulnerable to nuisance flooding with 24 inches of sea level rise (2060, High Scenario). (See Appendix B for larger image)



Figure 4. Visualization of Sketch Planning Tool nuisance flooding. (See Appendix B for larger image)

Results of the Sketch Tool analysis of road vulnerability shows impacts to Village roadways both during nuisance floods during King Tide events and as a result of daily inundation flooding. Because U.S. Highway 1 is the sole road and emergency evacuation route for the Florida Keys, even low-level nuisance flooding is problematic for public safety, health and welfare. Decreased traffic flow, increased accident risk and higher long-term maintenance costs are all concerns with nuisance flooding. These concerns are magnified exponentially with daily tidal flooding, and will likely lead to issues with evacuation times and increased costs for road replacement and eventual elevation. Roadway miles impacted by nuisance flooding and daily inundation flooding within the Village are provided in the tables below.

Two (2) facilities that showed the most near-term vulnerability to enhanced flood risks from sea level rise were the wastewater pump station located at 142 Sunshine Boulevard and the Fire Station #19 located at 74070 U.S. Highway 1. For both facilities, the first floor elevation is near or below the 2030 extreme event flood threshold for the high sea level rise scenario (6.83 feet above Mean Higher High Water (“MHHW”)). This means that these facilities would be exposed to extreme event flooding by 2030 if the highest rate of sea level rise occurs. Under the low sea level rise scenario, extreme event flood exposure would not be seen until between 2046 and 2051.

Table 2: Summary of Road Miles Vulnerable to Nuisance Flooding During King Tide Events*

	Original Road Miles	2030 Low	2030 High	2060 Low	2060 High
U.S. Highway 1	17.2 mi.	0.2 mi.	0.4 mi.	0.5 mi.	3.2 mi.
All Roads	67.0 mi.	2.1 mi.	3.8 mi.	5.2 mi.	24.9 mi.

* King Tide describes the elevation of tides that are higher than 99% of the high tides that occur each year at the Vaca Key tide gauge. For the 2030 Low scenario, the height of a King Tide is calculated at 1.5' above current MHHW, as referenced to the 1992 National Tidal Datum Epoch. For the 2030 High scenario, the height of a King Tide is calculated at 1.91' above current MHHW. For the 2060 Low scenario, the height of a King Tide is calculated at 2.0' above current MHHW. For the 2060 High scenario, the height of a King Tide is calculated at 3.33' above current MHHW.

Table 3: Summary of Road Miles Vulnerable to Inundation Flooding (Daily Tidal Floods)*

	Original Road Miles	2030 Low	2030 High	2060 Low	2060 High
U.S. Highway 1	17.2 mi.	0 mi.	0.02 mi.	0.03 mi.	0.5 mi.
All Roads	67.0 mi.	0.1 mi.	0.3 mi.	0.4 mi.	5.2 mi.

* Daily tidal flooding occurs when a road segment is at an elevation lower than a future MHHW mark as affected by sea level rise. For the 2030 Low scenario, future MHHW is calculated at 0.42' above current MHHW, as referenced to the 1992 National Tidal Datum Epoch. For the 2030 High scenario, future MHHW is calculated at 0.83' above current MHHW. For the 2060 Low scenario, future MHHW is calculated at 0.92' above current MHHW. For the 2060 High scenario, future MHHW tide is calculated at 2.25' above current MHHW.

For nuisance flooding vulnerability in 2030 under the low and high sea level rise scenarios, impacts to U.S. Highway 1 are minimal. Road impacts appear first on secondary roads in the residential portions of the north end of Plantation Key on both sides of U.S. Highway 1. For nuisance flooding vulnerability in 2060 under a high sea level rise scenario, impacts on U.S. Highway 1 can be seen throughout the Village, most prominently on Windley Key, Upper Matecumbe Key and Lower Matecumbe Key. Residential roads throughout Lower Matecumbe Key and southern Plantation Key in the neighborhood just north of Snake Creek (west of U.S. Highway 1) are also significantly impacted under this scenario. Inundation flooding during daily high tides is much less prevalent along both U.S. Highway 1 and secondary residential streets under both scenarios in 2030 and 2060.

Full vulnerability assessment results are provided in the Village of Islamorada: GIS Vulnerability Assessment for Sea Level Rise Planning report included in Appendix B.

F) COAST Sea Level Rise Modeling

The COAST modeling software mimics floods from storm events and sea level rise on community assets, including homes and businesses. The model also performs a vulnerability assessment by calculating cumulative damage to communities over time, from both storm events and sea level rise. This allows communities to better understand the cost of not adapting to or otherwise mitigating the impacts of storms and sea level rise. Finally, the model also calculates damage reductions (essentially the costs and benefits) of implementing various adaptation actions to mitigate storm impacts and sea level rise.

The above calculations are determined by adding sea level rise and storm surge to the nearest known MHHW height, which is a starting or “bottom point” for any analysis of how high waters may rise in the future. For the Upper Keys, this value is available at the NOAA Vaca Key tide gauge.

Several model inputs were identified for use in the COAST model, including:

- » LIDAR imagery of Islamorada and surrounding area which was converted to proper vertical units which consisted of a five (5) meter by five (5) meter grid with single elevation value in feet for each square;
- » Property values for land and buildings provided by the Monroe County Tax Collector’s Office;
- » Tide data including the value of the high tide level for Islamorada from the Vaca Key tide station;
- » Four (4) sea level rise scenario estimates obtained from the SFRCCC’s Unified Sea Level Rise Projection for Southeast Florida; and
- » Depth-damage function tables created by the USACE based on damage measurements.

Using the above data, the COAST model was used to perform a vulnerability assessment of homes and commercial building structures and to model adaptation action scenarios. The “asset” selected for analysis was the value of residential and commercial buildings. Sea level rise assumptions were based upon the Unified Sea Level Rise Projection including 3-7” (2030) and 9-24” (2060). Surge values from various sized storms were obtained from the most recent FEMA Flood Insurance Study.

The three (3) adaptation actions modeled included: 1) elevating and floodproofing buildings not already elevated and floodproofed, 2) building offshore barriers close to the coast, and 3) purchasing properties vulnerable to sea level rise through a voluntary buyout program over a phased timeframe.

To determine model inputs, the Team conducted three (3) community workshops in October, November and December 2014. During these workshops, participants voted on modeling parameters and assumptions for “no-action” and the three (3) adaptation actions during Workshops #2 and #3. The modeling results and community engagement process enabled the Team to provide residents with a context for beginning more difficult conversations regarding their vulnerabilities.

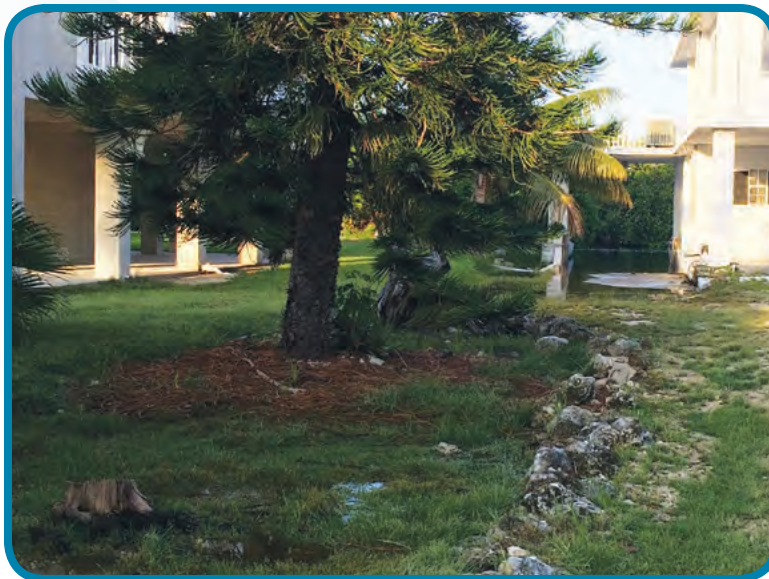


Figure 5. Google Earth image of potential flooding damages from a Hurricane Wilma-size flood (high sea level rise scenario) in 2060 for a section of Islamorada, FL. Coral parcels indicate those flooded from storm surge, with the height of the coral extrusions representing relative damage amounts (in dollars). Parcels in green indicate those permanently inundated from sea level rise. (See Appendix D for larger image)

Timescale	SLR Scenario	Cumulative Damage to Buildings by Scenario Date
2014-2030	Low - 3.00"	\$544.7 Million
2014-2030	High - 7.00"	\$610.2 Million
2031-2060	Low - 9.00"	\$1.189 Billion
2031-2060	High - 24.00"	\$2.130 Billion
2014-2060	Low - 9.00"	\$1.734 Billion
2014-2060	High - 24.00"	\$2.741 Billion

Figure 6: Cumulative damage estimated from all possible storms during a given time period with high and low sea level rise.

Vulnerability Assessment Results. Key findings from the “worst case” vulnerability assessment included one-time damage estimates of \$2.3 Million from a nuisance flood in 2060 under a high sea level rise scenario of 24” and \$288.0 Million from a Hurricane Wilma-size flood in 2060 under the same sea level rise scenario. Cumulative damages over time from storms of various sizes resulted in significantly higher damage estimates by 2060, with \$1.734 Billion in damages under a low sea level rise scenario and \$2.741 Billion in damages under a high sea level rise scenario. This is because the cumulative damage estimate includes damage from all storms that may occur within a certain time period and assumes repetitive rebuilding and damage to structures not permanently inundated during that period (once complete inundation of a parcel occurs the damage value for that parcel is no longer factored into the damage totals).



Private Residence, Islamorada, FL
Photo Source: Project Team

The value of properties (buildings and land) permanently inundated by only sea level rise by 2060 (from daily flooding at high tide) ranged from \$151.1 Million (low scenario) to \$295.5 Million (high scenario). Once the modeling indicated such properties would be flooded by the daily high tide, the software no longer subjected it to continuing cumulative damages from that point in time forward. Therefore, these damage figures (\$151.1 Million - \$295.5 Million) depict the true risk from only sea level rise impacts rather than increasingly frequent damage from multiple levels of storm events over time.

Adaptation Scenario Modeling Results. Results of the adaptation action modeling revealed that the action with the best benefit-cost ratio was elevating and floodproofing buildings (accounting for those not already elevated or floodproofed in Islamorada), which had a benefit-cost ratio between 5.24 and 15.28. This means that for every \$1.00 spent on elevating and floodproofing, the avoided damages would range from \$5.24 to \$15.28, depending on the sea level rise scenario (high or low) and construction cost estimates (high or low). Building offshore barriers had the second highest benefit-cost ratios (1.59 to 2.20). The voluntary buyout program had the lowest benefit-cost ratios (0.02 to 0.18). It should be noted that the parameters voted upon by workshop participants directly influenced the benefit-cost ratios as further described in Appendix D and different implementation parameters could provide different benefit-cost ratios (for instance level of participation and when a certain strategy was implemented). These benefit-cost ratios were presented to Islamorada residents, and keypad polling technology was used to evaluate community opinion on the results. After reviewing the COAST model results and participating in the group discussions, residents voted that elevating and floodproofing buildings was their most preferred action. In addition, residents supported Islamorada pursuing sources of funding to help private property owners implement this strategy. A breakdown of the public involvement and participation in the entire planning effort can be found in Section 7.

A copy of the complete Islamorada Matters: Analysis of Damages from Storm Surge and Sea Level Rise in Islamorada using the Coastal Adaptation to Sea Level Rise Tool (COAST) Report is included in Appendix D.

5. Use of Sustainability Tools for Assessing and Rating Communities (“STAR”)

Given Islamorada’s commitment to the principles in its Strategic Plan and existing Sustainability Plan, for this planning process the Team used the third-party rating system of STAR to evaluate its sustainability goals and actions. This Plan incorporates the results of the preliminary STAR assessment performed for the Village.

A) Overview of the STAR Framework

STAR is the first national third-party certification program that recognizes sustainable communities and provides a tool for evaluating a community’s level of sustainability. STAR is both a framework and formal certification program. Originally released in October 2012, STAR is intended to provide communities with a method for identifying, validating, and supporting the implementation of best practices that improve sustainable community conditions. STAR provides local leaders with a framework for assessing their community’s current level of sustainability, setting targets for moving forward, and measuring progress along the way. STAR consists of seven (7) main goal areas broken down into forty-four (44) objectives, 109 outcome level measures, 408 local actions and 526 indicators to assist local governments and communities in more effectively strategizing and defining sustainability planning efforts.

The STAR goal areas and objectives are provided below.



Table 4. STAR Community Rating System Goal Area Matrix¹⁹

Built Environment	Climate & Energy	Economy & Jobs	Education, Arts & Community	Equity & Empowerment	Health & Safety	Natural Systems
Ambient Light & Noise	Climate Adaptation	Business Retention & Development	Arts & Culture	Civic Engagement	Active Living	Green Infrastructure
Community Water Systems	Greenhouse Gas Mitigation	Green Market Development	Community Cohesion	Civil & Human Rights	Community Health & Health Systems	Invasive Species
Compact & Complete Communities	Greening the Energy Supply	Local Economy	Educational Opportunity & Attainment	Environmental Justice	Emergency Prevention & Response	Natural Resource Protection
Housing Affordability	Industrial Sector Resource Efficiency	Quality Jobs & Living Wages	Historic Preservation	Equitable Services & Access	Food Access & Nutrition	Outdoor Air Quality
Infill & Redevelopment	Resource Efficient Buildings	Targeted Industry Development	Social & Cultural Diversity	Human Services	Indoor Air Quality	Water in the Environment
Public Spaces	Resource Efficient Public Infrastructure	Workforce Readiness		Poverty Prevention & Alleviation	Natural & Human Hazards	Working Lands
Transportation Choices	Waste Minimization				Safe Communities	

Because each community addresses sustainability differently, there are three (3) levels of subscription available in STAR: 1) Participating STAR Community; 2) Reporting STAR Community; and 3) Leadership STAR Community. Participating STAR Communities – like Islamorada – are those that conduct a preliminary assessment of their sustainability and establish a “baseline” sustainability score. This introductory level allows the municipality to assess current conditions and set goals and priorities for becoming more sustainable after seeing where they currently stand on the sustainability continuum. Conducting a preliminary assessment results in a preliminary rating score, ranging from 0 to the maximum 720 points. Reporting STAR Communities undergo a more substantive assessment involving the compilation and electronic reporting of data gathered during the assessment process and a formal review of submitted data by STAR technical staff. Once certified, an official STAR score lasts three (3) years, though a local government can submit an application for re-certification to update their rating score within that time period if so desired (this requires an annual subscription renewal and additional cost to re-certify).

There are four (4) certification rating levels under STAR



There are four (4) certification rating levels under STAR, including the 5-STAR Community (600-720 points), 4-STAR Community (400-599 points), 3-STAR Community (200-399 points), and Reporting STAR Community (<200 points).

B) STAR Outcomes and Actions

Within STAR, each of the forty-four (44) Objectives contains two (2) types of evaluation measures: Community Level Outcomes and Local Actions.

- » Community Level Outcomes: more quantitative, measurable, condition-level indicators that show community progress on a STAR Objective. Examples include reductions in energy use or increased transportation access.
- » Local Actions: more qualitative actions a government takes to move toward the Community Level Outcomes – the range of decisions, investments, programs, plans, and codes that a local community puts in place. Local actions focus on deliverables that move towards Outcomes, and can be done by both the local government and other community groups and partners. Examples include policies, codes and regulations, as well partnerships and specific education and outreach programs to achieve desired results.

Because of the qualitative nature of STAR and the multi-disciplinary input into its development, STAR serves as a sound basis for developing recommendations in this planning process. The STAR framework provides a robust metric of outcomes and actions that local governments can use to evaluate current and previous planning initiatives. It can also be used to track performance for the planning process. Outcome level measures provide quantitative measures for determining the effectiveness of initiative implementation. Additionally, the suite of local actions within the STAR framework provides ideas that local governments can use in implementing new initiatives to achieve desired outcome level measures.

In addition to guiding recommendations in this Plan, the STAR framework can also be used to guide future Comprehensive Plan update processes. STAR's comprehensive metrics provide local governments with a methodical approach to identifying strengths and weaknesses in the existing Comprehensive Plan. There is significant overlap between the goal areas within the STAR framework and recommended Comprehensive Plan principles created by the American Planning Association ("APA") as part of its Sustaining Places initiative. APA's recommended Comprehensive Plan principles include: 1) Livable Built Environment, 2) Harmony with Nature, 3) Resilient Economy, 4) Interwoven Equity, 5) Healthy Community, and 6) Responsible Regionalism. Of the forty-four (44) STAR Objectives, the following dovetail best with APA's recommended principles and the overall Comprehensive Planning process:

- Compact & Complete Communities
- Housing Affordability
- Infill & Redevelopment
- Public Spaces
- Transportation Choices
- Climate Adaptation
- GHG Mitigation
- Local Economy
- Community Cohesion
- Historic Preservation
- Environmental Justice
- Equitable Services & Access
- Active Living
- Food Access & Nutrition
- Natural & Human Hazards
- Green Infrastructure
- Natural Resources Protection

C) Islamorada's Preliminary Assessment

The preliminary assessment allows a community to research and document gaps in their sustainability planning efforts, establishing a "baseline" score. Establishing this baseline allows communities to strategize ways to effectively improve their services, policies and procedures to strengthen their community and work towards a higher level of sustainability.

Beginning in February of 2014, Islamorada conducted a preliminary STAR assessment of current policies, practices and services previously initiated and implemented using the STAR framework. Over the course of several months, research was conducted to identify initiatives in each of the seven (7) STAR goal areas. In instances where Islamorada was affiliated with, supportive of or otherwise involved in programs, services and planning initiatives conducted by other entities on a regional scale, Islamorada was credited for that participation. This is consistent with the STAR guidance and includes initiatives outside of Islamorada's formal jurisdiction, but where there is cross collaboration and there are co-benefits, so that points are credited where appropriate.



Hurricane Monument, Islamorada, FL
Photo Source: Project Team

Results of Islamorada's preliminary assessment indicate that Islamorada obtained a preliminary score of 256.9 out of the available 720 points. This equates to a 3-Star Community ranking under STAR. Note however that according to STAR, the final certified score after review by STAR technical staff decreases on average 60-100 points due to data discrepancies. Communities are then allowed to resubmit additional information to address data gaps which is then reviewed by technical staff typically resulting in an improved score. Because of the preliminary score indicated by this research, if the Village ever pursues formal STAR certification it will be critical to ensure accuracy and completeness in all data submitted for review to ensure that a 3-STAR Community ranking is ultimately achieved. A breakdown of Islamorada's preliminary score by goal area is depicted below.

Table 5. Preliminary STAR Assessment Points Breakdown

Goal Area	Points Scored	Points Available	% of Total Points Earned
Built Environment	40.2	100	40.2%
Climate & Energy	52.3	100	52.3%
Economy & Jobs	11.4	100	11.4%
Education, Arts & Community	39.6	70	56.5%
Equity & Empowerment	18.1	100	18.1%
Health & Safety	51.6	100	51.6%
Natural Systems	38.8	100	38.8%
Innovation & Process Credits	5	50	10%
TOTAL	256.9	720	35.5%

Islamorada scored the highest in the goal areas of Education, Arts & Community, Climate & Energy and Health & Safety, respectively. Islamorada's participation in this planning process, participation in the SFRCCC, implementation of Sustainability Plan goals and its progressive BPAS incentive program all helped Islamorada gain points. Similarly, open space and shoreline protection policies, as well as stormwater infrastructure improvements, also helped increase the Village's score. Islamorada's Fire and Emergency Management efforts, in combination with similar services provided by the County, also helped the Village attain a higher score. Islamorada scored fewer points in the Natural Systems, Economy & Job and Equity & Empowerment goal areas in large part due to its unique geography and smaller population and somewhat limited access to services in these areas which are typically more robust in areas with larger population.

In the four (4) goal areas with the greatest relationship to this planning effort (Climate & Energy, Built Environment, Natural Systems, and Health & Safety), Islamorada scored fairly well. The highest and lowest point breakdowns for these goal areas are depicted in the graphic below. The STAR Crosswalk Excel spreadsheet illustrating the results of Islamorada's preliminary assessment is provided in Appendix E.

Climate & Energy		Built Environment		Natural Systems		Health & Safety	
Highest Points:	Lowest Points:	Highest Points:	Lowest Points:	Highest Points:	Lowest Points:	Highest Points:	Lowest Points:
GHG Mitigation	Resource Efficient Buildings	Community Water Systems	Infill and Redevelopment	Water in the Environment	Green Infrastructure	Emergency Prevention & Response	Natural & Human Hazards
Greening the Energy Supply	Resource Efficient Public Infrastructure	Public Spaces	Compact & Complete Communities	Invasive Species	Outdoor Air Quality	Active Living	Safe Communities
Resource Efficiency	Waste Minimization	Housing Affordability	Ambient Noise & Light	Natural Resource Protection	Working Lands	Community Health & Health Systems	Indoor Air Quality
Climate Adaptation		Transportation Choices					Food Access & Nutrition

D) How Islamorada's Preliminary Score Compares to Other Certified STAR Communities

Islamorada's preliminary score of 256.9 out of 720 points is high for a community of its size. For comparative purposes, the Team reviewed scores of other communities that also received certified scores within the 3-STAR Community range. Other communities achieving a 3-STAR Community rating are much larger than Islamorada, with populations ranging from 22,000 to 100,000 (as compared to the Village's population of 6,000).

Table 6. Other 3-STAR Certified Communities

Community	Population	Score	Date of Certification	Community	Population	Score	Date of Certification
Albany, NY	97,000	215.2	6/1/2014	Fayetteville, AR	75,000	271.9	8/10/2014
Woodbridge Township, NJ	99,585	219.5	2/2/2015	El Cerrito, CA	23,549	274.6	5/27/2014
Reading, PA	87,893	234.1	5/4/2015	Rosemount, MN	22,000	325	3/8/2015

E) Certification and Scoring

If desired, Islamorada can leverage the work done in completing the preliminary STAR assessment to undergo the formal STAR certification process if there is interest in doing so. To pursue formal certification, the Village would need to subscribe to STAR as a Reporting STAR Community, a year-long subscription which provides access to an online data storage and reporting tool. Formal certification would require additional data compilation and input of the collected data into the STAR online reporting tool. At the conclusion of data compilation and input activities, a formal verification would be requested from STAR's technical staff to verify the data submitted for accuracy and assign a formal score and rating based upon the total points achieved. Once certified, the score is valid for three (3) years.

Case Study: Baltimore, Maryland STAR Integration

The City of Baltimore ("City") faces a wide range of natural hazards like flooding, coastal storms and extreme heat. In 2013, the City prepared a Disaster Preparedness Project and Plan ("DP3"), combining hazard mitigation and climate adaptation into a single plan. Their DP3 included an innovative flood vulnerability assessment showing the estimated flooding, sea level rise and coastal storm influence of climate change, coastal hazards assessment showing how urban forests, parks and green space provide a storm buffer and heat vulnerability assessment identifying urban heat islands and hot spots.

The City is currently in the implementation phase, taking actions to strengthen their resilience based on the results of the DP3. High priority actions include:

- New floodplain regulations more stringent than FEMA;
- Growing Green Initiative which uses vacant lots for stormwater management and coastal buffering;
- Installation of 200 Urban Heat Island Sensors in hot spot communities where over thirty (30) tree plantings have been conducted;
- Integration of resilience considerations into the City's Capital Improvements Process;
- Citizen and business education about emergency preparedness and the impacts of climate change; and
- Development of a tree database that considers climate change impacts and identifies which tree species are best to plant in specific areas to help mitigate the impacts.

The City's climate adaptation efforts and current implementation strategy helped contribute to the 5-STAR rating obtained by the City of Baltimore in April 2015 (one of only three 5-STAR Communities in the U.S.).

F) Future Use of STAR and Key Areas for Improvement

Given the comprehensive nature of STAR across all seven (7) goal areas that span from economic development to social values, there are many uses for this information beyond just this planning process. It can be used as a roadmap, as a planning tool, as a way to organize/guide public engagement processes, to aid in decision-making, for performance-based budgeting, and as a measuring stick to determine whether investments are achieving outcomes. Communities have used STAR for strategic planning purposes as well as comprehensive planning purposes.

The Islamorada Matters planning effort focuses on integrating four (4) main STAR goal areas for future efforts, including: Climate & Energy, Built Environment, Natural Systems and Health & Safety, as well as the formulation of additional recommendations outside of the STAR framework. These STAR goal areas have been incorporated into the main Focus Areas of this Plan specific to the Village (as discussed in Section 6) to assure this planning process is tailored to the Village's goal of focusing on sea level rise. After completion of the STAR preliminary assessment, Islamorada staff and the Team prioritized the remaining local actions and outcome level measures that seemed most applicable or practical to Islamorada and in the greatest alignment with future Village goals for increasing overall sustainability. Only those local actions and outcome level measures most applicable to Islamorada were prioritized and are therefore included in this Plan. These recommendations reflect local actions and/or outcome level measures within the STAR framework that have yet to be implemented by Islamorada and can be found in Appendix E. The three (3) remaining goal areas from STAR (Equity & Empowerment, Economy & Jobs and Education, Arts & Community) are not discussed in the body of this document; however goal priorities for these areas are provided in the Goal Prioritization Memorandum included in Appendix E.

**Always plan ahead.
It wasn't raining when
Noah built the ark.**

Richard C. Cushing



6. Sea Level Rise Policy and the Islamorada Focus Area Prioritization

The USACE requires consideration of the direct and indirect effects of sea level rise on coastal and estuarine zones when “managing, planning, engineering, designing, constructing, operating, and maintaining” civil works projects.²⁰ Selecting a course of action for USACE projects also must involve consideration of the risks, consequences, and benefits for each possible alternative as they relate to human health and safety, economics, the environment, and society. The USACE adopted a scenario-based approach for dealing with future sea level rise uncertainties by requiring plans and designs to consider three (3) possible projections:

▼ Low	based upon the historic rate of sea level change.
▼ Medium	calculated using National Research Council and Intergovernmental Panel on Climate Change (“IPCC”) projections.
▼ High	exceeding IPCC projections to accommodate for the potential rapid loss of ice from Antarctica and Greenland.

Structural and non-structural alternatives must be developed and assessed for the entire range of future sea level rise projections. The USACE approach is a good basis for approaching other capital planning decisions.

Re-evaluating capital expenditures along the coastline will require sometimes difficult decisions that address the longer-term, sometimes incremental changes in sea levels. Sometimes this difficulty arises from misconceptions and the absence of a sense of urgency to address a slowly emerging problem. Building public support through education and outreach will help decision-makers exercise discretion in approving or denying capital improvement projects (“CIPs”) based upon the long-term effects of climate change and sea level rise.



ADAPTATION POLICY STATEMENT

The primary and overarching policy document for USACE is the *USACE Climate Preparedness and Resilience Policy Statement*, signed by Assistant Secretary of the Army Jo-Ellen Darcy in June 2014.

As the Nation's largest and oldest manager of water resources, the US Army Corps of Engineers (USACE) has long been successfully adapting its policies, programs, projects, planning, and operations to impacts from important drivers of global change and variability.

It is the policy of USACE to integrate climate change preparedness and resilience planning and actions in all activities for the purpose of enhancing the resilience of our built and natural water-resource infrastructure and the effectiveness of our military support mission, and to reduce the potential vulnerabilities of that infrastructure and those missions to the effects of climate change and variability. USACE shall continue undertaking its climate change preparedness and resilience planning, in consultation with internal and external experts and with our districts, divisions, and Centers, and shall implement the results of that planning using the best available – and actionable – climate science and climate change information. USACE shall also continue its efforts with other agencies to develop the science and engineering research on climate change information into the actionable basis for adapting to climate change impacts. Furthermore, USACE shall continue to consider potential climate change impacts when undertaking long-term planning, setting priorities, and making decisions affecting its resources, programs, policies, and operations.

These actions, which USACE is now conducting and has outlined for the future, are fully compatible with the guiding principles and framework of the Council on Climate Preparedness and Resilience and its predecessor, the Federal Interagency Climate Change Adaptation Task Force, with Executive Order 13653 and its December 19, 2013 instructions *Preparing Federal Agency Climate Change Adaptation Plans In Accordance with Executive Order 13653*; and with Executive Order 13514 and the *Implementing Instructions for Federal Agency Climate Change Adaptation* issued on March 4, 2011.

USACE understands and is acting to integrate climate adaptation (managing the unavoidable impacts) with mitigation (avoiding the manageable impacts). USACE recognizes the very significant differences between climate change adaptation and climate change mitigation in terms of physical complexity, fiscal and material resources, level of knowledge and technical readiness, and temporal and geographic scale. These differences mean that very different knowledge, skills, and abilities are needed to understand, plan and implement climate preparedness and resilience policies and measures as compared to the ones for implementing mitigation measures. It is the policy of USACE that mitigation and adaptation investments and responses to climate change shall be considered together to avoid situations where near-term mitigation measures might be implemented that would be overcome by longer-term climate impacts. Requiring adaptation, or where a short-term mitigation action would preclude a longer-term adaptation action.

Work to understand and adapt to the impacts of climate and global change is well underway at USACE, and the policy enunciated here is closely aligned with the USACE Campaign Plan and the USACE Civil Works Strategic Plan. USACE has several integrated programs directed at parts of climate change adaptation; in addition, many coordinated elements from other programs support the development of approaches to understand and mainstream climate change.

There are four (4) general categories of adaptation strategies: avoid, accommodate, protect, and retreat. After a major event like Hurricane Sandy in 2012, communities are confronted with how to implement these various strategies in the context of rebuilding. Within each of these broad categories, various recommendations for planning ahead can be categorized.

- Avoidance limits new development or infrastructure in areas that are vulnerable to sea level rise by redirecting development to less vulnerable areas. These types of strategies can be implemented through TDRs, conservation easements, setbacks, and other mechanisms.²¹
- Accommodation strategies acknowledge the long-term effects of sea level rise on an area, while implementing short-term measures to maintain existing uses.²² Examples of accommodation strategies include elevating a structure, drainage modifications, green infrastructure, and floodgates, among others.²³
- Protection adaptation strategies focus on protecting land from inundation, erosion, or storm-induced flooding through the construction of various structures such as jetties, groins, living shorelines, bulkheads, and beach nourishment.²⁴ Construction of these structures helps preserve a static shoreline, which may provide a short-term solution to the long-term impacts of sea level rise.²⁵ Many of these strategies are already commonly used in Florida, including: periodic beach renourishment projects which have had varying levels of success in maintaining coastal beaches; bulkheads constructed by private homeowners to stabilize their properties; and dikes that protect public infrastructure, low-lying communities, and environmentally-sensitive areas. Hybrid approaches to protecting shorelines are also used to “retain some of the storm-resistance of a hard structure, while also maintaining some of the features of natural shorelines.”²⁶
- Retreat strategies allow for natural shoreline migration through land conservation and the removal of structures that prevent shoreline movement (e.g. dikes, berms and bulkheads). Depending on the strategy and the timing of the impact, different options may or may not be available due to land availability and current development patterns.



Seaside Heights, NJ post-Hurricane Sandy
Photo Source: National Geographic Magazine, September 2013

Based on this, five (5) main Focus Areas were specifically identified for Islamorada and are included in this Plan: Habitat, Infrastructure and Built Environment, Village Buildings and Key Facilities, Adaptation Strategies for Homes and Businesses, and Sustainability. These are the primary topics included in this Section because they are more individualized to Islamorada than what could be accomplished using the STAR framework alone. Specific recommendations stemming from the data collection and modeling efforts described in Section 4 have also been developed for these Focus Areas. Finally, best practices research was conducted for all Focus Areas to identify what other governments and agencies are doing relative to sea level rise and climate adaptation planning.



Communications about sea level rise in the future will be important. In conjunction with this project, the Village has created a new section of its website with information about key facts and deliverables from this project. Recommendations related to outreach and education within the community are integrated throughout the various substantive sections of this Plan. The purpose is to holistically approach a Focus Area by including all recommendations related to that particular subject area. Frequently, “outreach activities” are considered to be of lesser importance, but the Team specifically chose to incorporate them to provide them the same importance as all the other recommendations in that Focus Area.

A) Habitat



The Habitat Focus Area includes recommendations related to existing public and private recreational and open space facilities within the Village, as well as natural areas and conservation lands within Islamorada. Nearly all of the Village's natural areas containing environmentally-sensitive vegetative communities are located along the shorelines of Islamorada. Other important natural areas in the Village include aquatic habitats consisting of coral reefs, seagrass beds and natural hardbottom habitats.

The predominant upland native habitat in Islamorada is tropical hardwood hammock. Tropical hardwood hammocks can be further characterized by their vegetation to include separate categories recognized as unique and different. Islamorada currently recognizes two upland native habitats: (1) low & high hammock, and (2) beach berm. These habitats contain unique plant and animal species, some of which are endemic, and many of which are listed with special status such as threatened, endangered, and regionally important.

Transitional habitats and wetland areas within Islamorada consist of fringing mangroves, isolated mangrove habitats, and buttonwood transitional zones. Mangroves can be tidally influenced or isolated in pockets that form in saturated soils and low areas. Buttonwood transitional zones are typically located between shoreline habitats and the upland communities, typically low hammock. Buttonwood transitional zones are not tidally influenced other than very high tides during infrequent events. These habitats consist of many threatened and endangered plant animal species due to their fragile and unique composition.

Islamorada's native habitat communities contain unique plant and animal species. Over the decades the State of Florida and local governmental agencies have worked together to purchase these areas for conservation and recreation. Examples of local State parks include: Windley Key State Geological Site, Lignumvitae Key Aquatic Preserve, Lignumvitae Key Botanical State Park, Indian Key Historic State Park, and the San Pedro Underwater Archaeological Preserve Site.

Village recreational areas include pocket parks, neighborhood parks, community parks, special facilities, district parks, regional parks, and natural reservations. Islamorada is known for its abundant recreational areas and quantity of open space. There are ten (10) parks encompassing 105 acres that are owned and maintained by the Village, including:

- Plantation Tropical Preserve
- Southwinds Preserve
- Green Turtle Hammock Preserve
- Plantation Hammock Preserve
- Hurricane Monument
- Key Tree Cactus Property
- Founders Park
- Library Beach Park
- Sea Oats Beach
- Anne's Beach

These parks provide swimming areas, play areas, picnic areas, beaches, boardwalks, athletic courts, boat ramps, marinas, dog parks, and recreational buildings. The Windley Key State Geological Site also includes 28.9 acres of fossil reef. Additionally, there are two (2) FDOT owned roadside recreational areas including the Upper Matecumbe Key Picnic Area and Channel Two Catwalk. Lastly, there are also approximately 34 miles of paved bike lanes and 10.8 miles of pedestrian and bicycle pathways within the Village.



Library Beach Mangroves
Photo Source: Project Team

Islamorada is also home to a diverse marine ecosystem that includes some of the world's most extensive seagrass beds and part of the only living coral barrier reef tract in the continental United States. Aside from providing habitat and feeding grounds for many marine species, the coral reefs surrounding Islamorada reduce wave impacts during storm events while the seagrass beds serve to stabilize the benthic sediments and may reduce wave impacts that potentially cause shoreline erosion.

By the Numbers

- Parks - 105 acres of Village parks, including Plantation Tropical Preserve, Plantation Hammock Preserve, Founders Park, Southwinds Preserve, Hurricane Monument, Library Beach Preserve, Green Turtle Hammock Park, Key Tree Cactus Property, Sea Oats Beach and Anne's Beach.
- Geological Sites - 28.9 acres of fossil reef at Windley Key State Geological Site reef.
- Marine Habitat – thousands of acres of marine habitat surrounding Islamorada.
- Shoreline – 50 miles of shoreline protecting the Village.

While beach and berm formation is relatively infrequent in the Florida Keys, Islamorada does have natural beaches from Upper Matecumbe Key southward, between MM 83 and MM 81 on Upper Matecumbe Key and along the entire oceanside of Lower Matecumbe Key. The only estuarine area in Islamorada is Florida Bay which functions like an estuary during years when the rainfall rate exceeds the rate of evapotranspiration. During these times, the Bay functions as a highly saline tropical lagoon.

Given the vast array of natural areas and habitat in the Village, this is a critical Focus Area for recommendations and improvements in this Plan. Recommendations within this Focus Area are aimed at helping the community protect and restore the places that provide the resources that support natural systems and wildlife in Islamorada. An ecosystems approach should be used to recognize the wide range of benefits natural systems provide, including water, food, and natural regulating processes affecting climate and floods.

Many of the ecosystems in and surrounding Islamorada help mitigate damage from storms and rising sea levels. For example, coastal marshes and mangrove forests can help dissipate storm surge impacts and slow down coastal erosion. Additionally, coral reefs can help reduce more than 85% of the wave energy along the coast, substantially protecting coastal communities from erosion and storm surges.²⁷

Hard and soft protection methods can also be used as mitigation techniques. “Hard” coastal protection is a broad term for most engineered features such as seawalls, revetments, cave fills, and bulkheads that block the landward retreat of the shoreline. Breakwaters, groins, and jetties may or may not be considered hard protection, depending upon their purpose and use with other “soft” protection methods. Although seawalls and shoreline hardening are generally not favored where more natural shorelines exist, they remain central to the discussion of sea level rise adaptation. Although hard armoring disrupts natural processes and may pose risks to property, it may be necessary to protect critical infrastructure in areas where retreat or relocation are not feasible. It should be noted that hardened shorelines in low-lying areas can be expected to slow, or in some cases stop, the movement of tidal systems. Sea level rise may reduce the effectiveness of existing hard armoring structures designed for lower sea levels and reinforcing or expanding these structures may be necessary in some instances over time.



Anne's Beach, Islamorada, FL
Photo Source: Project Team

“Soft” coastal protection methods replenish, enhance, or mimic natural buffers, and they include beach nourishment, living shorelines, or wetlands. They are often most effective where similar soft protection already occurs. Many soft protection methods may also be part of a green infrastructure program. Living shorelines are an approach to stabilize shoreline areas while maintaining habitat and natural shoreline processes. These shorelines are designed with plants, sand, and limited amounts of rock to restore and enhance coastal habitats, promote sedimentation, and protect against shoreline erosion. They are effective in low-to-medium-energy coastal and estuarine areas and tidally influenced creeks, streams, and rivers. Non-structural armoring involves replenishing or mimicking natural buffers. It may also involve elevating land so that structures are less vulnerable to inundation. Examples include dune creation and preservation, and wetland construction and restoration.

While some types of ecosystems have a capacity to adapt to sea level rise, the key to that adaptation is the ability to migrate to higher elevations. Options for this migration are likely constrained where adjacent areas have been intensively developed. Therefore, improved buffering strategies are those that will allow for the natural features of lands to migrate where possible. Environmental mitigation projects and acquisition strategies could help provide for that opportunity. Focusing on habitat connectivity that allows species to shift over time will also be important. This will be particularly important in buttonwood and mangrove areas. Specifically, protecting mangroves provides a protection mechanism due to their ability to build up soil at varying degrees. Finally, creating an initial database to monitor die-back and habitat shifts over time will help in identifying opportunities and constraints for strategy implementation.

As a baseline, the Village (potentially in partnership with the County or another State agency) may consider a more in-depth analysis of its wetlands including: identification of uplands for preservation and acquisition to provide areas for shoreline migration; prevention of the construction of structures that would act as barriers to migration; identification of wetland restoration techniques to allow wetlands to keep pace with sea level rise; cataloging of pertinent research needs; and identification of further policy and regulatory changes.

Given the objectives of this Focus Area and efforts initiated by the Village to date, the following have been prioritized and are recommended for implementation in Islamorada.



Lake Worth Lagoon, FL
Photo Source: Project Team

Table 7. Habitat Recommendations



Habitat

Habitat Recommendations

Recommendation		Overlap with Sustainability Plan	STAR Points
H.1	Update Stormwater Master Plan to include sea level rise assumptions and incorporate green infrastructure features as a priority. ²⁸	Land, bullet #7	NS-1(7)
H.2	Conduct a habitat analysis to document species, condition, size and location of trees within the Village. Focus particular attention on identifying priority areas where die-backs may be occurring in upland vegetation or habitat shifts with greater or lesser tolerance to tidal inundation. Also identify areas where up-gradient movement of natural tidal communities can occur (proximate to buttonwoods and mangroves). The inventory can serve as a tool to identify opportunities for strategy implementation as well as create a baseline to monitor changes over time.	Land, bullet #1 Land, bullet #3 Land, bullet #9	
H.3	Identify the areas where living shorelines are most appropriate and develop guidance for implementation, monitoring, and evaluation taking into account future sea level rise projections and storm events.		
H.4	Update requirements for ecological buffers (which may include increases depending on habitat type) and provide guidance on how to establish or adjust these buffers to accommodate sea level rise including the concept of “habitat migration corridors” that allow sensitive habitats and species to migrate inland or upland as sea level rises.		
H.5	Discourage the use of hard protection unless no other feasible alternative is available and require enhanced mitigation if it is not. Require any hard protection or mitigation designs be adapted to changing sea level and require monitoring of impacts over time.		
H.6	Specify priority areas where hard shoreline protection structures should be removed (through property owner incentives), including areas where structures threaten the survival of wetlands and other habitat, or beaches, trails, and other recreational areas.		
H.7	Identify vulnerable habitats, species and open space for prioritized land acquisition and maintenance. The ability of a parcel to provide a means for sea level rise adaptation should be a criterion for acquisition. Rank higher properties that may allow landward migration of wetlands than properties that are currently or predicted to be inundated as waters rise.	Land, bullet #7	

Recommendation		Overlap with Sustainability Plan	STAR Points
H.8	Identify and map natural inundation buffers which could also provide sea level rise adaptation benefit.		
H.9	Add policies to require site-specific evaluation of potential sea level rise impacts to archeological and paleontological resources on a development site. This would include, but not be limited to, those listed on the Historic Resources Survey list.		
H.10	Identify areas for habitat maintenance where the removal of exotics could improve the quality of that area to serve as a natural or soft protection option. Establish a maintenance schedule that factors in the benefits of managing habitats as a natural defense strategy against sea level rise impacts.		
H.11	Identify impacts to public access and recreation that might result from sea level rise and maintain existing access and visitor serving amenities to ensure maximum protection.		
H.12	Identify and protect “core areas” within the Village with the best chances of persistence during sea level rise and perform intensive management of these areas and ex-situ conservation strategies which may include species relocation. Specific areas should focus on hammocks, beach areas and shorelines that may be stabilized, considering impacts to listed species.		
H.13	To further reduce the impacts of stressors on the natural system, create additional or more aggressive policies to reduce the use of pollutants and runoff entering natural systems and the marine systems. Enhance educational efforts on the benefits of improving water quality and the relationships between environmental stressors and exacerbated impacts from sea level rise.		NS-5(2)
H.14	Review and revise as necessary existing species and habitat impact avoidance, minimization, mitigation, and compensation standards and develop new standards as necessary to address impacts in a manner that incorporates climate change considerations. Prioritize replacement of vegetation standards related to “core areas” identified in H.12 above.		
H.15	Incorporate factors to consider sea level rise in habitat management and mitigation plans, for example impacts in rights-of-ways. Comment on updates to Management Plans for State Parks regarding the projected impacts of sea level rise on those resources.		

* Short-term (1-3 yrs.) recommendations in light blue, medium-term (3-5 yrs.) recommendations in light yellow, and long-term (>5 yrs.) recommendations in light pink.

** For long-term recommendations, the Village is not required to wait on implementation if the opportunity for earlier implementation presents itself.

See the Implementation Matrix provided in Appendix F for how these recommendations should be implemented, the recommended timeframe for implementation and potential funding sources available to offset the costs of implementation (where available).

B) Infrastructure and Built Environment



Infrastructure &
Built Environment

The Habitat Focus Area includes recommendations related to existing public and private recreational and open space facilities within the Village, as well as natural areas and conservation lands within Islamorada. Nearly all of the Village's natural areas containing environmentally-sensitive vegetative communities are located along the shorelines of Islamorada. Other important natural areas in the Village include aquatic habitats consisting of coral reefs, seagrass beds and natural hardbottom habitats.

This Focus Area is intended to evaluate community development patterns, infrastructure serving development, livability and design characteristics, with an emphasis on providing access and choice to all residents regardless of income or socioeconomic status.

Islamorada's infrastructure includes roads, buildings (non-publicly owned), stormwater, water, wastewater and the power supply. Note that specific Village-owned facilities are included in the Village Buildings and Key Facilities Focus Area discussed in Section 6(c) below. Islamorada's roadway network consists of the major thruway, U.S. Highway 1, and connector and local streets that provide access to abutting land uses and channel traffic towards U.S. Highway 1. In 1999, the Village obtained jurisdiction and responsibility for all of its connector and local streets from Monroe County. Currently, there are 169 named streets in Islamorada totaling 39.31 miles of paved roadways and rights-of-way.

The two (2) primary bicycle facilities in Islamorada are the Overseas Heritage Trail along portion of U.S. Highway 1 and the State Road 4A ("Old Highway"). The Village also contains an extensive network of bicycle facilities shared by pedestrians, cyclists, and other users. This includes approximately 10.8 miles of pedestrian/bicycle network, with additional miles of striped bicycle lanes more recently constructed on Upper Matecumbe Key and along Gardenia Street and Royal Poinciana Boulevard (34 total miles of paved bicycle lanes).



Shared Use Path, Islamorada, FL
Photo Source: www.traillink.com

By the Numbers

- Roads – 169 named streets, 39.32 miles of paved roads and right-of-ways.
- Bike Lanes – 34 miles of paved bicycle lanes.
- Buildings – 5,038 homes and 2,102 businesses in Islamorada.
- Wastewater Facilities - 4 pump stations.
- Canals – 62 residential canals within the Village.

Currently, there are 5,038 houses and 2,102 businesses²⁹ in Islamorada. The Village regulates development and its rate of growth through their BPAS. This system encourages residential and commercial redevelopment rather than new development, with emphasis on affordable housing. The current building allocation is limited to a total annual unit cap of twenty-two (22) market rate units and six (6) affordable housing units, plus any available unused BPAS allocations from the previous year. This allocation is intended to limit growth and ensure that adequate public facilities and services are provided to residents in accordance with the Village's adopted level of service standards.

From a resiliency perspective, data related to this planning effort has focused on tracking potential inundation and storm-related flooding exacerbated by sea level rise. As discussed in Section 4(e) (Vulnerability Assessment Results for Habitat and Facilities), nuisance flooding (or 1.08 feet above the MHHW stage) will be the first impacts felt on a more regular basis occurring with the natural tide cycle. The visual impact will be more roadway flooding and impacts to low-lying landscapes, but could impose more structural impacts for higher water levels over longer durations. While many structures in Islamorada are constructed on piers or stilts, or even elevated above the floodplain through fill, the other structures that are not and are located in low-lying areas will be the primary focus of strategies for elevation or floodproofing. See Appendix D for a more detailed analysis of homes and businesses at risk within Islamorada.

Case Study: St. Johns County

This case involved several private property owners challenging St. Johns County over their legal responsibility to maintain Old A1A, a coastal road inundated by storms and hurricanes. In 1979, the State deeded Old A1A to the County. By 2005, the County enacted a temporary residential building moratorium for properties along the roadway segment at issue (approximately 60). In response to the County's actions, a complaint was filed in 2005 against St. Johns County claiming generally that the County had deprived these landowners of access to their land.

A total five claims, were raised involving whether the County had a duty to maintain Old A1A and whether their failure to do so constituted a legal taking under the law. The case ultimately settled whereby the County and property owners came to agreement on levels of service for the road in the future, recognizing the environmental challenges impacting the quality of the road in the future.

The County adopted an Ordinance in 2012 to specifically address natural forces' degradation and damage to public roads and streets and other improved public rights-of-way used for travel and recreation. The law is far from settled on this issue, but lessons learned to date can, and should, be used to guide future Village planning decisions especially in relation to "environmentally- compromised" infrastructure.



Wastewater plant piping installation within Islamorada
Photo Source: www.reynoldswaterislamorada.com.

Wastewater treatment in Islamorada was historically privately owned. Small facilities discharged wastewater into septic tanks, while larger facilities treated wastewater onsite using wastewater treatment package plants. In 2007, the Village constructed the first public wastewater treatment facility, the North Plantation Key Wastewater Treatment Plant, with a designed capacity of 0.355 million gallons per day. As discussed above, the Village recently extended sanitary sewer service to its incorporated islands of Plantation Key (North Plantation Key and South Plantation Key), Windley Key, and Upper and Lower Matecumbe Keys. During the project, the Village entered into an interlocal agreement with the Key Largo Wastewater Treatment Plant, allowing Islamorada to transmit its wastewater for treatment at the Key Largo Plant and convert the North Plantation Key Facility into a master repump station. The project met the State of Florida's amended statutory deadline of December 2015, with substantial completion by November 20, 2015. The statutory deadline, extended from the original 2009 deadline, required upgrading wastewater systems to eliminate septic systems and package plants to eliminate discharges to nearshore waters and improve water quality. Now, in Islamorada, wastewater is collected from residential and commercial areas and conveyed to the Key Largo Wastewater Treatment Facility via a transmission main installed along U.S. Highway 1. This project resulted in the elimination of all septic systems and package plants within the Village. As currently projected, the Wastewater Pump Station at 142 Sunshine Boulevard shows a very high near term vulnerability to sea level rise due to its elevation.

From a water supply perspective, FKAA manages the water source and distribution system serving the Village. Potable water resources are located at FKAA's wellfields in Florida City on the mainland and water is treated after it is withdrawn from the Biscayne Aquifer but before distribution in the Keys. While saltwater intrusion to that source of water supply is of concern due to a myriad of different stressors, sea level rise is but one of numerous impacts that must be monitored. Other impacts include naturally occurring groundwater flows which depend on currently planned restoration projects, withdrawals from other wellfields which are proximate to FKAA's wellfields as well as other sources of potential saltwater intrusion impact. Protection of this water supply resource will require regional and agency coordination because of the location and multi-jurisdictional management of the source.

One priority area of coordination will be with the South Florida Water Management District as they complete their next Lower East Coast Regional Water Supply Plan Update in the next three (3) years.

Stormwater is not managed through a centralized system in the Village, but there are stormwater management requirements for all new impervious surfaces. Stormwater management is also integrally tied to water quality because the waters surrounding the Keys are designated as OFWs. To date, water quality enhancement and addressing localized flooding have been the primary drivers of stormwater planning and retrofits. Levels of service and permitting requirements for stormwater are controlled by an initial Stormwater Management Master Plan, agreements and regulations with other state agencies as well as local regulations. Drainage structures and outfalls include swales, road-side ditches, access ways, canals, discharge into Bay and Ocean waters and direct percolation into the land's surface. In addition to these features, there are some storm sewers and retention basins, most of which are on private property or located along U.S. Highway 1 and the Old Highway. The Village has already begun important steps related to infrastructure preparedness including: 1) infrastructure vulnerability analysis and 2) beginning to address drainage "hot spots". An enhanced effort should be made to continue identifying neighborhood, business owner and staff complaints and observations related to storm events and documenting inundation during extreme high tides in the spring and fall (King Tides). Additionally, the Village may want to enhance stormwater regulations planning for higher design storm events where appropriate.

Results of the vulnerability assessment suggest potential susceptibility to future nuisance-level flooding in select transport corridors. If sea level rise rates tend toward the higher scenario projected by the SFRCCC (2011), there may be compelling need to elevate the transportation lanes between Fire Station #19 and U.S. Highway 1 before 2030 to ensure safe emergency vehicle access after extreme storm events. Additionally, U.S. Highway 1 is built to a low grade between White Marlin Boulevard and Palm Drive. As sea levels rise, this low grade may result in increased nuisance flooding of U.S. Highway 1, potentially slowing or restricting the movement of emergency vehicles based at the Fire Station #19 site. Long-term flood resilience and sea level rise adaptation planning for Fire Station #19 should therefore be closely coordinated with drainage improvements and FDOT's increased grade elevation of U.S. Highway 1 within this low-lying corridor.

The Village has a system of sixty-two (62) residential canals, ten (10) of which are considered poor quality. The Village is currently in the process of implementing canal restoration projects, in tandem with Monroe County, to improve water quality. To date, the Village has committed \$100,000 for canal restoration of its most impaired residential canals. Restoration efforts will improve the overall health of the canal system, as well as surrounding nearshore water quality. This is important as environmental stressors will become compounded with the effects of compromised drainage and increased direct runoff.

In terms of the built or developed areas of the Village, and from a land use perspective, development in extremely low-elevation land areas where tidal flooding is common and storm surge is severe will become inherently more risky as future sea level rise poses more of a threat. Although building codes are enforced and flood insurance is required, these waterfront properties will see more risk. Once certain thresholds are approached in terms of future sea level rise, policies could require periodic updates to the Code to reflect new risk. Traditional controls, like land-use zoning, could be used to limit development in such areas or create stricter "above code" requirements for redevelopment such as higher freeboard standards. Vulnerability data from this planning process can also be used to identify some areas where an overlay or adaptation action area may be established.

Finally, as retreat may be a strategy that is utilized over time, many private and public buildings and other infrastructure, such as roads, may become impractical to maintain as the environment changes. There are many public health and safety implications that must be addressed, such as abandonment of certain infrastructure or negotiated levels of service. Issues could include loss of access to a property, reduced quality of access or loss of property value due to removal of an inter-related public or private asset.

Given the objectives of this Focus Area and efforts initiated by the Village to date, the following have been prioritized and are recommended for implementation in Islamorada.



Projected Water Inundation at U.S. Highway 1 and White Marlin Boulevard
Photo Source: Project Team

Table 8. Infrastructure and Built Environment Recommendations



Infrastructure &
Built Environment

Infrastructure and Built Environment Recommendations

	Recommendation	Overlap with Sustainability Plan	Gain STAR Points
I.1	Improve data related to properties and infrastructure facilities including digitizing all building footprints and linking flood elevation certificate information where available (finished flood elevations). Maintain a GIS database of all facilities and infrastructure.	Land, bullet #7	NS-1(7)
I.2	Identify key segments and other road segments for retrofits with coordinating agencies or in the Capital Improvements Element ("CIE"). Develop database of real-time flood impacts to road segments providing anecdotal evidence that will serve as the basis for more detailed survey-based analysis if necessary.	Land, bullet #1 Land, bullet #3 Land, bullet #9	
I.3	Establish adaptation action areas or zoning overlays where enhanced or higher elevation and additional design criteria will be developed to protect infrastructure (such as water and wastewater) and development. Periodically revisit criteria as certain sea level rise milestones or thresholds are approached (by year or by level of rise).		
I.4	<p>Establish triggers for retrofit, relocation or removal of a structure impacted by changing site conditions such as when erosion is within a certain distance of the foundation; when monthly high tides are within a certain distance of the finished floor elevation; or when a setback decreases to a certain width. Consider the following concepts in development and redevelopment principles:</p> <ul style="list-style-type: none"> • Address sea level rise in "non-conforming" structure policies; • Address sea level rise in redevelopment or replacement of existing structures; • Use rolling easements in property development and redevelopment strategy;³⁰ • Enhance Transfer of Development Rights program parameters to account for sea level rise impacts by directing growth to land outside of potentially vulnerable areas. 		
I.5	Explore funding and grant opportunities for voluntary property acquisition programs or voluntary retrofit programs. Consider the need for user-based assessments for capital or neighborhood retrofits where needed.		

Recommendation		Overlap with Sustainability Plan	Gain STAR Points
I.6	Incentivize new “resiliency” construction standards such as Resilience STAR™ (U.S. Department of Homeland Security (“DHS”)), the Institute for Business and Home Safety’s FORTIFIED Home™, FORTIFIED Commercial, FORTIFIED Safer Business, FORTIFIED for Safer Living® or RELi standards. ³¹ Other systems related to infrastructure project analysis include Envision and Infrastructure Voluntary Evaluation Sustainability Tool (“INVEST”).		
I.7	To address the compounding impacts of poor water quality with sea level rise, update any required best management practices (“BMPs”) for water quality improvement such as those that provide greater infiltration/inflow of rainwater, increased stormwater capture and/or water recycling programs, the use of low impact on natural retention strategies development, improved maintenance procedures for public sewer mains, policies to address impaired private sewer laterals, and other proactive measures.	Stormwater, bullet #5	
I.8	Update Landscape Manual and landscaping requirements in the Code to more specifically require water conservation efforts in private landscaping within the Village.		
I.9	Draft an ordinance to address natural forces’ degradation and damage to public roads, streets, highways, bridges, sidewalks, curbs and curb ramps, crosswalks, bicycle ways, hiking and walking paths and trails, underpasses, overpasses, and other improved public rights-of-way used for travel and recreation or other appropriate infrastructure. (See Appendix J for a model ordinance.)		
I.10	Conduct a comprehensive review of the Code for potential improvements to address future flood risk. For example, add a provision to the Residential and Nonresidential Building Permit Allocation Evaluation Criteria and Awards related to future flood risk. The provision could incentivize elevation above base flood elevation and design of property serving infrastructure and mechanical systems that factor in future flood risk.		
I.11	Work with FDOT to develop site surveys of road bed elevation and, as appropriate, suggest engineering designs to raise portions of U.S. Highway 1 that currently show vulnerability to nuisance tidal flooding by 2030.		
I.12	Utilize the tidal flood vulnerability maps for roads as a guide for a public outreach campaign to develop a photographic record that documents the date, time, and severity of nuisance tidal flooding events.		

* Short-term (1-3 yrs.) recommendations in light blue, medium-term (3-5 yrs.) recommendations in light yellow, and long-term (>5 yrs.) recommendations in light pink.

** For long-term recommendations, the Village is not required to wait on implementation if the opportunity for earlier implementation presents itself.

See the Implementation Matrix provided in Appendix F for how these recommendations should be implemented, the recommended timeframe for implementation and potential funding sources available to offset the costs of implementation (where available).

C) Village Buildings and Key Facilities



Village Buildings and
Key Facilities

The Village owns and maintains several buildings and key facilities, including administrative buildings, public buildings, and parks. On two (2) levels, the Village can prepare buildings and facilities for sea level rise by 1) mitigating the impacts of excessive energy use making build-

ings more water and energy efficient and 2) prepare for the impacts of sea level rise by considering how buildings are located, constructed and adapted. By continuing to implement energy efficiency upgrades, the Village is saving on utility bills while lowering its GHG emissions. By preparing for the impacts of sea level rise, the Village is taking precautionary actions to assure buildings can withstand more regular instances of nuisance flooding over time.

As part of this Islamorada Matters planning process, the Team developed a digitized building footprint layer for eighty (80) public and critical infrastructure buildings and facilities within the Village to provide better elevation data. Modeling of these buildings and facilities was also performed to determine which structures and facilities are most vulnerable to sea level rise. As previously reported, two (2) facilities that showed the most near-term vulnerability to enhanced flood risks by 2030 from sea level rise were the wastewater pump station located at 142 Sunshine Boulevard and the Fire Station #19 located at 74070 U.S. Highway 1. For both facilities, the first floor elevation is near or below the 2030 extreme event flood threshold for the high sea level rise scenario (6.58 feet above MHHW). With a high sea level rise projection, impacts to these facilities could occur as early as 2030, or with a low sea level rise projection impacts would occur between 2046 and 2051. Regardless, these two (2) facilities appear to be the most vulnerable. Other public facilities in the Village that show new exposure of buildings to extreme event flooding within the 2060 planning horizon are the Islamorada Master Repump Station and Monroe County's Roth Building, which both show exposure to first floor storm surge damage. Additionally, Founders Park and the S & H Inc. Debris Site, because their elevations, show a potential for nuisance flooding impacts by 2030 (under high sea level rise scenario) or 2060 (under a low sea level rise scenario). As more visible impacts of sea level rise occur, "managed retreat" or planning for projected increases in sea levels by relocating vulnerable buildings, infrastructure and public facilities before significant inundation will need to occur. Appendix B contains a full analysis of Village infrastructure.

In addition to climate change and sea level rise vulnerability, this Focus Area also evaluates efforts the Village can implement to increase the sustainability of Village buildings and facilities. This includes energy and water conservation techniques, renewable and alternative energy development, and the reduction of chemicals that are harmful to humans and the natural environment. Note that Chapter 255 of the Florida Statutes requires that newly constructed and renovated public buildings be designed and constructed to be energy and water efficient in accordance with a sustainable building rating or national model green building code.³²

The recommendations in this section concentrate on efficiency as well as enhancing the quality of Village buildings and facilities. Given the objectives of this Focus Area and efforts initiated by the Village to date, the following have been prioritized and are recommended for implementation in Islamorada.



Islamorada, FL
Photo Source: Project Team

Table 9. Village Buildings and Key Facilities Recommendations



Village Buildings and
Key Facilities

Village Buildings and Key Facilities Recommendations

	Recommendation	Overlap with Sustainability Plan	Gain STAR Points
VB.1	Consider sea level rise impacts in capital planning by identifying critical assets (habitat and infrastructure) over time through enhanced data sets and field observations to continually plan for managed relocation of at-risk facilities, and/or other measures to ensure continuity of at risk assets. When risk is identified, consider repair and maintenance, elevation or spot-repair of key components, or fortification of structures where needed including when to consider managed retreat rather than continue with repairs and maintenance in light of sea level rise.	Land, bullet #7	NS-1(7)
VB.2	Conduct detailed site-level flood exposure audits for the wastewater pump station facility at 142 Sunshine Blvd. and the Islamorada Master Repump Station to determine above ground elevations and, as appropriate, structural flood resistance for electronics and mechanical components. Develop detailed GIS datasets, including bottom of invert elevation for access and junction points, to support site-level vulnerability assessments of underground wastewater infrastructure within the Village of Islamorada.	Land, bullet #1 Land, bullet #3 Land, bullet #9	
VB.3	Develop long-term flood resilience alternatives for Fire Station #19, located at 74070 U.S. Highway 1 (close coordination with FDOT will be required to ensure transport access this facility is maintained).		
VB.4	Development and maintenance of recording protocols and, as necessary, engineering assessments to assess resilience of below-grade pipes and pump infrastructure to increased saltwater incursion associated with sea level rise.		
VB.5	Develop and maintain a comprehensive GIS-based inventory that includes building footprints, finished first floor elevation data, and elevations of accessory electrical equipment for all existing critical infrastructure and Village of Islamorada facilities.		
VB.6	Link energy efficiency upgrades to capital asset improvements, renovations, or additions.	Energy, bullet #1 Energy, bullet #2	
VB.7	Conduct American Society of Heating, Refrigerating, and Air-Conditioning Engineers (“ASHRAE”) Level I or Level II energy audits on Village facilities to identify energy conservation measures.		
VB.8	Optimize planning, management and maintenance of Village assets to reduce GHG emissions.		

Recommendation		Overlap with Sustainability Plan	Gain STAR Points
VB.9	Negotiate terms to allow for the Village to purchase plug-in electric or plug-in hybrid vehicles.	Transportation, bullet #3	
VB.10	Conduct feasibility studies for alternative energy at Village facilities.		
<p>* Short-term (1-3 yrs.) recommendations in light blue, medium-term (3-5 yrs.) recommendations in light yellow, and long-term (>5 yrs.) recommendations in light pink.</p> <p>** For long-term recommendations, the Village is not required to wait on implementation if the opportunity for earlier implementation presents itself.</p>			

See the Implementation Matrix provided in Appendix F for how these recommendations should be implemented, the recommended timeframe for implementation and potential funding sources available to offset the costs of implementation (where available).

D) Adaptation Strategies for Homes and Businesses



Adaptation Strategies

Individuals and business owners affected by future sea level rise will need to make adaptation decisions about their own homes, land and businesses. A main goal of this planning process and the recommendations in this section is to assist individuals and business owners in making the best, most informed decisions for their own particular circumstances. Individuals and business owners may choose to elevate or relocate structures further away from vulnerable areas. Alternatively, they may choose not to make any structural or relocation decisions based upon the anticipated consequences of sea level rise.



In this Focus Area, the Team married the modeling results discussed in Section 4(f) above with potential adaptation strategies that homeowners and business owners can use to mitigate the damage from storm surge and sea level rise. There are several options, or adaptation strategies, that can be implemented to respond to sea level rise and increased storm surge. Options are broken into four (4) categories, including: 1) Avoid, 2) Accommodate, 3) Protect, and 4) Retreat.

Adaptation strategies focused on **Avoidance** limit development in particularly vulnerable areas, redirecting development to less vulnerable areas. Adaptation strategies that **Protect** use hard or soft structures to protect structures and prevent flood waters from reaching community assets. Hard structures could include seawalls or bulkheads, while soft structures could include geotextiles tubes and giant fabric sandbags designed to be replaced after storms. This strategy does not protect wetlands and beaches in front of these structures which are at risk of disappearing as they are pinched out between the rising water levels and the fortifying structures behind them. Adaptation strategies that **Accommodate** modify community assets to reduce the impact of flood waters from storm surge, but do not completely protect against sea level rise. Accommodation acknowledges long-term effects and that structures will become wet, but implements short-term actions to make structures more resilient, such as elevating structures or their critical systems. Lastly, **Retreat** involves relocating existing structures, people and land uses away from high-risk flood areas to new locations to eliminate the flooding risk, damage and loss. This adaptation strategy allows wetlands, beaches and natural coastal habitats to migrate to higher elevations naturally.

Within Islamorada, in the COAST modeling process, three (3) plausible adaptations strategies were evaluated, including: 1) elevate and floodproof buildings (accommodation), 2) offshore constructed barriers (protection), and 3) relocation through voluntary buyout (retreat). As was more thoroughly discussed in Section 4(f) above, elevating and floodproofing buildings within the Village showed the most potential for mitigating damages from sea level rise, as compared to the other adaptation strategies evaluated. Note however that this is not the sole solution for Islamorada, as it does not address or mitigate impacts to other critical infrastructure like roads and sewer services.

In addition to reduced damages from employing adaptation strategies, home and business owners can see additional benefits such as reductions in flood insurance premium rates for Islamorada's participation in programs like FEMA's CRS, as briefly discussed above. As of October 1, 2014, there were 3,061 NFIP policies issued within the Village with coverage totals of \$776,762,500. Since 1978, 229 claims have been paid totaling \$5,191,466.³³ There are also new standards applicable to substantial renovations in Islamorada, another attempt to encourage homeowners and business owners to floodproof their structures. The NFIP's CRS is a voluntary program that recognizes a community's efforts to implement strategies that go beyond NFIP standards.

Islamorada's Code identifies specific requirements for home and business owners intended to bring existing structures into compliance with FEMA's NFIP requirements. These efforts are similarly used to achieve additional CRS credits to reduce insurance premiums within the Village. Islamorada's Code includes specific requirements for improvements and repairs to existing homes and commercial structures. Under Chapter 6, Article III, Section 6-85, the Code requires that if a building is "substantially damaged" or "substantially improved," where the cost of the repair or improvement equals or exceeds 50% of the market value, the structure must be floodproofed. For both residential and nonresidential structures, floodproofing means having the lowest floor elevated to or above the base flood level. For nonresidential structures located in the AE-zones, floodproofing can be done in lieu of elevation provided that the structures are designed to be watertight with walls substantially impermeable to the passage of water. While compliance with the Code will come at an upfront cost to the property owner, the owner will subsequently benefit from the reduced flood insurance rates and further protection from the effects of rising sea levels over time.

New strategies to mitigate against sea level rise may include rolling easements which are used to ensure that coastal development does not interfere with the natural migration of shorelines as they move inland due to sea level rise. Rolling easements can be implemented in several ways, including development of state or local statutes, placement of conditions on development permits or voluntary agreements. These land use restrictions are usually developed with reference to a tide line, or other natural feature, which allow the feature to "dynamically fluctuate with natural coastal processes."³⁴ Therefore, as the sea level rises and the natural feature moves, the associated development or land use restrictions "roll" inland and allow for natural shoreline erosion and wetland migration to occur.³⁵

Given the objectives of this Focus Area and efforts initiated by the Village to date, the following have been prioritized and are recommended for implementation in Islamorada. These recommendations concentrate on adaptation strategies most appropriate for homes and businesses within the Village.



Founders Park, Islamorada, FL
Photo Source: Project Team

Table 10. Adaptation Strategies for Homes and Businesses Recommendations



Adaptation Strategies

Adaptation Strategies for Homes and Businesses Recommendations

	Recommendation	Overlap with Sustainability Plan	Gain STAR Points
AS.1	Continue discussing sea level rise vulnerability with residents and stakeholders, along with the importance of having a method to weigh different adaptation actions against one another to ensure the most beneficial strategies are implemented. Implement this through annual workshops on the progress of implementing the Islamorada Matters Plan. Annual workshops should occur at the beginning of the capital budgeting process.	Other, bullet #2	NS-1(7)
AS.2	Development and implementation of a geographic database (GIS and listing of “events”) for Village employees (and interested residents) to document the time and location of nuisance flood events that affect neighborhoods and facilities in neighborhoods. Development of such a database over the course of several years will not only raise public awareness about any increase in tidal flood issues, but will also provide critical data that can inform future decisions to elevate or otherwise adapt roads with vulnerability to future sea level rise. Database should be updated and reported upon at Annual Workshops described in AS.1.		
AS.3	Ensure that future flood vulnerability assessments in Islamorada build upon the work in the Islamorada Matters project and continue efforts to develop a more complete digital record of Elevation Certificates for homes and businesses. Use, integrate and improve Elevation Certificate record to promote higher confidence in flood risk assessments, providing a basis for development of a building by building prioritization for flood retrofit and/or rebuilding as conditions warrant.		
AS.4	Pursue funding strategies and tools to help private property owners elevate structures in the FEMA Velocity flood zone.		
AS.6	Develop a framework for using new knowledge to engage with residents so that consensus on an eventual adaptation action is both data and stakeholder driven. Expand communications on sea level rise and align them with future efforts within the CRS program to provide information about areas predicted to experience more flooding impacts in the future due to sea level rise (for example CRS Credit 322.c).	Other, bullet #2	

Recommendation		Overlap with Sustainability Plan	Gain STAR Points
AS.7	<p>Conduct additional study of an initiative to elevate and floodproof buildings within Islamorada. Identify additional barriers to elevating strategies such as height restrictions that may curtail the ability of someone to construct to higher elevations.</p> <ul style="list-style-type: none"> • Provide updates in Village communications as needed on progress made on Islamorada Matters Plan; • Highlight “demonstration” projects to provide examples of benefits to residents and business owners; • Distribute information about Islamorada Matters planning efforts at Village events. 		
AS.8	In future modeling efforts, model benefits and costs of joint action for adapting roads and buildings.		
AS.9	Collaborate to consider mandatory construction setbacks that prohibit construction and significant redevelopment in areas that will likely be impacted by sea level rise within the life of the structure.		
AS.10	Strengthen rebuilding restrictions for nonconforming structures.		
AS.11	Develop incentive program for developers and property owners who relocate structures landward, site development in upland areas, conserve open space along the shoreline, and/or preserve or restore natural flood buffers.		
<p>* Short-term (1-3 yrs.) recommendations in light blue, medium-term (3-5 yrs.) recommendations in light yellow, and long-term (>5 yrs.) recommendations in light pink.</p> <p>** For long-term recommendations, the Village is not required to wait on implementation if the opportunity for earlier implementation presents itself.</p>			

E) Sustainability



Sustainability

Sustainability is a holistic concept centered around meeting current community needs without compromising the ability of future generations to meet their needs.

Sustainability is much broader than most people think, including not

only environmental needs but also the economic and social needs of a community. From the local government perspective, sustainability is achieved when “the three e’s,” environment, economic and equity (social), are balanced.

The environmental component of sustainability includes ecosystem restoration and habitat preservation (both terrestrial and aquatic), water conservation, and GHG emissions reductions. The equity (social) component of sustainability aims to optimize the quality of life for community residents and includes social equity, livability, community health and safety, affordable housing, and cultural diversity. Finally, the economic component of sustainability includes workforce development, economic opportunity, and sustainable business practices.

Sustainability is in essence about efficiency, prioritizing ways to efficiently use resources, enhance quality of life and promote economic viability for future generations. Often analogized as a three-legged stool, sustainability cannot be achieved without careful consideration of each “leg” of the stool. When one “leg” of the stool is eliminated or under-achieved, the balance of the stool – sustainability – is lost.



Woven into the social concept of sustainability is the need to adapt to changing conditions to ensure the health of community residents. The Centers for Disease Control and Prevention (“CDC”) and the National Environmental Health Association (“NEHA”) have identified several health impacts specifically related to climate change, including: 1) heat impacts, 2) vector borne diseases, 3) extreme weather events, 4) air quality, and 5) waterborne diseases.

Heat stress is of great importance to the Village given the tropical climate and current average temperatures. Increasing temperatures and the resultant heat stress can impact human health in several ways, exacerbating chronic conditions like respiratory and cardiovascular disease. Vector borne diseases are also an important consideration in Islamorada due to the warm climate and established vector populations (mosquitoes).

A number of additional diseases may be able to prevail in new environments as the natural barriers of inhospitable environments to the vectors of such diseases are diminished in a warming climate. Islamorada has, and will continue to see, stronger storms with the potential to displace animals and insects and change migration routes as ecosystems change. Floods, hurricanes, and tropical storms have numerous immediate to long-term physical and emotional health impacts, including injury, drowning, death from structural collapses, infectious and chronic disease, displacement, and socioeconomic disruption. Air quality impacts may result in heightened levels of allergies and respiratory disease due to increased ground-level pollutants. Additionally, pathogens and pollutants from runoff and flooding have the potential to enter water supplies, while increased temperatures will support pathogen growth, and concentration of these agents under drought conditions will increase the threat of waterborne disease.

This Focus Areas covers a wide spectrum of efforts, from those aimed at reducing climate change impacts and increasing resource efficiency to those that create safer and healthier communities. The Village has made continued progress toward increasing overall sustainability since 2007. To determine the Village’s current level of sustainability, the Team evaluated both STAR actions and other best practices for achieving sustainability within a local government. Where applicable, the Team cross-referenced these recommendations with existing recommendations made in the Village’s 2007 Sustainability Plan and all annual updates.

Given the objectives of this Focus Area and efforts initiated by the Village to date, the following have been prioritized and are recommended for implementation in Islamorada.



Table 11. Sustainability Recommendations



Sustainability

Sustainability Recommendations

	Recommendation	Overlap with Sustainability Plan	Gain STAR Points
S.1	Promote a cultural shift aimed at saving money and reducing carbon emissions.	Other, bullet #2	
S.2	Consistently highlight available and pending incentives for residents desiring to perform energy retrofits or renewable energy deployment. Work with Florida Keys Electric Cooperative on promoting their programs.	Other, bullet #2	
S.3	Adopt more energy efficiency regulations for buildings within the jurisdiction.		HS-1(6)
S.4	Train inspectors to enforce water/energy efficiency standards in adopted building codes.		CE-5(7)
S.5	Achieve recognition as a Bicycle Friendly Community or Walk Friendly Community.	Energy, bullet #4	CE-2(6)
S.6	Implement specific programs and services or create facility upgrades that transition the community towards the use of alternative modes of transportation and low-emission vehicles. Look for opportunities to improve the efficiency of Village fleet.		CE-2(8)
S.7	Create incentives to help relocate residents from hazardous areas.		HS-6(7)
S.8	Adopt a waste management plan that identifies community's greatest sources of waste, sets formal waste reduction targets and establishes actions to help reach the community's waste reduction goals.		CE-7(1)
S.9	Collaboratively create/run at least two targeted recycling programs at key locations in the community.	Waste, bullet #2; Waste, bullet #3; Waste, bullet #4; Waste, bullet #5	CE-7(7)
S.10	Implement incentives ensuring that residents and businesses are working toward community waste reduction targets.		CE-7(5)
S.11	Implement specific programs and services or create facility upgrades that reduce waste in the community.		CE-2(9)

Recommendation		Overlap with Sustainability Plan	Gain STAR Points
S.12	Create guidelines to encourage incorporation of active building design ³⁶ in new buildings.		HS-1(3)
S.13	Adopt an energy/water use information disclosure ordinance ³⁷ requiring users to disclose consumption levels.		CE-5(3)
S.14	Adopt specific product bans to significantly advance progress toward waste reduction goals. For example, bans on single use plastic grocery bags and disposable food containers have been banned in other U.S. cities.		CE-7(2)
<p>* Short-term (1-3 yrs.) recommendations in light blue, medium-term (3-5 yrs.) recommendations in light yellow, and long-term (>5 yrs.) recommendations in light pink.</p> <p>** For long-term recommendations, the Village is not required to wait on implementation if the opportunity for earlier implementation presents itself.</p>			

See the Implementation Matrix provided in Appendix F for how these recommendations should be implemented, the recommended timeframe for implementation and potential funding sources available to offset the costs of implementation (where available).

7. Public Involvement

A) Public Workshops

As part of the Islamorada Matters project, several public workshops and other education and outreach activities were conducted. These workshops and events were held (and attended) for distribution of project information to better understand the unique perspectives of Islamorada residents and solicit community engagement in the planning process. There needs to be continued education and engagement with Village residents and other stakeholders, in particular the real estate community, to ensure that they remain educated about sea level rise impacts and the most appropriate adaptation actions that can be implemented within Islamorada.



Islamorada Matters Workshop
Photo Source: Project Team

Community Workshop #2:
How to Prepare for Sea Level Rise in the Village of Islamorada



Photo credit: © PD Bachelder

The Village of Islamorada, as part of IslamoradaMatters, is in the middle of a series of three (3) public workshops to share what we've learned in our sea level rise modeling efforts. We continue to want to engage the public and collaborate on the most relevant local solutions for Islamorada.

For more information, visit www.islamoradamatters.com

This is the 2nd of three community workshops planned to further engage the community in the Village of Islamorada's sea level rise planning efforts. This 2nd workshop will focus discussions on how to best prepare for sea level rise in the Village of Islamorada.

When & Where:
Monday, November 10th 5:30-8:30 p.m.
 Founders Park Community Center
 87000 Overseas Highway
 Islamorada, FL

At this workshop, the results of the COAST modeling sea level rise vulnerability assessment, specific to Islamorada, will be presented. This presentation will include:

- Predicted dollar damages to buildings, based on public input received during the 1st workshop regarding the data to be used in the model, and
- A discussion of possible adaptation strategies (with attendee participation), such as raising building elevations or relocating facilities entirely.

We want to hear from you - workshop participants will be asked to actively engage and assist in the development of these adaptation strategies by providing local perspectives on how to best prepare locally.

Upcoming Workshops:
Workshop #3: Implementing Strategies
Wednesday, December 10th 5:30-8:30 p.m.



For more information, contact:
 Shane Laakso, Senior Planner
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 86800 Overseas Highway
 Islamorada, FL 33036
 Phone: (305) 664-6424
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Table 12 below illustrates the workshops and events used to engage the Islamorada community in this sustainability and sea level rise planning process.

Table 12. List of Public Workshops and Events Attended for Islamorada Matters

Date of Workshop/ Event	Title of Workshop/ Event	Workshop/Event Description
September 11, 2014	Initial Sea Level Rise Impact Modeling Presentation	First presentation was made on initial modeling results from projected sea level rise impacts in 2030 and 2060. The Team showed results from its analysis on impacts to Islamorada buildings, electrical supply, water supply, wastewater, roads and habitat.
October 7, 2014	Community Workshop #1	<p>First community workshop focused on the risks of sea level rise and the types of economic and flooding impacts that could affect Islamorada homes and businesses in the future. The Team presented the modeling process to address impacts to homes and businesses and provided an example of how modeling was used to mitigate rising water levels in another community to show how flooding impacts of sea level rise with varying rates of severity can be managed. A panel of local community leaders was present to discuss impacts and potential solutions to sea level rise on roads and other critical areas in Islamorada, including:</p> <ul style="list-style-type: none"> • Mayor Ted Blackburn, Islamorada; • Joe Roth, Islamorada Chamber of Commerce, President; • David Makepeace, Water Quality Improvement Citizens' Advisory Committee, Chair; and • Ana Zalesky, Florida Keys Board of Realtors, Immediate Past President.
November 1, 2014	Islamorada Moose Lodge Bacon Fest	Public education and outreach about the project during Bacon Fest included passing out flyers, promoting upcoming public workshops and attempting to further engage residents in the project.
November 8, 2014	Community Day at Florida Keys Community College	Public education and outreach about the project during Community Day included passing out flyers, promoting upcoming public workshops and attempting to further engage residents in the project.
November 10, 2014	Community Workshop #2	Second workshop focused on how to prepare for sea level rise in Islamorada. Sea level rise vulnerability assessment results were presented showing the anticipated impacts to homes and businesses. Discussion focused on three (3) primary adaptation strategies, including: 1) elevating and floodproofing properties not already elevated or flood-proofed; 2) constructing breakwaters at two "at risk" locations and 3) voluntary property acquisitions where high tide would be at the center of the property either by 2030 or 2060.
November 22, 2014	Florida Bay Appreciation Day	Public education and outreach about the project during Florida Bay Appreciation Day included passing out flyers, promoting upcoming public workshops and attempting to further engage residents in the project.
December 4, 2014	Holiday Festival	Education and outreach about the project during the Islamorada Chamber Holiday Festival at Founders Park.
December 11, 2014	Community Workshop #3	Third workshop addressed pros and cons of each adaptation strategy identified during the previous workshop.

Date of Workshop/Event	Title of Workshop/Event	Workshop/Event Description
December 11, 2014	Islamorada Chamber of Commerce Lunch Presentation	Presented to the Islamorada Chamber of Commerce on sea level rise modeling project.
February 26, 2015	Islamorada Council Update	The Team provided a summary of work to date, including a recap of results from the modeling of Islamorada assets, infrastructure, water supply, roads, wastewater and electrical facilities. The presentation also included a summary of the three (3) workshops on community engagement for sea level rise adaptation strategies.
October 16, 2014 and March 19, 2015	Artwalk	Conducted public education and outreach about the Islamorada Matters projects at Artwalk. Passed out Islamorada Matters flyers, promoted upcoming public workshops and attempted to further engage Islamorada residents in the sea level rise planning project.

In addition to engaging the Islamorada community about the Islamorada Matters project through events, a database of potentially interested residents and business owners was created. Using Constant Contact, electronic invitations (via email), save the date cards and flyers were distributed to the contact list created for Islamorada in advance of each community workshop. These electronic communications served a dual purpose, increasing attendance at subsequent workshops and ensuring that local residents and business owners remained engaged throughout the Islamorada Matters planning process. The Village also sent out notices through its own email lists.

In addition, the Islamorada Chamber of Commerce (“Chamber”) was extremely helpful in the distribution of Islamorada Matters information. In advance of each community workshop, the Chamber circulated flyers to its membership to promote awareness about the project and increase attendance at the community workshops. With this help, the Team was able to reach a much wider audience of Islamorada businesses than would have been possible without the Chamber’s assistance.

B) Islamorada Matters Public Survey

To assist with the prioritization of recommendations and further engage Islamorada residents and business owners in the Islamorada Matters sustainability and sea level rise planning effort, a Survey Monkey survey consisting of fourteen (14) questions was prepared for distribution within the community. Questions drafted for the survey asked residents and business owners to prioritize and rank several of the Plan recommendations above, as well as provide their thoughts and feedback on Islamorada’s sustainability, climate change and sea level rise planning efforts to date. This survey was distributed to the Team’s Constant Contact database (138 individuals), Village contacts (250 individuals on email lists; 125 individuals on staff email list) as well as to the local Chamber for distribution to their membership.



Photo Source: Islamorada Chamber of Commerce

The survey was opened on April 9, 2015 and left open until June 1, 2015 (approximately 53 days), during which time 121 responses were received. Overall, the survey yielded excellent results with community engagement exceeding expectations. Key findings from the survey showed that residents and business owners in Islamorada are most concerned with the Habitat, Infrastructure and Built Environment and Sustainability Focus Areas, in order of importance. Survey respondents prioritized the following actions as extremely important for the Village moving forward:

- A complete streets policy to address all users and design for safety, comfort and convenience of pedestrians, bicyclists, drivers and public transit users as most important for Islamorada;
- Increasing the mileage of sidewalks connecting people with destinations;
- A requirement that internal decisions by local government departments use the most current climate science and staff monitor climate change impacts;
- Adopt energy efficiency regulations for buildings within the Village;
- Reduce or eliminate toxic pesticides in locally-owned or managed buildings through the use of pest management techniques;
- Become actively recognized as a Bicycle Friendly Community or Walk Friendly Community;
- Enforce regulations to control the use or sale of invasive species; and
- Provide incentives to residents and developers to protect critical watershed protection areas.

Because of their importance to Village residents, these were translated to specific recommendations included in this Plan. These priorities are reflected in recommendations S.3, S.5, H.13, I.7, VB.6, VB.7, VB.10, AS.11 and AS.5.

The following were deemed less important or totally unimportant by survey respondents:

- Adopt a policy or code requiring walkability standards for new developments;
- Adopt an energy/water use disclosure ordinance requiring users to disclose consumption levels;
- Adopt a “health in all policies” statement or policy commitment to be applicable to all local decision-making; and
- Educate the public on the impacts of poor air quality on human health and the natural environment and efforts they can take to reduce pollution and exposure.

As a result, only one (1) of these was retained as a recommendation in this plan (S.13).



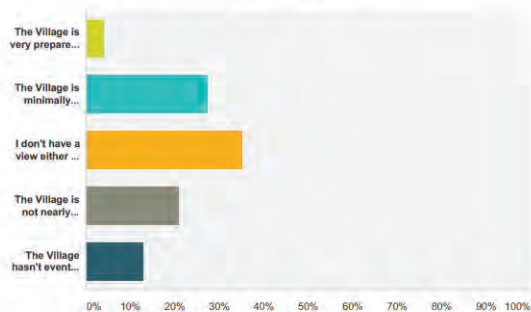
Nearly 43% of survey respondents feel that the Village is doing good, but could be doing better with sustainability (direct survey language). Another 26% of survey respondents feel that the Village is not doing nearly enough, but is doing some small things (direct survey language) with sustainability. Thirty-five percent of survey respondents do not have a view either way on the Village's current level of preparedness to deal with the impacts of climate change and sea level rise. Over 27% of respondents feel that the Village is minimally prepared, but is making significant progress toward becoming prepared.

To prepare for sea level rise, respondents prioritized working to address flooding on roads and in neighborhoods and ensuring that new development incentives address climate preparedness as the two (2) most important things the Village can do. To better prepare for disasters and extreme weather events, respondents want to see implementation of highest priority improvements listed in the local mitigation strategy or other similar plans. Regarding healthcare and health impacts and climate change, there is greatest concern among residents and business owners about waterborne diseases attributable to changing precipitation patterns, stronger storm events, and rising waters.

Responses varied widely on what residents and business owners perceive are the biggest threats to the Village of Islamorada from sea level rise. Flooding was most prevalently identified as the biggest threat, with over one-third of the free survey responses identifying it as the largest threat. Other threats repeatedly identified by respondents included property loss and devaluation, more extreme and frequent storms, saltwater intrusion, overpopulation, and increased flood insurance premiums.

Q9 How prepared do you think the Village of Islamorada is to deal with the impacts of climate change and sea level rise?

Answered: 77 Skipped: 44



Islamorada Survey Results

The Team used the survey results to assist in the ranking of recommendations in this Plan and confirm high priority recommendations. A copy of the survey and a report of the results is included in Appendix G.



C) Islamorada Matters Website

As part of the Islamorada Matters planning process, the Village created the Islamorada Matters website (<http://www.islamoradamatters.com/>) to serve as a specific source of publicly-available information about the project. The content of this website was developed simultaneously with this Plan and is intended to convey information specific to the Village's sea level rise planning and sustainability efforts. The Village is making this information available for residents, business owners, the insurance industry, and real estate community to use in making informed decisions on issues to be affected by sea level rise in the coming years.

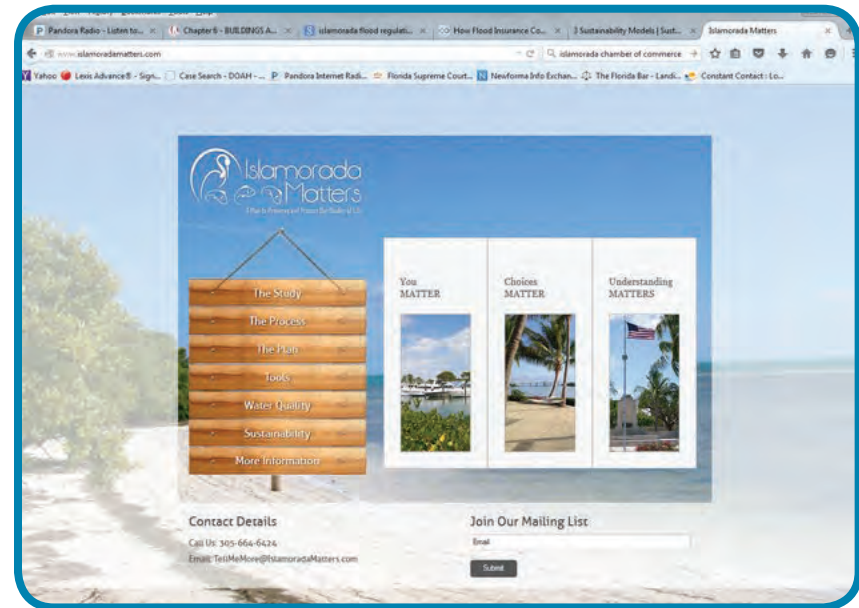
Ultimately, this website will serve as the Village's sustainability website and be the resource for all sea level rise and sustainability information for Islamorada.

D) Individual Outreach to Organizations and Agencies

In addition to the public outreach efforts discussed above, individual outreach was conducted to Islamorada organizations and agencies. This outreach was conducted to educate these local organizations and agencies on the Islamorada Matters planning project and solicit their support for the project.

Table 13. Individual Outreach Conducted for the Project

Date of Outreach Event	Organization	Outreach Description
October 22, 2014	Islamorada Chamber of Commerce	Presentation provided to the Islamorada Chamber of Commerce on sea level rise.
Prior to each of the three (3) community workshops	Islamorada Chamber of Commerce	An informational flyer was created for distribution by the Islamorada Chamber of Commerce to its current membership.



Islamorada Matters Website Landing Page

Photo Source: www.islamoradamatters.com

8. Implementation Strategy

Although there are several policies and programs already in place within the Village to improve sustainability and help the Village mitigate sea level rise impacts, the recommendations provided in this Plan exceed the scale of existing efforts. Implementation of the recommendations in this Plan is critical to ensuring that real improvements are made. The recommendations provided in this Plan can be implemented in several ways, including: integration with the capital planning process, securing newer partnered funding sources, integration with the Comprehensive Plan and Code, and other mechanisms. The Implementation Matrix provided in Appendix F illustrates specific methods of implementation for each individual recommendation per Focus Area, as does the narrative below.

A) Integration with Capital Planning Process

i. Village of Islamorada

As a strategy for implementing adaptation recommendations outlined in this Plan, the Proposed FY 2015/16 Islamorada Budget and five-year CIP were reviewed to identify scheduled public infrastructure investments that could be adapted to prevent damage associated with rising sea levels (Appendix H).

Each year, Islamorada undertakes a budgeting process that includes the proposed financing of the upcoming Fiscal Year critical capital improvements. The capital improvement projects proposed to be budgeted must be consistent with the five-year CIP, updated and adopted annually as part of the CIE of the Comprehensive Plan, in accordance with Section 163.3177, Fla. Stat. and Comprehensive Plan Policy 9-1.1.4. The 5-year CIP may be amended by ordinance and does not have to undergo a Comprehensive Plan Amendment. Section 163.3177, Fla. Stat. requires that the CIE be designed to consider deficiencies, needs, or increases in capacity of public facilities including estimated public facility costs, timelines, and projected revenue sources. Because the budget and CIP are adopted annually, adaptation strategies recommended in this Plan can be incorporated into the annual process. Below are the proposed capital planning projects for the FY 2015/16 budget cycle and suggestions for how the Village could consider integrating various adaptation strategies into this and future capital planning and budgeting processes.

Case Study: City of Miami Beach Stormwater Utility Assessment

The City of Miami Beach is combatting sea level rise in the near term with new pump stations. The City plans to have 60 to 80 pumps installed and running by 2020. The pumps will be placed in locations where a large amount of water from high tide spills onto the streets, and will pump 14,000 gallons of water back into the sea every minute.

This project comes with a \$300 million price tag, which the City Commission will fund with three \$100 million bond issuances to allow Miami Beach to borrow money at a low interest rate.

Also, a new Stormwater Utility Fee is being collected from all homeowners, businesses and hotels to help fund the pump project. Passed in September 2014, through Ordinance 2014-3894, the stormwater utility service charge for all customers increased from \$9.06 to \$16.67 per month. This increase will provide financial coverage for the Commission to issue the first bonds. Additional increases will be seen in fiscal years 2016/17, 2017/18 and 2018/19 to cover the issuance of subsequent bonds.

Table 14. Capital Projects Proposed for Funding in FY2015/16

Funding Source	Capital Project Funded	How recommendations in this Plan can influence capital project implementation
General Fund	<ul style="list-style-type: none"> • Repair and Maintenance to Building Department Vehicles - \$2,500. • Lighting in Anne's Beach, Library Beach, Green Turtle Hammock, Hurricane Monument, partial maintenance building & community center; neighborhood security lighting - \$66,000. • Park Complex public works maintenance shop - \$4,800. • Sewer connection, Green Turtle Hammock, Administrative Center, Anne's Beach, Library Beach - \$100,000. • Hurricane Monument, Anne's Beach, Library Beach Park, Plantation Tropical Preserve, Green Turtle Hammock - \$33,000. • Green Turtle Hammock main house repairs, electrical, insulation, drywall, windows, A/C, cottage and outbuilding maintenance - \$50,000. • Administrative Center interior repairs; elevator, sprinkler system and fire alarm maintenance - \$20,000. • Mabbs Hammock regrading and gravel - \$9,000. • Hurricane Monument replacement sod - \$6,500. • Anne's Beach boardwalk piling replacement project - \$50,000. • Parks & Recreation grounds repair and maintenance - \$40,000. • Parks & Recreation building repair and maintenance - \$25,000. • Parks & Recreation equipment repair and maintenance - \$25,000. 	<ul style="list-style-type: none"> • Continue phasing out inefficient Village vehicles and replacing them with more fuel efficient, hybrid or electric vehicles. • Ensure that energy efficient fixtures (e.g. LED bulbs, occupancy sensors) and water conserving fixture (e.g low-flow toilets, faucet and shower fixtures) are used in Village maintenance, repair and construction activities. • Increase building insulation and upgrade to energy efficient windows where possible when making building repairs. • Use sustainable materials or recycled products where possible. • Ensure that sea level rise is considered for all larger-scale maintenance and renovation of Village facilities.
Transportation Fund	<ul style="list-style-type: none"> • Venetian Shores & Venetian Way guardrails, trees and coral boulders along canals and canal ends - \$ 115,000. 	<ul style="list-style-type: none"> • Continue using native plants and ecosystem appropriate flora in replanting efforts. • Ensure that sea level rise is considered for all major transportation planning projects within the Village.

Funding Source	Capital Project Funded	How recommendations in this Plan can influence capital project implementation
Capital Project Fund	<ul style="list-style-type: none"> • Parks & Recreation– \$41,200. • Public Works - \$52,000. • Planning - \$10,000 for CityView enhancements. 	<ul style="list-style-type: none"> • Use results of the vulnerability analysis conducted as part of the Islamorada Matters Plan to inform capital project funding within the Village. • Ensure that sea level rise is considered for all capital improvements.
Affordable Housing Fund	<ul style="list-style-type: none"> • Sewer Connection Subsidies- \$30,000. 	<ul style="list-style-type: none"> • Use results of the vulnerability analysis conducted as part of the Islamorada Matters Plan to inform wastewater project funding within the Village. • Ensure that sea level rise is considered for all capital improvements.
Stormwater Enterprise Fund	<ul style="list-style-type: none"> • Individual stormwater project throughout Village - \$300,000. 	<ul style="list-style-type: none"> • Use results of the vulnerability analysis conducted as part of the Islamorada Matters Plan to design stormwater project funding within the Village. • Ensure that sea level rise is considered for improvements to vulnerable stormwater infrastructure.
Wastewater Utility Enterprise Fund	<ul style="list-style-type: none"> • No capital outlays listed. 	<ul style="list-style-type: none"> • For future capital outlays, ensure that sea level rise is considered for large improvements to vulnerable wastewater infrastructure.
5-year Capital Improvement Program	<ul style="list-style-type: none"> • Transportation Projects: Village-wide Public Road Asphalt Overlay Project - \$325,000. • Wastewater Projects: Remaining Service Area Wastewater Collection System - \$5,286,060. • Stormwater Projects: Neighborhood Stormwater Projects - \$300,000. 	<ul style="list-style-type: none"> • For future capital improvements, ensure that sea level rise is considered. This is especially true for transportation, wastewater and stormwater projects to maintain wise investment of capital funds.

New Budget Item recommendations are broken down by Focus Area below. Additionally, recommendations with budgetary implications that may be funded with existing Village funds and staff time are identified below. Additional details for the recommendations in this Focus Area are also provided in the Implementation Matrix in Appendix F.



Habitat

Use internal resources or allocate funds for outside assistance if needed:

- Update Stormwater Master Plan to include sea level rise assumptions and incorporate green infrastructure features.
- Conduct a habitat analysis to document species, condition, size and location of trees within the Village.
- Identify the areas where living shorelines are appropriate and develop guidance for implementation & monitoring.
- Identify vulnerable habitats and open space for prioritized land acquisition and maintenance.
- Identify and map natural inundation buffers which could also provide sea level rise adaptation benefits.
- Identify areas for habitat maintenance where removal of exotics could improve the quality of the area.
- Identify impacts to public access and recreation that might result from sea level rise.
- Identify and protect “core areas” within the Village with the best chance of persistence during sea level rise.



Infrastructure &
Built Environment

Use internal resources or allocate funds for outside assistance if needed:

- Improve data related to properties and infrastructure facilities including digitizing all building footprints.
- Identify key segments for retrofits; develop database of real-time flood impacts to road segments; explore funding.
- Update any required BMPs for water quality improvement; increase natural, on-site drainage to minimize runoff.
- Update Landscape Manual and landscaping requirements to more specifically require water conservation.
- Work with FDOT to develop survey of road bed elevations and suggest portions of roads most vulnerable for improvement.
- Utilize tidal vulnerability maps for roads as a guide for a public outreach campaign to develop record of flooding events.



Village Buildings and
Key Facilities

Three (3) new budget items are recommended, as provided below. Four (4) additional recommendations with budgetary implications are included in the Implementation Matrix.

- Conduct detailed site-level flood exposure audits for the wastewater pump station facility at 142 Sunshine Boulevard and the Islamorada Master Repump Station to determine above ground elevations and, as appropriate, structural flood resistance for electronics and mechanical components. Develop detailed GIS datasets, including bottom of invert elevation for access and junction points, to support site-level vulnerability assessments of underground wastewater infrastructure within the Village of Islamorada.
- Develop long-term flood resilience alternatives for Fire Station #19, located at 74070 U.S. Highway 1.
- Development of maintenance recording protocols and, as necessary, engineering assessments to assess resilience of below-grade pipes and pump infrastructure to increased saltwater incursion associated with sea level rise.



Adaptation Strategies

Use internal resources or allocate funds for outside assistance if needed:

- Continue discussing sea level rise vulnerability with residents/stakeholders through annual workshops on Plan progress.
- Develop and implement geographic database for Village employees and residents to document nuisance flood events.
- Ensure that future flood vulnerability assessments in Islamorada build upon the work in the Islamorada Matters project; use, integrate and improve Elevation Certificate record to promote higher confidence in flood risk assessments.
- Develop framework to engage with residents so that consensus on adaptation actions is data and stakeholder driven.
- Conduct additional study of an initiative to elevate and floodproof most vulnerable buildings within Islamorada.
- In future modeling efforts, model benefits and costs of joint action for adapting roads and buildings.
- Develop incentive program for developers and property owners who relocate structures landward, conserve or preserve.



Sustainability

Use internal resources or allocate funds for outside assistance if needed:

- Achieve recognition as a Bicycle Friendly Community or Walk Friendly Community.
- Train inspectors to enforce energy/water efficiency standards in adopted building codes.
- Implement specific programs/services or create facility upgrades to transition toward use of alternative transportation.
- Create incentives to help relocate residents from hazardous areas.
- Adopt a waste management plan that identifies greatest sources of waste and sets reduction targets.
- Collaboratively create/run two targeted recycling programs in the community.
- Implement specific programs and services or create facility upgrades that reduce waste in the community.

Figure 7: Recommendations with Budgetary Implications

Based upon the results of the vulnerability analysis completed as part of this project, only two (2) facilities, the wastewater pump station located at 142 Sunshine Boulevard and Fire Station #19 located at 74070 U.S. Highway 1, appear to be vulnerable under the highest sea level rise scenarios modeled by 2030. While not necessary for incorporation into the capital planning or budgeting process in the near term cycles, it is important to consider that these projected impacts are only fifteen (15) years out. But in terms of tidal flooding creating stormwater or road impacts, between 1.9 miles (low sea level rise) and 3.4 miles (high sea level rise) of non-U.S. Highway 1 road segments show potential nuisance flooding impacts by 2030.

The following guidance is provided for implementing the three (3) new capital budget items for Village buildings and facilities:

1. Conduct detailed site-level flood exposure audits for the wastewater pump station facility at 142 Sunshine Boulevard and the Islamorada Master Repump Station to determine above ground elevations and, as appropriate, structural flood resistance for electronics and mechanical components. Develop detailed GIS datasets, including bottom of invert elevation for access and junction points, to support site-level vulnerability assessments of underground wastewater infrastructure within the Village of Islamorada. (Recommendation VB.2)

In 2014, the Environmental Protection Agency released a guidance document for auditing site-level flood resilience of wastewater infrastructure.³⁸ Following this guide, the Team specifically recommends that the Village of Islamorada's Floodplain Coordinator be supplied with site-level assessments that characterize resistance of above-ground structures and associated electrical components to damages from extreme event flooding.

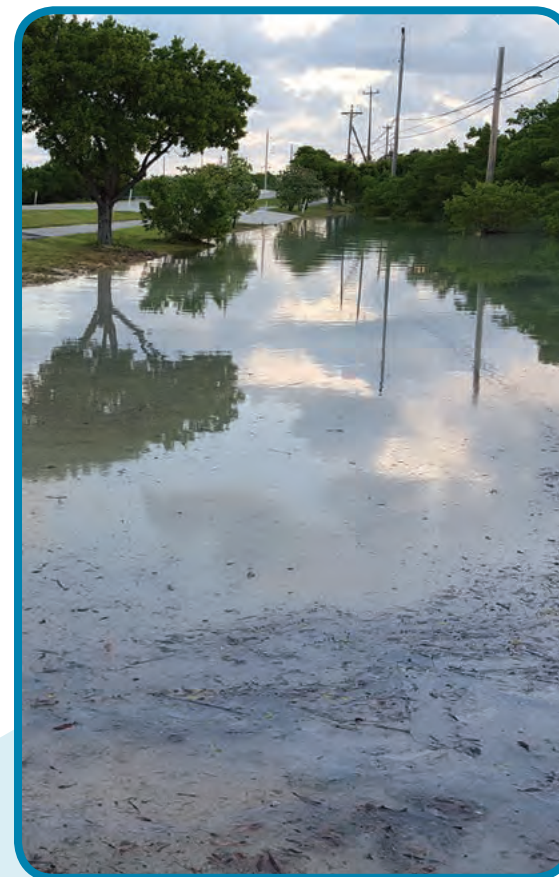
2. Development of maintenance recording protocols and, as necessary, engineering assessments to assess resilience of below-grade pipes and pump infrastructure to increased saltwater incursion associated with sea level rise. (Recommendation VB.4)

There may also be the need for the development of recording protocols and/or engineering assessments to further address resilience of other infrastructure associated with the most vulnerable facilities. Funding for these budget item can potentially be obtained from several sources, including: FEMA's Pre-Disaster Mitigation Grant Program; FEMA's Hazard Mitigation Grant Program (after disaster only) and FEMA's Flood Mitigation Assistance Program. See Section 8(d) and the Implementation Matrix in Appendix F for additional information on funding specific recommendations in this Plan.

3. Develop long-term flood resilience alternatives for Fire Station #19, located at 74070 U.S. Highway 1. (Recommendation VB.3)

The vulnerability assessment results suggest that future sea level rise not only has the potential to expose the Fire Station #19 structure to extreme event flooding, but also that the site is located on a low grade with potential susceptibility to future nuisance-level flooding in transport corridors. If sea level rise rates tend toward the higher scenario projected by the SFRCCC, there may be compelling need to elevate transportation lanes between Fire Station #19 and U.S. Highway 1 before 2030 in order to ensure safe access of emergency vehicles in the aftermath of extreme flooding events. Additionally, because U.S. Highway 1 is built to a low grade between White Marlin Boulevard and Palm Drive, long-term flood resilience and sea level rise adaptation planning for Fire Station #19 should therefore be closely coordinated with drainage improvements and increased grade elevation of U.S. Highway 1 within this low-lying corridor.

Funding for this budget item can potentially be obtained from several sources, including: FEMA's Pre-Disaster Mitigation Grant Program; FEMA's Hazard Mitigation Grant Program (after disaster only) and FEMA's Flood Mitigation Assistance Program. Transportation and U.S. Highway 1 improvement coordination related to these facilities should occur with FDOT through the State Transportation Five-Year Work Program discussed in the following section. See section 8(d) and the Implementation Matrix in Appendix F for additional information on funding specific recommendations in this Plan.



Islamorada, FL
Photo Source: Ariana Lawson

ii. Other Capital Planning Efforts

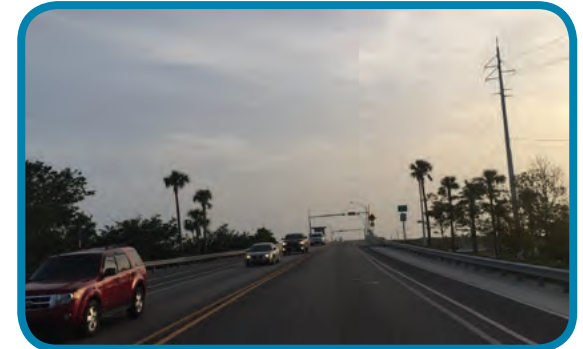
In addition to the Village's own capital planning efforts, there are other assets within Islamorada that are vulnerable to sea level rise but outside the jurisdiction of the Village. For example, Monroe County owns and manages several assets and the FDOT manages several miles of public roadway within the Village, primarily U.S. Highway 1. U.S. Highway 1 is the sole road transport and emergency evacuation route in the Florida Keys portion of Monroe County. For this reason, increased exposure to even low-level (i.e., nuisance) flood conditions along U.S. Highway 1 is highly problematic for public safety, health, and welfare. For nuisance flooding, such concerns include decreased traffic flow due to flooding of traffic lanes, increased risk of traffic accidents due to the hazard of tidal flooding conditions, and the likelihood of higher long-term maintenance costs due to saltwater overwash and saturation that may together accelerate degradation of the road bed.³⁹ In emergency situations, the potential for any flood blockage of low-lying sections of U.S. Highway 1 during an evacuation period would clearly raise a very high level of public safety concern. The seriousness of these issues compels near-term action to address and alleviate negative impacts.

Because these assets are physically located within the bounds of Islamorada, but outside their direct control, the Village needs to ensure coordinated efforts with these entities so that the vulnerabilities of these assets are addressed through their respective capital planning processes. Entities that the Village should continue to coordinate with include: Monroe County, Monroe County Emergency Management & Fire Rescue, FDOT, FDEP, USGS, and FDEM. Such collaboration will provide the Village with an opportunity to provide input on capital improvements affecting their residents and also allow the Village to strategically time its own improvements with relevant projects being implemented by these entities.

Coordination regarding transportation assets within the Village will be critical as sea level rise continues. The FDOT is responsible for the development of a State Transportation Five-Year Work Program ("Program")⁴⁰ which meets the mission, goals and objectives of the FDOT⁴¹ and the Florida Transportation Plan.⁴² The Program is the tentative list of projects that will be funded and carried out in District 6, which includes Miami-Dade and Monroe counties, during the next five (5) years. The Program is developed through extensive coordination with local governments, Metropolitan Planning Organizations ("MPOs"), regional planning groups and the public. In District 6, the Program is finalized in collaboration with the Miami-Dade County MPO and Monroe County Board of County Commissioners (because Monroe County is not part of an official MPO). The FDOT meets with MPO members and the Monroe County Board of County Commissioners throughout the year to determine projects that they and their constituents would like added to the Program. Public hearings are held in the Fall to give citizens and representatives from smaller municipalities the opportunity to comment on the tentative program. Following these hearings, FDOT submits the final draft of the Program to the MPO and Monroe County Board of County Commissioners. In February, the FDOT submits the tentative work Program to the governor's office and Legislature, as well as the Florida Transportation Commission and the DEO. In March, additional hearings are held to receive public input on the tentative work Program. After appropriations are approved by the Legislature, the Program is formally adopted by the FDOT in July. The Village should supply road-related vulnerability analysis from this plan to FDOT for consideration in these and future projects.



Administrative Center and Public Safety Headquarters, Islamorada, FL



Snake Creek Bridge, Islamorada, FL
Photo Source: Project Team

The following Islamorada projects are listed in the Tentative Work Program Fiscal Years 2016/2017 thru 2020/2021⁴³:

- Snake Creek Bridge – painting (2020);
- SR-5/U.S. Highway 1 from north of Old Highway (MM 77.5) to Jerome Avenue (MM 81.42) – resurfacing (2016);
- Tea Table Channel Bridge – bridge repair/rehabilitation (2016);
- Channel 2 Bridge – repair/rehabilitation (2016);
- Plantation Key Weigh Station – scale replacement (2016);
- SR5/U.S. Highway 1 from MM 81.44 to MM 77.47 – landscaping (2015); and
- SR5/U.S. Highway 1 from MM 77.47 to MM 81.44 – landscaping (2018).

The Florida Transportation Plan (“FTP”) establishes long range goals to provide a policy framework for the expenditure of federal and state transportation funds in the state of Florida. Every five (5) years, the FDOT takes the lead in updating the plan to respond to new trends and challenges to meet the future mobility needs of Florida’s residents, visitors and businesses. The 2060 Florida Transportation Plan, released in 2010, is the first statewide transportation plan for Florida to cover a 50 year period. The 2060 plan was developed by a committee of twenty-nine (29) people, representing all levels of government, multiple modes of transportation, business and economic development organizations, community and environmental interests, the military and the public. The committee was supported by four (4) advisory groups with an additional seventy-four (74) people assisting in the development of the plan. The FTP is currently in the process of being updated to a 2015 version.

The Village should maintain coordination with Monroe County to advance projects that will address future sea level rise.

B) Integration with Comprehensive Plan & Code Recommendations

This Plan can be implemented by incorporating recommendations into Policies and LDRs in the Comprehensive Plan and Code. Islamorada’s Comprehensive Plan was reviewed as part of this planning process for two (2) purposes. First, it was reviewed to glean additional data and analysis that would contribute to the overall sea level rise and sustainability analysis and recommendations. Second, it was reviewed to provide a blueprint for implementation that would allow each recommendation to be integrated into the appropriate location within the Comprehensive Plan or Code depending on the nature of the recommendation.

The Implementation Matrix, attached as Appendix F, outlines the methodology to integrate the recommendations of this Plan within its existing long-term and short-term policy structures. The Implementation Matrix provides specific policy and Code sections recommended for revision or update based on the recommendations made in this Plan.

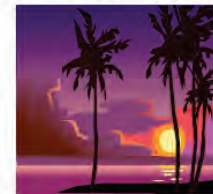
This effort should be led and supervised by the Village Planning Department. Recommended Comprehensive Plan updates and amendments should be implemented in the next Comprehensive Plan Update undertaken by the Village to ensure that the next iteration of the Village Comprehensive Plan begins to integrate sea level rise and future flood risk. Additionally, all future updates to the Village’s Comprehensive Plan should continue the process of more fully integrating sea level rise and resiliency. This full integration can be accomplished through several options:

- Including maps of potential future flood risks during the planning process;
- Creating core values around the general safety of citizens and the community with a need to plan for future threats; and
- Including sea level rise and natural hazards data in the background information, making sure to specifically call out impacts already experienced by the Village, as well as the future flood threats.

Similarly, Code additions and amendments should be adopted in accordance with the timeline provided in the Implementation Matrix.



ISLAMORADA: THE VILLAGE THAT RECLAIMED THE KEYS



COMPREHENSIVE PLAN JANUARY 2001

Comprehensive Plan and Code revisions can likely be implemented with existing staff resources or additional outside resources if needed. Select new or modified Comprehensive Plan and Code recommendations are broken down by Focus Area below. All recommendations for this Focus Area are provided in the Implementation Matrix in Appendix F.



Figure 8: Recommended Ordinance and Comprehensive Plan Amendments by Focus Area

C) Integration with FEMA Community Rating System

Implementing the recommendations of this Plan will help Islamorada meet several self-initiated goals, including becoming a more resilient community and maintaining membership in the FEMA CRS program.

Meeting the various criteria for good standing within the CRS program compliments many of the recommendations provided in this Plan, including managing development in areas that are vulnerable to flooding and preserving areas of the natural floodplain. Achieving a Class 7 rating and potentially improving that score over time could further assist in lowering flood insurance rates community-wide.

Each year, the Village will be required to undergo recertification to verify that it is continuing to perform the activities that are being credited by the CRS. In addition, the Village can continue to improve its Class rating by undertaking new mitigation and floodplain management activities that earn even more points. Some of the data and implementation of recommendations in this Plan can be used to gain more points and ultimately result in a lower (better) Class rating within the CRS program.

Communities can get additional points in the CRS program by undertaking various activities not already credited. FEMA will also review activities not listed in the Coordinator's Manual for credit based upon how well those activities increase public safety, reduce property damage, avoid economic disruption and loss, and protect the environment. A community can work with FEMA upfront on any of these additional activities to assure they will translate into scored points and result in actual improvement in the rating process.⁴⁴

The 2013 Coordinator's Manual includes new provisions related to credit for sea level rise and future flood risk planning. This recognizes that the future of how floodplains will look and be managed is an important consideration in planning. Factors listed affecting future flood risk are included in the Manual such as: increased impervious surfaces in developing watersheds, beach nourishment projects, new fill in floodways, rising sea levels and changes in natural functions of floodplains. While FIRMs do not consider these future impacts on the regulatory side, CRS incentivizes their consideration for credits in the following ways:

- Credit is provided under Section 322.c for communities that provide information about areas (not mapped on the FIRM) that are predicted to be susceptible to flooding in the future because of climate change or sea level rise;
- To become a Class 4 or better community, a community must (among other criteria) demonstrate that it has programs that minimize increases in future flooding;
- To achieve CRS Class 1, a community must receive credit for using regulatory flood elevations in the V and coastal A Zones that reflect future conditions, including sea level rise;
- Credit is provided under Section 342.d when prospective buyers of a property are advised of the potential for flooding due to climate changes and/or sea level rise;
- Credit is provided under Section 412.d when the community's regulatory map is based on future-conditions hydrology, including sea level rise;
- Credit is provided under Section 452.a if a community's stormwater program regulates runoff from future development;
- Credit is provided under Section 452.b for a community whose watershed master plan manages future peak flows so that they do not exceed present values; and
- Credit is provided under Section 512.a, Steps 4 and 5, for flood hazard assessment and problem analysis that address areas likely to flood and flood problems that are likely to get worse in the future, including (1) changes in floodplain development and demographics, (2) development in the watershed, and (3) climate change or sea level rise.



It should be noted that credit for some of the above CRS activities requires higher standards, such as adopting Village-specific maps and regulating to higher standards than currently required by FEMA. One way to enhance the Village's rating in the future would be to apply for the above listed credits related to future flood risk analysis. Further analysis shows that upwards of 518 points could be available through addressing sea level rise in the CRS process.⁴⁵ Again, these additional 518 points would require higher regulatory standards adopted by the Village and enforced by the community, but could be attainable. Islamorada came in as a Class 7, so the Village would be looking at potentially a Class 6 rating with these additional points.

Only eighteen (18) out of 235 communities in Florida have achieved a Class Rating of 5 and no communities in Florida as of May 2014 had achieved a Class Rating of 4. Given that these future flood risk criteria are relatively new in the CRS evaluation process, FEMA should be consulted to determine examples of where these points have been awarded and what data was used to achieve them.

Additional funds may be necessary for CRS improvement activities, which may be available from FEMA, FDEP or other entities. The Village will need to create a desired timeline for CRS rating score improvement so that potential funding sources can be identified to implement required improvement activities in advance of that score improvement deadline.

D) Funding Opportunities

As part of the Islamorada Matters planning project, the Team identified several funding sources for the recommendations provided in this Plan, including pre-disaster mitigation planning funds, impact fees, local government infrastructure sources, government funds, special revenue funds, landscape mitigation fees, stormwater utility enterprise funds, and grants. In addition to outside funding, another tool could include developing incentive programs for developers and property owners who retrofit structures to be more resilient to sea level rise impacts than state and county building codes and floodplain regulations require. Each potential funding source is described in greater detail in Table below.

A couple of key concepts are going to become important in future budgeting for adaptation planning. Public investment in sea level rise adaptation should be directed toward endeavors that benefit as many citizens as possible. Additionally, fee based funding options, if developed, should be user-related.

Table 110-1. CRS classes, credit points, and premium discounts.

CRS Class	Credit Points (cT)	Premium Reduction	
		In SFHA	Outside SFHA
1	4,500+	45%	10%
2	4,000–4,499	40%	10%
3	3,500–3,999	35%	10%
4	3,000–3,499	30%	10%
5	2,500–2,999	25%	10%
6	2,000–2,499	20%	10%
7	1,500–1,999	15%	5%
8	1,000–1,499	10%	5%
9	500–999	5%	5%
10	0–499	0	0

SFHA: Zones A, AE, A1–A30, V, V1–V30, AO, and AH

Outside the SFHA: Zones X, B, C, A99, AR, and D

Preferred Risk Policies are not eligible for CRS premium discounts because they already have premiums lower than other policies. Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage.

Some minus-rated policies may not be eligible for CRS premium discounts.

Premium discounts are subject to change.

CRS Classes, FEMA NFIP Coordinator's Manual

Photo Source: http://www.fema.gov/media-library-data/1406897194816-fc66ac50a3af-94634751342cb35666cd/FIA-15_NFIP-Coordinators-Manual_2014.pdf

Table 15. Potential Funding Sources for Plan Recommendations

Funding Source	Funding Description
Impact Fees	<p>Commercial and residential development affects Islamorada infrastructure and levels of service. Islamorada levies impact fees on building permits to fund capital infrastructure improvement projects or capital purchases needed to meet demands resulting from increased growth and usage. Impact fees for parks and recreation, transportation, public safety, and library activities and services are levied. Accumulated unspent revenues are segregated in committed fund balances and can only be spent for capital improvements which benefit that area of Islamorada activity.</p> <p>The following could be employed in Islamorada to fund the implementation of Plan recommendations:</p> <ul style="list-style-type: none"> • Development impact fees could be restructured to cover costs incurred by the Village for maintaining vital infrastructure vulnerable to rising seas; and • Impact fees used for coastal flood protection measures could be tied to particular geographic areas by using an adaptation action area overlay zone (if created).
Assessments	<p>The following could also be implemented in Islamorada to fund Plan recommendations:</p> <ul style="list-style-type: none"> • Special assessments could be imposed on those specifically benefitted by the retrofits; • A risk-based overlay, like an adaptation action area, could provide justification for a targeted assessment that is earmarked for infrastructure improvements like elevating roads, coastal armoring, or conservation purchases; and • Escrow accounts could be used to foster resilience to sea level rise.⁴⁶
Local Government Infrastructure Surtax	<p>Islamorada receives a portion of the additional sales surtax of one percent levied by Monroe County and distributed among the various municipalities and the County according to an allocation formula. Original surtax levy started January 1, 2004 and continues through December 31, 2018. In 2012, voters approved extension of the surtax to 2033. The surtax revenue collected and the related interest accrued may be expended for the following capital infrastructure projects, all of which have a life expectancy in excess of five (5) years: wastewater, recreation and conservation lands, marinas, courthouses, parking, offices, roads, bridges, airports, libraries, piers, auditoriums, riprap/seawalls, solid waste, jails, police/fire facilities, land acquisition, and stormwater. In addition to capital infrastructure projects, funds and interest accrued may also be expended on any public purpose, including maintenance of recreation and conservation lands.</p>
General Fund	<p>Used to account for all financial resources except those required to be accounted for in another fund. A government can report only one (1) general fund.</p>

Funding Source	Funding Description
Special Revenue Funds	<p>Used to account for the proceeds of specific revenue sources that are legally restricted or committed to expenditures for specified purposes (other than debt service or capital projects). Islamorada has the following Special Revenue Funds:</p> <ul style="list-style-type: none"> • Transportation Fund – revenue sources restricted for use on transportation-related expenditures, like local option gas taxes, a portion of state revenue sharing, FDOT grants and revenues resulting from ILAs with Monroe County. • Solid Waste Fund – primary revenue source is the annual non-ad valorem assessment levied to pay for solid waste collection services; primary expenditure is the cost of garbage, yard waste and recycling collection services. • Affordable Housing Fund – established to account for use of affordable housing impact fees charged by Islamorada as part of building permit fees; restricted for subsidizing, planning and developing affordable housing. • Enterprise Funds – used to account for operations that provide a service to citizens; funded primarily by a user charge or fee, and periodic measurement of net income is deemed appropriate for capital maintenance, public policy, management control, and accountability. Islamorada has 1) PYH Marina Enterprise Fund, 2) Wastewater Utility Enterprise Fund, and 3) Stormwater Utility Enterprise Fund.
Landscape Mitigation Fees	<p>As part of a development application on tropical hardwood hammock lands, applicants prepare and submit a habitat analysis that evaluates the distribution and quality of tropical hardwood hammock and/or wetlands within the parcel proposed to be developed. When existing noninvasive vegetation is removed or when vegetation that was to be preserved or relocated is damaged or destroyed during development activities, such vegetation shall be replaced, mitigated or restored. Mitigation fees are recorded in this account in the General Fund.</p>
Stormwater Utility Enterprise Fund	<p>Established to account for Islamorada’s stormwater improvement projects and services funded by annual non-ad valorem assessments. The current non-ad valorem assessment amount is \$32.00 per equivalent stormwater unit (“ESU”). Expenses accounted for relate to salary and benefits costs for staff to implement and manage stormwater repair projects and for the direct costs of those stormwater relief projects. Payments to Islamorada’s assessment consultant to draft the annual assessment roll and assist Islamorada in levying the assessments are also accounted for in this Fund.</p>

Funding Source	Funding Description
Grants	<p>Several sources of funding are potentially available for Islamorada through both state and federal grants. For example, grants are currently available for infrastructure improvements (transportation, water quality and land protection), hazard resiliency, parks and natural resources and sea level rise and climate planning:</p> <ul style="list-style-type: none"> • Transportation infrastructure - to improve bicycle and pedestrian pathways (including paths, lanes, trails, rest facilities, advocacy programs), promote reductions in vehicle miles travelled and carbon use (including vehicle standard policy development and policy analysis of electric vehicles), and develop alternative transportation methods (including bicycle/pedestrian trails, alternative transportation safety campaigns, and conversion of old corridors for trails). • Water quality and land conservation - to reduce non-point source pollution originating in stormwater runoff (through bioswales, bank stabilization, pervious surfaces, green roofs, and BMPs), reduce pollutant loads to known impaired waters (stormwater management projects, construction of BMPs, and stormwater runoff monitoring), and wetland protection and enhancement (through wetland programs, training and outreach, and studies to evaluate wetland performance). • Park and natural resource preservation - for habitat restoration and wildlife conservation (on the ground restoration and planning, environmental outreach, and result monitoring), sustainable community development (including critical resource conservation, habitat restoration, investment in green infrastructure, and private land stewardship), energy conservation (through building code revisions, appliance standards, programs to rate energy consumption, and incentives to reduce energy demands), and forest health promotion (forest surveys and monitoring and pest species eradication programs). • Hazard resiliency - for hazard mitigation efforts (drainage systems improvements, structural and road elevation, floodproofing, acquisition and relocation, and mitigation plan development), emergency management preparedness (including projects to enhance emergency preparedness and response), flood mitigation (acquisition and demolition or relocation, elevation, floodproofing, mitigation reconstruction, and flood reduction projects), pre-disaster mitigation (projects that reduce risk to population and structures prior to a disaster), and residential construction mitigation (building retrofits and modifications and public outreach to educate residents about wind mitigation techniques). • Sea level rise and climate planning – for climate adaptation (wildlife adaptation management and planning, resilience efforts to protect natural habitat, and enhancement of adaptive capacity of ecosystems, landscape functionality and critical biological processes) and climate mitigation efforts (climate adaptation and mitigation research and projects, weather readiness initiatives, marine fisheries sustainability, and resilient coastal community efforts). • Coastal resilience – for resiliency efforts to help coastal communities become more resilient to the effects of extreme weather events, climate hazards, and changing ocean conditions. Funding is available to help communities prepare for and recover from adverse effects and promotion of healthy and sustainable coastal ecosystems through habitat restoration and conservation.

See the Implementation Matrix in Appendix F for a list of specific funding sources applicable to the individual recommendations in this Plan.

E) Intergovernmental Coordination

Permitting processes for projects that involve several different agencies, particularly those for transportation, wastewater and shoreline protection can be challenging when agencies lack a common set of goals or have conflicting regulatory requirements. As sea level rise adaptation becomes incorporated into project proposals, conflicting regulations may delay permitting processes. Early coordination of projects between applicable agencies can help minimize regulatory conflicts and delays.

There is also concern that there may be challenges if regulations do not consider the potential impacts of sea level rise; both because sea level rise can change the ability of a project to meet regulatory standards and because adapting to sea level rise may require regulatory flexibility that does not yet exist. A variety of adaptation measures, such as incorporating migrating shorelines into the planning process, may be a new concept and take longer to permit than measures which do not include sea level rise considerations. This could present a real obstacle to implementing an adaptation measure. While this planning process has tried to capture many of those issues, the Village's Code should be more thoroughly reviewed in order to assure that there are no obstacles to implementing the recommendations in this Plan. There should also be a focus on incentivizing the type of actions that are recommended in each of the Focus Areas within this Plan.

F) Implementation Performance Tracking

To ensure that the Islamorada Matters planning project is successful, it is recommended that implementation progress be monitored annually to assess efforts and evaluate recommendations yet to be implemented. Ideally, updates on progress should occur before or in conjunction with the Capital Planning process. This review will provide an opportunity for Village staff to determine implementation priorities and resource allocation, present updates on efforts initiated within the previous year, and to report progress of larger scale recommendations for tracking purposes. A sample Report Card to be used for implementation tracking purposes is provided in Appendix I.

Additionally, to ensure recommendations are implemented appropriately, especially medium- and long-term recommendations, trigger points should be developed. Trigger points are essentially monitoring thresholds used to avoid environmental or socioeconomic tipping points, points where the impacts become so severe that they are irreversible. These trigger points can be used to justify and initiate proactive policy changes at the initial onset of a problem or in some instances avoid consequences entirely. This is especially important since many of the adaptation actions recommended in this Plan are designed to address problems associated with the projected rapid sea level rise, not the current slower rate of change. Since sea level rise is expected to accelerate in the future, establishing trigger points for adaptation actions allows the Village to balance policies that will preserve the status quo for as long as possible, while making a forward commitment to protect future populations.

Case Study: Thames Estuary, London

In 2002, the Thames Estuary 2100 project ("TE2100") was established to develop a long-term tidal flood risk management plan for London and the Thames estuary.

The TE2100 Plan contains recommendations on actions the Environment Agency and others will need to take in the short, medium and long term to manage flood risks.

Each zone within the flood risk area was assigned one (1) of five (5) policies to set the strategic direction of flood risk management in each part of the Estuary. The strategy was to then manage the flood risk according to risk level set by the policy, via a number of adaptation actions.

The TE2100 Plan identifies ten (10) key indicators of the changes which will affect flood risk management. These "triggers for change" will be monitored throughout the life of the TE2100 Plan.

Example triggers of change include:

- mean sea level
- peak surge tide level
- extent of erosion
- public attitudes to flood risk
- land use planning and development activities

The outputs from this monitoring will inform regular reviews and they will also trigger decision-making if rapid change occurs in one or more of the indicators. When one intervention ceases to be effective, another will be implemented.

This case study provides a good illustration of how trigger points can be used to adjust policies in response to real-time condition changes, like flooding and sea level rise.

9. Conclusion

Over the past decade, the Village has prioritized sustainability as an area of importance to Village operations and future success. With projected sea level rise impacts expected to affect Islamorada, increasing the focus on becoming more sustainable and more prepared to deal with these impacts is of paramount importance. Results of both the vulnerability assessments and storm surge and sea level rise modeling suggest varying degrees of impact to the Village – but even under the best case scenario, Islamorada will see significant changes. These impacts will be widely distributed and have the potential to impact everything from natural ecosystems to community infrastructure to individual flood insurance premium rates. Because of the potential significance of these impacts, it is critical that the Village continue the momentum generated by this project in all future planning efforts to ensure that the Village is able and ready to respond to the upcoming changes.

Though divided into the five (5) main Focus Areas of interest to the Village in this Plan, there is significant overlap between these Focus Areas with regard to the benefits of implementing the specific recommendations under each. The implementation of individual recommendations not only results in an increased level of municipal sustainability, such action also contributes to the larger mission of becoming more resilient to the impacts of sea level rise. With the results provided in this Plan, the Village is in a unique position, through strategic prioritization and implementation of these recommendations, to maximize the resulting benefits and therefore exponentially increase overall sustainability and sea level rise preparedness.

To continue the momentum generated by this planning project, Islamorada will also be part of the NOAA grant entitled Advancing Understanding of Risk: Increasing Accuracy of Hazard Damage Assessment Tools by Improving Base Data and Analyzing Opportunities and Barriers for Use in Adaptation Planning. This grant project will be implemented in 2016-2018 and is designed to improve the resilience of four (4) coastal communities across four (4) states in the Southeast, including Florida, Georgia, South Carolina and North Carolina. For each community, stakeholder input will be collected to determine local resilience priorities. In addition, digital data will be built to improve local planning capacity related to the priorities identified. Legal and policy research will also be conducted to improve the implementation of adaptation measures identified by the communities. Finally, pre- and post-project knowledge assessments will be conducted to evaluate the success of this method in communicating hazard vulnerability and resilience information on a regional scale.

In Islamorada, this grant project will specifically include public workshops, integration of project findings into local planning and policy development initiatives (including the CRS) and collaboration in developing legal research publications that broadly communicate lessons learned in the project to a regional audience. Most importantly, this project will build better base data for the Village and create more accurate hazard damage assessments, and improve knowledge of local vulnerabilities and resilience.



Islamorada, FL
Photo Source: Project Team

Endnotes

¹ Multihazard Mitigation Council, Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities (2005), available at: https://www.nibs.org/resource/resmgr/MMC/hms_vol1.pdf.

² Florida Ocean's Council, Climate Change and Sea Level Rise In Florida 2010, available at: http://www.dep.state.fl.us/oceanscouncil/reports/climate_change_and_sea_level_rise.pdf.

³ Visit <http://www.islamoradamatters.com/> for more information on the Islamorada Matters project.

⁴ United States Census Bureau, State & County QuickFacts: Islamorada, Village of Islands, available at: <http://quickfacts.census.gov/qfd/states/12/1234132.html>.

⁵ § 380.0552, Fla. Stat. (2014).

⁶ The 2015 LMS Update was prepared to comply with Florida Division of Emergency Management requirements (Florida Administrative Code Chapter 27P-22); provisions of the federal Hazard Mitigation and Pre-Disaster Mitigation Programs (44 CFR Parts 201 and 206); and the Flood Mitigation Assistance Program (44 CFR 78.6).

⁷ Executive Order 13514 was revoked with publication of the new Executive Order “Planning for Federal Sustainability in the Next Decade” which outlines forward-looking goals for federal agencies in the areas of energy, climate change, water use, vehicle fleets, construction and acquisition. Available at: <https://www.fedcenter.gov/programs/eo13514/>.

⁸ Council on Environmental Quality, Federal Agency Climate Change Adaptation Planning: Implementing Climate Change Adaptation Planning in Accordance with Executive Order 13515 (March 4, 2011); available at: https://www.whitehouse.gov/sites/default/files/microsites/ceq/adaptation_support_document_3_3.pdf.

⁹ Executive Order 13693, Planning for Federal Sustainability in the Next Decade (March 19, 2015), available at: <https://www.fedcenter.gov/programs/eo13693/>.

¹⁰ § 377.804, Fla. Stat. (2006).

¹¹ See 2006 Fla. Laws ch. 230 (S.B. 888); Exec. Order No. 07-126, Leadership by Example: Immediate Actions to Reduce Greenhouse Gas Emissions from Florida State Government (July 13, 2007); Exec. Order No. 07-127, Immediate Actions to Reduce Greenhouse Gas Emissions within Florida (July 13, 2007); Exec. Order No. 07-128, Florida Governor's Action Team on Energy and Climate Change (July 13, 2007).

¹² Florida House Bill No. 7123 (2007), available at: <http://www.myfloridahouse.gov/Sections/Bills/billsdetail.aspx?BillId=36885>.

¹³ Florida House Bill No. 697 (2008), available at: <http://www.myfloridahouse.gov/Sections/Bills/billsdetail.aspx?BillId=38094>.

¹⁴ HB 7135 (2008) amended § 255.2575(2), Fla. Stat (2007).

¹⁵ 2011 Fla. Laws ch. 2011-34, Senate Bill No. 1204 (2011).

¹⁶ § 163.3164, Fla. Stat. (2011).

¹⁷ 2015 Fla. Laws ch. 2015-69, Senate Bill No. 1094 (2015).

- ¹⁸ Southeast Florida Regional Climate Change Compact, A Unified Sea Level Projection for Southeast Florida (April 2011), available at: <http://www.southeastfloridacclimatecompact.org/>.
- ¹⁹ Sustainability Tools for Assessing and Rating Communities, Technical Guide to the STAR Community Rating System – Version 1.1 (2014).
- ²⁰ National Oceanic and Atmospheric Administration, A Planning Guide For State Coastal Management, Chapter 4 Vulnerability Assessment; available at: <http://coastalmanagement.noaa.gov/climate/docs/ch4vulnerabilityassessment.pdf>.
- ²¹ Deyle, R.E., K.C. Bailey & A. Matheny, Adaptive Response Planning to Sea Level Rise in Florida and Implications for Comprehensive and Public-Facilities Planning (2007), available at: http://research.fit.edu/sealevelriselibrary/documents/doc_mgr/449/Florida_Adaptive_Planning_for_SLR_-_Deyle_et_al._2007.pdf.
- ²² CSA International, Inc., Sea Level Response Strategy, Worcester County, Maryland: Prepared for Worcester County Maryland Department of Comprehensive Planning (2008), available at: <http://www.dnr.state.md.us/dnrnews/pdfs/Worcester.pdf>.
- ²³ Boateng, Isaac, Integrating Sea-Level Rise Adaptation into Planning Policies in the Coastal Zone (2008), available at: http://www.fig.net/pub/fig2008/papers/ts03f/ts03f_03_boateng_2722.pdf.
- ²⁴ Titus, J.G., & M. Craghan. (2009). Shore protection and retreat. In: Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region. A report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. [J.G. Titus (coordinating lead author), K.E. Anderson, D.R. Cahoon, D.B. Gesch, S.K. Gill, B.T. Guitierrez, E.R. Thieler, and S.J. Williams (lead authors)]. U.S. Environmental Protection Agency, Washington, D.C., pp 87-104. Available at: <http://www.climatechange.gov/Library/sap/sap4-1/final-report/>.
- ²⁵ National Oceanic and Atmospheric Office of Ocean and Coastal Resource Management, Administration Adapting to Climate Change: A Planning Guide for State Coastal Managers (2010), available at: <http://coastalmanagement.noaa.gov/climate/adaptation.html>.
- ²⁶ Titus, supra note 24.
- ²⁷ Alliance Development Works in Cooperation with United Nations University and The Nature Conservancy, World Risk Report 2012 (2012), available at: <http://www.nature.org/ourinitiatives/urgentissues/global-warming-climate-change/world-risk-report-2012-pdf.pdf>.
- ²⁸ U.S. Environmental Protection Agency, What is Green Infrastructure?, available at: http://water.epa.gov/infrastructure/greeninfrastructure/gi_what.cfm.
- ²⁹ Totals obtained from the Monroe County Tax Collector, Business Tax Office.
- ³⁰ The term “rolling easement” refers to the policy or policies intended to allow coastal lands and habitats including beaches and wetlands to migrate landward over time as the mean high tide line and public trust boundary moves inland with sea level rise. Such policies often restrict the use of shoreline protective structures (such as the “no future seawall” limitation sometimes used by the Commission), limit new development, and encourage the removal of structures that are seaward (or become seaward over time) of a designated boundary. This boundary may be designated based on such variables as the mean high tide line, dune vegetation line, or other dynamic line or legal requirement. Despite the term “rolling easements,” not all of the strategies related to rolling easements actually involve the use of recorded easements. California Coastal Commission, California Coastal Commission Sea Level Rise Policy Guidance, p. 134 (August 2015), available at: http://documents.coastal.ca.gov/assets/slr/guidance/August2015/0_Full_Adopted_Sea_Level_Rise_Policy_Guidance.pdf.

³¹ The Resilience STARTM designation, which is modeled after the Environmental Protection Agency's successful ENERGY STAR campaign, will be given to structures that are built to withstand damage from certain disasters, utilizing the standards and third-party verification process in the Insurance Institute for Business & Home Safety's ("IBHS") FORTIFIED programs (<http://disastersafety.org/fortified-programs/>). The FORTIFIED standards are designed to improve the quality of residential construction and feature practical, meaningful solutions for new and existing homes throughout the U.S. RELi (http://c3livingdesign.org/?page_id=5110) integrates a comprehensive listing of resilient design criteria with integrative process for developing communities, neighborhoods, buildings, homes and infrastructure. It is similar to LEED® with a lens on resiliency. The Action List + Credit Catalog are resources included in the RELi Green + Resilient Property Underwriting and Finance Standard. RELi was developed through an American National Standards Institute ("ANSI") accredited process as a National Consensus Standard.

³² § 339.135, Fla. Stat. (2013).

³³ Federal Emergency Management Agency, Coastal Discovery Report: Southeast Florida Coastal Project Palm Beach, Broward, Miami-Dade, and Monroe Counties (2015), available at: http://www.southeastcoastalmaps.com/PublicDocs/Discovery%20Report_South%20Florida%20Study%20Area_April%202015.pdf.

³⁴ Grannis, Jessica, Adaptation Tool Kit: Sea-Level Rise and Coastal Land Use (2011), available at: <http://www.georgetownclimate.org/resources/adaptation-tool-kit-sea-level-rise-and-coastal-land-use>.

³⁵ Grannis, *supra* note 34.

³⁶ Active building design is a process of consciously incorporating building design features that encourage physical activity. Examples include bicycle storage, highly visible stairways, and showers and locker rooms. Sustainability Tools for Assessing and Rating Communities, *supra* note 19.

³⁷ Sample Ordinance from Boston, Massachusetts, available at: http://www.cityofboston.gov/images_documents/Signed%20Ordinance_tcm3-38217.pdf.

³⁸ U.S. Environmental Protection Agency, Flood Resilience: A Basic Guide for Water and Wastewater Utilities (September 2014), available at: <http://water.epa.gov/infrastructure/watersecurity/emerplan/upload/epa817b14006.pdf>.

³⁹ Titus, J. 2002. Does sea level rise matter to transportation along the Atlantic Coast? In *The Potential Impacts of Climate Change on Transportation*, Summary and Discussion Papers, pp. 135-150. Washington: Brookings Institute.

⁴⁰ § 339.135, Fla. Stat. (2015).

⁴¹ § 344.046, Fla. Stat. (2015).

⁴² § 339.155, Fla. Stat. (2015).

⁴³ Florida Department of Transportation District 6, FDOT Tentative Work Program for Fiscal Year 2016/17 thru 2020/21, available at: <http://www.fdotmiamidade.com/userfiles/files/WPBooklet2015-Monroe.pdf>.

⁴⁴ Federal Emergency Management Agency, National Flood Insurance Program Community Rating System: A Local Official's Guide to Saving Lives, Preventing Property Damage Reducing the Cost of Flood Insurance, available at: http://www.fema.gov/media-library-data/20130726-1708-25045-7720/99032_nfip_small_brochure.pdf (last viewed August 9, 2015).

⁴⁵ Thomas Ruppert, References to Climate Change and Sea-Level Rise in the 2013 NFIP CRS Coordinator's Manual (March 2015), available at: https://www.flseagrant.org/wp-content/uploads/SLR-and-CC-in-CRS-program_FINAL_3.3.15.pdf. Examples include: Section 412.d. Higher study standards (160 pt. max.): To receive this credit for coastal studies, the community must use an estimate of the sea level rise anticipated by the year 2100 or later. The study used to determine the sea level rise must have been developed by FEMA, the Corps, the U.S. Geological Survey, the National Oceanic and Atmospheric Administration, or through a regional study that produced higher base flood elevations.

Additionally, under Section 512.a, Step 4—Assess the Hazard (5 pt. max) and 452.b., Step 5—Assess the Problem (15 pt. max if SLR integrated into Step 4 and meet Step 5(b)(3)-(5) (p. 510-16). A sea level rise vulnerability assessment could be a basis for seeking this credit. FEMA should be consulted ahead of time to determine any required parameters for that sea level rise vulnerability assessments when seeking credit.

⁴⁶ Escrow accounts have been utilized on an international scale under the Clean Development Mechanism of the Kyoto Protocol to establish a forest protection condition on investments to donor countries. S.C. Sea Grant, et al., Sea Level Rise Adaptation Report Beaufort County, South Carolina (2015), available at: http://www.scseagrant.org/pdf_files/Beaufort-Co-SLR-Adaptation-Report-Digital.pdf.

10. Appendices

Appendix A.	Sustainability Plan and Annual Updates, Major Accomplishments and New or Modified Goals
Appendix B.	Village of Islamorada: GIS Vulnerability Assessment for Sea Level Rise Planning
Appendix C.	Peer Review Process
Appendix D.	Islamorada Matters: Analysis of Damages from Storm Surge and Sea Level Rise in Islamorada using the Coastal Adaptation to Sea Level Rise Tool Report
Appendix E.	STAR Supporting Documentation
Appendix F.	Implementation Matrix
Appendix G.	Islamorada Survey and Responses
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Appendix I.	Sample Report Card
Appendix J.	Model Ordinance

Appendix A: Sustainability Plan and Annual Updates, Major Accomplishments and New or Modified Goals



Update Year	Major Islamorada Accomplishment(s)	New or Modified Goal(s)
2008	<ul style="list-style-type: none"> • Included energy and water efficient fixtures and equipment, motion-activated lighting and pervious pavers at Community Center, Fire Station 19 and marina restroom pavilions. • Installed cistern at Fire Station 20. • Adopted and implemented an Employee Sustainability Policy including an energy conservation program within Islamorada offices. • Completed two (2) waterfront landscape improvement projects. • Updated solid waste contract to include commercial and residential recycling initiatives. • Implemented mandatory recycling at events on Islamorada property. • Made recycling information available on website. • Adopted a Bicycle/Pedestrian Transportation Plan. • Completed one (1) cul-de-sac improvement. 	<p><u>New Goals:</u></p> <ul style="list-style-type: none"> • Create and implement an Environmental Sustainability Policy. • When possible, make arrangements for meetings to occur via conference call/Skype to avoid increasing vehicle miles travelled. • Revise Rights-of-way ("ROW") ordinance for vegetated swales. • Utilize biodegradable bags at Islamorada offices and parks. • Utilize pool vehicles rather than individual vehicles. • Continued Clean Marina practices. • Improve community awareness and involvement in Islamorada sustainability initiatives. <p><u>Eliminated Goals:</u></p> <ul style="list-style-type: none"> • Goal to increase floor area ratio ("FAR") in order to facilitate additional open space in other areas.
2009	<ul style="list-style-type: none"> • Continued to use energy and water efficient fixtures and equipment; cistern; biodegradable bags; as well as pervious pavers as part of new and renovated facility projects and parks. • Continued to implement Employee Sustainability Policies. • Installed pool cover at public pool. • Adopted Resolution 08-12-07 to waive building permit fees for solar system installations. • Reduced energy consumption by 11% in Islamorada offices and parks. • Applied for Energy Efficiency and Conservation Block Grant ("EECBG"). • Increased highway ROW sodding. • Began employee arborist training. • Acquired nine (9) acre Key Tree Cactus Preserve for conservation and recreation. • Completed two (2) new cul-de-sac improvements. • Planted only native plants at Administrative Center; no landscape irrigation required or installed. • Completed construction of paving and drainage improvements to Upper Matecumbe Key. • Purchased first hybrid vehicle. 	<p><u>New Goals:</u></p> <ul style="list-style-type: none"> • Encourage use of solar systems by property owners. • Reduce electrical consumption in government buildings and parks. • Seek funding to assist in energy reduction goals. • Phase out incandescent lighting in all government facilities. • Increase provision that ROW plantings be 100% Florida Friendly. <p><u>Eliminated Goals:</u></p> <ul style="list-style-type: none"> • Solar hot water heaters for affordable housing projects receiving Islamorada assistance. • Potential use of LEED certification standards as part of the BPAS as it was too difficult to implement.

	<ul style="list-style-type: none"> • Budgeted for inefficient fuel vehicle replacement program. • Auctioned six (6) inefficient Sheriff's Office vehicles. • Reduced municipal vehicle fleet by four (4) vehicles. • Added community education program to solid waste contract. • Information related to sustainability efforts and recommendations added to website. • Received 5-year Clean Marina award. 	
2010	<ul style="list-style-type: none"> • Retrofitted Anne's Beach and Library Beach restroom lighting. • Installed pervious parking area at Green Turtle Hammock Park. • Awarded EECBG funds. • Purchased and installed new recycling and trash bins at parks and along U.S. Highway 1 right-of-way. • Made additional recycling bins accessible to all vacation rental properties. • Updated BPAS scoring system to encourage solar hot water heater installs through additional points. 	<u>New Goals:</u> <ul style="list-style-type: none"> • Encourage recycling at vacation rental properties.
2011	<ul style="list-style-type: none"> • Installed energy efficient pool heat pumps and propane flash heater. • Installed solar street lights at Founders Park and Islamorada-owned property using EECBG. • Implemented paperless policies for staff, Council and the public. • Purchased two (2) bikes for parks and public works staff use. • Auctioned 17 inefficient vehicles. 	<u>Modified Goals:</u> <ul style="list-style-type: none"> • Utilize only native plants at all Islamorada properties. • Require staff to print double-sided and use electronic documents rather than printed. <u>Eliminated Goals:</u> <ul style="list-style-type: none"> • Replace neighborhood street lighting with solar lighting.
2012	<ul style="list-style-type: none"> • Removed/destroyed two (2) inefficient fleet vehicles. 	<u>New Goals:</u> <ul style="list-style-type: none"> • Promote voluntary use of reusable bags by businesses through "Got Your Bags" program.
2013	<ul style="list-style-type: none"> • Staff trained on exotic plant recognition and removal techniques; ongoing training to continue. • EnergyStar qualified appliances installed by developer at Wet Net Villas affordable housing project. • Only native plants installed at Wet Net Villas affordable housing project. • Replaced all incandescent lighting in Islamorada-owned buildings. • Completed Snake Creek Bridge beautification project. • Completed certification of Arborist on Public Works staff. 	<u>New Goals:</u> <ul style="list-style-type: none"> • Determine feasibility of canal restoration program based on County-wide Canal Management Master Plan.

	<ul style="list-style-type: none"> • Completed 224 total tree and greenery plantings. • Installed site specific native vegetation at all wastewater pump station sites. • Executed request for proposal ("RFP") for solid waste contract including mandatory commercial recycling program in conjunction with new ordinance. • Participated in Canal Management Master Plan process with County to address existing water quality challenges through improved canal cleanliness. • Committed \$100,000 to Canal Restoration Demonstration Project that will assist in developing a streamlined permitting, design, and evaluation process that will be utilized for future planning and costing of canal water quality improvements. 	
2014	<ul style="list-style-type: none"> • Acquired three (3) additional properties for conservation. • Final six (6) old pool pumps replaced with higher efficiency units. • Proposed budget item to improve technology for remote meetings. • Added position of Environmental Resource Program Manager. • Executed Waste Management contract to include implementation of mandatory recycling for commercial customers; used motor oil and increased household hazardous waste collection. • Purchased reusable bags and promoted "Got Your Bags" program. • Received 10-year Clean Marina Award. • Began Canal Restoration Demonstration Project on Plantation Key canal, one (1) of the sixty-two (62) residential canals in Islamorada. • Entered into agreement to create an adaptation action plan for Islamorada. 	<p><u>New Goals:</u></p> <ul style="list-style-type: none"> • Implement a Climate Change Action Plan.
2015	<ul style="list-style-type: none"> • In June, 2015, staff submitted application for financial assistance to purchase additional cloth bags for Got Your Bags? Florida Keys initiative. Did not win grant award. • One Plantation Key property acquired for conservation during FY 14-15. • As of September 2015, a total of 65.3 acres of conservation property and 105 acres of Park property is owned by the Village. • Project to cultivate specialized native plants initiated through the Landscape 	<p><u>New Goals:</u></p> <ul style="list-style-type: none"> • Complete Village-wide wastewater collection and transmission system (Village-wide wastewater collection and transmission system to be completed by the end of calendar year 2015.) <p><u>Modified Goals:</u></p>

	<ul style="list-style-type: none"> • Advisory Committee in May 2015. Plants to be utilized at Village properties. • During FY 14-15, improved measures to promote recycling with increased communication during registration renewals and laminated flyers encouraging recycling for posting at vacation rental properties. • Auctioned six inefficient fleet vehicles in 2014. • First canal restoration demonstration project implemented during FY 13-14 was completed and installed in November 2014. 	<ul style="list-style-type: none"> • Utilize trash bags made of recycled material at Village Parks and Village properties. • Utilize trash bags made of recycled material in Village Office Buildings.
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Environmental Sustainability Plan September 2007

Islamorada, Village of Islands

In order to contribute to a greener planet, the Village of Islamorada seeks to enact policies to reduce global warming pollution levels and provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements and energy conservation.

This document includes actions that are currently in place and goals/actions that have been identified to be investigated for future implementation. The document is intended to be utilized as a tool to review sustainability actions that have been achieved and to identify and prioritize goals that may be accomplished in the next year and future years.

The document is designed to be reviewed annually each spring to add/remove/modify the goals, update the status of items that have been implemented and identify those items that could be considered during budget discussions and implemented in the following fiscal year.

Environmental Sustainability Goal/Action

Status

ENERGY

• Include LEED energy certification components in plans for new Village building projects.	
• Include LEED energy certification components in plans for Village building renovations.	
• Utilize energy efficient mechanical systems in building projects.	
• Energy saving standards are included in the BPAS scoring system.	In place prior to September 2007
• Investigate additional LEED energy certification standards for addition to the BPAS scoring system to promote increased energy savings in new development (i.e. solar hot water heating, "going off the FKEC grid").	To be investigated during FY 07-08

<ul style="list-style-type: none"> • Turn thermostats up during non-business hours in all Village Buildings. Set a minimum temperature standard for business hours, with limited exceptions (i.e. areas housing computer server systems). 	In place September 2007
<ul style="list-style-type: none"> • Install motion-sensing, auto-off light switches where appropriate at Village owned buildings. 	
<ul style="list-style-type: none"> • Create and distribute monthly employee newsletter; include sustainability issues/suggestions in each newsletter. 	To be implemented during FY 07-08
<ul style="list-style-type: none"> • Establish an energy conservation program/policy for all Village offices and buildings to include turning off lights and equipment when not in use. 	To be implemented during FY 07-08
<ul style="list-style-type: none"> • As new equipment and appliances are required, procure energy efficient products that are ENERGY STAR® qualified or that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life-cycle cost basis. 	
<ul style="list-style-type: none"> • Update the Village purchasing policy and procedure to include the requirement of ENERGY STAR® qualified products or products that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life cycle cost basis. 	
<ul style="list-style-type: none"> • Require affordable housing projects receiving Village assistance to install ENERGY STAR® qualified appliances. 	
<ul style="list-style-type: none"> • Purchase vehicles with the highest fuel efficiency that are appropriate for the assigned task. 	
<ul style="list-style-type: none"> • Auction retired Sheriff's Department vehicles that are not fuel efficient for Village tasks. 	
<ul style="list-style-type: none"> • Implement anti-idling policy throughout all Village departments. 	In place September 2007
<ul style="list-style-type: none"> • Replace Founders Park pool heat pumps with new conventional units. 	
<ul style="list-style-type: none"> • Convert Founders Park pool heating to a solar panel powered system. 	

• Replace Founders Park street lights with solar lighting.	
• Retrofit existing Founders Park light poles for conversion to solar lighting.	
• Replace existing neighborhood street lighting with solar lighting.	
• Require solar hot water heating for affordable housing projects receiving Village assistance.	
• Utilize solar power to light “Welcome to Islamorada” signs at the north and south entrances to the Village.	In place prior to September 2007
• Manage Founders Park street lights for lowest possible energy use.	In place September 2007
• Utilize state of the industry standards/practices for Founders Park field lighting.	In place September 2007
• Preserve properties from development through conservation easements and agreements with Monroe County and the State of Florida.	Over 35 acres of property acquired prior to September 2007

LAND

• Increase allowed Floor Area Ratio in Village Center zoning districts to preserve open space in other areas and create compact, walkable areas.	
• Maintain and expand healthy tree canopies over certain roadways to provide for greater shade to residential areas for energy savings and promote groundwater absorption.	In place prior to September 2007 and ongoing
• Coordinate with FDOT to re-sod US 1 highway rights-of-ways rather than placing compacted lime rock. The sod may need to be protected with hedge materials.	
• Acquire or train employee(s) to become certified arborist on roadways staff.	

<ul style="list-style-type: none"> • Replace asphalt with pervious pavers where possible on publicly held land. 	
<ul style="list-style-type: none"> • Add rain barrels/cisterns to key properties to capture rainwater, allowing the water to be used for landscaping. 	
<ul style="list-style-type: none"> • Ensure that swales are vegetated and kept free from debris and minimize traffic that would compact soils and reduce permeability. 	
<ul style="list-style-type: none"> • Preserve additional properties from development. 	
<ul style="list-style-type: none"> • Work with schools, various community agencies and citizens' advisory committees for the planting of trees and greenery at Plantation Hammock Preserve, Plantation Tropical Preserve and other Village parks. 	In place prior to September 2007 and ongoing
<ul style="list-style-type: none"> • Require businesses that use rights-of-way to plant or re-plant vegetation and trees. 	
<ul style="list-style-type: none"> • Work with utility companies to restore vegetation, including re-sodding and tree planting. 	
<ul style="list-style-type: none"> • Work with neighborhood associations with culs de sac or streets ending in water for potential planting ideas to install landscaping to improve barren areas. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking by initiating the US Post Office / Townsite Supermarket proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes by initiating the Worldwide Sportsman Store / Islamorada Fish Company proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking by initiating Village-wide parking along US Highway 1 proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	

AIR QUALITY/CO2 REDUCTION

• Identify locations to strategically plant native canopy trees that would provide ample shade with its canopy to cool temperatures and reduce air pollution and plant six trees per year in public parks and rights-of-way.	In place prior to September 2007 and ongoing
• Require additional landscaping and buffers for projects requiring development orders.	In place prior to September 2007
• Increase the amount of landscaping required for new development.	

STORMWATER

• Village's stormwater master plan completed in 2001 and transmitted to officials at FDOT and FDEP.	In place prior to September 2007
• Meet with FDOT on a regular basis to coordinate and review work performed by the FDOT.	In place prior to September 2007 and ongoing
• Make requests to FDOT for improvement projects.	
• Complete remainder of the paving and drainage improvements on Upper Matecumbe Key.	In progress September 2007
• Utilize Stormwater Best Management Practices for drainage improvements.	In place prior to September 2007 and ongoing
• Require swales as part of the work to install driveway connections to local roads in order to promote infiltration	
• As part of right of way permitting, require xeriscape plant materials for plantings in right-of-way.	

WATER

• Low flow plumbing fixtures are in place in the Founders Park pool complex and Fire Station 20.	In place prior to September 2007
• LEED certification components (i.e. waterless toilets) could be utilized for additional water savings in new municipal building projects.	
• Utilize the minimum level of water necessary for Founders Park fields and landscaping to be properly maintained for use and for the pool and other facilities to function properly.	In place September 2007
• Utilize treated re-use water for field and greenery as it becomes available.	
• Water savings standards are currently included in the BPAS scoring system.	In place prior to September 2007
• Investigate additional LEED certification standards for BPAS scoring system.	

WASTE

• Create and post additional recycling information on website.	To be implemented during FY 07-08
• Provide standard recycling bins at all public parks in Village.	To be implemented beginning of FY 07-08
• Provide three-recycling-bin set up at public parks in Village.	
• Include alternatives for recycling in FY 08-09 solid waste contract.	
• Establish a recycling program at all Village offices and encourage recycling by all staff and visitors.	In place September 2007
• Encourage Village staff to print and copy double-sided when possible.	In place September 2007

• Encourage Village staff to utilize electronic documents rather than printed documents when appropriate.	In place September 2007
• Distribute Village meeting packets electronically or as double-sided prints when appropriate.	In place September 2007

TRANSPORTATION

• Develop a Bicycle/Pedestrian Transportation Master Plan (Comprehensive Plan Policy 2-1.5.1).	In progress September 2007
• Coordinate with FDOT to pave or sod specific areas along bike path within FDOT right-of-way to minimize impact to bike lanes from highway traffic.	
• Seek funding for a Transit (Bus) Pull-off Facility Preliminary Design.	
• Work with the FDOT as well as the Miami-Dade Transit Authority and Monroe County to plan and construct bus stops.	In progress September 2007
• Work with Monroe County and other governmental entities to encourage transportation companies to use clean fuel sources. This would likely need to be combined with an effort from Dade County and the City of Miami to be effective.	
• Encourage Village staff to carpool, rideshare, bike or walk to work, as appropriate.	To be implemented beginning of FY 07-08

Environmental Sustainability Plan September 2008

Islamorada, Village of Islands

In order to contribute to a greener planet, the Village of Islamorada seeks to enact policies to reduce global warming pollution levels and provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements and energy conservation.

The Environmental Sustainability Plan was implemented in September 2007 and is updated on an annual basis.

This document includes actions that are currently in place and goals/actions that have been identified to be investigated for future implementation. The document is intended to be utilized as a tool to review sustainability actions that have been achieved and to identify and prioritize goals that may be accomplished in the next year and future years.

The document is designed to be reviewed annually each spring to add/remove/modify the goals, update the status of items that have been implemented and identify those items that could be considered during budget discussions and implemented in the following fiscal year.

Environmental Sustainability Goal/Action

Status

ENERGY

<ul style="list-style-type: none">• Include LEED energy certification components in plans for new Village building projects.	Included energy efficient fixtures and equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19).
<ul style="list-style-type: none">• Include LEED energy certification components in plans for Village building renovations.	

<ul style="list-style-type: none"> • Utilize energy efficient mechanical systems in building projects. 	<p>Included energy efficient equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19).</p> <p>Fire Station 21 / Administrative Offices to be constructed during FY: 08-09 to include energy efficient mechanical systems.</p>
<ul style="list-style-type: none"> • Energy saving standards are included in the BPAS scoring system. 	<p>In place prior to September 2007.</p>
<ul style="list-style-type: none"> • Investigate additional LEED energy certification standards for addition to the BPAS scoring system to promote increased energy savings in new development (i.e. solar hot water heating, "going off the FKEC grid"). 	<p>Staff to propose additional points for solar hot water heaters.</p>
<ul style="list-style-type: none"> • Keep room temperatures no lower than 74 degrees during business hours and turn thermostats up to 78 degrees during non-business hours in all Village Buildings with limited exceptions (i.e. areas housing computer server systems). 	<p>In place September 2007, included in Employee Policy and updated 9/26/08.</p>
<ul style="list-style-type: none"> • Install motion-sensing, auto-off light switches where appropriate at Village owned buildings. 	<p>Motion-activated lighting installed in Marina Restroom Pavilion and in the Community Center restrooms.</p> <p>Retrofitting of existing buildings to be addressed during FY: 08-09.</p>
<ul style="list-style-type: none"> • Create and implement an Environmental Sustainability Policy for Village Employees ("Employee Policy"). 	<p>Employee Policy implemented 5/22/08, updated 8/27/08 and to continue to be updated from time to time.</p>

<ul style="list-style-type: none"> • Establish an energy conservation program/policy for all Village offices and buildings to include turning off lights and equipment when not in use. 	Implemented during FY: 07-08 through the Employee Policy.
<ul style="list-style-type: none"> • As new equipment and appliances are required, procure energy efficient products that are ENERGY STAR® qualified or that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life-cycle cost basis. 	Implemented during FY: 07-08 through the Employee Policy.
<ul style="list-style-type: none"> • Update the Village purchasing policy and procedure to include the requirement of ENERGY STAR® qualified products or products that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life cycle cost basis. 	Purchasing Policy and Procedure to be updated during FY: 08-09.
<ul style="list-style-type: none"> • Require affordable housing projects receiving Village assistance to install ENERGY STAR® qualified appliances unless the products are shown not to be cost-effective on a life-cycle cost basis. 	To be addressed by resolution during FY: 08-09.
<ul style="list-style-type: none"> • Replace Founders Park pool heat pumps with new high-efficiency units. 	High efficiency heat pumps to be considered for FY: 09-10 budget.
<ul style="list-style-type: none"> • Replace Founders Park street lights with solar lighting. 	
<ul style="list-style-type: none"> • Retrofit existing Founders Park light poles for conversion to solar lighting. 	
<ul style="list-style-type: none"> • Replace existing neighborhood street lighting with solar lighting. 	
<ul style="list-style-type: none"> • Require solar hot water heating or a heat recovery unit for affordable housing projects receiving Village assistance. 	To be addressed by resolution during FY: 08-09.
<ul style="list-style-type: none"> • Utilize solar power to light "Welcome to Islamorada" signs at the north and south entrances to the Village. 	In place prior to September 2007.

• Manage Founders Park street lights for lowest possible energy use.	In place September 2007.
• Utilize state of the industry standards/practices for Founders Park field lighting.	In place September 2007.
• When possible, make arrangements for meetings to occur via conference call rather than having all participants drive to the meeting location.	Policy initiated August 2008 and included in updated Employee Policy.

LAND

• Maintain and expand healthy tree canopies over certain roadways to provide for greater shade to residential areas for energy savings and to promote groundwater absorption.	In place prior to September 2007 and ongoing.
• Coordinate with FDOT to re-sod US 1 highway rights-of-ways rather than placing compacted lime rock. The sod may need to be protected with hedge materials.	Item to be included in budget for FY: 08-09.
• Acquire or train a roadways staff employee to become certified arborist.	Employee training ongoing and employee to take certification exam during FY: 08-09.
• Replace asphalt with pervious pavers where possible on publicly held land.	Pervious parking area to be installed as part of Green Turtle Hammock improvements with grant funding during FY: 08-09. Fire Station 21 / Administrative Offices project plans include a pervious parking lot.

<ul style="list-style-type: none"> • Add rain barrels/cisterns to key properties to capture rainwater, allowing the water to be used for landscaping. 	<p>Cistern installed at Fire Station 19 during FY: 07-08.</p> <p>Rain barrel installation proposed for Green Turtle, Plantation Tropical Preserve and Plantation Hammocks Preserve during FY: 08-09.</p> <p>Prior to construction during FY: 08-09, cistern to be considered for Fire Station 21 / Administrative Offices site.</p>
<ul style="list-style-type: none"> • Revise right-of-way ordinance to ensure that swales are vegetated and kept free from debris and minimize traffic that would compact soils and reduce permeability. 	<p>Revisions to be proposed during FY: 08-09.</p>
<ul style="list-style-type: none"> • Preserve properties from development through conservation easements and agreements with Monroe County and the State of Florida. 	<p>Over 58 acres of property acquired prior to September 2007.</p> <p>Additional properties will be considered for conservation.</p>
<ul style="list-style-type: none"> • Work with schools, various community agencies and citizens' advisory committees for the planting of trees and greenery at Plantation Hammock Preserve, Plantation Tropical Preserve and other Village parks. 	<p>In place prior to September 2007 and ongoing.</p>
<ul style="list-style-type: none"> • Require businesses that use rights-of-way to plant or re-plant vegetation and trees. 	<p>Update of Chapter 50 of the Village Code to include a planting / restoration provision for use of right-of-way to be initiated during FY: 08-09.</p>
<ul style="list-style-type: none"> • Work with utility companies to restore vegetation, including re-sodding and tree planting. 	

<ul style="list-style-type: none"> • Work with neighborhood associations with culs de sac or streets ending in water for potential planting ideas to install landscaping to improve barren areas. 	<p>Completed two cul de sac improvements with landscaping during FY: 07-08.</p> <p>Two additional cul de sac improvements scheduled for FY: 08-09.</p>
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking by utilizing concepts in the US Post Office / Townsite Supermarket proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes by utilizing concepts in the Worldwide Sportsman Store / Islamorada Fish Company proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking Village-wide parking along US Highway 1 by utilizing concepts as shown in the 2003 TSM Study for downtown Islamorada. 	

AIR QUALITY/CO2 REDUCTION

<ul style="list-style-type: none"> • Identify locations to strategically plant native canopy trees that would provide ample shade with its canopy to cool temperatures and reduce air pollution and plant six trees per year in public parks and rights-of-way. 	<p>In place prior to September 2007 and ongoing.</p>
<ul style="list-style-type: none"> • Require additional landscaping and buffers for projects requiring development orders. 	<p>In place prior to September 2007.</p>
<ul style="list-style-type: none"> • Increase the amount of landscaping required for new development. 	<p>Requirements for shade trees and xeriscaping to be reviewed during FY: 08-09.</p>

STORMWATER

• Village's stormwater master plan completed in 2001 and transmitted to officials at FDOT and FDEP.	In place prior to September 2007.
• Meet with FDOT on a regular basis to coordinate and review work performed by the FDOT.	In place prior to September 2007 and ongoing.
• Make requests to FDOT for improvement projects.	In place prior to September 2007 and requests are made annually.
• Complete remainder of the paving and drainage improvements on Upper Matecumbe Key.	Construction budgeted for FY: 07-08 and 08-09.
• Utilize Stormwater Best Management Practices for drainage improvements.	In place prior to September 2007 and ongoing.
• As part of the work to install driveway connections, swales, or similar method of stormwater management is currently required by Code.	Requirement included in the Village Code prior to September 2007.
• As part of right of way permitting, increase required xeriscape plant materials for plantings in right-of-way from 75% to 100%.	

WATER

• Low flow plumbing fixtures are in place in the Founders Park pool complex and Fire Station 20.	In place prior to September 2007.
• LEED certification components (i.e. waterless toilets) could be utilized for additional water savings in new municipal building projects.	Included low pressure faucets, shower fixtures and minimum volume toilets wherever practicable in 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19), to reduce water use and expenditures.

<ul style="list-style-type: none"> • Utilize the minimum level of water necessary for Founders Park fields and landscaping to be properly maintained for use and for the pool and other facilities to function properly. 	In place September 2007.
<ul style="list-style-type: none"> • Utilize treated re-use water for field and greenery as it becomes available. 	To be included in new wastewater projects.
<ul style="list-style-type: none"> • Water savings standards are currently included in the BPAS scoring system. 	In place prior to September 2007.
<ul style="list-style-type: none"> • Investigate additional LEED certification standards for BPAS scoring system. 	

WASTE

<ul style="list-style-type: none"> • Create and post additional recycling information on website. 	Information regarding new recycling alternatives to be advertised in new section of website beginning FY: 08-09.
<ul style="list-style-type: none"> • Provide three-recycling-bin set up at public parks in Village. 	Recycling bins with pick-up and disposal services will be included the solid waste contract for FY: 08-09.
<ul style="list-style-type: none"> • Include alternatives for recycling in FY: 08-09 solid waste contract. 	<p>Solid waste contract extension includes additional residential and commercial recycling initiatives.</p> <p>Additional alternatives, such as a Pay as You Throw program, to increase recycling, to be implemented on a trial basis during FY: 08-09.</p>
<ul style="list-style-type: none"> • Establish a recycling program at all Village offices and encourage recycling by all staff and visitors. 	In place September 2007 and included in 2008 Employee Policy.

• Require Village staff to print and copy double-sided when possible.	In place September 2007 and included in 2008 Employee Policy.
• Require Village staff to utilize electronic documents rather than printed documents when appropriate.	In place September 2007 and included in 2008 Employee Policy.
• Distribute Village meeting packets electronically or as double-sided prints when appropriate.	In place September 2007.
• Utilize biodegradable trash bags at Founders Park.	Implemented April 2008.
• Utilize biodegradable trash bags in Village Office Buildings.	Implemented June 2008.
• Include a requirement in the <i>Village-owned Parks Special Events Policy</i> for mandatory recycling at events at Village parks.	Implemented June 2008.
• Include a condition in the temporary use permit application for mandatory recycling at permitted events.	Implemented June 2008.

TRANSPORTATION / FUEL

• Develop a Bicycle/Pedestrian Transportation Master Plan (Comprehensive Plan Policy 2-1.5.1).	Plan adopted October 2007.
• Coordinate with FDOT to pave or sod specific areas along bike path within FDOT right-of-way to minimize impact to bike lanes from highway traffic.	

<ul style="list-style-type: none"> • Seek funding for a Transit (Bus) Pull-off Facility Preliminary Design. 	
<ul style="list-style-type: none"> • Work with the FDOT as well as the Miami-Dade Transit Authority and Monroe County to plan and construct bus stops. 	In progress September 2007.
<ul style="list-style-type: none"> • Work with Monroe County and other governmental entities to encourage transportation companies to use clean fuel sources. This would likely need to be combined with an effort from Dade County and the City of Miami to be effective. 	
<ul style="list-style-type: none"> • Purchase or lease vehicles with the highest fuel efficiency that are appropriate for the assigned task. 	\$50,000 budgeted for Capital Replacement Fund in FY: 08-09 to begin replacement of inefficient fleet vehicles.
<ul style="list-style-type: none"> • Auction retired Sheriff's Department vehicles that are not fuel efficient for Village tasks. 	
<ul style="list-style-type: none"> • Implement anti-idling policy throughout all Village departments. 	In place September 2007.
<ul style="list-style-type: none"> • Encourage Village staff to carpool, rideshare, bike or walk to work, as appropriate. 	Implemented during FY: 07-08 through the Employee Policy.
<ul style="list-style-type: none"> • Utilize pool vehicles rather than individual vehicles when practicable. 	To be addressed during FY: 08-09 with the potential reduction of four vehicles.

OTHER

<ul style="list-style-type: none"> • Continue environmental practices of the Clean Marina Program. 	Received Clean Marina designation for Plantation Yacht Harbor Marina in 2004.
<ul style="list-style-type: none"> • Improve community awareness of environmental sustainability initiatives undertaken by the Village and encourage community involvement. 	New news box to be developed and added to website at the beginning of FY: 08-09 to include Village initiatives and informational links.

Environmental Sustainability Plan September 2009

Islamorada, Village of Islands

In order to contribute to a greener planet, the Village of Islamorada seeks to enact policies to reduce global warming pollution levels and provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements and energy conservation.

The Environmental Sustainability Plan was implemented in September 2007 and is updated on an annual basis.

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The document is designed to be reviewed annually each spring to add/remove/modify the goals, update the status of items that have been implemented and identify those items that could be considered during budget discussions and implemented in the following fiscal year.

Environmental Sustainability Goal/Action

Status

ENERGY

- Include LEED energy certification components in plans for new Village building projects.

Included energy efficient fixtures and equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19).

Administrative Center & Public Safety Headquarters is constructed with an energy efficient roof and energy efficient windows.

<ul style="list-style-type: none"> • Include LEED energy certification components in plans for Village building renovations. 	
<ul style="list-style-type: none"> • Utilize energy efficient mechanical systems in building projects. 	<p>Included energy efficient equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19).</p> <p>Administrative Center & Public Safety Headquarters construction includes energy efficient air conditioning.</p>
<ul style="list-style-type: none"> • Energy saving standards are included in the BPAS scoring system. 	<p>In place prior to September 2007.</p>
<ul style="list-style-type: none"> • Investigate additional LEED energy certification standards for addition to the BPAS scoring system to promote increased energy savings in new development (i.e. solar hot water heating, "going off the FKEC grid"). 	<p>Staff to propose additional points for solar hot water heaters.</p>
<ul style="list-style-type: none"> • Keep room temperatures no lower than 74 degrees during business hours and turn thermostats up to 78 degrees during non-business hours in all Village Buildings with limited exceptions (i.e. areas housing computer server systems). 	<p>Included in 9/26/08 Employee Policy update.</p>
<ul style="list-style-type: none"> • Install motion-sensing, auto-off light switches where appropriate at Village owned buildings. 	<p>Motion-activated lighting installed in Marina Restroom Pavilion and in the Community Center restrooms.</p> <p>Motion-activated lighting installed in Administrative Center and Public Safety Headquarters building in all areas other than hallways and partitioned areas.</p>

	Retrofitting of existing buildings to be addressed during FY 09-10.
<ul style="list-style-type: none"> • Create and implement an Environmental Sustainability Policy for Village Employees (“Employee Policy”). 	Employee Policy implemented 5/22/08, and is updated as new information become available.
<ul style="list-style-type: none"> • Establish an energy conservation program/policy for all Village offices and buildings to include turning off lights and equipment when not in use. 	Implemented during FY 07-08 through the Employee Policy.
<ul style="list-style-type: none"> • As new equipment and appliances are required, procure energy efficient products that are ENERGY STAR® qualified or that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life-cycle cost basis. 	Implemented during FY 07-08 through the Employee Policy.
<ul style="list-style-type: none"> • Update the Village purchasing policy and procedure to include the requirement of ENERGY STAR® qualified products or products that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life cycle cost basis. 	Purchasing Policy and Procedure to be updated during FY 09-10.
<ul style="list-style-type: none"> • Require affordable housing projects receiving Village assistance to install ENERGY STAR® qualified appliances. 	To be addressed by resolution.
<ul style="list-style-type: none"> • Replace Founders Park pool heat pumps with new high-efficiency units and/or solar units. 	Phased replacement of old heat pumps with higher efficiency units planned to begin during FY 09-10.
<ul style="list-style-type: none"> • Install pool cover for Founders Park pool (for an estimated reduction of 10 to 20% of electrical consumption for pool heating and cooling). 	Pool cover installation completed October 2009.

<ul style="list-style-type: none"> • Replace Founders Park street lights with solar lighting. 	Cost estimates received during FY 08-09 were \$4,000 per light pole for each of the 70 street lights. Conversion to be considered in the future if improved technology or other factors reduce the cost.
<ul style="list-style-type: none"> • Replace existing neighborhood street lighting with solar lighting. 	Same as Founders Park street lights item.
<ul style="list-style-type: none"> • Utilize solar power to light "Welcome to Islamorada" signs at the north and south entrances to the Village. 	In place prior to September 2007.
<ul style="list-style-type: none"> • Manage Founders Park street lights for lowest possible energy use. 	In place September 2007.
<ul style="list-style-type: none"> • Utilize state of the industry standards/practices for Founders Park field lighting. 	In place September 2007.
<ul style="list-style-type: none"> • When possible, make arrangements for meetings to occur via conference call rather than having all participants drive to the meeting location. 	Policy initiated August 2008 and included in updated Employee Policy.
<ul style="list-style-type: none"> • Encourage use of solar / photovoltaic systems by Islamorada property owners. 	Adopted Resolution 08-12-07 in December 2008 to waive building permit fees for solar / photovoltaic system installation.
<ul style="list-style-type: none"> • Reduce overall electrical consumption for municipal offices and parks utilizing the methods listed in this section. 	Reduced electrical consumption for municipal offices and parks by 11% during FY 08-09.

<ul style="list-style-type: none"> • Seek funding assistance for “ENERGY” goals / actions identified above as appropriate. 	During FY 09-10, staff to seek funding through the State of Florida American Recovery and Reinvestment program / Energy Efficiency and Conservation Block Grant program.
<ul style="list-style-type: none"> • Phase out incandescent lighting in all Village buildings and properties. 	

LAND

<ul style="list-style-type: none"> • Maintain and expand healthy tree canopies over certain roadways to provide for greater shade to residential areas for energy savings and to promote groundwater absorption. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Coordinate with FDOT to re-sod US 1 highway rights-of-ways rather than placing compacted lime rock. The sod may need to be protected with hedge materials. 	Rights-of-way on Plantation Key sodded by FDOT following 08-09 roadway improvement projects.
<ul style="list-style-type: none"> • Acquire or train a roadways staff employee to become certified arborist (certification classes and certification exam could not be scheduled during FY 08-09.) 	Employee training ongoing and employee to take certification exam during FY 09-10.
<ul style="list-style-type: none"> • Replace asphalt with pervious pavers / pervious materials where possible on publicly held land. 	Pervious parking area (gravel) to be installed as part of Green Turtle Hammock improvements with grant funding during FY 09-10.
<ul style="list-style-type: none"> • Add rain barrels/cisterns to key properties to capture rainwater, allowing the water to be used for landscaping. 	Cistern installed at Fire Station 19 during FY 07-08.

	Rain barrel installation proposed for Green Turtle, Plantation Tropical Preserve and Plantation Hammocks Preserve during FY 08-09 and will be considered for a future budget year.
<ul style="list-style-type: none"> • Revise right-of-way ordinance to ensure that swales are vegetated and kept free from debris and minimize traffic that would compact soils and reduce permeability. 	Revisions to be proposed.
<ul style="list-style-type: none"> • Preserve properties from development through conservation easements and agreements with Monroe County and the State of Florida. 	<p>Over 58 acres of property acquired prior to September 2007.</p> <p>“Key Tree Cactus Preserve” (nine acres) acquired during FY 08-09 for conservation and recreation.</p> <p>Additional properties will be considered for conservation.</p>
<ul style="list-style-type: none"> • Work with schools, various community agencies and citizens’ advisory committees for the planting of trees and greenery at Plantation Hammock Preserve, Plantation Tropical Preserve and other Village parks. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Require businesses that use rights-of-way to plant or re-plant vegetation and trees. 	Update of Chapter 50 of the Village Code to include a planting / restoration provision for use of right-of-way to be initiated.
<ul style="list-style-type: none"> • Work with utility companies to restore vegetation, including re-sodding and tree planting. 	

<ul style="list-style-type: none"> • Work with neighborhood associations with culs de sac or streets ending in water for potential planting ideas to install landscaping to improve barren areas. 	<p>Completed two cul de sac improvements with landscaping during FY 07-08.</p> <p>Two additional cul de sac improvements completed during FY 08-09.</p>
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking by utilizing concepts in the US Post Office / Townsite Supermarket proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes by utilizing concepts in the Worldwide Sportsman Store / Islamorada Fish Company proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking Village-wide parking along US Highway 1 by utilizing concepts as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Utilize native plants and xeriscaping at Village project sites. 	<p>Only native plants are included in the landscaping plan for Administrative Center and Public Safety Headquarters.</p>

AIR QUALITY/CO2 REDUCTION

<ul style="list-style-type: none"> • Identify locations to strategically plant native canopy trees that would provide ample shade with its canopy to cool temperatures and reduce air pollution. Plant six trees per year in public parks and rights-of-way. 	<p>In place prior to September 2007 and ongoing.</p>
<ul style="list-style-type: none"> • Require additional landscaping and buffers for projects requiring development orders. 	<p>In place prior to September 2007.</p>

STORMWATER

Village's stormwater master plan completed in 2001 and transmitted to officials at FDOT and FDEP.	In place prior to September 2007.
<ul style="list-style-type: none">• Meet with FDOT on a regular basis to coordinate and review work performed by the FDOT.	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none">• Make requests to FDOT for improvement projects.	In place prior to September 2007 and requests are made annually.
<ul style="list-style-type: none">• Complete remainder of the paving and drainage improvements on Upper Matecumbe Key.	Construction budgeted for FY 07-08 and 08-09. Construction completed during FY 08-09.
<ul style="list-style-type: none">• Utilize Stormwater Best Management Practices for drainage improvements.	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none">• As part of the work to install driveway connections, swales, or similar method of stormwater management is currently required by Code.	Requirement included in the Village Code prior to September 2007.
<ul style="list-style-type: none">• As part of right of way permitting, increase required xeriscape plant materials for plantings in right-of-way from 75% to 100%.	

WATER

<ul style="list-style-type: none">• Low flow plumbing fixtures are in place in the Founders Park pool complex and Fire Station 20.	In place prior to September 2007.
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<ul style="list-style-type: none"> • LEED certification components (i.e. waterless toilets) could be utilized for additional water savings in new municipal building projects. 	<p>Included low pressure faucets, shower fixtures and minimum volume toilets wherever practicable in 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19), to reduce water use and expenditures.</p> <p>Administrative Center & Public Safety Headquarters building construction plans include low flow (0.5 gallons per minute) sensor operated faucets in restrooms and a low flow (1.0 gallons per flush) urinal.</p>
<ul style="list-style-type: none"> • Utilize the minimum level of water necessary for Founders Park fields and landscaping to be properly maintained for use and for the pool and other facilities to function properly. 	<p>In place September 2007.</p>
<ul style="list-style-type: none"> • Utilize treated re-use water for field and greenery as it becomes available. 	<p>To be included in new wastewater projects.</p> <p>Reclaimed water line installed for future irrigation for new Administration Center and Public Safety Headquarters landscaping.</p>
<ul style="list-style-type: none"> • Water savings standards are currently included in the BPAS scoring system. 	<p>In place prior to September 2007.</p>
<ul style="list-style-type: none"> • Investigate additional LEED certification standards for BPAS scoring system. 	<p>Additional LEED certifications standards considered; will not be included in BPAS scoring system due to difficulty with implementation.</p>

- Install pool cover at Founders Park pool (for an estimated reduction of 10 to 20% water usage for the pool).

Pool cover installation completed October 2009.

WASTE

- Create and post additional recycling information on website.

Information regarding recycling and environmental sustainability posted in new section of website beginning December 2008.

- Provide recycling bins up at public parks in Village.

Recycling pick-up and disposal services for parks included the solid waste contract beginning FY 08-09.

Bid for recycling bins for parks advertised in September 2009 for purchase during FY 09-10.

- Include alternatives for recycling in FY 08-09 solid waste contract.

Beginning October 2008, solid waste contract includes additional residential and commercial recycling and initiatives.

- Establish a recycling program at all Village offices and encourage recycling by all staff and visitors.

In place September 2007 and included in Employee Policy.

- Require Village staff to print and copy double-sided when possible.

In place September 2007 and included in Employee Policy.

- Require Village staff to utilize electronic documents rather than printed documents when appropriate.

In place September 2007 and included in Employee Policy.

• Distribute Village meeting packets electronically or as double-sided prints when appropriate.	In place September 2007.
• Utilize biodegradable trash bags at Founders Park.	Implemented April 2008.
• Utilize biodegradable trash bags in Village Office Buildings.	Implemented June 2008.
• Include a requirement in the <i>Village-owned Parks Special Events Policy</i> for mandatory recycling at events at Village parks.	Implemented June 2008.
• Include a condition in the temporary use permit application for mandatory recycling at permitted events.	Implemented June 2008.

TRANSPORTATION / FUEL

• Develop a Bicycle/Pedestrian Transportation Master Plan (Comprehensive Plan Policy 2-1.5.1).	Plan adopted October 2007.
• Coordinate with FDOT to pave or sod specific areas along bike path within FDOT right-of-way to minimize impact to bike lanes from highway traffic.	<p>Sodding completed on Plantation Key during FY 08-09 as part of FDOT construction projects.</p> <p>Sodding completed on Lower Matecumbe Key during FY 08-09 as part of FDOT construction projects.</p> <p>FDOT projects for Upper Matecumbe Key and Windley Key are on future years plan.</p>
• Seek funding for a Transit (Bus) Pull-off Facility Preliminary Design.	

<ul style="list-style-type: none"> • Work with the FDOT as well as the Miami-Dade Transit Authority and Monroe County to plan and construct bus stops. 	In progress September 2007. Project not active during FY 08-09.
<ul style="list-style-type: none"> • Work with Monroe County and other governmental entities to encourage transportation companies to use clean fuel sources. This would likely need to be combined with an effort from Miami-Dade County to be effective. 	
<ul style="list-style-type: none"> • Purchase or lease vehicles with the highest fuel efficiency that are appropriate for the assigned task. 	<p>\$50,000 budgeted for Capital Replacement Fund to begin replacement of inefficient fleet vehicles in FY 08-09 and FY 09-10. Funds will be appropriated annually.</p> <p>First hybrid vehicle purchased in May 2009.</p>
<ul style="list-style-type: none"> • Auction retired Sheriff's Department vehicles and other vehicles that are not fuel efficient for Village tasks. 	Auctioned six inefficient fleet vehicles in March 2009.
<ul style="list-style-type: none"> • Implement anti-idling policy throughout all Village departments. 	In place September 2007.
<ul style="list-style-type: none"> • Encourage Village staff to carpool, rideshare, bike or walk to work, as appropriate. 	Implemented during FY 07-08 through the Employee Policy.
<ul style="list-style-type: none"> • Utilize pool vehicles rather than individual vehicles when practicable. 	Reduced municipal vehicle fleet by four vehicles during FY 08-09.

OTHER

• Continue environmental practices of the Clean Marina Program.	Received Clean Marina designation for Plantation Yacht Harbor Marina in 2004.
• Improve community awareness of environmental sustainability initiatives undertaken by the Village and encourage community involvement.	New news box added to Village website in December 2008 includes Village sustainability initiatives and informational links. Community education program included in Solid Waste contract approved in October 2008.

Environmental Sustainability Plan September 2010

Islamorada, Village of Islands

In order to contribute to a greener planet, the Village of Islamorada seeks to enact policies to reduce global warming pollution levels and provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements and energy conservation.

The Environmental Sustainability Plan was implemented in September 2007 and is updated on an annual basis.

This document includes actions that are currently in place and goals/actions that have been identified to be investigated for future implementation. The document is intended to be utilized as a tool to review sustainability actions that have been achieved and to identify and prioritize goals that may be accomplished in the next year and future years.

The document is designed to be reviewed annually to add/remove/modify the goals, update the status of items that have been implemented and identify those items that could be considered for implementation during the following fiscal year.

Environmental Sustainability Goal/Action

Status

ENERGY

- Include LEED energy certification components in plans for new Village building projects.

Included energy efficient fixtures and equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19).

Administrative Center & Public Safety Headquarters is constructed with an energy efficient roof and energy efficient windows.

- Include LEED energy certification components in plans for Village building renovations.

<ul style="list-style-type: none"> • Utilize energy efficient mechanical systems in building projects. 	<p>Included energy efficient equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19).</p> <p>Administrative Center & Public Safety Headquarters was constructed with energy efficient air conditioning.</p>
<ul style="list-style-type: none"> • Energy saving standards are included in the BPAS scoring system. 	<p>In place prior to September 2007.</p>
<ul style="list-style-type: none"> • Investigate additional LEED energy certification standards for addition to the BPAS scoring system to promote increased energy savings in new development (i.e. solar hot water heating, "going off the FKEC grid"). 	<p>Staff to propose additional points for solar hot water heaters in September 2010 with plan for implementation early in FY 10-11.</p>
<ul style="list-style-type: none"> • Keep room temperatures no lower than 74 degrees during business hours and turn thermostats up to 78 degrees during non-business hours in all Village Buildings with limited exceptions (i.e. areas housing computer server systems). 	<p>Included in 9/26/08 Employee Policy update.</p>
<ul style="list-style-type: none"> • Install motion-sensing, auto-off light switches where appropriate at Village owned buildings. 	<p>Motion-activated lighting installed in Marina Restroom Pavilion and in the Community Center restrooms.</p> <p>Motion-activated lighting installed in Administrative Center and Public Safety Headquarters building in areas other than hallways and partitioned areas.</p> <p>Retrofitting of Anne's Beach and Library Beach restroom lighting completed during FY 09-10.</p>
<ul style="list-style-type: none"> • Create and implement an Environmental Sustainability Policy for Village Employees ("Employee Policy"). 	<p>Employee Policy implemented 5/22/08, and is updated as new information become available.</p>
<ul style="list-style-type: none"> • Establish an energy conservation program/policy for all Village offices and buildings to include turning off lights and equipment when not in use. 	<p>Implemented during FY 07-08 through the Employee Policy.</p>

<ul style="list-style-type: none"> As new equipment and appliances are required, procure energy efficient products that are ENERGY STAR® qualified or that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life-cycle cost basis. 	Implemented during FY 07-08 through the Employee Policy.
<ul style="list-style-type: none"> Update the Village purchasing policy and procedure to include the requirement of ENERGY STAR® qualified products or products that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life cycle cost basis. 	Purchasing Policy and Procedure to be updated during FY 10-11.
<ul style="list-style-type: none"> Require affordable housing projects receiving Village assistance to install ENERGY STAR® qualified appliances. 	To be addressed by resolution.
<ul style="list-style-type: none"> Replace Founders Park pool heat pumps with new high-efficiency units and/or solar units. 	Phased replacement of old heat pumps with higher efficiency units began during FY 09-10 with the replacement of four of the eighteen heat pumps.
<ul style="list-style-type: none"> Install pool cover for Founders Park pool (for an estimated reduction of 10 to 20% of electrical consumption for pool heating and cooling). 	Pool cover installation completed October 2009.
<ul style="list-style-type: none"> Replace Founders Park street lights with solar lighting. 	<p>Cost estimates received during FY 08-09 were \$4,000 per light pole for each of the 70 street lights. Conversion to be considered in the future if improved technology or other factors reduce the cost.</p> <p>In July 2010, received approval of an Energy Efficiency and Conservation Block Grant (as subgrantee) to be utilized to retrofit Founders Park Street lighting (and other lighting on Village-owned properties) to solar lighting. Work to be completed during FY 10-11.</p>
<ul style="list-style-type: none"> Replace existing neighborhood street lighting with solar lighting. 	Same as Founders Park street lights item.
<ul style="list-style-type: none"> Utilize solar power to light "Welcome to Islamorada" signs at the north and south entrances to the Village. 	In place prior to September 2007.

• Manage Founders Park street lights for lowest possible energy use.	In place September 2007.
• Utilize state of the industry standards/practices for Founders Park field lighting.	In place September 2007.
• When possible, make arrangements for meetings to occur via conference call rather than having all participants drive to the meeting location.	Policy initiated August 2008 and included in updated Employee Policy.
• Encourage use of solar / photovoltaic systems by Islamorada property owners.	Adopted Resolution 08-12-07 in December 2008 to waive building permit fees for solar / photovoltaic system installation.
• Reduce overall electrical consumption for municipal offices and parks utilizing the methods listed in this section.	Reduced electrical consumption for municipal offices and parks by 11% during FY 08-09.
• Seek funding assistance for "ENERGY" goals / actions identified above as appropriate.	During FY 09-10, staff worked with the County to apply for funding through the State of Florida American Recovery and Reinvestment program / Energy Efficiency and Conservation Block Grant program. Grant approved in July 2010 for retrofit during FY 10-11.
• Phase out incandescent lighting in all Village buildings and properties.	

LAND

• Maintain and expand healthy tree canopies over certain roadways to provide for greater shade to residential areas for energy savings and to promote groundwater absorption.	In place prior to September 2007 and ongoing.
• Coordinate with FDOT to re-sod US 1 highway rights-of-ways rather than placing compacted lime rock. The sod may need to be protected with hedge materials.	Rights-of-way on Plantation Key sodded by FDOT following 08-09 roadway improvement projects.
• Acquire or train a roadways staff employee to become certified arborist (certification classes and certification exam could not be scheduled during FY 08-09.)	Employee training ongoing and employee to take certification exam during FY 10-11.
• Replace asphalt with pervious pavers / pervious materials where possible on publicly held land.	Pervious parking area (gravel) installed as part of Green Turtle Hammock improvements with grant funding during FY 10-11.

<ul style="list-style-type: none"> • Add rain barrels/cisterns to key properties to capture rainwater, allowing the water to be used for landscaping. 	Cistern installed at Fire Station 19 during FY 07-08.
<ul style="list-style-type: none"> • Revise right-of-way ordinance to ensure that swales are vegetated and kept free from debris and minimize traffic that would compact soils and reduce permeability. 	Revisions to be proposed.
<ul style="list-style-type: none"> • Preserve properties from development through conservation easements and agreements with Monroe County and the State of Florida. 	<p>Over 58 acres of property acquired prior to September 2007.</p> <p>“Key Tree Cactus Preserve” (nine acres) acquired during FY 08-09 for conservation and recreation.</p> <p>Additional properties will be considered for conservation.</p>
<ul style="list-style-type: none"> • Work with schools, various community agencies and citizens’ advisory committees for the planting of trees and greenery at Plantation Hammock Preserve, Plantation Tropical Preserve and other Village parks. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Require businesses that use rights-of-way to plant or re-plant vegetation and trees. 	Update of Chapter 50 of the Village Code to include a planting / restoration provision for use of right-of-way to be initiated.
<ul style="list-style-type: none"> • Work with utility companies to restore vegetation, including re-sodding and tree planting. 	
<ul style="list-style-type: none"> • Work with neighborhood associations with culs de sac or streets ending in water for potential planting ideas to install landscaping to improve barren areas. 	<p>Completed two cul de sac improvements with landscaping during FY 07-08.</p> <p>Two additional cul de sac improvements completed during FY 08-09.</p>
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking by utilizing concepts in the US Post Office / Townsite Supermarket proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes by utilizing concepts in the Worldwide Sportsman Store / Islamorada Fish Company proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	

- Provide more shaded walkable/bikeable lanes and communal parking Village-wide parking along US Highway 1 by utilizing concepts as shown in the 2003 TSM Study for downtown Islamorada.

- Utilize native plants and xeriscaping at Village project sites.

Only native plants were utilized in landscaping installed during FY 09-10 for the Administrative Center and Public Safety Headquarters.

AIR QUALITY/CO2 REDUCTION

- Identify locations to strategically plant native canopy trees that would provide ample shade with its canopy to cool temperatures and reduce air pollution. Plant six trees per year in public parks and rights-of-way.

In place prior to September 2007 and ongoing.

- Require additional landscaping and buffers for projects requiring development orders.

In place prior to September 2007.

STORMWATER

Village's stormwater master plan completed in 2001 and transmitted to officials at FDOT and FDEP.

In place prior to September 2007.

- Meet with FDOT on a regular basis to coordinate and review work performed by the FDOT.

In place prior to September 2007 and ongoing.

- Make requests to FDOT for improvement projects.

In place prior to September 2007 and requests are made annually.

- Complete remainder of the paving and drainage improvements on Upper Matecumbe Key.

Construction budgeted for FY 07-08 and 08-09.
Construction completed during FY 08-09.

- Utilize Stormwater Best Management Practices for drainage improvements.

In place prior to September 2007 and ongoing.

<ul style="list-style-type: none"> • As part of the work to install driveway connections, swales, or similar method of stormwater management is currently required by Code. 	Requirement included in the Village Code prior to September 2007.
<ul style="list-style-type: none"> • As part of right of way permitting, increase required xeriscape plant materials for plantings in right-of-way from 75% to 100%. 	

WATER

<ul style="list-style-type: none"> • Low flow plumbing fixtures are in place in the Founders Park pool complex and Fire Station 20. 	In place prior to September 2007.
<ul style="list-style-type: none"> • LEED certification components (i.e. waterless toilets) could be utilized for additional water savings in new municipal building projects. 	<p>Included low pressure faucets, shower fixtures and minimum volume toilets wherever practicable in 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19), to reduce water use and expenditures.</p> <p>Administrative Center & Public Safety Headquarters building construction plans include low flow (0.5 gallons per minute) sensor operated faucets in restrooms and a low flow (1.0 gallons per flush) urinal.</p>
<ul style="list-style-type: none"> • Utilize the minimum level of water necessary for Founders Park fields and landscaping to be properly maintained for use and for the pool and other facilities to function properly. 	In place September 2007.
<ul style="list-style-type: none"> • Utilize treated re-use water for field and greenery as it becomes available. 	<p>To be included in new wastewater projects.</p> <p>Reclaimed water line installed for future irrigation.</p>
<ul style="list-style-type: none"> • Water savings standards are currently included in the BPAS scoring system. 	In place prior to September 2007.
<ul style="list-style-type: none"> • Investigate additional LEED certification standards for BPAS scoring system. 	Additional LEED certifications standards considered; will not be included in BPAS scoring system due to difficulty with implementation.
<ul style="list-style-type: none"> • Install pool cover at Founders Park pool (for an estimated reduction of 10 to 20% water usage for the pool). 	Pool cover installation completed October 2009.

WASTE

<ul style="list-style-type: none"> • Create and post additional recycling information on website. 	<p>Information regarding recycling and environmental sustainability posted in new section of website beginning December 2008 and updated as new recycling opportunities become available.</p>
<ul style="list-style-type: none"> • Provide recycling bins up at public parks in Village. 	<p>Recycling pick-up and disposal services for parks included the solid waste contract beginning FY 08-09.</p> <p>Bid for recycling bins for parks advertised in September 2009. Mixed recycling/trash containers purchased and installed during FY 09-10.</p>
<ul style="list-style-type: none"> • Include alternatives for recycling in FY 08-09 solid waste contract. 	<p>Beginning October 2008, solid waste contract includes additional residential and commercial recycling and initiatives.</p> <p>Solid Waste contractor added the collection of electronics for recycling during FY 09-10.</p>
<ul style="list-style-type: none"> • Establish a recycling program at all Village facilities and encourage recycling by all staff and visitors. 	<p>In place September 2007 and included in Employee Policy.</p>
<ul style="list-style-type: none"> • Require Village staff to print and copy double-sided when possible. 	<p>In place September 2007 and included in Employee Policy.</p>
<ul style="list-style-type: none"> • Require Village staff to utilize electronic documents rather than printed documents when appropriate. 	<p>In place September 2007 and included in Employee Policy.</p>
<ul style="list-style-type: none"> • Distribute Village meeting packets electronically or as double-sided prints when appropriate. 	<p>Began making double-sided prints for Council agenda packets in September 2007.</p> <p>Purchase of computer hardware required for use of electronic packets for Council agenda under consideration for FY 10-11.</p>
<ul style="list-style-type: none"> • Utilize biodegradable trash bags at Founders Park. 	<p>Implemented April 2008.</p>

<ul style="list-style-type: none"> • Utilize biodegradable trash bags in Village Office Buildings. 	Implemented June 2008.
<ul style="list-style-type: none"> • Include a requirement in the <i>Village-owned Parks Special Events Policy</i> for mandatory recycling at events at Village parks. 	Implemented June 2008.
<ul style="list-style-type: none"> • Include a condition in the temporary use permit application for mandatory recycling at permitted events. 	Implemented June 2008.
<ul style="list-style-type: none"> • Encourage recycling at Vacation Rental properties by providing recycling information to be on the property for renters as well as contact information for the Solid Waste provider to make additional recycling containers readily available. 	Began August 2010 with full implementation to occur during 2011 application period.

TRANSPORTATION / FUEL

<ul style="list-style-type: none"> • Develop a Bicycle/Pedestrian Transportation Master Plan (Comprehensive Plan Policy 2-1.5.1). 	Plan adopted October 2007.
<ul style="list-style-type: none"> • Coordinate with FDOT to pave or sod specific areas along bike path within FDOT right-of-way to minimize impact to bike lanes from highway traffic. 	<p>Sodding completed on Plantation Key during FY 08-09 as part of FDOT construction projects.</p> <p>Sodding completed on Lower Matecumbe Key during FY 08-09 as part of FDOT construction projects.</p> <p>FDOT projects for Upper Matecumbe Key and Windley Key are on future years plan.</p>
<ul style="list-style-type: none"> • Seek funding for a Transit (Bus) Pull-off Facility Preliminary Design. 	
<ul style="list-style-type: none"> • Work with the FDOT as well as the Miami-Dade Transit Authority and Monroe County to plan and construct bus stops. 	In progress September 2007. Project not active since 2008.
<ul style="list-style-type: none"> • Work with Monroe County and other governmental entities to encourage transportation companies to use clean fuel sources. This would likely need to be combined with an effort from Miami-Dade County to be effective. 	

<ul style="list-style-type: none"> • Purchase or lease vehicles with the highest fuel efficiency that are appropriate for the assigned task. 	<p>\$50,000 budgeted for Capital Replacement Fund to begin replacement of inefficient fleet vehicles in FY 08-09 and FY 09-10. Funds will be appropriated annually.</p> <p>First hybrid vehicle purchased in May 2009.</p>
<ul style="list-style-type: none"> • Auction retired Sheriff's Department vehicles and other vehicles that are not fuel efficient for Village tasks. 	<p>Auctioned six inefficient fleet vehicles in March 2009.</p>
<ul style="list-style-type: none"> • Have extremely inefficient vehicles destroyed for scrap to permanently remove them from the roadways. 	
<ul style="list-style-type: none"> • Implement anti-idling policy throughout all Village departments. 	<p>In place September 2007.</p>
<ul style="list-style-type: none"> • Encourage Village staff to carpool, rideshare, bike or walk to work, as appropriate. 	<p>Implemented during FY 07-08 through the Employee Policy.</p>
<ul style="list-style-type: none"> • Utilize pool vehicles rather than individual vehicles when practicable. 	<p>Reduced municipal vehicle fleet by four vehicles during FY 08-09.</p>

OTHER

<ul style="list-style-type: none"> • Continue environmental practices of the Clean Marina Program. 	<p>Received Clean Marina designation for Plantation Yacht Harbor Marina in 2004.</p> <p>Five Year Clean Marina Award received in April 2009.</p>
<ul style="list-style-type: none"> • Improve community awareness of environmental sustainability initiatives undertaken by the Village and encourage community involvement. 	<p>News box added to Village website in December 2008 includes Village sustainability initiatives and informational links is updated when new sustainable actions are implemented or new opportunities become available.</p> <p>Community education program included in Solid Waste contract approved in October 2008.</p>

Environmental Sustainability Plan September 2011

Islamorada, Village of Islands

In order to contribute to a greener planet, the Village of Islamorada seeks to enact policies to reduce global warming pollution levels and provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements and energy conservation.

The Environmental Sustainability Plan was implemented in September 2007 and is updated on an annual basis.

This document includes actions that are currently in place and goals/actions that have been identified to be investigated for future implementation. The document is intended to be utilized as a tool to review sustainability actions that have been achieved and to identify and prioritize goals that may be accomplished in the next year and future years.

The document is designed to be reviewed annually to add/remove/modify the goals, update the status of items that have been implemented and identify those items that could be considered for implementation during the following fiscal year.

Environmental Sustainability Goal/Action

Status

ENERGY

• Include LEED energy certification components in plans for new Village building projects.	Included energy efficient fixtures and equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19). Administrative Center & Public Safety Headquarters is constructed with an energy efficient roof and energy efficient windows.
• Include LEED energy certification components in plans for Village building renovations.	
• Utilize energy efficient mechanical systems in building projects.	Included energy efficient equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19). Administrative Center & Public Safety Headquarters was constructed with energy efficient air conditioning.

<ul style="list-style-type: none"> • Energy saving standards are included in the BPAS scoring system. <p>Encourage use of solar / photovoltaic systems by Islamorada property owners and investigate additional LEED energy certification standards for addition to the BPAS scoring system to promote increased energy savings in new development (i.e. solar hot water heating, “going off the FKEC grid”).</p>	<p>In place prior to September 2007.</p> <p>Adopted Resolution 08-12-07 in December 2008 to waive building permit fees for solar / photovoltaic system installation.</p> <p>Additional points for solar hot water heaters included in BPAS scoring system in October 2010.</p>
<ul style="list-style-type: none"> • Keep room temperatures no lower than 74 degrees during business hours and turn thermostats up to 78 degrees during non-business hours in all Village Buildings with limited exceptions (i.e. areas housing computer server systems). 	<p>Included in 9/26/08 Employee Policy update.</p>
<ul style="list-style-type: none"> • Install motion-sensing, auto-off light switches where appropriate at Village owned buildings. 	<p>Motion-activated lighting installed in Marina Restroom Pavilion and in the Community Center restrooms.</p> <p>Motion-activated lighting installed in Administrative Center and Public Safety Headquarters building in areas other than hallways and partitioned areas.</p> <p>Retrofitting of Anne’s Beach and Library Beach restroom lighting completed during FY 09-10.</p>
<ul style="list-style-type: none"> • Create and implement an Environmental Sustainability Policy for Village Employees (“Employee Policy”). 	<p>Employee Policy implemented 5/22/08, and is updated as new information become available.</p>
<ul style="list-style-type: none"> • Establish an energy conservation program/policy for all Village offices and buildings to include turning off lights and equipment when not in use. 	<p>Implemented during FY 07-08 through the Employee Policy.</p>
<ul style="list-style-type: none"> • As new equipment and appliances are required, procure energy efficient products that are ENERGY STAR® qualified or that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life-cycle cost basis. 	<p>Implemented during FY 07-08 through the Employee Policy.</p> <p>Purchasing Policy and Procedure to be updated during FY 11-12.</p>
<ul style="list-style-type: none"> • Require affordable housing projects receiving Village assistance to install ENERGY STAR® qualified appliances. 	<p>To be addressed by resolution.</p>

<ul style="list-style-type: none"> • Implement measures to reduce electrical requirements for pool temperature management. 	<p>Pool cover installation completed October 2009.</p> <p>Phased replacement of old heat pumps with higher efficiency units began during FY 09-10 with the replacement of four of the eighteen heat pumps.</p> <p>Two additional heat pumps purchased during FY 10-11.</p> <p>Installation of propane flash heater to reduce run-time of heat pumps during cold weather to be installed early FY 11-12.</p>
<ul style="list-style-type: none"> • Replace Founders Park street lights with solar lighting. 	<p>Energy Efficiency and Conservation Block Grant retrofit of Founders Park Street lighting (and other lighting on Village-owned properties) to solar lighting – tasks are in progress. Work to be completed during FY 11-12.</p>
<ul style="list-style-type: none"> • Utilize solar power to light “Welcome to Islamorada” signs at the north and south entrances to the Village. 	<p>In place prior to September 2007.</p>
<ul style="list-style-type: none"> • Manage Founders Park street lights for lowest possible energy use. 	<p>In place September 2007.</p>
<ul style="list-style-type: none"> • Utilize state of the industry standards/practices for Founders Park field lighting. 	<p>In place September 2007.</p>
<ul style="list-style-type: none"> • When possible, make arrangements for meetings to occur via conference call rather than having all participants drive to the meeting location. 	<p>Policy initiated August 2008 and included in updated Employee Policy.</p>
<ul style="list-style-type: none"> • Reduce overall electrical consumption for municipal offices and parks utilizing the methods listed in this section. 	<p>Reduced electrical consumption for municipal offices and parks by 11% during FY 08-09.</p>
<ul style="list-style-type: none"> • Seek funding assistance for “ENERGY” goals / actions identified above as appropriate. 	<p>During FY 09-10, staff worked with the County to apply for funding through the State of Florida American Recovery and Reinvestment program / Energy Efficiency and Conservation Block Grant program. Grant approved in July 2010 for retrofit to be completed during FY 11-12.</p>
<ul style="list-style-type: none"> • Phase out incandescent lighting in all Village buildings and properties. 	

LAND

<ul style="list-style-type: none"> • Maintain and expand healthy tree canopies over certain roadways to provide for greater shade to residential areas for energy savings and to promote groundwater absorption. 	<p>In place prior to September 2007 and ongoing.</p>
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<ul style="list-style-type: none"> • Coordinate with FDOT to re-sod US 1 highway rights-of-ways rather than placing compacted lime rock. The sod may need to be protected with hedge materials. 	Rights-of-way on Plantation Key sodded by FDOT following 08-09 roadway improvement projects.
<ul style="list-style-type: none"> • Acquire or train a Public Works Department employee to become certified arborist. 	Employee training ongoing and employee to take certification exam during FY 11-12.
<ul style="list-style-type: none"> • Replace asphalt with pervious pavers / pervious materials where possible on publicly held land. 	Pervious parking area (gravel) installed as part of Green Turtle Hammock improvements with grant funding during FY 10-11.
<ul style="list-style-type: none"> • Add rain barrels/cisterns to key properties to capture rainwater, allowing the water to be used for landscaping. 	Cistern installed at Fire Station 19 during FY 07-08.
<ul style="list-style-type: none"> • Revise right-of-way ordinance to ensure that swales are vegetated and kept free from debris and minimize traffic that would compact soils and reduce permeability. 	Revisions to be submitted during FY 11-12 in amended ROW ordinance.
<ul style="list-style-type: none"> • Preserve properties from development through conservation easements and agreements with Monroe County and the State of Florida. 	<p>Over 58 acres of property acquired prior to September 2007.</p> <p>“Key Tree Cactus Preserve” (nine acres) acquired during FY 08-09 for conservation and recreation.</p> <p>Additional properties will be considered for conservation.</p>
<ul style="list-style-type: none"> • Work with schools, various community agencies and citizens’ advisory committees for the planting of trees and greenery at Village parks and properties. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Require businesses that use rights-of-way to plant or re-plant vegetation and trees. 	Update of Chapter 50 of the Village Code to include a planting / restoration provision for use of right-of-way to be revised in FY 11-12.
<ul style="list-style-type: none"> • Work with utility companies to restore vegetation, including re-sodding and tree planting. 	
<ul style="list-style-type: none"> • Work with neighborhood associations with culs de sac or streets ending in water for potential planting ideas to install landscaping to improve barren areas. 	<p>Completed two cul de sac improvements with landscaping during FY 07-08.</p> <p>Two additional cul de sac improvements completed during FY 08-09.</p>

<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking by utilizing concepts in the US Post Office / Townsite Supermarket proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes by utilizing concepts in the Worldwide Sportsman Store / Islamorada Fish Company proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking Village-wide parking along US Highway 1 by utilizing concepts as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Utilize native plants at Village project sites. 	Only native plants were utilized in landscaping installed during FY 09-10 for the Administrative Center and Public Safety Headquarters resulting in no landscape irrigation.

AIR QUALITY/CO2 REDUCTION

<ul style="list-style-type: none"> • Identify locations to strategically plant native canopy trees that would provide ample shade with its canopy to cool temperatures and reduce air pollution. Plant six trees per year in public parks and rights-of-way. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Require additional landscaping and buffers for projects requiring development orders. 	In place prior to September 2007.

STORMWATER

<ul style="list-style-type: none"> • Village's stormwater master plan completed in 2001 and transmitted to officials at FDOT and FDEP. 	In place prior to September 2007.
<ul style="list-style-type: none"> • Meet with FDOT on a regular basis to coordinate and review work performed by the FDOT. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Make requests to FDOT for improvement projects. 	In place prior to September 2007 and requests are made annually.
<ul style="list-style-type: none"> • Complete remainder of the paving and drainage improvements on Upper Matecumbe Key. 	Construction completed during FY 08-09.

<ul style="list-style-type: none"> Utilize Stormwater Best Management Practices for drainage improvements. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> As part of the work to install driveway connections, swales, or similar method of stormwater management is currently required by Code. 	Requirement included in the Village Code prior to September 2007.
<ul style="list-style-type: none"> As part of right of way permitting, increase required native plant materials for plantings in right-of-way from 75% to 100%. 	Feasibility of increasing percentage of native plant materials to be researched by Public Works and Planning Departments during FY 11-12.

WATER

<ul style="list-style-type: none"> Low flow plumbing fixtures are in place in the Founders Park pool complex and Fire Station 20. 	In place prior to September 2007.
<ul style="list-style-type: none"> LEED certification components (i.e. waterless toilets) could be utilized for additional water savings in new municipal building projects. 	<p>Included low pressure faucets, shower fixtures and minimum volume toilets wherever practicable in 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19), to reduce water use and expenditures.</p> <p>Administrative Center & Public Safety Headquarters building construction plans include low flow (0.5 gallons per minute) sensor operated faucets in restrooms and a low flow (1.0 gallons per flush) urinal.</p>
<ul style="list-style-type: none"> Utilize the minimum level of water necessary for Founders Park fields and landscaping to be properly maintained for use and for the pool and other facilities to function properly. 	In place September 2007.
<ul style="list-style-type: none"> Utilize treated re-use water for field and greenery as it becomes available. 	<p>To be considered for new wastewater facilities that may be constructed in the Village.</p> <p>Reclaimed water line installed for future irrigation at Founders Park.</p>
<ul style="list-style-type: none"> Water savings standards are currently included in the BPAS scoring system. 	In place prior to September 2007.
<ul style="list-style-type: none"> Investigate additional LEED certification standards for BPAS scoring system. 	Additional LEED certifications standards considered; will not be included in BPAS scoring system due to difficulty with implementation.
<ul style="list-style-type: none"> Install pool cover at Founders Park pool (for an estimated reduction of 10 to 20% water usage for the pool). 	Pool cover installation completed October 2009.

WASTE

• Create and post additional recycling information on website.	Information regarding recycling and environmental sustainability posted in new section of website beginning December 2008 and updated as new recycling opportunities become available.
• Provide recycling bins up at public parks in Village.	Recycling pick-up and disposal services for parks included the solid waste contract beginning FY 08-09. Mixed recycling/trash containers purchased and installed during FY 09-10.
• Include alternatives for recycling in solid waste contract.	Beginning October 2008, solid waste contract includes additional residential and commercial recycling and initiatives. Solid Waste contractor added the collection of electronics for recycling during FY 09-10.
• Establish a recycling program at all Village facilities and encourage recycling by all staff and visitors.	In place September 2007 and included in Employee Policy.
• Require Village staff to print and copy double-sided when possible.	In place September 2007 and included in Employee Policy.
• Require Village staff to utilize electronic documents rather than printed documents when appropriate.	In place September 2007 and included in Employee Policy.
• Distribute Village meeting packets electronically or as double-sided prints when appropriate.	Began making double-sided prints for Council agenda packets in September 2007. Paperless agenda preparation process was implemented in July 2011. Paper copies of the agenda provided to the public on request only beginning September 2011. Transition to paperless agenda use by Council and staff budgeted for FY 11-12.
• Utilize biodegradable trash bags at Founders Park.	Implemented April 2008.
• Utilize biodegradable trash bags in Village Office Buildings.	Implemented June 2008.
• Include a requirement in the <i>Village-owned Parks Special Events Policy</i> for mandatory recycling at events at Village parks.	Implemented June 2008.

• Include a condition in the temporary use permit application for mandatory recycling at permitted events.	Implemented June 2008.
• Encourage recycling at Vacation Rental properties by providing recycling information to be on the property for renters as well as contact information for the Solid Waste provider to make additional recycling containers readily available.	Began August 2010 with full implementation to occur during 2011 application period.

TRANSPORTATION / FUEL

• Develop a Bicycle/Pedestrian Transportation Master Plan (Comprehensive Plan Policy 2-1.5.1).	Plan adopted October 2007.
• Coordinate with FDOT to pave or sod specific areas along bike path within FDOT right-of-way to minimize impact to bike lanes from highway traffic.	Sodding completed on Plantation Key during FY 08-09 as part of FDOT construction projects. Sodding completed on Lower Matecumbe Key during FY 08-09 as part of FDOT construction projects. FDOT projects for Upper Matecumbe Key and Windley Key are on future years plan.
• Seek funding for a Transit (Bus) Pull-off Facility Preliminary Design.	
• Work with the FDOT as well as the Miami-Dade Transit Authority and Monroe County to plan and construct bus stops.	In progress September 2007. Project not active since 2008.
• Work with Monroe County and other governmental entities to encourage transportation companies to use clean fuel sources.	
• Purchase or lease vehicles with the highest fuel efficiency that are appropriate for the assigned task.	\$50,000 budgeted for Capital Replacement Fund to begin replacement of inefficient fleet vehicles in FY 08-09 and FY 09-10. Funds will be appropriated annually. First hybrid vehicle purchased in May 2009.
• Auction retired Sheriff's Department vehicles and other vehicles that are not fuel efficient for Village tasks.	Auctioned six inefficient fleet vehicles in March 2009.

• Have extremely inefficient vehicles destroyed for scrap to permanently remove them from the roadways.	
• Implement anti-idling policy throughout all Village departments.	In place September 2007.
• Encourage Village staff to carpool, rideshare, bike or walk to work, as appropriate.	Implemented during FY 07-08 through the Employee Policy.
• Reduce vehicle usage; utilize pool vehicles rather than individual vehicles when practicable.	Reduced municipal vehicle fleet by four vehicles during FY 08-09. Continued practice of lowest possible number of fleet vehicles in use (19 at FY 10-11 end). During FY 10-11, purchased two bicycles for Park and Public Works staff use between Park office and Administrative offices.

OTHER

• Continue environmental practices of the Clean Marina Program.	Received Clean Marina designation for Plantation Yacht Harbor Marina in 2004. Five Year Clean Marina Award received in April 2009.
• Improve community awareness of environmental sustainability initiatives undertaken by the Village and encourage community involvement.	News box added to Village website in December 2008 includes Village sustainability initiatives and informational links is updated when new sustainable actions are implemented or new opportunities become available. Community education program included in Solid Waste contract approved in October 2008.

Environmental Sustainability Plan September 2012

Islamorada, Village of Islands

In order to contribute to a greener planet, the Village of Islamorada seeks to enact policies to reduce global warming pollution levels and provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements and energy conservation.

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Environmental Sustainability Goal/Action

Status

ENERGY

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<ul style="list-style-type: none"> • Utilize state of the industry standards/practices for Founders Park field lighting. 	<p>In place September 2007.</p>
<ul style="list-style-type: none"> • When possible, make arrangements for meetings to occur via conference call rather than having all participants drive to the meeting location. 	<p>Policy initiated August 2008 and included in updated Employee Policy.</p>
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<ul style="list-style-type: none"> • Maintain and expand healthy tree canopies over certain roadways to provide for greater shade to residential areas for energy savings and to promote groundwater absorption. 	<p>In place prior to September 2007 and ongoing.</p>
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<ul style="list-style-type: none"> • Acquire or train a Public Works Department employee to become certified arborist. 	Employee training ongoing and Assistant Public Works Director to take certification exam during FY 12-13.
<ul style="list-style-type: none"> • Replace asphalt with pervious pavers / pervious materials where possible on publicly held land. 	Pervious parking area (gravel) installed as part of Green Turtle Hammock improvements with grant funding during FY 10-11.
<ul style="list-style-type: none"> • Add rain barrels/cisterns to key properties to capture rainwater, allowing the water to be used for landscaping. 	Cistern installed at Fire Station 19 during FY 07-08.
<ul style="list-style-type: none"> • Revise right-of-way ordinance to ensure that swales are vegetated and kept free from debris and minimize traffic that would compact soils and reduce permeability. 	Revisions drafted during FY 11-12; to be proposed in amended ROW ordinance during FY 12-13.
<ul style="list-style-type: none"> • Preserve properties from development through conservation easements and agreements with Monroe County and the State of Florida. 	<p>Over 58 acres of property acquired prior to September 2007.</p> <p>“Key Tree Cactus Preserve” (nine acres) acquired during FY 08-09 for conservation and recreation.</p> <p>Additional properties will be considered for conservation.</p>
<ul style="list-style-type: none"> • Work with schools, various community agencies and citizens’ advisory committees for the planting of trees and greenery at Village parks and properties. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Require businesses that use rights-of-way to plant or re-plant vegetation and trees. 	Update of Chapter 50 of the Village Code to include a planting / restoration provision for use of right-of-way revisions drafted in FY 11-12 to be proposed in amended ROW ordinance during FY 12-13.
<ul style="list-style-type: none"> • Work with utility companies to restore vegetation, including re-sodding and tree planting. 	
<ul style="list-style-type: none"> • Work with neighborhood associations with culs de sac or streets ending in water for potential planting ideas to install landscaping to improve barren areas. 	<p>Completed two cul de sac improvements with landscaping during FY 07-08.</p> <p>Two additional cul de sac improvements completed during FY 08-09.</p>

<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking by utilizing concepts in the US Post Office / Townsite Supermarket proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
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<ul style="list-style-type: none"> • Utilize native plants at Village project sites. 	Only native plants were utilized in landscaping installed during FY 09-10 for the Administrative Center and Public Safety Headquarters resulting in no landscape irrigation.

AIR QUALITY/CO2 REDUCTION

<ul style="list-style-type: none"> • Identify locations to strategically plant native canopy trees that would provide ample shade with its canopy to cool temperatures and reduce air pollution. Plant six trees per year in public parks and rights-of-way. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Require additional landscaping and buffers for projects requiring development orders. 	In place prior to September 2007.

STORMWATER

<ul style="list-style-type: none"> • Village's stormwater master plan completed in 2001 and transmitted to officials at FDOT and FDEP. 	In place prior to September 2007.
<ul style="list-style-type: none"> • Meet with FDOT on a regular basis to coordinate and review work performed by the FDOT. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Make requests to FDOT for improvement projects. 	In place prior to September 2007 and requests are made annually.
<ul style="list-style-type: none"> • Complete remainder of the paving and drainage improvements on Upper Matecumbe Key. 	Construction completed during FY 08-09.

• Utilize Stormwater Best Management Practices for drainage improvements.	In place prior to September 2007 and ongoing.
• As part of the work to install driveway connections, swales, or similar method of stormwater management is currently required by Code.	Requirement included in the Village Code prior to September 2007.

WATER

• Low flow plumbing fixtures are in place in the Founders Park pool complex and Fire Station 20.	In place prior to September 2007.
• LEED certification components (i.e. waterless toilets) could be utilized for additional water savings in new municipal building projects.	Included low pressure faucets, shower fixtures and minimum volume toilets wherever practicable in 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19), to reduce water use and expenditures. Administrative Center & Public Safety Headquarters building construction plans include low flow (0.5 gallons per minute) sensor operated faucets in restrooms and a low flow (1.0 gallons per flush) urinal.
• Utilize the minimum level of water necessary for Founders Park fields and landscaping to be properly maintained for use and for the pool and other facilities to function properly.	In place September 2007.
• Water savings standards are currently included in the BPAS scoring system.	In place prior to September 2007.
• Investigate additional LEED certification standards for BPAS scoring system.	Additional LEED certifications standards considered; will not be included in BPAS scoring system due to difficulty with implementation.
• Install pool cover at Founders Park pool (for an estimated reduction of 10 to 20% water usage for the pool).	Pool cover installation completed October 2009.

WASTE

• Create and post additional recycling information on website.	Information regarding recycling and environmental sustainability posted in new section of website beginning December 2008 and updated as new recycling opportunities become available.
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<ul style="list-style-type: none"> • Provide recycling bins up at public parks in Village. 	<p>Recycling pick-up and disposal services for parks included the solid waste contract beginning FY 08-09.</p> <p>Mixed recycling/trash containers purchased and installed during FY 09-10.</p>
<ul style="list-style-type: none"> • Include alternatives for recycling in solid waste contract. 	<p>Beginning October 2008, solid waste contract includes additional residential and commercial recycling and initiatives.</p> <p>Solid Waste contractor added the collection of electronics for recycling during FY 09-10.</p>
<ul style="list-style-type: none"> • Establish a recycling program at all Village facilities and encourage recycling by all staff and visitors. 	<p>In place September 2007 and included in Employee Policy.</p>
<ul style="list-style-type: none"> • Require Village staff to print and copy double-sided when possible. 	<p>In place September 2007 and included in Employee Policy.</p>
<ul style="list-style-type: none"> • Require Village staff to utilize electronic documents rather than printed documents when appropriate. 	<p>In place September 2007 and included in Employee Policy.</p>
<ul style="list-style-type: none"> • Distribute Village meeting packets electronically or as double-sided prints when appropriate. 	<p>Began making double-sided prints for Council agenda packets in September 2007.</p> <p>Paperless agenda preparation process was implemented in July 2011.</p> <p>Paper copies of the agenda provided to the public on request only beginning September 2011.</p> <p>Transition to paperless agenda use by Council tested during FY11-12. Will identify more suitable devices for paperless agendas in the future.</p>
<ul style="list-style-type: none"> • Utilize biodegradable trash bags at Founders Park. 	<p>Implemented April 2008.</p>
<ul style="list-style-type: none"> • Utilize biodegradable trash bags in Village Office Buildings. 	<p>Implemented June 2008.</p>
<ul style="list-style-type: none"> • Include a requirement in the <i>Village-owned Parks Special Events Policy</i> for mandatory recycling at events at Village parks. 	<p>Implemented June 2008.</p>
<ul style="list-style-type: none"> • Include a condition in the temporary use permit application for mandatory recycling at permitted events. 	<p>Implemented June 2008.</p>

- Encourage recycling at Vacation Rental properties by providing recycling information to be on the property for renters as well as contact information for the Solid Waste provider to make additional recycling containers readily available.

Began August 2010 with full implementation during the 2011 application period.

- Promote voluntary use of reusable bags by businesses in Islamorada and residents.

Staff to begin with coordination with Chamber of Commerce during FY 12-13. Following first year of promotion, staff to provide report to the Village Council and request policy direction regarding continued actions.

TRANSPORTATION / FUEL

- Develop a Bicycle/Pedestrian Transportation Master Plan (Comprehensive Plan Policy 2-1.5.1).

Plan adopted October 2007.

- Coordinate with FDOT to pave or sod specific areas along bike path within FDOT right-of-way to minimize impact to bike lanes from highway traffic.

Sodding completed on Plantation Key during FY 08-09 as part of FDOT construction projects.

Sodding completed on Lower Matecumbe Key during FY 08-09 as part of FDOT construction projects.

FDOT projects for Upper Matecumbe Key and Windley Key are on future years plan.

FY 11-12 sod installation included area adjacent to bike trail at MM 80.5, along southbound lane of Tea Table and adjacent to the northern section of bike trail on Lower Matecumbe Key.

- Seek funding for a Transit (Bus) Pull-off Facility Preliminary Design.

- Work with the FDOT as well as the Miami-Dade Transit Authority and Monroe County to plan and construct bus stops.

In progress September 2007. Project not active since 2008.

- Work with Monroe County and other governmental entities to encourage transportation companies to use clean fuel sources.

<ul style="list-style-type: none"> • Purchase or lease vehicles with the highest fuel efficiency that are appropriate for the assigned task. 	<p>\$50,000 budgeted for Capital Replacement Fund to begin replacement of inefficient fleet vehicles in FY 08-09 and FY 09-10. Funds will be appropriated annually.</p> <p>First hybrid vehicle purchased in May 2009.</p>
<ul style="list-style-type: none"> • Auction retired Sheriff's Department vehicles and other vehicles that are not fuel efficient for Village tasks. 	<p>Auctioned six inefficient fleet vehicles in March 2009.</p> <p>Auctioned 17 inefficient fleet vehicles in 2011.</p>
<ul style="list-style-type: none"> • Have extremely inefficient vehicles destroyed for scrap to permanently remove them from the roadways. 	<p>In 2012, two inefficient fleet vehicles were removed from fleet for destruction (utilized for fire rescue training).</p>
<ul style="list-style-type: none"> • Implement anti-idling policy throughout all Village departments. 	<p>In place September 2007.</p>
<ul style="list-style-type: none"> • Encourage Village staff to carpool, rideshare, bike or walk to work, as appropriate. 	<p>Implemented during FY 07-08 through the Employee Policy.</p>
<ul style="list-style-type: none"> • Reduce vehicle usage; utilize pool vehicles rather than individual vehicles when practicable. 	<p>Reduced municipal vehicle fleet by four vehicles during FY 08-09.</p> <p>Continued practice of lowest possible number of fleet vehicles in use</p> <ul style="list-style-type: none"> ○ 19 vehicles in use at FY 10-11 end ○ 21 vehicles in use at FY 11-12 end with goal to reduce to 20 <p>During FY 10-11, purchased two bicycles for Park and Public Works staff use between Park office and Administrative offices.</p>

OTHER

<ul style="list-style-type: none"> • Continue environmental practices of the Clean Marina Program. 	<p>Received Clean Marina designation for Plantation Yacht Harbor Marina in 2004.</p> <p>Five Year Clean Marina Award received in April 2009.</p>
<ul style="list-style-type: none"> • Improve community awareness of environmental sustainability initiatives undertaken by the Village and encourage community involvement. 	<p>News box added to Village website in December 2008 includes Village sustainability initiatives and informational links is updated when new sustainable actions are implemented or new opportunities become available.</p> <p>Community education program included in Solid Waste contract approved in October 2008.</p>

Environmental Sustainability Plan September 2013

Islamorada, Village of Islands

In order to contribute to a greener planet, the Village of Islamorada seeks to enact policies to reduce global warming pollution levels and provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements and energy conservation.

The Environmental Sustainability Plan was implemented in September 2007 and is updated on an annual basis.

This document includes actions that are currently in place and goals/actions that have been identified to be investigated for future implementation. The document is intended to be utilized as a tool to review sustainability actions that have been achieved and to identify and prioritize goals that may be accomplished in the next year and future years.

The document is designed to be reviewed annually to add/remove/modify the goals, update the status of items that have been implemented and identify those items that could be considered for implementation during the following fiscal year.

Environmental Sustainability Goal/Action

Status

ENERGY

• Include LEED energy certification components in plans for new Village building projects.	Included energy efficient fixtures and equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19). Administrative Center & Public Safety Headquarters is constructed with an energy efficient roof and energy efficient windows.
• Include LEED energy certification components in plans for Village building renovations.	
• Utilize energy efficient mechanical systems in building projects.	Included energy efficient equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19). Administrative Center & Public Safety Headquarters was constructed with energy efficient air conditioning.

<ul style="list-style-type: none"> • Include energy saving standards in the BPAS scoring system. <p>Encourage use of solar / photovoltaic systems by Islamorada property owners and investigate additional LEED energy certification standards for addition to the BPAS scoring system to promote increased energy savings in new development (i.e. solar hot water heating, “going off the FKEC grid”).</p>	<p>In place prior to September 2007.</p> <p>Adopted Resolution 08-12-07 in December 2008 to waive building permit fees for solar / photovoltaic system installation.</p> <p>Additional points for solar hot water heaters included in BPAS scoring system in October 2010.</p>
<ul style="list-style-type: none"> • Keep room temperatures no lower than 74 degrees during business hours and turn thermostats up to 78 degrees during non-business hours in all Village Buildings with limited exceptions (i.e. areas housing computer server systems). 	<p>Included in 9/26/08 Employee Policy update.</p>
<ul style="list-style-type: none"> • Install motion-sensing, auto-off light switches where appropriate at Village owned buildings. 	<p>Motion-activated lighting installed in Marina Restroom Pavilion and in the Community Center restrooms.</p> <p>Motion-activated lighting installed in Administrative Center and Public Safety Headquarters building in areas other than hallways and partitioned areas.</p> <p>Retrofitting of Anne’s Beach and Library Beach restroom lighting completed during FY 09-10.</p>
<ul style="list-style-type: none"> • Create and implement an Environmental Sustainability Policy for Village Employees (“Employee Policy”). 	<p>Employee Policy implemented 5/22/08, and is updated as new information becomes available.</p>
<ul style="list-style-type: none"> • Establish an energy conservation program/policy for all Village offices and buildings to include turning off lights and equipment when not in use. 	<p>Implemented during FY 07-08 through the Employee Policy.</p>
<ul style="list-style-type: none"> • As new equipment and appliances are required, procure energy efficient products that are ENERGY STAR® qualified or that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life-cycle cost basis. 	<p>Implemented during FY 07-08 through the Employee Policy.</p> <p>Purchasing Policy and Procedure to be updated during FY 13-14.</p>
<ul style="list-style-type: none"> • Require affordable housing projects receiving Village assistance to install ENERGY STAR® qualified appliances. 	<p>To be addressed by resolution.</p> <p>Gorman & Company to install ENERGY STAR® qualified appliances in Wet Net Villas affordable rental development (to begin leasing in 2013).</p>

<ul style="list-style-type: none"> • Implement measures to reduce electrical requirements for pool temperature management. 	<p>Pool cover installation completed October 2009.</p> <p>Phased replacement of old heat pumps with higher efficiency units began during FY 09-10 with the replacement of four of the eighteen heat pumps.</p> <p>Two additional heat pumps purchased during FY 10-11.</p> <p>Installation of propane flash heater to reduce run-time of heat pumps during cold weather installed FY 11-12.</p> <p>FY 13-14 budget includes the purchase of the final six pool heat pumps to replace the remainder of the original and older inefficient units.</p>
<ul style="list-style-type: none"> • Replace Founders Park street lights with solar lighting. 	<p>Energy Efficiency and Conservation Block Grant retrofit of Founders Park Street lighting (and other lighting on Village-owned properties) to solar lighting completed during FY 11-12.</p>
<ul style="list-style-type: none"> • Utilize solar power to light “Welcome to Islamorada” signs at the north and south entrances to the Village. 	<p>In place prior to September 2007.</p>
<ul style="list-style-type: none"> • Manage Founders Park street lights for lowest possible energy use. 	<p>In place September 2007.</p>
<ul style="list-style-type: none"> • Utilize state of the industry standards/practices for Founders Park field lighting. 	<p>In place September 2007.</p>
<ul style="list-style-type: none"> • When possible, make arrangements for meetings to occur via conference call rather than having all participants drive to the meeting location. 	<p>Policy initiated August 2008 and included in updated Employee Policy.</p>
<ul style="list-style-type: none"> • Reduce overall electrical consumption for municipal offices and parks utilizing the methods listed in this section. 	<p>Reduced electrical consumption for municipal offices and parks by 11% during FY 08-09. Methods to reduce electrical consumption have continued.</p>
<ul style="list-style-type: none"> • Seek funding assistance for “ENERGY” goals / actions identified above as appropriate. 	<p>During FY 09-10, staff worked with the County to apply for funding through the State of Florida American Recovery and Reinvestment program / Energy Efficiency and Conservation Block Grant program. Grant approved in July 2010; retrofit completed during FY 11-12.</p>
<ul style="list-style-type: none"> • Phase out incandescent lighting in all Village buildings and properties. 	<p>By 2013, all incandescent lighting has been replaced in Village buildings with the exception of Green Turtle Hammock Park which is currently undergoing renovations by the non-profit Operator.</p>

LAND

<ul style="list-style-type: none"> • Maintain and expand healthy tree canopies over certain roadways to provide for greater shade to residential areas for energy savings and to promote groundwater absorption. 	<p>In place prior to September 2007 and ongoing.</p>
<ul style="list-style-type: none"> • Coordinate with FDOT to re-sod US 1 highway rights-of-ways rather than placing compacted lime rock. The sod may need to be protected with hedge materials. 	<p>Rights-of-way on Plantation Key sodded by FDOT following 08-09 roadway improvement projects.</p> <p>During FY 12-13 the Snake Creek Bridge to MM 87.3 FDOT US 1 beautification project was completed.</p>
<ul style="list-style-type: none"> • Consistently maintain a certified arborist as a Parks and Recreation or Public Works staff member to provide any necessary consultations or information for staff responsible for trimming, mowing and planting; provide regular training for all Public Works staff. 	<p>Staff member has certified arborist credentials.</p> <p>To sustain native vegetation, Public Works staff receive ongoing training on invasive exotic recognition and removal techniques as well as herbicide and arborist training throughout the year.</p>
<ul style="list-style-type: none"> • Replace asphalt with pervious pavers / pervious materials where possible on publicly held land. 	<p>Pervious parking area (gravel) installed as part of Green Turtle Hammock improvements with grant funding during FY 10-11.</p>
<ul style="list-style-type: none"> • Add rain barrels/cisterns to key properties to capture rainwater, allowing the water to be used for landscaping. 	<p>Cistern installed at Fire Station 19 during FY 07-08.</p>
<ul style="list-style-type: none"> • Revise right-of-way ordinance to ensure that swales are vegetated and kept free from debris and minimize traffic that would compact soils and reduce permeability. 	<p>Revisions drafted during FY 11-12; to be proposed in amended ROW ordinance during FY 13-14.</p>
<ul style="list-style-type: none"> • Preserve properties from development through conservation easements and agreements with Monroe County and the State of Florida. 	<p>Over 58 acres of property acquired prior to September 2007.</p> <p>“Key Tree Cactus Preserve” (nine acres) acquired during FY 08-09 for conservation and recreation.</p> <p>Additional properties continue to be considered for conservation.</p>
<ul style="list-style-type: none"> • Work with schools, various community agencies and citizens’ advisory committees for the planting of trees and greenery at Village parks and properties. 	<p>In place prior to September 2007 and ongoing.</p> <p>Small projects are completed regularly and during FY 12-13, the Village’s Landscape Advisory Committee worked in coordination with Public Works and the Florida Keys Electric Cooperative to complete a substantial planting project - 224 total plantings - at Plantation Tropical Preserve.</p>
<ul style="list-style-type: none"> • Require businesses that use rights-of-way to plant or re-plant vegetation and trees. 	<p>Update of Chapter 50 of the Village Code to include a planting / restoration provision for use of right-of-way revisions drafted in FY 11-12 to be proposed in amended ROW ordinance during FY 13-14.</p>

<ul style="list-style-type: none"> • Work with utility companies to restore vegetation, including re-sodding and tree planting. 	
<ul style="list-style-type: none"> • Work with neighborhood associations with culs de sac or streets ending in water for potential planting ideas to install landscaping to improve barren areas. 	<p>Completed two cul de sac improvements with landscaping during FY 07-08.</p> <p>Two additional cul de sac improvements completed during FY 08-09.</p>
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking by utilizing concepts in the US Post Office / Townsite Supermarket proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes by utilizing concepts in the Worldwide Sportsman Store / Islamorada Fish Company proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking Village-wide parking along US Highway 1 by utilizing concepts as shown in the 2003 TSM Study for downtown Islamorada. 	

AIR QUALITY/CO2 REDUCTION

<ul style="list-style-type: none"> • Identify locations to strategically plant native canopy trees that would provide ample shade with its canopy to cool temperatures and reduce air pollution. Plant six trees per year in public parks and rights-of-way. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Require additional landscaping and buffers for projects requiring development orders. 	In place prior to September 2007.

STORMWATER

<ul style="list-style-type: none"> • Village's stormwater master plan completed in 2001 and transmitted to officials at FDOT and FDEP. 	In place prior to September 2007.
<ul style="list-style-type: none"> • Meet with FDOT on a regular basis to coordinate and review work performed by the FDOT. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Make requests to FDOT for improvement projects. 	In place prior to September 2007 and requests are made annually.

• Complete remainder of the paving and drainage improvements on Upper Matecumbe Key.	Construction completed during FY 08-09.
• Utilize Stormwater Best Management Practices for drainage improvements.	In place prior to September 2007 and ongoing.
• As part of the work to install driveway connections, swales, or similar method of stormwater management is currently required by Code.	Requirement included in the Village Code prior to September 2007.

WATER

• Low flow plumbing fixtures are in place in the Founders Park pool complex and Fire Station 20.	In place prior to September 2007.
• LEED certification components (i.e. waterless toilets) could be utilized for additional water savings in new municipal building projects.	Included low pressure faucets, shower fixtures and minimum volume toilets wherever practicable in 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19), to reduce water use and expenditures. Low flow (0.5 gallons per minute) sensor operated faucets in restrooms and a low flow (1.0 gallons per flush) urinal installed during construction of Administrative Center & Public Safety Headquarters.
• Utilize the minimum level of water necessary for Founders Park fields and landscaping to be properly maintained for use and for the pool and other facilities to function properly.	In place September 2007.
• Include water savings standards in the BPAS scoring system.	In place prior to September 2007.
• Investigate additional LEED certification standards for BPAS scoring system.	Additional LEED certifications standards considered; will not be included in BPAS scoring system due to difficulty with implementation.
• Install pool cover at Founders Park pool (for an estimated reduction of 10 to 20% water usage for the pool).	Pool cover installation completed October 2009.
• Utilize native plants at Village project sites.	Only native plants were utilized in landscaping installed during FY 09-10 for the Administrative Center and Public Safety Headquarters resulting in no landscape irrigation. Site specific native vegetation to be installed at all of the proposed wastewater pump station sites to be constructed beginning 2013. Wet Net Villas affordable rental housing project to be complete in 2013 will include native plants and low-water plants, resulting in no irrigation requirements.

WASTE

• Create and post additional recycling information on website.	Information regarding recycling and environmental sustainability posted in new section of website beginning December 2008 and updated as new recycling opportunities become available.
• Provide recycling bins up at public parks in Village.	Recycling pick-up and disposal services for parks included the solid waste contract beginning FY 08-09. Mixed recycling/trash containers purchased and installed during FY 09-10.
• Include alternatives for recycling in solid waste contract.	Beginning October 2008, solid waste contract includes additional residential and commercial recycling and initiatives. Solid Waste contractor added the collection of electronics for recycling during FY 09-10. 2013 Request for Proposals for Solid Waste Services draft agreement requires mandatory recycling for commercial customers in conjunction with a new ordinance.
• Establish a recycling program at all Village facilities and encourage recycling by all residents, staff and visitors.	In place September 2007 and included in Employee Policy.
• Require Village staff to print and copy double-sided when possible.	In place September 2007 and included in Employee Policy.
• Require Village staff to utilize electronic documents rather than printed documents when appropriate.	In place September 2007 and included in Employee Policy.
• Distribute Village meeting packets electronically or as double-sided prints when appropriate.	Began making double-sided prints for Council agenda packets in September 2007. Paperless agenda preparation process was implemented in July 2011. Paper copies of the agenda provided to the public on request only beginning September 2011. Transition to paperless agenda use by Council tested during FY11-12. Will identify more suitable devices for paperless agendas in the future.
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• Include a condition in the temporary use permit application for mandatory recycling at permitted events.	Implemented June 2008.
• Encourage recycling at Vacation Rental properties.	Beginning August 2010, recycling information provided with license as well as information to assist renters with contacting the Solid Waste provider for delivery of additional recycling containers.
• Promote voluntary use of reusable bags by businesses in Islamorada and residents.	Bags to be purchased early FY 12-13 to begin promoting voluntary use of reusable bags through <i>Got Your Bags</i> program.

TRANSPORTATION / FUEL

• Develop a Bicycle/Pedestrian Transportation Master Plan (Comprehensive Plan Policy 2-1.5.1).	Plan adopted October 2007.
• Coordinate with FDOT to pave or sod specific areas along bike path within FDOT right-of-way to minimize impact to bike lanes from highway traffic.	Sodding completed on Plantation Key during FY 08-09 as part of FDOT construction projects. Sodding completed on Lower Matecumbe Key during FY 08-09 as part of FDOT construction projects. FDOT projects for Upper Matecumbe Key and Windley Key are on future years plan. FY 11-12 sod installation included area adjacent to bike trail at MM 80.5, along southbound lane of Tea Table and adjacent to the northern section of bike trail on Lower Matecumbe Key.
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• Improve community awareness of environmental sustainability initiatives undertaken by the Village and encourage community involvement.	<p>News box added to Village website in December 2008 includes Village sustainability initiatives and informational links is updated when new sustainable actions are implemented or new opportunities become available.</p> <p>Community education program included in Solid Waste contract approved in October 2008.</p> <p>Increased advertising, additional direct public relations presentations to school groups, community groups and the media to promote recycling are included in 2013 Request for Proposals for Solid Waste Services draft agreement.</p> <p>In conjunction with implementation of mandatory commercial recycling during FY 13-14, a new position Sustainability Coordinator may be recommended.</p>
• Determine the feasibility of a Canal Restoration Program following the completion of the County's Keys-wide Canal Management Master Plan.	<p>During FY 12-13, the Village Council committed up to \$100,000 toward canal restoration project expenditures.</p> <p>During FY 12-13, the Village entered into an Agreement with a consultant to select a canal for a canal restoration demonstration project to begin during FY 13-14.</p>

Environmental Sustainability Plan September 2014

Islamorada, Village of Islands

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Status

ENERGY

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<ul style="list-style-type: none"> • Establish an energy conservation program/policy for all Village offices and buildings to include turning off lights and equipment when not in use. 	<p>Implemented during FY 07-08 through the Employee Policy.</p>
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<ul style="list-style-type: none"> • Implement measures to reduce electrical requirements for pool temperature management. 	<p>Pool cover installation completed October 2009.</p> <p>Phased replacement of old heat pumps with higher efficiency units began during FY 09-10 with the replacement of four of the eighteen heat pumps.</p> <p>Two additional heat pumps purchased during FY 10-11.</p> <p>Installation of propane flash heater to reduce run-time of heat pumps during cold weather installed FY 11-12.</p> <p>FY 13-14 budget includes the purchase of the final six pool heat pumps to replace the remainder of the original and older inefficient units.</p>
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<ul style="list-style-type: none"> • Utilize solar power to light "Welcome to Islamorada" signs at the north and south entrances to the Village. 	<p>In place prior to September 2007.</p>
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<ul style="list-style-type: none"> • When possible, make arrangements for meetings to occur via conference call rather than having all participants drive to the meeting location. 	<p>Policy initiated August 2008 and included in updated Employee Policy.</p> <p>During FY 14-15, consider purchase of 360 camera(s) to make on-line meetings and trainings more effective.</p>
<ul style="list-style-type: none"> • Reduce overall electrical consumption for municipal offices and parks utilizing the methods listed in this section. 	<p>Reduced electrical consumption for municipal offices and parks by 11% during FY 08-09. Methods to reduce electrical consumption have continued.</p>
<ul style="list-style-type: none"> • Seek funding assistance for "ENERGY" goals / actions identified above as appropriate. 	<p>During FY 09-10, staff worked with the County to apply for funding through the State of Florida American Recovery and Reinvestment program / Energy Efficiency and Conservation Block Grant program. Grant approved in July 2010; retrofit completed during FY 11-12.</p>
<ul style="list-style-type: none"> • Phase out incandescent lighting and update to LED lighting in all Village buildings and properties. 	<p>By 2013, all incandescent lighting has been replaced in Village buildings with the exception of Green Turtle Hammock Park which is currently undergoing renovations by the non-profit Operator.</p> <p>Consideration of appropriate locations for LED lighting to be considered during FY 14-15.</p>

LAND

<ul style="list-style-type: none"> • Maintain and expand healthy tree canopies over certain roadways to provide for greater shade to residential areas for energy savings and to promote groundwater absorption. 	<p>In place prior to September 2007 and ongoing.</p>
<ul style="list-style-type: none"> • Coordinate with FDOT to re-sod US 1 highway rights-of-ways rather than placing compacted lime rock. The sod may need to be protected with hedge materials. 	<p>Rights-of-way on Plantation Key sodded by FDOT following 08-09 roadway improvement projects.</p> <p>During FY 12-13 the Snake Creek Bridge to MM 87.3 FDOT US 1 beautification project was completed.</p>
<ul style="list-style-type: none"> • Consistently maintain a certified arborist as a Parks and Recreation or Public Works staff member to provide any necessary consultations or information for staff responsible for trimming, mowing and planting; provide regular training for all Public Works staff. 	<p>Staff member has certified arborist credentials.</p> <p>To sustain native vegetation, Public Works staff receive ongoing training on invasive exotic recognition and removal techniques as well as herbicide and arborist training throughout the year.</p> <p>FY 14-15 budget includes new employment position of Environmental Resource Program Manager. Expertise provided by this staff member to be available to Public Works employees.</p>
<ul style="list-style-type: none"> • Replace asphalt with pervious pavers / pervious materials where possible on publicly held land. 	<p>Pervious parking area (gravel) installed as part of Green Turtle Hammock improvements with grant funding during FY 10-11.</p>
<ul style="list-style-type: none"> • Add rain barrels/cisterns to key properties to capture rainwater, allowing the water to be used for landscaping. 	<p>Cistern installed at Fire Station 19 during FY 07-08.</p>
<ul style="list-style-type: none"> • Revise right-of-way ordinance to ensure that swales are vegetated and kept free from debris and minimize traffic that would compact soils and reduce permeability. 	<p>Revisions drafted during FY 11-12; to be proposed in amended ROW ordinance during FY 14-15.</p>
<ul style="list-style-type: none"> • Preserve properties from development through conservation easements and agreements with Monroe County and the State of Florida. 	<p>Over 58 acres of property acquired prior to September 2007.</p> <p>“Key Tree Cactus Preserve” (nine acres) acquired during FY 08-09 for conservation and recreation.</p> <p>Three Plantation Key properties (approximately 1.5 acres) acquired for conservation during FY 13-14.</p> <p>Additional properties continue to be considered for conservation.</p>
<ul style="list-style-type: none"> • Work with schools, various community agencies and citizens’ advisory committees for the planting of trees and greenery at Village parks and properties. 	<p>In place prior to September 2007 and ongoing.</p> <p>Small projects are completed regularly and during FY 12-13, the Village’s Landscape Advisory Committee worked in coordination with Public Works</p>

	and the Florida Keys Electric Cooperative to complete a substantial planting project - 224 total plantings - at Plantation Tropical Preserve.
<ul style="list-style-type: none"> • Require businesses that use rights-of-way to plant or re-plant vegetation and trees. 	Update of Chapter 50 of the Village Code to include a planting / restoration provision for use of right-of-way revisions drafted in FY 11-12 to be proposed in amended ROW ordinance during FY 14-15.
<ul style="list-style-type: none"> • Work with utility companies to restore vegetation, including re-sodding and tree planting. 	
<ul style="list-style-type: none"> • Work with neighborhood associations with culs de sac or streets ending in water for potential planting ideas to install landscaping to improve barren areas. 	Completed two cul de sac improvements with landscaping during FY 07-08. Two additional cul de sac improvements completed during FY 08-09.
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking by utilizing concepts in the US Post Office / Townsite Supermarket proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes by utilizing concepts in the Worldwide Sportsman Store / Islamorada Fish Company proposed project as shown in the 2003 TSM Study for downtown Islamorada. 	
<ul style="list-style-type: none"> • Provide more shaded walkable/bikeable lanes and communal parking Village-wide parking along US Highway 1 by utilizing concepts as shown in the 2003 TSM Study for downtown Islamorada. 	

AIR QUALITY/CO2 REDUCTION

<ul style="list-style-type: none"> • Identify locations to strategically plant native canopy trees that would provide ample shade with its canopy to cool temperatures and reduce air pollution. Plant six trees per year in public parks and rights-of-way. 	In place prior to September 2007 and ongoing.
<ul style="list-style-type: none"> • Require additional landscaping and buffers for projects requiring development orders. 	In place prior to September 2007.

STORMWATER

• Village's stormwater master plan completed in 2001 and transmitted to officials at FDOT and FDEP.	In place prior to September 2007.
• Meet with FDOT on a regular basis to coordinate and review work performed by the FDOT.	In place prior to September 2007 and ongoing.
• Make requests to FDOT for improvement projects.	In place prior to September 2007 and requests are made annually.
• Complete remainder of the paving and drainage improvements on Upper Matecumbe Key.	Construction completed during FY 08-09.
• Utilize Stormwater Best Management Practices for drainage improvements.	In place prior to September 2007 and ongoing.
• As part of the work to install driveway connections, swales, or similar method of stormwater management is currently required by Code.	Requirement included in the Village Code prior to September 2007.

WATER

• Low flow plumbing fixtures are in place in the Founders Park pool complex and Fire Station 20.	In place prior to September 2007.
• LEED certification components (i.e. waterless toilets) could be utilized for additional water savings in new municipal building projects.	Included low pressure faucets, shower fixtures and minimum volume toilets wherever practicable in 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19), to reduce water use and expenditures. Low flow (0.5 gallons per minute) sensor operated faucets in restrooms and a low flow (1.0 gallons per flush) urinal installed during construction of Administrative Center & Public Safety Headquarters.
• Utilize the minimum level of water necessary for Founders Park fields and landscaping to be properly maintained for use and for the pool and other facilities to function properly.	In place September 2007.
• Include water savings standards in the BPAS scoring system.	In place prior to September 2007.
• Investigate additional LEED certification standards for BPAS scoring system.	Additional LEED certifications standards considered; will not be included in BPAS scoring system due to difficulty with implementation.
• Install pool cover at Founders Park pool (for an estimated reduction of 10 to 20% water usage for the pool).	Pool cover installation completed October 2009.

- Utilize native plants at Village project sites.

Only native plants were utilized in landscaping installed during FY 09-10 for the Administrative Center and Public Safety Headquarters resulting in no landscape irrigation.

Site specific native vegetation to be installed at all of the proposed wastewater pump station sites to be constructed beginning 2013.

Wet Net Villas affordable rental housing project to be complete in 2013 will include native plants and low-water plants, resulting in no irrigation requirements.

WASTE

- Create and post additional recycling information on website.

Information regarding recycling and environmental sustainability posted in new section of website beginning December 2008 and updated as new recycling opportunities become available.

- Provide recycling bins up at public parks in Village.

Recycling pick-up and disposal services for parks included the solid waste contract beginning FY 08-09.

Mixed recycling/trash containers purchased and installed during FY 09-10.

- Include alternatives for recycling in solid waste contract.

Beginning October 2008, solid waste contract includes additional residential and commercial recycling and initiatives.

Solid Waste contractor added the collection of electronics for recycling during FY 09-10.

2013-2018 Solid Waste Services Agreement requires the Contractor to implement mandatory recycling for commercial customers-following adoption of a mandatory recycling ordinance.

- Improve collection and proper disposal of hazardous waste materials.

2013-2018 Solid Waste Services Agreement increased Household Hazardous Waste Collection days to four per year and included requirement for Contractor to provide for used motor oil collection.

- Establish a recycling program at all Village facilities and encourage recycling by all residents, staff and visitors.

In place September 2007 and included in Employee Policy.

- Require Village staff to print and copy double-sided when possible.

In place September 2007 and included in Employee Policy.

- Require Village staff to utilize electronic documents rather than printed documents when appropriate.

In place September 2007 and included in Employee Policy.

<ul style="list-style-type: none"> • Distribute Village meeting packets electronically or as double-sided prints when appropriate. 	<p>Began making double-sided prints for Council agenda packets in September 2007.</p> <p>Paperless agenda preparation process was implemented in July 2011.</p> <p>Paper copies of the agenda provided to the public on request only beginning September 2011.</p> <p>Transition to paperless agenda use by Council tested during FY11-12. Will identify more suitable devices for paperless agendas in the future.</p>
<ul style="list-style-type: none"> • Utilize biodegradable trash bags at Founders Park. 	<p>Implemented April 2008.</p>
<ul style="list-style-type: none"> • Utilize biodegradable trash bags in Village Office Buildings. 	<p>Implemented June 2008.</p>
<ul style="list-style-type: none"> • Include a requirement in the <i>Village-owned Parks Special Events Policy</i> for mandatory recycling at events at Village parks. 	<p>Implemented June 2008.</p>
<ul style="list-style-type: none"> • Include a condition in the temporary use permit application for mandatory recycling at permitted events. 	<p>Implemented June 2008.</p>
<ul style="list-style-type: none"> • Encourage recycling at Vacation Rental properties. 	<p>Beginning August 2010, recycling information provided with license as well as information to assist renters with contacting the Solid Waste provider for delivery of additional recycling containers.</p> <p>Identify additional means to improve recycling at vacation rental properties during FY 14-15.</p>
<ul style="list-style-type: none"> • Promote voluntary use of reusable bags by businesses in Islamorada and residents. 	<p>Bags purchased FY 13-14 to begin promoting voluntary use of reusable bags through <i>Got Your Bags</i> program. Efforts to be expanded during FY 14-15.</p>

TRANSPORTATION / FUEL

<ul style="list-style-type: none"> • Develop a Bicycle/Pedestrian Transportation Master Plan (Comprehensive Plan Policy 2-1.5.1). 	<p>Plan adopted October 2007.</p>
<ul style="list-style-type: none"> • Coordinate with FDOT to pave or sod specific areas along bike path within FDOT right-of-way to minimize impact to bike lanes from highway traffic. 	<p>Sodding completed on Plantation Key during FY 08-09 as part of FDOT construction projects.</p> <p>Sodding completed on Lower Matecumbe Key during FY 08-09 as part of FDOT construction projects.</p>

	<p>FDOT projects for Upper Matecumbe Key and Windley Key are on future years plan.</p> <p>FY 11-12 sod installation included area adjacent to bike trail at MM 80.5, along southbound lane of Tea Table and adjacent to the northern section of bike trail on Lower Matecumbe Key.</p>
<ul style="list-style-type: none"> • Purchase or lease vehicles with the highest fuel efficiency that are appropriate for the assigned task. 	<p>\$50,000 budgeted for Capital Replacement Fund to begin replacement of inefficient fleet vehicles in FY 08-09 and FY 09-10. Funds will be appropriated annually.</p> <p>First hybrid vehicle purchased in May 2009.</p>
<ul style="list-style-type: none"> • Auction retired Sheriff's Department vehicles and other vehicles that are not fuel efficient for Village tasks. 	<p>Auctioned six inefficient fleet vehicles in March 2009.</p> <p>Auctioned 17 inefficient fleet vehicles in 2011.</p>
<ul style="list-style-type: none"> • Have extremely inefficient vehicles destroyed for scrap to permanently remove them from the roadways. 	<p>In 2012, two inefficient fleet vehicles were removed from fleet for destruction (utilized for fire rescue training).</p>
<ul style="list-style-type: none"> • Implement anti-idling policy throughout all Village departments. 	<p>In place September 2007.</p>
<ul style="list-style-type: none"> • Encourage Village staff to carpool, rideshare, bike or walk to work, as appropriate. 	<p>Implemented during FY 07-08 through the Employee Policy.</p>
<ul style="list-style-type: none"> • Reduce vehicle usage; utilize pool vehicles rather than individual vehicles when practicable. 	<p>Reduced municipal vehicle fleet by four vehicles during FY 08-09.</p> <p>Continued practice of lowest possible number of fleet vehicles in use</p> <ul style="list-style-type: none"> ○ 19 vehicles in use at FY 10-11 end ○ 21 vehicles in use at FY 11-12 <p>During FY 10-11, purchased two bicycles for Park and Public Works staff use between Park office and Administrative offices.</p>
<ul style="list-style-type: none"> • Provide facilities for employees, residents and visitors to charge electric cars at municipal sites. 	<p>During FY 14-15, staff to seek grant funding to install electric car charging stations at the Administrative Center, Pool Facility and Southwinds Park.</p>

OTHER

- Continue environmental practices of the Clean Marina Program.

Received Clean Marina designation for Plantation Yacht Harbor Marina in 2004. Five Year Clean Marina Award received in April 2009. Ten year Award received April 2014.

- Improve community awareness of environmental sustainability initiatives undertaken by the Village and encourage community involvement.

News box added to Village website in December 2008 includes Village sustainability initiatives and informational links is updated when new sustainable actions are implemented or new opportunities become available.

Community education program included in Solid Waste contract approved in October 2008.

Increased advertising, additional direct public relations presentations to school groups, community groups and the media to promote recycling are included in 2013 Request for Proposals for Solid Waste Services draft agreement.

In conjunction with implementation of mandatory commercial recycling, a new position - Sustainability Coordinator - may be recommended.

- Determine the feasibility of a Canal Restoration Program following the completion of the County's Keys-wide Canal Management Master Plan.

During FY 12-13, the Village Council committed up to \$100,000 toward canal restoration project expenditures.

During FY 12-13, the Village entered into an Agreement with a consultant to select a canal for a canal restoration demonstration project to begin during FY 13-14.

First canal restoration demonstration project implemented during FY 13-14.

- Implement a climate change adaptation plan.

During FY13-14, the Village entered into an Agreement with a consultant to create an adaptation action plan specific to Islamorada.

Environmental Sustainability Plan September 2015

Islamorada, Village of Islands

In order to contribute to a greener planet, the Village of Islamorada seeks to enact policies to reduce global warming pollution levels and provide economic and quality of life benefits such as reduced energy bills, green space preservation, air quality improvements and energy conservation.

The Environmental Sustainability Plan was implemented in September 2007 and is updated on an annual basis.

This document includes actions that are currently in place and goals/actions that have been identified to be investigated for future implementation. The document is intended to be utilized as a tool to review sustainability actions that have been achieved and to identify and prioritize goals that may be accomplished in the next year and future years.

This document is designed to be reviewed annually to add/remove/modify the goals, update the status of items that have been implemented and identify those items that could be considered for implementation during the following fiscal year.

Environmental Sustainability Goal/Action

Status

ENERGY

Include LEED energy certification components in plans for new Village building projects.	Included energy efficient fixtures and equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19). Administrative Center & Public Safety Headquarters is constructed with an energy efficient roof and energy efficient windows.
Include LEED energy certification components in plans for Village building renovations.	
Utilize energy efficient mechanical systems in building projects.	Included energy efficient equipment as practicable and cost effective for 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19). Administrative Center & Public Safety Headquarters was constructed with energy efficient air conditioning.

<p>Include energy saving standards in the BPAS scoring system.</p> <p>Encourage use of solar / photovoltaic systems by Islamorada property owners and investigate additional LEED energy certification standards for addition to the BPAS scoring system to promote increased energy savings in new development (i.e. solar hot water heating, "going off the FKEC grid").</p> <p>Keep room temperatures no lower than 74 degrees during business hours and turn thermostats up to 78 degrees during non-business hours in all Village Buildings with limited exceptions (i.e. areas housing computer server systems).</p> <p>Install motion-sensing, auto-off light switches where appropriate at Village owned buildings.</p>	<p>In place prior to September 2007.</p> <p>Adopted Resolution 08-12-07 in December 2008 to waive building permit fees for solar / photovoltaic system installation.</p> <p>Additional points for solar hot water heaters included in BPAS scoring system in October 2010.</p>
<p>Create and implement an Environmental Sustainability Policy for Village Employees ("Employee Policy").</p>	<p>Included in 9/26/08 Employee Policy update.</p>
<p>Establish an energy conservation program/policy for all Village offices and buildings to include turning off lights and equipment when not in use.</p>	<p>Motion-activated lighting installed in Marina Restroom Pavilion and in the Community Center restrooms.</p> <p>Motion-activated lighting installed in Administrative Center and Public Safety Headquarters building in areas other than hallways and partitioned areas.</p> <p>Retrofitting of Anne's Beach and Library Beach restroom lighting completed during FY 09-10.</p> <p>Employee Policy implemented 5/22/08, and is updated as new information becomes available.</p>
<p>As new equipment and appliances are required, procure energy efficient products that are ENERGY STAR® qualified or that are certified under the Federal Energy Management Program unless the products are shown not to be cost-effective on a life-cycle cost basis.</p>	<p>Implemented during FY 07-08 through the Employee Policy.</p>
<p>Require affordable housing projects receiving Village assistance to install ENERGY STAR® qualified appliances.</p>	<p>Implemented during FY 07-08 through the Employee Policy.</p> <p>Purchasing Policy and Procedure to be updated during FY 15-16.</p>
<p>Implement measures to reduce electrical requirements for pool temperature management.</p>	<p>To be addressed by resolution.</p> <p>Gorman & Company installed ENERGY STAR® qualified appliances in Wet Net Villas affordable rental development (began leasing in 2013).</p> <p>Pool cover installation completed October 2009.</p> <p>Phased replacement of old heat pumps with higher efficiency units began during FY 09-10 with the replacement of four of the eighteen heat pumps.</p> <p>Two additional heat pumps purchased during FY 10-11.</p>

	<p>Installation of propane flash heater to reduce run-time of heat pumps during cold weather installed FY 11-12.</p> <p>FY 13-14 budget includes the purchase of the final six pool heat pumps to replace the remainder of the original and older inefficient units.</p>
Replace Founders Park street lights with solar lighting.	Energy Efficiency and Conservation Block Grant retrofit of Founders Park Street lighting (and other lighting on Village-owned properties) to solar lighting completed during FY 11-12.
Utilize solar power to light "Welcome to Islamorada" signs at the north and south entrances to the Village.	In place prior to September 2007.
Manage Founders Park street lights for lowest possible energy use.	In place September 2007.
Utilize state of the industry standards/practices for Founders Park field lighting.	In place September 2007.
When possible, make arrangements for meetings to occur via conference call rather than having all participants drive to the meeting location.	Policy initiated August 2008 and included in updated Employee Policy.
Reduce overall electrical consumption for municipal offices and parks utilizing the methods listed in this section.	Reduced electrical consumption for municipal offices and parks by 11% during FY 08-09. Methods to reduce electrical consumption have continued.
Seek funding assistance for "ENERGY" goals / actions identified above as appropriate.	<p>During FY 09-10, staff worked with the County to apply for funding through the State of Florida American Recovery and Reinvestment program / Energy Efficiency and Conservation Block Grant program. Grant approved in July 2010; retrofit completed during FY 11-12.</p> <p>In June, 2015, staff submitted application for financial assistance to purchase additional cloth bags for <i>Got Your Bags? Florida Keys</i> initiative. Did not win grant award.</p>
Phase out incandescent lighting and update to LED lighting in all Village buildings and properties.	<p>By 2013, all incandescent lighting has been replaced in Village buildings with the exception of Green Turtle Hammock Park which is currently undergoing renovations by the non-profit Operator.</p> <p>Consideration of appropriate locations for LED lighting to be considered during FY 15-16.</p>

LAND

Maintain and expand healthy tree canopies over certain roadways to provide for greater shade to residential areas for energy savings and to promote groundwater absorption.	In place prior to September 2007 and ongoing.
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Coordinate with FDOT to re-sod US 1 highway rights-of-ways rather than placing compacted lime rock. The sod may need to be protected with hedge materials.

Consistently maintain a certified arborist as a Parks and Recreation or Public Works staff member to provide any necessary consultations or information for staff responsible for trimming, mowing and planting; provide regular training for all Public Works staff.

Replace asphalt with pervious pavers / pervious materials where possible on publicly held land.

Add rain barrels/cisterns to key properties to capture rainwater, allowing the water to be used for landscaping.

Revise right-of-way ordinance to ensure that swales are vegetated and kept free from debris and minimize traffic that would compact soils and reduce permeability.

Preserve properties from development through conservation easements and agreements with Monroe County and the State of Florida.

Work with schools, various community agencies and citizens' advisory committees for the planting of trees and greenery at Village parks and properties.

Rights-of-way on Plantation Key sodded by FDOT following 08-09 roadway improvement projects.

During FY 12-13 the Snake Creek Bridge to MM 87.3 FDOT US 1 beautification project was completed.

Staff member has certified arborist credentials.

To sustain native vegetation, Public Works staff receive ongoing training on invasive exotic recognition and removal techniques as well as herbicide and arborist training throughout the year.

FY 14-15 budget included new employment position of Environmental Resource Program Manager. Expertise provided by this staff member to be available to Public Works employees.

Pervious parking area (gravel) installed as part of Green Turtle Hammock improvements with grant funding during FY 10-11.

Cistern installed at Fire Station 19 during FY 07-08.

Revisions drafted during FY 11-12; to be proposed in amended ROW ordinance during FY 15-16.

Over 58 acres of property acquired prior to September 2007.

"Key Tree Cactus Preserve" (nine acres) acquired during FY 08-09 for conservation and recreation.

Three Plantation Key properties (approximately 1.5 acres) acquired for conservation during FY 13-14.

One Plantation Key property acquired for conservation during FY 14-15.

As of September 2015, a total of 65.3 acres of conservation property and 105 acres of Park property is owned by the Village.

Additional properties continue to be considered for conservation.

In place prior to September 2007 and ongoing.

Small projects are completed regularly and during FY 12-13, the Village's Landscape Advisory Committee worked in coordination with Public Works and the Florida Keys Electric Cooperative to complete a substantial planting project - 224 total plantings - at Plantation Tropical Preserve.

	Project to cultivate specialized native plants initiated through the Landscape Advisory Committee in May 2015. Plants to be utilized at Village properties.
Require businesses that use rights-of-way to plant or re-plant vegetation and trees.	Update of Chapter 50 of the Village Code to include a planting / restoration provision for use of right-of-way revisions drafted in FY 11-12 to be proposed in amended ROW ordinance during FY 15-16.
Work with utility companies to restore vegetation, including re-sodding and tree planting.	
Work with neighborhood associations with culs de sac or streets ending in water for potential planting ideas to install landscaping to improve barren areas.	Completed two cul de sac improvements with landscaping during FY 07-08. Two additional cul de sac improvements completed during FY 08-09.
Provide more shaded walkable/bikeable lanes and communal parking by utilizing concepts in the US Post Office / Townsite Supermarket proposed project as shown in the 2003 TSM Study for downtown Islamorada.	
Provide more shaded walkable/bikeable lanes by utilizing concepts in the Worldwide Sportsman Store / Islamorada Fish Company proposed project as shown in the 2003 TSM Study for downtown Islamorada.	
Provide more shaded walkable/bikeable lanes and communal parking Village-wide parking along US Highway 1 by utilizing concepts as shown in the 2003 TSM Study for downtown Islamorada.	

AIR QUALITY/CO2 REDUCTION

Identify locations to strategically plant native canopy trees that would provide ample shade with its canopy to cool temperatures and reduce air pollution. Plant six trees per year in public parks and rights-of-way.	In place prior to September 2007 and ongoing.
Require additional landscaping and buffers for projects requiring development orders.	In place prior to September 2007.

STORMWATER

Village's stormwater master plan completed in 2001 and transmitted to officials at FDOT and FDEP.	In place prior to September 2007.
Meet with FDOT on a regular basis to coordinate and review work	In place prior to September 2007 and ongoing.

performed by the FDOT.

Make requests to FDOT for improvement projects.

In place prior to September 2007 and requests are made annually.

Complete remainder of the paving and drainage improvements on Upper Matecumbe Key.

Construction completed during FY 08-09.

Utilize Stormwater Best Management Practices for drainage improvements.

In place prior to September 2007 and ongoing.

As part of the work to install driveway connections, swales, or similar method of stormwater management is currently required by Code.

Requirement included in the Village Code prior to September 2007.

WATER USE

Low flow plumbing fixtures are in place in the Founders Park pool complex and Fire Station 20.

In place prior to September 2007.

LEED certification components (i.e. waterless toilets) could be utilized for additional water savings in new municipal building projects.

Included low pressure faucets, shower fixtures and minimum volume toilets wherever practicable in 2007 building projects (Community Center, Restroom Pavilion and Fire Station 19), to reduce water use and expenditures.

Low flow (0.5 gallons per minute) sensor operated faucets in restrooms and a low flow (1.0 gallons per flush) urinal installed during construction of Administrative Center & Public Safety Headquarters.

Utilize the minimum level of water necessary for Founders Park fields and landscaping to be properly maintained for use and for the pool and other facilities to function properly.

In place September 2007.

Include water savings standards in the BPAS scoring system.

In place prior to September 2007.

Investigate additional LEED certification standards for BPAS scoring system.

Additional LEED certifications standards considered; will not be included in BPAS scoring system due to difficulty with implementation.

Install pool cover at Founders Park pool (for an estimated reduction of 10 to 20% water usage for the pool).

Pool cover installation completed October 2009.

Utilize native plants at Village project sites.

Only native plants were utilized in landscaping installed during FY 09-10 for the Administrative Center and Public Safety Headquarters resulting in no landscape irrigation.

Site specific native vegetation to be installed at all of the proposed wastewater pump station sites to be constructed beginning 2013.

Wet Net Villas affordable rental housing project to be complete in 2013 will include native plants and low-water plants, resulting in no irrigation requirements.

WASTE

Create and post additional recycling information on website.	Information regarding recycling and environmental sustainability posted in new section of website beginning December 2008 and updated as new recycling opportunities become available.
Provide recycling bins up at public parks in Village.	Recycling pick-up and disposal services for parks included the solid waste contract beginning FY 08-09. Mixed recycling/trash containers purchased and installed Village-wide during FY 09-10.
Include alternatives for recycling in solid waste contract.	Beginning October 2008, solid waste contract includes additional residential and commercial recycling and initiatives. Solid Waste contractor added the collection of electronics for recycling during FY 09-10. 2013-2018 Solid Waste Services Agreement requires the Contractor to implement mandatory recycling for commercial customers-following adoption of a mandatory recycling ordinance.
Improve collection and proper disposal of hazardous waste materials.	2013-2018 Solid Waste Services Agreement increased Household Hazardous Waste Collection days to four per year and included requirement for Contractor to provide for used motor oil collection.
Establish a recycling program at all Village facilities and encourage recycling by all residents, staff and visitors.	In place September 2007 and included in Employee Policy.
Require Village staff to print and copy double-sided when possible.	In place September 2007 and included in Employee Policy.
Require Village staff to utilize electronic documents rather than printed documents when appropriate.	In place September 2007 and included in Employee Policy.
Distribute Village meeting packets electronically or as double-sided prints when appropriate.	Began making double-sided prints for Council agenda packets in September 2007. Paperless agenda preparation process was implemented in July 2011. Paper copies of the agenda provided to the public on request only beginning September 2011.

Utilize trash bags made of recycled material at Village Parks and Village properties.	Transition to paperless agenda use by Council tested during FY11-12. Will identify more suitable devices for paperless agendas in the future. Implemented April 2008.
Utilize trash bags made of recycled material in Village Office Buildings.	Implemented June 2008.
Include a requirement in the <i>Village-owned Parks Special Events Policy</i> for mandatory recycling at events at Village parks.	Implemented June 2008.
Include a condition in the temporary use permit application for mandatory recycling at permitted events.	Implemented June 2008.
Encourage recycling at Vacation Rental properties.	Beginning August 2010, recycling information provided with license as well as information to assist renters with contacting the Solid Waste provider for delivery of additional recycling containers. During FY 14-15, improved measures to promote recycling with increased communication during registration renewals and laminated flyers encouraging recycling for posting at vacation rental properties.
Promote voluntary use of reusable bags by businesses in Islamorada and residents.	Bags purchased FY 13-14 to begin promoting voluntary use of reusable bags through <i>Got Your Bags</i> program. Efforts expanded during FY 14-15 to include outreach to retailers.

TRANSPORTATION / FUEL

Develop a Bicycle/Pedestrian Transportation Master Plan (Comprehensive Plan Policy 2-1.5.1).	Plan adopted October 2007.
Coordinate with FDOT to pave or sod specific areas along bike path within FDOT right-of-way to minimize impact to bike lanes from highway traffic.	Sodding completed on Plantation Key during FY 08-09 as part of FDOT construction projects. Sodding completed on Lower Matecumbe Key during FY 08-09 as part of FDOT construction projects. FDOT projects for Upper Matecumbe Key and Windley Key are on future years plan. FY 11-12 sod installation included area adjacent to bike trail at MM 80.5, along southbound lane of Tea Table and adjacent to the northern section of bike trail on Lower Matecumbe Key.

Purchase or lease vehicles with the highest fuel efficiency that are appropriate for the assigned task.	\$50,000 budgeted for Capital Replacement Fund to begin replacement of inefficient fleet vehicles in FY 08-09 and FY 09-10. Funds will be appropriated annually. First hybrid vehicle purchased in May 2009.
Auction retired Sheriff's Department vehicles and other vehicles that are not fuel efficient for Village tasks.	Auctioned six inefficient fleet vehicles in March 2009. Auctioned 17 inefficient fleet vehicles in 2011. Auctioned six inefficient fleet vehicles in 2014.
Have extremely inefficient vehicles destroyed for scrap to permanently remove them from the roadways.	In 2012, two inefficient fleet vehicles were removed from fleet for destruction (utilized for fire rescue training).
Implement anti-idling policy throughout all Village departments.	In place September 2007.
Encourage Village staff to carpool, rideshare, bike or walk to work, as appropriate.	Implemented during FY 07-08 through the Employee Policy.
Reduce vehicle usage; utilize pool vehicles rather than individual vehicles when practicable.	Reduced municipal vehicle fleet by four vehicles during FY 08-09. Continued practice of lowest possible number of fleet vehicles in use o 19 vehicles in use at FY 10-11 end o 21 vehicles in use at FY 11-12 During FY 10-11, purchased two bicycles for Park and Public Works staff use between Park office and Administrative offices.
Provide facilities for employees, residents and visitors to charge electric cars at municipal sites.	During FY 14-15, staff to seek grant funding to install electric car charging stations at the Administrative Center, Pool Facility and Southwinds Park. Grant funding not obtained during FY 14-15, will continue to seek funding. During FY 15-16, Code amendments to be drafted to provide regulations for electric vehicle charging facilities.

WATER QUALITY

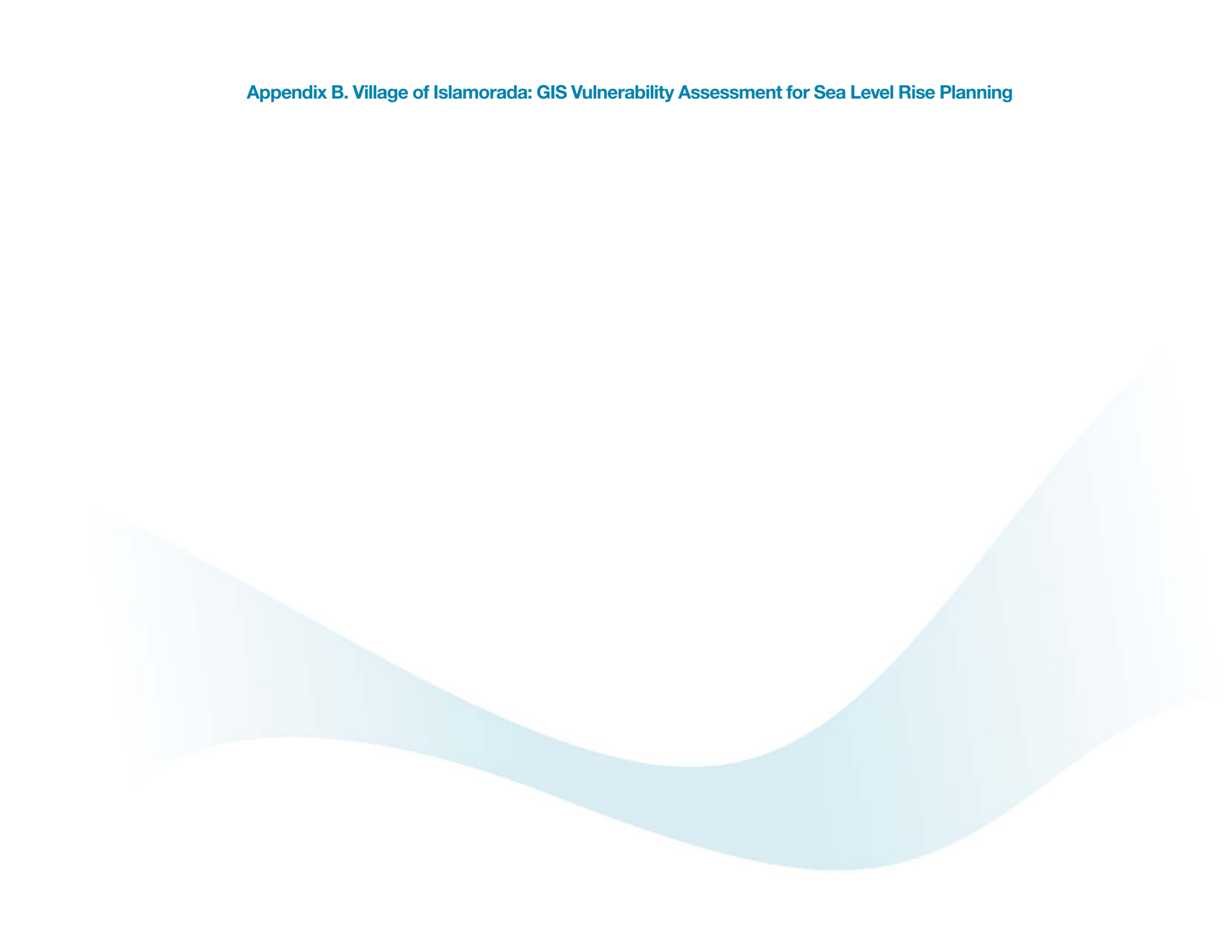
Continue environmental practices of the Clean Marina Program.	Received Clean Marina designation for Plantation Yacht Harbor Marina in 2004. Five Year Clean Marina Award received in April 2009. Ten year Award received April 2014.
Determine the feasibility of a Canal Restoration Program following the completion of the County's Keys-wide Canal Management Master Plan.	During FY 12-13, the Village Council committed up to \$100,000 toward canal restoration project expenditures and the Village joined the FKMS WQPP Canal Restoration Subcommittee to participate in the County-wide restoration demonstration project to address water quality issues in residential canals.

	<p>In October 2013, an engineering consultant was retained and completed a work plan ranking ten of the poor quality canals initially targeted within the Village for restoration during the entire demonstration project. This plan serves as a “shovel-ready” template for future projects as funding is available.</p> <p>First canal restoration demonstration project implemented during FY 13-14 was completed and installed in November 2014.</p>
Complete Village-wide wastewater collection and transmission system	Village-wide wastewater collection and transmission system to be completed by the end of calendar year 2015.

OTHER

<p>Improve community awareness of environmental sustainability initiatives undertaken by the Village and encourage community involvement.</p>	<p>News box added to Village website in December 2008 includes Village sustainability initiatives and informational links is updated when new sustainable actions are implemented or new opportunities become available.</p> <p>Community education program included in Solid Waste contract approved in October 2008.</p> <p>Increased advertising, additional direct public relations presentations to school groups, community groups and the media to promote recycling are included in 2013 Request for Proposals for Solid Waste Services draft agreement.</p> <p>In conjunction with implementation of mandatory commercial recycling, a new position - Sustainability Coordinator - may be recommended.</p>
Implement a climate change adaptation plan.	<p>During FY 13-14, the Village entered into an Agreement with a consultant to create an adaptation (sea level rise) action plan specific to Islamorada.</p> <p>Climate adaptation action plan, <i>IslamoradaMatters</i> to be completed November 2015. Additional environmental sustainability measures and initiatives identified in <i>IslamoradaMatters</i> will be incorporated into this document.</p>

Appendix B. Village of Islamorada: GIS Vulnerability Assessment for Sea Level Rise Planning



Village of Islamorada: GIS Vulnerability Assessment for Sea Level Rise Planning



September 17, 2015

Final Report for Village of Islamorada

86800 Overseas Highway

Islamorada, FL 33037

Author: Jason M. Evans, PhD

Project Manager: Erin L. Deady, P.A.

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Village of Islamorada: GIS Vulnerability Assessment for Sea Level Rise Planning

Final Report for Village of Islamorada

86800 Overseas Highway

Islamorada, FL 33037

September 17, 2015

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Village of Islamorada: GIS Vulnerability Assessment for Sea Level Rise Planning

A key component of the Islamorada Matters planning process was to perform a vulnerability assessment for sea level rise scenarios in the years 2030 and 2060. This vulnerability assessment included an evaluation of ground elevation relative to current and future tidewater heights for roads, public buildings, and other critical infrastructure (e.g., wastewater facilities, water supply facilities, and electric utility substations). Assessments of land cover change and habitat vulnerability to sea level rise were also performed using the Sea Level Affecting Marshes Model (SLAMM) and a tidewater inundation approach. This Appendix provides a technical explanation of the datasets, modeling procedures, and results of this vulnerability assessment.

Sea Level Rise Scenarios

The Southeast Florida Regional Climate Change Compact (2011) developed a series of sea level rise scenarios recommended for use in vulnerability assessments conducted by local governments in Monroe, Miami-Dade, Broward, and Palm Beach counties. Using a baseline year of 2010, Southeast Florida Regional Climate Change Compact (2011) recommended a 2030 sea level rise planning scenario of 3 inches and a maximum 2030 sea level rise scenario of 7 inches. By 2060 the recommended minimum sea level rise scenario is 9 inches, while the maximum sea level rise scenario is 24 inches.

The Southeast Florida Regional Climate Change Compact (2011) sea level rise scenarios are based upon the low and high Modified Natural Research Center (1987) quadratic sea level rise equations, as more recently described by the US Army Corps of Engineers (2011).

The quadratic sea level rise equation, based upon a unit measure of inches, is defined as:

$$E(t) = at + bt^2; \text{ where}$$

$$E(t) = \text{sea level rise (in) in year } t$$

$$t = \text{years since 1992 (yr)}$$

a = historic local sea level rise trend in inches per year (in/yr), as determined from a tide gauge record; for SE Florida, $a = 0.0913$ (in/yr) based on the Key West tide gauge record.

b = sea level rise acceleration coefficient (in/yr²); for low scenario, $b_{low} = .001067$; for high scenario, $b_{high} = .004449$

The low sea level rise curve ($b = .001067$) implies a gradual acceleration of sea level rise over the next several decades, primarily due to thermal expansion (i.e., ocean warming) and polar ice sheet melt rates similar to what has been observed over the last fifty years. The low sea level rise curve recognizes the contributions of anthropogenic global warming and climate change to sea

level rise, but generally assumes that global greenhouse gas emissions will slow and/or that near-term climate sensitivity to greenhouse gases is low.

The high sea level rise curve ($b = .004449$), by contrast, implies a rapid acceleration of sea level rise over the next several decades due to more rapid thermal expansion of ocean water and accelerated melting of ice sheets in Greenland and West Antarctica. The high sea level rise curve assumes that global greenhouse gas emissions continue to grow and that near-term climate sensitivity to greenhouse gases is high.

We do note that governmental reports and published literature indicate a wider range of sea level rise scenarios than those developed by the Southeast Florida Regional Climate Change Compact (2011). For example, the National Climate Assessment (Parris et al. 2012) contains scenarios of “Lowest” and “Highest” sea level rise that are both outside of the scenario window adopted by the Southeast Florida Regional Climate Change Compact (2011). The “Lowest” scenario from the National Climate Assessment (Parris et al. 2012) assumes a continuation of a simple linear trend for global sea level rise (0.075 in/yr) as based upon a simple regression of historic tide gauge data. Translated into a 2010 baseline, this “Lowest” scenario would equate to approximately 1.5 inches of sea level rise by 2030 and 3.75 inches by 2060 at a global level. Using the slightly higher linear trend from the Key West tide gauge (0.0913 in/yr), this linear trend would be approximately 1.8 inches by 2030 and 4.6 inches by 2060. The “Highest” scenario from the National Climate Assessment (Parris et al. 2012) assumes the onset of catastrophic ice sheet melt that would raise sea levels at Key West by 9 inches at 2030 and 31 inches by 2060. However, it is generally recommended that the lowest sea level rise scenario only be used as a minimum standard for relatively low value projects with high risk tolerance (e.g., work sheds), while the highest sea level rise scenario is most appropriate for extremely high value projects with very little risk tolerance (e.g., nuclear power plants).

Sea Level Rise Calculations

The base planning year, or the assumed zero elevation point, for sea level rise under the Southeast Florida Regional Climate Change Compact (2011) scenarios was 2010. Consistency with the US Army Corps of Engineers (2011) sea level rise curves requires establishment of unique zero points for the low and high scenarios curves at the year 2010. This is accomplished by calculating sea level rise with the quadratic function using the t value associated with the original 1992 tidal reference period, and then differentially adjusting this value to a 2010 sea level based on the calculated sea level rise between 1992 and 2010.

For the low sea level rise scenario, the calculated sea level rise between 1992 and 2010 ($E(t)_{Low2010}$) using the quadratic sea level rise curve is approximately 2 inches:

$$E(t)_{Low2010} = (.0913*(2010-1992)) + (.001067*(2010-1992)^2)$$

$$E(t)_{Low2010} = (.0913*18) + (.001067*18^2)$$

$$E(t)_{Low2010} = 1.989 \text{ inches (or } \sim 2 \text{ inches)}$$

To obtain the Southeast Florida Regional Climate Change Compact (2011) low sea level rise value for 2030 from a 2010 baseline ($E(t)_{LowCompact2030}$), the assumed sea level rise of 2 inches between 1992 and 2010 is then subtracted from the quadratic sea level rise calculated for the period between 1992 and 2030 ($E(t)_{Low2030}$):

$$E(t)_{Low2030} = (.0913*(2030-1992)) + (.001067*(2030-1992)^2)$$

$$E(t)_{Low2030} = (.0913*38) + (.001067*38^2)$$

$$E(t)_{Low2030} = 5.0101 \text{ inches (or } \sim 5 \text{ inches)}$$

$$E(t)_{LowCompact2030} = E(t)_{Low2030} - E(t)_{Low2010}$$

$$E(t)_{LowCompact2030} = (5 \text{ inches}) - (2 \text{ inches})$$

$$E(t)_{LowCompact2030} = 3 \text{ inches}$$

To obtain the Southeast Florida Regional Climate Change Compact (2011) low sea level rise value for 2060 from a 2010 baseline ($E(t)_{LowCompact2030}$), the assumed sea level rise of 2 inches between 1992 and 2010 is similarly subtracted from the quadratic sea level rise calculated for the period between 1992 and 2060 ($E(t)_{Low2060}$):

$$E(t)_{Low2060} = (.0913*(2060-1992)) + (.001067*(2060-1992)^2)$$

$$E(t)_{Low2060} = (.0913*68) + (.001067*68^2)$$

$$E(t)_{Low2060} = 11.142 \text{ inches (or } \sim 11 \text{ inches)}$$

$$E(t)_{LowCompact2060} = E(t)_{Low2060} - E(t)_{Low2010}$$

$$E(t)_{LowCompact2060} = (11 \text{ inches}) - (2 \text{ inches})$$

$$E(t)_{LowCompact2060} = 9 \text{ inches}$$

High sea level rise calculation

For the high sea level rise scenario, the calculated sea level rise between 1992 and 2010 ($E(t)_{Low2010}$) using the quadratic sea level rise curve is approximately 3 inches:

$$E(t)_{High2010} = (.0913*(2010-1992)) + (.004449*(2010-1992)^2)$$

$$E(t)_{High2010} = (.0913*18) + (.004449*18^2)$$

$$E(t)_{High2010} = 3.08 \text{ inches (or } \sim 3 \text{ inches)}$$

To obtain the Southeast Florida Regional Climate Change Compact (2011) high sea level rise value for 2030 from a 2010 baseline ($E(t)_{LowCompact2030}$), the assumed sea level rise of 3 inches between 1992 and 2010 is then subtracted from the quadratic sea level rise calculated for the period between 1992 and 2030 ($E(t)_{Low2030}$):

$$E(t)_{High2030} = (.0913*(2030-1992)) + (.004449*(2030-1992)^2)$$

$$E(t)_{High2030} = (.0913*38) + (.004449*38^2)$$

$$E(t)_{High2030} = 9.89 \text{ inches (or } \sim 10 \text{ inches)}$$

$$E(t)_{HighCompact2030} = E(t)_{High2030} - E(t)_{High2010}$$

$$E(t)_{HighCompact2030} = (10 \text{ inches}) - (3 \text{ inches})$$

$$E(t)_{HighCompact2030} = 7 \text{ inches}$$

To obtain the Southeast Florida Regional Climate Change Compact (2011) low sea level rise value for 2060 from a 2010 baseline ($E(t)_{LowCompact2030}$), the assumed sea level rise of 2 inches between 1992 and 2010 is similarly subtracted from the quadratic sea level rise calculated for the period between 1992 and 2060 ($E(t)_{Low2060}$):

$$E(t)_{High2060} = (.0913*(2060-1992)) + (.004449*(2060-1992)^2)$$

$$E(t)_{High2060} = (.0913*68) + (.004449*68^2)$$

$$E(t)_{High2060} = 26.78 \text{ inches (or } \sim 27 \text{ inches)}$$

$$E(t)_{HighCompact2060} = E(t)_{High2060} - E(t)_{High2010}$$

$$E(t)_{HighCompact2060} = (27 \text{ inches}) - (3 \text{ inches})$$

$$E(t)_{HighCompact2060} = 24 \text{ inches}$$

Dataset Inventory

The first step in developing the sea level rise vulnerability assessment was compilation of existing geo-spatial and tabular datasets. The list of original datasets used for the sea level rise vulnerability assessment in the Village of Islamorada is provided in Table 1.

Table 1: Dataset Inventory

Original Dataset Description	Original File Name	Source
LIDAR Digital Elevation Model (Raster)	FLLIDAR_MOSAIC_FT.gdb	UF GeoPlan (2013a)
Property parcels (Vector polygon)	PARCEL_PUBLIC.shp	Monroe County Property Appraiser
Monroe County sections (Vector polygon)	SECPOLY.shp	Monroe County Property Appraiser
Aerial photography (MrSID imagery)	20-1 MrSID Compressions (Folder)	Monroe County Property Appraiser
Land cover and habitats (Vector polygon)	Land_Cover_Habitat.shp	Monroe County GIS
Road centerlines (Vector polyline)	CENTERLINES.shp	Monroe County Property Appraiser
FDOT road centerlines (Vector polyline)	Original_Infrastructure_Layers.gdb	UF GeoPlan (2013b)
Critical facilities (Vector point)	Critical_Facilities.shp	Monroe County GIS
Parcels with county facilities (Vector polygon)	County_Buildings.shp	Monroe County GIS
Government buildings (Vector point)	gc_govbuild_feb13.shp	UF GeoPlan (2013c)
Correctional facilities (Vector point)	gc_correctional_feb13.shp	UF GeoPlan (2013d)
Law enforcement (Vector point)	gc_lawenforce_dec12.shp	UF GeoPlan (2013e)
Schools (Vector point)	gc_schools_may12.shp	UF GeoPlan (2012)
Village of Islamorada critical facilities (Excel spreadsheet)	Facilities_List.xlsx	Village of Islamorada

LIDAR Digital Elevation Model (DEM)

In 2007-2008 the Florida Division of Emergency Management collected raw elevation point cloud data throughout Southeast Florida using airborne LIDAR (light detection and ranging) technology (original specifications for this project are described by FDEM 2009). Bare earth

accuracy of the LIDAR point cloud was reported at +/- 0.6 feet at the 95% confidence level (FDEM 2009), or a root mean square error of 0.3 feet. Using this LIDAR point data, the University of Florida's GeoPlan Center (2013a) constructed a ground surface digital elevation model (DEM; File Name = FLIDAR_MOSAIC_FT) at a horizontal cell size resolution of 5 meters (~16 feet). The original vertical datum of the UF GeoPlan LIDAR DEM is in NAVD88 and the original projection is in Albers Equal Area Conic HARN.

To facilitate efficient use of the dataset for advanced geoprocessing operations required for vulnerability assessments in Monroe County, the original UF GeoPlan LIDAR DEM was clipped to only contain the geography of the Florida Keys (i.e., the island chain from Key Largo to Key West) portion of Monroe County. This clipped DEM was named UF_LIDAR.

The presence of buildings and heavy vegetation cover poses inherent challenges in gathering raw ground elevation data using aerial LIDAR technology. For this reason, the UF GeoPlan Center (2013) DEM was originally processed such that buildings and other areas lacking ground return values were assigned a "null," or unknown, ground elevation. This technique of assigning null values to raster cells with non-ground LIDAR returns is a standard process for development of base DEM layers (Dehvari and Heck 2012). Because assessment of potential flood vulnerability to buildings is a key goal of a sea level rise vulnerability assessment, it is necessary to apply geographical interpolation techniques that replace null values with a continuous estimate of ground elevations near and underneath structures.

For this project we utilized Inverse Distance Weighting (IDW) to interpolate, or quantitatively estimate using known ground elevation data from adjacent areas, ground elevation values for all cells defined as "null" within the Florida Keys. The IDW method is a standard procedure used for such applications (Aguilar et al. 2010; Achilleos 2011). The following workflow in ArcGIS10.1 was used to perform this interpolation:

- 1. Raster to Point.** Input raster: UF_LIDAR; Output point feature: UF_LIDAR_Points.
Purpose: Convert raster grid cells to point features
- 2. Inverse Distance Weighting.** Input point features: UF_LIDAR_Points; Z Value Field: GridCode; Output raster: IDW_LIDAR; Output cell size: 5 meters; Power: 2; Search Radius Setting, Number of Points: 12.
Purpose: Interpolate point values to continuous DEM
- 3. Clip Raster.** Input Raster: IDW_LIDAR; Output extent: SecPoly (Monroe County Sections); Use Input Feature for Clipping Geometry (checked); Output Raster Dataset: MC_LIDAR
Purpose: Restrict interpolated DEM coverage to the geography covered by Monroe County property appraiser records within the Florida Keys, thus reducing file size for geoprocessing operations

The interpolated LIDAR DEM for Monroe County (File Name = MC_LIDAR) as referenced to NAVD88 was used as the basis for further geoprocessing to develop a DEM suitable for sea level rise and tidal flooding vulnerability assessments.

Mean Higher High Water (MHHW) Surface

Modeling of future sea level rise impacts is typically conducted using a local Mean Higher High Water (MHHW) tidal datum. The definition of MHHW is the average height of the highest high tide observed each day at a given location relative to an orthometric datum, usually NAVD88. Complex geomorphological, bathymetric, and climatological factors, particularly wind speed and direction, are known to produce significant differences in MHHW height across the Florida Keys. For example, the height of MHHW differs by 1.5 feet across the entire Florida Keys island chain, and can differ as much as one foot between the Atlantic Ocean and Florida Bay sides of the Upper Keys.

Due to these known datum issues, the Southeast Florida Regional Climate Change Compact (2012) has recommended that all sea level rise analyses conducted in Southeast Florida perform regional transformations of the MHHW surface as compared to NAVD88. NOAA has developed a free software program called VDatum for the specific purpose of transforming DEM values between different orthometric and tidal datums (NOAA 2014). The VDatum transformations are based upon comparative analysis of tide heights relative to orthometric datums across numerous permanent and temporary tide gauges across the coastal U.S. The technical basis for the most recent VDatum transformations in the Florida Keys is described in detail by Yang et al. (2012).

Following the recommendations of the Southeast Florida Regional Climate Change Compact (2012), we developed a VDatum transformation surface from NAVD88 to MHHW for the entire Florida Keys portion of Monroe County. This surface was developed by first transforming all raster cells within the interpolated LIDAR DEM (File Name = MC_LIDAR) into a value of zero, which has the function of making all cells correspond to the NAVD88 datum (File Name = MASKNAVD). The MASKNAVD file was then loaded into VDatum to perform a transformation surface from NAVD88 to MHHW (Figure 1). This transformation surface file was renamed KEYSVDTM.

The geography of the VDatum transformation from NAVD88 to MHHW is based upon tidal readings and does not extend to all upland areas where tidal incursion is infrequent. Because the purpose of a sea level rise vulnerability assessment is to project where future tides may penetrate into areas currently not affected by tidal inundation, it was necessary to interpolate the MHHW elevation surface (KEYSVDTM) onto all upland areas area covered by the vulnerability assessment. Following the technical procedures outlined by the Southeast Florida Regional Climate Change Compact (2012), we applied an IDW procedure similar to the one described above for the revised LIDAR DEM to develop an interpolated MHHW surface relative to NAVD88 across all upland areas of Monroe County.

1. **Raster to Point.** Input raster: KEYSVDTM; Output point feature: KEYSVDTM.
Purpose: Convert raster grid cells to point features
2. **Inverse Distance Weighting.** Input point features: KEYSVDTM; Z Value Field: GridCode; Output raster: IDW_VDTM; Output cell size: 5 meters; Power: 2; Search Radius Setting, Number of Points: 12.
Purpose: Interpolate point values to continuous correction surface
3. **Clip Raster.** Input Raster: IDW_VDTM; Output extent: SecPoly (Monroe County Sections); Use Input Feature for Clipping Geometry (checked); Output Raster Dataset: MC_VDATUM

A final GIS processing step was then employed to adjust the MC_LIDAR DEM from the NAVD88 orthometric datum to a local tidal datum based upon MHHW. This step utilized the Raster Calculator function in ArcGIS10.1 to add the NAVD to MHHW correction surface to the Monroe County LIDAR DEM (Raster Calculator script: “MC_LIDAR” + “MC_VDATUM”). This final MHHW-based LIDAR DEM (File name = MHHW_DEM), as shown in Figures 2a-2f for the Village of Islamorada, provides the basis for the sea level rise flooding and inundation vulnerability assessments described through the remainder of this document.

Figure 1: NOAA VDatum 3.4 software NAVD88 to MHHW transformation.

The screenshot displays the NOAA's Vertical Datum Transformation - v3.4 software window. The interface is divided into several sections:

- Horizontal Information:** Contains fields for Source and Target Datum, Coordinate System, Unit, and Zone. Both Source and Target are set to "NAD83(2011/2007/CORS96/HARN) - North Am..." and the Coordinate System is "Geographic (Longitude, Latitude)".
- Vertical Information:** A checkbox labeled "Vertical Information" is checked. It contains fields for Source and Target Datum, Unit, and options for Height or Sounding. Source Datum is "NAVD 88", Target Datum is "MHHW", and both Units are "foot (U.S. Survey) (US_ft)". The "Height" radio button is selected for both.
- File Conversion:** This section is active and shows the "File type" as "ESRI ASCII Raster Format". It includes checkboxes for "Use VDatum's Source Georeferencing Setup (above)" (selected) and "Use Source File(s) Built-in Georeferencing Setup". The "File name(s)" field is "C:\Users\jevans1\Documents\Keys\02_Vdatum\masknavd.asc" and the "Save as:" field is "C:\Users\jevans1\Documents\Keys\02_Vdatum\result". There is also an unchecked checkbox for "Excluding NODATA points (points with coords. = -999999)".

A "Convert" button is located at the bottom right of the File Conversion section.

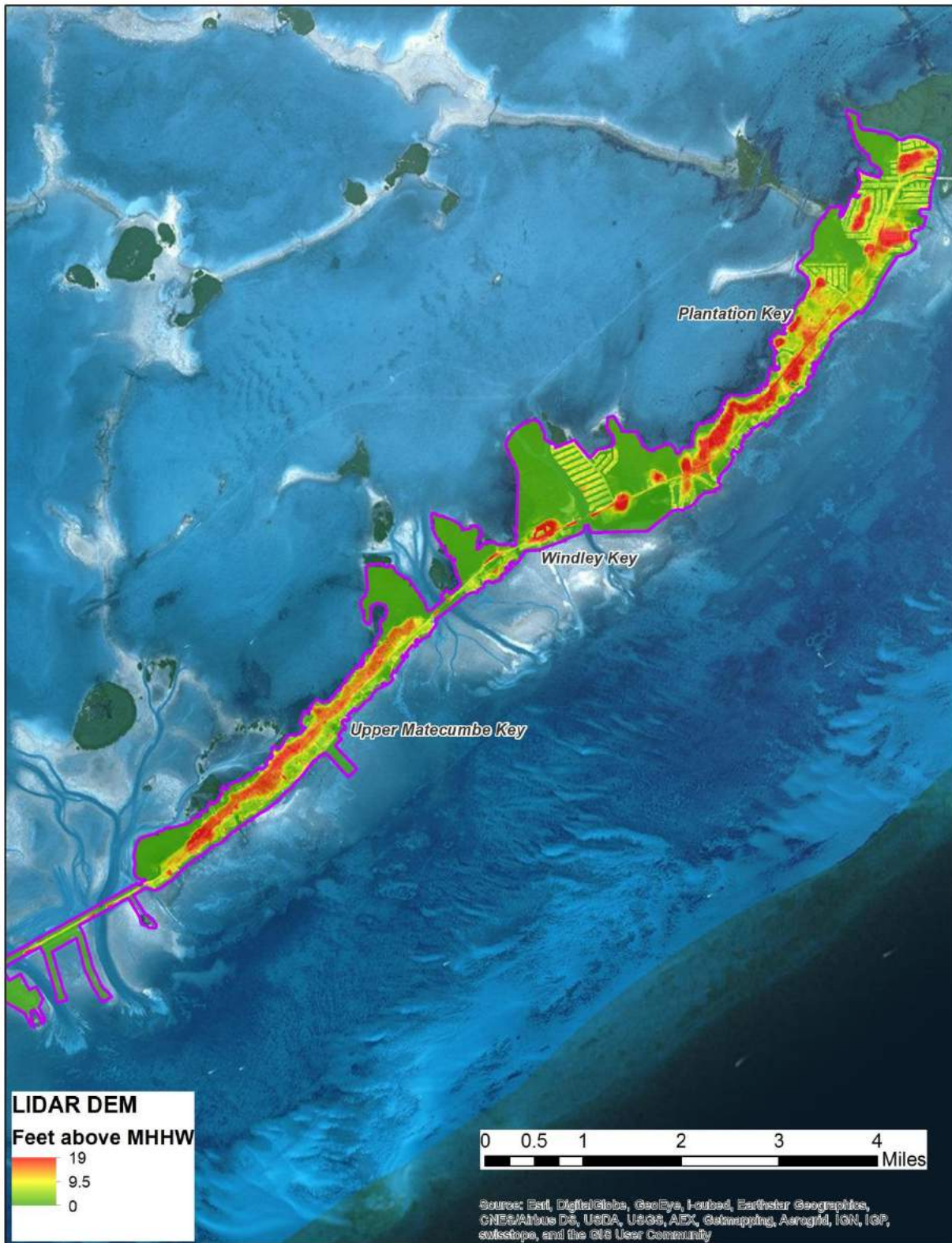


Figure 2a. MHHW Digital Elevation Model, Plantation Key to Upper Matecumbe Key.

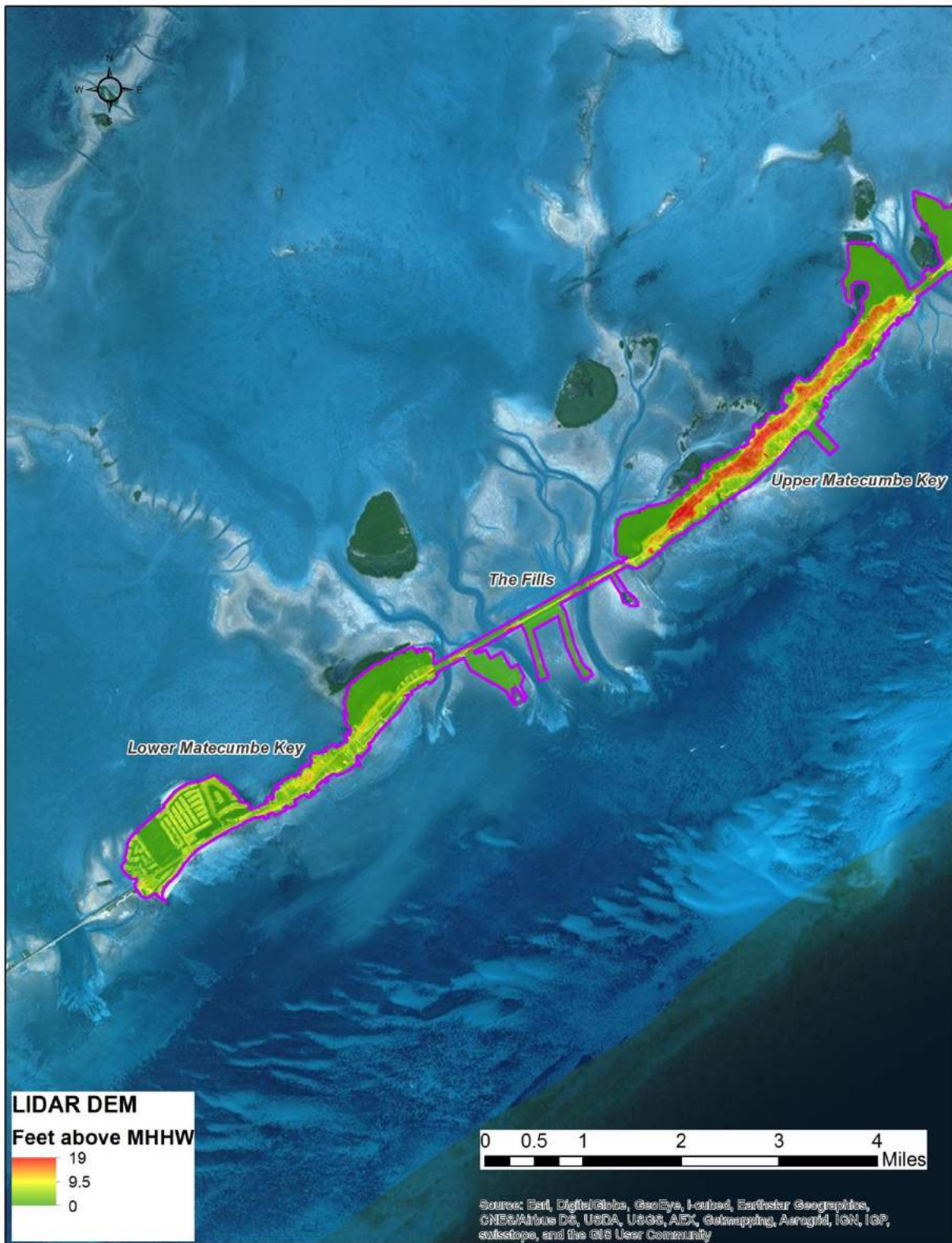


Figure 2b. MHHW Digital Elevation Model, Upper Matecumbe Key to **Lower Matecumbe Key**

Tide Gauge Analysis

NOAA (2015a) maintains a permanent tide gauge installation on the Florida Bay side of Vaca Key (Figure 3). This tide gauge has collected a long-term record of tide heights since 1970 and is the closest permanent tide gauge to the Village of Islamorada. The long-term sea level rise trend across the Vaca Key tide gauge record amounts to 1.10 feet, or 13.2 inches, if extrapolated across a 100-year period.

A recent NOAA report (Sweet et al. 2014) describes how sea level rise is already resulting in increased occurrences of “minor” tidal flooding of streets, yards, and low-lying areas throughout the U.S. Such minor flooding events are often referred to as “nuisance floods,” as they typically are associated with little or no permanent damage to human assets and recede quickly with the outgoing tide. Two typical consequences of nuisance flooding are temporarily slowed or stopped traffic flow through low-lying roads and damage to saltwater intolerant landscaping plants in low-lying yards. However, it is well-known that nuisance tidal flood events can also lead to temporary, but sometimes significant, loss of stormwater drainage potential. For this reason, co-occurrence of heavy rainfall events with a nuisance tidal flood may be expected to result in more severe and potentially damaging floods.

In Monroe County, the nuisance tidal flooding threshold is defined as a tide that reaches 1.08 feet above MHHW (Sweet et al. 2014). Such high tides may occur unpredictably due to storm or high wind conditions, or more predictably due to the confluence of lunar and solar gravitational forces that naturally increase tidal height. For example, the highest tidal amplitudes of each month, often referred to as “spring tides,” generally occur on and near the days of full moons and new moons. We note that term spring tide does not relate to the season of spring (i.e., spring tides occur in all seasons), but instead is derived from an image of a tide that “springs forth” (see, for example, <http://oceanservice.noaa.gov/facts/springtide.html>). The colloquial term of “king tide” is often used to describe the highest spring tide of each year. In the Florida Keys, a king tide most often occurs during spring tides in October and November, but may also occur in other months due to natural celestial and climatological factors.

Assessment of the Vaca Key tide gauge from 2010-2014 indicates that the 1.08 feet above MHHW threshold is currently being exceeded approximately four times per year. The highest tide height, as referenced to MHHW, over the 2010-2014 period was 1.67 feet on October 30, 2012, and the seven highest tides (ranging from 1.39 feet – 1.67 feet above MHHW) from 2010-2014 all occurred over a 5-day span covering October 26 – October 30, 2012. The direct cause for this extended series of high tide events was a period of strong (often exceeding 20 knots) sustained winds from the west-northwest that had the effect of abnormally raising water heights on the Florida Bay side of the Florida Keys. The highest tidal water height recorded at Vaca Key is 5.79 feet above MHHW, which occurred on October 24, 2005 as a storm surge associated with Hurricane Wilma.



Figure 3: NOAA Tide Gauge at Vaca Key, FL. Image obtained from <http://tidesandcurrents.noaa.gov/stationphotos.html?id=8723970#>.

Based upon this record and NOAA guidance, we applied three sea level rise flood exposure thresholds for infrastructure in the Village of Islamorada: 1) extreme event flooding, which occurs at elevations less than 6 feet above MHHW (i.e., an event on the order of Hurricane Wilma), as referenced to the current tidal epoch base year of 1992; 2) nuisance flooding, which may be expected to occur at elevations less than or equal to 1.08 feet above MHHW (i.e., the 1% tidal flood height); and 3) inundation flooding, which occurs at elevations less than MHHW. These values are summarized in Table 2.

Table 2: Tidal Flooding Thresholds. All elevation values are as feet above MHHW, as referenced to the 1983-2001 National Tidal Datum Epoch. All areas with elevations less than the listed value are assumed to have vulnerability to the respective flooding category under each sea level rise scenario.

Flood threshold	Sea Level Rise			
	2030 – Low (3 inches)	2030 – High (7 inches)	2060 – Low (9 inches)	2060 – High (24 inches)
Inundation	0.42'	0.83'	0.92'	2.25'
Nuisance	1.50'	1.91'	2.00'	3.33'
Extreme	6.42'	6.83'	6.92'	8.25'

LIDAR-Based Flood Elevation Thresholds

Due to the porous limestone bedrock and sandy soils within the Village of Islamorada, it may be conservatively assumed that groundwater height will equilibrate to tidewater height, thus producing saltwater flood conditions for areas at or below high tide elevations. However, statistical uncertainties in both aerial LIDAR data used to develop the DEM and in the MHHW VDatum transformation place inherent limits on the ability to project the occurrence of future tidal flood conditions at specific locations.

In recognition of these issues, the Southeast Florida Regional Climate Change Compact (2012) presents a methodology that takes into account the statistical uncertainties in both the aerial LIDAR and MHHW VDatum transformation surface to produce two categories of future flood risk from sea level rise. The first category is “Possible” future flooding under a given sea level rise scenario. The “Possible” category is defined as a 25% - 75% probability of flooding. The second category is “Likely” future flooding under a given sea level rise scenario. The “Likely” category is defined as a greater than 75% probability of flooding under a given sea level rise scenario.

As discussed in more detail by the Southeast Florida Regional Climate Change Compact (2012), the elevations associated with these probability thresholds are calculated based upon a standard Z-score methodology:

$$\text{Standard } Z - \text{score} = \frac{\text{Flood threshold (2010 MHHW)} - \text{Land Elevation (LIDAR)}}{RMSE_{(Total)}}; \text{ where}$$

$$RMSE_{(Total)} = \sqrt{RMSE_{(LIDAR)}^2 + RMSE_{(VDatum)}^2} = 0.46, \text{ as defined by}$$

$$RMSE_{(LIDAR)} = 0.3 \text{ (FDEM 2009) and } RMSE_{(VDatum)} = 0.35 \text{ (NOAA 2014)}$$

A standard Z-score for a LIDAR elevation with 25% probability of being exceeded under a given flood threshold is equal to -0.67, whereas a Z-score for a LIDAR elevation with a 75% exceedance probability is 0.67. Rearrangement of terms gives the following equation for solving LIDAR elevations that correspond to each Z-score probability term:

$$\text{Land elevation (LIDAR)} = \text{Flood threshold (2010 MHHW)} - (RMSE_{(Total)} * Z - \text{score}_p)$$

Table 3 provides a summary of LIDAR elevation thresholds for flood risk in the Village of Islamorada at the 2030 and 2060 sea level rise scenarios using the standard Z-score methodology. These provide the basis for subsequent analyses and visualizations of flood risk to habitat, public buildings, and other infrastructure within the Village of Islamorada in which LIDAR data is used as the assessment basis.

Table 3: LIDAR Elevation Ranges by Flood Threshold and Sea Level Rise Scenario. All elevation values are as feet above MHHW, as referenced to the 1983-2001 National Tidal Datum Epoch.

Flood threshold	Sea Level Rise Scenario			
	2030 – Low (3 inches)	2030 – High (7 inches)	2060 – Low (9 inches)	2060 – High (24 inches)
Likely Inundation	< 0.11'	< 0.44'	< 0.69'	< 1.84'
Possible Inundation	0.11' – 0.73'	0.44' – 1.06'	0.69' – 1.31'	1.94' – 2.56'
Likely Nuisance	< 1.19'	< 1.52'	< 1.77'	< 3.02'
Possible Nuisance	1.19' – 1.81'	1.52' – 2.14'	1.77' – 2.39'	3.02' – 3.64'
Likely Extreme	< 6.11'	< 6.44'	< 6.69'	< 7.94'
Possible Extreme	6.11' – 6.73'	6.44' – 7.06'	6.69' – 7.31'	7.94' – 8.56'

Building Footprints

A building footprint layer is a GIS polygon file, typically in shapefile format, that specifically outlines the land area occupied by buildings. Early in the project period, the Principal Investigator (PI) learned that Monroe County and the Village of Islamorada, like many communities in Florida, currently lack a GIS building footprint layer. The paucity of any GIS building footprint layers was a key dataset limitation finding that was subsequently addressed in this study of the Village of Islamorada. A previous sea level rise assessment for Monroe County, as conducted by the Southeast Florida Regional Climate Change Compact (2012), utilized parcel-scale geographies to conduct analyses of future flood risk, but it did not include vital GIS building datasets. As noted in this previous study (Southeast Florida Regional Climate Change Compact 2012), parcel-scale analyses of flood vulnerability, have a significant disadvantage in that they do not necessarily reflect the actual risk to buildings and structures located within each parcel.

Development of a building footprint layer, which can be manually drawn from high quality aerial photographs or in some cases through more automated methods that provide indication of the land area occupied by buildings, is a common methodology used to improve the geographic precision of flood vulnerability assessments within a built environment. For this project, we developed a building footprints layer that includes the visible outlines of structures that various sources (i.e., Monroe County, Village of Islamorada, and UF GeoPlan; see Table 1) have identified and listed as public and critical infrastructure located within the Village of Islamorada. This critical infrastructure includes schools, law enforcement buildings, fire stations, other government buildings, electric and water utilities, hospitals, and disaster response staging areas.

To develop this building footprint layer, we used a query function to select parcels from the original Monroe County Property Appraiser dataset (PARCEL_PUBLIC.shp) that contained the point, address, or polygon locations of public and critical infrastructure. These infrastructure parcels were then exported into a new file (INFRASTRUCTURE_PARCELS.shp). High resolution 2012 aerial MrSID orthophotography supplied by the Monroe County Property Appraiser was then used as the basis for manual digitization of all building footprints seen within the boundaries of each parcel in the INFRASTRUCTURE_PARCELS.shp file. A total of 80 buildings in the Village of Islamorada were digitized through this procedure. The building footprint digitization of the Village of Islamorada Administration Center is shown as an example in Figure 4. This new building footprints layer for the Village of Islamorada was named ISLAMORADA_FOOTPRINTS.shp.

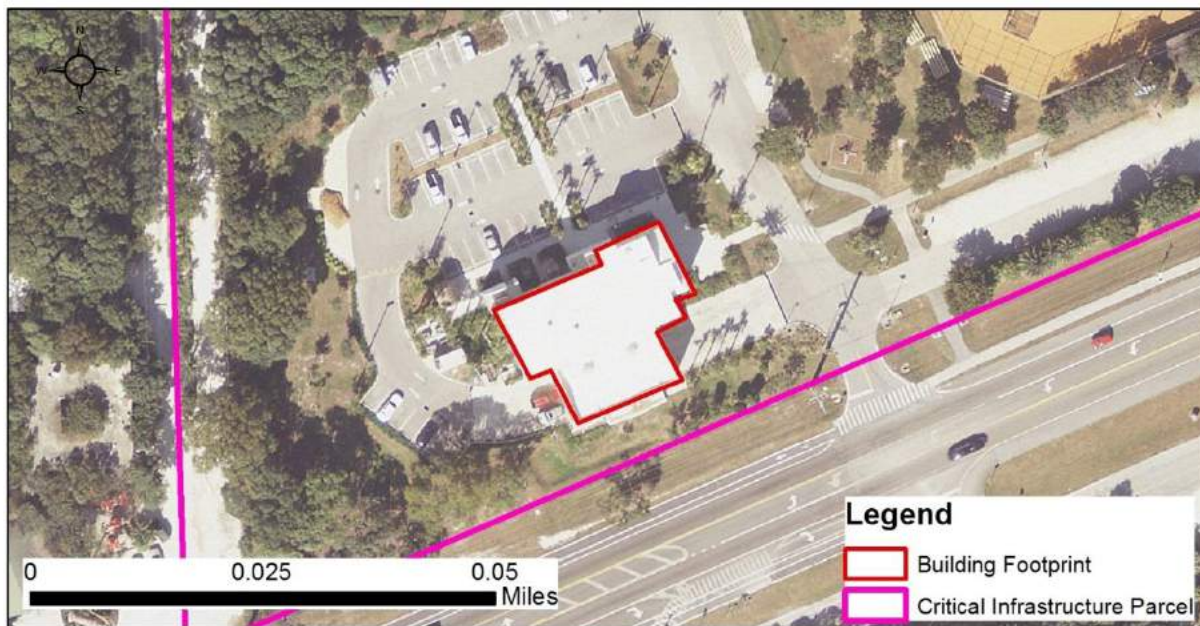
Building Ground Elevations from LIDAR DEMs

Using ArcGIS10.1, we employed a Zonal Statistics procedure to define four ground elevation values within the bounds of all building footprint polygons within the Village of Islamorada: 1) maximum elevation, as referenced to MHHW (source DEM data, MHHW_DEM); 2) minimum

elevation, as referenced to MHHW (source DEM data, MHHW_DEM); 3) maximum elevation, as referenced to NAVD88 (source DEM data, MC_LIDAR); and 4) minimum elevation, as referenced to NAVD88. The maximum elevation value, for both MHHW and NAVD88, corresponds to the highest DEM cell value found within the bounds of the building footprint polygon. Similarly, the minimum elevation values correspond to the lowest DEM cell value found within the bounds of the building footprint polygon. Use of such LIDAR elevations calculations within building footprints conforms with methods that FEMA has evaluated as an alternative when Elevation Certificates are unavailable (Dewberry and Davis 2005).

It must be cautioned that the Zonal Statistics methodology does not provide an estimate of finished first floor elevations for buildings, and that some inherent geographic error is introduced by methodologies used to develop both DEMs and building footprints. However, most buildings in the Village of Islamorada, including those that are not elevated on piers or stilts, are built to a filled grade that is higher than the surrounding environment. Therefore, the maximum value obtained through the Zonal Statistics method is, in practice, likely to correspond closest to the adjacent ground grade for most buildings.

Figure 4: Building Footprint of the Village of Islamorada Administration Center.



Building Elevations from Elevation Certificates

The finished first floor elevation provides the most definitive basis for evaluating a building's flood damage vulnerability. The most accurate public information regarding the finished first floor elevations can be found on Elevation Certificates developed for some buildings as a requirement for flood insurance policies written through the National Flood Insurance Program.

Archives of Elevation Certificates developed for public infrastructure in the Village of Islamorada are maintained by the Village's Floodplain Coordinator or, for some buildings, the Floodplain Coordinators for Monroe County.

Through public records searches conducted in collaboration with the Floodplain Coordinators in Monroe County and the Village of Islamorada, we obtained the Elevation Certificate records for a total of twelve public buildings within the jurisdictional bounds of the Village of Islamorada. In most cases, the elevation heights from Elevation Certificate surveys were referenced to the National Geodetic Vertical Datum of 1929 (NGVD29), rather than the NAVD88 datum used for LIDAR-based elevations and floodplain mapping. Because the NGVD29 to NAVD88 vertical datum conversion varies significantly across the Florida Keys, it is necessary to perform geographically precise transformations between these datums, thus ensuring maintenance of elevation accuracy at the level of an individual building.

NOAA (2015b) has developed an orthometric height conversion tool that uses geographically specific algorithms to transform elevations from NGVD29 to NAVD88. Using the survey-listed or GIS-based centroid coordinates from each building with an Elevation Certificate record, we applied the NOAA (2015b) tool to transform the finished first floor elevations and adjacent ground floor elevations (as listed in the Elevation Certificate) from NGVD29 to NAVD88. These NAVD88-based elevation values, in feet, were manually added as new data columns within the attribute table for the building footprint layer (ISLAMORADA_FOOTPRINTS.shp) on all public buildings in which an Elevation Certificate was available.

Flood Exposure Results for Public Facilities

Flood Exposure Results for Public Buildings with Elevation Certificates

A full set of elevation data for twelve buildings with digitized Elevation Certificate information is provided in Table 4. Of the facilities listed in Table 4, only four facilities show a first floor elevation lower than eight feet above NAVD88, or the threshold for a worst case 2060 flooding scenario of a Wilma-sized storm surge and two feet of sea level rise.

The two facilities that show the highest near-term vulnerability to enhanced flood risks from sea level rise are the wastewater pump station located at 142 Sunshine Boulevard (first floor elevation of 6.46 above NAVD and 6.58 above MHHW) and the Fire Station #19 (first floor elevation of 6.51 above NAVD and 6.50 above MHHW) located at 74070 Overseas Highway. For both of these facilities, the first floor elevation is below the 2030 extreme event flood threshold (6.83 feet above MHHW) for the high sea level rise scenario. This means that both facilities would be exposed to potential extreme event flooding by 2030 if the highest rate of sea level rise occurs. Under the low sea level rise scenario, potential extreme event flood exposure for these two buildings would begin between 2046 and 2051. An additional vulnerability for the wastewater pump station and Fire Station #19, as indicated by the Elevation Certificate and LIDAR elevation data, is relatively low surrounding grade elevations that range between two to

three feet above MHHW. These low-lying areas are already exposed to significant flood risks during storm surge events. Moreover, the low-lying topography suggests that transportation access may be periodically and, with sea level rise, increasingly adversely affected around these facilities during nuisance tidal flooding and high rainfall events.

Other public facilities in the Village of Islamorada that show new exposure of buildings to extreme event flooding within the 2060 planning horizon are the Islamorada Wastewater Treatment Plant (286 Gardenia St.) and Monroe County's Roth Building (50 High Point Rd.). The first floor elevation of the Islamorada Wastewater Treatment Plant of (6.86 feet above NAVD 88; ~7.24 feet above MHHW) suggests that exposure to potential first floor storm surge damages from an extreme event at the highest sea level rise scenario would begin between 2038 and 2046. For the Roth Building, the first floor elevation (7.86 feet above NAVD88; ~8.38 feet above NAVD88) indicates that exposure to first floor storm surge damages from an extreme event at the highest sea level rise scenario would begin between 2057 and 2067.

Table 4: Public Facilities with Elevation Certificate Record. This list contains facilities with digitized Elevation Certificate records.

Building/Site Name	Owner	Address	Finished Floor Elevation (NAVD88)	Lowest Grade Elevation (NAVD88)	Max Elevation above MHHW (LIDAR)	Max Elevation above NAVD88 (LIDAR)
PUMP STATION	VILLAGE OF ISLAMORADA	142 SUNSHINE BLVD	6.46	2.31	2.12	2.00
FIRE STATION #19	VILLAGE OF ISLAMORADA	74070 OVERSEAS HWY	6.51	2.01	2.82	2.83
ISLAMORADA WASTEWATER TREATMENT PLANT	VILLAGE OF ISLAMORADA	286 GARDENIA ST	6.86	4.36	3.88	3.50
ROTH BUILDING	MONROE COUNTY	50 HIGH POINT RD	7.84	5.94	7.62	7.08
#66 RADIO TRANSMISSION ROOM/SHOP	MONROE COUNTY	88770 OVERSEAS HWY	8.11	8.11	8.50	8.33
#65 COUNTY OFFICES	MONROE COUNTY	MM 89.5 OVERSEAS HWY	8.38	7.38	6.21	5.83
COUNTY GARAGE	MONROE COUNTY	88770 OVERSEAS HWY	8.50	8.50	8.50	8.33
VILLAGE OF ISLAMORADA ADMINISTRATION CENTER	VILLAGE OF ISLAMORADA	86800 OVERSEAS HWY	10.07	9.17	10.43	10.58
GOVERNMENTAL CENTER	MONROE COUNTY	88770 OVERSEAS HWY	10.61	8.14	8.57	8.17
SHERIFF'S SUB STATION	MONROE COUNTY SHERIFF'S OFFICE	88770 OVERSEAS HWY	11.14	10.14	7.25	7.17
LIBRARY	MONROE COUNTY	81830 OVERSEAS HWY	11.99	10.49	9.56	9.33
SHERIFF'S SUB STATION	MONROE COUNTY SHERIFF'S OFFICE	88770 OVERSEAS HWY	12.02	11.02	10.41	10.25

Flood Exposure Results for Public Buildings without Elevation Certificates

Elevation Certificates were not located for an additional 68 structures contained on parcels with critical infrastructure or other public facilities within the Village of Islamorada. For these buildings, we developed building footprint polygons from aerial photography and applied the LIDAR-based method for deriving ground elevations under building footprints as the method for evaluating potential sea level rise vulnerability. Table 5 contains the full list of these facilities with maximum and minimum LIDAR elevations within the building footprint, as referenced to both the VDatum corrected MHHW and NAVD88.

Table 6 contains a summary list and vulnerability classifications for structures with maximum ground MHHW elevations below 3.32 feet, or the highest elevation within the “possible nuisance flooding” at the 2060 high sea level rise scenario. Notably, all of these buildings are located within two sites: 1) Founders Park, a public facility complex owned by the Village of Islamorada; or 2) the S&H Inc. Debris Site, a site listed as a critical facility by Monroe County. Three structures within Founders Park show ground elevations lower than two feet above MHHW. This indicates potential exposure to nuisance flooding by 2030 with a high sea level rise scenario, or by 2060 with a low sea level rise scenario. Ground elevations for all other structures in Table 6 are higher than the nuisance flood threshold through 2030, but show likely or possible exposure to nuisance flooding before 2060 at the high sea level rise scenario.

We again caution that interpolated data from the ground LIDAR DEM, as summarized in Tables 5 & 6 and provided in full to the Village of Islamorada, contain uncertainties in both vertical elevation and the horizontal coordinate plane, and therefore should not be used on a standalone basis for site-level flood vulnerability assessments of individual structures. Instead, these data provide an objective basis for prioritization of site-level elevation surveys of first floors and outside equipment (e.g., air conditioners and electrical fixtures), which may then be used to develop appropriate flood adaptation or mitigation strategies at the individual structure level.

Recommendations for Village of Islamorada Facilities and Critical Infrastructure

The current vulnerability assessment results suggest several immediate recommendations for the Village of Islamorada to improve flood resilience in the near-term, while also developing additional information needed for longer-term sea level rise adaptation.

Recommendation 1: Develop and maintain a comprehensive GIS-based inventory that includes building footprints, finished first floor elevation data, and elevations of accessory electrical equipment for all existing critical infrastructure and Village of Islamorada facilities.

The most traditional method for first floor elevation and accessory electrical equipment is development of Elevation Certificates, as performed by licensed surveyors, on a building by building basis. Such Elevation Certificates are routinely developed for newly built and substantially remodeled buildings in the Village of Islamorada as a requirement for participation

within the National Flood Insurance Program. Continued GIS digitization of Elevation Certificate data for new buildings into the GIS building footprint layer developed for the Islamorada Matters project is a low cost record-keeping task that can be implemented readily. FEMA (2015) suggests that development of surveys for existing buildings and facilities that do not currently have Elevation Certificates on file would likely cost between \$500 to over \$2,000 per structure, depending on the complexity of the site and building.

Prioritization for development of Elevation Certificates for existing buildings is ultimately a policy decision that requires careful input from technical staff and interested stakeholders. Factors commonly used to prioritize development of such information include sensitivity of the site (e.g., facilities needed for emergency response generally take priority over facilities used primarily for recreation), inherent risk level of the site (e.g., a facility located on low grade susceptible to ground-level flooding generally would be higher priority over a similar facility located on higher grade with lower ground-level flood-risk), and expected life cycle of the facility (e.g., facilities unlikely to be replaced before 2030 generally would be higher priority than facilities that may slated for decommission or replacement within the foreseeable planning cycle).

Recommendation 2: Conduct detailed site-level flood exposure audits for the wastewater pump station facility at 142 Sunshine Blvd., the Islamorada Wastewater Treatment Plant, and other wastewater infrastructure within the Village of Islamorada.

The vulnerability assessment results for this study suggest that future sea level rise has the potential to raise extreme flood heights beyond the first floor elevation of the pump station and wastewater treatment facility. While this result suggests a potential need for long-term adaptation action, it should also be noted most wastewater facilities, particularly ones more recently constructed, are engineered to have some tolerance and resistance to extreme event flooding (EPA 2014). For this reason, more detailed investigation is required to determine the necessity, feasibility, timing, and budgeting of preventive actions for these sites.

The EPA (2014) has recently released a guidance document for auditing site-level flood resilience of wastewater infrastructure. Following this guide, we specifically recommend that the Village of Islamorada's Floodplain Coordinator be supplied with site-level assessments that characterize resistance of above-ground buildings and associated electrical components to damages from extreme event flooding. Development of maintenance recording protocols and, as necessary, engineering assessment to assess resilience of below-grade pipes and pump infrastructure to increased saltwater incursion associated with sea-level rise is also recommended.

Recommendation 3: Develop long-term flood resilience alternatives for Fire Station #19, located at 74070 Overseas Highway.

The vulnerability assessment results suggest that future sea level rise not only has the potential to expose Fire Station #19 to extreme event flooding, but also that the site is located on a low grade with potential susceptibility to future nuisance-level flooding in transport corridors. If sea level rise rates tend toward the higher scenario projected by the Southeast Florida Climate Change Compact (2011), there may be compelling need to elevate transportation lanes between Fire Station #19 and Overseas Highway before 2030 in order to ensure safe access of emergency vehicles in the aftermath of extreme flooding events.

As discussed later in this report, Overseas Highway (US Highway 1) is also currently built to a relatively low grade on the corridor between White Marlin Avenue and Palm Drive. As sea levels rise, this low grade may result in increased nuisance flooding of Overseas Highway, potentially slowing or restricting the movement of emergency vehicles based at Fire Station #19. Long-term flood resilience and sea level rise adaptation planning for Fire Station #19 should therefore be closely coordinated with drainage improvements and increased grade elevation of Overseas Highway within this low-lying corridor.

Table 5: LIDAR-Based Elevations for Public Facilities and Critical Infrastructure. This list contains facilities without digitized Elevation Certificate records. The list is ordered from lowest to highest MHHW elevation, as determined by the maximum LIDAR DEM value within each building footprint. Facilities highlighted in yellow are located on parcels owned by the Village of Islamorada.

Facility Name	Address	Max Elevation above MHHW	Min Elevation above MHHW	Max Elevation above NAVD88	Min Elevation above NAVD88
FOUNDERS PARK	86800 OVERSEAS HWY	1.25	1.08	0.75	0.58
FOUNDERS PARK	87000 OVERSEAS HWY	1.28	1.03	0.75	0.50
FOUNDERS PARK	87000 OVERSEAS HWY	1.61	1.61	1.08	1.08
FOUNDERS PARK	87000 OVERSEAS HWY	2.19	1.94	1.67	1.42
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.31	1.98	2.50	2.17
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.69	2.10	2.92	2.33
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.74	2.16	3.00	2.42
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.77	2.44	3.00	2.67
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.85	2.35	3.08	2.58
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.94	2.27	3.17	2.50
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.98	2.64	3.17	2.83
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	3.02	2.50	3.25	2.75
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	3.08	1.91	3.33	2.17
FOUNDERS PARK	86800 OVERSEAS HWY	3.08	1.92	2.58	1.42
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	3.32	2.57	3.58	2.83
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	3.41	2.16	3.67	2.42
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	3.41	2.83	3.67	3.08
ISLAMORADA WASTEWATER TREATMENT PLANT	MM 89.5 OVERSEAS HWY	3.79	3.71	3.42	3.33
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	4.49	3.16	4.75	3.42
UNITED STATES COAST GUARD PLANTATION KEY	PALERMO DR	4.50	1.33	4.17	1.00
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	4.67	3.67	4.75	3.75

S&H INC DEBRIS SITE	82100 OVERSEAS HWY	4.71	3.35	4.92	3.58
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	4.84	3.67	4.92	3.75
ISLAND CHRISTIAN SCHOOL	83400 OVERSEAS HWY	4.87	4.37	4.92	4.42
SAN PEDRO CHURCH	89500 OVERSEAS HWY	5.24	2.13	4.83	2.00
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	5.26	4.42	5.33	4.50
GREEN TURTLE HAMMOCK	86800 OVERSEAS HWY	5.47	2.56	5.17	2.25
ISLAND CHRISTIAN SCHOOL	83400 OVERSEAS HWY	5.52	2.60	5.50	2.58
ISLAND CHRISTIAN SCHOOL	83250 OVERSEAS HWY	5.93	5.13	5.92	5.17
ST. JAMES EPISCOPAL, PLANTATION KEY	87500 OVERSEAS HWY	6.08	5.39	6.33	5.67
ISLAND CHRISTIAN SCHOOL	83400 OVERSEAS HWY	6.46	5.29	6.50	5.33
ISLAND CHRISTIAN SCHOOL	83400 OVERSEAS HWY	6.52	4.33	6.50	4.33
BOARD OF PUBLIC INSTRUCTION	81830 OVERSEAS HWY	6.73	6.31	6.42	6.00
ST. JAMES EPISCOPAL, PLANTATION KEY	87500 OVERSEAS HWY	6.83	5.92	7.08	6.17
FOUNDERS PARK	86800 OVERSEAS HWY	7.11	4.94	6.58	4.42
ST. JAMES EPISCOPAL, PLANTATION KEY	87500 OVERSEAS HWY	7.25	6.75	7.50	7.00
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	7.33	5.41	7.58	5.67
MONROE COUNTY COURT	88820 OVERSEAS HWY	7.33	6.83	7.25	6.75
UNITED STATES POST OFFICE	82801 OVERSEAS HWY	7.43	6.00	7.50	6.17
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	7.57	4.82	7.83	5.08
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	7.58	7.49	7.83	7.75
ST. JAMES EPISCOPAL, PLANTATION KEY	87500 OVERSEAS HWY	7.92	6.83	8.17	7.08
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	7.94	7.60	7.67	7.58
FKA BUILDING	81830 OVERSEAS HWY	7.98	7.23	7.67	6.92
GOVERNMENTAL CENTER	88770 OVERSEAS HWY	8.23	7.82	7.83	7.42
PLANTATION KEY CHILDREN'S SHELTER	88770 OVERSEAS HWY	8.34	6.34	7.83	5.83
FOUNDERS PARK	86800 OVERSEAS HWY	8.44	5.77	7.92	5.25
BOARD OF PUBLIC INSTRUCTION	81830 OVERSEAS HWY	8.52	8.19	8.58	8.25
CORAL SHORES HIGH SCHOOL	89901 OLD HIGHWAY	8.58	8.17	8.83	8.42
FKA WATER STORAGE TANK	81830 OVERSEAS HWY	8.65	7.31	8.33	7.00

FCAA BUILDING	81830 OVERSEAS HWY	8.73	8.48	8.42	8.17
FCAA WATER STORAGE TANK	81830 OVERSEAS HWY	8.81	8.65	8.50	8.33
TREASURE VILLAGE MONTESSORI CHARTER SCHOOL	86800 OVERSEAS HWY	8.94	7.36	9.08	7.50
CORAL SHORES HIGH SCHOOL	89901 OLD HIGHWAY	8.99	8.66	9.25	8.92
PLANTATION KEY PUBLIC WORKS YARD	87831 OVERSEAS HWY	9.28	9.03	9.17	8.92
FKEC ELLIS FACILITY ISLAMORADA	80571 OLD HIGHWAY	9.54	7.04	9.75	7.25
FOUNDERS PARK	87001 OVERSEAS HWY	10.15	9.86	9.75	9.42
PLANTATION KEY CONVALESCENT CENTER	48 HIGH POINT RD	10.19	3.28	9.67	2.75
ISLAMORADA FIRE/EMS #20	81850 OVERSEAS HWY	10.56	9.48	10.25	9.17
FOUNDERS PARK	87001 OVERSEAS HWY	10.61	10.44	10.25	10.08
FOUNDERS PARK	87000 OVERSEAS HWY	10.78	10.78	10.42	10.42
FOUNDERS PARK	87001 OVERSEAS HWY	10.86	10.78	10.50	10.42
PLANTATION KEY SCHOOL	MM 89.5 OVERSEAS HWY	10.95	8.70	10.42	8.17
FOUNDERS PARK	87001 OVERSEAS HWY	11.11	10.94	10.75	10.58
CORAL SHORES HIGH SCHOOL	89901 OLD HIGHWAY	11.17	9.57	11.42	9.75
FOUNDERS PARK	87000 OVERSEAS HWY	11.61	11.28	11.25	10.92
FOUNDERS PARK	86800 OVERSEAS HWY	11.75	10.33	11.25	9.83
PLANTATION KEY SCHOOL	MM 89.5 OVERSEAS HWY	13.79	7.20	13.25	6.67

Table 6: LIDAR-Based Flood Threshold Analysis for Public Facilities and Critical Infrastructure. The list is ordered from lowest to highest MHHW elevation, as determined by the maximum LIDAR DEM value within each building footprint. Facilities highlighted in yellow are located on parcels owned by the Village of Islamorada.

Facility Name	Address	Max Elevation above MHHW	Sea Level Rise Exposure Threshold, High Scenario	Sea Level Rise Exposure Threshold, Low Scenario
FOUNDERS PARK	86800 OVERSEAS HWY	1.25	Likely Nuisance, 2030	Likely Nuisance, 2060
FOUNDERS PARK	87000 OVERSEAS HWY	1.28	Likely Nuisance, 2030	Likely Nuisance, 2060
FOUNDERS PARK	87000 OVERSEAS HWY	1.61	Possible Nuisance, 2030	Likely Nuisance, 2060
FOUNDERS PARK	87000 OVERSEAS HWY	2.19	Likely Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.31	Likely Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.69	Likely Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.74	Possible Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.77	Possible Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.85	Possible Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.94	Possible Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	2.98	Possible Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	3.02	Possible Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	3.08	Possible Nuisance, 2060	N/A
FOUNDERS PARK	86800 OVERSEAS HWY	3.08	Possible Nuisance, 2060	N/A
S&H INC DEBRIS SITE	82100 OVERSEAS HWY	3.32	Possible Nuisance, 2060	N/A

Flood Risk Assessment for Roads

Through funding provided by the Florida Department of Transportation, the University of Florida GeoPlan Center has recently developed and publicly released a series of geographic information system (GIS) files that provide preliminary assessments of sea level rise inundation vulnerability for roads and other transportation systems (Thomas and Watkins 2013). The UF GeoPlan Center describes this GIS database in online links and project documentation as the “Sea Level Scenario Sketch Planning Tool” (<http://sls.geoplan.ufl.edu/documents-links/>), which we hereafter refer to as the “Sketch Planning Tool.”

The Sketch Planning Tool is based upon a 5-meter horizontal resolution LIDAR DEM and, as such, is designed for landscape-level vulnerability assessments of road infrastructure. For this project, we modified the original Sketch Planning Tool datasets in two ways:

- 1) Incorporation of additional road segments contained with the Monroe County Property Appraiser’s GIS archive, but not originally contained within the Sketch Planning Tool dataset. This provides for a more complete assessment of local roads not included within the Sketch Planning Tool.
- 2) Assessment of 2030 and 2060 flood vulnerability at possible nuisance flood thresholds (i.e., 1.08 above MHHW) in addition to inundation-level flooding for both the low and high sea level rise scenarios. This accounts for the fact that the onset of multiple nuisance flooding events a year will cause significant road maintenance and access issues well before the severe loss of services associated with inundation-level (i.e., daily) flooding.

Taking into account the uncertainty bounds of the LIDAR dataset and MHHW VDatum transformation summarized above in Table 3, we defined the possible nuisance flood thresholds of road line segments as:

2030 Low Sea Level Rise: 1.57 feet (19 inches)

2030 High Sea Level Rise: 1.90 feet (23 inches)

2060 Low Sea Level Rise: 2.07 feet (25 inches)

2060 High Sea Level Rise: 3.32 feet (40 inches)

As noted above in this report and in the Sketch Planning Tool project documentation (Thomas and Watkins 2013), the 5-meter cell granularity of the DEM combined with the vertical uncertainty bounds in the underlying LIDAR data used to construct the DEM prevent confident use of Sketch Planning Tool results at a site-level scale. This means that there is generally high confidence in the summation of results (e.g., road miles vulnerable to future flooding impacts) and the likelihood of flood risks in general areas across the Village of Islamorada, but less

confidence in the geographic precision of results at the level of an individual road segment. Instead, the results from the Sketch Planning Tool provide a preliminary, but objective, assessment of potential vulnerabilities.

Visualizations of roads that the Sketch Planning Tool analyses identify as susceptible nuisance flooding under each sea level rise scenario are shown as Figure 5a.1-5l.4. Table 7 provides a summary of road miles within the Village of Islamorada that the Sketch Planning Tool indicates as vulnerable to nuisance flooding (i.e., 1.08 feet above MHHW) under each sea level rise scenario. The road miles subject to potential inundation (i.e., tidal flooding on a daily basis) by each sea level rise scenario are provided in Table 8.

Table 7: Road Miles Vulnerable to Nuisance Flooding by Sea Level Rise Scenario.

	Original Road Miles	2030 Low	2030 High	2060 Low	2060 High
Overseas Highway (US1)	17.2	0.2	0.4	0.5	3.2
All Roads	67.0	2.1	3.8	5.2	24.9

Table 8: Road Miles Vulnerable to Inundation Flooding by Sea Level Rise Scenario.

	Original Road Miles	2030 Low	2030 High	2060 Low	2060 High
Overseas Highway (US1)	17.2	0	0.02	0.03	0.5
All Roads	67.0	0.1	0.3	0.4	5.2

Recommendations for Roads

Recommendation 1: Conduct site surveys of road elevation and, if necessary, develop road bed elevation designs for all sections of US Highway 1 that show future sea level rise flood vulnerability under the Sketch Planning Tool analyses.

US Highway 1 is the sole road transport and emergency evacuation route in the Florida Keys portion of Monroe County. For this reason, increased exposure to even low-level (i.e., nuisance) flood conditions along US Highway 1 is highly problematic for public safety, health, and welfare. For nuisance flooding, such concerns include decreased traffic flow due to flooding of traffic lanes, increased risk of traffic accidents due to the hazard of tidal flooding conditions, and the likelihood of higher long-term maintenance costs due to saltwater overwash and groundwater pressure that may together accelerate degradation of the road bed (Titus 2002). In emergency situations, the potential for any flood blockage of low-lying sections of US Highway 1 during an evacuation period would clearly raise a very high level of public safety concern. The seriousness of these issues compels near-term action to address areas of US Highway 1 that show flooding vulnerability.

Results from the Sketch Planning Tool (Figures 51.1 – 51.2) indicate 2030 nuisance flooding vulnerability for a small portion of Overseas Highway between White Marlin Avenue and Palm Drive. Significant tidal incursion into drainage swales located on the north side of this portion of Overseas Highway is currently observed during king tide events, indicating the potential vulnerability to more frequent flood events of this site as sea levels rise. The consonance between the future vulnerability identified by the Sketch Planning Tool and recent observations of increased tidal incursion into drainage swales suggest the need for more detailed site surveys and, as appropriate, near-term action to mitigate foreseeable tidal flood risk.

Recommendation 2: Use the Sketch Planning Tool results as the basis for informing development of a spatio-temporal and photographic record of tidal flooding events that impact public roads throughout the Village of Islamorada.

As noted above, the accuracy of the Sketch Planning Tool results is inherently constrained by factors that include the resolution of input DEM files and the geographic precision of road centerlines. Development of high resolution elevation surveys for all road segments identified as potentially vulnerable to sea level rise through 2060 could provide a technical answer that would remove this constraint. However, such surveys may be prohibitively expensive and, in some cases, unnecessary unless conducted in conjunction with regular road maintenance activities.

For this reason, we suggest that the Village of Islamorada leverage the visualizations provided through the Sketch Planning Tool to develop photo-documentation and keep public records of road flood complaints. Linking of geographic coordinates onto photographs may be readily developed through simple recording of addresses, or through more technological means such as embedding of GPS data through smartphone applications. Development of such a database over the course of several years will not only raise public awareness about any increase in tidal flood issues, but will also provide critical data that can inform future decisions to elevate or otherwise adapt roads with vulnerability to future sea level rise.

Figure 5a.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, Northeast Plantation Key



Figure 5a.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, Northeast Plantation Key



Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, Aero, GEBCO, AeroGRID, IGN, IGP, swisstopo, and the GIS User

0 0.25 0.5 Miles

Village Limits

Road Impacted by Nuisance Flooding

Plantation Key

Key Largo

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Figure 5a.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, Northeast Plantation Key



Figure 5b.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, North Plantation Key



Figure 5b.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, North Plantation Key



Figure 5b.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, North Plantation Key



Figure 5b.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, North Plantation Key



Figure 5c.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, Central Plantation Key

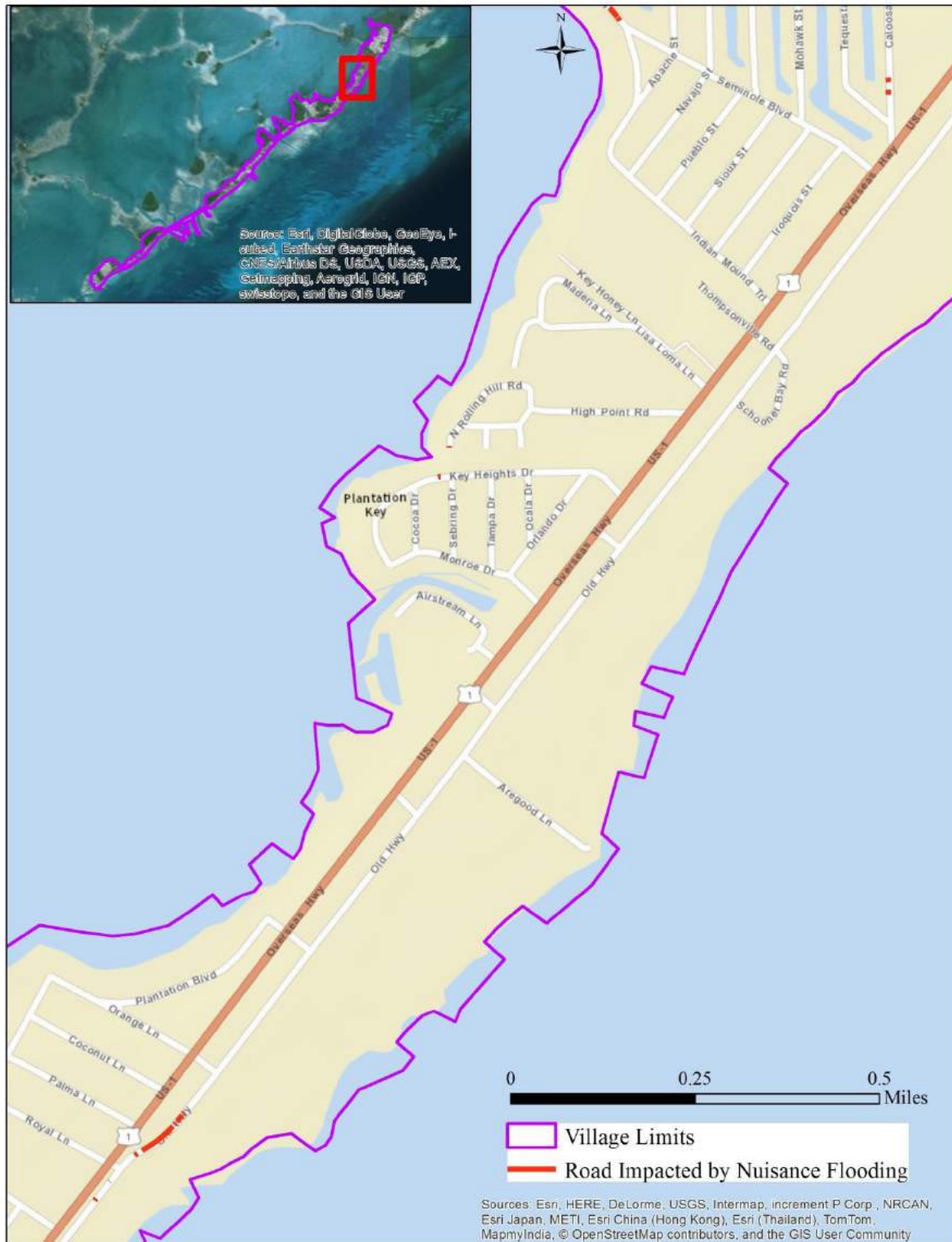


Figure 5c.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, Central Plantation Key

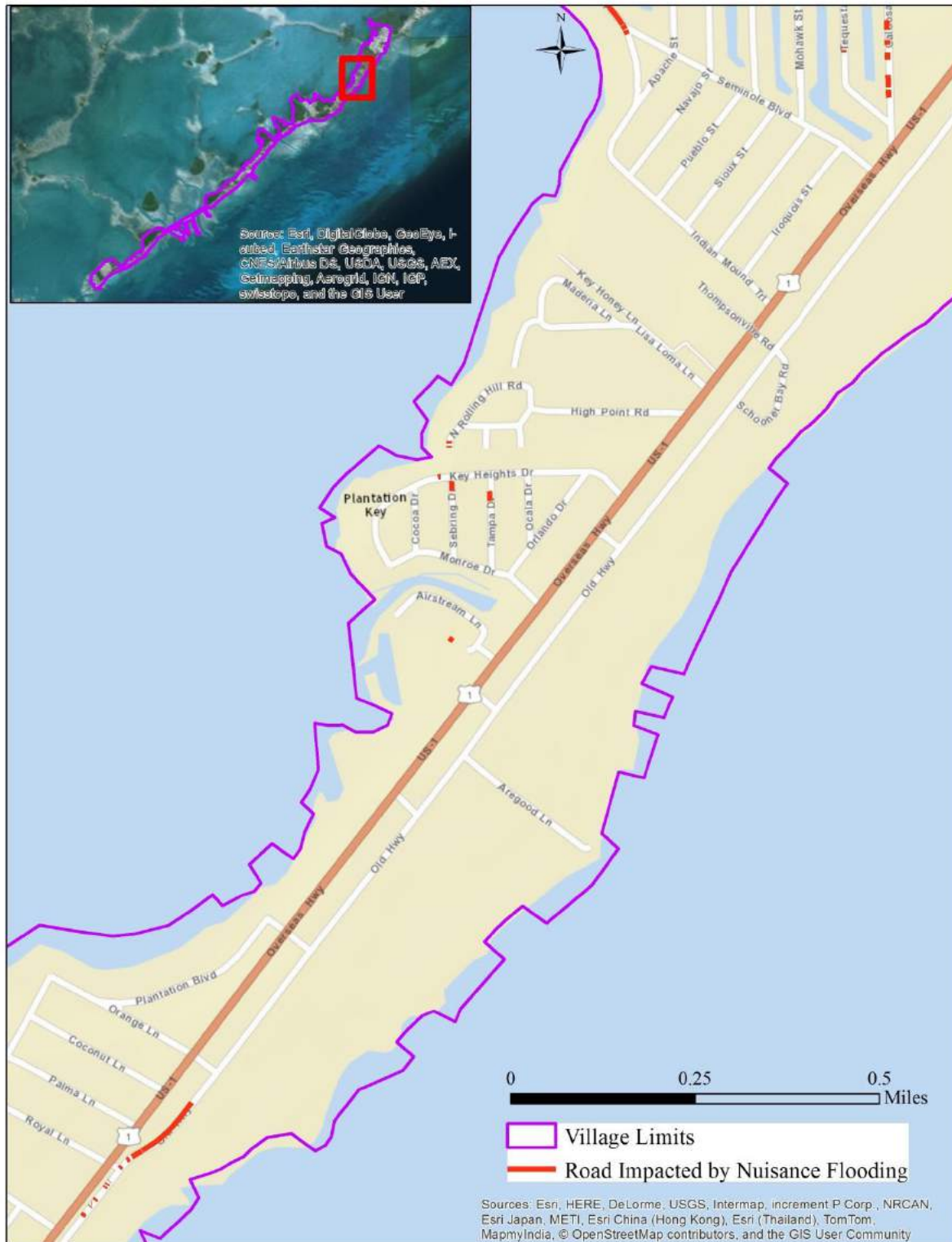


Figure 5c.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, Central Plantation Key



Figure 5c.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, Central Plantation Key



Figure 5d.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, South Plantation Key

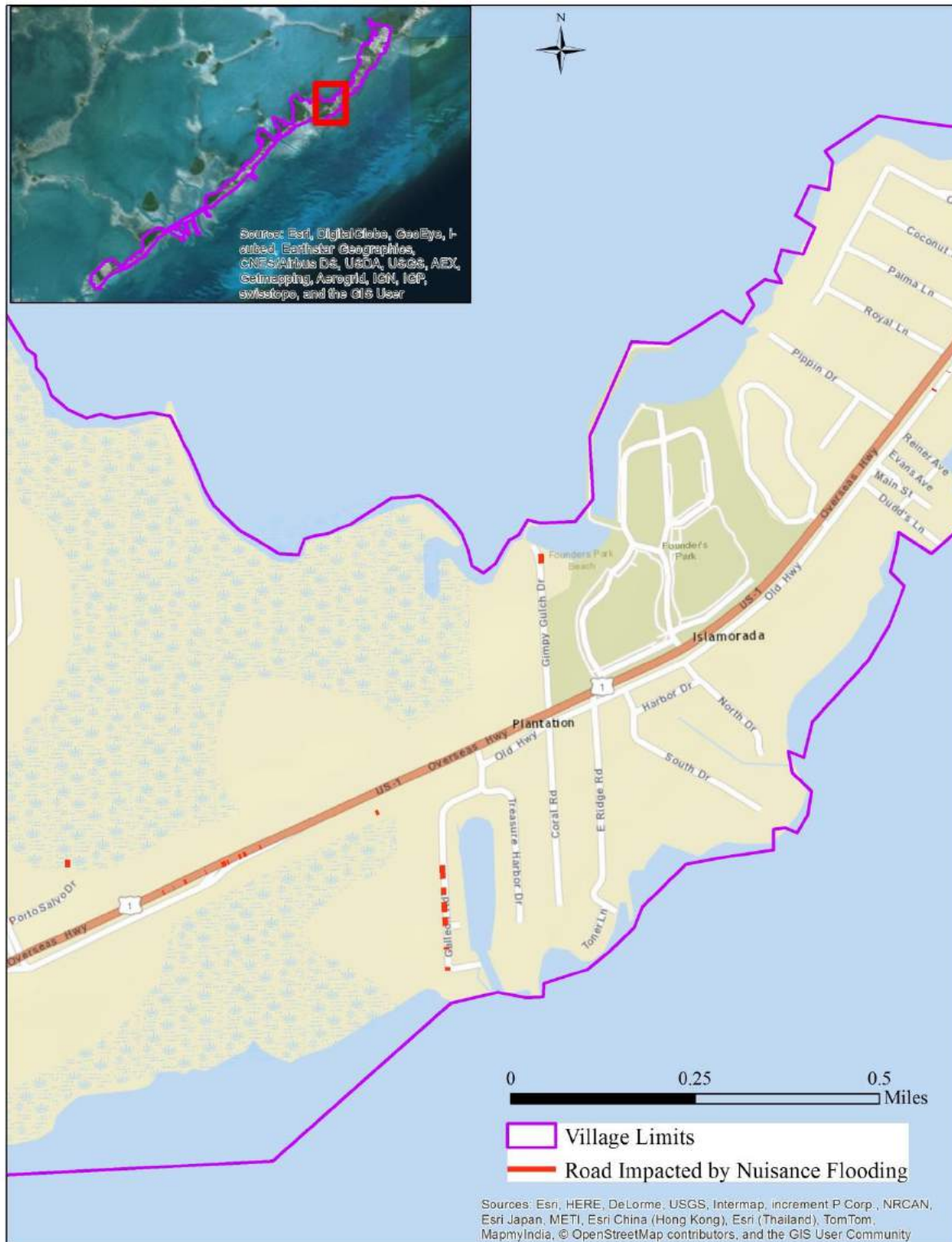


Figure 5d.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, South Plantation Key



Figure 5d.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, South Plantation Key



Figure 5d.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, South Plantation Key



Figure 5e.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, South Plantation Key to Windley Key



Figure 5e.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, South Plantation Key to Windley Key



Figure 5e.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, South Plantation Key to Windley Key



Figure 5e.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, South Plantation Key to Windley Key



Figure 5f.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, South Windley Key to Upper Matecumbe Key

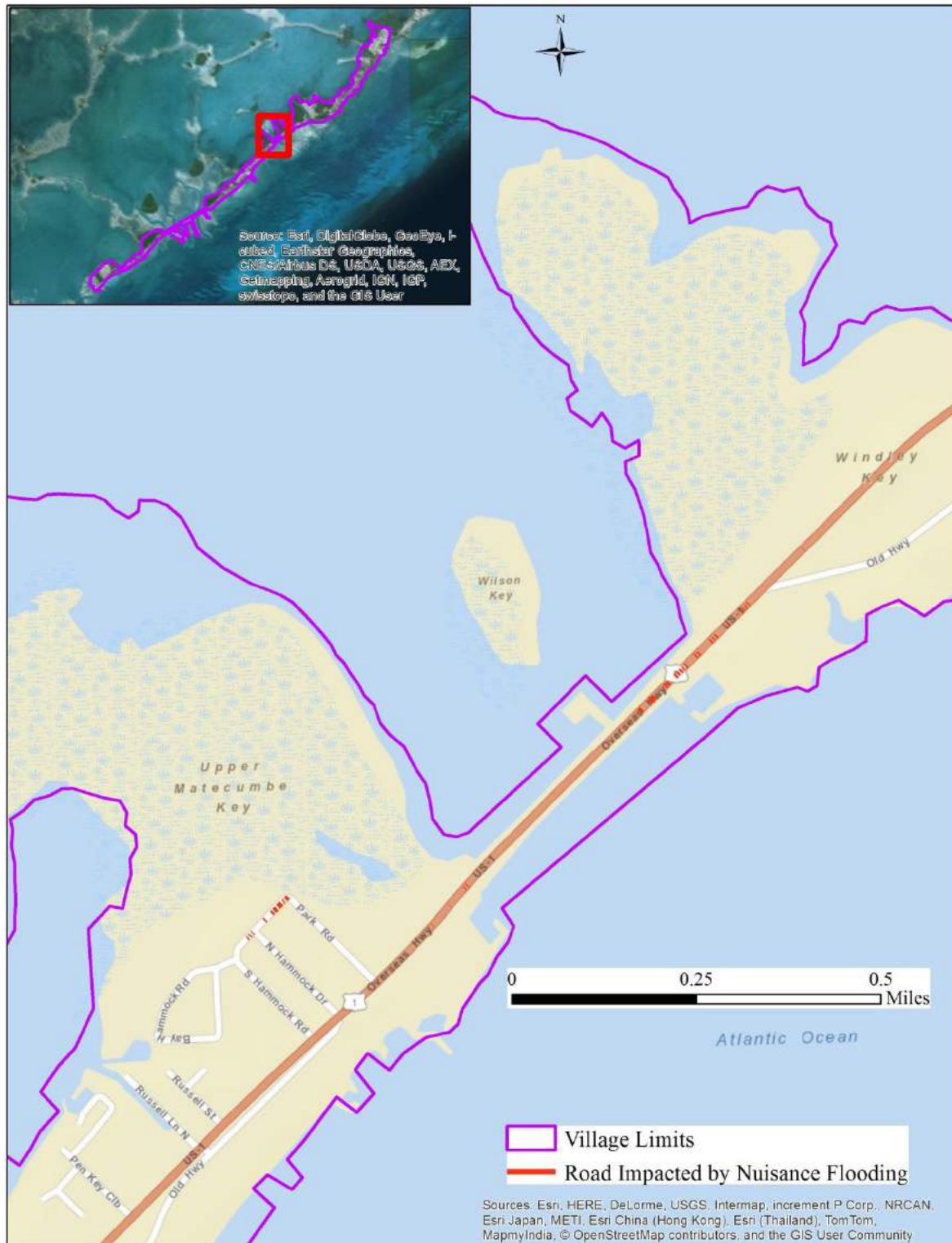


Figure 5f.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, South Windley Key to Upper Matecumbe Key

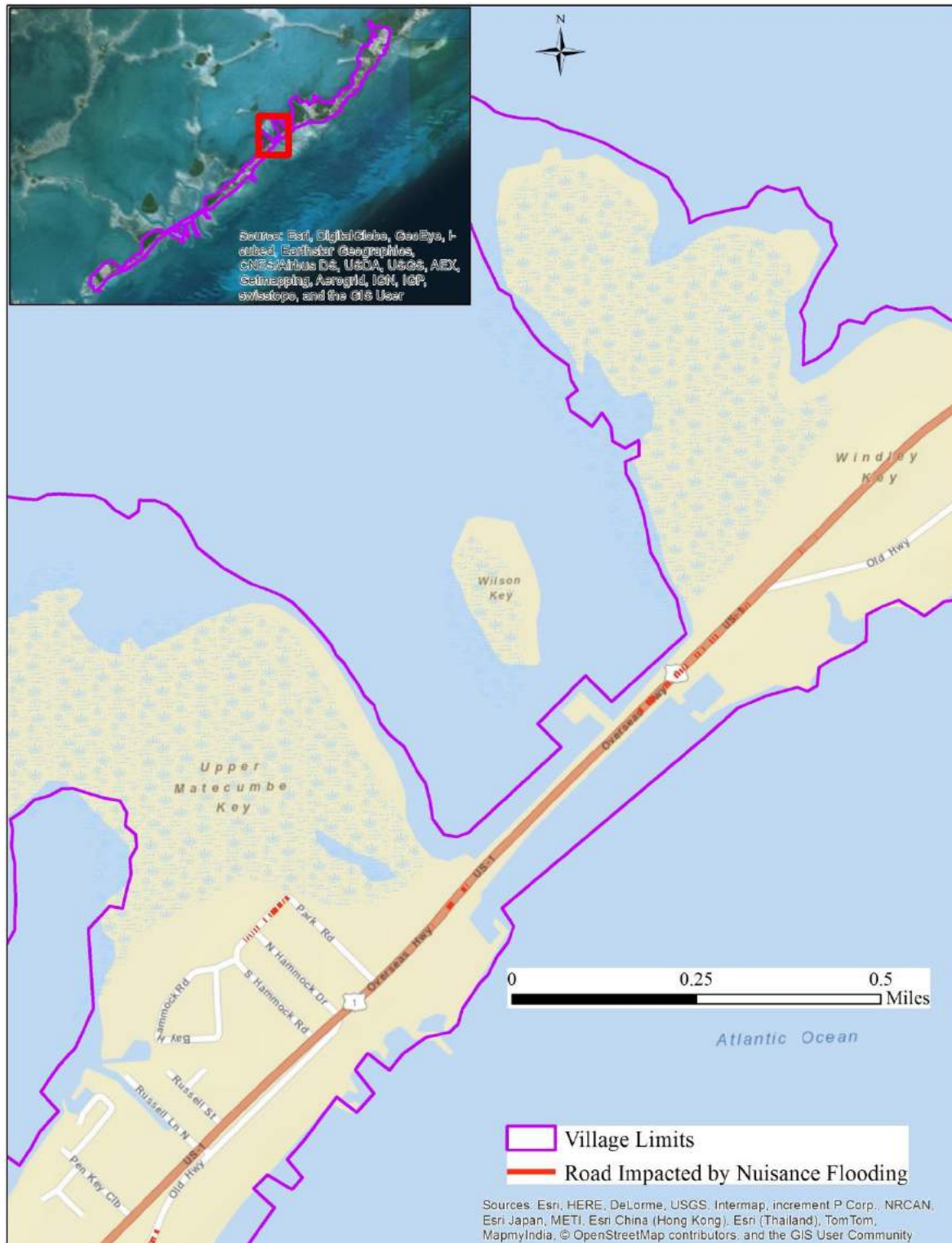


Figure 5f.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, South Windley Key to Upper Matecumbe Key

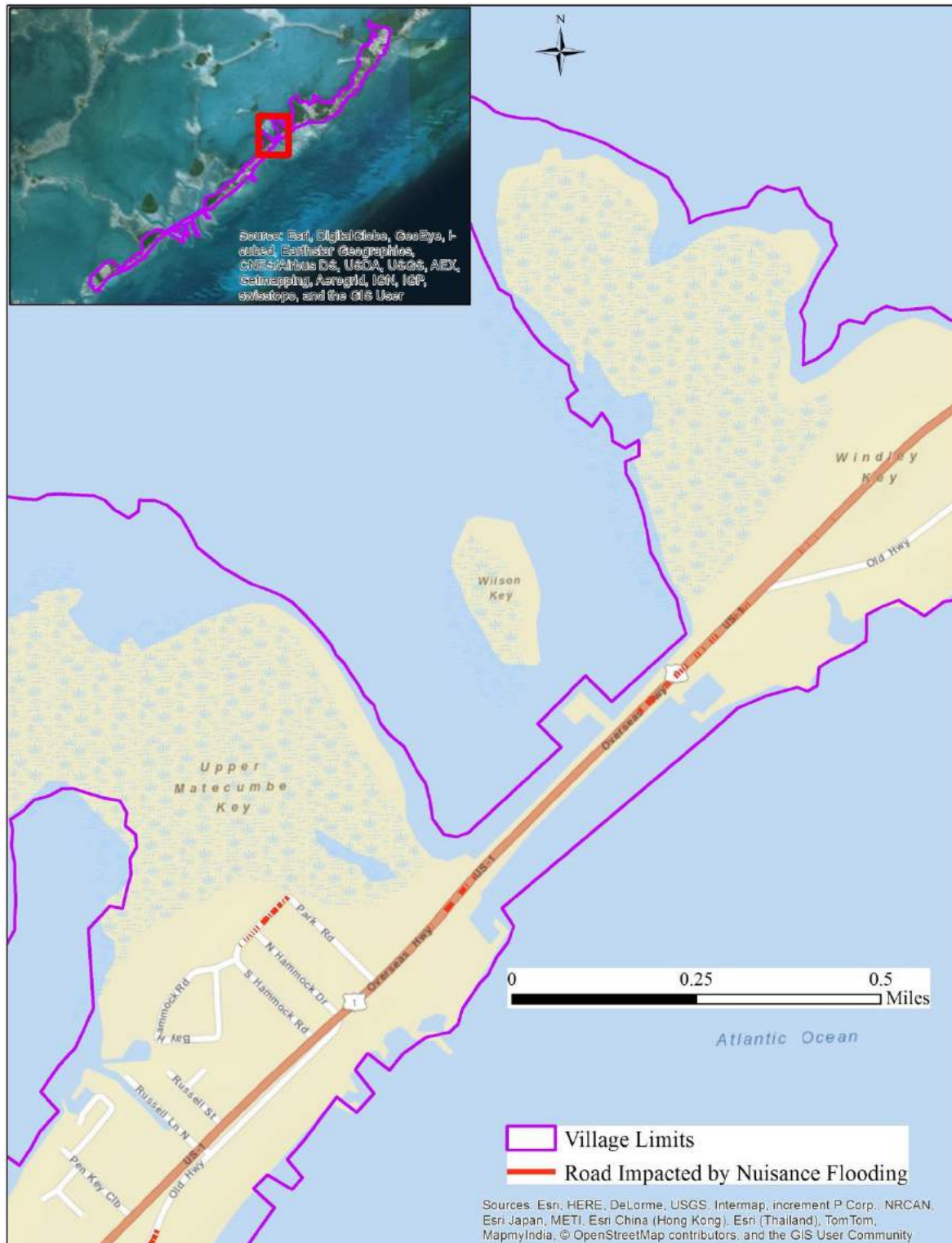


Figure 5f.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, South Windley Key to Upper Matecumbe Key

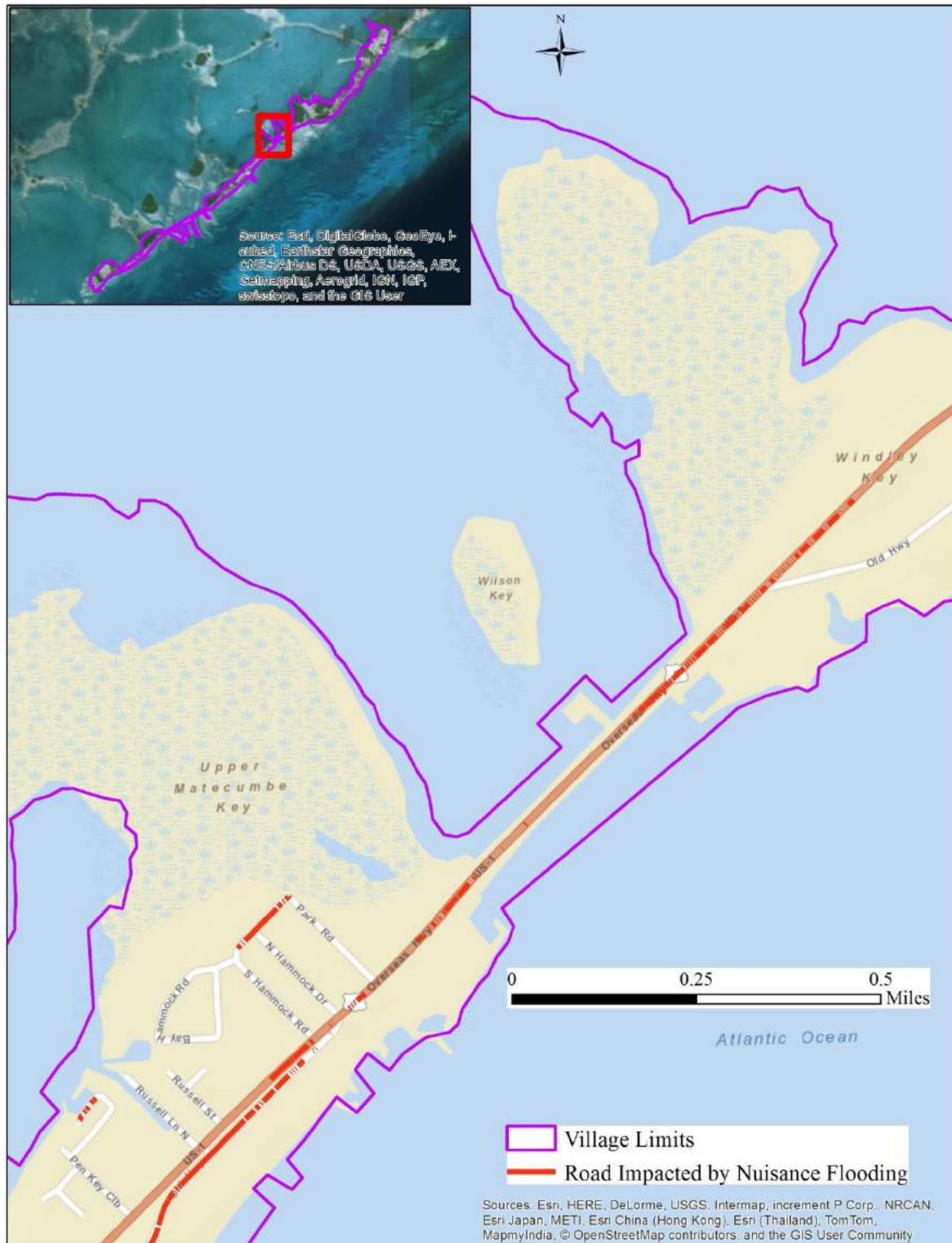


Figure 5g.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, Central Upper Matecumbe Key



Figure 5g.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, Central Upper Matecumbe Key



Figure 5g.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, Central Upper Matecumbe Key



Figure 5g.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, Central Upper Matecumbe Key



Figure 5h.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, South Upper Matecumbe Key



Figure 5h.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, South Upper Matecumbe Key



Figure 5h.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, South Upper Matecumbe Key



Figure 5h.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, South Upper Matecumbe Key

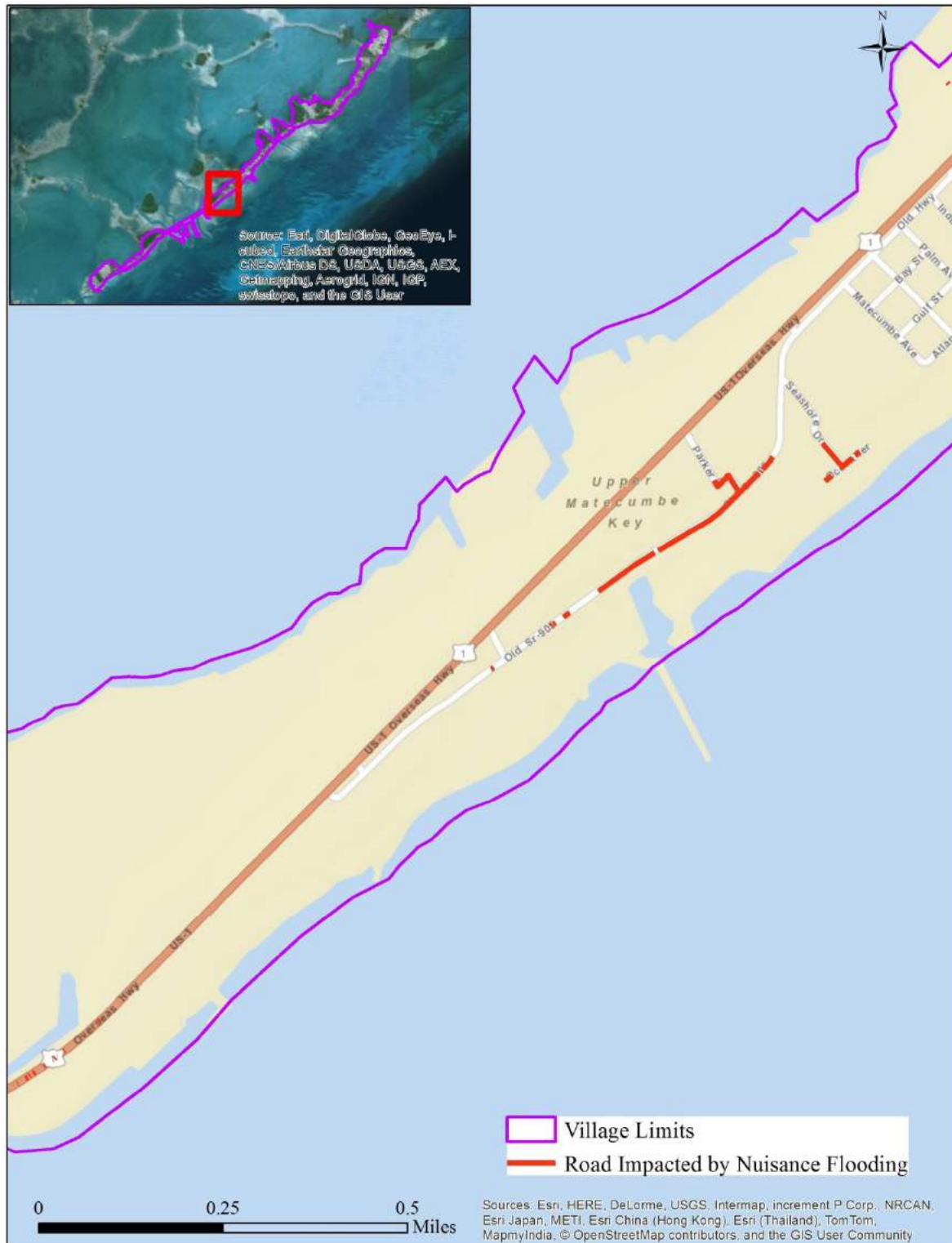


Figure 5i.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, North Fills



Figure 5i.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, North Fills



Figure 5i.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, North Fills



Figure 5i.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, North Fills



Figure 5j.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, South Fills to Lower Matecumbe Key

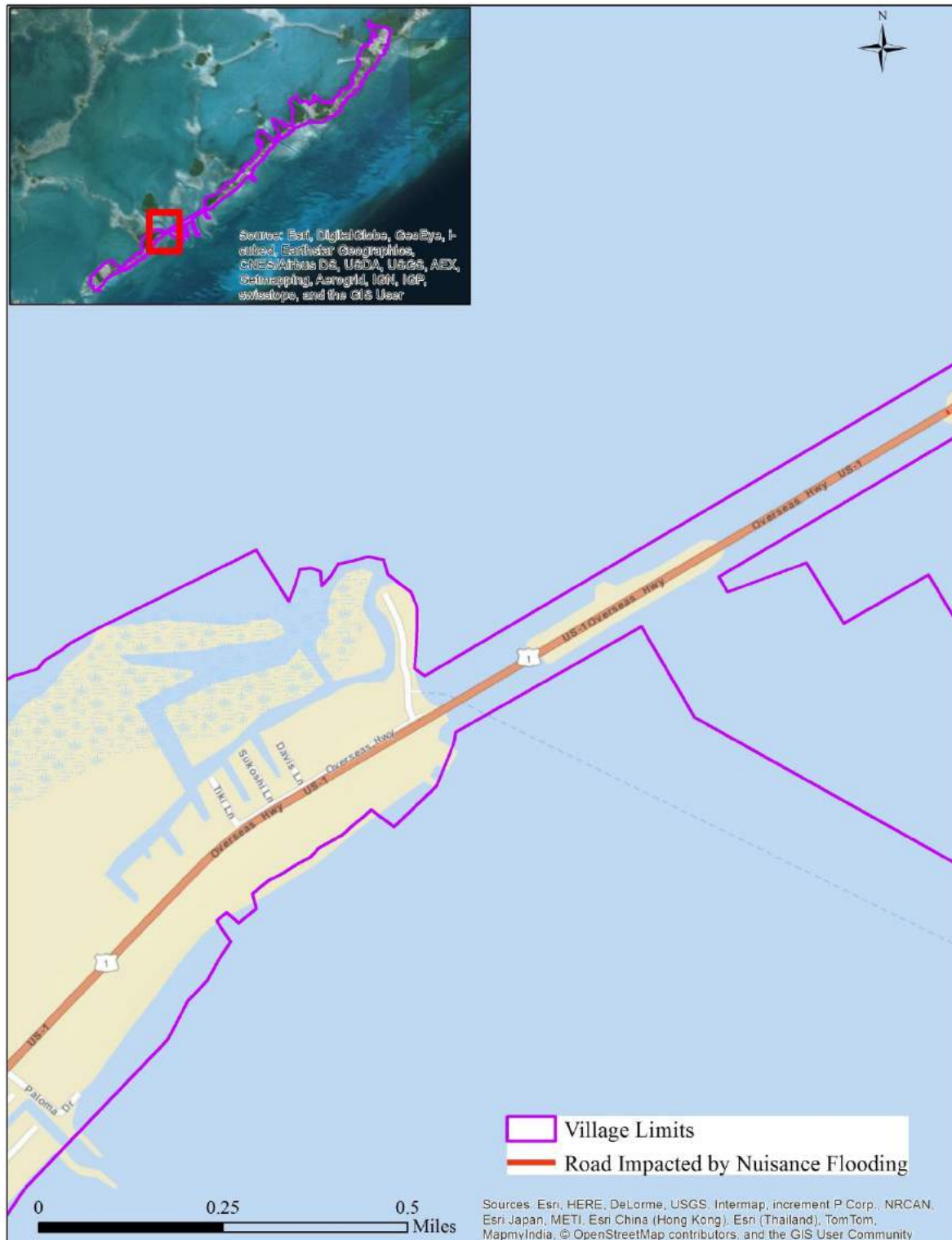


Figure 5j.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, South Fills to Lower Matecumbe Key

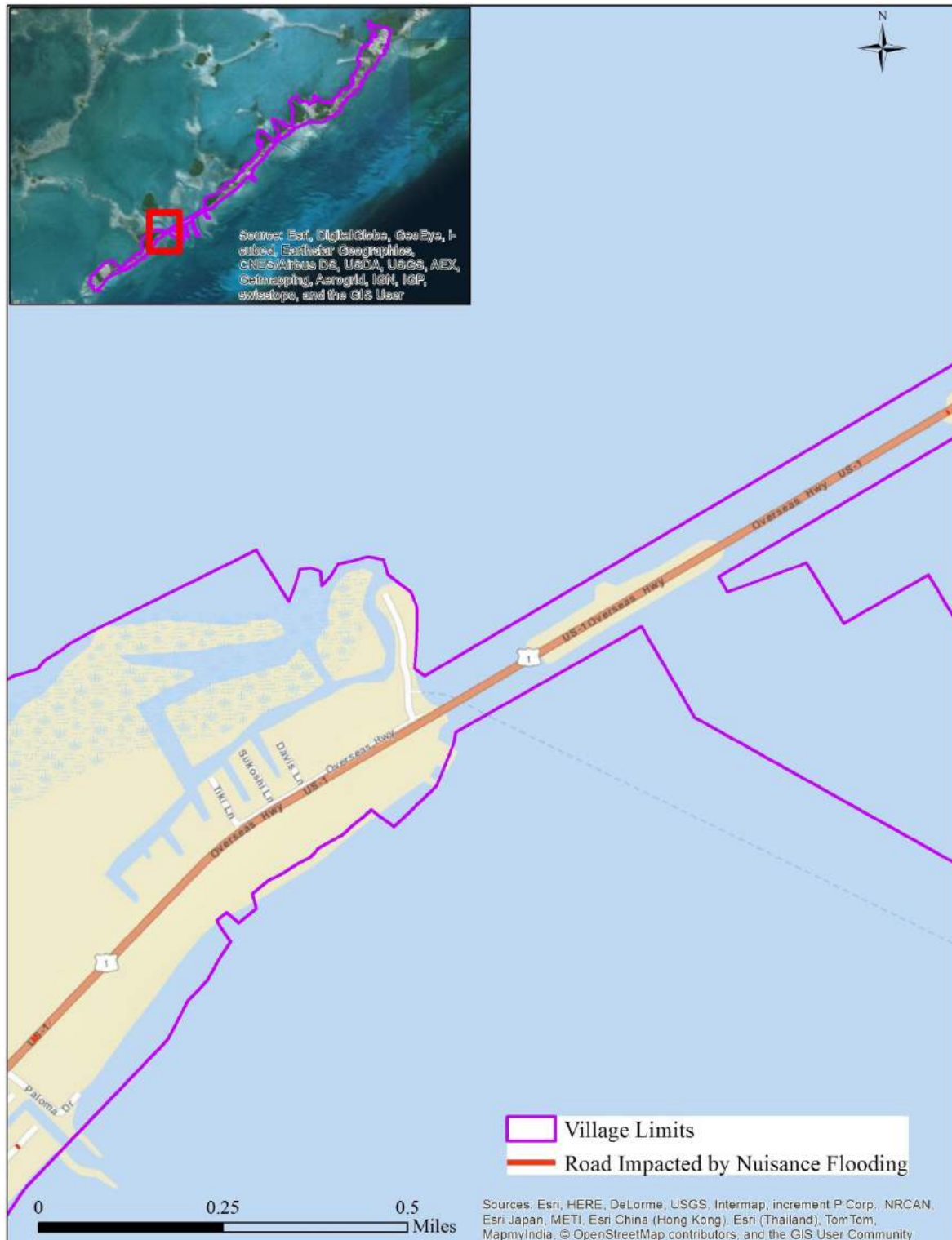


Figure 5j.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, South Fills to Lower Matecumbe Key



Figure 5j.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, South Fills to Lower Matecumbe Key



Figure 5k.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, North Lower Matecumbe Key



Figure 5k.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, North Lower Matecumbe Key



Figure 5k.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, North Lower Matecumbe Key



Figure 5k.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, North Lower Matecumbe Key



Figure 5L.1: FDOT Sea Level Rise Sketch Planning Tool, 2030 Low Sea Level Rise, South Lower Matecumbe Key



Figure 5L.2: FDOT Sea Level Rise Sketch Planning Tool, 2030 High Sea Level Rise, South Lower Matecumbe Key



Figure 5L.3: FDOT Sea Level Rise Sketch Planning Tool, 2060 Low Sea Level Rise, South Lower Matecumbe Key



Figure 5L.4: FDOT Sea Level Rise Sketch Planning Tool, 2060 High Sea Level Rise, South Lower Matecumbe Key



Habitat Vulnerability Assessment

As the southernmost area of the continental United States, the Florida Keys contain a distinct set of tropical forest and herbaceous vegetation communities. The following is a description of main natural ecosystem types found in the Village of Islamorada, as based upon original community profiles provided by the Florida Natural Areas Inventory (2010).

Mangroves

Natural marine shorelines and low-lying islands in the Florida Keys contain vast areas of tidal mangrove and buttonwood forest communities. Mangrove forests are typically located on elevations that are below the MHHW line but higher than mean sea level. Dominant canopy trees are the red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), and white mangrove (*Laguncularia racemosa*), with an understory that can include glasswort (*Salicornia* sp.), salt grass (*Distichlis spicata*), and sea daisy (*Borrchia aborescens*).

Mangrove forests are generally quite productive nursery areas for the marine ecosystem and provide critical nesting habitat for large flocks of wading and seabirds. In addition to the high habitat value of these systems, intact mangrove communities both provide important functions such as filtering upland pollution, mitigating chronic wave erosion of shorelines, and absorbing destructive wave energy associated with coastal storm events.

Buttonwood forest

Buttonwood forests typically form directly up-gradient from mangroves in the supratidal zone, which has a ground elevation higher than the MHHW line, but is subject to regular saltwater flooding during spring tides and other high tide events. Typical plants in the buttonwood community include the buttonwood (*Conocarpus erectus*), joewood (*Jacquinnia keyensis*), wild dilly (*Manilkara bahamensis*), blacktorch (*Erithalis fruticosa*), and saffron plum (*Bumelia celastrina*).

Tropical hammock forest

Tropical hammocks are characterized by a closed canopy of hardwood trees and shade-tolerant understory species similar to those found on tropical islands in the West Indies. Typical tropical hammock plants in the Florida Keys include gumbo limbo (*Bursera simaruba*), Jamaican dogwood (*Piscidia piscipula*), poisonwood (*Metopium toxiferum*), pigeon plum (*Coccoloba diversifolia*), and sea grape (*Coccoloba uvivera*).

Beach berm

Beach berms, or coastal berms, are scrubby shrub thickets or short forests that form on ridges of loose marine sediments deposited by coastal storm surge events. Older and higher beach berms can contain trees similar to those found on tropical hammocks, with trees that include gumbo

limbo (*Bursera simaruba*), seagrape (*Coccoloba uvifera*), silver palm (*Coccothrinax argentata*), sevenyear apple (*Genipa clusifolia*), and poisonwood (*Metopium toxiferum*). Common tall shrubs include Spanish stopper (*Eugenia foetida*), hog plum (*Ximenia americana*), white indigoberry (*Randia aculeata*), Florida Keys blackbead (*Pithecellobium keyense*), and saffron plum (*Sideroxylon celastrinum*). Perfumed spiderlily (*Hymenocallis latifolia*), bayleaf capertree (*Capparis flexuosa*), buttonsage (*Lantana involucrata*), and rougeplant (*Rivina humilis*) are among the more common short shrubs and herbs within beach berm communities. Rare plants such as pride-of-big-pine (*Stumpfia maritima*), joewood (*Jacquinia keyensis*), and wild dilly (*Manilkara jaimiqui*) are often found on beach berms.

SLAMM analysis

The Sea Level Affecting Marshes Model (SLAMM) is an advanced land cover and ecosystem change tool that simulates the impacts of future sea level rise on wetland and upland ecosystems. (Warren Pinnacle Consulting, Inc., 2012). The utility of SLAMM is that, unlike other flood vulnerability assessment methods, it integrates long-term hydrologic functions and ecosystem parameters to give projections about future changes to tidal habitat types, such as saltwater marshes, mangroves, and other coastal wetlands, that are already subjected to regular tidal flooding.

SLAMM utilizes a series of algorithms to integrate future climate change scenarios and ecosystem parameters to make predictions about the transition of different land covers due to sea level rise. For coastal wetlands, sea level rise in some cases is expected to increase the area of tidal wetland due to upland areas becoming subject to tidal flooding, which may then promote colonization by tidal wetland vegetation (Kirwan and Megonigal 2013). In other cases, coastal wetlands may be expected to decline and transition to open water or non-vegetated mud-flats due to the inability of wetland plants to adapt to rising tides and/or coastal erosion pressures (Ellison and Stoddart 1990; Gilman et al 2008).

For mangrove ecosystems, the primary physical mechanism behind different transition scenarios is the ability of mangroves roots to capture sediment flux. In low sea level rise scenarios or high sediment zones, mangrove ecosystems may capture sufficient sediment flux to outpace the effects of sea level rise (Parkinson et al. 1994). By contrast, higher rates of sea level rise and/or low sediment fluxes may outpace the sediment capture ability, thus leading to mangrove mortality and subsequent transition to a subtidal or open water ecosystem. The high value of SLAMM as a tool for making such complex assessments is well-recognized by many coastal researchers (e.g., Linhoss et al. 2014; Hauer et al. 2015), state agencies (Glazer 2013), and federal agencies (Lee et al. 2014).

Our SLAMM analysis builds upon a previous iteration of SLAMM runs (see Glazer 2013) performed by the Florida Fish and Wildlife Conservation Commission (FWC) for the Florida Keys portion of Monroe County. The previous FWC analysis utilized a previous version of

SLAMM (version 6.01) and sea level rise curves developed by the 2001 Intergovernmental Panel on Climate Change (IPCC). Our analysis updates this prior FWC work by using a later version of SLAMM (version 6.2) and revised sea level rise curves that conform precisely to the lower and upper bounds of the Southeast Florida Regional Climate Change Compact (2011).

Runs of SLAMM 6.2 require geospatial inputs for land cover, elevation, and slope, as well as a series of ecosystem input parameters that include direction of offshore wind, historic trend of sea level rise, great diurnal tide range, elevation of the boundary where saltwater wetlands end, and estimated values of erosion and accretion for freshwater and saltwater wetlands. Brian Beneke of FWC provided the project team with a land cover file based originally upon the Florida Cooperative Land Cover Map (FNAI 2010), which an expert panel assembled by FWC crosswalked into land cover categories required by SLAMM (Glazer 2013; Table 9). As noted by Glazer (2013), areas designated in SLAMM as “brackish marsh” and “shrub-scrub marsh” were determined to have no direct analogue from the FNAI (2010) land covers, and thus instead were manually identified and edited by the expert panel using aerial photography.

All ecosystem parameter inputs for SLAMM analyses as described by Glazer (2013) were provided to the project team by FWC. Consistent with the original FWC analyses (Glazer 2013) and the resolution of the crosswalked SLAMM land cover map provided by FWC, all SLAMM runs for this project were performed at a 10m raster cell size. Elevation and slope parameters were derived from the same LIDAR-based DEM, as referenced to NAVD88 (NAVD_LIDAR), used as the basis for other project analyses, but as resampled to a 10m raster cell size.

At the request of the Village of Islamorada, we extracted the results of the Monroe County SLAMM runs to the Village of Islamorada jurisdictional limits. Summary results for the 2030 and 2060 SLAMM land cover change analyses in the Village of Islamorada are provided in Table 10. As expected, the general trend of the SLAMM results is that a higher rate of sea level rise is associated with an increased conversion of upland and freshwater dependent land covers into tidal wetlands and open water habitats over time.

Mangrove ecosystems in the Village of Islamorada show a highly divergent response under the two sea level rise scenarios. Under the low sea level rise scenario, mangrove area shows a slight decrease (8%) by 2030, but then shows some recovery in area by 2060. By contrast, the high sea level rise scenario shows a rapid (28%) decline in mangrove area by 2030, followed by a continued decline (70% loss) in area by 2060. These results are consistent with research suggesting that mangrove ecosystems have some capacity for collecting sediments and “keeping up” with low levels of sea level rise, as well as colonizing into upland areas that become more regularly inundated by tidal influx (Kirwan and Megonigal 2013). However, existing research also suggests that high rates of sea level rise can overwhelm the adaptive and colonization capacity of mangroves, resulting in major die-backs and significant reduction in areal coverage (Gilman 2004).

Although SLAMM is an advanced ecosystem and land cover change model, we do note that caution is warranted in terms of how the results of SLAMM should be interpreted within the Florida Keys. Underlying elevation errors within the LIDAR DEM, classification errors within the land cover file, and geographic transformations necessary for the model to function all introduce uncertainty about the results, particularly at lower levels of sea level rise. In addition, careful calibration of the model with historic land cover change and field observations (Gilman et al. 2008) would provide helpful guidance for further updates and revisions of the modeling input parameters to better fit the specific ecological nuances of the Florida Keys.

Even with these caveats, the current results for the Village of Islamorada are broadly consistent with the view that coverage, expansion, and/or die-back within mangrove ecosystems may be one of the most crucial near-term indicators of the sea-level rise trajectory that takes shape over the next several decades (Blasco et al. 1996). Responses of intertidal ecosystems, such as mangroves, may show high sensitivity to near-term sea level rise shifts. For this reason, it is plausible that a mangrove response characterized by shoreward invasion into upland areas, but with general maintenance of extant populations, could provide near-term indication of a low sea level rise scenario. By contrast, a large net loss (i.e., die-back rate exceeds colonization rate) of mangrove coverage from natural areas in the Village of Islamorada through 2030 may provide some indication that sea level rise is trending toward a higher scenario.

It is, however, critical to reiterate that a variety of other factors such as hurricane disturbance, coastal hardening with sea walls or other bulkheads, and hydrologic alterations that change regional sediment balances can have impacts on future mangrove distribution that may exacerbate, or even exceed those, associated with sea level rise (Smoak et al. 2013). Therefore, maintenance of natural habitat corridors in low-lying areas that allow for up-gradient colonization of tidal wetlands is the most commonly recommended strategy for promoting future coverage of mangroves and other tidal wetland ecosystems, including under accelerated sea level rise trends (Gilman et al. 2008). Construction of hardened bulkheads and impervious surfaces in low-lying areas can be expected to slow or even entirely prevent colonization of wetland vegetation, even as the hardened surfaces become more regularly subjected to tidal inundation (Titus et al. 1991).

Habitat Inundation Analysis

An analysis of potential inundation of future freshwater, upland, and anthropogenic land cover types within the Village of Islamorada due to sea level rise was performed using low and high sea level rise scenarios at 2030 and 2060. This analysis was developed through an area summation analysis of Monroe County's most recent GIS shapefile layer representing habitat and land cover types (Land_Cover_Habitat.shp) with extracted elevation from the LIDAR DEM. The initial area for each upland habitat and land cover type represents the summed area of DEM cells above MHHW (>0 feet above MHHW) within the respective habitat polygons at the condition of 2010 sea level. The same calculation was then performed for each 2030 and 2060

sea level rise scenario, with the MHHW elevations in the LIDAR DEM adjusted downward for each scenario using the range of possible and likely flood inundation thresholds (Table 3). The logic for this calculation is that any upland habitat exposed to daily tidal flooding will be inundated and transformed into a tidal ecosystem. The possible and likely categories are calculated separately (i.e., possible is not additive to likely) and follow the explicit elevation ranges defined in Table 3.

Results for habitat and land cover areas possibly and likely lost to tidal inundation for each 2030 sea level rise scenario are presented in Table 11. Notably, land covers classified as developed by far show the most amount of possible or likely acreage lost for both 2030 scenarios. However, built areas that are denoted by the impervious surface land cover show a comparatively low percentage of area subject to tidal inundation by 2030. The vast majority of the impervious cover acreage suggested as vulnerable to 2030 sea level rise scenarios is composed of roads and parking areas. Less than 4 acres in the Village of Islamorada is denoted as freshwater wetlands, and the inundation analyses suggest that more than 10% of this acreage could be possibly affected by regular saltwater intrusion with 3 inches of sea level rise in 2030. The analysis further suggests that over 20% of the freshwater wetland acreage in the Village of Islamorada would either be possibly (15.2%) or likely (5.4%) affected by regular saltwater intrusion with 7 inches of sea level rise in 2030.

Table 12 presents complementary results for habitat and land cover areas possibly and likely lost to tidal inundation for each 2060 sea level rise scenario. Habitats dominated by exotic species continue to show high exposure to sea level rise inundation in terms of percentage lost, while land covers classified as developed also continue to show the most amount of possible or likely acreage lost for both 2060 scenarios. Impervious surface land cover show approximately 2.5% possible or likely inundation exposure at the low 2060 sea level rise scenario, but show a significant possible or likely exposure of 11.5% at the high 2060 sea level rise of 2 feet above current MHHW.

Although tropical hammock forests in the Village of Islamorada show fairly low percent exposure at other sea level rise thresholds, our analysis suggests that over 36 acres (8.1%) of tropical hammock forest in the Village of Islamorada would likely be lost with 2 feet of sea level rise, while an additional 32.7 acres (7.2%) may possibly be lost. Hammock and anthropogenic land covers along the US1 corridor for much of Plantation, Windley, and Upper Matecumbe keys show somewhat low potential exposure to even 2 feet of sea level rise due to the presence of a relatively high ridge. However, large habitat areas adjacent to the Atlantic and Florida Bay coasts and much of Lower Matecumbe Key show widespread exposure to possible or likely inundation effects with 2 feet of sea level rise.

Scientific research on the impacts of sea level rise in Southeast Florida indicates a very strong consensus that there is very little, if any, ability to prevent upland habitat change as tidewaters become higher over time (Ross et al. 1994; Noss 2011; Saha et al. 2011; Schmidt et al. 2012). In fact, vegetation changes may be an early indicator of the extent and rate to which sea level rise is occurring within the Village of Islamorada over the next two decades. For this reason, careful and sustained monitoring of tropical hammock ecosystems vegetation, particularly for invasion of vegetation with known tolerance to regular tidal inundation, is highly recommended as a key component of ongoing sea-level rise planning within the Village of Islamorada. Complementary monitoring of mangrove ecosystems to assess trends of expansion or loss due to increased tidal incursion is also recommended.

From a landscape management perspective, maintenance of greenspace corridors in areas with low-lying elevations that show susceptibility to future tidal inundation has the benefit of allowing for up-gradient movement of natural tidal communities, such as buttonwood and mangroves, in the event of accelerated sea level rise. By contrast, construction of hardened shorelines and impervious surfaces in low-lying areas can be expected to slow, or perhaps even stop, the movement of these tidal ecosystems, thus accelerating their future decline. Avoidance of human development in such low-lying areas has the co-benefit of avoiding future costs associated with flood damages to the built environment.

Table 9: Crosswalk to SLAMM Land Cover Categories. Crosswalk from original FNAI (2010) land cover categories (adapted from Glazer 2013). Note – not all SLAMM or FNAI land covers from this list are found in the Village of Islamorada.

SLAMM Land Cover	FNAI Code and Land Cover Class
Developed Dry Land	1800 - Cultural
	1821 - Low Intensity Urban
	1822 - High Intensity Urban
	1840 - Transportation
	1841 - Roads
	1842 - Rails
	1850 - Communication
	1860 - Utilities
	1870 - Extractive
	1872 - Sand & Gravel Pits
	1873 - Rock Quarries
	1875 - Reclaimed Lands
	1877 - Spoil Area
	3240 - Sewage Treatment Pond
	3260 - Industrial Cooling Pond
	18211 - Urban Open Land
	18212 - Low Structure Density
	18221 - Residential, Med. Density
	18222 - Residential, High Density
	18223 - Commercial & Services
	18224 - Industrial
	18225 - Institutional
	182131 - Parks
	182132 - Golf courses
	182134 - Zoos
Undeveloped Dry Land	1110 - Upland Hardwood Forest
	1123 - Live Oak
	1125 - Cabbage Palm
	1130 - Rockland Hammock
	1131 - Thorn Scrub
	1210 - Scrub
	1214 - Coastal Scrub
	1220 - Upland Mixed Woodland
	1300 - Pine Flatwoods and Dry Prairie
	1311 - Mesic Flatwoods
	1320 - Pine Rockland
	1330 - Dry Prairie
	1340 - Palmetto Prairie
	1400 - Mixed Hardwood-Coniferous
	1500 - Shrub and Brushland
	1610 - Beach Dune
	1620 - Coastal Berm
	1630 - Coastal Grassland
	1640 - Coastal Strand

	1650 - Maritime Hammock 1740 - Keys Cactus Barren 1831 - Rural Open 1832- Agriculture 1880 - Bare Soil/Clear Cut 7000 - Exotic Plants 7100 - Australian Pine 7200 - Melaleuca 7300 - Brazilian Pepper 18331 - Cropland/Pasture 18332 - Orchards/Groves 18323 - Tree Plantations 182111 - Urban Open Forested 183111 - Oak - Cabbage Palm Forests 183311 - Row Crops 183312 - Field Crops 183313 - Improved Pasture 183314 - Unimproved/Woodland Pasture 183321 - Citrus 183324 - Fallow Orchards 183331 - Hardwood Plantations 183341 - Tree Nurseries 183342 - Sod Farms 183343 - Ornamentals 183352 - Specialty Farms 1833151 - Fallow Cropland
Swamp	2112 - Mixed Scrub-Shrub Wetland 2200 - Freshwater Forested Wetlands 2230 - Other Hardwood Wetlands 2233 - Mixed Wetland Hardwoods 2240 - Other Wetland Forested Mixed 2242 - Cypress/Pine/Cabbage Palm 7400 - Exotic Wetland Hardwoods 22211 - Hydric Pine Flatwoods 22212 - Hydric Pine Savanna 22311 - Bay Swamp 22312 - South Florida Bayhead
Cypress Swamp	2210 - Cypress/Tupelo(incl Cy/Tu mixed) 2211 - Cypress 2213 - Isolated Freshwater Swamp 2214 - Strand Swamp
Inland Fresh Marsh	2111 - Wet Prairie 2120 - Freshwater Marshes 2125 - Glades Marsh 2131 - Sawgrass 2140 - Floating/Emergent Aquatic Vegetation 2300 - Non-vegetated Wetland 5251 – Buttonwood Forest 21211 - Depression Marsh

Brackish Marsh	*Expert Input
Scrub-Shrub Marsh	*Expert Input
Salt Marsh	5240 - Saltwater Marsh
Mangrove	5250 - Mangrove Swamp
Tidal Flat	5220 - Tidal Flat 9100 - Unconsolidated Substrate
Ocean Beach	1670 - Sand Beach (Dry)
Rocky Intertidal	52111 - Keys Tidal Rock Barren
Inland Open Water	3000 - Lacustrine 3100 - Natural Lakes & Ponds 3200 - Artificial Lakes & Ponds 3211 - Aquacultural Ponds 3220 - Artificial Impoundment/Reservoir 3230 - Quarry Pond 4200 - Canal/Ditch 4210 - Canal 8000 - Open Water
Estuarine Open Water	5000 - Estuarine
Tidal Creek	4000 - Riverine 4100 - Natural Rivers & Streams
Open Ocean	6000 - Marine

Table 10: SLAMM 6.2 Habitat Change Results for the Village of Islamorada. Results based on 2030 and 2060 Southeast Florida Regional Climate Change Compact sea level rise scenarios. All area units are in acres.

	Year (Sea Level Rise Scenario)								
Habitat	2010	2030 (Low)	% Change	2030 (High)	% Change	2060 (Low)	% Change	2060 (High)	% Change
Developed Dry Land	2,197	2,054	-6%	2,026	-8%	1,999	-9%	1,659	-24%
Brackish Marsh	5	5	0%	4	-20%	4	-20%	1	-80%
Mangrove	1,426	1,312	-8%	1,021	-28%	1,343	-6%	428	-70%
Open Ocean/Estuarine	1,149	1,431	25%	1,766	54%	1,479	28%	2,848	148%
Salt Marsh	13	12	-8%	10	-23%	11	-15%	4	-69%
Scrub-Shrub Marsh	53	45	-16%	37	-30%	41	-23%	21	-60%
Undeveloped Dry Land	561	545	-3%	540	-4%	527	-6%	443	-21%

Table 11: Habitat Inundation Analysis, 2030 Sea Level Rise Scenarios.

		2030 Low Scenario 3 Inches Sea Level Rise				2030 High Scenario 7 Inches Sea Level Rise			
Land Cover	2010 Acres	Possibly Lost	%	Likely Lost	%	Possibly Lost	%	Likely Lost	%
Freshwater Wetland	3.9	0.4	10.6%	N/A	N/A	0.6	15.2%	0.2	5.4%
Hammock	456.0	6.8	1.5%	N/A	N/A	9.3	2.0%	2.8	0.6%
Undeveloped Land	182.6	13.8	7.5%	N/A	N/A	12.4	6.8%	7.1	3.9%
Beach Berm	11.6	0.0	0.1%	N/A	N/A	0.0	0.3%	0.0	0.1%
Exotic	49.7	5.8	11.7%	N/A	N/A	8.9	17.9%	1.4	2.9%
Developed Land	1646.1	115.2	7.0%	N/A	N/A	107.1	6.5%	29.7	1.8%
Impervious Surface	317.4	4.4	1.4%	N/A	N/A	4.7	1.5%	1.9	0.6%

Table 12: Habitat Inundation Analysis, 2060 Sea Level Rise Scenarios.

		2060 Low Scenario 9 Inches Sea Level Rise				2060 High Scenario 24 Inches Sea Level Rise			
Land Cover	2010 Acres	Possibly Lost	%	Likely Lost	%	Possibly Lost	%	Likely Lost	%
Freshwater Wetland	3.9	0.7	16.7%	0.3	8.5%	0.9	24.0%	2.1	52.6%
Hammock	456.0	10.9	2.4%	5.1	1.1%	32.7	7.2%	36.8	8.1%
Undeveloped Land	182.6	11.2	6.2%	11.5	6.3%	25.3	13.9%	39.8	21.8%
Beach Berm	11.6	0.1	0.5%	0.0	0.1%	1.6	13.4%	0.5	4.3%
Exotic	49.7	7.9	15.9%	4.4	8.9%	7.6	15.4%	19.5	39.3%
Developed Land	1646.1	76.4	4.6%	72.5	4.4%	150.7	9.2%	227.9	13.8%
Impervious Surface	317.4	4.8	1.5%	3.3	1.0%	18.6	5.8%	18.0	5.7%

Summary of Dataset Deliverables

All final GIS datasets for this vulnerability assessment are to be delivered to the Village of Islamorada in an ESRI File Geodatabase format with supporting metadata upon project completion. The files within this geodatabase are summarized in Table 13.

Table 13: Final GIS Datasets.

Dataset Description	File Name	Dataset Type
MHHW-based Digital Elevation Model	MHHW_LIDAR	Raster (5 meter cell size)
NAVD88-based Digital Elevation Model	NAVD_LIDAR	Raster (5 meter cell size)
Building Footprints of Public Facilities and Critical Infrastructure Parcels	ISLAMORADA_FOOTRPINTS	Polygon Features
Complete Road Segments	Original_Roads	Polyline Features
Road Segments with Sketch Planning Tool Nuisance Flooding Vulnerability, 2030 Low Sea Level Rise Scenario	Low_2030_Nuisance	Polyline Features
Road Segments with Sketch Planning Tool Inundation Flooding Vulnerability, 2030 Low Sea Level Rise Scenario	Low_2030_Inundation	Polyline Features
Road Segments with Sketch Planning Tool Nuisance Flooding Vulnerability, 2030 High Sea Level Rise Scenario	High_2030_Nuisance	Polyline Features
Road Segments with Sketch Planning Tool Inundation Flooding Vulnerability, 2030 High Sea Level Rise Scenario	High_2030_Inundation	Polyline Features
Road Segments with Sketch Planning Tool Nuisance Flooding Vulnerability, 2060 Low Sea Level Rise Scenario	Low_2060_Nuisance	Polyline Features
Road Segments with Sketch Planning Tool Inundation Flooding Vulnerability, 2060 Low Sea Level Rise Scenario	Low_2060_Inundation	Polyline Features
Road Segments with Sketch Planning Tool Nuisance Flooding Vulnerability, 2060 High Sea Level Rise Scenario	High_2060_Nuisance	Polyline Features
Road Segments with Sketch Planning Tool Inundation Flooding Vulnerability, 2060 High Sea Level Rise Scenario	High_2060_Inundation	Polyline Features

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Appendix C. Peer Review Process



Dr. Jason M. Evans
Assistant Professor of Environmental Science
Stetson University
September 24, 2015 - DRAFT

Monroe County, FL: GIS Vulnerability Assessment for Sea Level Rise Planning

Appended Responses to Peer Review and Staff Comments from Draft Document

Nick Aumen's comments

Comment 1: *I worry that SLR scenarios used in this analysis are too conservative, based on more recent scientific literature. Even if higher levels are more uncertain, would it not be prudent at least to consider the impacts of more severe changes than considered here?*

As a scientist, I completely understand this concern. However, this planning effort was undertaken under the funding and approval of the Monroe County Board of County Commissioners, who are signatories to the Southeast Florida Regional Climate Change Compact. The 2011 Unified Sea Level Rise projections were adopted for the explicit purpose of providing analytic clarity and uniformity to vulnerability assessments. Through this project there was a remarkable lack of argument, at least from public officials, about use of the accelerated sea level rise curves. Introduction of higher curves into the planning effort at the end of the project, frankly, would not only be a source of new modeling effort, but could also undermine the consensus and trust earned throughout the consistent use of scenarios throughout the project. There is therefore little support among Monroe County staff, or the planning team to use a higher curve than those already seen and agreed by the BOCC.

From an applied sense, the analyses already show that 24 inches by 2060 scenario would have extremely severe impacts on Monroe County by 2060. In fact, it is likely that this rate of sea level rise would exceed resilience and adaptation thresholds for most areas of Monroe County. Such a future scenario would also be accompanied by clear knowledge that seas would continue to rise at a high rate for decades and centuries to come, not to mention disruptions of global agriculture and other difficulties associated with runaway global warming and climate change. Because the 24 inches by 2060 scenario already presents such an extreme and dire case (even if not the most extreme that is technically possible), it is my sincere professional opinion there is very little to gain from a general vulnerability assessment of this type using a higher sea level rise curve, at least within Monroe County.

I do know that the draft guidance for the updated SEFRCCC suggests using the higher SLR curve (6.6 feet by 2100, which translates to about 31 inches by 2060 using the 2011 SEFRCCC methodology) from the National Climate Assessment for “low risk tolerance” infrastructure. My understanding is that “low risk tolerance” infrastructure refers to new construction of facilities like nuclear power plants that cannot be moved and would be continue to be extremely dangerous once inundated. One could perhaps make the argument that Monroe County should consider developing and implementing design standards for its wastewater treatment infrastructure to be resilient through 2060 under the most extreme sea level rise scenarios, and for there to be specific decommissioning protocols in the case that the infrastructure must be abandoned before 2060 due to catastrophic sea level rise. As noted in more detail below, such engineering assessments and design criteria ultimately exceed the level of technical detail we currently have available for this vulnerability assessment.

All that said, I have amended the text to note that higher rates of sea level rise are possible and noted in the scientific literature (pg. 2). Because we also received some public demands to consider lower sea level

rise (i.e., simple continuation of the linear trend) scenarios, I've also included language to that effect as well.

Comment 2: Another climate change possibility that could have dramatic effects in Monroe County is the possibility of lower amounts of precipitation, coupled with increasing temperature (and associated increases in evapotranspiration). A recent analysis suggested that a 10% decrease in rainfall accompanied by a 1.5-degree C increase in temperature could result in major impacts on Lake Okeechobee and Everglades water levels, which could affect water supply for the Keys (see Aumen et al. 2015 for an overview). The document recognizes the potential impacts from sea level rise on water supply (p. 50), but gives little attention to potential impacts from the coupling of decreased rainfall and increased evapotranspiration.

I have modified a paragraph on pg. 53 to read as follows:

“It is also widely documented that severe droughts can quickly lower the freshwater lens and in some cases result in both landward and upward movement of the saltwater interface within the Biscayne Aquifer (Peters and Reynolds 2008). This saltwater movement is associated with drops in interconnected regional surface water resources that occur due to evaporation and lack of rainfall replenishment, as well as increased human demand for freshwater supply from surface and groundwater surfaces (Bloetscher et al. 2010). Some climate change models suggest that increasingly severe drought conditions and higher dry season temperatures are more likely to occur within southeast Florida over the next several decades, further stressing regional freshwater resources and providing conditions that further promote the landward encroachment of saltwater lenses (Bloetscher et al. 2011). Thus, there is great regional concern that the interacting stressors of sea level rise, increased water demand, malfunctioning drainage canals, and anomalously severe droughts could together precipitate significant regional saltwater contamination of freshwater wells within the Biscayne Aquifer over the next several decades (Aumen et al. 2015).”

Comment 3: As an ecologist by training, and not a geospatial expert, I have no specific comments on the methods and approaches used in this document other than they seem very appropriate and relevant. However, I have an overarching concern about how we project impacts from sea level rise. This document focuses on footprints of critical buildings and roadways, which is understandable. However, how likely is it that there would be a functioning infrastructure and inhabitants in an area where only the buildings and the roads are above water? Is there a way to extend the analysis to examine some sort of threshold at which rises in sea level overcome our ability to adapt, resulting in migration? I also could imagine a scenario in which critical buildings and roadways are preserved, but one or more critical functions are lost that make the buildings and roadways irrelevant. Examples include the loss of water supply, flood control, and sewage treatment capabilities. The only text that I could find related to this concern is on p. 37, which mentions the possibility of altered patterns of population settlement.

These are important questions, and ones I think about A LOT. The technical answer is that we don't really know what the thresholds for migration are, although – as an aside – I am currently collaborating with a demographer at University of Georgia, Mathew Hauer, on case study research to maybe get at this. I very

much agree that the abandonment thresholds are very likely to be below the point at which buildings get regularly inundated by tidewaters.

However, the only (and wholly unsatisfying) answer I can give here is that trying to model those system dynamics thresholds is well beyond the scope of what Monroe County contracted us to do for this particular project. What we are trying to do here is at least begin getting a more direct handle on their infrastructure vulnerabilities, and perhaps laying the groundwork for a decision framework for determining thresholds at which infrastructure should either be improved – or abandoned. But these are complex, value-laden decisions that we are not yet equipped to even model (to my knowledge), much less make firm recommendations from a policy or technical perspective.

Comment 4: With respect to roadways, sea level rise will compromise roads at sea levels well below the actual road surface. Wetter soils and more frequent inundation can compromise the road bed long before the road is actually submerged. This possibility is mentioned in the document for structures and access roads, but not for the main roadways. The potential compromise of the roadbed for Tamiami Trail is one of the major impediments to raising canal stages in the adjacent L-29 Canal for Everglades restoration purposes. Hundreds of millions of dollars have been spent and will be spent in the future to construct bridges and to raise the roadbed along the most vulnerable stretches of Tamiami Trail.

Good point. I've added this text to introduce the roads section:

“Increased tidal inundation of road beds and road surfaces is generally one of the earliest impacts of sea level rise observed in low lying coastal communities. Although saltwater infiltration into road surfaces may begin as an infrequent and temporary nuisance, repeated and severe inundation of road beds and road surfaces can cause a wide range of significant problems and expensive damages. The most readily apparent of these issues is blockage or restriction of traffic lanes due to flooding conditions and increased corrosion of metals on vehicles that may frequently pass through shallow saltwater puddles. Because roads often serve as conduits for stormwater, tidal flooding of roadways during heavy rains may in some cases result in loss of drainage potential that causes more widespread local flooding. Repeated tidal saturation of road bed soils and flowing tidewater action across road surfaces may also in some cases result in wash out or partial collapse of road surfaces (Titus 2002).”

Comment 5: Also, a hard-to-define loss in quality of life, perhaps through loss of nearby natural areas, could end up being more important than loss of some infrastructure. Another hard-to-quantify example might be the loss of the characteristic vegetation in the Keys from more frequent salt water inundation, which, while only a temporary nuisance for drainage and traffic, can cause irreversible changes in soil characteristics. A colleague of mine spent a lot of money and time planting native vegetation on his property on Cudjoe Key. The Hurricane Wilma storm surge in October 2005 inundated his property, and killed the new vegetation. The increased salinity of the soil prevented the restoration of this vegetation for years, and that was only from one storm surge event. If the Keys landscape becomes less aesthetically pleasing because of these vegetation changes, it is possible that this impact could be far more serious from an economic standpoint than drainage or traffic nuisances?

I do agree with these sentiments, but they get into issues of aesthetic preference and human values that are simply beyond the specific scope of this project.

Comment 6: Justification should be included for omission of the Key West, Key Colony Beach, Marathon, and Islamorada WWT facilities (p. 35). It seems like these facilities should be part of the evaluation.

The rationale for omitting these is that the County staff was pretty adamant about not doing any extra work/analysis of infrastructure belonging to municipalities. Where locations for municipal infrastructure were provided by the County, we included the analysis. If not provided, we did not develop the data necessary to do the analysis. I've included this amended text on pg. 38:

“Because this study was conducted for unincorporated Monroe County, additional wastewater treatment facilities operated by the municipalities of Key West, Key Colony Beach, Marathon, and Islamorada were not included in the vulnerability assessment.”

Comment 7: It appears that the evaluation of the WWTPs was limited to inundation of structures within the facilities. Is it possible that the WWTPs would lose function before sea levels rise to the point of more frequent inundation? For example, could higher sea levels decrease the ability to gravity drain wastewater, or even to pump wastewater? An assessment of WWTP function seems necessary under these various scenarios. Additionally, do any WWTPs in Monroe county presently utilize, or plan to utilize in the future, constructed wetlands for tertiary treatment? If so, WWTP function would be interrupted by sea level rises far below those that would impact actual structures.

Yes, failure of WWTP systems could occur due to many factors independent of the central facilities. However, the failure points of these systems require very detailed engineering assessments and site-specific data far beyond what we were provided or, frankly, could be expected to evaluate wholly for this sort of planning project. I have added some language into the report to recommend the need for follow-up engineering assessments of the type suggested here:

“The EPA (2014) has recently released a guidance document for auditing site-level flood resilience of wastewater infrastructure. Following this guide, we specifically recommend that the Monroe County’s Floodplain Coordinators be supplied with site-level assessments that characterize resistance of above-ground structures and associated electrical components to damages from extreme event flooding. Development of maintenance recording protocols and, as necessary, engineering assessment to assess resistance and resilience of below-grade wastewater pipes and pump infrastructure to increased saltwater incursion associated with sea-level rise is also recommended.”

Comment 8: On page 95, the following statement is made: “There is wide agreement that the most generally predictable of these projected impacts is long-term disappearance of upland ecosystems and associated species that become inundated by rising seas.” I am concerned about this statement for two reasons. One, if there is wide agreement, references should be provided to support the assertion. Two, the statement leaves the impression that much less is known about the other components of climate change, which I do not think is true. Although I am not a marine ecologist, I think that coral reef changes from increased ocean temperature already have been documented scientifically. I think the same is true from

ocean acidification, but I do not know for sure. The document does address these issues more completely in subsequent sections (beginning on p. 97). In any event, these issues should be explored more carefully or the wording might be revised. The same general comments might apply to the discussion about mangrove communities. Again, I have the sense that some work has been done and published. I would suggest that you ask one or two experts in these areas to review this section.

Points very well-taken re: the references and strength of the language here. I've adjusted this paragraph in this way:

“Perhaps the most generally predictable of these projected impacts is long-term disappearance of upland ecosystems and associated species that become inundated by rising seas (Ross et al. 2008; Menon et al. 2010; Saha et al. 2011). However, there is also significant potential for large-scale changes in the composition and productivity of marine ecosystems due to the combined stressors of ocean acidification (as associated with increased atmospheric carbon dioxide), increased ocean temperatures, and rapid sea level rise (Duarte 2002; Orth et al. 2006; Hoegh-Guldberg et al. 2007; De'ath et al. 2012; Cuning and Baker 2013). Impacts of climate change on intertidal mangrove wetland communities are perhaps among the least predictable, as such communities could potentially decline or expand depending on multiple factors that include rate of sea level rise, changes in regional sedimentation patterns, and the future extent of human engineering interventions within the intertidal zone (Krauss et al. 2014).”

I do think it is appropriate and defensible to state that disappearance of terrestrial ecosystems is the most generally predictable impact of sea level rise. We can be pretty certain that once a terrestrial ecosystem becomes affected by tidewater, it will convert into something else. By contrast, the thresholds for marine ecosystems are not as straightforward and the relationships are trickier. In coral reefs, for example, there is interaction between nutrients, food chain structure, and other factors that prevent a straightforward inference of X climate change = Y ecosystem change. Same thing goes for mangroves and sea grass communities. We know there are thresholds, but the uncertainty bounds are relatively high due to confounding multivariate factors. However, we can say with very high confidence that X sea level rise = Y loss of upland communities. Basically, if they are under MHHW or even annual higher water, we can be assured that they will have turned into something else.

Comment 9: *The Keller and Causey 2005 reference on p. 96 is very dated with respect to characterizing restoration efforts in the Everglades. Perhaps a reference to information contained in www.evergladesrestoration.gov would be better. Also, it is a bit of overstatement to say in this paragraph that improvement of the Keys coral reef ecosystem was the express reason for efforts to restore Everglades flows. The Keys were certainly one important reason, but one of many.*

I've reworded this a bit here. The point is intended to be the narrow one that the Keys were one of many reasons for Everglades restoration. There is no intention to imply that the Keys were the only reason.

“For all these reasons, there has been longstanding effort to implement management interventions and governmental policies that support the improvement of water quality and ecosystem health within the Florida Keys coral reef ecosystem. Such efforts have included large-

scale replacement of septic tanks with centralized sewerage throughout Monroe County, local load reduction of nutrients and sediments into the near-shore environment (Rehr et al. 2012), and reduced fishing pressures on apex predators and other slowly reproducing species (Bohnsack et al. 1994; Suman et al. 1999).” Improvement of the coral reef system is one of the broader ecosystem restoration goals for long-term plans to restore regional hydrologic flows from the Everglades (Keller and Causey 2005; Caraco and Drescher 2011).”

As for the Keller and Causey (2005) reference, I’ve left that here because it does provide the explicit linkage from Everglades restoration to coral reef restoration. I’ve also added the Caraco and Drescher (2011) reference, which is more recent and goes into much more detail on linkages between CERP and coral reef protection.

Comment 10: In the second paragraph on p. 98, the implication is that local efforts to reduce carbon dioxide are of little use. Although “leading by example” is mentioned subsequently, I think it is important to call attention to the need for carbon dioxide reductions globally. Such global reduction efforts will fail if local areas such as Monroe County do not do their part.

I have given this a lot of thought and ultimately decided to just delete this paragraph as falling outside the scope of a habitat vulnerability assessment.

Comment 11: On p. 98, last paragraph, the first major alteration/stress to Florida Bay was the completion of the Flagler railroad, which via its causeways, cut off tidal flushing from the Atlantic. The signal of this impact can be seen in cores of corals in Florida Bay, showing decreased growth rates beginning in the 1920s.

This paragraph has been amended as follows:

“The other major water quality issue in Florida Bay is a long-term increase in the bay’s salinity. These salinity increases have been largely caused by losses of regional freshwater inputs from the Everglades (Hall et al. 2007). However, blockages of tidal exchange between Florida Bay and the Atlantic Ocean, particularly as associated with construction of the Flagler Railway causeway in the early 20th century, have also resulted in increased residence times and onset of hypersaline conditions in low flush areas (Rudnick et al. 2005). These long-term salinity increases are thought to be another major contributing factor in the decline of many seagrass patches and associated aquatic organisms observed in the Florida Keys region over the past several decades (Boyer et al. 2009).”

Comment 12: On p. 102, I do not understand the explanation provided at the end of the next-to-last paragraph. I understand how LIDAR can overestimate land elevation under vegetation cover, but it is not clear to me how this issue led to the stated result. I am not an expert in this area, but I am assuming this document is geared toward technically literature folks who are not expert in every area.

I’ve tried to make this explanation more clear.

“However, an idiosyncratic result is that undeveloped dry land ecosystems show an increase in area by 2030 under the low sea level rise scenario (i.e., three inches total sea level rise), while

developed dry land ecosystems show a decrease in area. A likely explanation for this discrepancy is that LIDAR elevations are often biased upward in areas of high coastal vegetation cover (Wang et al. 2009; Hladik and Alber 2012). This upward elevation bias may result in ground elevation data points within intertidal ecosystems being (erroneously) recorded as higher than MHHW or, in some cases, even higher than annual high water. Such an upward bias could, in turn, lead SLAMM to convert some extant coastal wetland areas into undeveloped dry land under a low sea level rise scenario. This is because tidal vegetation communities that erroneously show underlying elevations in exceedance of annual high water would be assumed to undergo successional growth into non-tidal, upland vegetation communities.”

The basic idea is that if SLAMM encounters a mangrove community with an underlying elevation that is higher than annual high water at the given scenario year, it will convert that mangrove community into an upland forest. For example, a given area of mangroves may have a “true” elevation of 0 (i.e., at MHHW), but have an erroneous LIDAR value of 1.4 feet above MHHW. At three inches of sea level rise, the mangrove community with an (erroneous) elevation of 1.4 feet above MHHW could transition into an upland forest.

In reality, it is absurd to think that there would be any increase of upland forest at the expense of mangrove under even minimal sea level rise in the FL Keys (or elsewhere, for that matter). However, at small increments of sea level rise (e.g., 3 inches), it’s very likely that the upward elevation bias will lead to some predicted conversion of mangroves into upland forest in SLAMM, as the (mistaken) input elevation is shown as higher than MHHW.

There are emerging techniques for reducing this kind of bias, particularly in saltmarshes (Hladik and Alber 2012, reference below and also added to the report), but these are pretty field data intensive and beyond the scope of the GreenKeys project. Therefore, we need to caveat the results appropriately and, perhaps, make recommendations for developed of enhanced ground elevation data and/or local field corrections.

Comment 13: At the beginning of the third paragraph on p. 99, I would be cautious about saying there is general consensus among scientists on these points (in general, this document should be reviewed for possible overuse of phrases like “general consensus”, “high consensus”, and “widespread agreement”, unless the author is abundantly sure that these are true and can back the statements up with references). In fact, I think there remains somewhat of a scientific debate about whether nutrient reduction or restoration of freshwater inputs are more important to stabilize seagrass communities and other ecosystem components of the Bay. In fact, one of the main foundations of the Comprehensive Everglades Restoration Project is to get more freshwater to Florida Bay.

Point well-taken re: the use of the term “consensus” and its ilk. I’ve gone through and either removed those phrases, or made sure to follow them up with a chain of supporting references. As for this specific comment, I’ve changed the paragraph as follows:

“Under conditions of rapidly warming and rising seas, conservation of seagrass communities will clearly require a multi-pronged strategy. The fundamental piece of this strategy is reduction of

phosphorus, nitrogen, and other anthropogenic pollutant loads into shallow marine waters that have historically supported seagrass communities. Algal blooms fueled by nutrient loading remain as the primary global stressor to seagrass communities, and there is high consensus among scientists that seagrass areas with low anthropogenic nutrient burdens are likely to show the highest resilience to both sea-level rise and warming of marine waters (Orth et al. 2006; Bricker et al. 2008; Paerl and Paul 2012). Continued nutrient mitigation in Florida Bay through advanced wastewater treatment, stormwater management, and other water quality improvement practices can therefore be expected to increase the resilience of the sea grass community to climate change stressors. Efforts to improve water quality through restoration of regional freshwater inputs and increased tidal flushing are also considered critical to the long-term recovery and future resilience of sea grass communities within the Florida Bay ecosystem (Rudnick et al. 2005).”

Hladik, C. and M. Alber. 2012. Accuracy assessment and correction of a LIDAR-derived salt marsh digital elevation model. *Remote Sensing of Environment* 121:224-235.

Jayantha Obeysekera’s comments

Comment 1: *Please be aware that these numbers (sea level rise scenarios) have changed in the latest projections of the Compact.*

Please see the response to Nick Aumen’s first comment, which also notes the revised Compact projections. I have added language in the report to acknowledge that higher sea level rise scenarios are within the range of possibility, while also being clear about the rationale for using the 2011 projections.

Comment 2: *How did you compute the 2010 elevation in terms of the Geodetic Datum? See paper by Flick et al. (2013) Matching Mean Sea Level Rise Projections to Local Elevation Datums, J. of Waterway, Port, Coastal and Ocean Engineering, March 2013*

Thank you for the Flick et al. (2013) reference. Without realizing it, I followed their exact methodology to make the adjustments between the fixed geodetic datum (NAVD88), the 1992 tidal datum, and the differential values for 2010 MHHW used for each of the different sea level rise curves. I’ve spelled these calculations out in full detail now on pages 2-4.

In practice, I actually modeled everything relative to a DEM based on the 1992 tidal datum, rather than make different adjustments for the two sea level rise curves. So, for example, I modeled vulnerability for the 2030 low sea level rise at 5 inches above 1992 MHHW and the 2030 high sea level rise at 27 inches above 1992 MHHW. This gives the same result as the Compact scenarios, while removing the messiness of creating separate DEMs with a different elevation “datum” for each scenario. However, I realize that I had previously communicated this very poorly in both Table 2 and Table 3. For the sake of clarity, what I’ve done now is change the reference in these tables to the 1992 national tidal datum epoch for Tables 2 and 3.

As an aside, I did notice that the new Compact projections apparently use the 1992 tidal epoch datum, rather than adjusted 2010 baselines. My assumption is that the Compact did this because the 2010 adjustments end up being pretty confusing to explain, particularly if one starts doing analyses based upon several different sea level rise projections that each end up having slightly different 2010 “baselines.”

Comment 3: It is not clear why this particular dataset (UF GeoPlan DEM at 5 m cell size) was used. I thought there is a point cloud and/or a 5 ft data set.

There are a few reasons why we chose to use this UF GeoPlan dataset, as opposed to the other sources noted. First, assembling a new DEM from the raw LIDAR point cloud is a very intensive operation to perform across the entirety of the Keys, and the project was tasked and budgeted under the assumption that a new DEM would not be created. There are algorithms available from NOAA Digital Coast to create a DEM from raw LIDAR clouds, but it requires a lot of secondary processing and filtering to remove “false” ground return data from the NOAA output. These also arrive in multiple tiles, which then have to be mosaicked together in batches after the filtering and quality check processes are completed. I say all this just to reiterate that creation of a new DEM from raw LIDAR at the scale of Monroe County is not an endeavor to be taken lightly.

I did obtain and evaluate a 10 ft resolution DEM developed by SFWMD. However, I decided against using that dataset, primarily due to concerns about the point cloud filtering. For example, there are some cells in Key West that show ground elevations over 90 feet above NAVD in the SFWMD DEM, and there are numerous cells that register above 20 ft NAVD throughout Monroe County. Virtually all of these values can be assumed to be an artifact of misclassified building rooftops and/or vegetation canopy as ground returns. The UF GeoPlan apparently used a more aggressive point removal algorithm to construct its DEM, and the highest ground elevation anywhere in the Keys in the UF DEM is just over 19 feet above NAVD. This difference alone in the apparent quality of point filtering provided a straightforward justification for choosing the UF DEM over the SFWMD DEM, at least for the type of analyses we performed here.

Even though I agree that it’s marginally desirable to improve upon the 5 meter resolution of the UF DEM, it’s also important to note that virtually all the building infrastructure of concern that we analyzed for this project is much larger than the 25 m² cell size associated with the UF DEM. This implies that the raster resolution is generally sufficient to capture potential vulnerabilities within these structures.

The UF DEM also provides the basis for the FDOT Sea Level Rise Sketch Tool analyses and the SLAMM runs. Use of the same base DEM dataset as the basis for other analyses is arguably desirable simply for the sake of analytic consistency.

All that said, I haven’t added anything in the report to dwell on the technical decisions behind use of the UF DEM dataset in the report. I’ve instead left the matter at documenting the source

and associated limitations of the dataset we did use, rather than discuss issues or limitations with other available datasets.

Comment 4: *Just curious how this (Inverse Distance Weighting) compares with, say Kriging.*

Inverse Distance Weighting (IDW) is a deterministic interpolation technique, whereas kriging utilizes more complex stochastic geostatistical metrics, particularly spatial autocorrelation, to derive an interpolation surface. Most LIDAR DEMs use an IDW technique because of the high density of points available to create the surface. The high density of points generally makes it unnecessary to undertake a much more computationally intense kriging operation.

The basic answer as to why IDW is more appropriate for this application is really twofold: 1) we have a very large number of sample points from which to make the interpolation; and 2) the Keys do not have a complex or steep terrain that might otherwise favor the use of a kriging technique. Kriging would generally be more appropriate if we were basing the interpolation off a relatively few number of points and/or if we were trying to get at high topographical nuance underneath buildings. Since neither of these conditions applied to our case, the potential benefits of a kriging approach can be assumed as marginal, at best.

See, for example, Liu, X, Z. Zhang, and J. Peterson. 2009. Evaluation of the performance of DEM interpolation algorithms for LiDAR data. In: Ostendorf, B., B. Baldock, D. Bruce, M. Burdett, and P. Corcoran (eds.) Proceedings of the Surveying and Spatial Sciences Institute Biennial International Conference, Adelaide 2009, Surveying & Spatial Sciences Institute, pp. 771-780.

Comment 5: *This description of (VDatum) transformations is not very clear. A sketch explaining what was done may help. Also more details on the VDATUM application will be helpful.*

I very much appreciate and, after re-reading this section, agree very much with the first part of this comment. I have added much more detail as to the VDatum interface, and also provided important clarification to the method that was used. The previous description was indeed somewhat incomplete, and as written likely could not have been replicated readily by others. For what it's worth, I have had one of my (best) GIS students go through the procedure as now described, and she was able to replicate it successfully within VDatum and ArcGIS.

I've also added some text and a reference (Yang et al. 2012) to the NOAA technical document that describes the VDatum modeling for the Keys. However, I'm admittedly hesitant to get into a lot of technical detail about the VDatum transformation methods, as it's frankly a very complicated methodology that's a bit ancillary to our purposes here. I think the big key point to emphasize, which hopefully I've done, is that it is absolutely critical to do this transformation when working with LIDAR in SE Florida (and, frankly, most anywhere else if working on a large geographic area with tidal variability).

Comment 6: *How was SLR from the tidal datum to 2010 handled?*

Please see the answer to comment 2 above.

Comment 7: *Does this (nuisance flooding threshold of 1.08 feet above MHHW) apply to the entire county?*

This is the defined NOAA threshold for the Key West tide gauge, and the typical practice is to indeed assign these thresholds by County – or, in cases where there is not a tide gauge in a County, to the nearest tide gauge.

Comment 8: *How the values (in Table 2) were derived is not very clear. Please elaborate since the text is not detailed enough. How was this computed using station tidal epoch? (1981-2001?)*

As noted above in response to Comment 2, I've updated the values in Table 2 and 3 to correspond to the 1992 National Tidal Datum Epoch. The shifting datums between the low and high sea level rise scenarios (i.e., as referenced to 2010) is exceptionally difficult to explain for each table.

Comment 9: *Was this (extreme storm value of 6 feet above MHHW) from statistical modeling of extremes?*

This value was based upon agreement among Monroe County officials and stakeholders that the Wilma surge, which is the highest on record for both Monroe County tide gauges, should serve as the basis of an “extreme event.” I've clarified the text to make this history more clear.

Comment 10: *Actually this (VDatum methodology) was based on NOAA.*

I've changed “developed” to “presented” in this sentence. This, I think, now only denotes that the methodology can be found in the SEFRCCC (2012) document, but removes the implication that SEFRCCC “developed” it.

Jennifer Jurado's comments

Comment 1: *I suggest rewording as “current” is relative. Maybe clarify that used the adopted projections approve at the time of project. You might note that projection in process of being updated to include planning scenario for low risk tolerance projections. Agree with Nick that important to note that while there are other scenarios, (although) this set of curves deemed most relevant for the type of planning decisions and planning horizons for local and regional planning. Might also be worth noting some of the assumptions or recognized limitations, eg. Doesn't adequately reflect contributions of sea level rise due to ice melt, such that rate and amount of rise could both be underestimated.*

As noted above in response to Comment 1 from Nick Aumen, I have rewritten and expanded the sea level rise scenarios section to account for these types of concerns. The high 2060 sea level

rise scenario (24 inches from 2010, but about 5 feet by 2100) does imply onset of significant polar ice melt, although it is indeed true that higher melt rate scenarios are found within the literature. The National Climate Assessment's "High Curve" (6.6 feet by 2100) implies the onset of somewhat more catastrophic melt, and that is the highest scenario that, to my knowledge, is in use by any national or international agency. By comparison, the most recent IPCC "high" scenario sea level rise for 2100 is at approximately 1 meter (3.3 feet).

I do know that James Hansen and others have recently published a paper that suggests the possibility of much more rapid near-term sea level rise (one ice sheet meltwater scenario suggests upward of 15 feet of sea level rise by about 2050). However, this paper is being pretty hotly debated currently within the scientific community, and I'm quite frankly a bit reluctant to delve onto the margins of such arguments about sea level rise rates within this planning effort.

Comment 2: This could be correct, but I thought it (Confidence Interval for LIDAR) was 6 inches or 0.5 feet. I could be wrong.

I have rechecked the LIDAR specifications from FDEM, and the Root Means Square Error is 0.3 feet, which does correspond to a 95% confidence interval of 0.6 feet as noted in the text.

Comment 3: Consider alternative language "to provide that" or "in a manner that"

Language changed to "to provide that."

Comment 4: Word choice. "throughout" or "in"

Changed to throughout.

Comment 5: Missing a number or something? Sentence isn't clear.

On page 33 of the revised document, this sentence now reads (with addition in red): "Notably, all but **two** building with potential exposure of finished first floors of structures to regular tidal flooding (i.e., not considering storm surge), and most facilities that show potential future access issues due to low adjacent grade elevation, for any sea level rise scenario are located within the Pigeon Key historic district.

Comment 6: Is there a reference? Maybe I missed it?

This comment highlights the text "GreenKeys!" While the GreenKeys! moniker is introduced at the beginning of the technical document, I've gone ahead and changed the text to say "this project."

Comment 7: LaPointe as correct spelling?

Corrected.

Comment 8: *Agree with Nick, that if this is a county-wide assessment, that these facilities should be included.*

As noted in response to Comment 6 for Nick Aumen, the project scope was limited to facilities for unincorporated Monroe County. Development of additional data and analyses for facilities owned and operated by municipalities was deemed outside the scope of this project.

Comment 9: *In this series of graphics, it is hard to tell what the arrow is pointing to. Is it the outline of the inundated structure, or something you could identify with a star? Maybe the arrow can be shifted to better show it is the outline of the shape, if appropriate? Sometimes the arrow is directly on top of the outline, so its not entirely clear.*

This comment is referring to wastewater treatment plant visualizations, Figures 7-12. I have removed the arrows and replaced with yellow stars located within structures identified as having 2060 flood risk under the high sea level rise scenario.

Comment 10: *In this section, suggest inclusion of figure that shows saltwater line relative to wellfields and predictions of movement with time if available. What about statement about extent to which SLR influences intrusion? How much of historical?*

A figure from Prinos et al. (2014) has been added as Figure 14 within the document. We do have predictions of movement with time from Hearn et al. (2013), but discussions with SFWMD staff have indicated that the findings from Prinos et al. (2014) raise questions about the validity of the Hearn et al. (2013) results. For example, the Hearn et al. (2013) results showed no risk of saltwater intrusion to FKAA even with 24 inches of sea level rise at 2060. Given the complexity and sensitivity of saltwater intrusion modeling, we have chosen to be conservative with both the visualizations and language that we put into the planning document.

Comment 11: *Contributed to (suggested word change from “caused”)*

Changed as suggested.

Comment 12: *and development? Affects recharge. (Referring to saltwater intrusion in Biscayne Bay)*

Sentence changed to: “These include construction of drainage canals that directly connect inland freshwater surface waters to coastal water bodies, lowered surface headwater pressures in the Everglades due to regional flood control and agricultural drainage, large-scale groundwater pumping for municipal and agricultural supply, **and development of impervious urban surfaces that reduce local recharge** (Andersen et al. 1988; Dausman et al. 2005; Prinos et al. 2014).”

Comment 13: *Westward relocation of wellfields, well abandonment.(Referring to well fields)*

Sentence changed to: “Increased monitoring of saltwater movement in the Biscayne Aquifer, decreases of groundwater withdrawals from high-risk well-fields, **abandonment and westward**

relocation of highly affected well-fields, and large-scale regional hydrologic interventions associated with the multi-decade Comprehensive Everglades Restoration Plan (CERP) have all been implemented for the purpose of mitigating regional saltwater intrusion issues throughout southeast Florida (Prinos et al 2014).”

Comment 14: *Consider word choice. Drops in resources or reductions in resources, or in water levels? Reduced regional storage and recharge rates?*

Changed to “water levels” (pg. 57)

Comment 15: *I would clarify to note reduced recharge associated with each of these.*

Sentence (pg. 57) changed to: “This saltwater movement is associated with drops in interconnected regional surface water levels that occur due to evaporation and lack of groundwater recharge through rainfall replenishment, as well as increased human demand for freshwater supply from surface and groundwater surfaces for agricultural and urban landscape uses during drought periods (Bloetscher et al. 2010).”

Comment 16: *What are malfunctioning canals?*

Sentence (pg. 57) changed to: “Thus, there is great regional concern that the interacting stressors of sea level rise, increased water demand, drainage canals that promote landward movement of sea water, and anomalously severe droughts could together precipitate significant regional saltwater contamination of freshwater wells within the Biscayne Aquifer over the next decades (Aumen et al. 2015).”

Comment 17: *Marginally? Likely slightly less vulnerable? I might clarify.*

This sentence (pg. 57) changed by removing “marginally.” “This location, along with the relatively low water demands of Monroe County as compared to much larger Miami-Dade and Broward counties, has generally made the FKAA well-field show less near-term vulnerability to sea level rise and associated saltwater intrusion than larger Biscayne Aquifer well-fields located to the north and east (Hearn et al. 2013).”

Comment 18: *From current wellfield (clarifier for Biscayne Aquifer)*

Sentence (pg. 57-58) changed as follows: “Although Prinos et al. (2014) note that recently installed saltwater control structures in the Card Sound Road Canal systems are expected to provide important mitigation of this saltwater intrusion, water managers and planners at FKAA (2011) have recognized that the cumulative impacts of sea-level rise, drought stress, and regional population growth will limit Monroe County’s future capacity for freshwater withdrawals from the current Biscayne Aquifer wellfield.”

Comment 19 & 20: *References. I would expand further, like cisterns, or reservoirs, or ASR. Not sure what is being suggested.*

This sentence (pg. 58) amended as: “Over the longer term, it is widely recognized that development of greater desalination capacity, increased reuse of wastewater resources, deployment of local rainfall capture devices (e.g., cisterns), local and regional conservation, and other regional alternative supply mechanisms (e.g., surface water reservoirs and aquifer storage and recovery) will be required to ensure sustainable water supply for future residents and visitors to Monroe County (FKAA 2011; Borisova et al. 2013; SFWMD 2013).”

Comment 21 & 22: *Unreasonable if you can't get home. Want to mention as an economic disrupter as well? (In regards to nuisance flooding of roads)*

This paragraph has been edited for clarity: “Tolerance for nuisance road flooding impacts is dependent on the amount of traffic served by the road being impacted. For less-traveled neighborhood roads, onset of shallow nuisance road flooding that occurs several times each year may not necessarily impose severe traffic constraints, although access to individual homes may be temporarily restricted. However, even infrequent nuisance tidal flooding conditions on major highway thoroughfares pose clear concerns for public safety, health, and welfare, while also impacting the local economy through the temporary loss of primary transportation routes. Such consequences justify near-term and preventive action to mitigate existing or potential flood risks on primary highway transportation routes.”

Comment 23: *Maybe reference a recent economic assessment, valuing coastal resources?*

References added: For these reasons, there has been a long-term recognition that the health and sustainability of natural ecosystems is central to the economy, lifestyle, and overall heritage of Monroe County (Park et al. 2002; Bhat 2003; Mozumder et al. 2011).

Comment 24 & 25 & 26: *Agreement among the referenced studies? Again reference. I suggest modified language as it seems this type of verbiage is frequently used throughout text. I might suggest reviewing for repetitive use. Alternatives “has been identified as” or strike “widely” or “has been characterized or deemed”*

As noted above in response to Comment 13 from Nick Aumen, the document has been revised to remove terms such as “general consensus” and numerous supporting references have been added.

Comment 27: *By who? Scientific community? Or across broad geographic areas?*

Text (pg. 108) modified as: “Because seagrass die-offs in Florida Bay and other areas of the world have been associated with elevated water temperatures (Boesch et al. 1993), there is concern among scientists that the local and worldwide frequency and extent of such events may increase as marine waters continue to warm over the next several decades (Orth et al. 2006; Paerl and Paul 2012).”

Comment 28: *And the question would be can the new colonization (of sea grass) keep pace with rate of rise?*

This comment is associated with the following sentence: “While all seagrass species have the evolutionary capacity to colonize areas that become newly submerged due to rising sea levels, most seagrass researchers believe that rapid sea level rise in conjunction with other human disturbances (e.g., eutrophication and coastal development) will most likely result in significant net losses of seagrass area for the foreseeable future (Duarte 2002; Orth et al. 2006).”

This is an open question as to what rate of sea level rise that would allow for sustained migration of sea grasses. However, the consensus is indeed that combined human impacts are very likely to result in loss of sea grass habitat.

Comment 29: *Alternative language as “strong” also used later in same paragraph.*

Deleted “strongly” later in the paragraph to avoid the repetition.

Comment 30: *Suggest restating as currently reads that under these conditions the community will come to this realization, rather than noting that the community provides this recommendation under this condition. Maybe suggest alternative verbiage to “general consensus” as it used above.*

Reworded (pg. 109) as: “Under conditions of rapidly warming and rising seas, conservation of seagrass communities will clearly require a multi-pronged strategy.”

Comment 31 & 32: *Suggest different verbiage. Suggest different verbiage.*

Sentences have been reworded to avoid use of terms “consensus” and “clear evidence.”

Comment 33: *Maybe its in here. But will living shorelines be presented as a general conservation and adaptation strategy?*

Sentence has been added (pg. 109): “It is also recommended that Monroe County promote living shorelines and mangrove restoration as an alternative to traditional bulkheads for near-term stabilization of eroding coastal areas, while also allowing for long-term marine ecosystem migration (Bulleri and Chapman 2010; Spalding et al. 2014).”

Comment 34: *Suggest rewording.*

The previous “More long-term” (pg. 110) has been reworded as “**Over a longer time horizon,** Monroe County may wish to pursue “blue carbon” payments for conserved and restored seagrass areas through international carbon mitigation markets that may begin emerging over the next decade (see, e.g., Ullman et al. 2013).”

Comment 35: *Physical mechanism for what? Suggest expanding statement.*

This has been expanded (pg. 112): “For mangrove ecosystems, the primary physical mechanism **behind different transition scenarios** is the ability of mangroves roots to capture sediment flux. **In**

low sea level rise scenarios or areas with high sediment loads, mangrove ecosystems may capture sufficient sediment flux to outpace the effects of sea level rise (Parkinson et al. 1994). By contrast, higher rates of sea level rise and/or low sediment fluxes may outpace the sediment capture ability, thus leading to mangrove mortality and subsequent transition to a subtidal or open water ecosystem.”

Comment 36: *Or builds upon?*

I believe comment is whether it is appropriate to say in the following paragraph (pg. 112) that the current project “updates this prior FWC work” (noted in yellow below), or if this should be changed to “builds upon.”

“Our SLAMM analysis builds upon a previous iteration of SLAMM runs (see Glazer 2013) performed by the Florida Fish and Wildlife Conservation Commission (FWC). The previous FWC analysis utilized a previous version of SLAMM (version 6.01) and sea level rise curves developed by the 2001 Intergovernmental Panel on Climate Change (IPCC). Our analysis **updates** this prior FWC work by using a later version of SLAMM (version 6.2) and revised sea level rise curves that conform precisely to the lower and upper bounds of the Southeast Florida Regional Climate Change Compact (2011).”

In the full context of the paragraph, I believe it is appropriate to say that we both build upon (i.e., use the datasets and inputs provided by FWC) and update (i.e., use a new version of SLAMM and new sea level rise curves) the FWC work.

Michael Roberts Comments (in email dated August 5, 2015)

Comment: I think the report looks fine. I'm a little surprised to see that the SLAMM model indicates reductions in ALL of the habitats analyzed. I would have thought that some habitats would increase in area with rising seas. I'm particularly surprised at the loss of salt marsh and scrub shrub marsh – habitats that I would have thought would increase in extent, particularly in the “low” scenario. This should lead to some interesting adaptation discussions.

These are valid concerns regarding the potential limitations of the SLAMM predictions. A caveat in the report regarding the current limitations of SLAMM and the need for further research is noted on pages 113-114: “Although SLAMM is an advanced ecosystem and land cover change model, we do note that caution is warranted in terms of how the results of SLAMM should be interpreted within the Florida Keys. Underlying elevation errors within the LIDAR DEM, classification errors within the land cover file, and geographic transformations necessary for the model to function all introduce uncertainty about the results, particularly at lower levels of sea level rise. In addition, careful calibration of the model with historic land cover change and field observations (Gilman et al. 2007) would provide helpful guidance for further updates and revisions of the modeling input parameters to better fit the specific ecological nuances of the Florida Keys.”

Comment: As for the approach with the “new” SLR curves – I concur. Particularly being our Board has not seen this data and may be reluctant to incorporate it into the planning process. Thanks for the advance look and good job.

This comment from staff, I think, bolsters the response to other peer reviewers about why we are not introducing higher sea level curves into this modeling or planning effort.

Judith Clarke Comments (in email dated September 11, 2015)

Comment: I don’t have any comments on the document, but I have some questions about using the data for planning with regard to county roads. The first thing I’m wondering is whether I can get copies of or a version of the data showing the road inundation/nuisance flooding or access to a GIS layer, whatever, because the ones in the report are too small for me to use when we are evaluating road projects.

Yes – all GIS data for this project will be provided in full to the Monroe County GIS Department upon project completion.

Comment: Second, and I’m not sure there are answers to all of these but if not they are questions that we should start discussing:

Has the county accepted or adopted a specific scenario for design purposes (I may have asked this before)? Design life of a paving project is 20 years, so I am mainly looking at the 2030 data right now but have we decided on low or high scenario?

This is a very good policy question. It is one that we can help the County pursue with the Regional Sea Grant project.

Have there been any discussions or decisions about tolerable levels of nuisance flooding/king tide flooding? I’m guessing not based on the report but historically in the Keys there is a certain amount of water on the road that people have to accept (large rainstorms, etc) but some sort of criteria may need to be developed to decide when we mitigate it with a construction project. Most of our roads are local and only serve the residential population but some are through streets.

This is one of those “holy grail” questions that people everywhere are asking, but, so far as I know, there is not any sort of definitive answer. I have been having discussions with behavioral economists, migration demographers, and population geographers about we might try to get at this question. Again, this is an excellent question that, I hope, we can help answer in follow-on work.

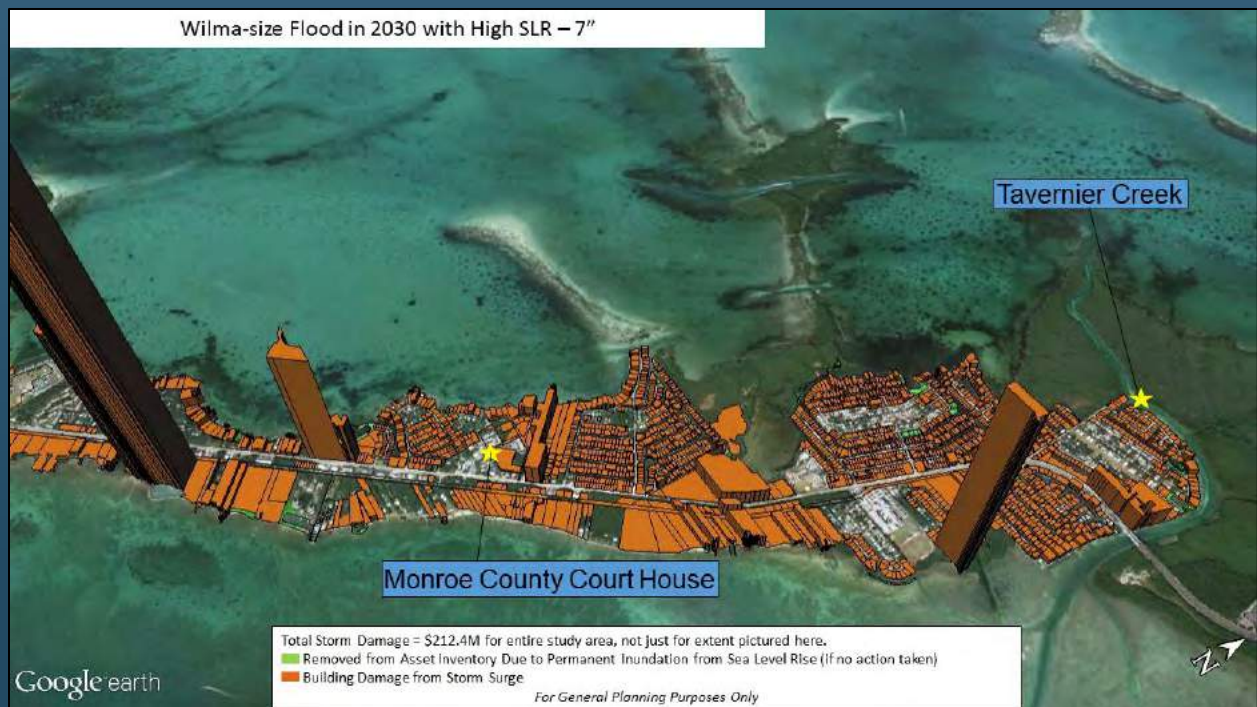
Due to the fact that our water table is so high in most places, much of our stormwater control system is tidally dependent; as we experience sea level rise we will have flooding not just from

inundation and king tides but from rain storms (possibly getting larger as weather changes) that now drain away more slowly. I have no idea how to quantify this in any way, and I don't know if that's been looked at for the Keys but I know from living in Key West that when we have hurricanes (Wilma) the areas around the shore get inundated but when we have large rainstorms we have a lot of flooding in old town in the higher elevation areas so it is clearly a different flooding mechanism.

Another big part of the Regional Sea Grant is to help get at least some of the Keys (particularly US 1 corridor) stormwater systems into a GIS database. Understanding those pipe chokepoints and interactions with rainfall is clearly critical for effective adaptation. Having a GIS dataset with all of that information readily available for hydrologic evaluations will be a major asset for ongoing adaptation efforts, in my view.

Appendix D. Islamorada Matters: Analysis of Damage from Storm Surge and Sea Level Rise in Islamorada using the Coastal Adaptation to Sea Level Rise Tool





Islamorada Matters

ANALYSIS OF DAMAGES FROM STORM SURGE AND SEA LEVEL RISE IN ISLAMORADA USING THE COASTAL ADAPTATION TO SEA LEVEL RISE TOOL (COAST)

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 14 May 2015



ERIN L. DEADY, P.A.





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1 EXECUTIVE SUMMARY

Catalysis Adaptation Partners, LLC (Catalysis) specializes in analyzing impacts from storm surges and long-term sea level rise using its COastal Aadaptation to Sea level rise Tool (COAST). COAST modeling software mimics floods from storms and sea level rise on community assets such as homes and businesses, then tallies the cumulative damages over time so communities can better understand the cost to them of not adapting (vulnerability assessment), as well as the costs and benefits (damage reduction) of implementing various adaptation actions.

Catalysis was contracted by Erin L. Deady, P.A. to use COAST to perform a vulnerability assessment of homes and commercial building structures and to model adaptation action scenarios in the Village of Islamorada (Islamorada) as part of the Islamorada Matters Project. Working with Erin L. Deady, P.A., Catalysis conducted three (3) community workshops in October, November and December 2014, during which participants voted on modeling parameters and assumptions for “no-action” and three (3) adaptation action scenarios: 1) elevating and floodproofing buildings; 2) building barriers close to shore; and 3) purchasing properties vulnerable to sea level rise through a voluntary buyout program. Voting occurred during Workshops #2 and #3 (results can be found in the appendix Section 6 of this report) and focused on certain model parameters as well as whether or not actions should be further evaluated.

The “asset” selected for analysis was the value of residential and commercial buildings, obtained from Monroe County tax records. Sea level rise assumptions were based upon the Unified Sea Level Rise Projection for Southeast Florida¹. Those projections included a low and high estimate of sea level rise in 2030 of 3” and 7” respectively, as well as a low and high estimate of sea level rise in 2060 of 9” and 24” respectively. Surge values from various sized storms were obtained from the most recent Federal Emergency Management Administration (FEMA) Flood Insurance Study. Key findings from the “worst case” vulnerability assessment included one-time damage estimates of \$2.3 Million from a nuisance flood in 2060 under a high sea level rise scenario of 24” and \$288.0 Million from a Hurricane Wilma-sized flood in 2060 under the same sea level rise scenario. Cumulative damages over time from storms of various sizes resulted in significantly higher damage estimates by 2060, with \$1.734 Billion in damages under a “low” sea level rise scenario and \$2.741 Billion in damages under a “high” sea level rise scenario. The value of properties (buildings and land) permanently inundated by sea level rise alone by 2060 (from daily flooding at high tide) ranged from \$151.1 Million (low scenario) to \$295.5 Million (high scenario). Once the modeling indicated such properties would be flooded by the daily high tide, the software no longer subjected it to continuing cumulative damages from that point in time forward.

The three (3) adaptation actions to model identified by the Islamorada Matters consultant and staff team included:

- Elevating and floodproofing buildings
- Building barriers close to the coast to protect from storm surge but not sea level rise

¹ Southeast Florida Regional Climate Change Compact Counties, Sea Level Rise Ad Hoc Technical Working Group (April 2011).



- Purchase of properties vulnerable to sea level rise through a voluntary buyout program over a phased timeframe.

For each action, costs were determined by the consultant and staff team, and in some cases, modified by workshop participants by polling. Modeling parameters (e.g., building elevation heights, the distance between the constructed barrier and the coast as well as the height of the barrier, the number of residents accepting a buyout for their properties, etc.) also were established by workshop participants through a keypad polling process. Catalysis then used COAST again with the adaptation actions in place to quantify the predicted reduction in damages over the same time period as the vulnerability assessment.

These results were converted into benefit-cost ratios. Ratios greater than 1 represented actions that reduced more in damages in the future than it cost to implement them. Ratios less than 1 represented actions that would cost more than the amount of reduced damages in the future (i.e., not cost effective). The action that had the best benefit-cost ratio was **elevating and floodproofing buildings** (accounting for those not already elevated or floodproofed in Islamorada), which had a benefit-cost ratio between 5.24 and 15.28 (meaning for every \$1.00 spent on elevating and floodproofing, the avoided damages would range from \$5.24 to \$15.28), depending on the sea level rise scenario (high or low) and construction cost estimates (high or low). **Building barriers** had the second highest benefit-cost ratios (1.59 to 2.20). The voluntary buyout program had the lowest benefit-cost ratios (0.02 to 0.18). Aside from the model outputs, there were other factors which contributed to these results as discussed in this document.

These benefit-cost ratios were presented to Islamorada residents, and keypad polling technology was used to evaluate their opinions. After looking at the COAST model results and participating in the group discussions, residents voted that elevating and floodproofing buildings was their most preferred action. In addition, residents supported Islamorada pursuing sources of funding to help private property owners implement this strategy.

The modeling results and community engagement process enabled the consultant and staff team to provide the residents of Islamorada with a context for beginning more difficult conversations and decision-making processes regarding their vulnerabilities. Discussions of factors outside of the model should lead to diverse co-benefits (e.g., choosing to restore mangrove forests to not only improve coastal ecosystems but also protect buildings from wave attenuation) and planning outcomes. Importantly, benefit-cost ratios resulting from this work tend to open difficult conversations about exactly what is most important to a community in planning how to adapt to sea level rise and future storm surges.

However, these results do not mean that Islamorada should begin implementing a program to elevate and floodproof residential and commercial buildings. Catalysis recommends that Islamorada use this information to:

- Further discuss sea level rise vulnerability with residents and the importance of having a method to weigh different adaptation actions against one another (benefit-cost analysis)
- Develop a framework for using new knowledge to engage with residents so that consensus on an eventual adaptation action is data- and stakeholder-driven



- Share this information with neighboring communities so that more regional communication can take place and strengthen any local momentum towards adaptation
- Document any progress or failures towards adaptation so that other communities around the country have lessons from which they can learn.



2 METHODOLOGY AND ASSUMPTIONS USED FOR COAST MODEL ANALYSIS

Initial development of the COAST software tool was funded by the US Environmental Protection Agency. The tool is used to predict damages from varying amounts of sea level rise and storm surge under a range of candidate adaptation action scenarios that users construct. The software was run for Islamorada by Catalysis, who use it to help communities around the country. COAST is used to calculate the potential damage from one particular storm in the future, as well to calculate the cumulative potential damage from all storms that may occur over a period of years, from today until a point in the future. These storm events can also be modeled to become worse over time based on scenarios that include assumptions for sea level rise, which was the case for Islamorada.

2.1 PREPARING MODEL INPUTS FOR ISLAMORADA

2.1.1 Add Accurate Elevation Data

A Light Detection and Ranging (LiDAR) image of the area was used, which is a highly accurate map of land elevations made by taking laser measurements from an airplane. With this data layer the COAST model could identify the ground elevation of any point in the study area. The 2008 LiDAR data for Islamorada was provided by the National Oceanic and Atmospheric Administration (NOAA) and distributed by the Florida Geographic Data Library (FGDL). It was then converted to the proper vertical units for use in the COAST software by Dr. Jason Evans and his team at the University of Georgia and Stetson University, and consisted of a 5 meter by 5 meter grid, with a single elevation value in feet for each square.

2.1.2 Add Tax Map Parcels and Assessed Building Values from Islamorada

Property values for land and buildings were provided by the Monroe County Tax Collector's Office, and prepared by Dr. Jason Evans and his team, ensuring that the LiDAR images and tax map layers had the same coordinate system and units (feet) for both vertical and horizontal positions. Each property was classified according to general land-use (i.e., residential, commercial and government as categorized by the Tax Collector's Office) and the year it was built. Parcels with buildings that had already been elevated according to FEMA requirements were also identified so that those buildings could be treated differently during the modeling process. Given that most properties after 1974 have already been elevated an average of eight (8) feet, this was an important process to assure the accuracy of the model and the benefits from the proposed strategies. Tax assessment values were raised by 15% across the board to adjust the assessed values of buildings to market prices, per the direction of the attendees at the first workshop.

2.1.3 Determine Water Levels and Probabilities

The starting value of the high tide level for Islamorada was taken from the nearest tide station in Vaca Key, where the Mean Higher High Water (MHHW) value was -0.36 feet (in NAVD 88 units). This is considered the highest daily average tide; on top of which storm surge and sea level rise assumptions were added. The four (4) sea level rise (SLR) scenario estimates were obtained from the Unified Sea Level Rise Projection for Southeast Florida, Southeast Florida Regional Climate Change Compact Counties, Sea Level Rise Ad Hoc Technical Working Group (April 2011), and were as follows:



- By the year 2030
 - o An additional 3 inches (Low)
 - o An additional 7 inches (High)
- By the year 2060
 - o An additional 9 inches (Low)
 - o An additional 24 inches (High)

An “exceedance curve” was also established for particular neighborhoods throughout Islamorada, and added into the COAST model. These curves set the height of water expected from storms of different sizes and probabilities for these different areas. The model then has information on how deep the floodwaters may be in each part of the study area, when future storms arrive. For instance, one neighborhood may have a 100-year storm (1% chance of occurring in any given year, or once every hundred years) flood height of ten (10) feet, but an adjacent neighborhood may have a 100-year flood height of only six (6) feet, if it contains higher ground or is more protected from storm surges.

Islamorada was divided into nine (9) areas based on these predicted flood heights, which came from a digital flood insurance map file (dfirm_fldhaz_jun13.shp) produced by FGDL. The probabilities and water levels for the 1-, 10-, 50-, and 100-year storm events came from the latest available Flood Insurance Study for Monroe County (February 18, 2005). The table below represents the flood heights and probabilities for various neighborhoods in Islamorada, used in creating the exceedance curves in the COAST model:

Storm Event	Recurrence Interval	Probability in Any Given Year	Surge Height Above MHHW of 3.52 ft. (NAVD 88 units)	
			Minimum Value	Maximum Value
100 Year Storm	Once every 100 years	0.01	6.0	15.0
50 Year Storm	Once every 50 years	0.02	5.9	6.4
10 Year Storm	Once every 10 years	0.10	3.9	4.5
1 Year Storm (known as Nuisance Flood or King Tide)	Once every year	1	1.08	1.08

Table 1. Storm events, recurrence intervals, probabilities and surge heights above Mean Higher High Water for Islamorada, FL, used to create Exceedance Curves for COAST modeling.

These water levels were established for the creation of simulated storms, with identified sea level rise assumptions added over time.

2.1.4 Provide a Depth-Damage Function: Predicting Damage from Various Flood Depths

Finally, COAST relies on a function to calculate damage predicted to occur on each property, depending on flooding depth at the center of the property during each predicted storm event. This is called a “depth-damage function.” COAST used depth-damage function tables created by the US Army Corps of Engineers, based on the Army Corps’ damage measurements from years of studying floods and associated insurance claims (see U.S. Army Corps of Engineers, Contract No. DACW29-00-D-0001, Depth-Damage Relationships...in Support of the Donaldsonville to the Gulf, Louisiana, Feasibility Study, March 7,



2006). Four (4) different depth-damage functions were assigned to each property, according to whether it was classified as either residential or non-residential, and whether it was elevated or not elevated. Dr. Evans' team assigned whether a property was elevated based on the year built (properties constructed in flood zones after 1974 were required to be elevated). It was also assumed that once the daily high tide (mean higher high water) with no storm surge reached the center of a parcel, the entire value of the building or buildings would be permanently lost due to sea level rise, if no action was taken. Therefore buildings on such parcels would no longer be subject to repeated damage, once their centers were permanently inundated.

2.1.5 Ensure Asset Data are Appropriately Structured

COAST creates flood scenarios over many years and measures flood depth at the center of each parcel. In the case of multiple buildings on one lot, and with the version of the software being used at the time, there unfortunately was no way to apportion building value between separate buildings. The County tax parcel database aggregated "building value" for all buildings on a lot. Therefore, for the purposes of this model, the aggregate building value was assigned to the group of buildings on each multi-building lot. Implications of this are that if the model showed the centroid of the parcel as flooded, it calculated damage to all buildings on the parcel using the depth-damage function, as if it were combined into one flooded building located at the center of the parcel. This may have overestimated damage on some parcels, but very few.

2.2 LIMITATIONS OF COAST MODEL RESULTS

- The effects of waves, wind, and erosion are not considered in the COAST model, as it calculates new high tide levels due to sea level rise (SLR) only, using still water flood elevations on the existing terrain.
- Values for individual buildings were not available, as County assessing records combined the values of all buildings on a particular lot into one number.
- Total loss of building value and land value for the lot was assumed to occur when daily tidal waters (without any surge) reached the imaginary point centered in the parcel polygon, known as the parcel "centroid."
- Only structural damage to buildings was included, based upon U.S. Army Corps of Engineers Depth Damage Functions for still water or static flooding. Damage to building contents or damage from wind or wave action was not included, meaning that damage figures are conservative in quantifying true loss.
- Structural Building Value was the only asset analyzed. COAST did not estimate damages to other assets such as roads, storm drainage systems, sewers, sewage treatment and pumping facilities, or other utilities.



3 VULNERABILITY ASSESSMENT

One-time flood damage estimates for Islamorada were generated for a “nuisance flood” or “king tide” arriving in the years 2030 or 2060 as if no adaptation action had been taken. A nuisance flood or king tide is defined as the highest tide of the year which occurs when the moon is full and is at perigee (the closest distance to the earth in its orbital path). One-time damage estimates were also generated for a Hurricane Wilma-sized storm surge (6 feet in 2005), made worse over time by sea level rise. COAST created visualizations of the pattern of these predicted damages (Figures 1-4). Parcels in coral represent those flooded from storm surge, with the height of each coral bar showing relative dollar damage. Parcels in green represent those permanently inundated from sea level rise (SLR). All images for three (3) major sections of Islamorada are located in the appendix of this report (Section 6.2).

Cumulative building damage over time was also calculated, through the years 2030 and 2060. Results are summarized in tables below.

Key Findings of Vulnerability Assessment – If No Action is Taken

- By 2030 a nuisance flood would cause \$400,000 in damages to buildings even in a low (3”) sea level rise scenario (Table 2).
- By 2060 a nuisance flood would cause \$2.3 Million in damages to buildings under a high (24”) sea level rise scenario (Table 2).
- By 2030 a Wilma-sized flood would cause \$204.8 Million in damages to buildings under a low (3”) sea level rise scenario (Table 3).
- By 2060 a Wilma-sized flood would cause \$288.0 Million in damages to buildings under a high (24”) sea level rise scenario (Table 3).
- By 2060, cumulative damages from all possible storms (Table 4) would result in damages ranging from \$1.734 Billion (low sea level rise) to \$2.741 Billion (high sea level rise).
- By 2060, the total value of all buildings and land that are no longer inhabitable as a result of sea level rise (Table 6) would be between \$151.1 Million (low sea level rise scenario) and \$295.5 Million (high sea level rise scenario).
- This represents a loss of \$0.38 to \$0.75 Million in annual tax revenue.

Table 2. One-time damage estimates from nuisance floods in Islamorada in 2030 and 2060 with high and low sea level rise.

Event: 1.08 ft. Surge Nuisance Flood		SLR Scenario		One-Time Damage to Building Values
Year 2030	Low	-	3.00"	\$ 0.4 Million
Year 2030	High	-	7.00"	\$ 0.2 Million
Year 2060	Low	-	9.00"	\$ 0.2 Million
Year 2060	High	-	24.00"	\$ 2.3 Million

Table 3. One-time damage estimates from Hurricane Wilma-sized floods in Islamorada in 2030 and 2060 with high and low sea level rise.

Event: 6.00 ft. Surge Wilma-Sized Flood		SLR Scenario		One-Time Damage to Building Values
Year 2030	Low	-	3.00"	\$ 204.8 Million
Year 2030	High	-	7.00"	\$ 212.4 Million
Year 2060	Low	-	9.00"	\$ 233.3 Million
Year 2060	High	-	24.00"	\$ 288.0 Million



Figure 1. Google Earth image of potential flooding damages from a nuisance flood (low sea level rise scenario) in 2060 for a section of Islamorada, FL. Coral parcels indicate those flooded from storm surge, with the height of the coral extrusions representing relative damage amounts (in dollars). Parcels in green indicate those permanently inundated from sea level rise.



Figure 2. Google Earth image of potential flooding damages from a nuisance flood (high sea level rise scenario) in 2060 for a section of Islamorada, FL. Coral parcels indicate those flooded from storm surge, with the height of the coral extrusions representing relative damage amounts (in dollars). Parcels in green indicate those permanently inundated from sea level rise.



Figure 3. Google Earth image of potential flooding damages from a Hurricane Wilma-sized flood (low sea level rise scenario) in 2060 for a section of Islamorada, FL. Coral parcels indicate those flooded from storm surge, with the height of the coral extrusions representing relative damage amounts (in dollars). Parcels in green indicate those permanently inundated from sea level rise.



Figure 4. Google Earth image of potential flooding damages from a Hurricane Wilma-sized flood (high sea level rise scenario) in 2060 for a section of Islamorada, FL. Coral parcels indicate those flooded from storm surge, with the height of the coral extrusions representing relative damage amounts (in dollars). Parcels in green indicate those permanently inundated from sea level rise.



Timescale	SLR Scenario	Cumulative Damage to Buildings by Scenario Date	
2014-2030	Low - 3.00"	\$ 544.7	Million
2014-2030	High - 7.00"	\$ 610.2	Million
2031-2060	Low - 9.00"	\$ 1.189	Billion
2031-2060	High - 24.00"	\$ 2.130	Billion
2014-2060	Low - 9.00"	\$ 1.734	Billion
2014-2060	High - 24.00"	\$ 2.741	Billion

Table 4. Cumulative damage estimates from all possible storms during a given time period with high and low sea level rise.

Timescale	SLR Scenario	Value of Buildings Lost to SLR	Value of Land Lost to SLR	No. of Parcels Lost to SLR	Total Value of Builds and Land Lost to SLR
2014-2030	Low - 3.00"	\$ 44.7 Million	\$ 28.7 Million	145	\$ 73.4 Million
2014-2030	High - 7.00"	\$ 69.4 Million	\$ 73.8 Million	371	\$ 143.2 Million
2031-2060	Low - 9.00"	\$ 29.0 Million	\$ 48.7 Million	249	\$ 77.7 Million
2031-2060	High - 24.00"	\$ 50.4 Million	\$ 101.9 Million	410	\$ 152.3 Million

Table 5. Buildings and land permanently inundated from sea level rise during scenario years 2014-2030 and 2031-2060 with high and low sea level rise.

SLR Scenario	Value of Buildings Lost to SLR	Value of Land Lost to SLR	No. of Parcels Lost to SLR	Total Value of Builds and Land Lost to SLR	Annual Tax Revenue Lost to SLR
Low - 9.00"	\$ 73.7 Million	\$ 7.4 Million	394	\$ 151.1 Million	\$ 0.38 Million
High - 24.00"	\$ 119.8 Million	\$ 175.7 Million	781	\$ 295.5 Million	\$ 0.75 Million

Table 6. Buildings and land permanently inundated from sea level rise during scenario years 2014-2060 with high and low sea level rise.



4 ADAPTATION ACTIONS

4.1 POSSIBLE STRATEGIES: DO NOTHING, FORTIFY, ACCOMMODATE OR STRATEGICALLY RELOCATE

Options for responding to sea level rise and storm surge can be divided into four (4) categories:

- *Doing nothing* simply involves waiting for a storm incident to happen and responding afterwards to save those structures and resources that are not completely lost due to the incident. *Doing nothing* is not proposed for Islamorada.
- Adaptation approaches that *fortify* use hard or soft structures to prevent flood waters from reaching community assets. Such fortification can be “hard,” such as seawalls or bulkheads, or “soft” structures such as geotextiles tubes, giant fabric sandbags designed to be replaced after storms (Fig. 7a and 7b). Unfortunately, wetlands and beaches in front of such structures can disappear as they are pinched out between the rising water levels and the fortifying structures behind them.



Figures 7a and 7b. USACE hurricane barrier in Stamford, CT (left) and geotextile tubes in front of apartment complex in Sea Isle City, NJ (Right)

- Adaptation approaches that *accommodate* modify community assets to reduce the impact of flood waters, but they do not protect against sea level rise (only storm surge). Accommodation acknowledges that structures will become wet, but actions are taken to make them resilient, such as elevating structures or their critical systems.



Figures 8a and 8b. Elevated house (left) and floodproofed house (right). Source: <http://www.theepochtimes.com/n3/4747-hurricane-sandy-katrina-offer-similar-lessons-for-builders/>



- *Strategic relocation* involves relocating existing structures, people and land-uses away from areas at high risk of flooding to a new location to eliminate the risks of flooding and damage/loss, and allowing wetlands, beaches and natural coastal habitats to migrate to higher elevations naturally.

4.2 USE OF COAST TO PERFORM A BENEFIT-COST ANALYSIS FOR THREE (3) PROPOSED STRATEGIES

Once an adaptation strategy, or set of strategies, has been identified for a community or portion of a shoreline, COAST can be used to evaluate whether the strategy would be a good investment. Following the above vulnerability assessment stage, the COAST model can be run with adjustments to the depth damage functions. This serves as a proxy estimation of how much cumulative damage might be avoided if the adaptation strategies were put in place. Avoided cumulative damage can then be compared to the cost of the potential strategies, creating a benefit-cost ratio. If this ratio is high (i.e., costs are low and benefits are high) the option may be a good investment and worthy of further study, such as more detailed feasibility plans, construction designs or estimates. It should be noted that the cost estimates obtained for this study simply use high and low estimates, and further detailed work would need to be undertaken to arrive at a more specific adaptation strategies design, with more accurate permitting and construction costs.

4.3 DESCRIPTION OF THE THREE (3) PROPOSED ADAPTATION STRATEGY SCENARIOS

Participant polling at the Islamorada community workshop in November 2014 (Workshop #2) refined three (3) adaptation strategy scenarios that were initially developed by the Project Team and Islamorada Staff. Agreed upon candidate adaptation strategy scenarios were as follows:

- Action 1: Elevate and Floodproof (Fig. 9a and 9b)
 - 50% of properties in FEMA V-Zones elevated to current code plus two (2) feet.
 - 100% of properties in FEMA A-Zones floodproofed to eight (8) feet.
- Action 2: Constructed Barriers (Fig. 10a and 10b)
 - Two (2) 0.5 mile long emergent breakwater structures built near shore (200 feet off of coast), constructed of limestone block topped with mangrove plantings.
- Action 3: Relocate – Voluntary Buyout (Fig. 11a and 11b)
 - 10% of properties permanently flooded from sea level rise by 2030 accept the voluntary buyout in 2015.
 - 50% of properties permanently flooded from sea level rise by 2045 accept the voluntary buyout in 2030.



Figure 9a and 9b. Action 1 Scenario: Images of two (2) locations in Islamorada. Parcels in red indicate those located in a FEMA V-Zone and had their buildings elevated (98 total parcels) as a result of the candidate action. Parcels in green indicate those located in a FEMA A-Zone and had their buildings floodproofed (1391 total parcels) as a result of the candidate action.



Figure 10a and 10b. Action 2 Scenario: Images of two (2) locations of constructed barriers in Islamorada. Only parcels located in the V-Zones behind the barriers would have reduced damage.



Figure 11a and 11b. Action 3 Scenario: Images of two (2) locations in Islamorada. Parcels in red indicate those permanently inundated from sea level rise by 2030 (94 total) subject to voluntary buyouts as a result of the candidate action. Parcels in green indicate those permanently inundated from sea level rise by 2045 (95 total) subject to voluntary buyouts as a result of the candidate action.



4.4 RESULTS FOR MODELING THE THREE (3) PROPOSED ADAPTATION STRATEGY SCENARIOS

Table 7 below shows results for Adaptation Action 1, Elevate and Floodproof. Avoided damages by the year 2060 ranged from \$850.6 Million (low sea level rise) to \$1.210 Billion (high sea level rise). Costs to elevate a building ranged from \$60,000 to \$160,000², and costs to floodproof a building ranged from \$52,682 to \$105,364³. These costs represent low and high estimates for construction only, and are irrespective of building for specific sea level rise scenarios (i.e., based only on today's storm surge heights). Complete pricing information is available in the appendix of this report (Section 6.3). Avoided damage estimates by the year 2060 for high and low sea level rise (9 or 24 inches) and using the high and low cost estimates for elevating and floodproofing buildings resulted in four (4) benefit-cost ratios. These ranged from \$5.24 (low sea level rise with high cost estimates) to \$15.28 (high sea level rise with low cost estimates). The ratios represent long-term savings in the form of damage reduction for every dollar spent today. For example, under the scenario with the most favorable benefit-cost ratio, for every \$1 spent today to elevate and floodproof buildings, \$15.28 would be saved by 2060.

Table 7 - Elevate and Floodproof Buildings	
Avoided Damages Low SLR - (9.00")	Avoided Damages High SLR - (24.00")
(\$ Millions)	(\$ Millions)
850.6	1,209.8
Low Cost Estimate	High Cost Estimate
\$79.2 Million - Total	\$162.2 Million - Total
Avg. Price Per Unit - Elevation	Avg. Price Per Unit - Elevation
\$60,000	\$160,000
Avg. Price Per Unit - Floodproofing	Avg. Price Per Unit - Floodproofing
\$52,682	\$105,364
Benefit-Cost Ratios - Using Low Cost Estimate	
Low SLR	High SLR
\$10.75	\$15.28
Benefit-Cost Ratios - Using High Cost Estimate	
Low SLR	High SLR
\$5.24	\$7.46

Table 7. Results from COAST model of Adaptation Action 1 – Elevate and Floodproof buildings. 50% of buildings in FEMA V-Zones were elevated and 100% of buildings in FEMA A-Zones were floodproofed.

² Estimated elevation cost ranges were provided by a review of contractor websites and consultation with FEMA officials and Parsons Brinckerhoff.

³ Estimated floodproofing cost ranges were calculated by taking 10% (low) and 20% (high) of the building values and dividing by the number of buildings to be floodproofed. These percentages were provided by Parsons Brinckerhoff.



Table 8 shows results for Adaptation Action 2- Constructed Barriers. Avoided damages by the year 2060 only ranged between \$12.8 Million (with low sea level rise of 9”) and \$13.2 Million (with high sea level rise of 24”) because a barrier does not protect against sea level rise – it only diminishes wave from storm events for properties in the FEMA V-Zones located behind the barriers. Costs to build a barrier ranged from \$6.0 Million to \$8.0 Million (see Section 6.3 for cost breakdown), four (4) benefit-cost ratios were calculated. These ranged from \$1.59 (with low sea level rise of 9” and a high cost estimate) to \$2.20 (with high sea level rise of 24” and a low cost estimate). The ratios represent long-term savings in the form of damage reduction for every dollar spent today. For example, under the best benefit-cost ratio, for every \$1 spent today to build barriers to protect buildings, \$2.20 would be saved by 2060.

Table 8 – V-Zone Properties Behind Barriers = Reduced Damage from Wave Heights Reduced by 80% All Other Properties = Unchanged	
Avoided Damages Low SLR - (9.00")	Avoided Damages High SLR - (24.00")
(\$ Millions)	(\$ Millions)
12.8	13.2
Low Cost Estimate	High Cost Estimate
\$6.0 Million - Total	\$8.0 Million - Total
Avg. Price Per Linear Foot	Avg. Price Per Linear Foot
\$1,141.62 ⁴	\$1,518.36 ⁴
Benefit-Cost Ratios - Using Low Cost Estimate	
Low SLR	High SLR
\$2.12	\$2.20
Benefit-Cost Ratios - Using High Cost Estimate	
Low SLR	High SLR
\$1.59	\$1.65

Table 8. Results from COAST model of Adaptation Action 2 – Constructed Barriers.

⁴ Cost estimates derived from contractor estimates provided by Palm Beach County Environmental Resources Management Department.



Table 9 shows results for Adaptation Action 3- Voluntary Buyouts. Avoided damages by the year 2060 ranged from \$1.1 Million (with high sea level rise of 24") to \$6.7 Million (with low sea level rise of 9"). The total cost to purchase homes before they are permanently inundated from sea level rise ranged from \$37.3 Million to \$56.0 Million⁵ (see Section 6.3 for cost breakdown). Avoided damage estimates by 2060 for high and low sea level rise (24" or 9") with either high or low cost estimates for purchasing vulnerable buildings resulted in four (4) benefit-cost ratios. These ranged from \$0.02 (with high sea level rise of 24" and high cost estimates) to \$0.18 (with low sea level rise of 9" and low cost estimates). The ratios represent long-term savings in the form of damage reduction for every dollar spent today. However due to these ratios being less than 1, under the most favorable benefit-cost ratio every \$1 spent today to buy people's homes in the future would only save \$0.18 by 2060. In other words, it may make more sense economically to do nothing than to follow through with this particular action. However, this result is based on assumptions chosen by the participants, and there could be some more positive benefits in implementing this action, under a different set of parameters.

Table 9 – Voluntary Buyouts	
Avoided Damages Low SLR - (9.00")	Avoided Damages High SLR - (24.00")
(\$ Millions)	(\$ Millions)
6.7	1.1
Low Cost Estimate	High Cost Estimate
\$37.3 Million - Total	\$56.0 Million - Total
Avg. Price Per Buyout	Avg. Price Per Buyout
\$643,103	\$965,517
Benefit-Cost Ratios - Using Low Cost Estimate	
Low SLR	High SLR
\$0.18	\$0.03
Benefit-Cost Ratios - Using High Cost Estimate	
Low SLR	High SLR
\$0.12	\$0.02

Table 9. Results from COAST model of Adaptation Action 3 – Voluntary Buyouts. The scenario was run as if 10% of buildings permanently inundated from sea level rise by 2030 were purchased from owners and 50% of buildings permanently inundated from sea level rise by 2045 were purchased from owners.

⁵ The building and land values for parcels permanently inundated from high sea level rise by 2030 and 2045 were calculated using discount rates for the dates they were to be purchased and multiplied by the appropriate percentages (i.e., participation rates in both phases, and estimated legal costs for the high cost estimate scenario).



5 DISCUSSION AND CONCLUSIONS

5.1 COMPARISONS OF MODELING RESULTS FOR THE THREE (3) ADAPTATION ACTIONS

The appendix of this report includes keypad polling results from the Islamorada Community Workshops #2 and #3, in which audience members voted on specific COAST modeling assumptions and responded to the COAST modeling results (See Sections 6.1 and 6.4).

In Community Workshop #3, audience members preferred results of Adaptation Action 1, Elevation and Floodproofing, more than the other two (2) actions. Depending on cost estimates and sea level rise assumptions, benefit-cost ratios for Action 1 ranged from 15.3 to 5.2. Benefit-cost ratios with a value above 1.0 are considered positive results (benefits greater than costs). Probably as a result of such favorable ratios, one hundred percent (100%) of participants believed it would be worth Islamorada's time to conduct additional study of an initiative to elevate and floodproof buildings. Similarly, a majority of participants (65%) believed Islamorada should pursue sources of funding to help private property owners elevate their buildings in the FEMA Velocity flood zone.

While Adaptation Action 2, Constructing an Offshore Limestone Barrier with Mangrove Plantings, did have favorable benefit-cost ratios ranging from 1.6 to 2.2, the action would only have protected buildings located in the FEMA V-Zone and directly behind the barrier. While a positive result, these ratios are not as highly positive as those for Adaptation Action 1. In addition, to make the ratios more favorable the barriers had been "placed" in areas where they protected the highest values of buildings, not necessarily the highest number of buildings. This may make sense financially, however it would be a challenge to build consensus around the barrier locations. Moreover, the barrier would not prevent damages from sea level rise but would only reduce wave action during storms which was a concern for community members.

Adaptation Action 3, Voluntary Buyouts, had the least favorable benefit-cost ratios compared to the other actions. Unfortunately each result for this modeled action suggested it would cost more than the cumulative damage reduction over time, with benefit-cost ratios ranging from 0.02 to 0.2 (always less than 1.0). However, modeling assumptions for this action significantly influenced the results. For example, if a person were to be able to stay in their home until 2030 despite having accepted a voluntary buyout for that home today, in this scenario money would be invested toward purchase of that house *and* toward repair of damages that occur between today and 2030. The benefit-cost ratio for this action would thus improve if less time were to be allowed between purchasing a house and the date when title for that house transfers. Because of these issues, keypad polling in Workshop #3 determined that a majority of participants (53%) did not think Islamorada should pursue funding to support a voluntary buyout program.

5.2 HOW THE COAST MODELING RESULTS RELATE TO THE LARGER ISLAMORADA MATTERS PROJECT

COAST modeling results showed that Adaptation Action 1 (elevating and floodproofing buildings) had the most favorable benefit-cost ratio compared to the other two (2) adaptation actions. However in discussions at the public meetings, it became clear that elevation and floodproofing alone could not be considered as a solution to future threats from sea level rise and storm surges. Impacts on roads and other infrastructure in Islamorada will need adaptation actions to prevent damage at the same time as



private properties are made safer by elevating and floodproofing. If road access and sewer and water services to these properties will be lost, making private properties safer by minimizing damage from storm surge will not be a sustainable solution. Therefore it is important to review the COAST modeling results in the larger context of the Islamorada Matters and the Monroe County GreenKeys! projects. In future modeling efforts in Islamorada or elsewhere, it may be beneficial to model benefits and costs of joint action for adapting roads and buildings. Nevertheless, the modeled actions for adapting real estate alone do provide useful results that should help provide momentum toward additional important steps in Islamorada's sea level rise adaptation planning process.

It is also important to review results from this project with the larger adaptation context in mind. That is, adapting to the threats of a changing climate is as much of a governance problem as it is an uncertainty problem. Choosing one adaptation action over another will not be (and should not be) a simple or linear process determined by one report or study. Rather it should be a process that involves multiple stakeholder groups (e.g., private property owners, utilities, local governments and state governments) in a process where concerns and interests, data gathering, and reciprocal learning can be shared between groups so that all parties involved have an opportunity to shape the adaptation action(s) over time.

One of the main challenges with this process is moving beyond simple vulnerability assessments to a robust benefit-cost analysis that can begin to address real-world solutions and start (or compliment) the overall adaptation process. The analysis presented here is intended to substantively fill this void. But importantly, it is just a first step in this direction; filling the void completely can be expected to take more time. In many cases choosing an adaptation action and determining how it should be implemented will take as long as the actual implementation itself. However this should not deter people from taking their time to evaluate multiple climate change threats and adaptation actions, as long as the lessons learned continue to create momentum towards an overall strategy that can be supported by those it is intended to help.

It is important to remain aware that threats to a community such as sea level rise and storm surge transcend jurisdictional boundaries, political cycles and fiscal calendars. As a result communities need to consistently work together and communicate to ensure individual efforts are not working against one another, but rather in tandem. When communities coordinate their adaptation efforts in this manner benefits can be scaled up and have more of a regional impact – which in turn helps strengthen the individual actions.



5.3 COMPARISON OF COAST RESULTS IN ISLAMORADA TO NEARBY LOCATIONS

During fall 2014, Catalysis also used the COAST model to analyze vulnerabilities and test similar adaptation actions in the next community to the north, the geographic area of Key Largo. The Islamorada study area had 5,601 properties with a total market value of \$3.67 billion. The Key Largo geographic area had 12,289 properties with a total market value of \$4.24 billion. Even though Islamorada is smaller with 54% fewer properties and 13% lower market value than Key Largo, predicted cumulative dollar damages to buildings from storm surges and sea level rise was actually 28.7% higher with a high sea level rise scenario.

Timescale	SLR Scenario	Cumulative Damage to Buildings Islamorada Study Area	Cumulative Damage to Buildings Key Largo Study Area	Percent Increase (decrease) in Cumulative Damage, Islamorada vs. Key Largo
2014-2060	Low – 9"	\$1.734 billion	\$1.778 billion	(-2.5%)
2014-2060	High – 24"	\$2.741 billion	\$2.130 billion	+28.7%

Table 10. Comparison of COAST Model Results for Cumulative Damage to Buildings by 2060, Islamorada versus Key Largo Geographic Area.

Analysis of this situation indicates two (2) factors that would lead to this unexpected result:

1. In general, as one travels south down Route 1 from the beginning of the Keys in Key Largo, the land area becomes lower and flatter and subject to more surge damage compared between the two.
2. A larger percentage of the higher value real estate may be located in lower, more vulnerable areas in Islamorada, than in Key Largo geographic area. In particular, Key Largo has more high value development along Route 1 (on higher ground) compared to its southern neighbor.

It should also be noted as a positive factor, that by 2060, the benefit-cost ratios for Action 1 (Elevation and Floodproofing) with a high SLR scenario, were higher for Islamorada than for Key Largo. Because results suggest there may be more danger from surges in Islamorada than in Key Largo, this strategy is shown to be somewhat more effective in this location.

Timescale	SLR Scenario	Benefit-Cost Ratio: Elevation and Floodproofing, Islamorada (with High Cost Estimate)	Benefit-Cost Ratio: Elevation and Floodproofing, Key Largo (with High Cost Estimate)
2014-2060	Low – 9"	5.24	5.72
2014-2060	High – 24"	7.46	6.51

Table 11. Comparison of COAST Model Results of Benefit-Cost Ratios for Elevation and Floodproofing by 2060, Islamorada versus Key Largo Geographic Area.



5.4 HOW COAST RESULTS HAVE LED TO ADAPTATION ACTIONS IN OTHER COMMUNITIES, AND HOW ISLAMORADA CAN USE THEM

Now that problems of sea level rise and storm surge have been discussed with probabilities and estimated damage figures attached, vulnerabilities will have begun to seem more real than before the effort began.

These model results provide powerful insights and information to seek funding and develop political leadership around adaptation strategies that will protect the community – whether the solution will be fortification, accommodation, strategic relocation, or a combination of these. However the COAST process is not just about these results. This project has built models of the future *in collaboration with* a broad collection of stakeholders and concerned citizens. Now that problems of sea level rise and storm surge have been discussed with probabilities and damage figures attached, vulnerabilities will have begun to seem more real than before the effort began.

Candidate adaptation actions have also been evaluated in

detail, creating the opportunity for political momentum should community leaders wish to take additional steps in these directions.

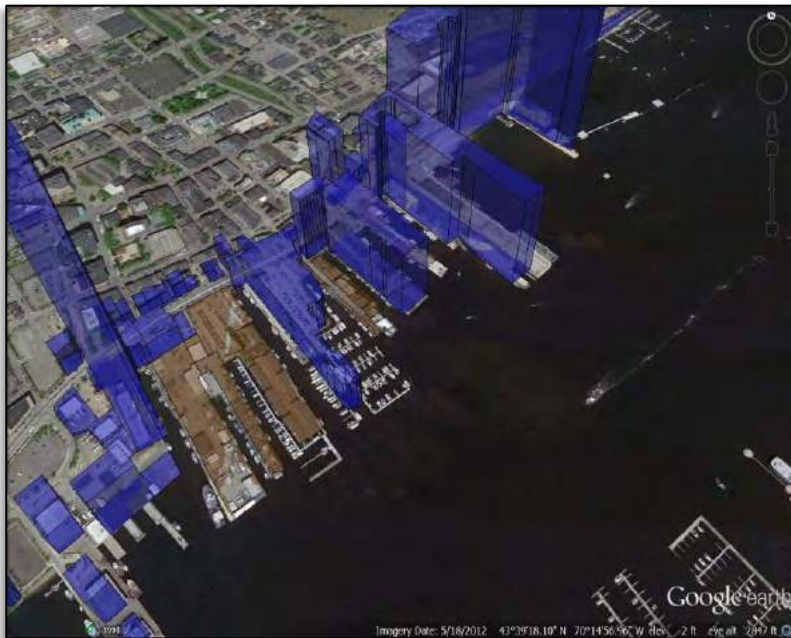
Many communities have completed the COAST modeling process during the past three (3) years. Examples of some positive steps taken by other communities that have used COAST include:

- Kingston, New York – Results of the COAST model have led to continuing discussions about further floodproofing and even relocating the main sewage treatment plant, which was identified as an extremely vulnerable asset predicted to be subject to a high level of cumulative damage over the coming decades. Sea level rise issues are being considered for inclusion with ongoing updates to the Master Plan and Waterfront Redevelopment Plan for Kingston.





- Portland, Maine – Results of COAST modeling in the Back Cove area led to inclusion of specifications in requests for proposals for storm drainage work, specifically that designers and engineers must address potential sea level rise conditions in prospective projects. Another product of this effort was a second round of COAST modeling to study the vulnerability of the Commercial Street waterfront (arranged by the local nonprofit Portland Society for Architecture). Results have highlighted opportunities for the City of Portland to revise ordinances and make other changes in the direction of a more resilient working waterfront.



Interestingly, the most cost-effective option is not always the one favored; communities sometimes determine other values are more important, such as maintaining ocean views or protecting natural resources.

Given the short period the COAST approach has been in use and how long it takes to actually implement most adaptation strategies, construction stages of actions modeled by the Catalysis team have not yet occurred in communities that have used the approach. However, COAST modeling results have started many important public conversations. For example when considering adaptations to sea level and storm surge, numerous communities have indicated preferences for which directions they might like to head next. Interestingly, the most cost-effective option is not always the one favored; communities sometimes determine other values are

more important, such as maintaining ocean views or protecting natural resources. That is, benefit-cost ratios from this work tend to open difficult conversations about what is most important to a community. Additionally, this type of modeling exercise usually results in broad discussion of vulnerabilities outside the model and helps identify diverse co-benefits of taking action. It is hoped results from this project will galvanize similar conversations and move the Islamorada towards its desired courses of action.



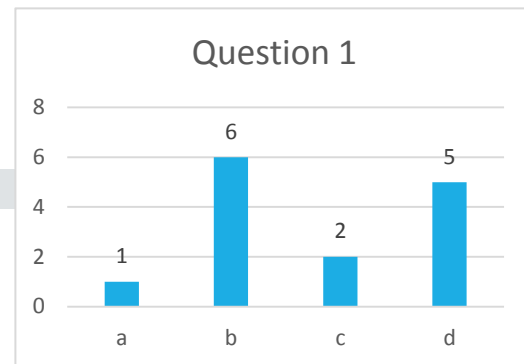
6 APPENDIX: PUBLIC INPUT AND COST CONSIDERATIONS OF PROPOSED STRATEGIES

6.1 KEYPAD POLLING RESULTS FROM COMMUNITY WORKSHOP #2

Keypad Polling Results from the COAST community modeling exercise conducted November 10, 2014 at the Community Center in Islamorada, FL.
Answers with the Highest Number of Votes are Highlighted in Gray.

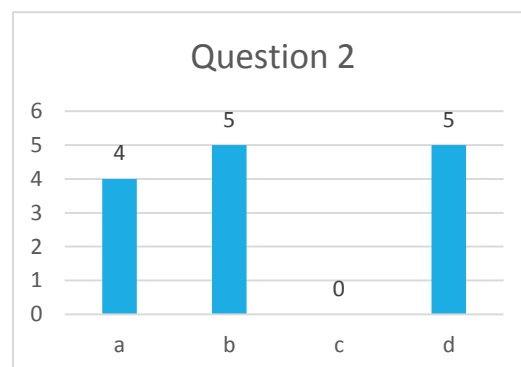
Question #1: Currently in Islamorada, 46% of properties are already elevated. What percentage of additional Islamorada V-zone buildings do you want to see elevated in this model?

- 1 a 25%
b 50%
c 75%
d The draft input of 100%



Question #2: What percentage of Islamorada A-zone buildings do you want to see floodproofed in this model?

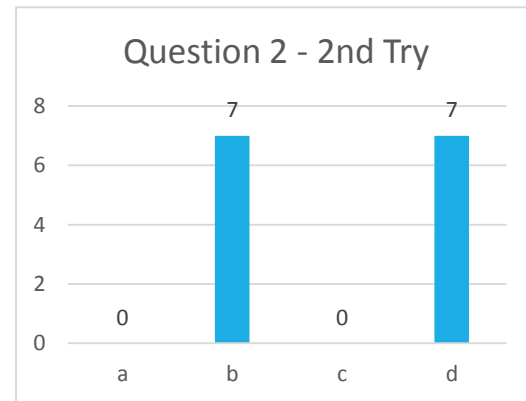
- 2 a 25%
b 50%
c 75%
d The draft input of 100%





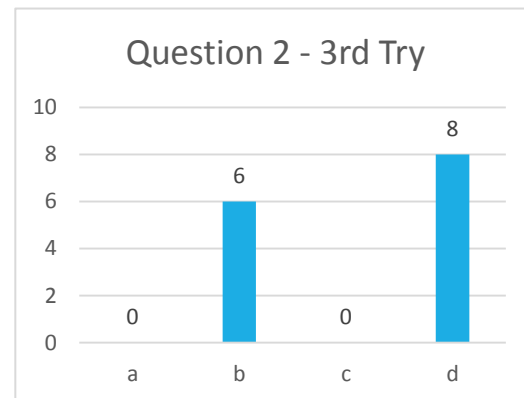
2nd Try: Asking Respondents to Choose Between B and D

- 2 a 25%
b 50%
c 75%
d The draft input of 100%



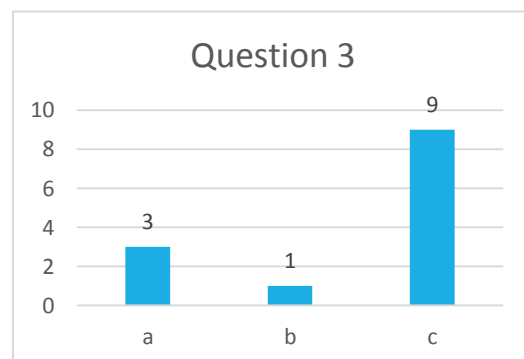
3rd Try: Asking Respondents to Choose Between B and D

- 2 a 25%
b 50%
c 75%
d The draft input of 100%



Question #3: Currently in Islamorada, new buildings are required to be elevated to the 100-year flood elevation, which ranges from 6 to 15 feet across the Key. For parcels that will be elevated in the model, do you want them to be elevated up to this code or to something higher?

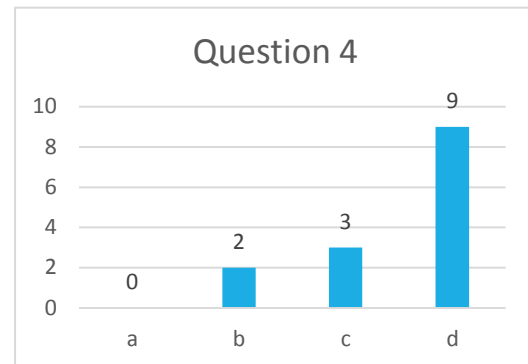
- 3 a Up to current code
b Up to current code plus 1 ft
c Up to current code plus 2 ft





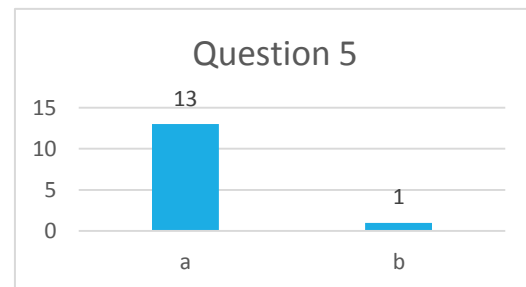
Question #4: The model estimates floodproofing to a certain height. How high would you like to see parcels floodproofed?

- 4 a 1 ft
 b 3 ft
 c 6 ft
 d The draft input of 8 ft



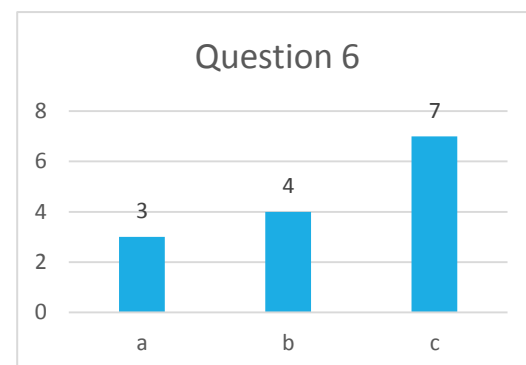
Question #5: Should the planning group model this action?

- 5 **a Yes**
 b No



Question #6: Which of the following types of structures would you like to see us model:

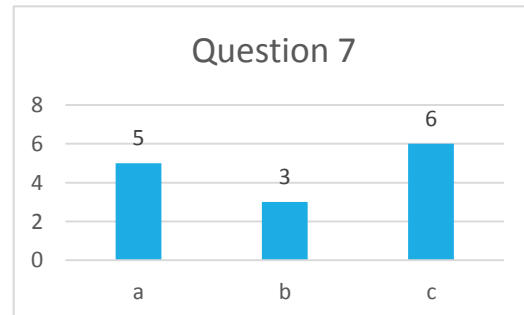
- 6 a Submergent
 b At water level
 c Emergent





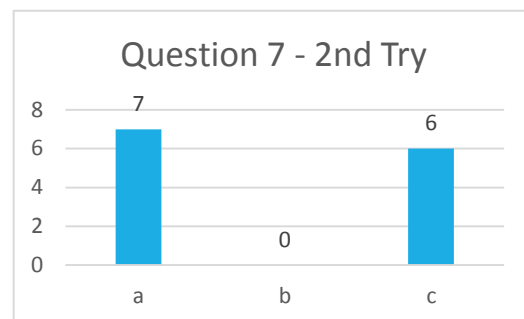
Question #7: How far out from the shore do you think the structures should be?

- 7 a On the shore
b Nearshore
c Offshore



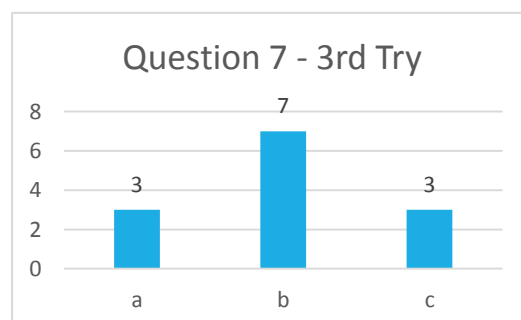
2nd Try: Asking Respondents to Choose Between A and C

- 7 a On the shore
b Nearshore
c Offshore



3rd Try: Asking Respondents to Choose Among All Choices, After Discussion of Water Access Problems Raised by Opponents of Choice A

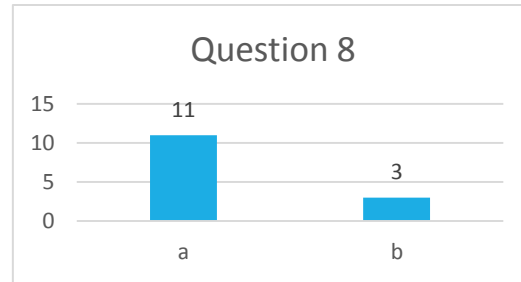
- 7 a On the shore
b Nearshore
c Offshore





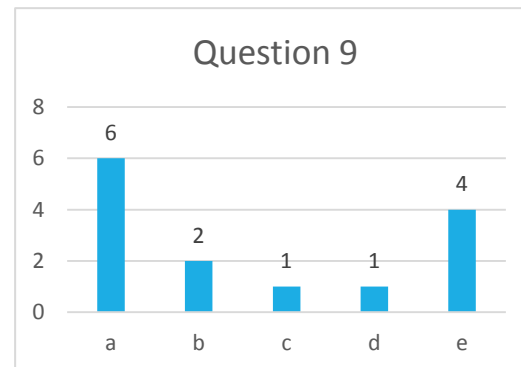
Question #8: Should the planning group model this action?

- 8 a Yes
b No



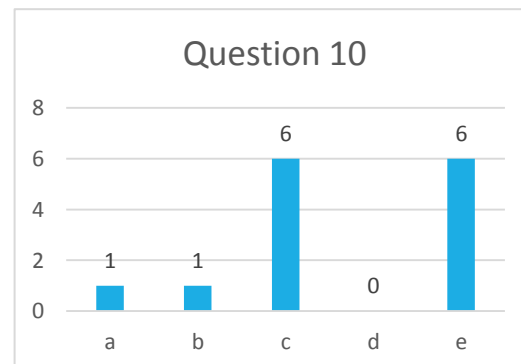
Question #9: What percent of property owners illustrated in red for Islamorada should we model would accept this voluntary buyout in the next few years (Phase 1)?

- 9 a 10%
b 25%
c 50%
d 75%
e The draft input of 100%



Question #10: What percent of property owners illustrated in green for Islamorada should we model that would accept this voluntary buyout in the year 2030 (Phase 2)?

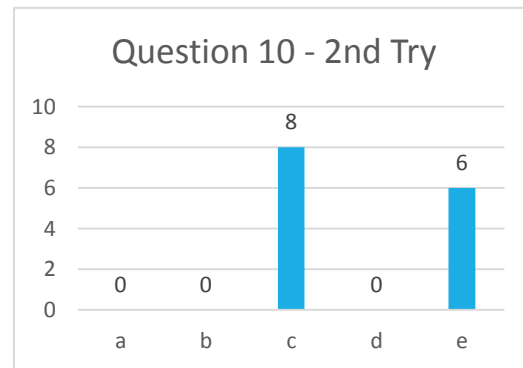
- 10 a 10%
b 25%
c 50%
d 75%
e The draft input of 100%





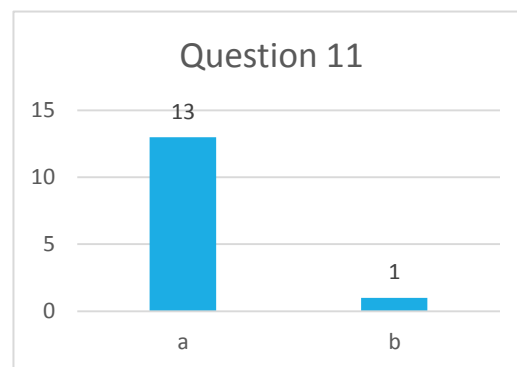
2nd Try: Asking Respondents to Choose Between C and E

- 10 a 10%
b 25%
c 50%
d 75%
e The draft input of 100%



Question #11: Should the planning group model this action?

- 11 **a Yes**
b No





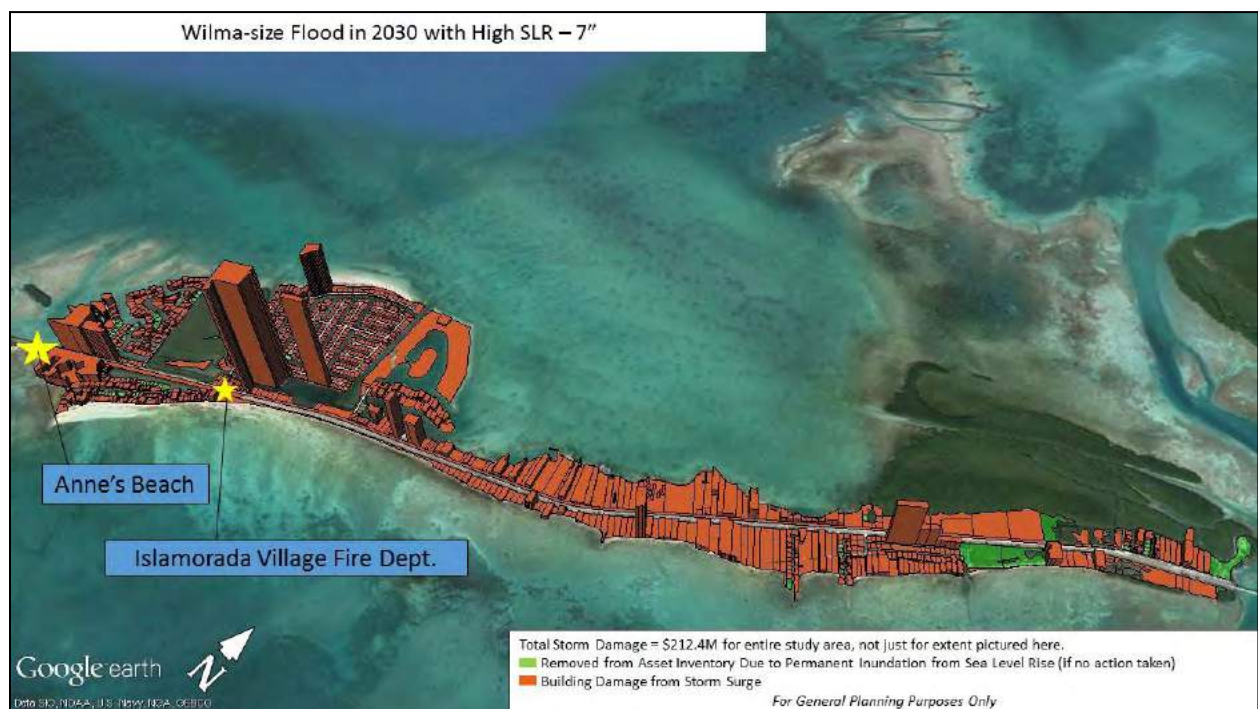
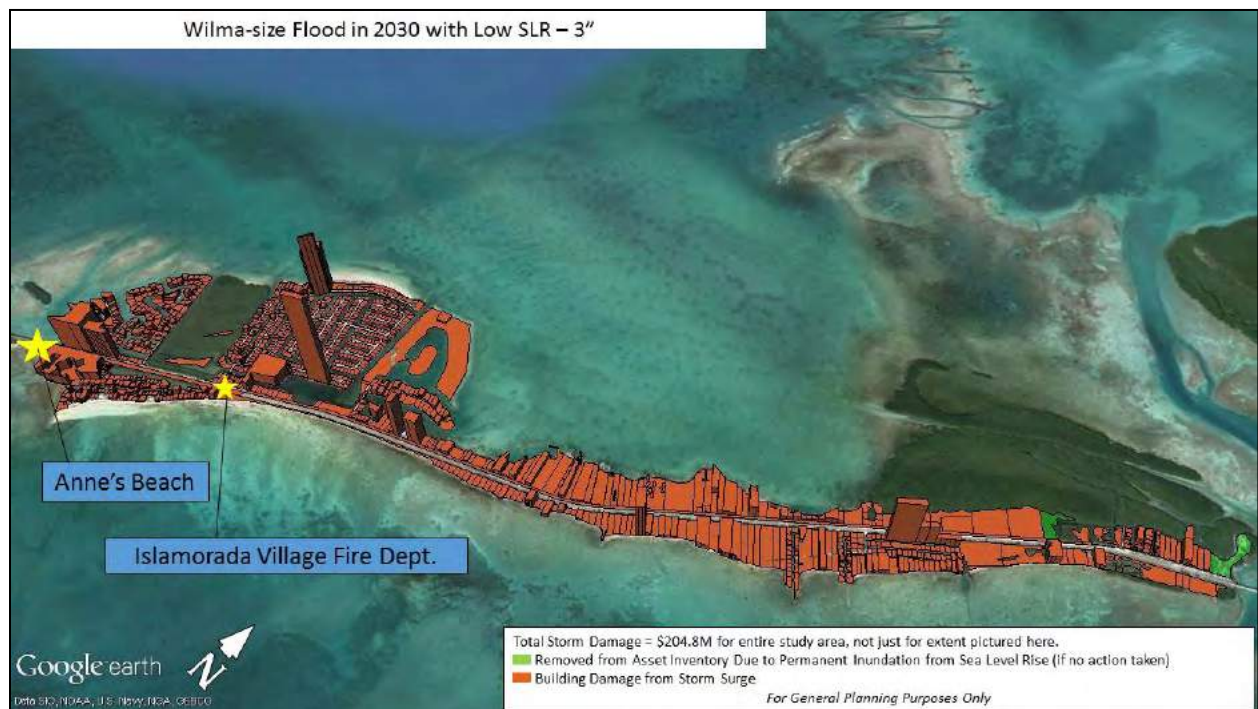
6.2 MAPS OF POTENTIAL ONE-TIME FLOODING DAMAGE IN ISLAMORADA, FL

Sea Level Rise assumptions were based upon the report: Unified Sea Level Rise Projection for Southeast Florida, Southeast Florida Regional Climate Change Compact Counties, Sea Level Rise Ad Hoc Technical Working Group (April 2011).



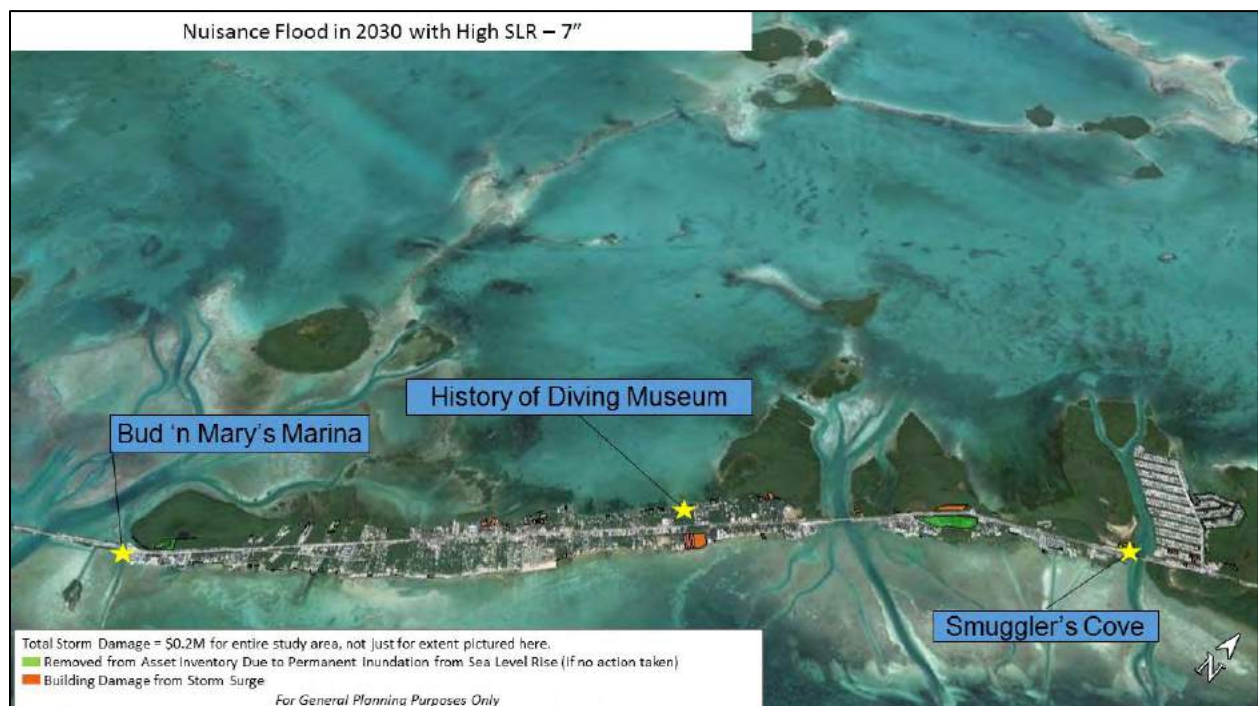


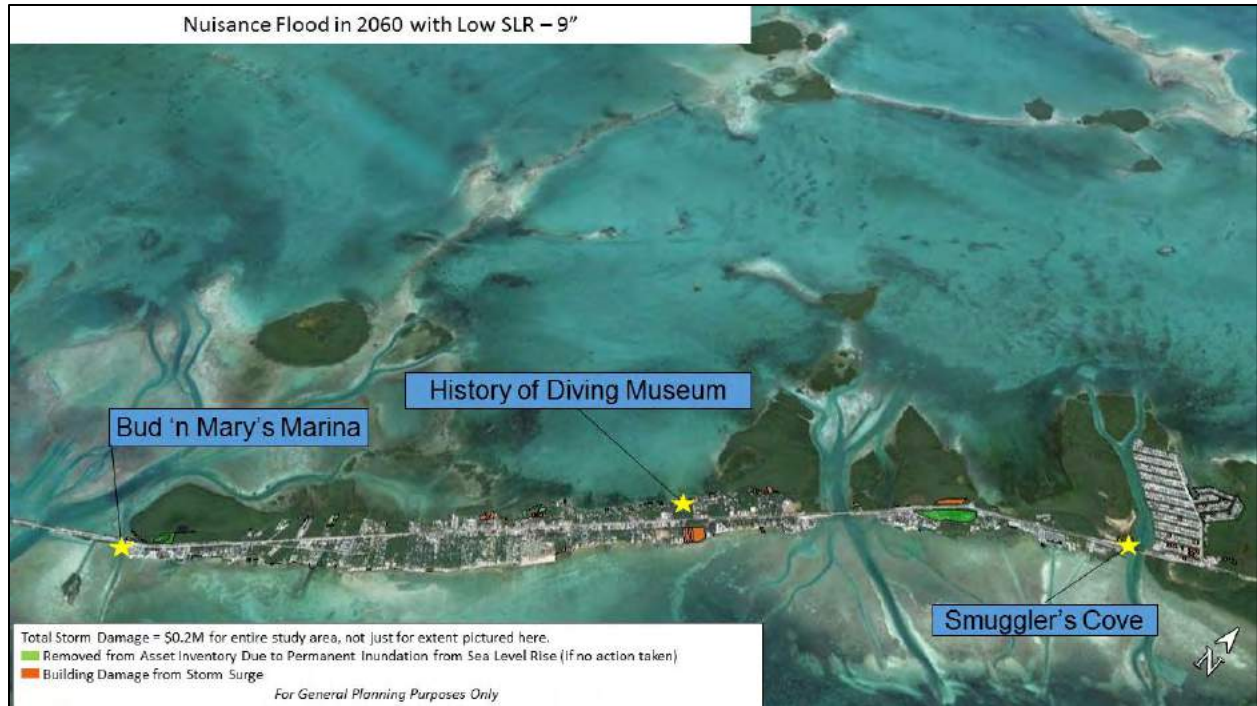




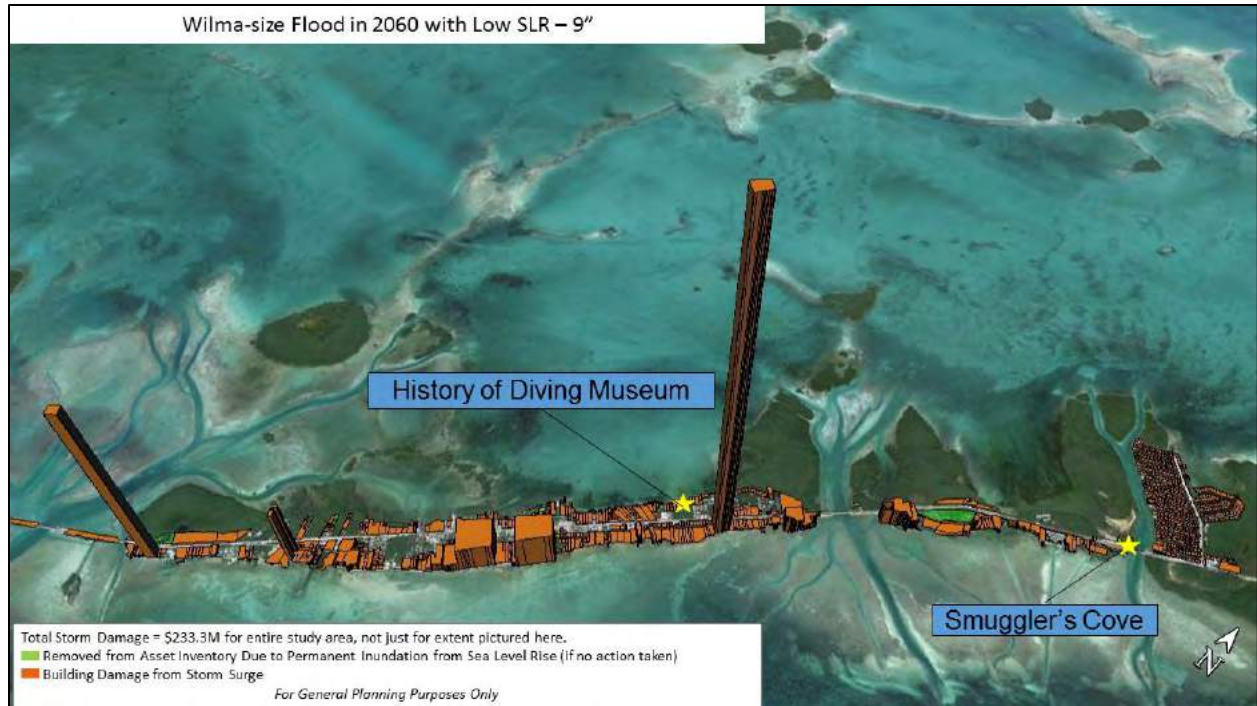




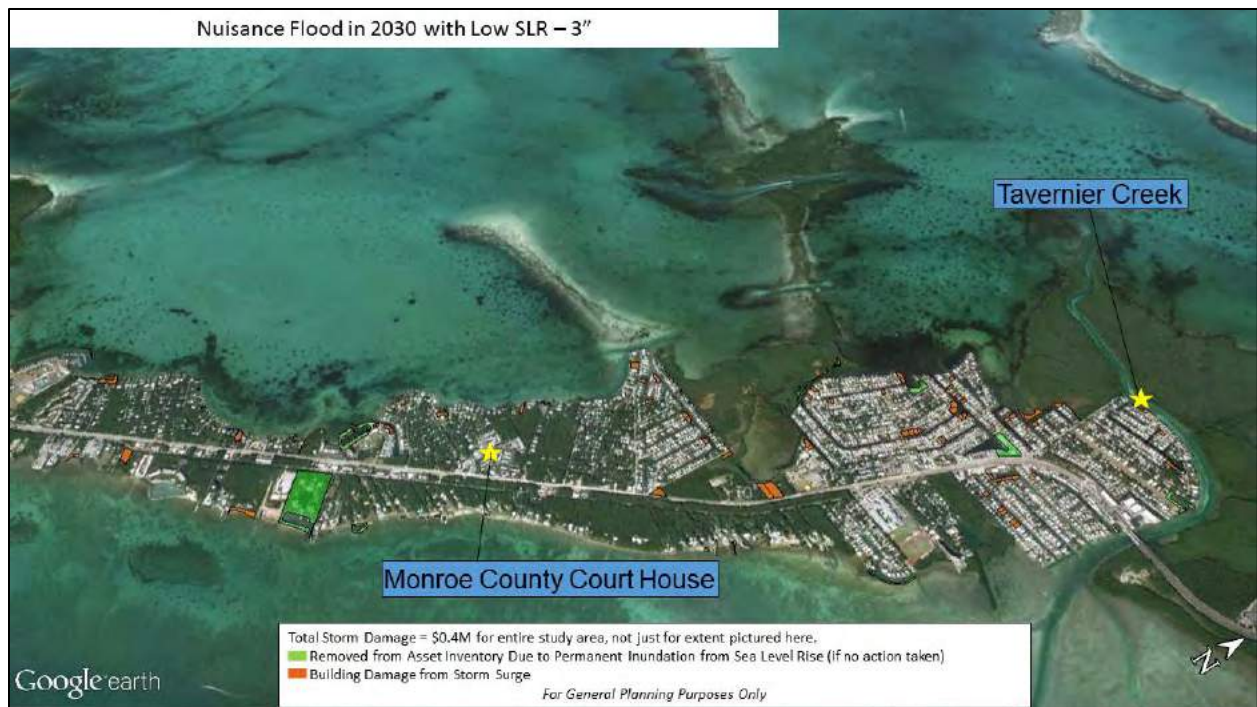


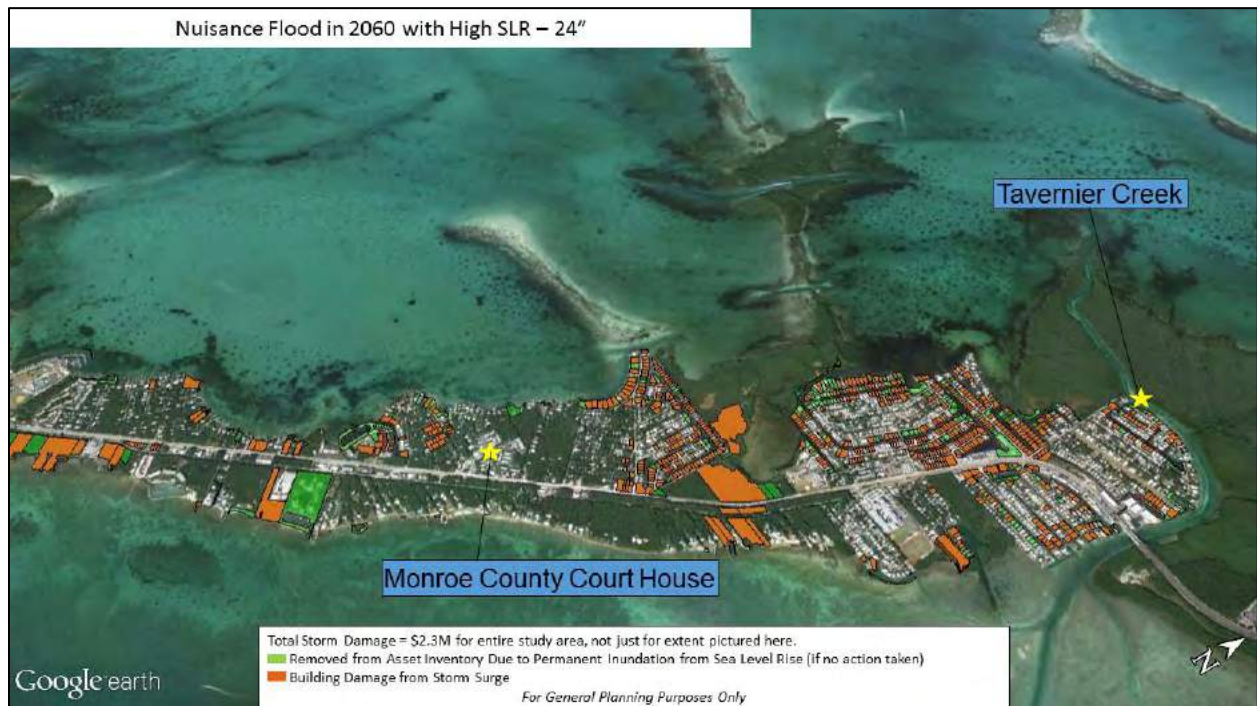


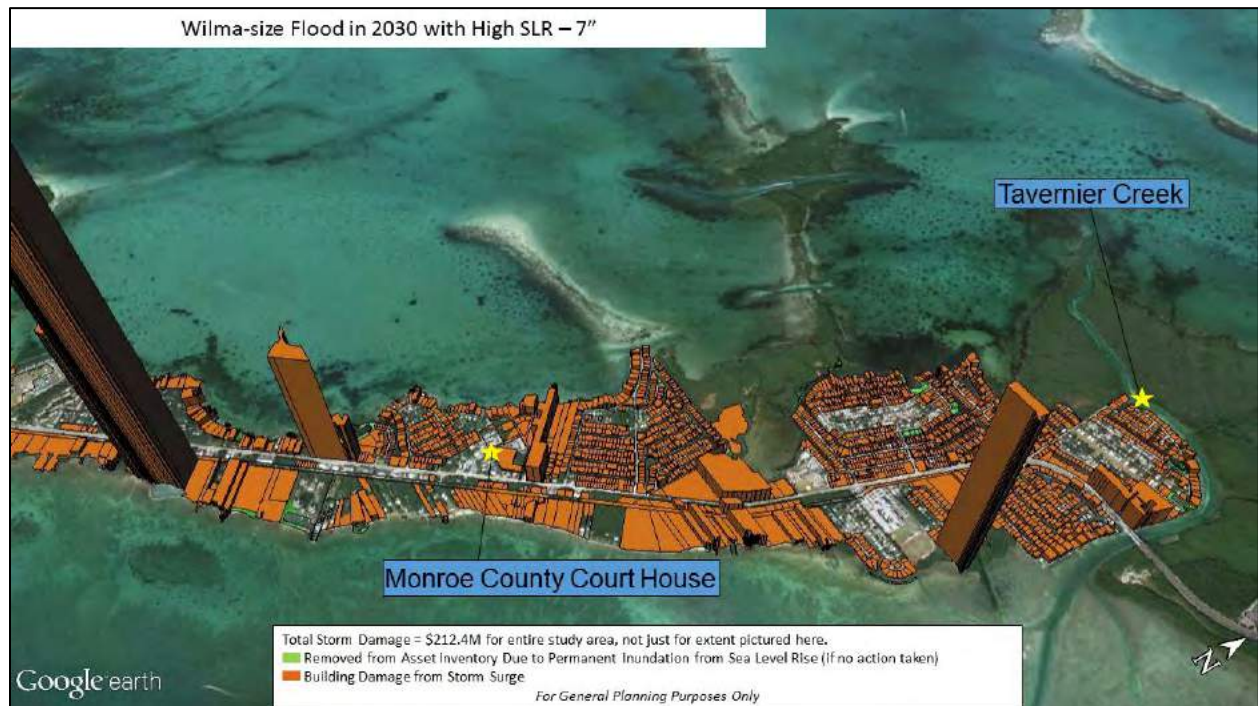
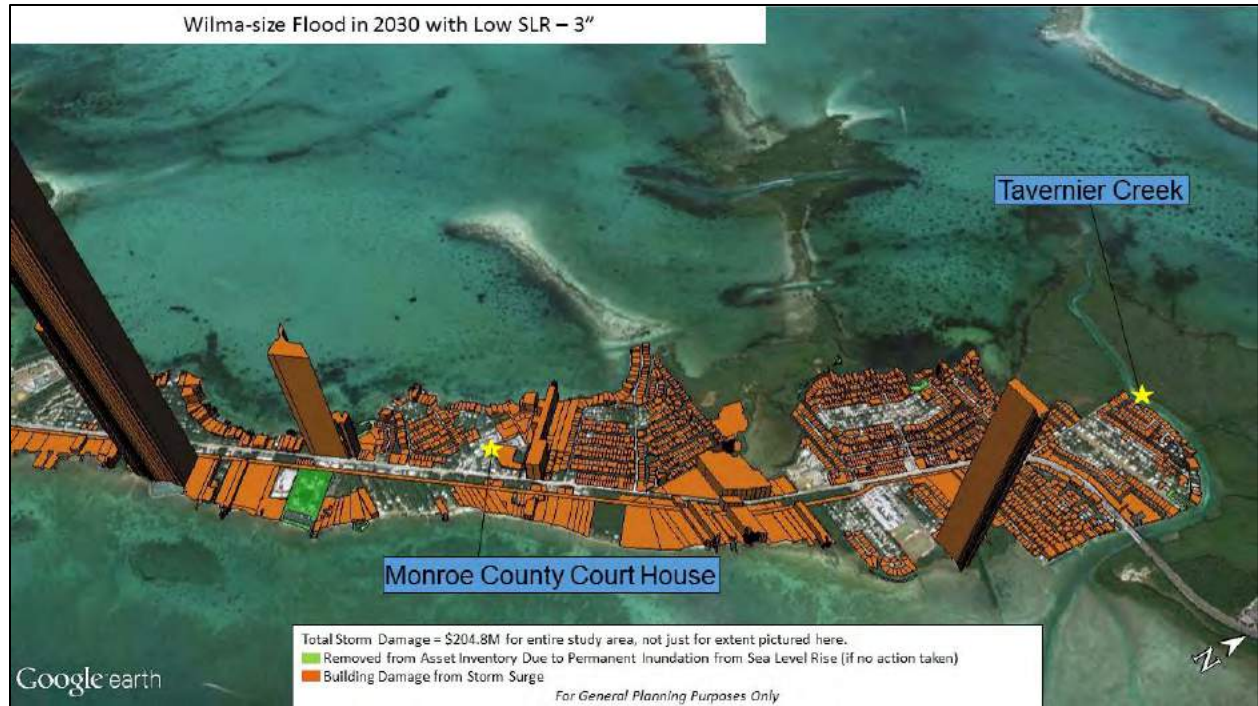


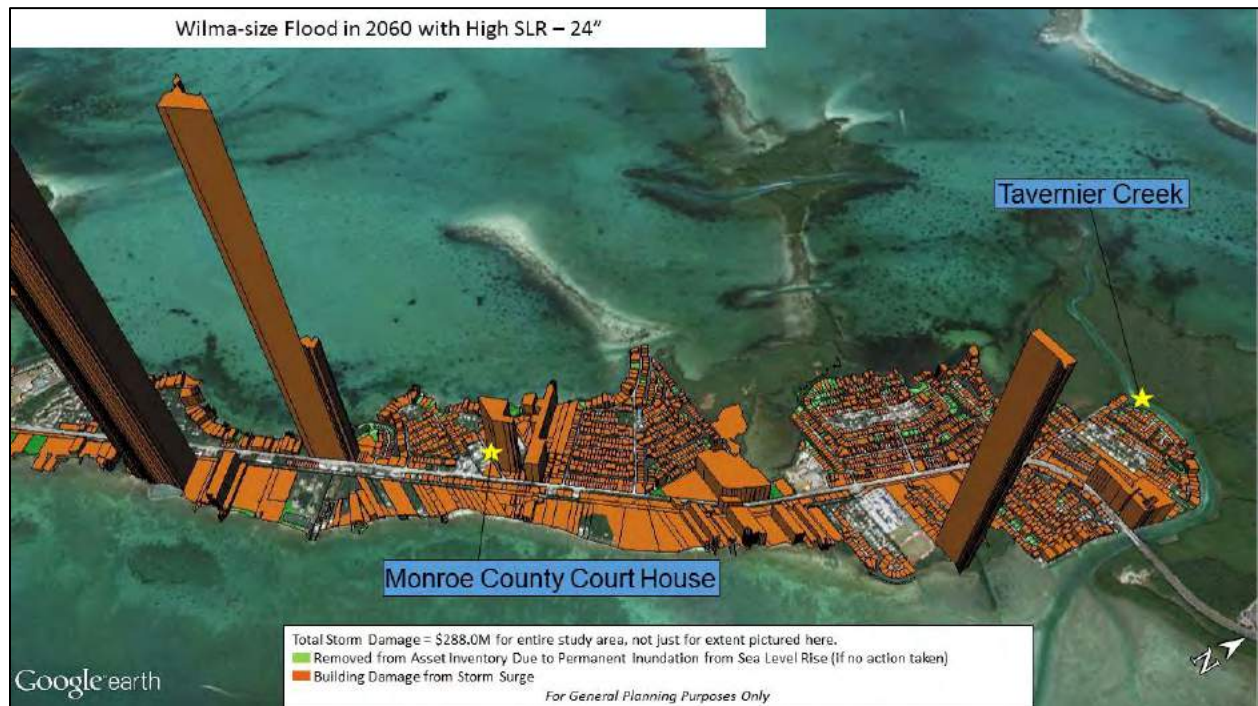














6.3 COST BREAKDOWN FOR ADAPTATION ACTIONS

6.3.1 Adaptation Action 1 – Elevate and Floodproof Buildings

Cost Estimates for Action 1 - No Discounting, Costs paid Now					
	Number of Units Elevated in the V Zone	Elevation Price Per Site - Low	Elevation Price per Site-High	Cost - Low	Cost - High
For Elevation Component	98	\$ 60,000 ⁶	\$ 160,000 ²	\$ 5,880,000	\$ 15,680,000
	Total Bldg Market Value of Flood-proofed Units in A Zone (1391 properties)	Cost as percent of Building Structure Value - Low	Cost as percent of Building Structure Value - High	Cost - Low	Cost - High
For Flood-proofing Component	\$ 732,805,839	10% ⁷	20% ³	\$ 73,280,584	\$ 146,561,168
Total				\$ 79,160,584	\$162,241,168

⁶ Cost estimates derived from internet search of pricing from Florida-based elevation contractors. This range of values also is consistent with FEMA post-Sandy grants to homeowners for elevations, during 2013-2014.

⁷ Provided by Parsons Brinckerhoff cost estimators as a good “rule of thumb,” based on post-Sandy floodproofing work in the New York metropolitan area in 2013.



6.3.2 Adaptation Action 2 – Constructed Barriers

	Estimated Costs Using Bid Numbers from South Cove Restoration Plan (2011) - Limestone Breakwater with Mangroves in Similar Depth - Palm Beach County ERM/Lake Worth Area					
	Qty	Unit	Unit Cost - Avg 3 Lowest Bids in 2011	Total Cost	Scale-Up Multiplier for Islamorada (1500 feet to 1 miles)	Islamorada Cost Estimate
Mobilization - Demobilization	1	lump sum	\$ 146,533.00	\$ 146,533	1.5	\$ 219,800
Design Drawings	1	lump sum	\$ 28,900.00	\$ 28,900	2	\$ 57,800
Fill	35000	CY	\$ 20.37	\$ 712,950	3.52	\$ 2,509,584
Armor Stone	9600	Tons	\$ 73.10	\$ 701,760	3.52	\$ 2,470,195
Bedding Stone	1600	Tons	\$ 77.92	\$ 124,672	3.52	\$ 438,845
Total				\$ 1,714,815		\$ 5,696,224
Adjust by CPI since 2011						\$ 6,027,758
					Low Cost Estimate	\$ 6,027,758
				For High Cost Estimate, Add 33%		\$ 8,016,918



6.3.3 Adaptation Action 3 – Voluntary Buyouts

Cost Estimates for Action 3 - 100% participation					
Rolling Easement Acquisition Costs					
	Current Building Market Value	Current Land Value - Assessed Value	Current Land Market Value	Current Total Market Value, Land + Bldg	Discounted to Today's Price from 2030 for reds; from 2045 for greens
Red Parcels (94 total)	\$27,756,169	\$30,982,565	\$35,629,950	\$63,386,119	\$ 37,704,138
Green Parcels (95 total)	\$22,875,081	\$34,806,967	\$40,028,012	\$62,903,093	\$ 22,991,221
Total (Low Estimate)					\$ 60,695,359
Total (High Estimate - 50% increase for High Legal Costs)					\$ 91,043,038

Cost Estimates for Action 3 - 10% participation now and 50% in 2030						
Rolling Easement Acquisition Costs						
	Current Building Market Value (100%)	Current Land Value - Assessed Value (100%)	Current Land Market Value (100%)	Current Total Market Value, Land + Bldg (100%)	Discounted to Today's Price from 2030 for reds; from 2045 for greens, reduced to 10% participation now, 50% in 2030	Average Cost per Easement
Red Parcels (10 total)	\$53,781,942	\$80,484,581	\$92,557,268	\$146,339,210	\$ 8,704,735	\$ 870,474
Green Parcels (48 total)	\$59,385,014	\$84,529,363	\$97,208,767	\$156,593,781	\$ 28,617,688	\$ 596,202
Total (Low Estimate) 58 properties					\$ 37,322,423	\$ 643,103
Total (High Estimate - High Legal Costs) 58 properties					\$ 55,983,635	\$ 965,517

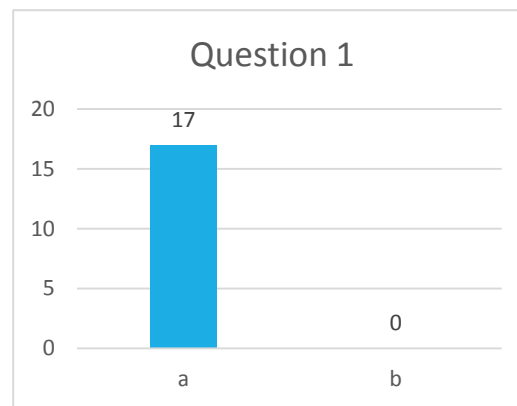


6.4 KEYPAD POLLING RESULTS FROM COMMUNITY WORKSHOP #3

Islamorada Matters - Keypad Polling Results from the COAST community modeling exercise conducted December 11, 2014 at the Founders Park Community Center in Islamorada, FL

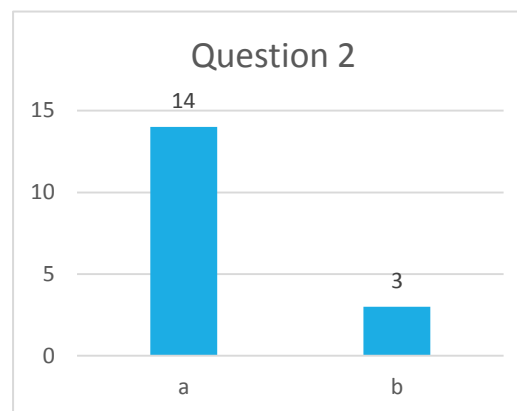
Floodproof & Elevate: 1. Given the results of the COAST model do you think this action deserves further study by Islamorada?

1 a **Yes**
b No



Floodproof & Elevate: 2. Do you think Islamorada should require elevations of structures in Islamorada after they are damaged by more than 50% by a storm surge event, to a higher level than the current code requires? (Such as the 100 year flood height plus 2 or 3 feet, versus just the 100 year flood height, as required today?)

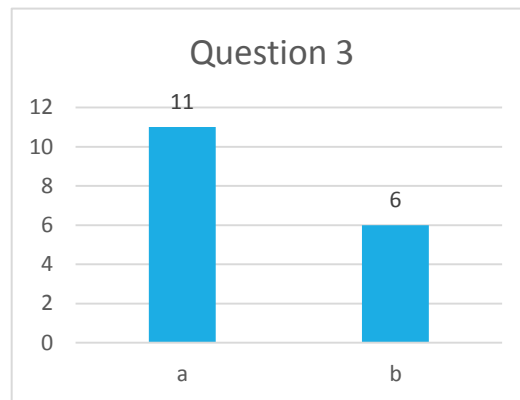
2 a **Yes**
b No





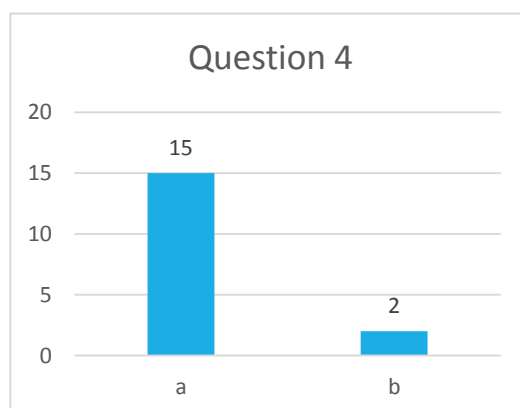
Floodproof & Elevate: 3. Do you think Islamorada should pursue sources of funding to help private property owners elevate properties located in the FEMA V-zone, as a way to prevent storm surge damage?

3 a **Yes**
b No



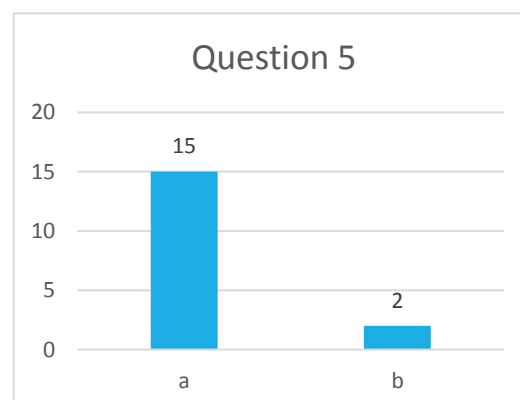
Floodproof & Elevate: 4. Do you think Islamorada should pursue sources of funding to help private property owners flood-proof their properties located in the FEMA A zone, as a way to prevent storm surge damage?

4 a **Yes**
b No



Floodproof & Elevate: 5. After looking at the model results, and participating in the group discussions of the three (3) actions modeled, do you like this one the best?

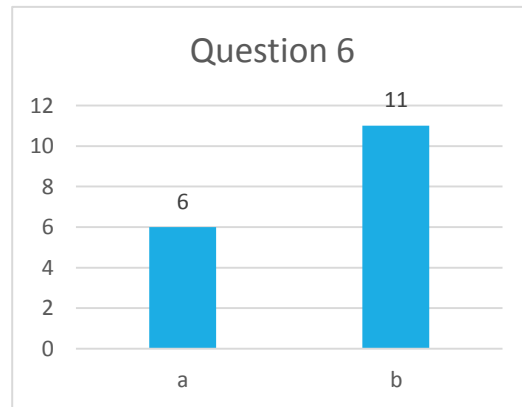
5 a **Yes**
b No





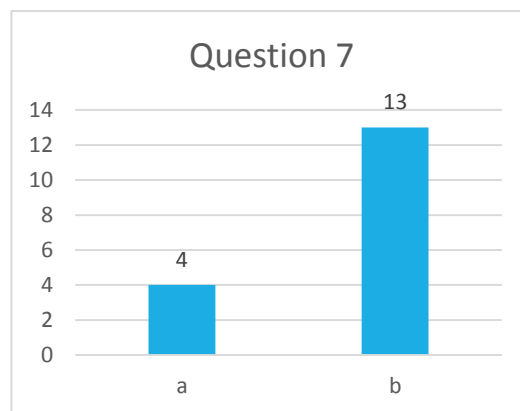
Construct Breakwater: 6. Given the results of the COAST model, do you think this action deserves further study by Islamorada?

6 a Yes
b **No**



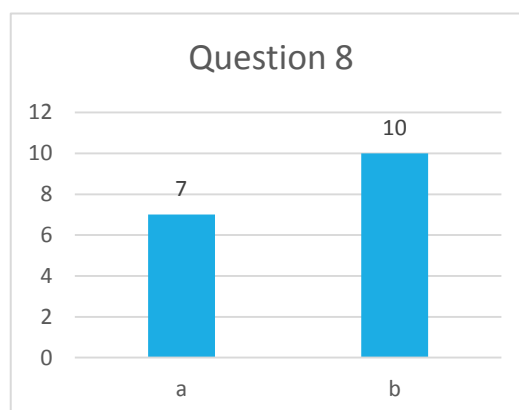
Construct Breakwater: 7. Given that there may be local, state and/or federal regulations constraining such breakwaters from being constructed in the areas shown, do you think Islamorada should spend any effort to change laws or rules to facilitate such projects?

7 a Yes
b **No**



Construct Breakwater: 8. Do you think Islamorada should pursue sources of funding to construct limestone/mangrove breakwaters to protect homes from storms?

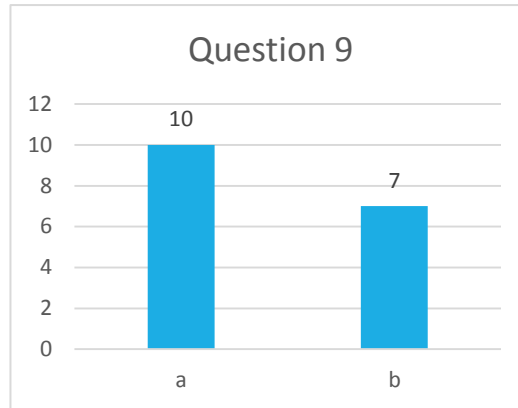
8 a Yes
b **No**





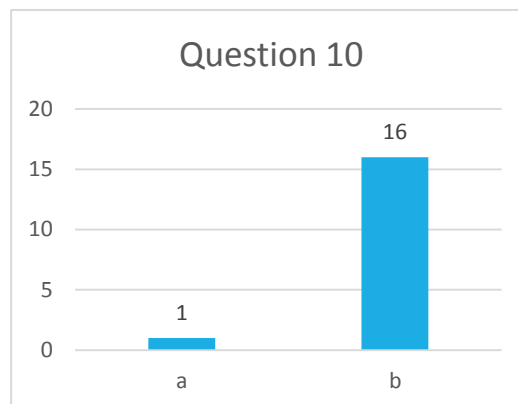
Construct Breakwater: 9. Do you think Islamorada should pursue identification of resources at risk from storm damage for which breakwaters might have a favorable benefit-cost ratio?

9 a **Yes**
b No



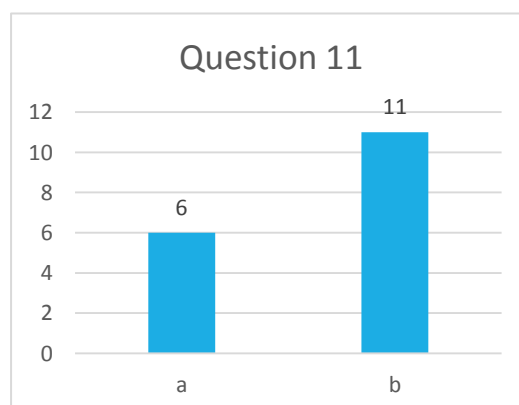
Construct Breakwater: 10. After looking at the model results, and participating in the group discussions of the three (3) actions modeled, do you like this one the best?

10 a Yes
b **No**



Relocate Over Time: 11. Given the results of the COAST model, do you think this action deserves further study by Islamorada?

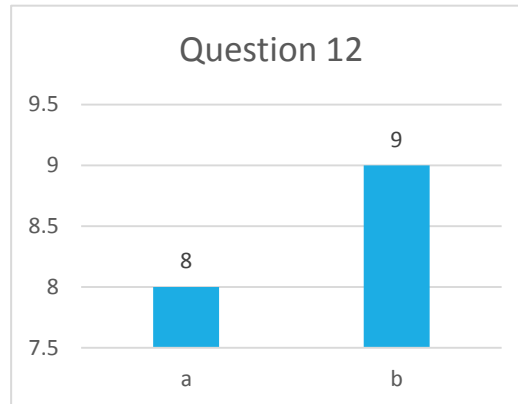
11 a Yes
b **No**





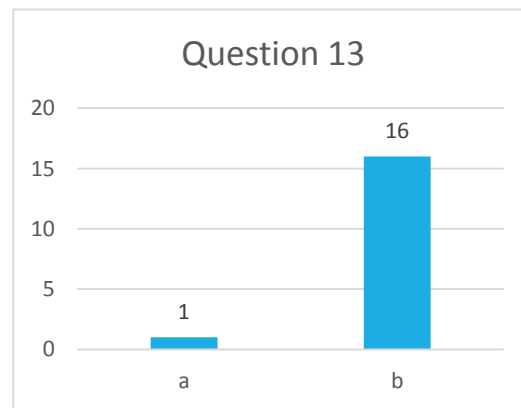
Relocate Over Time: 12. Do you think Islamorada should pursue sources of funding to support a voluntary rolling easement purchase program, similar to what was modeled in this study?

12 a Yes
b **No**



Relocate Over Time: 13. After looking at the model results, and participating in the group discussions of the three (3) actions modeled, do you like this one the best?

13 a Yes
b **No**





6.5 COMMUNITY PRESENTATION AND WORKSHOP MINUTES

6.5.1 Islamorada Matters Community Workshop #1 – October 7, 2014

In attendance: Mayor Ted Blackburn, Vice Mayor Deb Gillis, Councilman Ken Philipson, Councilman Dave Purdo, Village Manager Maria Aguilar, Village Attorney Roget Bryan, Assistance Village Manager Shane Laakso, Consultant Erin Deady, Consultant J.T. Lockman, Consultant acting as Recording Secretary Mitty Barnard, Panel Member Joe Roth, Panel Member David Makepeace, Panel Member Ana Zalesky, additional Village Staff Members and members of the community

A. Shane Laakso Introduction – 5:37pm

- Pledge of allegiance
- Brief history of how IslamoradaMatters project came about
- Introduced partners involved in project
- Turned it over to Erin Deady

B. Erin Deady Brief Overview – 5:40pm

- Turned over to JT Lockman 5:45pm

C. JT Lockman Presentation – started at 5:45pm

- Piermont example:
 - JT's vulnerability assessment slide –
 - Audience Question – Are the estimates based on real time dollars or future dollars?
 - Presentation ended 6:17pm
 - Question & Answer session opened 6:17pm
 - How do you deal with future growth? You can increase building values over time if you know that things are going to be built, software has capability to do this
 - Has he worked scenario attempting to build levy? JT says he has not worked on anything like that, only time levy will work is when federal government pays for it (cities and counties won't have funds to do that)

D. Panel Discussion started 6:20pm

- Question 1 – from your perspective, what do you think the biggest concern is with regard to sea level rise within the Village of Islamorada?
 - Panelist Joe Roth – damage to commercial structures, loss of life
 - Panelist David Makepeace – as homeowner his concern is erosion, landscaping issues for normal sea level rise because vegetation cannot handle salt; property value
 - As biologist – whole new succession of vegetation will occur, loss of hammock, reef impacts that won't rise with the sea level, storms won't break on the reef like they do now, mangroves won't be same kind of buffer they are now
 - Panelist Ana Zalesky – agrees with Joe Roth on safety issue; concern is property values and what is to become of them – can they be fortified, will we be able to save all of them?
 - Erin Deady says might need tools for financing



- Panelist Mayor Ted Blackburn – very optimistic because of Southeast Florida Regional Climate Change Compact (SEFRCCC); last week’s conference in Miami Beach provided example of storm surge, having dramatic effect of sea and fresh water coming together; but in Keys there are tides that protect us – but concerned about initiative and whether community can look at them and figure out something to do about the seas rising – are we going to take steps to mitigate? Near term council will have to look at these issues, but there are things that we can do now to buy time – need to start now – his major concern that we are talking about it but might not be willing to take the necessary steps
- Question 2 – similarities with Piermont?
 - Panelist David Makepeace – need to set own baseline data to add into the scenario going forward (so that 2 feet from where has reference); need to use assessed value since only thing that will remain consistent regarding property values; need to figure out a factor (assessed value vs. sale value) to use; Cost-Benefit Analysis (CBA) individual and infrastructure/government CBA is helpful – good to have both since public doesn’t have typical access to government info – side comment is that perception is the reality (we need to prepare without scaring tourists and future homebuyers) – need to keep emphasizing this to the community so not scaring people
 - Panelist Joe Roth – similar most in the peninsular aspect, everything is coastal here too; from commercial property owner/homeowner side we need multi-prong approach (flood proofing structures) – walling is not going to be useful; different because we have a lot of runoff happening; he also likes blended property value (factor/multiplier included)
 - Panelist Ana Zalesky – says different because Piermont is a river community with dredged land; walling is not an option for us here, we are built on a rock (not dredged)
 - Panelist Mayor Ted Blackburn – differences? Started by touching on insurance – FEMA analysis to determine what to charge residents – but we need to show that we are being proactive to take hardening steps (could result in financial benefit for all of us); talked about Sea Oats Park that breaches during all storm events; 200 yards on left from that the mangroves are almost underwater and the road is right there – we have to have the right data to make the correct decisions going forward; resaid he is optimistic that we can come up with good solutions
- Question 3 – unique characteristics of Islamorada?
 - Panelist David Makepeace – some of the most valuable property in the Keys are in harm’s way to rising water and nuisance tides (waterside rests, resorts) – moving forward those places need our help in terms of CBA to determine what to do moving forward; different – don’t have large land masses that we are backed up against with high elevations – water can run around the Keys so not subject to storm surge – but porosity is an issue after storms; permitting issues - need to revise stormwater master plan to address what will happen
 - Panelist Ana Zalesky – local economy relies on the water so important to look at what is going to happen so we can help ourselves as much as possible – since so dependent on water; how the locals live. Influx of second homes but locals see it different than those in Piermont – here most people live here and work here, makes it more important to our economy
 - Panelist Joe Roth – need to take into account, Piermont has a lot more elevation but here we don’t have option to relocate – need to keep resorts on water not on US1 (or people won’t come here); residential concern/tax base concerns that several areas that were built on fill dirt that didn’t previously exist – substantial economic value in those



areas that are very vulnerable to ground washing out from underneath them – make canals shallower, shore up docks, walls – also stormwater issue because of nature of fill areas

- Panelist Mayor Ted Blackburn – loved what Joe Roth said, have to look at totality of where we are, gave example of Lower Matecumbe Key – Sea Oats beach is low and breaches but because it does, the areas of Port Antigua survive since there is less of a storm surge (other places where not same flow have much worse flooding); Upper Matecumbe Key is rock – can you put tunnels between ocean and bay? – would that preserve/recreate flow? (he doesn't know); we are unique but there are ways to find solutions to keep us around for longer than we think; mentioned Hemingway article after 1935 wipeout – 400 veterans came here to rebuild but residents are here by choice – same with today's residents, they choose to live here despite the perils though we must make efforts to stall and buy time
- Erin Deady's recap – she heard the following concerns: limited land envelop, limited ability for growth, fill issue, canal systems issues/solutions
- Session ended 7:01pm for 5 minute break

E. Public Comment Period – Erin Deady started back up at 7:16pm

- Erin Deady turned presentation over to JT Lockman
- Using same numbers Jason Evans presented last month for infrastructure 3-7" by 2030 or 9-24" by 2060 – JT Lockman to use same numbers –
 - no objection from public
- Using Monroe County parcel data; surges from all years 10, 25, 50 (2005 study is best we have) –
 - 12 runs of the model will be done total – proposing to show damage from 8 single storms
 - Erin Deady explained difference between nuisance flooding (1.08') and Wilma storm event (6')
 - Once results are obtained, then extrapolate places in between or times in between
 - Doing whole area rather than select areas – though more consistent based on infrastructure work being done by Jason Evans
 - Comments on dates, storms being modeled
 - Public (Sue Miller) – as water rises, effect is different because of reef height and mangroves - observation is drastic difference in effect of hurricanes if come from Bay or Ocean side – is that being considered? No, when you make models, you have to simplify things – results that are overestimated will be balanced with those that are underestimated, model doesn't factor wind, just using FEMA numbers of how high water will rise – can do more complicated water modeling that takes into account wind, shape of bottom, wave shape but would cost million for the Keys
 - Panelist David Makepeace comment – if Wilma-type flood worst on Ocean side is 6 feet and worst on Bay side is 6 feet – surges not seen greater than that – if 10 feet surges, no hardening options will work
 - Councilman Ken Philipson – interested in seeing total Islamorada modeled, not just a specific portion in Islamorada
 - Elevation of mean high tide – using Vaca Key gauge, explained mean higher high water (MHHW) data since they have that at Vaca Key, using that as the starting point –
 - No Comments from public



- Subsidence – JT Lockman said not really an issue, mostly in other areas, so we are not proposing to use and subsidence data in model –
 - No Comments from public
- Location of 100 year flood zone – proposing to use 2005 flood maps, divide the Village into subareas to look at all parcels with particular flood height, will then do separate runs of the model based on different characteristics; will likely divide Village into 8 different areas so 12 runs of 8 = 96 total runs of the model
 - No Comments from public
- Surge height, flood insurance data – using 2005 flood insurance study –
 - No Comments from public
- Topography – obtained LiDAR data (measured every 3 feet to within 2-3 inch accuracy); proposing to use 5 meter data (measured every 15' to same accuracy)
- JT Lockman asked the audience if anything bothering them so far, if they would do anything different?
 - Deb Gillis said 300 ft property with 10' height variance on her property – questioned if same elevation every 15' is accurate enough – JT Lockman explained that it was
 - Panelist Joe Roth – asked how are we going to value? Transcends so many issues
 - JT Lockman says use digital tax map for buildings and lots; first thing is Jason Evans has worked with tax assessors to make sure everything is properly classified by use, also put in year built for each building, can then assign different depth damage function to each property
 - JT Lockman says one decision to make here is about property values – use assessed value or apply sales ratio with a multiplier?
 - Up to the audience as to what they want? What does the audience want?
 - Public responses:
 - Panelist Ana Zalesky says definitely apply 15-20% to assessed value (because assessed values are running lower on average)
 - Panelist David Makepeace says we don't need to set number – but wants to see some multiplier because if the assessed values are off, that will make a big difference in CBA in determining what to do going forward – especially in commercial and public properties - says assessed values are not accurate and lag behind market value (Erin Deady says 115% is best data so far – Panelist Ana Zalesky asked if this pertained to residential or commercial or both – Erin Deady said she needs to follow up but the 115% is aggregate number)
 - Seems to be consensus that there needs to be a multiplier but not much public comment on by how much
 - Panelist Mayor Ted Blackburn says they use total assessed appraised value to determine value of village – they discovered in last 4 years is that there is a 2 yr lag on that – after end of recession it took 2 years to reflect end of recession – he says 10-15% sounds ok but



- doesn't know how to quantify the 2 year lag in data if you use the assessed values – says we need to use multiplier but doesn't know what it should be
- JT Lockman says this could be a project for staff – if you have last 5 years of sales and 5 years of assessed values – could determine the ratio with actual data
 - Someone (Ken Philipson) in audience public said don't do that calculation because then you get into lag issue – just need to pick
 - Deb Gillis asked how many people Erin Deady had consulted – Erin responded three (3) total
 - She then asked if consistent across entire Keys or just Islamorada – Ana Zalesky says across keys that it is 15-20%
 - Panelist David Makepeace said we want higher number, some ground proofing is good – he is comfortable with 15% since somewhat close to real values when doing CBA
 - Erin Deady suggested more ground truthing within a certain range – if we fall within range then people will feel ok about the percentage
 - Panelist David Makepeace asked what the average home sales in Islamorada is - 50 or 100? – so small sample size to extrapolate from
 - Panelist Mayor Ted Blackburn said a lot of factors go into it – if you do aggregate then we would at least have a base to work off of
 - Panelist Ana Zalesky talked about homestead exemption making assessed values low
 - Consensus of audience agreed to 115% multiplier
- Depth damage function – 1996 and 1992 reports to be used
 - Panelist David Makepeace asked about stilt homes – is it water at the stilts or water in home? – JT Lockman said its water at the stilts
 - Erin Deady said we spent time with property appraiser to spot check year of construction and elevations to deal with elevation issue
 - JT Lockman discussed next public meetings in November and December and what will each will entail
 - JT Lockman opened for public comment and questions at 8:04pm
 - Questions/comments:
 - Cost analysis is based strictly on structure in village? Yes this will be model of possible damage to buildings
 - No other comment or questions from public
 - Workshop ended at 8:09pm



6.5.2 Islamorada Matters Community Workshop #2 – November 10, 2014

In attendance: Mayor Ted Blackburn, Vice Mayor Deb Gillis, Councilman Ken Philipson, Councilman Dave Purdo, Village Manager Maria Aguilar, Assistance Village Manager Mary Swaney, Senior Planner Shane Laakso, Planning Director Cheryl Cioffari, Consultant Erin Deady, Consultant J.T. Lockman, Consultant Chris Burgh, Consultant Jason Evans and members of the community.

Workshop started at 5:39 PM

1. **Erin Deady Introduction** – started at 5:39 PM
 - Discussed purpose of meeting
 - Turned over to J.T. Lockman at 5:42 PM
2. **J.T. Lockman Presentation** – started at 5:42 PM
 - Review of sea level rise tool model
 - o Parcel valuations
 - o Sea level rise scenarios (4-County Compact)
 - o FEMA flood levels
 - o Land elevations (LiDAR)
 - Review of “no-action” results
 - J.T. takes questions at 5:58 PM
 - o Audience member asked if damage results include roads.
 - o J.T. answered that the model only used building values; not roads, or sewage pipes.
 - o Erin Deady responded by saying that the village is looking at other infrastructure impacts and those results were presented to the village in September.
 - o Audience member asked if the number are broken down to tax loss to the village.
 - o J.T. answered that the answer could be determined from market value of the building (market value divided by 1.15, then multiplied by the mill rate).
 - o Audience member asked if cumulative damage is based on today’s assessed value.
 - o J.T. answered with yes.
 - o Audience member commented by saying that even with discounting future dollars things probably wouldn’t look any better.
 - J.T. continues presentation at 6:05 PM
 - Presents images of modeled flooding from storms and sea level rise.
 - Reviews next steps for modeling adaptation strategies.
 - J.T. takes questions about visuals at 6:12 PM.
 - o Audience member commented that some parcels that are not on the tax roll will be inundated as well.
 - o J.T. agreed.
 - o Audience member asked how they can get access to the visuals to show other people in town the potential risks; so more community members are involved in this planning process.
 - o J.T. responded by saying that Erin Deady is coordinating the effort to share the information.



- Erin Deady said that they will be emailing and posting results on the website.
- The same audience member clarified their question by asking if the information will be available on a parcel-by-parcel basis to the general public. Will there be a number can people can call to find out their personal risks?
- Erin responded by saying that the model aggregates all the parcels into one number so people will not be defensive about what is being conveyed economically, but did say they can work on following up with people but right now that information is not available.
- Audience member commented that he works for the Nature Conservancy and that his organization has put together maps with different sea level rise scenarios so people can see their individual properties.
- J.T. commented that the Nature Conservancy's maps will illustrate different flooding scenarios, but it's not going to calculate damage or cumulative damage from those events.
- Audience member commented that maybe simplicity (the Nature Conservancy's tool) is better at these early planning stage.
- Erin commented that they would make available the Nature Conservancy's tool on the website (link to it) and then hands it over to at 6:19 PM.

3. Jason Evans Presentation – started at 6:20 PM

- Review of actions others around the world are taking to combat sea level rise.
 - Do nothing
 - Fortify
 - Accommodate
 - Relocate
 - Pros and cons of various actions
- Turns it over to Chris Burgh at 6:34 PM

4. Chris Burgh Presentation – started at 6:34 PM

- Presents information about natural barriers.
 - Benefits to infrastructure and natural environment
 - Reviews voting choices during break-out session:
 - Onshore, near-shore or off-shore
 - Submergent, at the waterline, or emergent
 - Reviews actions being taken in other parts of Florida
 - Reviews voting options for elevating and flood-proofing properties:
 - Height of elevation
 - Percent of properties adapted
 - Reviews voting options for relocation (rolling easement):
 - Percent of parcels that would accept buyouts
- Erin hands out summaries of strategies and choices.
- Erin goes over the agenda for the breakout sessions and ends the presentation at 6:54 PM



5. **Roundtable Discussions** – started at 7:00 PM
 - Group was divided into three (3) groups according to numbers assigned at check-in
 - Each group discussed the proposed action at each station: Elevation & Floodproofing; Construct Breakwater; and Voluntary Relocation over time
 - In each discussion, the group discussed possible refinements or modifications on how the action could be modeled

6. **J.T. Lockman** Runs Keypad Polling on Adjustments to Modeled Adaptation Actions – started at 8:08 PM
 - Instructions for using the keypad polling devices
 - Starts polling for adaptation actions
 - Results for future modeling from keypad polling:
 - o **ELEVATE AND FLOODPROOF**
 - o 50% of properties in V-Zone elevated
 - o 100% of properties in A-Zone floodproofed
 - o Elevate properties to current code plus 2 feet
 - o Floodproof properties to 8 feet
 - o Yes – model this action
 - o **NATURAL BARRIERS**
 - o Emergent structure
 - o Audience member commented that an on-the-shore structure (which won the polling) would impact tourism since people wouldn't be able to see the ocean. The polling was re-run and the audience chose to place the structure near-shore.
 - o Yes – model this action
 - o **RELOCATE (BUYOUT OPTION)**
 - o 10% of properties flooded by 2030 accept the voluntary buyout in 2015
 - o 50% of properties flooded by 2045 accept the voluntary buyout in 2030
 - o Yes – model this action
 - J.T. ends keypad polling at 8:37 PM

7. **Workshop ends** at 8:37 PM



6.5.3 Islamorada Matters Community Workshop #3 – December 11, 2014

In attendance: Vice Mayor Deb Gillis, Village Manager Maria Aguilar, Senior Planner Shane Laakso, Assistant Village Manager Mary Swaney, Building Official Gerry Albertson, Senior Building Inspector Phil Moretta, Consultants Erin Deady and J.T. Lockman. Also in attendance were former Council members: Ted Blackburn, Dave Purdo and Ken Philipson.

Workshop started at 5:36 P.M.

1. **Shane Laasko**— started at 5:36 P.M.
 - Welcome and introduction
 - Meeting agenda
 - Review of workshops and overall sustainability plan project
 - Turns it over to JT Lockman at 5:41 P.M.
2. **JT Lockman Presentation** – started at 5:41 P.M.
 - Review of COAST software
 - Review of inputs for modeling
 - o 3 in. (low) and 7 in. (high) by 2040
 - o 9 in. (low) and 24 in. (high) by 2060
 - o FEMA Flood Insurance Study (10yr, 50yr, 100yr storm surge estimates)
 - Wilma-sized flood for 100yr and king tide for nuisance flooding
 - o Review of “No-Action” scenario results for cumulative damages over time
 - \$2.7 billion in damages by 2060 under high sea level rise scenario
 - \$1.7 billion in damages by 2060 under low sea level rise scenario
 - o Review of adaptation actions modeled after community voting in Meeting #2
 - Elevate and floodproof buildings
 - Construct a breakwater
 - Voluntary property buyouts/relocation
 - o Audience member asked who is “we” in reference to JT saying “we would pay folks to vacate their homes”
 - o JT responded by saying that the models assume someone would pay for these actions but the level(s) of government that would administer the actions is not known. If it turns out the action is a good fiscal idea, then the community can begin to look for money to do that action.
 - o Audience member asked at 6:00 P.M. where the people were who voted. He didn’t think they were located in the keys. He also said that he had to leave early so he didn’t know there was polling during the meeting.
 - Erin Deady open the floor for more questions at 6:02 P.M. for people who may have missed the previous meeting
 - o Audience member asked if these were the strategies that the county voted on
 - o Erin responded that the county was looking at different parameters
 - o Audience member commented that the polling results were just the collective feelings of the group about what Catalysis should model. There was no large survey across the village. Just collective thoughts from the people in the room.



- Audience member asked for clarification about what the properties in red and those in green signified
- JT responded by saying that in Action 1 the parcels in red were those that were located in the V-Zone and had buildings that were not elevated. The parcels that were green were those that were located in the A-Zone and had buildings that were not floodproofed.
- Audience member asked how people voted.
- Audience member responded by saying that it was done electronically and anonymously
- Audience member asked if the model scenario used money to buy people out of their homes, or raise their homes
- JT responded by saying that Action 1 was to raise homes, Action 2 was to build a breakwater and Action 3 was to buy people out of their homes
- JT continued his presentation at 6:07 P.M.
 - Went over the avoided damages by elevating and floodproofing houses
 - \$890 M avoided under low sea level rise and \$1.2 B avoided under high sea level rise
 - Went over the avoided damages by constructing a breakwater
 - \$12.8 M avoided under low sea level rise and 13.2 M avoided under high sea level rise
 - Went over the avoided damages by relocating people away from vulnerable properties
 - \$26.8 M avoided under low sea level rise and \$4.5 M avoided under high sea level rise
 - Audience member asked about the roads
 - JT responded by saying that what was modeled on his end were the building damages and that the roads were another part of the project that Erin would speak about
 - Erin then responded by saying that the county looked at infrastructure (sewer, water, roads) and presented those findings to the village council in September and those reports are available online
 - Audience member commented that the new sewer line is already obsolete and has salt water intrusion problems and that people need to be more forward thinking
 - Council member commented that the pump stations were raised for sealevel rise, and the sewer system is sealed. Also the cost to resurface the roads is 1/10th the cost to raise and rebuild the road
- JT continued his presentation at 6:16 P.M.
 - Went over costs for adaptation strategies modeled
 - High and low estimates
 - Went over benefit-cost ratios for adaptation strategies modeled
 - Elevating and floodproofing had the best benefit-cost ratio
 - Constructing the breakwater had a positive benefit-cost ratio but was not as high as elevating and floodproofing houses



- Voluntary buyouts had a benefit-cost ratio less than 1 (poor)
- JT opened the floor for questions at 6:25 P.M.
 - Audience member asked about the \$1.2 M in savings for elevating and floodproofing but asked how that relates to the \$1.2 B in damages if no action is taken
 - JT responded by saying that the benefits and costs were analyzed with discounted future dollars for economic purposes.
- Erin Dedy asked the audience how they think the village could use this information at 6:32 P.M.
 - Audience member asked at what point the village is no longer viable because sea levels are too high and at what point property values will start to decline
 - JT responded by saying that if by 2100 there are four (4) or five (5) feet of sea level rise there is very little that can be done.
 - Erin responded that the US 1 corridor fairs pretty well under extreme scenarios but asked if any realtors in the room could speak to when property values would fall because she doesn't know.
 - JT commented Islamorada gets more damage than Key Largo, even though Key Largo has more people, simply because Islamorada is at a lower elevation
 - Audience member asked about impacts to critical habitat and coordination between multiple levels of government
 - Erin Dedy responded that this information could be used to bring multiple levels and agencies of government together to begin having discussions about solutions. But without this information those conversations can't really begin
 - Audience member commented that we don't know what the technology will be like in 2060, and that maybe we won't need certain infrastructure that is vulnerable today. He mentioned underwater homes, using waterproof rail and energy sources that don't need pipes or wires
 - Audience member commented that this analysis will help the village make decisions about new codes for building and reconstructing homes
- Erin asked at 6:44 P.M. for ways to get information about this project out to the public (emails, workshops, discussion forums?)
 - Audience member said email or newspapers
 - Audience member commented that seeing charts on the village center wall might help
 - Audience member asked how to get people who don't believe climate change is happening to see this information
 - Audience member said that it isn't so much an issue of get people who don't believe to change their minds as much as it is getting everyone the information and letting people decide what they want. It's a distribution issue, not a persuasion issue.
 - Audience member said that it's important to present this information as a future problem, so that people don't stop buying homes out of fear



- Audience member said that things just need to be approached from a positive standpoint. There are things one (and the community) can do to make their home (and the community) last longer
- JT mentioned that the reason the benefit-cost ratios are used are so that people have a better understanding about what things are feasible. It should be a positive message (the steps that can be taken)
- Audience member followed by saying that he would have wanted to see a vision for the future of the keys (floating rail and futuristic buildings)

3. JT Lockman Initiated Keypad Polling Questions – started at 6:52 P.M.

- Given the results of the COAST model, do you think the action deserves further study by Islamorada?
 - 17 yes, 0 no
- Do you think Islamorada should require elevations of structures in Islamorada, after they were damaged by more than 50% after storm surge, to a higher level than the current code requires?
 - 14 yes, 3 no
- Do you think Islamorada should pursue sources of funding to help property owners in the V-Zone elevate buildings?
 - 11 yes, 6 no
- Do you think Islamorada should pursue sources of funding to help property owners in the A-Zone floodproof their buildings?
 - 15 yes, 2 no
- After looking at the model results, do you like this action the best?
 - 15 yes, 2 no
- Given the results of the COAST model should Islamorada further study the breakwater action?
 - 6 yes, 11 no
- Given that there may be local, state and/or federal regulations constraining breakwaters from being built, should Islamorada spend any effort to change laws or rules to facilitate such projects?
 - 4 yes, 13 no
- Do you think Islamorada should pursue sources of funding to construct limestone breakwaters to protect homes from storms?
 - 7 yes, 10 no
- Do you think Islamorada should pursue identification of resources at risk from storm damage for which breakwaters might have a favorable benefit-cost ratio?
 - 10 yes, 7 no
- After looking at the model results, do you like this action the best?
 - 1 yes, 16 no
- Given the results of the COAST model, do you think Islamorada should further study rolling easements/voluntary buyouts?
 - 6 yes, 11 no






- Do you think Islamorada should pursue sources of funding to support a voluntary rolling easement purchase program similar to what was modeled in this study?
 - o 8 yes, 9 no
 - After looking at the model results, do you like this action the best?
 - o 1 yes, 16 no
 - JT then turns it over to Erin Deady at 7:04 P.M.
4. **Erin Deady Presentation of Islamorada Matters Project** – started at 7:04 P.M.
- Reviewed next steps for the project
 - o Summarize content and inputs
 - o Develop tool to survey community for goals for sea level rise adaptations
 - New project website
 - Workshop on Draft Islamorada Matters Plan to Village Council
 - Erin opens the floor for questions
 - o Audience member suggested incorporating home owners associations with this process to get more buy-in and attendance
 - Erin Deady ended the presentation at 7:13 P.M.
 - Audience member added that people can sign up for village news from the village website.
5. **Erin Deady Ended Workshop** – at 7:13 P.M.



Appendix E. STAR Supporting Documentation



Additional STAR Actions to Raise Sustainability Score


 Habitat	STAR Identifier	Overlap with Sustainability Plan
Increase percentage of funding invested in green infrastructure.	NS-1(7)	Land, bullet #7
Provide incentives to residents/developers to protect critical watershed protection areas.	NS-5(5)	
Develop a community-wide invasive species integrated pest management plan.	NS-2(1)	
Enforce regulations to control use and sale of invasive species.	NS-2(7)	
Educate the public on impacts of poor air quality on human health and the natural environment and efforts they can take to reduce pollution and exposure.	NS-4(6)	Other, bullet #2
Create/enhance programs aimed at increasing tree canopy through active planting.	NS-4(10)	Land, bullet #1; Air Quality, bullet #1
 Infrastructure and Built Environment	STAR Identifier	Overlap with Sustainability Plan
Adopt a complete streets policy to address all users that also includes design criteria to withstand sea level rise impacts for the useful life of transportation systems.	BE-7(2)	
Establish or support a community-wide public bike share program.	BE-7(9)	
Create incentives to support development of renewable and alternative fuel infrastructure.	CE-3(6)	
Create partnerships to address sources of noise or light pollution not subject to the local authority.	BE-1(4)	
Establish clear lines of authority for enforcing nuisance noise violations.	BE-1(6)	
Support temporary creative neighborhood uses for vacant properties and greyfields.	BE-5(7)	
Enforce noise standards during permitting, design and construction of large developments.	BE-1(7)	
Enforce light standards during permitting, design and construction of large developments.	BE-1(8)	
Establish programs that eliminate existing sources of light pollution coming from municipally-owned entities.	BE-1(9)	Energy, bullet #6; Energy, bullet #14

Adopt advanced parking strategies in transit-served areas and compact, mixed use areas.	BE-3(6), NS-4(2)	
Partner with local/regional organizations to support one or more transportation management association that promotes rideshare programs.	NS-4(5)	
Implement programs to preserve/maintain existing subsidized and unsubsidized affordable housing in transit served areas, mixed-use areas and rapidly expanding areas.	BE-4(8)	
Work with private employers to provide live-near-your-work/employer-assisted housing financial incentives.	BE-4(9)	
Require walkability standards for new development that include sidewalks on both sides of roadways, street trees, ADA accessible crosswalks, roadways designed for maximum travel speeds of 25 mph, and maximum block lengths in transit-served areas and areas identified for compact, mixed-use development.	BE-3(4) BE-7(3)	
Target local infrastructure improvements to revitalize redevelopment or blighted areas and catalyze private reinvestment.	BE-5(10)	
Implement highest priority utility improvements listed in the hazard mitigation plan (or here local mitigation strategy).	HS-6(9)	
 Village Buildings and Key Facilities		STAR Identifier Overlap with Sustainability Plan
Adopt a renewable energy or alternative fuel targets for locally owned facilities and vehicles.	CE-3(5)	
Install electric vehicle charging stations.	CE-3(10)	Transportation, bullet #9
Adopt a building energy efficiency plan to improve the energy and water efficiency of commercial, residential and institutional buildings in the community.	CE-5(1)	Energy, bullet #8
Require public infrastructure managers to consider thorough energy and water consumption implications when designing and installing new infrastructure components.	CE-6(2)	Energy, bullet #7
Develop training programs for infrastructure operators on energy and water efficiency techniques.	CE-6(6)	Energy, bullet #7
Reduce or eliminate toxic pesticide use in locally owned or managed buildings through the use of integrated pest management (“IPM”) techniques.	HS-5(5)	
Require all new or substantially renovated local government and school buildings to incorporate advanced ventilation standards.	HS-5(3)	
Purchase and sell healthful food at facilities owned, leased, and operated by the local government.	HS-4(9)	

 Adaptation Strategies for Homes and Businesses	STAR Identifier	Overlap with Sustainability Plan
Require that internal decisions by local government departments use the most current climate science and that staff monitor climate change impacts.	CE-1(2)	Energy, bullet #4; Water, bullet #4
Enforce regulations or offer incentives to encourage residents and businesses to shift behavior to prepare for future climate change impacts.	CE-1(7)	
 Sustainability	STAR Identifier	Overlap with Sustainability Plan
Train inspectors to enforce water/energy efficiency standards in adopted building codes.	CE-5(7)	
Implement incentives or enforce regulations ensuring that residents and businesses are working toward community waste reduction targets.	CE-7(5)	
Achieve recognition as a Bicycle Friendly Community or Walk Friendly Community.	HS-1(6)	
Adopt energy efficiency regulations for buildings within the jurisdiction.	CE-2(6)	Energy, bullet #4
Implement specific programs and services or create facility upgrades that transition the community towards the use of alternative modes of transportation and low-emission vehicles.	CE-2(8)	
Adopt an energy/water use information disclosure ordinance requiring users to disclose consumption levels.	CE-5(3)	
Engage public works and infrastructure managers in voluntary GHG reporting.	CE-6(5)	
Increase sub-metering from infrastructure systems to collect better information on energy/water use.	CE-6(8)	
Adopt a waste management plan that identifies community's greatest sources of waste, sets formal waste reduction targets and established actions to help reach the community's waste reduction goals.	CE-7(1)	
Collaboratively create/run at least two targeted recycling programs at key locations in the community.	CE-7(7)	Waste, bullet #2; Waste, bullet #3; Waste, bullet #4; Waste, bullet #5
Create guidelines to encourage incorporation of active building design in new buildings.	HS-1(3)	
Adopt a health in all policies statement or policy commitment for local decision-making.	HS-2(3)	

Achieve accreditation by the Emergency Management Accreditation Program.	HS-3(8)	
Prohibit smoking in multi-family buildings community-wide or residential buildings controlled by local housing authority/affirm by local ordinance the right for landlords to legally establish smoke-free rental units.	HS-5(2)	
Create insurance/incentive structures to help relocate residents from hazardous areas.	HS-6(7)	
Adopt specific product bans to significantly advance progress toward waste reduction goals.	CE-7(2)	
Implement specific programs and services or create facility upgrades that reduce waste in the community.	CE-2(9)	Waste, bullet #3
Adopt zoning/development regulations that limit or prohibit the sale of unhealthful foods.	HS-4(3)	
Adopt menu-labeling requirement/regulation that discourage, tax, prohibit sale of unhealthful foods/drinks.	HS-4(4)	
Implement an "Increase Your Food Bucks" program for farmer's markets.	HS-4(10)	
Provide incentives for healthful retail food outlets to locate in underserved areas or mobile vendors that only sell fresh food.	HS-4(11)	

To: Mary Swaney, Assistant Village Manager, Islamorada, Village of Islands
Shane Laakso, Senior Planner, Islamorada Village of Islands

From: Erin Deady, Esq. 
Amity Barnard, Esq.

Re: Final Islamorada STAR Goal Prioritization Memorandum

Date: March 20, 2015

This memorandum is prepared to document the results of the data entry into the Sustainability Tools for Assessing and Rating Communities ("STAR") preliminary score reporting checklist for all goal areas, including: Built Environment ("BE"), Climate & Energy ("CE"), Health & Safety ("HS"), Natural Systems ("NS"), Economy & Jobs ("EJ"), Education, Arts & Community ("EAC"), Equity & Empowerment ("EE"), and Innovation & Process ("IP"). This memorandum identifies the following:

- Subgoal areas where Islamorada, Village of Islands ("Village") scored the most points and is strongest in action or initiative implementation to date;
- Subgoal areas where the Village scored fewer points and is weaker in implementation to date; and
- Specific local actions that the Village could more easily implement to receive unattained points.

Note that this document provides results of our data collection and entry into the online STAR preliminary score checklist. The point breakdowns provided are intended only to provide a preliminary gauge of the Village's sustainability score currently, not a formal STAR certification score. Results of this preliminary scoring indicate that the Village scored approximately 256.9 points out of the 720 total points available (as displayed in the table below).

Goal Area	Points Scored	Points Available	% of Total Points Earned
Built Environment	40.2	100	40.2%
Climate & Energy	52.3	100	52.3%
Economy & Jobs	11.4	100	11.4%
Education, Arts & Community	39.6	70	56.5%
Equity & Empowerment	18.1	100	18.1%
Health & Safety	51.6	100	51.6%
Natural Systems	38.8	100	38.8%
Innovation & Process Credits	5	50	10%
TOTAL	256.9	720	35.5%

A. Built Environment

The BE goal area includes: Ambient Noise & Light (BE-1), Community Water Systems (BE-2), Compact & Complete Communities (BE-3), Housing Affordability (BE-4), Infill & Redevelopment (BE-5), Public Spaces (BE-6), and Transportation Choices (BE-7).

Overall, the Village scored the most points in the BE-2, BE-6 and BE-4 subgoal areas, in descending order of highest to lowest points gained. The Village scored fewer points in the BE-5, BE-3, BE-1 and BE-7 subgoal areas, in descending order of highest to lowest points gained. The point breakdown for this goal area is as follows:

Subgoal Area	Points Earned	Points Available	% of Total Points Earned
BE-1: Ambient Noise & Light	0.9	5	18%
BE-2: Community Water Systems	13.5	15	90%
BE-3: Compact & Complete Communities	4.7	20	23.5%
BE-4: Housing Affordability	6.1	15	40.6%
BE-5: Infill & Redevelopment	3.8	10	38%
BE-6: Public Spaces	8.2	15	54.6%
BE-7: Transportation Choices	3	20	15%
TOTAL	40.2	100	40.2%

In order to gain more points and increase the Village's overall sustainability score, the following local actions can be implemented:

Built Environment
BE-1: Ambient Noise & Light
(4) Create partnerships to address sources of noise or light pollution not subject to the local authority
(6) Establish clear lines of authority for enforcing nuisance noise violations
(7) Enforce noise standards during permitting, design and construction of large developments
(8) Enforce light standards during permitting, design and construction of large developments
(9) Establish programs that eliminate existing sources of light pollution coming from municipally-owned entities
BE-3: Compact & Complete Communities
(4) Adopt a policy or code requiring walkability standards for new development
(6) Adopt advanced parking strategies in transit-served areas and compact, mixed use areas
BE-4: Housing Affordability
(8) Implement programs to preserve/maintain existing subsidized and unsubsidized affordable housing in transit served areas, mixed-use areas and rapidly expanding areas
(9) Work with private employers to provide live-near-your-work/employer-assisted housing financial incentives
BE-5: Infill and Redevelopment
(7) Support temporary creative neighborhood uses for vacant properties and greyfields
(10) Target local infrastructure improvements to revitalize redevelopment or blighted areas and catalyze private reinvestment
BE-7: Transportation Choices
(2) Adopt a complete streets policy to address all users
(3) Adopt a policy or code requiring walkability standards that encourage walking and enhance safety
(9) Establish or support a community-wide public bike share program

B. Climate & Energy

The CE goal area includes: Climate Adaptation (CE-1), Greenhouse Gas ("GHG") Mitigation (CE-2), Greening the Energy Supply (CE-3), Industrial Sector Resource Efficiency (CE-4), Resource Efficient Buildings (CE-5), Resource Efficient Public Infrastructure (CE-6), and Waste Minimization (CE-7).

Overall, the Village scored the most points in the CE-2, CE-3 and CE-4 subgoal areas, in descending order of highest to lowest points gained. The Village scored fewer points in the CE-1, CE-5, CE-6 and CE-7

subgoal areas, in descending order of highest to lowest points gained. The point breakdown for this goal area is as follows:

Subgoal Area	Points Earned	Points Available	% of Total Points Earned
CE-1: Climate Adaptation	7.8	15	52%
CE-2: GHG Mitigation	16.5	20	82.5%
CE-3: Greening the Energy Supply	8.8	15	58.6%
CE-4: Industrial Sector Resource Efficiency	5.5	10	55%
CE-5: Resource Efficient Buildings	6.5	15	43.3%
CE-6: Resource Efficient Public Infrastructure	4	10	40%
CE-7: Waste Minimization	3.3	15	22%
TOTAL	52.3	100	52.3%

In order to gain more points and increase the Village's overall sustainability score, the following local actions can be implemented:

Climate & Energy
CE-1: Climate Adaptation
(2) Require that internal decisions by local government departments use the most current climate science and that staff monitor climate change impacts
(7) Enforce regulations or offer incentives to encourage residents and businesses to shift behavior to prepare for future climate change impacts
CE-2: Greenhouse Gas Mitigation
(4) Establish a climate change advisory group to engage diverse community stakeholders in identifying and implementing GHG reduction targets
(6) Adopt energy efficiency regulations for buildings within the jurisdiction
(8) Implement specific programs and services or create facility upgrades that transition the community towards the use of alternative modes of transportation and low-emission vehicles
(9) Implement specific programs and services or create facility upgrades that reduce waste in the community
CE-3: Greening the Energy Supply
(5) Adopt a renewable energy or alternative fuel target for locally-owned facilities and vehicles
(6) Create incentives to support development of renewables/alternative fuel infrastructure
(10) Install electric vehicle charging stations
CE-4: Industrial Sector Resource Efficiency
(1) Adopt a plan designed to improve the resource efficiency of the community's industrial sector
(3) Adopt regulations/codes that promotes the industrial sector to reduce energy/water use
(5) Work collaboratively with industrial sector to set targets and strategies to reduce energy and water use
(7) Administer program that supports industrial sector's transition to less energy and water intensive practices
(8) Create financial incentives or industry-focused challenges to encourage companies to reduce the intensity of their resource consumption
CE-5: Resource Efficient Buildings
(1) Adopt a building energy efficiency plan to improve the energy and water efficiency of commercial, residential and institutional buildings in the community
(3) Adopt an energy/water use information disclosure ordinance requiring users to disclose consumption levels
(5) Establish a committee to provide recommendations on policies related to resource efficiency in buildings or integrate this role into the work of an existing committee
(7) Train inspectors to enforce water/energy efficiency standards in adopted building codes

CE-6: Resource Efficient Public Infrastructure
(2) Require public infrastructure managers to consider thorough energy and water consumption implications when designing and installing new infrastructure components
(5) Engage public works and infrastructure managers in voluntary GHG reporting
(6) Develop training programs for operators on energy/water efficiency techniques
(8) Increase sub-metering from infrastructure systems to collect better information on energy/water use
CE-7: Waste Minimization
(1) Adopt a waste management plan that identifies community's greatest sources of waste, sets formal waste reduction targets and established actions to help reach the community's waste reduction aims
(2) Adopt specific product bans to significantly advance progress toward waste reduction goals
(5) Implement incentives or enforce regulations ensuring that residents and businesses are working toward community waste reduction targets
(7) Collaboratively create/run at least two targeted recycling programs at key locations in the community

C. Health & Safety

The HS goal area includes: Active Living (HS-1), Community Health & Health Systems (HS-2), Emergency Prevention & Response (HS-3), Food Access & Nutrition (HS-4), Indoor Air Quality (HS-5), Natural & Human Hazards (HS-6), and Safe Communities (HS-7).

Overall, the Village scored the most points in the HS-3, HS-1 and HS-2 subgoal areas, in descending order of highest to lowest points gained. The Village scored fewer points in the HS-6, HS-7, HS-5 and HS-4 subgoal areas, in descending order of highest to lowest points gained. The point breakdown for this goal area is as follows:

Subgoal Area	Points Earned	Points Available	% of Total Points Earned
HS-1: Active Living	10.1	15	67.3%
HS-2: Community Health & Health Systems	10.4	20	52%
HS-3: Emergency Prevention & Response	13.4	15	89.3%
HS-4: Food Access & Nutrition	3.3	15	22%
HS-5: Indoor Air Quality	1.6	5	32%
HS-6: Natural & Human Hazards	6.9	15	46%
HS-7: Safe Communities	5.8	15	38.6%
TOTAL	51.6	100	51.6%

In order to gain more points and increase the Village's overall sustainability score, the following local actions can be implemented:

Health & Safety
HS-1: Active Living
(3) Create guidelines to encourage incorporation of active building design in new buildings
(6) Become actively recognized as a Bicycle Friendly Community or Walk Friendly Community
HS-2: Community Health & Health Systems
(3) Adopt a health in all policies statement or policy commitment for local decision-making
(8) Use performance management systems to monitor and improve health services and programs that promote positive health outcomes and expand access to health care
(9) Conduct Health Impact Assessments on proposed infrastructure investments and development projects to increase positive health outcomes and minimize adverse impacts

HS-3: Emergency Prevention & Response
(7) Perform an annual review/assessment of plans, procedures, resources and trainings based on emergency response incidents and demands
(8) Achieve accreditation by the Emergency Management Accreditation Program
HS-4: Food Access & Nutrition
(3) Adopt zoning/development regulations that limit or prohibit the sale of unhealthful foods
(4) Adopt menu-labeling requirement/regulation that discourage, tax, prohibit sale of unhealthful foods/drinks
(9) Purchase and sell healthful food at facilities owned, leased, operated by local government
(10) Implement an "Increase Your Food Bucks" program for farmers markets
(11) Provide incentives for healthful retail food outlets to locate in underserved areas or mobile vendors that only sell fresh food
HS-5: Indoor Air Quality
(2) Prohibit smoking in multi-family buildings community-wide or residential buildings controlled by the local housing authority or affirm by local ordinance the right for landlords to legally establish smoke-free rental units
(3) Require all new or substantially renovated local government and school buildings to incorporate advanced ventilation standards
(5) Reduce or eliminate toxic pesticides in locally-owned or managed buildings through the use of integrated pest management techniques
HS-6: Natural & Human Hazards
(7) Create insurance/incentive structures to help remove residents from hazardous areas
(9) Implement highest priority utility improvements listed in hazard mitigation plan
HS-7: Safe Communities
(3) Educate the community about the safe communities strategic plan and its implementation
(6) Perform ongoing data collection, evaluation and monitoring from multiple agencies to track trends and identify emerging community needs
(7) Implement violence prevention programs and strategies to address community risk
(9) Develop violence intervention programs/strategies to support at-risk families/youth and prevent violence

D. Natural Systems

The NS goal area includes: Green Infrastructure (NS-1), Invasive Species (NS-2), Natural Resource Protection (NS-3), Outdoor Air Quality (NS-4), Water in the Environment (NS-5), and Working Lands (NS-6).

Overall, the Village scored the most points in the NS-5, NS-2 and NS-3 subgoal areas, in descending order of highest to lowest points gained. The Village scored fewer points in the NS-1, NS-4 and NS-6 subgoal areas, in descending order of highest to lowest points gained. The point breakdown for this goal area is as follows:

Subgoal Area	Points Earned	Points Available	% of Total Points Earned
NS-1: Green Infrastructure	8.2	20	41%
NS-2: Invasive Species	5.3	10	53%
NS-3: Natural Resource Protection	9.9	20	49.5%
NS-4: Outdoor Air Quality	3.6	15	24%
NS-5: Water in the Environment	11.8	20	59%
NS-6: Working Lands	0	15	0%
TOTAL	38.8	100	38.8%

In order to gain more points and increase the Village's overall sustainability score, the following local actions can be implemented:

Natural Systems
NS-1: Green Infrastructure
(7) Increase percentage of funding invested in green infrastructure
NS-2: Invasive Species
(1) Develop a community-wide invasive species integrated pest management plan
(7) Enforce regulations to control use and sale of invasive species
NS-4 Outdoor Air Quality
(2) Adopt advanced parking strategies in transit-served areas and compact, mixed use areas
(5) Partner with local/regional organizations to support one or more transportation management association that promotes rideshare programs
(6) Educate the public on impacts of poor air quality on human health and the natural environment and efforts they can take to reduce pollution and exposure
(10) Create/enhance programs aimed at increasing tree canopy through active planting
NS-5: Water in the Environment
(5) Provide incentives to residents/developers to protect critical watershed protection areas
NS-6: Working Lands
Because there are no working lands in the Village, no recommendations are provided

E. Equity & Empowerment

The EE goal area includes: Civic Engagement (EE-1), Civil & Human Rights (EE-2), Environmental Justice (EE-3), Equitable Services & Access (EE-4), Human Services (EE-5), and Poverty Prevention & Alleviation (EE-6).

Overall, the Village scored the most points in the EE-1, EE-6 and EE-5 subgoal areas, in descending order of highest to lowest points gained. The Village scored fewer points in the EE-4, EE-3 and EE-2 subgoal areas. The point breakdown for this goal area is as follows:

Subgoal Area	Points Earned	Points Available	% of Total Points Earned
EE-1: Civic Engagement	7.9	15	52.6%
EE-2: Civil & Human Rights	0	10	0%
EE-3: Environmental Justice	0	15	0%
EE-4: Equitable Services & Access	0.8	20	4%
EE-5: Human Services	3.1	20	15.5%
EE-6: Poverty Prevention & Alleviation	6.3	20	31.5%
TOTAL	18.1	100	18.1%

In order to gain more points and increase the Village's overall sustainability score, the following local actions can be implemented:

Equity & Empowerment
EE-1: Civic Engagement
(1) Adopt policy to encourage diversity in local government appointments to advisory boards and commissions
(2) Adopt guidelines to instruct local government agencies/departments about how to engage residents
(4) Partner with business, civic, and neighborhood organizations to increase voter registration and turnout OR volunteer opportunities and participation OR ongoing civic engagement in local decision-making
EE-2: Civil & Human Rights
(1) Adopt specific policies or amend the jurisdiction's charter to specifically protect the civil and human rights of all community residents

(2) Establish an office within jurisdiction with authority/capacity to investigate civil and human rights complaints
(3) Conduct local public education campaigns regarding civil/human rights, such as process for filing complaints
(5) Provide training for police officers focused on non-discrimination/conflict prevention
(6) Operationalize the local government's civil and human rights policies in programs, services, and operations
(7) Provide language translation or interpretation services to ensure that residents have access to information about local government programs, services, and operations
EE-3: Environmental Justice
(1) Create an Environmental Justice Collaborative Group (EJCG) composed of residents, stakeholders, and environmental professionals to assess risk/exposure, set targets, implement projects, monitor improvements
(2) Assess risk/exposure to toxins related to prioritized environmental justice sites
(3) Adopt environmental justice plan aimed at reducing polluted/toxic environments
(4) Establish targets for each prioritized environmental justice site related to air/water
(5) Incorporate environmental justice criteria and priorities into zoning, land use planning, permitting policies, and development of new projects
(6) Create community benefit agreements (CBAs) for projects associated with prioritized environmental justice sites and proposed development projects
(7) Create an interdepartmental working committee within the local government to guide and support environmental justice activities
(8) Monitor/enforce regulations for facilities that impact environmental justice sites
(9) Implement projects to reduce exposure to contaminants/risks associated with environmental justice sites
EE-4: Equitable Services & Access
(1) Adopt equity plan that evaluates current conditions and establishes targets to improve equitable access and proximity in at least the categories identified in the outcome measure
(2) Adopt an equity or social justice policy that establishes a clear commitment to equity in local government decision-making, activities, and investments
(4) Publicize efforts to improve equitable access/proximity to community facilities, services, and infrastructure
(5) Establish partnerships that engage key community groups and stakeholders in activities to advance equitable access and proximity to facilities, services, and infrastructure
(6) Provide equity and diversity training for local government staff
(7) Modify deployment of local programs/services to reduce disparities within categories identified in outcome
(8) Construct new facilities and infrastructure in locations that reduce existing disparities within the categories identified in the outcome measure
EE-5: Human Services
(5) Implement information technology solutions to improve client support services and management
(6) Monitor/evaluate quality, comprehensiveness, effectiveness of priority human services for priority groups
(7) Equip human services personnel with the skills and training needed to effectively improve the well-being of the community's priority populations
(8) Support provision of high quality, priority human services in coordination with non-governmental providers
(9) Upgrade existing facilities/build new facilities to better provide needed human services
EE-6: Poverty Prevention & Alleviation
(1) Adopt a community-wide plan to reduce poverty
(2) Create a team of local government staff to work collaboratively and coordinate with non-governmental organizations to provide high-quality services and reduce poverty
(5) Implement supportive workplace programs for people living at or near the poverty line
(6) Create programs to improve employment opportunities for low-income individuals by strengthening hard and soft work skills

F. Economy & Jobs

The EJ goal area includes: Business Retention & Development (EJ-1), Green Market Development (EJ-2), Local Economy (EJ-3), Quality Jobs & Living Wages (EJ-4), Targeted Industry Development (EJ-5), and Workforce Readiness (EJ-6).

Overall, the Village scored the most points in the EJ-2, EJ-3 and EJ-1 subgoal areas, in descending order of highest to lowest points gained. The Village scored fewer points in the EJ-5, EJ-6 and EJ-4 subgoal areas, in descending order of highest to lowest points gained. The point breakdown for this goal area is as follows:

Subgoal Area	Points Earned	Points Available	% of Total Points Earned
EJ-1: Business Retention & Development	1.7	20	8.5%
EJ-2: Green Market Development	4.6	15	30.6%
EJ-3: Local Economy	2.4	15	16%
EJ-4: Quality Jobs & Living Wages	0.6	20	3%
EJ-5: Targeted Industry Development	1.2	15	8%
EJ-6: Workforce Readiness	0.8	15	5.3%
TOTAL	11.4	100	11.4%

In order to gain more points and increase the Village's overall sustainability score, the following local actions can be implemented:

Economy & Jobs
EJ-1: Business Retention & Development
(2) Formally engage with business community regularly to improve conditions/needs
(3) Appoint an advisory body to provide recommendations/represent businesses in local decision-making
(5) Utilize tax incentives to retain or expand businesses, including property tax abatement, local sales tax rebates, and/or tax increment financing (TIF)
(6) Provide direct financial assistance to businesses in the form of municipal bonds, grants, or loans
(7) Support business development activities in special investment zones, such as Business Improvement Districts, Enterprise Zones, or other similar districts
(8) Provide direct services/trainings tailored to the needs of the business community
(9) Provide focused support, resources, services to young companies through business incubators
EJ-2: Green Market Development
(1) Amend existing local economic policies/strategies to increase market demand for green products/services
(2) Adopt policies/regulations that increase overall market demand for green buildings and associated materials, renewable energy products/infrastructure, and recyclable products
(5) Partner with other local governments, community groups, private entities in region to articulate an overarching sustainable economic development strategy and work collaboratively to increase demand for green products and services
(7) Create an environmentally preferable purchasing program for local government procurement of safe, healthy, and environmentally responsible products
(10) Install electrical vehicle charging stations
EJ-3: Local Economy
(4) Create or support promotional campaigns to bank locally, buy locally, or buy from small and independent businesses and retailers
(5) Provide incentives for businesses that use materials produced within region/sell their products within region
(6) Provide support to targeted sectors to strengthen value chain infrastructure/develop market channels
(7) Connect entrepreneurs/business owners with lenders/investors to facilitate investment in the local economy
(8) Support import substitution strategies that positively impact key sectors of local economy
EJ-4: Quality Jobs & Living Wages
(1) Enact a living wage policy for local government employees and contractors
(2) Enact family-friendly workplace policies for all local government employees that include at least 2 of the following benefits: paid sick days, family leave, flexible scheduling, job sharing, and easily available childcare

(3) Require local government contractors provide at least 2 of the following benefits to their employees: family leave, flexible scheduling, job sharing, easily accessible childcare
(4) Align local economic development policy strategies with workforce development programs
(5) Support living wage campaigns in the community
(6) Support a Best Places to Work campaign to recognize local businesses that support employees/their families
(8) Provide training programs and assistance to local businesses to encourage them to provide family-friendly workplace policies and extended benefits
(9) Provide job training and assistance programs for employees and employers in professions or sectors where wages are below the living wage
(10) Provide job training and assistance programs for employees and employers in professions or sectors where wages are below the living wage
EJ-5: Targeted Industry Development
(2) Invest in market studies/research to support the continued growth/expansion of targeted industry sectors
(3) Coordinate or support local/regional associations or formal networks of related businesses in targeted industry sectors
(5) Educate residents about economic impact of targeted industry sectors in community
(6) Use tax incentives to attract, retain, or expand businesses in targeted industry sectors
(7) Provide direct financial assistance, such as local bonds, grants, or loans, to attract, retain, or expand businesses in targeted industry sectors
(8) Provide capacity building services/support for professionals in emerging/existing targeted industry sectors
EJ-6: Workforce Readiness
(2) Align local economic development policy strategies with workforce development programs
(3) Require local government contractors/entities receiving financial incentives to prioritize hiring local residents
(4) Participate in/promote community workforce agreements or project labor agreements
(5) Create a workforce development committee to align post-secondary education, workforce development training programs, and economic development strategies
(6) Create data sharing agreements between local government/private sector employers to maximize availability and use of data in economic and workforce development planning
(7) Produce an annual report that tracks workforce readiness performance measures
(8) Provide support services and training tailored to the needs of the local workforce
(9) Support expansion of community college programs to address educational/training needs of local workforce
(10) Invest in community college facilities and capital improvements to accommodate residents and members of the local workforce

G. Education, Arts & Community

The EAC goal area includes: Arts & Culture (EAC-1), Community Cohesion (EAC-2), Educational Opportunity & Attainment (EAC-3), Historic Preservation (EAC-4), and Social & Cultural Diversity (EAC-5).

Overall, the Village scored the most points in the EAC-3, EAC-1 and EAC-2 subgoal areas, in descending order of highest to lowest points gained. The Village scored fewer points in the EAC-4 and EAC-5 subgoal areas, in descending order of highest to lowest points gained. The point breakdown for this goal area is as follows:

Subgoal Area	Points Earned	Points Available	% of Total Points Earned
EAC-1: Arts & Culture	7.5	15	50%
EAC-2: Community Cohesion	7	15	46.6%
EAC-3: Educational Opportunity & Attainment	19.7	20	98.5%

EAC-4: Historic Preservation	3.6	10	36%
EAC-5: Social & Cultural Diversity	1.8	10	18%
TOTAL	39.6	70	56.5%

In order to gain more points and increase the Village's overall sustainability score, the following local actions can be implemented:

Education, Arts & Community
EAC-1: Arts & Culture
(2) Adopt a percent-for-art ordinance requiring public art to be installed as part of new major public development projects
(7) Hire local artists to create artwork, sculptures, or perform in public spaces
(9) Provide entrepreneurial and workforce development training programs that serve artists, writers, designers, and other creative industries professionals
EAC-2: Community Cohesion
(3) Provide access to information about community issues, programs, services, and activities that is also accessible to non-English speaking residents
(4) Partner with neighborhood associations, community organizations, and local service providers to identify and address neighborhood-specific needs
EAC-3: Educational Opportunity & Attainment
(3) Prepare annual progress report for public outlining local school system's performance
EAC-4: Historic Preservation
(2) Adopt a historic preservation plan that establishes community priorities for preservation
(4) Adopt land use, zoning, design regulations that support and reinforce existing community character in older and historic neighborhoods and commercial areas, and promote development of sensitive, compatible infill
(8) Provide incentives to encourage the rehabilitation of historic buildings and reinvestment in older and historic neighborhoods and commercial areas
(9) Provide local financial assistance to low- and moderate-income homeowners, residents, seniors, and/or businesses vulnerable to rising real estate values and maintenance costs associated with historic preservation
EAC-5: Social & Cultural Diversity
(1) Conduct assessment of social and cultural diversity to inform local government actions
(2) Use Diversity Index to analyze effectiveness of policies, programs, service delivery, and infrastructure investments
(3) Adopt policy to encourage diversity in local government appointments to advisory boards and commissions
(5) Provide equity and diversity training for local government staff
(6) Establish an office within the jurisdiction to ensure access, equity, and inclusion in policies, programs, procedures, and service delivery
(7) Provide leadership/training programs to encourage/support diverse representation on boards/commissions
(9) Provide financial or logistical support to programs, activities, or events that celebrate and deepen understanding and respect for the community's diversity

H. Innovation & Process Credits

The IP goal area is essentially an "extra credit" goal area, serving as an avenue for discovering emerging and leading edge practices that communities are implementing to improve sustainability outcomes. This goal area includes: Best Practices & Processes (IP-1), Exemplary Performance (IP-2), Local Innovation (IP-3), and Regional Priorities (IP-4).

Additional points may be gained in the Regional Priorities goal area. For the Regional Priorities goal area, points may be gained by establishing sea level rise as an independent priority area. This goal

area serves to encourage coordinated regional action on the sustainability issues of greatest importance to the region in which the jurisdiction resides, and the Village's involvement (through Monroe County) with the Southeast Florida Regional Climate Compact fits squarely within this purpose.

Subgoal Area	Points Earned	Points Available	% of Total Points Earned
IP-1: Best Practices & Procedures	0	10	0%
IP-2: Exemplary Performance	0	10	0%
IP-3: Local Innovation	0	25	0%
IP-4: Regional Priorities	5	5	100%
TOTAL	5	50	10%

Goal Area	Outcome	#	Description	Islamorada	Link
BE-1	Outcomes	1	Noise: Option A: Demonstrate that daytime ambient noise levels do not exceed 70 dBA in commercial areas --OR-- Option B: Show progress toward locally identified key ambient noise targets	Nothing - to get outcome points, have to id 3 areas and have noise studies done to demonstrate reductions over time (70% of points can be achieved through local actions below)	
BE-1	Outcomes	2	Light: Show progress toward locally identified key light targets for light glare and/or light trespass	Nothing - to get outcome points, have to id 3 areas and have noise studies done to demonstrate reductions over time (70% of points can be achieved through local actions below)	
BE-1	Outcomes	3	Light in the Night Sky: Achieve a sky glow at or below 4 in the Bortle Dark-Sky Scale where the Milky Way is still visible in residential areas	The World Atlas of the Artificial Night Sky Brightness	http://www.inquinamentoluminoso.it/worldatlas/pages/
BE-1	Actions	1	Adopt a community noise policy, ordinance, or regulations as needed based upon a local assessment	Noise Ordinance 05-22 (2005)	http://www.islamorada.fl.us/Newsmanager/userfiles/file/Ordinances/05-22.pdf
BE-1	Actions	2	Adopt a community light policy, ordinance, or regulations as needed based upon a local assessment	Light Ordinance 01-17	http://www.islamorada.fl.us/Newsmanager/userfiles/file/Ordinances/01-17.pdf
				Ordinance 05-03 (reduce light pollution)	http://www.islamorada.fl.us/Newsmanager/userfiles/file/Ordinances/05-03.pdf
				Comprehensive Plan Policy 1-2 5.1	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
				Land Development Regulation Chapter 12 Article V. Section 12-116 Sea Turtle Protection establishes standards for exterior artificial lighting	https://library.municode.com/HTML/14298/level3/COOR_CH12ENNAREPR_ARTVSETUPR.html#COOR_CH12ENNAREPR_ARTVSETUPR_S12-116STEXARU
				Ordinance 10-09 (lighting to protect sea turtles)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCwQFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FOrdinances%2F13-09.pdf&ei=1BEsVMqjH83LgwSXnoHIBQ&usq=AFQjCNFpWqVaUqUT9K5l-XL5H68cCtI8w&bvm=bv.76477589.d.eXY&cad=rja
				Land Development Regulation Chapter 12 Article V. Section 12-117 Sea Turtle Protection establishes standards for interior artificial lighting	https://library.municode.com/HTML/14298/level3/COOR_CH12ENNAREPR_ARTVSETUPR.html#COOR_CH12ENNAREPR_ARTVSETUPR_S12-117STINARU
BE-1	Actions	3	Educate the public about standards, effects of excessive exposure, and mitigation techniques for ambient noise or ambient light	Islamorada Sea Turtle Nesting Public Announcement - educates public about reducing light pollution to protect sea turtle nesting	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CDEQFjAB&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnews%2Fturtle_tips.pdf&ei=1BEsVMqjH83LgwSXnoHIBQ&usq=AFQjCNF6JiNOIRAhk6ZKWxiAe9xYL0dMxw&bvm=bv.76477589.d.eXY&cad=rja
				Turtle Season in the Keys article in Keys Weekly discusses reducing light pollution for sea turtle nesting protection	http://keysweekly.com/42/turtle-season-in-the-keys/
BE-1	Actions	4	Create partnerships to address sources of noise and/or light pollution not subject to the local authority	cant find anything	
BE-1	Actions	5	Develop a database of noise complaints and noise measurements (e.g. roads, industrial, outdoor music venues) or of light issues and neighborhoods targeted for improvements	Monroe County Sheriff's Office Issue Concern online system for reporting an issue - not strictly limited to noise complaints. Will have to call them to find out where the concerns go once left online.	http://www.keyssso.net/commrelations/issues_comments/issues_of_concern.htm
				Key West International Airport Noise Hotline	
				Monroe County Code Compliance Complaint Form available for online submission. Will have to call them to find out where the complaints go once left online.	https://fi-monroecounty.civicplus.com/requesttracker.aspx
BE-1	Actions	6	Establish clear lines of authority for enforcement of nuisance noise violations relative to different noise sources	nothing here since no reporting system that I can find	

BE-1	Actions	7	Enforce noise standards during the permitting, design, and construction of new large-scale developments that can significantly increase ambient noise levels	Nothing	
BE-1	Actions	8	Enforce light standards during the permitting, design, and construction of new large-scale developments that can significantly increase ambient light levels	Nothing	
BE-1	Actions	9	Establish programs that eliminate existing sources of light pollution coming	No program	
BE-2	Outcomes	1	Drinking Water Quality: Part 1: Demonstrate that the community is not in violation of EPA's 5% standard for coliform bacteria in water pipes --AND-- Part 2: Option A: Demonstrate that the water supplied to residents is not in violation of EPA standards for turbidity and water pathogens --OR-- Option B: Decrease the amount of all regulated contaminants over time	FKAA has monthly bacteria reports online 1/13 to 5/14	
BE-2	Outcomes	2	Secure Water Supply: Part 1: Demonstrate that the height of the water table for subsurface aquifers has been stable or rising --AND-- Part 2: Demonstrate that the height of surface waters is within the range to meet expected demand for the next 5 years or is rising	Cannot demonstrate this	
BE-2	Outcomes	3	Safe Wastewater Management: Part 1: Demonstrate that all publicly owned treatment works (POTWs) are in compliance with EPA effluent permits --AND-- Part 2: Demonstrate that existing industrial dischargers are in compliance with EPA permits	Duck Key Regional - extensive redesign in 2011 and upgraded to Advanced Water Treatment standards	
BE-2	Outcomes	4	Safe Stormwater Management: National Pollutant Discharge Elimination System (NPDES) permit(s) have been obtained prior to discharging stormwater	NPDES Permitting controlled by FDEP	http://www.dep.state.fl.us/water/stormwater/npdes/MS4_1.htm ; http://www.dep.state.fl.us/water/stormwater/npdes/construction1.htm ; http://www.dep.state.fl.us/water/stormwater/npdes/industrial1.htm ; http://www.dep.state.fl.us/water/wastewater/facinfo.htm
BE-2	Outcomes	1 - Bonus	Jurisdiction or water provider participates in EPA water quality research on emerging contaminants	No info available showing this	
				Resolution 12-05-39	https://www.dropbox.com/s/oiakrtwe4hve8mk/12-05-39%20Wastewater%20Management%20Plan.pdf
				Wastewater Management Plan Islamorada, Village of Islands (May 2012)	https://www.dropbox.com/s/oiakrtwe4hve8mk/12-05-39%20Wastewater%20Management%20Plan.pdf
				FKAA Water Quality Report 2011	http://www.fkaa.com/WaterQualityReport2011.pdf

BE-2	Actions	1	Adopt a jurisdiction-wide management plan for both water consumption and disposal that provides a clean and secure water supply for all local uses	FKAA Water Quality Report 2012	http://www.fkaa.com/WaterQualityReport2012.pdf
				FKAA Water Quality Report 2013	http://www.fkaa.com/WaterQualityReport2013.pdf
				FKAA 20 Year Capital Improvement Plan (2006)	http://www.fkaa.com/fkaa_20yr_cimp_dec06.pdf
				FKAA 2011 Strategic Plan	http://www.fkaa.com/Strategic%20Plan%202011.2.pdf
				FKAA Drinking Water Standards and Analyses (2012)	http://www.fkaa.com/Drinking%20Water%20Standards%202012.pdf
				FKAA Drinking Water Standards and Analyses (2013)	http://www.fkaa.com/Drinking%20Water%20Standards%202013.pdf
				SFWMD Lower East Coast Water Supply Plan Update 2013	http://www.sfwmd.gov/portal/page/portal/xrepository/sfwmd_repository_pdf/2013_lec_plan.pdf
				Monroe County Stormwater Management Master Plan (2001)	https://www.dropbox.com/s/88x1vau229sfnsq/Stormwater%20Management%20Master%20Plan.pdf
				Monroe County Marine Management Strategic Plan (2005)	https://www.dropbox.com/s/agidmd9i773uc9l/Monroe%20County%20Marine%20Management%20Strategic%20Plan.pdf
				Monroe County Sanitary Wastewater Master Plan (2000)	https://www.dropbox.com/s/gl8bt6otfxmydeh/Monroe%20County%20Sanitary%20Wastewater%20Master%20Plan.pdf
				Monroe County Canal Management Plan Phase I Summary Plan (2012)	https://www.dropbox.com/s/m45xn5iflog61m6/Canal%20Management%20Master%20Plan%20Phase%20I.pdf
				Ordinance 02-12 regulating landscaping to conserve water and reduce runoff	http://www.islamorada.fl.us/Newsmanager/userfiles/file/Ordinances/02-12.pdf

BE-2	Actions	2	Adopt policies to ensure that the jurisdiction has the authority to enact water conservation measures during periods of drought	Resolution 08-12-95 supporting SFWMD watering restrictions	https://www.dropbox.com/s/a4qdvlfld52yqcfm/Resolution%2008-12-95.pdf
				FKAA Consumptive Use Permit (Modification 2005)	https://www.dropbox.com/s/43eq0yd3yb4ng6/050329-23 Permit .20050328%20CUP%20FKAA.pdf
				Municode Part II, Chapter 34, Art. II Water Conservation	https://library.municode.com/HTML/19975/level3/PTIICOR_CH34NARE_ARTIIWACO.html
				FKAA Rules & Regulations	http://www.fkaa.com/Rule%20Document%20as%20revised%205.1.2014%20Water%20Rates.pdf
BE-2	Actions	3	Collaborate with a regional water management group that includes other jurisdictions that share the same water sources	Water Quality Improvements Citizen' Advisory Committee	http://www.islamorada.fl.us/WQIA_Committee.asp
				SFWMD Water Resources Advisory Commission	http://my.sfwmd.gov/portal/page/portal/xweb%20about%20us/wrac
BE-2	Actions	4	Establish water quality monitoring and public reporting systems	FKAA Annual Water Quality Report - Reporting Year 2013	http://www.fkaa.com/WaterQualityReport2013.pdf
				FKAA Annual Water Quality Report - Reporting Year 2012	http://www.fkaa.com/WaterQualityReport2012.pdf
				FKAA Annual Water Quality Report - Reporting Year 2011	http://www.fkaa.com/WaterQualityReport2011.pdf
				FKAA Monthly Bacteriological Reports (Jan 13 - May 14 on website)	http://www.fkaa.com/bacteriological.htm
				FKAA Priority Call Service to notify residents and businesses of water issues (boil water/service interruption) - online registration to get number added to the priority call list	http://www.fkaa.com/priority_call.htm
BE-2	Actions	5	Shift towards a full cost pricing system to ensure that users are paying for the true cost of water	FKAA Water Rates and Charges	http://www.fkaa.com/Water%20Rates.pdf
				FKAA Wasetwater Rates and Charges	http://www.fkaa.com/Wastewater%20Rates.pdf

BE-2	Actions	6	Create programs to guarantee the provision of water to low-income residents	FKAA Senior and Veteran Discount Service	http://www.fkaa.com/SC%20Application%20Form%202014.pdf
BE-2	Actions	7	Develop and provide water conservation programs to residents, businesses and agricultural water users in order to help ensure that the community is not depleting its water supply	FKAA High Efficient Toilet Rebate program SWFWMD WaterSip Program Comprehensive Plan Element 8.0 Potable Water SWFMD Water Champ Program for hotels and motels to incentive use reductions 2009 SWFMD Water Efficiency and Self-Conducted Water Audits at Commercial and Institutional Facilities Guide	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.fkaa.com%2FResidential%2520Toilet%2520Rebate%2520form.pdf&ei=9HDqU7PMCsWXyAS3hIAo&usq=A-FQICNFRfkQ8KPimVwAlADG0fLCuVzHkvQ&bvm=bv.72676100,d.aWw&cad=rja http://www.sfwmd.gov/portal/page/portal/levelthree/water%20conservation#sip http://keyscompplan.com/system/wp-content/uploads/2010/02/8.0-Potable-Water3.pdf http://www.sfwmd.gov/portal/page/portal/xweb%20-%20release%203%20water%20conservation/water%20conservation%20businesses http://issuu.com/southfloridawatermanagement/docs/water_efficiency_improvement_guide?mode=window&proSidebarEnabled=true&background-color=%23222222
				Permit Conditions of the FKAA Consumptive Use Permit	https://www.dropbox.com/s/43e0q0yd3yb4ng6/050329-23_Permit_20050328%20CUP%20FKAA.pdf

BE-2	Actions	8	Manage and upgrade infrastructure to reduce leaks in the system, eliminate contaminants, and achieve other local conservation goals	FKAA 20 Year Capital Improvement Plan (2006)	http://www.fkaa.com/fkaa_20yr_cimp_dec06.pdf
BE-2	Actions	9	Implement at least 3 innovative water infrastructure and facility programs	FKAA Reclaimed Water - Big Coppitt	http://www.fkaa.com/Reclaimed%20Info%20Brochure%2008-23-10_Final%20(2).pdf
				FKAA Reclaimed Water - Duck Key	http://www.fkaa.com/Duck%20Reclaimed%20Info%20Brochure_10-25-13.pdf
				Cudjoe Advanced Water Reclamation Facility	http://www.cudioewastewater.com/overview
			Upgrade and improve stormwater and wastewater treatment facilities to meet current and foreseeable needs	Canal Restoration Demonstration report	https://www.dropbox.com/s/re1zja3mn5368yn/Canal%20Restoration%20Demonstration%20Rpt%2011-8-13_201401081451126079.pdf
				Florida Keys Area of State Concern Annual Report 2012	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFIAA&url=http%3A%2F%2Fwww.floridajobs.org%2Ffdcp%2Fdc%2Fdc%2Ffiles%2F2012FLKeysReport.pdf&ei=sX_qU-bRNi6ZyATE3ILIBw&usg=AFQjCNFBtF9VxtCvFgdGoAwI9A-en_fDcQ&bvm=bv.72938740.d.aWw
				Florida Keys Area of State Concern Annual Report 2011	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCQQFjAB&url=http%3A%2F%2Fwww.floridajobs.org%2Ffdcp%2Fdc%2Fdc%2Ffiles%2F2011FLKeysReport.pdf&ei=yH_qU-QOdeDyQTjwYKQAA&usg=AFQjCNFhE5pdPdx9kUsFf8nkC0m9NO7Jfg&bvm=bv.72938740.d.aWw&cad=rja

BE-2	Actions	10		FKAA 20 Year Capital Improvement Plan (2006)	http://www.fkaa.com/fkaa_20yr_cimp_dec06.pdf
				Key Haven - letter of aquisition, smoke testing project letter, smoke test faqs	http://www.fkaa.com/Key%20Haven%20Update%2026%20Jan%2010.pdf
				Big Coppitt Regional - Gravity collection system with AWT* Plant and reclaim water distribution system (see 30 day notice, homeowner info letter, construction packet)	http://www.fkaa.com/Wastewater-Big%20Coppitt.htm
				Bay Point - Vaccum collection system with BAT* Plant. System complete and operating.	http://www.fkaa.com/Wastewater-Bay%20Point.htm
				Cudjoe Regional - WWTP plant construction to be completed by Dec 2015 and includes reclaimed water plant	http://www.cudjoe wastewater.com/
				Duck Key Regional - extensive redesign in 2011 and upgraded to Advanced Water Treatment standards	http://www.fkaa.com/Wastewater-DuckKey.htm
				City of Layton - Gravity collection system with BAT Plant. System complete and operating.	http://www.fkaa.com/Wastewater-Layton.htm
BE-2	Actions	11	Engage in restoration projects for critical water bodies that provide usable water for the jurisdiction or stormwater management assistance	Restoration - Outstanding Florida Water Designation/Reports that identify water quality hot spots, then determined why hot spot meaning were not on centralized or was it stormwater? National Marine Sanctuary is OWF and Florida Keys are Special Waters	https://www.dropbox.com/s/6l9qowt7ies9v9u/outstanding%20florida%20waters%20facts.pdf
				Monroe County Selection of Demonstration Canals for Water Quality Improvements (11/13)	https://www.dropbox.com/s/re1zia3mn5368vn/Canal%20Restoration%20Demonstration%20Rpt%2011-8-13_201401081451126079.pdf

				<p>Update on Canal Restoration Projects 1/13/14</p> <p>Monroe County Canal Management Master Plan Phase 1 Summary Report (6/12)</p> <p>Central and South Florida Project CERP Project Management Plan: Florida Keys Tidal Restoration Project (4/02)</p>	<p>https://www.dropbox.com/s/48mn8m5z954pi70/Updates%20on%20Canal%20Restoration%20Demonstration%20Projects%201-31-14_201402030904562839.pdf</p> <p>https://www.dropbox.com/s/m45xn5ifloq61m6/Canal%20Management%20Master%20Plan%20Phase%201.pdf</p> <p>http://www.evergladesplan.org/pm/pmp/pmp_docs/pmp_31_fl_keys_tidal/pmp_31_main_final.pdf</p>
BE-3	Preliminary Step		Identify the Compact & Complete Centers (CCCs) that will be analyzed under this Objective	nothing that I could find for this category	
BE-3	Outcomes	1	<p>Density, Destinations, and Transit: Demonstrate that each CCC achieves the following thresholds:</p> <p>Residential Density:</p> <ul style="list-style-type: none"> • Average of at least 12 dwelling units per acre within a ¼-mile walk distance of bus or streetcar stops, or within ½-mile walk distance of bus rapid transit stops, light or heavy rail stations or ferry terminals • Average of at least 7 dwelling units per acre average within the rest of the CCC boundary <p>Employment Density: At least 25 jobs per acre</p> <p>Diverse Uses: At least 7 diverse uses present</p> <p>Transit Availability: At least 60 weekday trips and 40 weekend trips</p>		
BE-3	Outcomes	2	<p>Walkability: Demonstrate that each CCC achieves the following thresholds:</p> <ul style="list-style-type: none"> • 90% of roadways contain sidewalks on both sides • 100% of crosswalks are ADA accessible • 60% of block faces contain street trees at no more than 40 feet intervals • 70% of roadways are designed for a travel speed of no more than 25 mph • Minimum intersection density of 90 intersections per square mile 		
BE-3	Outcomes	3	<p>Design: Demonstrate that each CCC achieves the following thresholds:</p> <ul style="list-style-type: none"> • 80% of front building setbacks along primarily single-family residential blocks are not more than 25 feet from the property line • 80% of front building setbacks along primarily commercial blocks are not more than 10 feet from the property line • 40% of primarily commercial blocks have ground floor street frontages free from blank walls and loading docks, and do not have structured or surface parking as the principal land use along the street 		

BE-3	Outcomes	4	Affordable Housing: Demonstrate that each CCC achieves the following thresholds: <ul style="list-style-type: none"> • 10% of total residential units are affordable • 10% of residential units built or substantially rehabilitated within the last 3 years are dedicated as subsidized affordable housing • Some of the dedicated long-term affordable housing are deeply subsidized or deeply affordable for very- and extremely low income households 		
BE-3	Actions	1	Demonstrate that the comprehensive plan supports compact, mixed-use development	Islamorada Comprehensive Plan Objective 1-2.4	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
				Islamorada Comprehensive Plan 1-2.1.12	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
				Islamorada Comprehensive Plan Objective 1-2.8	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
				Monroe County Comprehensive Plan Policy 101.4.5	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606
				Monroe County Comprehensive Plan Policy 101.4.6	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606
BE-3	Actions	2	Identify areas appropriate for compact, mixed-use development on the community's official future land use map	Islamorada Official Future Land Use Map 2008	https://www.dropbox.com/s/bki0jgx039dqaog/Official_FLUM_Map.pdf
				Monroe County FLUM 2.0 Part 1	http://keyscompplan.com/system/wp-content/uploads/2011/01/2.0%20Future%20Land%20Use%20Element%201%20of%202.pdf
				Monroe County FLUM 2.0 Part 2	http://keyscompplan.com/system/wp-content/uploads/2011/01/2.0%20Future%20Land%20Use%20Element%202%20of%202.pdf
BE-3	Actions	3	Adopt regulatory strategies that permit or incentivize increased residential and employment densities and diverse uses in transit-served areas and areas identified for compact, mixed-use development	Islamorada Code of Ordinances Chapter 30 LDR Art IV, Division 16 Affordable Housing	https://library.municode.com/HTML/19975/level4/PTIICOOR_CH30LADERE_ARTIVADPR_DIV16AFHOST.html
				Islamorada Code of Ordinances Chapter 30 LDR Art IV, Division 12 Transfer of Development Rights	https://library.municode.com/HTML/19975/level4/PTIICOOR_CH30LADERE_ARTIVADPR_DIV12TRDERI.html
				Monroe County Affordable and Workforce Housing (2007)	https://www.dropbox.com/s/8pvqno7cchuz8g1/AffordableHousingPresentation.pdf
				Monroe County Comprehensive Plan Policy 502.1.2	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606
				Monroe County Comprehensive Plan Chapter 3.6 Goal 601	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606

				Land Development Part II, Chapter 130, Article II, Section 130-38	https://library.municode.com/HTML/14298/level3/PTIILADE_CH130LAUSD_ARTIIDIPU.html
				Land Development Part II, Chapter 138 Rate of Growth Restrictions	https://library.municode.com/HTML/14298/level2/PTIILADE_CH138RAGRRERONR.html
				Land Development Part II, Chapter 130, Article V, Section 130-160 (TDRs)	https://library.municode.com/HTML/14298/level3/PTIILADE_CH130LAUSD_ARTVLAUSIN.html#PTIILADE_CH130LAUSD_ARTVLAUSIN_S130-160TRDERITD
				Development Part II, Chapter 130, Article V, Section 130-161 (affordable housing)	https://library.municode.com/HTML/14298/level3/PTIILADE_CH130LAUSD_ARTVLAUSIN.html#PTIILADE_CH130LAUSD_ARTVLAUSIN_S130-161AFEMHOAD
				Land Development Part II, Chapter 130, Article V, Section 130-161.1 (AH incentives)	https://library.municode.com/HTML/14298/level3/PTIILADE_CH130LAUSD_ARTVLAUSIN.html#PTIILADE_CH130LAUSD_ARTVLAUSIN_S130-161.1AFHOINPR
				Land Development Part II, Chapter 138, Article III, Section 138-56 Affordable Housing Impact Fees	https://library.municode.com/HTML/14298/level3/PTIILADE_CH138RAGRRERONR_ARTIIINORAGRILNR.html#PTIILADE_CH138RAGRRERONR_ARTIIINORAGRILNR_S138-56EMHOFASHIMFE
				Land Development Part II, Chapter 138, Article II and III ROGO and NROGO Restrictions	https://library.municode.com/HTML/14298/level2/PTIILADE_CH138RAGRRERONR.html
BE-3	Actions	4	Require walkability standards for new development that include sidewalks on both sides of roadways, street trees, ADA accessible crosswalks, roadways designed for maximum travel speeds of 25 mph, and maximum block lengths in transit-served areas and areas identified for compact, mixed-use development	Nothing in Islamorada Comp Plan requiring this	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606
BE-3	Actions	5	Require build-to lines for commercial and residential structures in transit-served areas and areas identified for compact, mixed-use development	None	
BE-3	Actions	6	Adopt advanced parking strategies in transit-served areas and areas identified for compact, mixed-use development	Nothing identified	
BE-3	Actions	7	Require, incentivize, or subsidize creation of affordable housing in transit-served areas and areas identified for compact, mixed-use development	Code of Ordinances Chapter 30 LDR Art IV, Division 16 Affordable Housing	https://library.municode.com/HTML/19975/level4/PTIICOOR_CH30LADERE_ARTIVADPR_DIV16AFHOST.html
				Code of Ordinances Chapter 30 LDR Art IV, Division 12 Transfer of Development Rights	https://library.municode.com/HTML/19975/level4/PTIICOOR_CH30LADERE_ARTIVADPR_DIV12TRDERI.html
				Ordinance 11-03-17 Affordable Housing Trust Fund (find ordinance creating fund)	https://www.dropbox.com/s/i2dlqwohzi64jiv/Isia%20Ordinance%2011-03-17%20AH%20Trust%20Fund.pdf
				Land Development Part II, Chapter 130, Article V, Section 130-160 (TDRs)	https://library.municode.com/HTML/14298/level3/PTIILADE_CH130LAUSD_ARTVLAUSIN.html#PTIILADE_CH130LAUSD_ARTVLAUSIN_S130-160TRDERITD
				Land Development Part II, Chapter 130, Article V, Section 130-161 (affordable housing)	https://library.municode.com/HTML/14298/level3/PTIILADE_CH130LAUSD_ARTVLAUSIN.html#PTIILADE_CH130LAUSD_ARTVLAUSIN_S130-161AFEMHOAD
				Land Development Part II, Chapter 130, Article V, Section 130-161.1 (AH incentives)	https://library.municode.com/HTML/14298/level3/PTIILADE_CH130LAUSD_ARTVLAUSIN.html#PTIILADE_CH130LAUSD_ARTVLAUSIN_S130-161.1AFHOINPR

BE-3	Actions	8	Establish a design review board, neighborhood commission, or similar appointed citizen body that provides comments on proposed development projects	Islamorada Design Review Committee	http://www.islamorada.fl.us/D_R_Committee.asp
				Islamorada Ordinance 10-01	https://www.dropbox.com/s/mex8pp06c2ydm8g/Ordinance%2010-01.pdf
				Design Review Manual	http://www.google.com/url?sa=t&rct=i&q=&escr=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FPlanning_Forms%2Fdesign_review_manual.pdf&ei=G3nrU_WmNNeoqASsyoDgAw&usq=AFQjCNH84x-SxX0Udves2E7-Nuc3i6rpKA&bvm=bv.72938740,d.aWw&cad=rja
				Affordable Housing Advisory Committee created by Ordinance 014-2008	http://www.google.com/url?sa=t&rct=j&q=&escr=s&source=web&cd=3&ved=0CC4QFjAC&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentCenter%2FHome%2FView%2F696&ei=VXnrU_HmIIQNYAT00ICyCw&usq=AFQjCNETXHFp2TFKjWynYnHpx5TZxcO9A&bvm=bv.72938740,d.aWw&cad=rja
BE-3	Actions	9	Implement programs to preserve and maintain existing subsidized and unsubsidized affordable housing in transit-served areas, compact and mixed-use areas, and areas with rapidly-rising housing costs	No specific program information	
BE-3	Actions	10	Increase the percentage of households with access to transit	Nothing found	
BE-4	Outcomes	1	Housing and Transportation Costs: Part 1: Demonstrate that there are at least 80% of Census block groups where a household earning the Area Median Income (AMI) would spend less than 45% on housing and transportation combined --AND-- Part 2: Demonstrate that there are at least 60% of Census block groups where a household earning 80% AMI would spend less than 45% on housing and transportation combined		
BE-4	Outcomes	2	Affordable Housing Production: Option A: Achieve targets for creation of new affordable housing identified in a locally-adopted comprehensive housing strategy --OR-- Option B: Demonstrate that 10% of residential units built or substantially rehabilitated in the past 3 years in the community's Compact & Complete Centers (CCCs) are dedicated as subsidized affordable housing	WetNet and other affordable housing developments exist - we need to get total number of units from Village Resolution 04-10-56	
BE-4	Outcomes	3	Affordable Housing Preservation: Demonstrate no loss of subsidized affordable housing units due to expiring subsidies in the past 3 years		

BE-4	Actions	1	Develop a comprehensive housing strategy	Monroe County Housing Needs Assessment (2007)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fmetropolitan.fiu.edu%2Fresearch%2Fhousing-market-policy-research%2Fmonroe_housing_assess.pdf&ei=uHrrU9ifAdesyATJ7YLOAQ&usg=AFQjCNEEVPDmijMoanHCS5tqrgFzem2GxQ&bvm=bv.72938740.d.aWw&cad=rja
				Monroe County Affordable and Workforce Housing (2007)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CCsQFjAC&url=http%3A%2F%2Fwww.cavaplace.com%2FAffordableHousingPresentation.pdf&ei=2HvrU4XuCl-YyAToz4CgBg&usg=AFQjCNF1TalkwXyZclhCTI2Pzo4ADUw_A&bvm=bv.72938740.d.aWw&cad=rja
				Monroe County Affordable Housing Needs Assessment	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.monroe.k12.fl.us%2FHousing%2FAHNA.pdf&ei=sXzrU-JsQSkmoHYAw&usg=AFQjCNGoQJWsyihCKffepefNYekOPUIMGw&bvm=bv.72938740.d.cWc&cad=rja
				Islamorada Workforce Housing Support Study (2007)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FOrdinances%2F07-23.pdf&ei=b3vrU-WMAdGdygT-g4GgDO&usg=AFQjCNE3eD8T9WS_8HFUJDojRDhVNkvoHQ&bvm=bv.72938740.d.aWw&cad=rja
BE-4	Actions	2	Analyze transit access and transportation costs for neighborhoods with housing affordable to low- and moderate-income households	Resolution 06-07-52 Transit Feasibility Study	https://www.dropbox.com/s/vfndet0vyhu6gy5/Resolution%2006-07-52%20and%20Transit%20Feasibility%20Study.pdf
				Miami-Dade Transit Development Plan Update 2013-22	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.miamidade.gov%2Ftransit%2Flibrary%2F10_year_plan%2FTDP-update-2012.pdf&ei=BX7rU9r0O8-NyASpolCwBw&usg=AFQjCNGehu26f9fy9qc46zhbpsiK4eR3dA&bvm=bv.72938740.d.aWw&cad=rja
				US 1 Arterial Travel Time and Delay Study (2011)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.monroecounty.fl.gov%2FDocumentview.aspx%3FDID%3D1186&ei=in7rU56JLoWOyATK3YHQAg&usg=AFQjCNHCo2lbEbeUq_EbdxVxdpPkycl8Rg&bvm=bv.72938740.d.aWw

BE-4	Actions	3	When new transit or other major infrastructure investments are planned, analyze the likelihood and extent to which housing costs are anticipated to increase in low- and moderate-income neighborhoods so that appropriate strategies can be developed to preserve and create long-term affordable housing	Resolution 06-07-52 Transit Feasibility Study	https://www.dropbox.com/s/vfndt0vyhu6yv5/Resolution%2006-07-52%20and%20Transit%20Feasibility%20Study.pdf
				Islamorada Comprehensive Plan - Transportation Element	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
BE-4	Actions	4	Use regulatory and design strategies to encourage compatible infill and redevelopment with a mix of housing types in neighborhoods close to employment centers, commercial areas, and where transit or transportation alternatives exist	Islamorada Ordinance 07-23 - Creates program to increase affordable housing	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FOrdinances%2F07-23.pdf&ei=ep3rU_6DLo-WvATN0oHgBg&usg=AFQICNE3eD8T9WS_8HFUJDoiRDhVNkvoHQ&bvm=by72938740,d.aWw&cad=rja
				Ordinance 02-17 - Encourages affordable housing and gives extra points for infill development	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FOrdinances%2F02-17.pdf&ei=vp3rU6SXLYSAvgSTmYKwCA&usg=AFQICNG1JCnpfWvRAj10ciJoM2j3bVGnIA&bvm=by.72938740,d.aWw
				Monroe County Comprehensive Plan Policy 601.1.11 and 601.1.12	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606
BE-4	Actions	5	Require, incentivize, or subsidize creation of subsidized affordable housing, including deeply subsidized or deeply affordable housing, in transit-served areas and areas identified for compact, mixed-use development	Comprehensive Plan Chapter 3 Housing Element (does not count under this credit)	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
				Islamorada Ordinance 02-17 encourages affordable housing and gives extra points for infill development	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FOrdinances%2F02-17.pdf&ei=vp3rU6SXLYSAvgSTmYKwCA&usg=AFQICNG1JCnpfWvRAj10ciJoM2j3bVGnIA&bvm=by.72938740,d.aWw
				Code of Ordinances Chapter 30 LDR Art IV, Division 16 Affordable Housing	https://library.municode.com/HTML/19975/level4/PTIICOOR_CH30LADER6_ARTIVADPR_DIV16AFHOST.html
				Islamorada Code of Ordinances Chapter 30 LDR Art IV, Division 12 Transfer of Development Rights	https://library.municode.com/HTML/19975/level4/PTIICOOR_CH30LADER6_ARTIVADPR_DIV12TRDERI.html
				Islamorada Ordinance 11-03-17 Affordable Housing Trust Fund (find ordinance creating fund)	https://www.dropbox.com/s/i2dlqwohzi64jlv/Isa%20Ordinance%2011-03-17%20AH%20Trust%20Fund.pdf
				Monroe County Comprehensive Plan Policy 601.1.11 and 601.1.12	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606

BE-4	Actions	6	Collaborate with other jurisdictions to address affordable housing and location efficiency needs in the region	Workforce/Affordable Housing Citizens Advisory Committee	http://www.islamorada.fl.us/WAHCA_Committee.asp
				Monroe County Land Authority	http://www.monroecounty-fl.gov/index.aspx?NID=272
				Monroe County Land Authority Advisory Committee	http://www.monroecounty-fl.gov/index.aspx?NID=273
				Monroe County Affordable Housing Advisory Committee	http://www.monroecounty-fl.gov/index.aspx?NID=301
BE-4	Actions	7	Partner with nonprofit organizations to provide education, counseling, and financial assistance to homebuyers or renters	Middle Keys Community Land Trust	http://www.mkclt.org/
				Florida's Community Contribution Tax Credit Program	http://www.floridajobs.org/business-growth-and-partnerships/for-businesses-and-entrepreneurs/business-resources/community-contribution-tax-credit-program
				Key West and Lower Keys Habitat for Humanity	http://www.habitatlowerkeys.org/
				Florida's Community Contribution Tax Credit Program	http://www.floridajobs.org/business-growth-and-partnerships/for-businesses-and-entrepreneurs/business-resources/community-contribution-tax-credit-program
BE-4	Actions	8	Implement programs to preserve and maintain existing subsidized and unsubsidized affordable housing in transit-served areas, compact and mixed-use areas, and areas with rapidly-rising housing costs		
BE-4	Actions	9	Work with private employers to provide live-near-your-work or employer-assisted housing financial incentives	Cheeca Lodge Employer assisted housing Comp Plan Ch. 3 Policy 3-1.1.7	
BE-5	Outcomes	1	Infill Development: Option A: Increase the percentage of new development in locally-designated infill and redevelopment areas --OR-- Option B: Increase the percentage of new development located on infill, previously developed, brownfield, and prevfield sites		
BE-5	Outcomes	2	Existing Infrastructure: Demonstrate that at least 75% of new housing units in the past 3 years utilized existing water and sewer mains and did not require extending or widening public roadways		

BE-5	Actions	1	Develop an inventory of infill, previously developed, brownfield, or greyfield sites of greatest priority and potential for development or redevelopment	FDEP List of Brownfield Sites	http://www.dep.state.fl.us/waste/categories/brownfields/pages/processes_s_county.htm#MONROE
				Old Baltuff Dump Site, first Designated Brownfield Area for Monroe County,	http://www.google.com/url?sa=t&rct=i&q=&esrc=s&source=web&cd=2&ved=0CCcQFjAB&url=http%3A%2F%2Fwww.dep.state.fl.us%2Fwaste%2Fquick_topics%2Fpublications%2Fwc%2Fbrownfields%2FBF440701001_BSRA.pdf&ei=iq7rU4XiNjL2yQTJ54CoCg&usg=AFQjCNGMwIXzscptHx8F8o8olWkkFuCeg&bvm=bv.72938740,d.aWw&cad=rja
				Monroe County Resolution 261-2007 designates Blattuff Brownfield	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.dep.state.fl.us%2Fwaste%2Fquick_topics%2Fpublications%2Fwc%2Fbrownfields%2Fresolutions%2FBF440701000_RES.pdf&ei=L6_rU4_AKND9yQShz4CADg&usg=AFQjCNGM1g9Ha10IN8V1UTvvhgdCowmA6Q&bvm=bv.72938740,d.aWw&cad=rja
BE-5	Actions	2	Adopt a policy commitment to limited or no expansion of physical jurisdiction boundaries or extension of urban services	Islamorada Resolution 05-05-26	https://www.dropbox.com/s/epwygbzxcq0tw31/Resolution%2005-05-26.pdf
				Islamorada Resolution 13-04-17	https://www.dropbox.com/s/zs7nqyily6tirp/Resolution%2013-04-17.pdf
BE-5	Actions	3	Use regulatory and design strategies to encourage compatible infill and redevelopment with a mix of housing types in neighborhoods close to	Islamorada Resolution 09-10-102	http://www.google.com/url?sa=t&rct=i&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FResolutions%2F09-10-102.pdf&ei=07LrU_rJCvDesATXu4GwAg&usg=AFQjCNE-K40zTngKsHhu1j8c52hAlial8w&bvm=bv.72938740,d.cWc&cad=rja
				Islamorada Code of Ordinances, Chapter 130 LDR, Art. IV, Section 30-476	https://library.municode.com/HTML/19975/level4/PTIICOOR_CH30LADERE_ARTIVADPR_DIV11BUPEALSY.html#PTIICOOR_CH30LADERE_ARTIVADPR_DIV11BUPEALSY_S30-476BUPEALEVCRAW
				Monroe Comprehensive Plan Goal 105.	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606

			employment centers, commercial areas, and where transit or transportation alternatives exist	Monroe County Comprehensive Plan Policy 101.5.1	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606
				Monroe County Comprehensive Plan Policy 1001.2.1.	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=4606
				Monroe County LDR Part II, Chapter 138, Art. II Section 138.28 (ROGO)	https://library.municode.com/HTML/14298/level3/PTIILADE_CH138RAGRRERONR_ARTIIRERAGRLIRO.html#PTIILADE_CH138RAGRRERONR_ARTIIRERAGRLIRO_S138-28EVCR
				Monroe County LDR Part II, Chapter 138, Art. III Section 138.55 (NROGO)	https://library.municode.com/HTML/14298/level3/PTIILADE_CH138RAGRRERONR_ARTIIINORAGRLINR.html#PTIILADE_CH138RAGRRERONR_ARTIIINORAGRLINR_S138-55EVCRR
BE-5	Actions	4	Educate residents and community groups about the importance of infill and redevelopment, brownfield assessment findings, and design strategies for compatible neighborhood development	Lower Keys Livable Communikeys Plan. 2012. South Florida	http://www.monroecounty-fl.gov/DocumentCenter/Home/View/173
				COMPREHENSIVE ECONOMIC DEVELOPMENT STRATEGY 2012-2017 Technical Report	http://www.sfrpc.com/CEDS/SouthFloridaCEDS2012-17.pdf
BE-5	Actions	5	Collaborate with state and federal authorities to advance brownfields cleanup	Monroe County Resolution 261-2007 designates Old Baltuff Brownfield	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.dep.state.fl.us%2Fwaste%2Fquick_topics%2Fpublications%2Fwc%2Fbrownfields%2Fresolutions%2F440701000_RES.pdf&ei=L6_rU4_AKND9yQShz4CADg&usq=AFQICNGM1e9Ha10jN8V1UTvwhgdCwmA6Q&bvm=bv.72938740,d.aWw&cad=rja
BE-5	Actions	6	Establish a program to provide information and assistance to owners, potential buyers, and developers regarding brownfield assessments, redevelopment strategies, and available resources	Floridas Brownfield Program - Florida Statutes Section 288.107 - Bonus Refund	http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0200-0299/0288/Sections/0288.107.html
				Florida Statutes, Section 376.30781 - Tax Credit	http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0300-0399/0376/Sections/0376.30781.html
				Floridas Brownfield Program; Section 376.80	http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0300-0399/0376/Sections/0376.80.html
BE-5	Actions	7	Support temporary, creative neighborhood uses for vacant properties and greyfields		
BE-5	Actions	8	Provide financial incentives to encourage infill and redevelopment	Ordinance 02-17 - Encourages affordable housing and gives extra points for infill development	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ad=rja&uact=8&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FOrdinances%2F02-17.pdf&ei=vp3rU6SXLySAvgSTmYKwCA&usq=AFQICNG1JCnpfVwRAj10cJ0M2j3bVGnIA&bvm=bv.72938740,d.aWw
BE-5	Actions	9	Perform proactive zoning enforcement and vacant lot cleanup or maintenance to improve the attractiveness of a redevelopment or blighted area and to deter crime		

BE-5	Actions	10	Target local infrastructure improvements to revitalize redevelopment or blighted areas and catalyze private reinvestment		
BE-6	Outcomes	1	Acreage: Provide ample parkland based on population density as follows: • High: 6.8 acres per 1,000 residents • Intermediate-High: 7.3 acres per 1,000 residents • Intermediate-Low: 13.5 acres per 1,000 residents • Low: 20.3 acres per 1,000 residents	6,427 population over 4115.2 acre land area = 1.56 (low density) so only need to meet 20.3 acres per 1000 residents Comp Plan LOS 3.79 Acres per 1,000 Persons for Parks and Recreation Facilities - ---- outcome not met	
BE-6	Outcomes	2	Proximity: Demonstrate that housing units in the community are located within a ½-mile walk distance of a public space or park based on population density as follows: • High or Intermediate-High: 85% • Intermediate-Low or Low: 70%		
BE-6	Outcomes	3	Connectivity: Demonstrate that 90% of households are located within 3 miles of an off-road trail		
BE-6	Outcomes	4	Use and Satisfaction: Option A: Demonstrate that 66% or more of surveyed residents visit a park at least once a year --OR-- Option B: Demonstrate that 66% or more of surveyed residents respond favorably regarding the quality of the community's public space and park system		
BE-6	Actions	1	Adopt a parks and/or open space plan that promotes a community-wide network of public spaces that provide recreational, transportation, and environmental benefits	Islamorada Comprehensive Plan Objective 1-4.9: PRESERVE WORKING WATERFRONTS.	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
				Islamorada Comprehensive Plan Policy 1-41.9.1, 9.2	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
				Implement Working Waterfronts Land Development Regulation	

				Resolution 08-06-40 adopts Working Waterfronts Master Plan	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FResolutions%2F08-06-40.pdf&ei=qsDrU4fzOoKbvATxi4GIAQ&usg=AFQjCNGs50N6cZLNDLE_YwRxyBgA3RFFg&bvm=bv.72938740,d.cWc&cad=rja
				Tavernier Commercial Corridor Enhancements/County and all municipalities.	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB0QFjAA&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentView.aspx%3FDID%3D1293&ei=XcHrU4GtHYqYyASzo4_H4Aw&usg=AFQjCNG3pV44dOisOO_WTTRvvyPU_qsMg&bvm=bv.72938740,d.cWc&cad=rja
				Monroe County Comprehensive Plan Parks/Open Space E	http://keyscompplan.com/system/wp-content/uploads/2014/07/3-12-rec-and-open-space-element-track-changes-7-1-14.pdf
				Tavernier Historic Preservation	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCMQFjAB&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentView.aspx%3FDID%3D1161&ei=XcHrU4GtHYqYyASzo4_H4Aw&usg=AFQjCNHXrdrfv8g94SXTUomJ-c2_1Vltbw&bvm=bv.72938740,d.cWc&cad=rja
BE-6	Actions	2	Conduct a study regarding the economic impact of parks and public spaces on the local economy to understand their contributions to community satisfaction and tourism	Monroe County Resolution 233-2011 Approves 2011 Public Facilities Capacity Assessment Report.	https://www.dropbox.com/s/a1j8oc7d9hl2ak2/Resolution%20233-2011%20Public%20Facilities%20Capacity%20Report.pdf
				Survey from Linking the Economy and Environment of the Florida Keys/Key West, Figures 1.1 and 1.2	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fsanctuaries.noaa.gov%2Fscience%2Fscioeconomic%2Ffloridakeys%2Fpdfs%2Fresident9596.pdf&ei=nMPrU8CPIM-cyAS13oLQAQ&usg=AFQjCNE5rpHMH6MbYLFxV8UhfOhJL-LyUw&bvm=bv.72938740,d.aWw&cad=rja
				Economic Contribution of Recreating Visitors to Florida Keys	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCcQFjAB&url=http%3A%2F%2Fcoastalsocioeconomics.noaa.gov%2Fcore%2Fsocmonfk%2Fpublications%2F99-11.pdf&ei=nMPrU8CPIM-cyAS13oLQAQ&usg=AFQjCNFrzHjmsd1xc4eiivhHdcmnNV8iQ&bvm=bv.72938740,d.aWw&cad=rja
				NOAA Linking the Economy and Environment of Florida Keys (2010)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CDEQFjAC&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentView.aspx%3FDID%3D756&ei=nMPrU8CPIM-cyAS13oLQAQ&usg=AFQjCNHqn6D2OpJcCeCWEDkUrqcIPyYQ&bvm=bv.72938740,d.aWw&cad=rja

BE-6	Actions	3	Adopt regulatory strategies or development incentives to create, maintain, and connect parks and public spaces	Livable CommuniKeys Planning Program Policy 101.20.1	https://www.dropbox.com/s/7y2mf2dnju9ce2/Livable%20Keys%20Policy%20101.20.1.pdf
				Livable CommuniKeys Planning Program Policy 101.20.2	https://www.dropbox.com/s/gphztmcmvblm12w/Livable%20Keys%20Policy%20101.20.2.pdf
				Livable CommuniKeys Program Master Plan for Future Development of Big Pine Key and No Name Key	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=7&ved=0CD8QFIAG&url=http%3A%2F%2Fskeetersmarine.com%2FMitigation%2FBPK%2520Master%2520plan.pdf&ei=1MXrU5v8H9GLyAT404HgBA&usq=AFOjCNGR_JOwbRQMCaM8eRHAKwv-87NOGQ&bvm=bv.72938740.d.aWw&cad=rja
				Key Largo Livable CommuniKeys Plan: Community Master Plan	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCEQFiAA&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2Findex.aspx%3FNID%3D260&ei=CMbrU7bxfYiGyATN7YKwDA&usq=AFOjCNGf48oGqg_9ka26DIR1wrlDvW5U1w&bvm=bv.72938740.d.aWw&cad=rja
BE-6	Actions	4	Adopt design guidelines for new public spaces and improvements to existing facilities to strengthen environmental benefits and provide visitor amenities		
BE-6	Actions	5	Participate in a local or regional alliance working to improve and expand the community-based or regional park system	The Islamorada Foundation (2010); a public charity, non profit, to enhance, conserve, and preserve the Islamorada parks, common greenspace and recreation.	http://islamoradafoundation.org/
				The Islamorada Foundation Projects-Southwinds Park Advancement, Downtown landscape lighting.	http://islamoradafoundation.org/projects/
				Monroe County Parks and Recreation Advisory Board (PRAB).	http://www.monroecounty-fl.gov/index.aspx?nid=326
				Florida Department of Parks and Recreation.	http://www.dep.state.fl.us/parks/
BE-6	Actions	6	Create an advisory board to regularly receive feedback from residents and regarding planning, decision-making, and other issues affecting the quality and availability of parks and public spaces	Islamorada Parks & Recreation Citizens Advisory Committee	http://www.islamorada.fl.us/PRCA_Committee.asp

				Ordinance 018-1983 creating Monroe County Board of Parks and Recreation	https://www.dropbox.com/s/4fk50y84uzq5ais/Ordinance%20018%201983.pdf
				Citizens Advisory Task Force created by Resolution No. 488-2008	https://www.dropbox.com/s/vm71p260h10kkui/Resolution%20%20No.%20488-2008.pdf
BE-6	Actions	7	Host or partner with a volunteer program to support parks and public space maintenance	The Islamorada Foundation partnership with Village on Southwinds park improvements and par cleanups etc	
BE-6	Actions	8	Provide assistance for low income users to access and use parks and public spaces through subsidy, scholarships, and discounts		
BE-6	Actions	9	Host programs and events in parks and public spaces that bring the community together and encourage physical activity	Founders Park monthly events, kids summer camps, adult aquatic swim fitness club, aquafit water aerobics.	http://www.islamorada.fl.us/newsmanager/userfiles/file/Founders_Park/2014_August_event.pdf
BE-6	Actions	10	Consistently invest sufficient capital and operational funding to create and maintain parks and public spaces	per capital improvements element updates State and Federal Legislative Priorities: State funding for key infrastructure: SUPPORT state funding for critical and job-creating infrastructure such as wastewater, roads and bridges; and legislation that provides additional local revenue sources for fund public infrastructure needs and/or greater flexibility in levying and using currently authorized local revenue sources. MC Tourist Development Tax has funding public works maintenance and various capital improvement projects like beacha and museums.	LOOK ALSO AT ISLAMORADA AND COUNTY STRATEGI PLANS AND ANNUAL BUDGET DOCUMENTS (MANY HAVE OVERVIEWS OF BUDGET PRIORITIES). PARKS ARE BIG IN COUNTY AND ISLAMORADA AND THEY SHOULD BE ABLE TO GAIN HERE.
BE-7	Outcomes	1	Mode Split: Achieve the following thresholds for journey-to-work trips: • Drive alone maximum: 60% • Bike + Walk + Transit minimum: 25% • Bike + Walk minimum: 5%	Comp Plan and CIE No tables or statistics recorded	
BE-7	Outcomes	2	Transportation Affordability: Show that at least 50% of households in the jurisdiction are estimated to spend less than 15% of income on transportation costs	H&T Affordability Index-Transportation Costs % Income	
BE-7	Outcomes	3	Transportation Safety: Demonstrate that pedestrian and bicyclist fatalities are making incremental progress towards zero fatalities by 2040, compared to a baseline year not predating 2000	NOT SURE WHERE TO FIND THIS FOR BOTH ISLAMORADA OR COUNTY BUT THERE IS ALSO A FLORIDA KEYS HERITAGE TRAIL. ALMOST THE ENTIRE LENGTH OF THE KEYS IS BIKE LANED. THIS SHOULD COUNT FOR SOMETHING.	

BE-7	Actions	1	Adopt a bicycle and/or pedestrian master plan that prioritizes future projects to improve safety and access to non-motorized transportation	Islamorada Resolution 07-10-63	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFJAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FResolutions%2F071063.pdf&ei=uszrU8WWJoycygTh7oJ4&usg=AFQjCNftZi11eUCLLcdII70ZhkxHx0U3nQ&bvm=bv.72938740,d.aWw
				Islamorada Bicycle/Pedestrian Transportation Master Plan	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFJAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FResolutions%2F071063.pdf&ei=uszrU8WWJoycygTh7oJ4&usg=AFQjCNftZi11eUCLLcdII70ZhkxHx0U3nQ&bvm=bv.72938740,d.aWw
				Florida Keys Overseas Heritage Trail Master Plan	https://www.dropbox.com/s/y426chw89ec6wi/FloridaKeysOverseasHeritageTrail.pdf
BE-7	Actions	2	Adopt a complete streets policy that addresses all users, applies to all projects with limited exceptions, and includes specific next steps for implementation	don't have	
BE-7	Actions	3	Subdivision and other development regulations require walkability standards that encourage walking and enhance safety		
BE-7	Actions	4	Local government offers employee incentives to encourage commuting by modes other than single-occupancy vehicles	2013 Environmental Sustainability Plan (encourages staff carpooling, purchased 2 bikes for staff use between government buildings)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFJAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2F2013_sustainability.pdf&ei=p8_rU7QoNM-cyAS13oLQAQ&usg=AFQjCNEdcI2gLHnNGL01ZC4ocVwW_flgMw&bvm=bv.72938740,d.aWw
				Climate Action Plan (03/2013) Goal B-4: Transportation. Encourage the use of public transportation, ride sharing, and a shift to fossil fuel efficient and electric commuter vehicles through the provision of the appropriate infrastructure.	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFJAA&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentCenter%2FView%2F5971&ei=-8_rU_6qKMH_yQ5Xj4KACA&usg=AFQjCNGG6xVDCRHmUN60uaJIWSKbj5zZ_Eg&bvm=bv.72938740,d.aWw
BE-7	Actions	5	Implement at least 2 types of focused enforcement programs to ensure pedestrian, bicycle, and motorist safety		
BE-7	Actions	6	Increase the percentage of households with access to transit		
BE-7	Actions	7	Increase the mileage of sidewalks, particularly on arterial or collector roads that connect people with destinations		
BE-7	Actions	8	Increase the mileage of striped or buffered bicycle lanes, cycle-tracks, parallel off-street paths and/or other dedicated facilities	Shared Use Path construction from MM 99.6 to 106.3 and construction of over 11 miles of bicycle lanes along CR905.	http://fl-monroecounty.civicplus.com/Files/AgendaCenter/Items/1210/H1_20120021333086920.pdf
BE-7	Actions	9	Establish or support a community-wide public bike share program		

BE-7	Actions	10	Construct or retrofit transportation infrastructure to meet standards in the Americans with Disabilities Act (ADA)		
CE-1	Preliminary Step		Identify 4 core areas of local climate change adaptation concerns. Core areas must apply to at least 3 of 4 general groupings: Built Environment, Economic Environment, Natural Environment, Social Environment	Should confirm this with the County, but recommended (per STAR manual): Built Environment - homes, businesses, transportation infrastructure threatened by sea level rise; Economic Environment - tourism impacts, energy supply/infrastructure; Natural Environment - coastal zone threats, threats to native species; Social Environment - emergency management, public health.	
CE-1	Outcomes	1	Vulnerability Reduction: Demonstrate a measurable reduction in vulnerability in each of the 4 core areas identified locally	SEFRCC Vulnerability Assessment (2012)	http://southeastfloridacclimatecompact.files.wordpress.com/2014/05/vulnerability-assessment.pdf
CE-1	Actions	1	Adopt a climate change adaptation plan	<p>Monroe County Climate Action Plan (11/2013)</p> <p>Monroe County, Florida Sea Level Vulnerability Analysis (2/11)</p> <p>A Unified Sea Level Rise Projection for Southeast Florida (4/11)</p> <p>A Region Responds to a Changing Climate; Southeast Florida Regional Climate Change Compact Counties; Regional Climate Action Plan (10/12)</p>	<p>http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ad=rja&uact=8&ved=0CB4QFJAA&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentCenter%2FView%2F5971&ei=Sv-U8ChF8vboASqYLoCw&usg=AFQICNGG6xVDCRHmUN60uaJIWSKbj5zZEg&bvm=bv.74035653,d.cGU</p> <p>http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ad=rja&uact=8&ved=0CB4QFJAA&url=http%3A%2F%2Fsoutheastfloridacclimatecompact.files.wordpress.com%2F2014%2F05%2Fvulnerability-assessment.pdf&ei=FCz-U627AZS4pgTzk4CADQ&usg=AFQICNHKpnaV61y9xL6E-geIC6sMoZJ8jA&bvm=bv.74035653,d.cGU</p> <p>https://www.dropbox.com/s/8suxpkdc1k44pb7/Sea%20Level%20Rise%20Projections%20-%20SE%20FL%20ClimateCompact.pdf?dl=0</p> <p>https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFJAA&url=https%3A%2F%2Fwww.broward.org%2FLegislative%2FDocuments%2FChangingClimate.pdf&ei=hSz-U4yrlom6ogT9_oBg&usg=AFQICNE-wOihXCZTFWHLvGiNjrbTMOAJA&bvm=bv.74035653,d.cGU</p>

				Initial Estimates of Ecological and Economic Consequences of Sea Level Rise in the Florida Keys through the year 2010 (TNC 2010)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB4QFJAA&url=http%3A%2F%2Ffrp.org%2FSLR%2520documents%2FFINAL%2520-%2520Aug%252021%2520-WITH%2520COVER.pdf&ei=nSz-U-rPIivogSI94GgDA&usq=AFOiCNFSdplBzs8TJdnIXrFkFEXzdLsZ3A&bvm=bv.74035653,d.cGU
CE-1	Actions	2	Require that internal decisions by local government departments use the most current climate science and that staff monitor climate change impacts	not in comp plan	
CE-1	Actions	3	Develop a committee that includes climate scientists, adjacent jurisdictions, regional coalitions, state and federal agencies, and/or non-governmental organizations for the purpose of understanding and addressing shared vulnerabilities	Resolution No. 002-2011 creates CCAC	http://fl-monroecounty.civicplus.com/DocumentView.aspx?DID=963
				Resolution No. 149-2011 repeals 002-2011 and clarifies board	http://fl-monroecounty.civicplus.com/DocumentCenter/View/1505
				Resolution No. 263-2013 extends CCAC	http://fl-monroecounty.civicplus.com/DocumentCenter/View/6367
				Resolution 338-2013 extends terms of CCAC members	http://fl-monroecounty.civicplus.com/DocumentCenter/View/6368
				Monroe County CCAC Bylaws	http://fl-monroecounty.civicplus.com/DocumentCenter/View/6803
				Soputheast Florida Regional Climate Change Compact ARE THESE APPLICABLE TO ISLAMORADA?	http://southeastfloridaclimatecompact.org/who-we-are/
CE-1	Actions	4	Create an education and outreach campaign to engage citizens and businesses in climate change vulnerability reduction efforts	FIU Medina Aquarius Reef Base Program	http://aquarius.fiu.edu/education/
				Florida Keys Green Living & Energy Education	http://www.keysglee.com/
				Islamorada Matters Community Workshops	http://www.islamoramatters.com/
				Sanctuary Friends Foundation of the Florida Keys	http://sanctuaryfriends.org/donate-now/become-a-member/
				Reef Relief	http://reefrelief.org/2013/11/ocean-climate-change/
				Nature Conservancy	http://www.nature.org/ourinitiatives/urgentissues/global-warming-climate-change/

				Climate Change and the Florida Keys, By Hans Hoegh-Guldberg.	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCcQFjAB&url=http%3A%2F%2Fsanctuaries.noaa.gov%2Fscience%2Fsocial%2Ffloridakeys%2Fpdfs%2Fclimateflkeys_main.pdf&ei=NzP-U-2MC4fboASp_4CwDA&usg=AFQjCNEPBFgyvZ6lqiDYWYNWpRO0ehyrQ&bvm=bv.74035653.d.cGU&cad=rja
CE-1	Actions	5	Adopt zoning code, building code, or other legally binding regulations that address future climate change threats	Anti-Idling Policy I BELIEVE THEY BOTH HAVE FLOOD PLAIN ORDINANCE THAT REQUIRE ELEVATED CONSTRUCTION ON AT LEAST SOME LEVEL- THAT'S WHY HALF THE BUILDINGS ARE RAISED IN BOTH ISLAMORADA AND THE COUNTY.	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2FAnti_Idling_Policy.pdf&ei=2TX-U7TcGsqpyATq84DwBQ&usg=AFQjCNHmuUjCUOsv7rvLH-UUjCP-bnuiGg&bvm=bv.74035653.d.cGU&cad=rja
CE-1	Actions	6	Create or enhance programs and services that specifically help address climate change threats		
				Alert System through Monroe County Emergency Management	http://www.monroecountyem.com/list.aspx?ListID=207
				Monroe County Sustainability and Climate Change Program	http://www.monroecounty-fl.gov/index.aspx?NID=585
CE-1	Actions	7	Enforce regulations or offer incentives to encourage residents and businesses to shift behaviors to prepare for future climate change impacts		
CE-1	Actions	8	Improve facilities throughout the community to be better prepared for climate change threats	LOOK AT BOTH FOR CAPITAL IMPROVEMENTS ADDRESSING FLOODING AND DRAINAGE.TRY TO TRACK DOWN STORMWATER AND ROAD IMPROVEMENTS THROUGHOUT THE VILLAGE TO DEAL WITH ROUTINE FLOODING.	
CE-2	Outcomes	1	Greenhouse Gas Emissions Reductions: Demonstrate incremental progress towards achieving an 80% reduction by 2050 in community-wide greenhouse gas (GHG) emissions	Monroe County, FL Community-Wide CY2010 Greenhouse Gas Emissions Inventory Report Version 1.0 (6/12)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fmonroecounty.civicplus.com%2FDocumentCenter%2FView%2F5009&ei=sHkgVIXuB47DggSizIDYAQ&usg=AFQjCNE3yuiq2rWAurgtYRcAY5umrA5w&bvm=bv.75775273.d.eXY&cad=rja
				Southeast Florida Regional Climate Compact Regional Greenhouse Gas Emissions Inventory Baseline Period: 2005-2009 (11/11)	http://southeastfloridacclimatecompact.files.wordpress.com/2014/05/ghg-inventory.pdf

CE-2	Actions	1	Adopt a climate action plan designed to reduce GHG emissions throughout the jurisdiction	Monroe County Climate Action Plan (11/2013)	http://www.monroecounty-fl.gov/DocumentCenter/View/5971
CE-2	Actions	2	Require GHG emissions to be considered in broader local government planning processes and decision-making	Islamorada Comprehensive Plan Policy 1-4, 5.6	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
				Environmental Sustainability Plan Sept. 2013	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCsQFjAB&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2F2013_sustainability.pdf&ei=cnsGVP_dJMXlgwTtgYLOAQ&usg=AFQjCNEdcj2gLNhNGL01ZC4ocVwW_flgMw&bvm=bv.75775273,d.eXY
				Environmental Sustainability Policy For Islamorada Village of Islands Employees	http://www.islamorada.fl.us/newsmanager/userfiles/file/Sustainability/Employee_Environmental_Sustainability_Policy_082708_2.pdf
				Anti-Idling Policy	http://www.islamorada.fl.us/newsmanager/userfiles/file/Sustainability/Anti_Idling_Policy.pdf
				Resolution 07-06-33	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FResolutions%2F07-06-33.pdf&ei=vHsgVMrwCozMegSRwLG4AQ&usg=AFQjCNFvOqSUrsE6WRuDQ1TZKrKgWgqUmA&bvm=bv.75775273,d.eXY
				Resolution 07-11-68	http://www.islamorada.fl.us/Newsmanager/userfiles/file/Resolutions/071168.pdf
				Monroe County Comprehensive Plan Update Energy (7/11)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCYQFjAB&url=http%3A%2F%2Fkeyscompplan.com%2Fsystem%2Fwp-content%2Fuploads%2F2010%2F02%2F16.0-Energy-Conservation-and-Climate2.pdf&ei=dHwgVK6vKNLEggSpoyDwAQ&usg=AFQjCNHlFCXRnHj-8DPgT3oU0FTnv3T1g&bvm=bv.75775273,d.eXY&cad=rja
				Monroe County 2010 Comprehensive Plan Evaluation and Appraisal Report (5/12)	http://keyscompplan.com/facts-information-resources/comprehensive-plan-documents/
CE-2	Actions	3	Create an education and outreach campaign to engage citizens and businesses in GHG reduction efforts	Islamorada Matters	http://www.islamoradamatters.com/

CE-2	Actions	4	Establish a climate change advisory group to engage diverse community stakeholders in identifying and implementing GHG reduction strategies	none	
CE-2	Actions	5	Modify local government operations and facilities in order to reduce GHG emissions and serve as a leader in the community		
CE-2	Actions	6	Adopt energy efficiency regulations for buildings within the jurisdiction		
CE-2	Actions	7	Create incentives to improve reliance on distributed generation of renewable energy sources	Ordinance 08-12-07 Allows additional points for solar hot water heaters added to the BPAS scoring sheet in 2010.	http://www.islamorada.fl.us/Newsmanager/userfiles/file/Resolutions/0812107.pdf
CE-2	Actions	8	Implement specific programs and services or create facility upgrades that transition the community towards the use of alternatives modes of transportation and low-emissions vehicles		
CE-2	Actions	9	Implement specific programs and services or create facility upgrades that reduce waste in the community		
CE-3	Outcomes	1	Green Vehicles: Part 1: Demonstrate increased ownership of alternative fuel vehicles by residents over time --AND-- Part 2: Demonstrate increased ownership of fuel-efficient vehicles by residents over time	Environmental Sustainability Plan Sept. 2013 (fuel efficient fleet upgrades)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCsQFjAB&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2F2013_sustainability.pdf&ei=cnsGVP_dJMXlgwTtgYLOAQ&usg=AFQjCNEdcJ2gLNhNGL01ZC4ocVwW_flgMw&bvm=bv.75775273.d.eXY
CE-3	Outcomes	2	Electrical Energy Supply: Demonstrate that the community receives a portion of its overall energy supply from renewable energy sources	FKEC Solar Energy	http://www.fkec.com/Green/solararrays.cfm
CE-3	Outcomes	1 - Bonus	Demonstrate a decreased percentage of residents who own motor vehicles		
				Monroe County, Florida Energy Efficiency and Conservation Strategy (11/11)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB4QFjAA&url=http%3A%2F%2Fmonroeconomy.civicplus.com%2FDocumentCenter%2FView%2F4041&ei=Lj0gVN7hHJS-ggTKo4HwBA&usg=AFQjCNE4i4zJMrAKc76HqkwHoG202HsufA&bvm=bv.75775273.d.eXY

CE-3	Actions	1	Adopt a community-wide plan that includes a comprehensive programmatic and policy approach to shift the community towards alternative fuels and renewable energy sources, especially for non-transportation uses	Monroe County Climate Action Plan (11/13)	http://www.monroecounty-fl.gov/DocumentCenter/View/5971
CE-3	Actions	2	Create a policy to ensure that the local government's transportation and non-transportation energy supplies increasingly come from renewable and alternative sources		
CE-3	Actions	3	Remove zoning, height, and other regulatory restrictions on the development of small- and medium-scale renewable energy installations and alternative fueling systems	Florida state law Statute 163.04, re: Energy devices based on renewable resources	http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0100-0199/0163/Sections/0163.04.html
CE-3	Actions	4	Establish partnerships with critical energy providers and consumers to match renewable energy sources with community energy needs	Partnership with the Florida Keys Electric Cooperative	http://www.fkec.com/Cooperative/
CE-3	Actions	5	Adopt renewable energy or alternative fuel targets for locally owned facilities and vehicles		

CE-3	Actions	6	Create incentive programs to support the development of renewable and alternative fuel infrastructure		
CE-3	Actions	7	Use a feed-in tariff or other financial mechanisms to increase the mix of renewable energy sources supplied to residents	None per TJ at FKEC	
CE-3	Actions	8	Run a net-metering program that encourages the development of small scale renewable energy sources	FKEC Net Metering Programs	http://www.fkec.com/Green/interconnectivity.cfm
CE-3	Actions	9	Work with state and regional partners to electrify truck stops to reduce idling and unnecessary emissions		
CE-3	Actions	10	Install electrical vehicle charging stations	none	
CE-3	Actions	11	Build the necessary distribution infrastructure to support further investment in renewable energy sources	FKEC Solar Arrays Constructed	http://www.fkec.com/Green/solararrays.cfm
CE-4	Outcomes	1	Energy Efficiency: Demonstrate incremental progress towards achieving an 80% reduction by 2050 in the energy use of industrial sector operations	3% reduction from 2005 to 2012	

CE-4	Outcomes	2	Water Efficiency: Demonstrate incremental progress towards achieving an 80% reduction by 2050 in the water use of industrial sector operations	<i>we don't have this data</i>	
CE-4	Actions	1	Adopt a plan designed to improve the resource efficiency of the community's industrial sector	Nothing here	
CE-4	Actions	2	Adopt policies that promote shifts to improved data collection	CityView Resolution passed in 2013	
CE-4	Actions	3	Adopt regulations or codes that promote the industrial sector to reduce energy and water use		
CE-4	Actions	4	Partner with organizations to encourage the collection and reporting of energy and water use data from the industrial sector	Numerous partnership, including adaptation behavior in the face of global climate change: Survey responses from experts and decision makers serving the Florida Keys. Article from Ocean and Coastal Management Journal	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCcQFjAB&url=http%3A%2F%2Fsanctuaries.noaa.gov%2Fscience%2Fsocial-economic%2Fflorida-keys%2Fpdfs%2Fclimatefilevs_main.pdf&ei=NzP-U-2MC4fboASp_4CwDA&usq=AFOjCNEPBFgyvfZ6lqiDYWYNWpRO0ehyrQ&bv=m:bv.74035653.d.cGU&cad=ria
CE-4	Actions	5	Work collaboratively with local industrial sector leaders to set local targets and strategies to reduce energy and water use		
CE-4	Actions	6	Create training and educational opportunities for industrial sector employees to learn about current best practices and techniques for reducing energy and water use		
CE-4	Actions	7	Administer programs that support the industrial sector's transition to less energy and water intensive practices		
CE-4	Actions	8	Create financial incentives or industry-focused challenges to encourage companies to reduce the intensity of their resource consumption		
CE-4	Actions	9	Develop the necessary infrastructure for industries to transition to less resource intensive practices		
CE-5	Outcomes	1	Energy Efficiency: Demonstrate incremental progress towards achieving an 80% reduction by 2050 in the energy use intensity of the community's building stock	KH says we don't have data to support this	
CE-5	Outcomes	2	Water Efficiency: Demonstrate incremental progress towards achieving an 80% reduction by 2050 in the water use intensity of the community's building stock		

CE-5	Outcomes	3	<p>Green-Certified Building Stock: Part 1: Increase over time the percentage of non-residential buildings achieving certification in STAR-qualifying energy efficiency and green construction programs --AND-- Part 2: Increase over time the percentage of residential units achieving certification in STAR-qualifying energy efficiency and green construction programs</p>	2007 Building Projects (Community Center, Restroom Pavilion and Fire Station 19) equipped with energy efficient fixtures Administrative Center & Public Safety Headquarters constructed with energy efficient roof, energy efficient windows, energy efficient air conditioning	
CE-5	Actions	1	Adopt a building energy efficiency plan to improve the energy and water efficiency of commercial, residential, and institutional buildings in the community		
CE-5	Actions	2	Adopt or upgrade building codes to ensure that new and renovated buildings are more water and energy efficient	<p>Islamorada Comp Plan Policy 6-1.13.3: Address Energy Efficiency in Plans. http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf</p> <p>Islamorada Comp Plan Policy 6-1.13.4: Address Energy Conservation in Building and Construction. http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf</p> <p>Resolution No. 147-2010 adopts green building standards for county buidings Not Islamorada http://fl-monroecounty.civicplus.com/DocumentCenter/View/5006</p>	
CE-5	Actions	3	Adopt an energy and water use information disclosure ordinance requiring energy and water users to disclose consumption levels		
CE-5	Actions	4	Create an education and outreach campaign or challenge to engage citizens and businesses in energy and water efficiency efforts		
CE-5	Actions	5	Establish a committee to provide recommendations on policies related to resource efficiency in buildings OR integrate this role into the work of existing committees		

CE-5	Actions	6	Work with the local utilities to improve energy efficiency programs and increase sub-metering	FKEC Residential Rebate Program Standard Interconnection Agreement for Member-Owner Renewable Generation.	http://www.fkec.com/Green/rebate-2014.cfm https://www.fkec.com/pdf/PVAgreement_Tier1.pdf
CE-5	Actions	7	Train inspectors to enforce water and energy efficiency standards in adopted building codes		
CE-5	Actions	8	Create incentives to encourage the construction of energy and water efficient certified buildings		
CE-5	Actions	9	Create a program to help homeowners and renters upgrade to more energy and water efficient homes	Weatherization Assistance Program	http://fl-monroecounty.civicplus.com/index.aspx?NID=280
				Weatherization Assistance Program Memorandum of Understanding	http://fl-monroecounty.civicplus.com/DocumentCenter/View/6960
				Weatherization Flyer	http://fl-monroecounty.civicplus.com/Documentview.aspx?DID=1421
CE-5	Actions	10	Renovate local government buildings to improve energy and water use efficiency	FY 07-08 Employee Policy - replace equipment and appliances with EnergyStar models	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCEQFIAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2F2013_sustainability.pdf&ei=waQpVOptI7HgsATo_oCACA&usq=AFQjCNEdcJ2gLNhNGL01ZC4ocVwW_flgMw&bvm=bv.76247554.d.cWc
				Purchasing Policy 2013-14 updated to reflect this (cant find copy online) Reduced electrical consumption for municipal offices and parks by 11% during FY08-09 (anything newer)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCEQFIAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2F2013_sustainability.pdf&ei=waQpVOptI7HgsATo_oCACA&usq=AFQjCNEdcJ2gLNhNGL01ZC4ocVwW_flgMw&bvm=bv.76247554.d.cWc
CE-6	Preliminary Step		For Outcome 1: Select public infrastructure which comprises an estimated 50% of the community's infrastructure-based energy consumption		
CE-6	Preliminary Step		For Outcome 2: Select public infrastructure which comprises an estimated 50% of the community's infrastructure-based water consumption		
CE-6	Outcomes	1	Energy Efficiency: Demonstrate incremental progress towards achieving an 80% reduction by 2050 in energy use by selected public infrastructure		
CE-6	Outcomes	2	Water Efficiency: Demonstrate incremental progress towards achieving an 80% reduction by 2050 in water use by selected public infrastructure		
CE-6	Actions	1	Develop targeted strategies to improve the resource efficiency of	Monroe County, Florida Energy Efficiency and Conservation Strategy (11/11)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB4QFIAA&url=http%3A%2F%2Ffl-monroecounty.civicplus.com%2FDocumentCenter%2FView%2F4041&ei=Lj0gVN7hJUS-ggTKo4HwBA&usq=AFQjCNE4i4zJMrAKc76HqkwHoG202HsufA&bvm=bv.75775273.d.eXY

			public infrastructure systems	Monroe County Climate Action Plan (11/13)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB4QFJAA&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentCenter%2FView%2F5971&ei=Sv-U8ChF8vboASqYLoCw&usg=AFQICNGG6xVDCRHmUN60uaJIWSKbj5zZEg&bvm=bv.74035653,d.cGU
CE-6	Actions	2	Require public infrastructure managers to consider thorough energy and water consumption implications when designing and installing new infrastructure components		
CE-6	Actions	3	Adopt codes or design standards for new public infrastructure that will increase energy and water efficiency	Comp Plan Policy 6-1.13.6: Conserve Energy in Buildings and Construction. Islamorada, Village of in building, heating and cooling systems. The Village shall promote attendance at regional training workshops in energy efficiency in construction and continue to foster cooperative relationships between building trades, architects, engineers and building officials. The Village shall also consider the use of alternative sources for building, heating and cooling systems, including but not limited to solar power.	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
CE-6	Actions	4	Partner with state or regional entities that own or operate infrastructure within the jurisdiction to develop strategies to reduce energy and water usage	Islands shall enforce energy-efficient building codes and promote efficient energy conservation	http://www.fkaa.com/Strategic%20Plan%202011.2.pdf
CE-6	Actions	5	Engage public works and infrastructure managers in voluntary GHG reporting		
CE-6	Actions	6	Develop training programs for infrastructure operators on energy and water efficiency techniques		
CE-6	Actions	7	Make specific upgrades to infrastructure systems that will increase energy and water efficiency	2013 Environmental Sustainability Plan - Cistern installed at Fire Station 19 FY07-08	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCEQFJAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2F2013_sustainability.pdf&ei=waQpVOPti7HgsATo_oCACA&usg=AFQjCNEdcJ2gLNGL01ZC4ocVwW_flgMw&bvm=bv.76247554,d.cWc
CE-6	Actions	8	Increase sub-metering from specific infrastructure systems to collect better information on energy and water use	None	
CE-7	Outcomes	1	Total Solid Waste: Demonstrate incremental progress towards achieving a 100% reduction by 2050 in total solid waste generated within the jurisdiction that is disposed of via landfill or incinerator		
CE-7	Actions	1	Adopt a waste management plan that identifies the community's greatest sources of waste, sets formal waste reduction targets and establishes actions to help reach the community's waste reduction aims	Don't have	

CE-7	Actions	2	Adopt specific product bans that will significantly advance progress towards waste reduction goals	None in place currently - prohibited by state law	
CE-7	Actions	3	Create a public education campaign or a focused outreach effort to inform residents and businesses of their roles in achieving waste reduction targets	2013 Environmental Sustainability Plan - Community education programs mandated in all waste services contracts	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCEQFIAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2F2013_sustainability.pdf&ei=waQpVOptI7HgsATo_oCACA&usg=AFQjCNEdcJ2gLNhNGL01ZC4ocVwW_flgMw&bvm=bv.76247554.d.cWc
				Monroe County Reducing Waste by Reusing Resources: Keys Reuse Business Guide	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFIAA&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2Findex.aspx%3FNID%3D433&ei=vaUpVle4DclhsATl-ICwCw&usg=AFQjCNGiw69QKMpuu7l09Vq_ZSrkiG4EzQ&bvm=bv.76247554.d.cWc
				Monroe County Recycling Brochure (2013)	http://fl-monroecounty.civicplus.com/DocumentView.aspx?DID=1540
CE-7	Actions	4	Develop or participate in a regional coalition that enhances the community's ability to address waste management targets		
CE-7	Actions	5	Implement incentives or enforce regulations ensuring that residents and businesses are working toward community waste reduction targets		
CE-7	Actions	6	Provide services to enable residents and businesses to recycle and reduce their waste footprint	Advanced Disposal recycling, ewaste, oil disposal program	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&ved=0CDcQFIAE&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2Fnews%2F1-09-14_Oil.pdf&ei=TI_JVO-4K8OcNobKgZAG&usg=AFQjCNHpayUjowLz8UeABTITli-vYfAV-A&bvm=bv.84607526.d.eXY&cad=rja
CE-7	Actions	7	Collaboratively create and run at least 2 targeted recycling programs at key locations throughout the community	Hazardous Household Collection (HHC) Program – Islamorada 2015	http://www.islamorada.fl.us/newsmanager/userfiles/file/news/2015_HHC_Program.pdf
				No credit cause need 2	
CE-7	Actions	8	Operate at least 2 specific waste management programs for critical waste stream types found in the community, such as: organic waste, hazardous waste, electronic waste, and	Advanced Disposal recycling, ewaste, oil disposal program	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&ved=0CDcQFIAE&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2Fnews%2F1-09-14_Oil.pdf&ei=TI_JVO-4K8OcNobKgZAG&usg=AFQjCNHpayUjowLz8UeABTITli-vYfAV-A&bvm=bv.84607526.d.eXY&cad=rja
CE-7	Actions	9	Create a waste-to-energy conversion system for the community		
EAC-1	Outcomes	1	Creative Industries: Demonstrate that creative industries represent at least a 5% share of all businesses in the county	The LAI does not account for municipalities statistics. Therefore, In 2014 4.58% of all MC busnissess are in the Creative Industry .	http://www.artsindexusa.org/where-i-live?c4=12087
EAC-1	Outcomes	2	Attendance and Participation: Part 1: Demonstrate that at least 50% of adult residents in the county attend a live performing arts event annually --AND-- Part 2: Demonstrate that at least 30% of adult residents in the county visit an art museum annually	No information is available for the LAI for Islamorada, the Conty data is used.Part 1: LAI 20111-2013 adult population share attending live performing arts is 25.4%Part2:Most recent data (2011-2013) of adult population share of Monroe County Visiting Art Museum is 15.2%	http://www.artsindexusa.org/where-i-live?c4=12087

EAC-1	Actions	1	Adopt a strategic plan to protect, enhance, and expand the community's arts and cultural resources and strengthen creative industries	Florida Keys Council of the Arts Strategic Plan adopted 1998, revised and adopted January 2010, revised May 2013.	http://www.keysarts.com/about/pdf/FKCAStrategicPlan.pdf
EAC-1	Actions	2	Adopt percent-for-art ordinance requiring public art to be installed as part of new major public development projects	None found	N/A
EAC-1	Actions	3	Establish enterprise zones, arts or cultural districts, or overlay zoning that encourages businesses in the creative industries to cluster together and integrate with surrounding neighborhoods	In 2010, Islamorada established the Morada Way Arts & Cultural District who partners with Village and County Government, local businesses, and residents to provides a supportive platform for Artists work. The Morada Way Arts & Cultural District sustains its efforts through the ongoing and growing support of local businesses who serve as Art District PARTNERS. District Partners commit to \$100 each month (\$1200 a year). In return for this investment Partners are included in Third Thursday Art Walkabout marketing efforts, they receive (1) Partner sign as well as a monthly space at each Third Thursday Art Walkabout (value of \$40 each month). Partners also receive up to 8 entires into Morada Way U Art School Studio Groups to use as they wish.	http://moradaway.org
EAC-1	Actions	4	Collaborate with private, non-profit, or regional organizations to increase access to and participation in the arts	In addition to the Morada Way Arts and Cultural District Collaberation the Florida Keys Council of the Arts serves to Collaborate with private, non-profit, and regional organizations to increase access to and participation in the arts in Islamorada and throughout Monroe County and South Florida.	http://www.keysarts.com
EAC-1	Actions	5	Track participation and attendance at major community arts and cultural events, performances, festivals, and programs	Under the umbrella of the Arts Council participation and attendance at major community arta nd cultural events are tracked and recorded in the FKCA Annual Report and Audit.	http://www.keysarts.com/about/pdf/AR-2012-13.pdf

EAC-1	Actions	6	Provide financial or logistical support to local arts, festivals, performances, or cultural tourism	See County wide FKAC funding program accomplishments. http://www.keysarts.com/about/pdf/AR-2012-13.pdf	
EAC-1	Actions	7	Hire local artists to create artwork, sculptures, or perform in public spaces	Although arts grant programs were found for students and the FKAC funds other programs, no direct hires by the Village were noted.	
EAC-1	Actions	8	Develop special programs to advance arts education that is aligned with core curriculum in all public schools, especially early elementary grades	<p>The Florida Keys Council of the Arts has several school programs such as The Artists in Schools Grant program that invites teaching artists in the performing, visual, literary or historical arts into the classroom. Teachers and teaching artists are encouraged to collaborate on creative projects together to enhance the existing curriculum, or to teach a new topic using the ARTS. All Monroe County public and private schools, as well as other organizations that serve children ages 5-18, are eligible to apply.</p> <p>Project and student goals:</p> <ul style="list-style-type: none"> •To use art of any genre to expand the students' understanding of concepts within a selected curriculum •To bring something new to the student's experience •To work with an artist, and to have him/her as a professional role model. •To increase knowledge of an art form •To be share new skills or techniques with students •To increase the student's sense of accomplishment and self-confidence •To enhance student's powers of perception and creative communication <p>Artist in Schools grants are up to \$2,000 each for artist's time and materials on a reimbursement basis upon</p>	http://www.keysarts.com/index.html and http://www.keysarts.com/grants_more/AIS-grantJuneDeadline.html
EAC-1	Actions	9	Provide entrepreneurial and workforce development training programs that serve artists, writers, designers, and other creative industries professionals	None found	

EAC-1	Actions	10	Ensure that major arts and cultural facilities are accessible to people with disabilities	Arts and Cultural facilities throughout Islamorada and the County are ADA accessible.	http://www.keysarts.com/artist_connections/gallery_guide.html
EAC-1	Actions	11	Protect and maintain local public artworks and cultural resources for future generations	The in 2010 the BOCC established the Monroe County Historic Preservation Commission. The MCHPC funds the the Historic Florida Keys Foundation which invests in historic preservation of art and civic structures throughout the Keys.	http://www.monroecounty-fl.gov/index.aspx?NID=317
EAC-2	Outcomes	1	Community Venues: Demonstrate that least 75% of residents live within 1 mile of a community venue that is open to the public and offers free services and/or events for residents	Hoping for mapping assistance from MCPA.	
EAC-2	Outcomes	2	Neighborhood Cohesion: Demonstrate an increased percentage of neighborhoods reporting positive levels of neighborhood cohesion through community surveys	Islamorada has not conducted any recent community surveys.	
EAC-2	Actions	1	Adopt neighborhood plans that guide future development, recommend strategies to create or preserve community venues, and address neighborhood-specific issues	Lower Keys Livable Communikeys Plan and four others.	http://www.monroecounty-fl.gov/Documentview.aspx?DID=173

EAC-2	Actions	2	Adopt zoning and development regulations that support or incentivize farmers markets, community gardens, and urban agriculture	None found	none found
EAC-2	Actions	3	Provide access to information about community issues, programs, services, and activities that is also accessible to non-English speaking residents	Islamorada, Village of Islands Village Notifications Sign-Up although services are not provided for non-english speaking residents and therefore do not meet Action Area requirement.	http://www.islamorada.fl.us/ealert.asp
EAC-2	Actions	4	Partner with neighborhood associations, community organizations, and local service providers to identify and address neighborhood-specific needs	The city government of Islamorada does not contribute technical expertise or funding to help neighborhood groups with identified neighborhood specific needs.	none found
EAC-2	Actions	5	Support neighborhood advisory councils to encourage dialogue on community issues and build the social capital of neighborhoods	Islamorada Community Character Task Force was recently formed in 2014 as an appointed committee in order to gather ideas and input about the unique community character of Islamorada that people want to protect and enhance. The Task Force will discuss strategies regarding commercial development regulations that may help to preserve the desired community character of the Village. The Planning Department provides staff for the Committee. May meet Action Area criteria.	http://www.islamorada.fl.us/CCTF_Committee.asp
EAC-2	Actions	6	Establish a department with staff assigned to work as liaisons with specific neighborhoods	Islamorada Community Character Task Force that is staffed by the Planning Department. The Task Force was created to gather ideas and input about the unique community character of Islamorada that people want to protect and enhance. The Task Force will discuss strategies regarding commercial development regulations that may help to preserve the desired community character of the Village. MAY not meet the criteria as the task force is temporary and does not have an annual report or 3 years of historical info complete the data required.	http://www.islamorada.fl.us/CCTF_Committee.asp
EAC-2	Actions	7	Provide direct funding and management of at least 2 types of community and neighborhood venues	Islamorada government funds and maintains Founders Park and Plantation Yacht Harbor Marina: Offers a public beach with watersports or a serene nature walk on 42 acres of open space within the 42 acres we have 83 slips in our marina. Park amenities include sports fields, tennis, olympic size pool and dive complex, skate park, beach, playground and dog park. The Village is dedicated to the quality and maintenance of these facilities for visitors to the park and marina for both residents and tourists.	http://www.islamorada.fl.us/pyh.asp

EAC-2	Actions	8	Provide capacity-building programs to enable community leaders and groups to self-organize, resolve issues, and cultivate leadership	Leadership MonroeCounty is open to Village residents and is a 16 week program that teaches leasership skills while informing citizens about government and business and relationships and the local government's relationship to the State. The program was created in 1992 aand has aproximately 25 participants a year.	http://leadershipmonroecounty.org
EAC-2	Actions	9	Provide programs that support the development of positive, strong youth leaders, particularly in low-income and/or minority neighborhoods	The Islamorada Youth Council acts as an advisory board to the Village Council, representing the youth of Islamorada regarding youth issues and initiatives. The Youth Council promotes and encourages youth to become effective leaders in the community by helping shape the future of Islamorada	http://www.islamorada.fl.us/Youth_Council.asp
EAC-2	Actions	10	Provide financial or logistical support for publicly-accessible neighborhood events, activities, and programming, particularly in low-income and/or minority neighborhoods	None Found	http://www.islamorada.fl.us/newsmanager/userfiles/file/Budget/FY_14-15_Budget_Book.pdf
EAC-3	Outcomes	1	Reading Proficiency: Demonstrate at least 85% of third grade public school students meet or exceed reading proficiency standards	According to Greatschools.org Village Montesouri in 2013 had 86% of 4th grade readers proficient. The Action area criteria has been met for the Village school.	www.greatschools.org

EAC-3	Outcomes	2	Graduation Rate: Option A: Achieve a 90% average 4-year adjusted cohort high school graduation rate for all public schools in the jurisdiction --OR-- Option B: Demonstrate incremental progress towards a 90% average 4-year adjusted cohort high school graduation rate for all public schools in the jurisdiction in the past 3 years	Coral Shores High School has 71% high school graduation rate.	http://keysschools.schoolfusion.us/modules/news/announcements/news.phtml?aid=4036457
EAC-3	Outcomes	3	Graduation Rate Equity: Increase the average 4-year adjusted cohort high school graduation rate for all students in all public schools in the jurisdiction from selected underperforming groups of race/ethnicity, disability, English proficiency, or income	Coral Shores graduation rates have risen steadily over the past 4 years	http://keysschools.schoolfusion.us/modules/news/announcements/news.phtml?aid=4036457
EAC-3	Actions	1	Engage local education authorities, teachers, families, and young people to advance collaborative decision-making and a community-driven framework for improving education	The District Advisory Council (DAC) was established to advise the Superintendent with regard to the development and implementation of the School District's Strategic Plan and to serve as a major communication link between the district, the schools and the community	http://district-advisory-council.keysschools.schoolfusion.us/modules/groups/integrated_home.phtml?&gid=2978004&sessionid=7553aadd70d07a1b612cbe84a42ba9e7
EAC-3	Actions	2	Strengthen opportunities for parental and community involvement in schools	The District Advisory Council (DAC) was established to advise the Superintendent with regard to the development and implementation of the School District's Strategic Plan and to serve as a major communication link between the district, the schools and the community.	http://district-advisory-council.keysschools.schoolfusion.us/modules/groups/integrated_home.phtml?&gid=2978004&sessionid=7553aadd70d07a1b612cbe84a42ba9e7
EAC-3	Actions	3	Prepare an annual progress report for the public outlining the local school system's performance	Monroe County School District does not produce an annual progress report although demographic statistics are available on the website	www.keysschools.com

EAC-3	Actions	4	Provide funding or other resources to support Head Start programs in community	The School District has a Head Start Program. In FY 0211-2012 Head Start program operations: 1,754,749.00	http://headstart.keysschools.schoolfusion.us/modules/groups/integrated_home.phtml?&gid=3096228&SID=
EAC-3	Actions	5	Provide full-day kindergarten for low-income students and students with special needs	Established in 2010 the Early Learning Coalition of/Monroe is a nonprofit organization dedicated to ensuring early care and education for children in Miami-Dade and Monroe counties. Through a variety of affordable and innovative early education and voluntary pre-kindergarten programs, the Coalition serves children ages birth to 12 years old and their families. In 2012-2013 119 kindergarteners were enrolled in the program. Additionally the Sigsby Charter School (kindergarten program start 2011-12, approx 50 kids per grade) and Montessori Schools of Key West (est 1998) offer kindergarten programs for the gifted. The Action Area Criteria is met.	http://www.elcmdm.org/about_us/index.htm
EAC-3	Actions	6	Program or support after-school activities, tutoring, extended day-and/or summer programs for students who need additional academic assistance	All middle and high schools in the county have afterschool tutoring or care programs.	http://www.tutoringbycity.com/florida/tutoring_miami_fl.htm
EAC-3	Actions	7	Offer multiple pathways to graduation as a way to improve educational outcomes for students	1. Take Stock in Children not-for-profit organization (13-year history) provides college scholarships, mentors and educational support for low-income and at-risk youth in Monroe County. The mission of TSIC is to break the cycle of poverty through education. The primary objective is successful completion of secondary and post-secondary education. Academic support strategies guarantee scholarships. 2. Florida Keys Community College administers the GED for the county HS students if they do not go through the typical graduation program; and 3. the Lower Keys PACE program which provides an alternative public education for kids who have been expelled or suspended from their school without losing any school time.	http://take-stock-in-children.keysschools.schoolfusion.us/modules/groups/integrated_home.phtml?gid=1574212&sessionid=cefeb354108dad53b259c468a1851f00

EAC-3	Actions	8	Implement career pathway initiatives	<p>DUAL ENROLLMENT - Dual Enrollment is a program established by the Florida College System. Students earn both college credit and high school credit prior to high school graduation for courses successfully completed.</p> <p>DIVERSIFIED CAREER TECHNOLOGY The purpose of this program is to provide students with “student-centered” selected occupational skills through employment related instruction and paid, on-the-job training supervised by the employer and teacher/coordinator.</p> <p>APPLIED ENGINEER TECHNOLOGY The purpose of this program is to provide students with a foundation of knowledge and technically oriented experiences in the study of applied engineering and its effect upon our lives and the choosing of an occupation. The content and activities will also include the study of entrepreneurship, safety, and leadership skills. This program focuses on transferable skills and stresses understanding and demonstration of the techno- logical tools, machines, instruments, materials, processes and systems in business and industry. The content includes but is not limited to study in mechanical, electrical, civil, and environ- mental engineering disciplines.</p>	http://kwh.keysschools.schoolfusion.us/modules/groups/homepage/files/cms/1523243/File/Curriculum%20Guide%2020142015.pdf
EAC-4	Outcomes	1	<p>Local Historic District(s): Designate at least one local historic district with specific design standards and a process for reviewing new projects</p>	Historically designated buildings and lands are regulated in Islamorada by the Village of Islands local Historic Preservation Commission. The County has two local historic districts	
EAC-4	Outcomes	2	<p>Preserved Structures and Sites: Increase over time the annual number of eligible structures and sites designated as local historic landmarks, added to local historic districts, and/or rehabilitated, restored, or converted through adaptive reuse</p>		
EAC-4	Outcomes	3	<p>Green Retrofits: Increase over time the annual number of historic structures retrofitted or rehabilitated with energy efficiency or clean energy technologies</p>		
EAC-4	Outcomes	4	<p>Economic Impact: Demonstrate that historic preservation efforts have had a positive, measurable impact on the local economy</p>		

EAC-4	Actions	1	Create an inventory of designated and eligible historic structures and sites in the community (Bonus: Inventory includes archeological resources)	The Islamorada Historical and Archeological Resources Survey was adopted in 2009. 390 architectural sites and 29 more archeological sites were documented. Islamorada already had a handful of sites listed in the National Register of Historic Places, including the 1935 Hurricane Monument, Lignumvitae Key archaeological site and a few shipwrecks.	http://www.islamorada.fl.us/Newsmanager/userfiles/file/Resolutions/09-06-48_reso.pdf
EAC-4	Actions	2	Adopt a historic preservation plan that establishes community priorities for preservation	There is no Historic Preservation Plan that establishes local priorities for preservation.	None found
EAC-4	Actions	3	Adopt a historic preservation ordinance that establishes procedures for designation of local historic districts and landmarks and authorizes establishment of a historic preservation commission	<p>Islamorada Ordinance 02-14 was adopted in 2002 and most recently updated in 2007. It established Land Development regulations for "Historic and Archeological Sites." The Ordinance gives the power of issuing Certificates of Appropriateness and recommending designation of historic structures as contributing to the Historic Preservation Commission. The purpose of the Ordinance (intent) is to:</p> <p>(1) Protect and enhance buildings, structures, improvements, landscape features, and archaeological resources of sites and districts which represent distinctive elements of the village's cultural, social, economic, political, scientific, prehistoric, and architectural history;</p> <p>(2) Safeguard the village's historic, cultural, archaeological, and architectural heritage, as embodied and reflected in such individual sites, districts, and archaeological areas;</p> <p>(3) Foster civic pride in the accomplishments of the past;</p> <p>(4) Protect and enhance the village's attraction to visitors and thereby support and stimulate the economy; and</p> <p>(5) Acknowledge historic property with minimal cost to the property owner.</p>	www.islamorada.fl.us/Newsmanager/userfiles/file/Ordinances/02-14.pdf https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest=%7B%22searchText%22:%22demolition%20by%20neglect%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentTypes%22:%5B%22CODES%22%5D,%22productIds%22:%5B%5D%7D&nodeId=PTIICOOR_CH30LADERE_ARTVIIENRE_DIV7HIARSI_S30-1692DE

EAC-4	Actions	4	Adopt land use, zoning, and design regulations that support and reinforce existing community character in older and historic neighborhoods and commercial areas, and promote development of sensitive, compatible infill	No zoning or design regulations have been adopted that are sensitive to the historic context of contributing properties.	None found
EAC-4	Actions	5	Collaborate with local non-profit or for-profit entities to support local events, recognition programs, and tourism efforts that celebrate and leverage the economic value of local historic resources	Historic Florida Keys foundation - Serves as the direct support Organization to the the Monroe County Historic Preservation Board since 1991. The Historic Florida Keys Foundation receives ongoing financial support from Monroe County, in exchange for assisting their Historic Preservation program. The organization promotes historic preservation in the Florida Keys through programming publications, preservation awards, tours of the Key West Cemetery, and historic markers. The Board of Directors selection criteria is done by five geographical regions with the largest representation being Key West. several Key Accomplishments in the past three yers include: Succesfully advocating for the preservation of the Old Seven Mile Bridge; Preservation and resoration of the the Sue Moore House (Marathon); and resoration of the Historic Western Union Flagship.	http://www.historicfloridakeys.org/historicfloridakeys/Mission_%26_History.html
EAC-4	Actions	6	Achieve Certified Local Government status, as recognized by the National Park Service	Islamorada Certified 02/19/2008	http://grants.cr.nps.gov/CLG_NEW/CLG_REVIEW/Get_All_CLG.cfm
EAC-4	Actions	7	Establish a demolition by neglect ordinance	Although Ordinance 02-14 adopted a definition of Demolition by Neglect it was in 2007 that Ordinance 07-21 created provision Sec. 30-1696(h) prohibiting demolition by neglect. It is the intent of this section to preserve from deliberate or inadvertent neglect the exterior features of such properties and the interior portions thereof when maintenance is necessary to prevent deterioration and decay of the property. All such properties shall be preserved against such decay and deterioration and shall be free from structural defects through prompt corrections of any of defects. Within the past 3 years no cases have been investigated. The Code Compliance/Building Department is responsible for the identification and enforcement action of the Ord. That	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest=%7B%22searchText%22:%22demolition%20by%20neglect%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentType%22:%5B%22CODES%22%5D,%22productIds%22:%5B%5D%7D&nodeId=PTIICOR_CH30LADERE_ARTVIIENRE_DIV7HIARSI_S30-1692DE
EAC-4	Actions	8	Provide incentives to encourage the rehabilitation of historic buildings and reinvestment in older and historic neighborhoods and commercial areas	No incentives, financial or otherwise, are practiced or codified, for rehabilitation of historic structures.	None found

EAC-4	Actions	9	Provide local financial assistance to low- and moderate-income homeowners, residents, seniors, and/or businesses vulnerable to rising real estate values and maintenance costs associated with historic preservation	No financial assistance programs related to historic preservation exist.	None Found
EAC-4	Actions	10	Provide technical assistance to property owners or non-profit organizations seeking to add properties or historic districts to the National Register of Historic Places or the comparable state register	EAC-4 (10) We do provide some technical assistance and would go out of our way to help assist someone if they were interested in adding their property to the national historic register. We have one property that is locally designated as a historic structure (resolution attached). If you need more info, let me know and I will get it to you.	None found
EAC-5	Outcomes	1	Diverse Community Representation: Demonstrate that appointments to local advisory boards and commissions reflect the racial and ethnic diversity of the community	Desired outcome of racial and ethnic composition on Boards within 10% of same in community unattainable	
EAC-5	Outcomes	2	Social and Cultural Events: Demonstrate that public events celebrating social and cultural diversity are held in the community	Does not attain desired Outcome	
EAC-5	Actions	1	Conduct an assessment of the community's social and cultural diversity to inform local government actions	Action is possible but will take significant resources to complete a diversity assesment	

EAC-5	Actions	2	Use the Diversity Index to analyze the effectiveness of policies, programs, service delivery, and infrastructure investments	Action is possible but will take stime to complete Diversity Index	
EAC-5	Actions	3	Adopt a policy to encourage diversity in local government appointments	Islamorada does not currently have a policy that encourages diversity in local government appointments to Boards and Commissions. Does the Village want to adopt one?	
EAC-5	Actions	4	Promote events and programs that recognize and celebrate social and cultural diversity in the community	Nautical Flea Market; Raegae Fest; Blues Fest etc. many others through ICE	
EAC-5	Actions	5	Provide equity and diversity training for local government staff	Equity and diversity training is not provided to local government staff	
EAC-5	Actions	6	Establish an office within the jurisdiction to ensure access, equity, and inclusion in policies, programs, procedures, and service delivery	There is no office witin the juristiction that ensures access equity and inclusion in policies, programs and procedures.	
EAC-5	Actions	7	Provide leadership and training programs that encourage and support representation on local boards and commissions reflective the community's diversity	There are no leadership and training programs in the juristiction that encourage and support diverse representation on local boards and commissions.	
EAC-5	Actions	8	Provide programs that support the development of positive, strong youth leaders, particularly in low-income and/or minority neighborhoods	Keys to Be the Change, Inc. (several programs), Boys & Girls Club of the Keys Area, Inc. AND Bahama Village Mentoring Program, Key West Idle Hands Program	http://keysweekly.com/42/project-idle-hands/ http://www.apsmc.org/APSMC_NEWSITE/site/whoweare.html http://www.islamorada.fl.us/Youth_Council.asp
EAC-5	Actions	9	Provide financial or logistical support to programs, activities, or events that celebrate and deepen understanding and respect for the community's diversity	The local government has not provided financial support that is evidenced in the fiscal year budget; although there may have been support from the Manager's/Administrators discretionary budget or labor provided by the Public Works Department for activities that support the community's diversity. Request for information from lopcal government necessary.	

EE-1	Outcomes	1	Voting: Part 1: Increase the percentage of registered voters over time --AND-- Part 2: Increase the percentage of voters participating in local elections over time		
EE-1	Outcomes	2	Volunteerism: Option A: Demonstrate that at least 30% of residents in large jurisdictions or 35% of residents in small or mid-sized jurisdictions volunteered in the past year --OR-- Option B: Demonstrate an increase in the percentage of residents who volunteered over the past 2 years	21% in 2013, decreasing since 2011	
EE-1	Outcomes	3	Empowerment: Option A: Demonstrate that at least 50% of residents believe they are able to have a positive impact on their community based on a local survey --OR-- Option B: Increase over time the percentage of residents who believe they are able to have a positive impact on their community based on local surveys		
EE-1	Actions	1	Adopt a policy to encourage diversity in local government appointments to advisory boards and commissions		
EE-1	Actions	2	Adopt guidelines to instruct local government agencies or departments about how to successfully engage residents		
EE-1	Actions	3	Conduct education campaigns about the electoral process, voter registration and participation, and other issues related to civic literacy	Monroe County Supervisor of Elections Voter Guide	http://www.keys-elections.org/LinkClick.aspx?fileticket=blqwRijOERw%3d&tabid=4263&portalid=63
				Monroe County Supervisor of Elections website	http://www.keys-elections.org/
				Florida Keys Democrats Facebook	https://www.facebook.com/floridakeysdemocrats
EE-1	Actions	4	Partner with business, civic, and neighborhood organizations to increase voter registration and turnout OR volunteer opportunities and participation OR ongoing civic engagement in local decision-making		
EE-1	Actions	5	Provide training to local government agencies or departments on successful public engagement techniques	Baker Communication provided Customer Service Training to the Planning and Building Department on 6/24/13	
EE-1	Actions	6	Establish regular, ongoing opportunities for elected officials and/or senior government staff to meet with residents to answer questions and listen to concerns	Town Hall meetings provides annually as documented in 2014/15, 2013/14 and 2012/13 budget books	
EE-1	Actions	7	Create a volunteer program for residents to assist the local government with special events, services, and operations	Monroe County Library Volunteer Program - Includes Islamorada Library	http://www.monroecounty-fl.gov/index.aspx?NID=212

EE-1	Actions	8	Provide support and resources to local community groups to help them achieve their missions	Village contributes funding to Morada Way (2013) and other groups	
EE-1	Actions	9	Create a mock youth voting program to teach children about democracy, elections, and the importance of voting	Several mock election programs run annually throughout the Keys.	Supervisor of Elections Key Largo Office assist with annual mock voting at Key Largo School. Mock voting to occur most recently involved over 100 students. Mock youth voting programs throughout the Florida Keys, including this one, educate students about the electoral process and what it means to vote in local, state and national elections. It is hoped that this education will increase voter turnout as children reach the age of majority since they have been exposed to the process and understand the importance of their civic duty to vote.
EE-2	Outcomes	1	Resolution of Complaints: Demonstrate that all civil and human rights complaints in the past 3 years have been investigated and violations redressed in a timely manner		
EE-2	Actions	1	Adopt specific policies or amend the jurisdiction's charter to specifically protect the civil and human rights of all community residents		
EE-2	Actions	2	Establish an office within the jurisdiction with the authority and capacity to investigate civil and human rights complaints		
EE-2	Actions	3	Conduct local public education campaigns regarding civil and human rights, such as the process for filing complaints		
EE-2	Actions	4	Establish an independent civil and/or human rights commission to ensure access, equity, and inclusion		
EE-2	Actions	5	Provide training for police officers focused on non-discrimination and conflict prevention		
EE-2	Actions	6	Operationalize the local government's civil and human rights policies in programs, services, and operations		
EE-2	Actions	7	Provide language translation or interpretation services to ensure that residents have access to information about local government programs, services, and operations		
EE-3	Preliminary Step		Identify the community's prioritized environmental justice sites for evaluation in this Objective		

EE-3	Outcomes	1	Reduced Risk and Exposure: Demonstrate progress towards achieving targets for prioritized environmental justice sites identified in a locally-adopted plan		
EE-3	Actions	1	Create an Environmental Justice Collaborative Group (EJCG) composed of residents, stakeholders, and environmental professionals to assess risk and exposure, set targets, implement projects, and monitor improvements		
EE-3	Actions	2	Assess the risk and exposure to toxins related to the community's prioritized environmental justice sites		
EE-3	Actions	3	Adopt an environmental justice plan aimed at reducing polluted and toxic environments in the jurisdiction		
EE-3	Actions	4	Establish targets for each of the prioritized environmental justice sites related to air or water improvements		
EE-3	Actions	5	Incorporate environmental justice criteria and priorities into zoning, land use planning, permitting policies, and development of new projects		
EE-3	Actions	6	Create community benefit agreements (CBAs) for projects associated with prioritized environmental justice sites and proposed development projects with environmental justice concerns		
EE-3	Actions	7	Create an interdepartmental working committee within the local government to guide and support environmental justice activities		
EE-3	Actions	8	Monitor and enforce environmental regulations for existing facilities that impact environmental justice sites		
EE-3	Actions	9	Implement projects to reduce acute exposure to contaminants and risks associated with environmental justice sites		
EE-4	Outcomes	1	Equitable Access and Proximity: Demonstrate increased access and proximity by residents of diverse income levels and race/ethnicity to the following community facilities, services, and infrastructure: • Public transit facilities and service levels • Public libraries • Public schools • Public spaces • Healthful food • Health and human services • Digital access or high speed internet • Urban tree canopy • Emergency response times		

EE-4	Actions	1	Adopt an equity plan that evaluates current conditions in the community and establishes targets to improve equitable access and proximity in at least the categories identified in the outcome measure		
EE-4	Actions	2	Adopt an equity or social justice policy that establishes a clear commitment to equity in local government decision-making, activities, and investments		
EE-4	Actions	3	Promote events and programs that recognize and celebrate social and cultural diversity in the community	Nautical Flea Market; Raegaee Fest; Blues Fest etc. many others through ICE	
EE-4	Actions	4	Publicize efforts to improve equitable access and proximity to community facilities, services, and infrastructure		
EE-4	Actions	5	Establish partnerships that engage key community groups and stakeholders in activities to advance equitable access and proximity to facilities, services, and infrastructure		
EE-4	Actions	6	Provide equity and diversity training for local government staff		
EE-4	Actions	7	Modify the deployment of local programs and services to reduce disparities within the categories identified in the outcome measure		
EE-4	Actions	8	Construct new facilities and infrastructure in locations that reduce existing disparities within the categories identified in the outcome measure		
EE-5	Preliminary Step		Select at least 3 priority populations and up to 5 priority human services for evaluation in this Objective		
EE-5	Outcomes	1	Human Services Assistance: Reduce the percentage of people in selected priority populations who need assistance obtaining selected priority human services		

EE-5	Actions	1	Conduct a community needs assessment to identify priority service needs and resources, including the needs of priority populations	Monroe County Health Almanac 2013	http://www.floridahealth.gov/provider-and-partner-resources/community-partnerships/floridamapp/state-and-community-reports/monroe-county/_documents/monroe-cha.pdf
EE-5	Actions	2	Adopt a human services plan designed to guarantee that basic human needs are met in the community	Monroe County Transportation Disadvantaged Service Plan (2014)	http://www.healthcouncil.org/wp-content/uploads/2014/11/Monroe-County-Transportation-Disadvantaged-Service-Plan-14-15-FINAL.pdf
EE-5	Actions	3	Establish an advisory committee that provides ongoing consultation to local government departments and agencies responsible for providing priority human services		
EE-5	Actions	4	Develop public education campaigns to inform residents about available service programs to help meet basic needs	Monroe County Social Services Website	http://www.monroecounty-fl.gov/index.aspx?NID=140
				Monroe County Transit Information Packet	http://www.monroecounty-fl.gov/DocumentView.aspx?DID=553
				Bayshore Manor brochure	http://www.monroecounty-fl.gov/DocumentView.aspx?DID=550

EE-5	Actions	5	Implement information technology solutions to improve client support services and management		
EE-5	Actions	6	Monitor and evaluate the quality, comprehensiveness, and effectiveness of priority human services to selected priority populations		
EE-5	Actions	7	Equip human services personnel with the skills and training needed to effectively improve the well-being of the community's priority populations		
EE-5	Actions	8	Support the provision of high quality, priority human services in coordination with non-governmental service providers		
EE-5	Actions	9	Upgrade existing facilities or build new facilities to better provide needed human services		
EE-6	Outcomes	1	Poverty Reduction: Demonstrate progress towards no residents living below the poverty line by 2025		
EE-6	Outcomes	2	Equitable Poverty Reduction: Demonstrate a decrease over time in the percentage of residents living below the poverty line from at least 3 population subgroups		
EE-6	Actions	1	Adopt a community-wide plan to reduce poverty		
EE-6	Actions	2	Create a team of local government staff to work collaboratively and coordinate with non-governmental organizations to provide high-quality services and reduce poverty		
EE-6	Actions	3	Develop public education campaigns to inform residents about how to enroll in available service programs to help meet basic needs	Monroe County Social Services Website	http://www.monroecounty-fl.gov/index.aspx?NID=140

				Monroe County Transit Information Packet	http://www.monroecounty-fl.gov/DocumentView.aspx?DID=553
				Bayshore Manor brochure	http://www.monroecounty-fl.gov/DocumentView.aspx?DID=550
EE-6	Actions	4	Establish or support programs that reduce the costs of basic needs for low-income households	Rental and Medical Assistance Programs provide financial assistance to pay rent and for medical treatment.	http://www.monroecounty-fl.gov/index.aspx?nid=281
EE-6	Actions	5	Implement supportive workplaces programs for people living at or near the poverty line		
EE-6	Actions	6	Create programs to improve employment opportunities for low-income individuals by strengthening hard and soft work skills		
EE-6	Actions	7	Provide child development programs for children living at or near the local poverty line	The Early Learning Coalition of Miami-Dade/Monroe is a nonprofit organization dedicated to ensuring early care and education for children in Miami-Dade and Monroe counties.	http://www.elcndm.org/
EJ-1	Outcomes	1	Businesses: Option A: Demonstrate an increased number of business establishments in the county over time --OR-- Option B: Demonstrate an increased number of business establishments in the municipality over time		
EJ-1	Outcomes	2	Annual Sales: Demonstrate an increase in annual sales from businesses located in the jurisdiction over time		
EJ-1	Outcomes	3	Employment: Part 1: Demonstrate an increase in the percentage of residents employed over time --AND-- Part 2: Demonstrate a decrease in the unemployment rate of residents over time		
EJ-1	Actions	1	Negotiate project labor agreements, community benefit agreements, and local hiring agreements	LDR Article VI Purchasing and Contract Section 2-349	https://www.municode.com/library/fl/monroe_county/codes/code_of_ordinances?searchRequest={%22searchText%22:%22local%20hiring%20agreements%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentTypes%22:[%22CODES%22],%22productIds%22:[]}&nodeId=CH2AD_ARTVIPUCO_52-349LOPRBI
EJ-1	Actions	2	Formally engage with the business community on a regular basis to improve conditions and address specific needs		

EJ-1	Actions	3	Appoint an advisory body to provide recommendations and represent the business community in local decision-making		
EJ-1	Actions	4	Engage in regional coordination with other governmental, public, private, and non-governmental entities to attract and retain businesses in the region	South Florida Regional Planning Council Partnership	http://www.sfrpc.com/Regional%20Partnership.htm
EJ-1	Actions	5	Utilize tax incentives to retain or expand businesses, including property tax abatement, local sales tax rebates, and/or tax increment financing (TIF)		

EJ-1	Actions	6	Provide direct financial assistance to businesses in the form of municipal bonds, grants, or loans		
EJ-1	Actions	7	Support business development activities in special investment zones, such as Business Improvement Districts, Enterprise Zones, or other similar districts	None	
EJ-1	Actions	8	Provide direct services and trainings tailored to the needs of the business community		
EJ-1	Actions	9	Provide focused support, resources, and services to young entrepreneurial companies through business incubators		
EJ-2	Outcomes	1	Community Resource Efficiency: Demonstrate decreased greenhouse gas (GHG) intensity over time		
EJ-2	Outcomes	2	Green-Certified Building Stock: Part 1: Increase over time the percentage of non-residential buildings achieving certification in STAR-qualifying energy efficiency and green construction programs --AND-- Part 2: Increase over time the percentage of residential units achieving certification in STAR-qualifying energy efficiency and green construction programs		
EJ-2	Outcomes	3	Renewable Energy Use: Demonstrate an increased number of renewable energy certificates (RECs) purchased by residents annually		
EJ-2	Outcomes	4	Green Vehicles: Part 1: Demonstrate increased ownership of alternative fuel vehicles by residents over time --AND-- Part 2: Demonstrate increased ownership of fuel-efficient vehicles by residents over time		

EJ-2	Actions	1	Amend existing local economic policies and strategies to increase market demand for green products and services		
EJ-2	Actions	2	Adopt policies and regulations that increase overall market demand for green buildings and associated materials, renewable energy products and infrastructure, and recyclable products		
EJ-2	Actions	3	Review and amend zoning regulations to remove barriers or provide flexibility for green businesses		
EJ-2	Actions	4	Create a green purchase policy to ensure that the local government's transportation and non-transportation energy supplies increasingly come from renewable and alternative sources	2013 Environmental Sustainability Plan (encourages staff carpooling, purchased 2 bikes for staff use between government buildings)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=ria&uact=8&ved=0CB0QFJAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2F2013_sustainability.pdf&ei=p8_rU7QoNM-cyAS13oLQAQ&usq=AFOjCNEdcJ2gLnNGL01ZC4ocVwW_flgMw&bvm=by_72938740,d.aWw
EJ-2	Actions	5	Partner with other local governments, community groups, and private entities in the region to articulate an overarching sustainable economic development strategy and work collaboratively to increase demand for green products and services		
EJ-2	Actions	6	Create educational materials to define the larger vision of economic sustainability as one that proactively fosters green businesses, green jobs, and green practices	GLEE	

EJ-2	Actions	7	Create an environmentally preferable purchasing program for local government procurement of safe, healthy, and environmentally responsible products		
EJ-2	Actions	8	Create programs to help businesses transition to new green practices	Got Your Bags Florida Keys Program - for numbers see http://keysglee.com/our-programs/gyb/whos-taken-the-pledge/	http://monroe.ifas.ufl.edu/pdf/community/got_your_bags_fk.pdf
EJ-2	Actions	9	Implement a green business promotion program	GLEE Green Business Program	
EJ-2	Actions	10	Install electrical vehicle charging stations		
EJ-3	Outcomes	1	Community Self-Reliance: Demonstrate that 50% of <i>import sectors</i> have increasing <i>location quotients</i> over the past 3 years		
EJ-3	Outcomes	2	Local Financial Institution Deposits: Increase the total funds deposited in locally-owned and operated financial institutions over time		

EJ-3	Actions	1	Conduct an assessment of local economic conditions, including economic leakage and targeted sectors for future investment	Linking the Economy and the Environment of Florida Keys/Key West (2010)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCMQFjAB&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentView.aspx%3FDID%3D756&ei=Alt8VJJo2EgwTxm4PgDQ&usg=AFQjCNHiqn6D2OpJcCeJCWEDkUrqclPyYQ&bvm=bv.80642063,d.eXY
EJ-3	Actions	2	Adopt an economic localization plan to increase local production for local consumption and export	Economic Diversification Advance Planning for Monroe County, FL (2006)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CDQQFjAE&url=http%3A%2F%2Fwww.keywestcity.com%2Fegov%2Fdocuments%2F1287517943_98327.pdf&ei=qI58VOG_FlajNsPYvgj&usg=AFQjCNG_ic-TTkCFhdWH66X-5dz1RSnf6w&bvm=bv.80642063,d.eXY&cad=rja
EJ-3	Actions	3	Promote purchasing preferences for locally-produced goods and services in anchor institutions, including the local government	Code of Ordinances Sec. 2-327. - Guidelines. Local preference	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?nodeId=PTIICOOR_CH2AD_ARTIVFI_DIV2PU

EJ-3	Actions	4	Create or support promotional campaigns to bank locally, buy locally, or buy from small and independent businesses and retailers		
EJ-3	Actions	5	Provide incentives for businesses that use materials produced within the region and sell their products within the region		
EJ-3	Actions	6	Provide support services to targeted sectors to strengthen value chain infrastructure and develop market channels		
EJ-3	Actions	7	Connect entrepreneurs and business owners with lenders and investors to facilitate investment in the local economy		
EJ-3	Actions	8	Support import substitution strategies that positively impact key sectors of the local economy		
EJ-4	Outcomes	1	Median Household Income: Increase real median household income over time		
EJ-4	Outcomes	2	Living Wages: Option A: Demonstrate that 90% of median household incomes in the jurisdiction meet or exceed the living wage standard --OR-- Option B: Demonstrate that 90% of households are economically self-sufficient		
EJ-4	Actions	1	Enact a living wage policy for local government employees and contractors		
EJ-4	Actions	2	Enact family-friendly workplace policies for all local government employees that include at least 2 of the following benefits: paid sick days, paid family leave, flexible scheduling, job sharing, and easily available childcare		
EJ-4	Actions	3	Require that local government contractors provide at least 2 of the following benefits to their employees: paid family leave, flexible scheduling, job sharing, and easily accessible childcare		
EJ-4	Actions	4	Align local economic development policy strategies with workforce development programs		
EJ-4	Actions	5	Support living wage campaigns in the community		

EJ-4	Actions	6	Support a Best Places to Work campaign to recognize local businesses that support employees and their families		
EJ-4	Actions	7	Maintain collective bargaining relationships with public employee labor organizations that represent local government workers	Collective Bargaining Agreement between Monroe County BOC and Professional Firefighters of Monroe County, International Association of Firefighters, Local 3909 (2008)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentview.aspx%3FDID%3D936&ei=HAX-VJL6MsuqNq_QgrAD&usg=AFQjCNFW5mypoG2DUpVKq8YrJJKS9ucN7A&bv=m=0.80642063,d.eXY&cad=rja
				Collective Bargaining Agreement between Monroe County and Teamsters (2013)	http://fl-monroecounty.civicplus.com/AgendaCenter/ViewFile/Item/4637?fileID=4516
EJ-4	Actions	8	Provide training programs and assistance to local businesses to encourage them to provide family-friendly workplace policies and extended benefits		
EJ-4	Actions	9	Provide job training and assistance programs for employees and employers in professions or sectors where wages are below the living wage		
EJ-4	Actions	10	Enforce the living wage policy with a living wage officer or equivalent function		
EJ-5	Preliminary Step		Locally define at least 3 targeted industry sectors for evaluation		
EJ-5	Outcomes	1	Targeted Industry Businesses: Demonstrate an increase in the annual sales or total value of businesses in <i>targeted industry sectors</i> relative to growth in non-target industries, compared to a baseline year not predating 2000		
EJ-5	Outcomes	2	Targeted Industry Sales: Demonstrate an increase in the total number of new businesses in <i>targeted industry sectors</i> relative to growth in non-targeted industries, compared to a baseline year not predating 2000		
EJ-5	Outcomes	3	Targeted Industry Employment: Demonstrate an increase in total employment in <i>targeted industry sectors</i> relative to growth in non-target industries, compared to a baseline year not predating 2000		
EJ-5	Actions	1	Conduct a local economic analysis or participate in the development of a	South Florida COMPREHENSIVE ECONOMIC	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&ved=0CFMQFjAI&url=http%3A%2F%2Fwww.sfrpc.com%2FCEDS%2FSouthFl

EJ-5	Actions	2	Invest in market studies and research to support the continued growth and expansion of targeted industry sectors		
EJ-5	Actions	3	Coordinate or support local and regional associations or formal networks of related businesses in the targeted industry sectors		
EJ-5	Actions	4	Coordinate with universities, community colleges, the local Workforce Investment Board, private firms and other community stakeholders to align research, workforce development, and resources to support targeted industry sectors	South Florida Workforce Investment Board created by Resolution R-315-06 in March 2006 between Miami-Dade and Monroe Counties - extended by interlocal agreement through 2012. South Florida Workforce Investment Board is a public-private partnership that establishes state and federally funded workforce development and training policies for Miami-Dade and Monroe counties. South Florida Workforce Investment Board's services and resources are available to everyone at no cost through a network of career centers located throughout the region.	http://www.careersourcesfl.com/interlocalAgreement/Interlocal%20Agreement021908.pdf
EJ-5	Actions	5	Educate residents about the economic impact of targeted industry sectors in the community		
EJ-5	Actions	6	Use tax incentives to attract, retain, or expand businesses in targeted industry sectors		
EJ-5	Actions	7	Provide direct financial assistance, such as local bonds, grants, or loans, to attract, retain, or expand businesses in targeted industry sectors		
EJ-5	Actions	8	Provide capacity building services and support for professionals in emerging and existing targeted industry sectors		

EJ-6	Outcomes	1	Trained Workforce: Demonstrate improvements in workforce training outcomes for participants over the past 3 years		
EJ-6	Outcomes	2	Workforce Mobility: Demonstrate increased post-secondary educational attainment in the community over time		
EJ-6	Actions	1	Adopt a workforce development plan or comprehensive strategy to educate, train, and prepare residents for local employment opportunities	South Florida Two-Year Workforce Services Plan (2009-11)	http://www.careersourcesfl.com/2009_2011TwoYrPlan/AdultProgramPlanFinal.pdf
EJ-6	Actions	2	Align local economic development policy strategies with workforce development programs		
EJ-6	Actions	3	Require local government contractors and entities receiving financial incentives to prioritize hiring local residents		
EJ-6	Actions	4	Participate in and promote community workforce agreements or project labor agreements		
EJ-6	Actions	5	Create a workforce development committee to align post-secondary education, workforce development training programs, and economic development strategies		
EJ-6	Actions	6	Create data sharing agreements between the local government and private sector employers to maximize the availability and use of data in economic and workforce development planning		
EJ-6	Actions	7	Produce an annual report that tracks workforce readiness performance measures		
EJ-6	Actions	8	Provide support services and training tailored to the needs of the local workforce		
EJ-6	Actions	9	Support expansion of community college programs to address the educational and training needs of the local workforce		
EJ-6	Actions	10	Invest in community college facilities and capital improvements to accommodate residents and members of the local workforce		

HS-1	Outcomes	1	Active Adults: Demonstrate that 21% or less of adults aged 20+ report no leisure time physical activity within the past month	18% so get this outcome point	http://www.countyhealthrankings.org/app/florida/2014/rankings/monroe/country/outcomes/overall/snapshot
HS-1	Outcomes	2	Active Kids: Option A: Increase the percentage of high school students that are physically active for 60 minutes per day on 5 or more days --OR-- Option B: Increase the percentage of public schools that require some form of physical activity daily, such as physical education classes or recess		
HS-1	Actions	1	Include a chapter, section, or plan element focused on active living or active transportation in the comprehensive plan or transportation plan	Islamorada Comprehensive Plan Chapter 2 Transportation Element Bicycle/Pedestrian Transportation Master Plan Resolution 08-12-100 approving Transportation Demand Management Program	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FResolutions%2F0812100.pdf&ei=e6kpVPX1LM3IsAstloHQCQ&usg=AFQjCNHJB1d0A85CUS8pFuxl4_vomHulBQ&bvm=bv.76247554,d.cWc&cad=rja
HS-1	Actions	2	Require or incentivize bicycle and pedestrian amenities in new major development projects in high-density, mixed-use areas or near transit stations	Code of Ordinances Sec. 30-852. - Off-street parking.	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest={%22searchText%22:%22bicycle%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentTypes%22:[%22CODES%22],%22productIds%22:[%22]}&nodeId=PTIICOR_CH30LADERE_ARTVSCDIUSDEST_DIV7OREPALODRST_S30-852OREPA
HS-1	Actions	3	Create guidelines to encourage incorporation of active building design features in new public, commercial, office, and multi-family residential buildings		
HS-1	Actions	4	Establish school siting guidelines that give preferential considerations to locations that maximize the number of students who can walk or bicycle safely to school		
HS-1	Actions	5	Create an advisory board to advise the local government on issues related to planning, policies, code requirements, and other actions affecting active living in the community	Islamorada Local Planning Agency	http://www.islamorada.fl.us/ILPA_Committee.asp
HS-1	Actions	6	Achieve recognition as a <i>Bicycle-Friendly Community</i> or <i>Walk-Friendly Community</i>		

HS-1	Actions	7	Appoint a <i>physical activity</i> specialist within the local health department has a physical activity specialist on staff to serve as a liaison with relevant local government departments or agencies	Monroe County Health Department has appointed the following physical activity specialists: 1) Wellness Coordinator 2) Community Outreach Coordinator	http://monroe.floridahealth.gov/programs-and-services/community-health-planning-and-statistics/chip/index.html
HS-1	Actions	8	Host or partner with community groups to support at least 2 programs that encourage active living for adults and kids	Monroe County Bicycle Safety Days Program	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCMQFjAB&url=http%3A%2F%2Fwww.monroecounty-fl.gov%2FDocumentCenter%2FView%2F7876&ei=RMP0VOT8NJPcgwT4nYUJDQ&usg=AFQjCNEo3vyqDARs8DqSeV-kCwVjV8cHxQ&bvm=bv.87269000,d.eXY&cad=rja
				Bicycle Saefy Instruction	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&ved=0CDQQFjAE&url=http%3A%2F%2Fmonroecounty.civicplus.com%2FDocumentCenter%2FView%2F8376&ei=RMP0VOT8NJPcgwT4nYUJDQ&usg=AFQjCNFKVnY9BKafZA7jVJRjsHtytAU7xg&bvm=bv.87269000,d.eXY&cad=rja
HS-1	Actions	9	Implement a local program that systematically improves bicycle and pedestrian amenities community-wide	Overseas Heritage Trail Improvements	http://www.dep.state.fl.us/gwt/state/keystrail/default.htm
HS-1	Actions	10	Provide at least 3 types of active recreation facilities that are available for community use, by population size	Founders Park	http://www.islamorada.fl.us/Founders_Park.asp
				Anne's Beach	http://www.islamorada.fl.us/OtherParks.asp
				Green Turtle Hammock (see resolution and management plan)	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=7&ved=0CEsQFjAG&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FResolutions%2F13-03-09.pdf&ei=JrApVlf2AeSlSsYulCoBg&usg=AFQjCNEBg9mCqu5-2C02k8_qHISP2BmcwQ&bvm=bv.76247554,d.cWc&cad=rja
HS-1	Actions	11	Enable joint use of school-based recreation facilities during non-school hours		

HS-2	Outcomes	1	Health Outcomes: Demonstrate that the community is a county, or is a municipality located in a county, ranked in the top 15% in the state in regards to morbidity and mortality	Within top 30% so will receive partial credit. Ranked 20 out of 67 counties.	http://www.countyhealthrankings.org/app/florida/2014/rankings/monroe-county/outcomes/overall/snapshot
HS-2	Outcomes	2	Health Behaviors: Demonstrate that the community is a county, or is a municipality located in a county, ranked in the top 15% in the state in regards to key behaviors that impact health	Health Behaviors ranked 20 out of 67 or within top 30% so partial credit will be received	http://www.countyhealthrankings.org/app/florida/2014/rankings/monroe-county/outcomes/overall/snapshot
HS-2	Outcomes	3	Clinical Care: Demonstrate that the community is a county, or is a municipality located in a county, ranked in the top 15% in regards to quality of clinical care, including access to health care	ranked 39 out of 67 so no point since 58% not within top 15 or 30%	
HS-2	Outcomes	4	Quality of Local Health System: Option A: Demonstrate that at least one hospital in the county is recognized as a top performer by the Joint Commission --OR-- Option B: Demonstrate that the local public health department is accredited by the Public Health Accreditation Board (PHAB) --OR-- Option C: Demonstrate that least 30% of public health clinicians are board certified in their specialty areas and ancillary staff holds professional certification in their respective fields		
HS-2	Actions	1	Conduct a comprehensive community health assessment, which includes data collection and analysis of public health conditions, trends, and problems affecting the community	Monroe County Health Almanac 2013	http://www.floridahealth.gov/provider-and-partner-resources/community-partnerships/floridamapp/state-and-community-reports/monroe-county/documents/monroe-cha.pdf

HS-2	Actions	2	Develop a community health improvement plan to strengthen the delivery of health services and improve community health	2015 COMMUNITY HEALTH IMPROVEMENT PLAN	http://monroe.floridahealth.gov/programs-and-services/community-health-planning-and-statistics/chip/index.html
HS-2	Actions	3	Adopt a <i>health in all policies</i> statement or policy commitment for local decision-making	none	
HS-2	Actions	4	Collaboratively engage the public in the assessment of community health problems and developing strategies to improve the delivery of health services	Florida Keys Healthy Start Coalition	http://www.keyshealthystart.org/general/about
HS-2	Actions	5	Collaboratively engage the local public health department and relevant local government departments or agencies to integrate health considerations into local plans and policies that affect the built environment, <i>physical activity</i> , and access to fresh food		
HS-2	Actions	6	Provide information and education to the public regarding health issues and available local programs and services that support prevention and wellness	Green Drinks 03/01/2015; http://monroe.floridahealth.gov/program ; Florida Department of Health Healthiest Weight Florida ongoing social media campaign emphasizing healthy goals, healthy eating, and physical activity.	
HS-2	Actions	7	Demonstrate that the local public health department, local government, or major hospital has received <i>HealthLead</i> workplace accreditation	not accredited	

HS-2	Actions	8	Use a performance management system to monitor and improve health services and programs that promote positive health outcomes and expand access to health care	don't use per Alison Morales	
HS-2	Actions	9	Conduct health impact assessments (HIAs) on proposed infrastructure investments and development projects to increase positive health outcomes and minimize adverse impacts	None per Bill Brookman	
HS-3	Outcomes	1	Superior Fire Protection: Achieve a Class 4 ISO rating or better	Village website says ISO rating of 4 , press release says 2- need to get formal document from fire department	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCMQFIAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2Fnews%2F3-17-14_IVOI_Media_Release-ISO_Rating-lower_rates.pdf&ei=67MpVK7uPLG1sQSw8oDQDQ&usq=AFQjCNEP0DbGXcvqslQf_7pWC1JwFJ6HfQ&bvm=bv.76247554,d.cWc&cad=rja
HS-3	Outcomes	2	Emergency Response Times: Demonstrate that 90% of response times are in compliance with standards set by the National Fire Protection Association (NFPA)		
HS-3	Outcomes	3	National Incident Management System: Demonstrate that the community is in compliance with the National Incident Management System (NIMS)		
HS-3	Actions	1	Develop a NIMS-compliant local inventory of assets and resources available for emergency response and mutual aid requests		
HS-3	Actions	2	Publish information to encourage residents to develop emergency kits and evacuation plans and encourage businesses to develop emergency procedures and shelter-in-place plans	Islamorada Hurricane video	http://www.islamorada.fl.us/Fire_Video3.asp
				Red Guide Disaster Recovery site in Village Fire Resue website	http://www.theredguidetorecovery.com/free-preparedness-recovery-tools/
				Florida's Severe Weather Awareness Guide	http://www.monroecountyem.com/DocumentCenter/View/18
HS-3	Actions	3	Participate in interstate, statewide, regional, or inter-jurisdictional mutual aid response systems	The department is statutorily charged with Fire Prevention duties of fire safety plan review and inspections of commercial and multi-family occupancies. Emergency Management responsibilities include planning, preparedness, response and mitigation for man-made or natural disasters. The department also administers and manages a comprehensive training program and provides the community with public education on fire prevention and disaster planning and preparedness as well as provides mutual aid assistance to those agencies in need.	http://www.islamorada.fl.us/Fire_Rescue.asp

HS-3	Actions	4	Participate in a regional emergency planning commission	South Florida Regional Planning Council Local Emergency Planning Committee	http://www.sfrpc.com/lepc.htm
HS-3	Actions	5	Adopt a local comprehensive plan for emergency response that include provisions for evacuating low-income, disabled, and other persons likely to need assistance	Village CEMP	
HS-3	Actions	6	Participate in training drills that involve the public and emergency management personnel from multiple departments and/or multiple jurisdictions	The department is statutorily charged with Fire Prevention duties of fire safety plan review and inspections of commercial and multi-family occupancies. Emergency Management responsibilities include planning, preparedness, response and mitigation for man-made or natural disasters. The department also administers and manages a comprehensive training program and provides the community with public education on fire prevention and disaster planning and preparedness as well as provides mutual aid assistance to those agencies in need.	http://www.islamorada.fl.us/Fire_Rescue.asp
HS-3	Actions	7	Perform an annual review or assessment of plans, procedures, resources, and trainings based on emergency response incidents and demands	Not done	
HS-3	Actions	8	Achieve accreditation by the <i>Emergency Management Accreditation Program (EMAP)</i>	Not, only state of florida is accredited	

HS-3	Actions	9	Host an active <i>Community Emergency Response Team (CERT)</i> or <i>Medical Reserve Corps (MRC)</i>	Islamorada Fire Rescue and Emergency Management Department provides a Community Emergency Response (CERT) program to train people to be prepared for emergency situations in their community and neighborhood and support local emergency management officials. Additionally, the CERT members would provide critical support to the Village EOC and first responders in emergencies, provide immediate assistance to victims, collect disaster information to support first responder efforts and provide that first neighborhood help in the immediate hours following a major emergency.	http://www.islamorada.fl.us/CERT.asp
HS-3	Actions	10	Distribute emergency kits or supplies to residents, particularly low-income and vulnerable populations	smoke detectors distributed	
HS-4	Outcomes	1	Local Fresh Foods: Option A: Demonstrate an increase over the past 3 years in the amount of fresh food produced through local urban agriculture --OR-- Option B: Demonstrate an increase over the past 3 years in the amount of fresh food sold locally at farmers markets or other direct farm-to-consumer activities		
HS-4	Outcomes	2	Food Security and Assistance: Demonstrate an increase over the past 3 years in the ability of low income families to access low-cost, healthful food		
HS-4	Outcomes	3	Access to Healthful Food: Option A: Demonstrate an increase over the past 3 years in the percentage of residents within a walkable 1/4-mile of a healthful retail food outlet --OR-- Option B: Demonstrate a decrease over the past 3 years in the percentage of residents living in a urban or rural food desert		
HS-4	Outcomes	4	School Nutrition: Demonstrate an increase over the past 3 years in the food service sales of fresh fruits and vegetables in the largest public school district		
HS-4	Actions	1	Conduct an assessment of the local food system, including existing policies		
HS-4	Actions	2	Adopt zoning and development regulations that allow farmers markets, community gardens, and urban agriculture	LDR DIVISION 2. - ZONING DISTRICTS Sec. 30-696. - Highway commercial (HC) zoning district. Permitted use is farmers market.	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest={%22searchText%22:%22farmers%20market%22,%22pageNumber%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentTypeTypes%22:[%22CODES%22],%22productIds%22:[]}&nodeId=PTIICOOOR_CH30LADERE_ARTVSCDIUSDEST_DIV2ZODI_S30-696HICOHZODI
HS-4	Actions	3	Adopt zoning and development regulations that limit or prohibit the sale of unhealthful foods	None	

HS-4	Actions	4	Adopt menu-labeling requirements or regulations that discourage, tax, or prohibit the sale of unhealthful foods or beverages	Had formula restaurant prohibition ordinance previously but it was invalidated in the courts	
HS-4	Actions	5	Demonstrate that the local public school district has adopted a model school wellness policy	School Wellness Policy in Section 204 of Public Law 108-265 established by the School Health Advisory Committee. 2012.	http://www.keysschools.com/schoolBoard/agenda_folders/11-12_Agenda_Folders/April24/wellness%20policy%202011.pdf
HS-4	Actions	6	Establish a local or regional food policy council that includes health professionals, community organizations, schools, farmers, and/or related businesses	South Florida Food Policy Council	http://earth-learning.org/index.php?option=content&Itemid=77&task=view&id=163&-South-Florida-FPCs
HS-4	Actions	7	Develop public outreach materials, classes, or workshops for residents to learn about food, nutrition, and gardening OR develop public outreach materials to promote food assistance programs	C-1 Congregate Meal Program Women, Infants & Children free event January 12, 2015 2012 State of Your County - Big Pine Nutrition Site, Marathon Nutrition Site, Plantation Key Nutrition Site, Key West Truman School Nutrition Program	http://www.monroecounty-fl.gov/index.aspx?nid=147 https://www.facebook.com/pages/Monroe-County-BOCC/529019460475901 http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=11&ved=0CDIQFIAAQAAo&url=http%3A%2F%2Ffl-monroecounty.civicplus.com%2Findex.aspx%3Fnid%3D584&ei=9bopVjCqN-M-IsQTGhoHYDQ&usq=AFQicNE-rv2Ehy7y4BskphJyd3d63bZ2wg&bvm=bv.76247554,d.cWc&cad=rja
HS-4	Actions	8	Demonstrate that local schools or the public school district has received certification from the USDA Healthier US Schools Challenge or an award from the Alliance for a Healthier Generation in the past 3 years	Coral Shores High School, Monroe County School District - Bronze Award 2014 Gerald Adams Elementary School- Bronze Award 2014 Key Largo School - Bronze Award 2014 Poinciana Elementary School - Bronze Award 2014 Stanley Switlik Elementary School - Bronze Award 2014	https://www.healthiergeneration.org/about_childhood_obesity/in_your_state/florida/
HS-4	Actions	9	Purchase and sell healthful food at facilities owned, leased, and operated by the local government	None	
HS-4	Actions	10	Implement an "Increase Your Food Bucks" program for farmers markets	None	
HS-4	Actions	11	Provide incentives for healthful retail food outlets to locate in underserved areas or for mobile vendors that only sell fresh food	None	
HS-5	Outcomes	1	IAQ Complaints to School District: Decrease the number of student, parent, and staff complaints to the public school district regarding indoor air quality (IAQ) over time		
HS-5	Outcomes	2	IAQ Complaints to Enforcement Agency: Decrease the number of tenant complaints regarding IAQ over time		
HS-5	Actions	1	Prohibit smoking in all enclosed public places, including restaurants, bars, and workplaces	Section 386.202 Part II of the Florida Statute	http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=0300-0399/0386/0386.html
HS-5	Actions	2	Prohibit smoking in multi-family buildings community-wide OR residential buildings controlled by the local housing authority OR affirm by local ordinance the right for landlords to legally establish smoke-free rental units	No ordinance	
HS-5	Actions	3	Require all new or substantially renovated local government and school buildings to incorporate advanced ventilation standards	No ordinance or code	

HS-5	Actions	4	Conduct local public education campaigns regarding prevention and safe remediation of common indoor air pollutants	Florida Health Department Carbon Dioxide brochure	http://www.floridahealth.gov/%5C/environmental-health/carbon-monoxide/_documents/GeneratorsCOPoisonEnglish.pdf
				Carbon Monoxide website FDOH	http://www.floridahealth.gov/%5C/environmental-health/carbon-monoxide/index.html
				Florida Environmental Public Health Tracking Program Facebook page provides information about IAQ and environmental health risks, including radon.	https://www.facebook.com/floridatracking
HS-5	Actions	5	Reduce or eliminate toxic pesticide use in locally owned or managed buildings through the use of <i>integrated pest management (IPM)</i> techniques	None	
HS-5	Actions	6	Address residential IAQ problems related to mold, pests, and other hazards through inspections and enforcement using authority from the state or local housing code or public health code		
HS-5	Actions	7	School district implements a system-wide IAQ management program to monitor and address IAQ problems	Not participating county	
HS-5	Actions	8	Provide free, subsidized, or at-cost supplies to test and monitor IAQ to prevent harm from common pollutants	smoke detectors provided free	
HS-5	Actions	9	Provide grants or loans to remediate indoor air pollution problems in low-income homes or affordable rental units	mold remediation part of CDBG grant in Village	
HS-6	Outcomes	1	Location-Specific Hazards: Part 1: Option A: Reduce over time the number of homes below code standards that are located in designated high risk areas --OR-- Option B: Reduce over time the percentage of residents living in designated high risk areas --AND-- Part 2: Reduce over time the critical infrastructure below code standards that is located in designated high risk areas		
HS-6	Outcomes	2	Full Community Hazards: Demonstrate increased resilience to hazard threats over time		
HS-6	Actions	1	Develop a hazard mitigation action plan that includes an all-hazard vulnerability assessment of the community's primary hazard threats	Monroe County and Incorporated Municipalities Local Mitigation Strategy 2010 Update	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.monroecountyem.com%2FDocumentCenter%2FView%2F102&ei=g70pVPidFaLCsAS8toL4Bw&usg=AFQjCNFwYDnd_Lmdadm2LcXjd8aUkpzsMQ&bvm=bv.76247554_d.cWc

HS-6	Actions	2	Develop a post-disaster plan that addresses long-range redevelopment issues such as land use, economic development, housing, infrastructure, public services, and environmental restoration	Monroe County Florida Recovery Plan 2011	http://www.monroecountym.com/DocumentCenter/View/11
HS-6	Actions	3	Increase community awareness of natural hazards through education and outreach materials	Be Hurricane Prepared flyer	http://www.islamorada.fl.us/Newsmanager/userfiles/file/Hurricane/SURVIVING_A_HURRICANE.pdf
				Florida's Severe Weather Awareness Guide	http://www.monroecountym.com/DocumentCenter/View/18
				Flood Safety Brochure	http://www.monroecountym.com/DocumentCenter/View/321
HS-6	Actions	4	Integrate an all-hazard vulnerability assessment or other key local hazards information into the community's comprehensive plan	Comprehensive Plan Policy 5-1, 6.3	http://www.islamorada.fl.us/newsmanager/userfiles/file/Comp_Plan/020314_CompPlan.pdf
HS-6	Actions	5	Adopt zoning regulations that limit development in areas of high hazard vulnerability	Islamorada Code of Ordinances Sec. 6-85. - Standards for flood hazard reduction.	

HS-6	Actions	6	Enact building codes with heightened standards for buildings in areas of high hazard vulnerability	Ordinance 12-13. March 2013	http://www.islamorada.fl.us/newsmanager/userfiles/file/Ordinances/13-12.pdf
HS-6	Actions	7	Create insurance or incentive structures to help equitably remove residents from hazardous situations		
HS-6	Actions	8	Build or renovate locally-owned public facilities to meet higher building code standards to be used as shelters, command centers, and to set an	Ordinance 12-13. March 2013	http://www.islamorada.fl.us/newsmanager/userfiles/file/Ordinances/13-12.pdf
HS-6	Actions	9	Implement highest priority projects utility improvements listed in the hazard mitigation plan		
HS-7	Outcomes	1	Violent Crime Rate: Option A: Demonstrate that the average violent crime rate for the past 3 years is below the following thresholds: • 5.5 homicides per 100,000 residents • 70 incidents of rape or attempted rape per 100,000 residents • 462.7 aggravated assaults per 100,000 residents --OR-- Option B: Achieve targets for a percentage decrease in violent crime identified in a locally-adopted safe communities strategic plan		
HS-7	Outcomes	2	School Violence: Demonstrate that the average number of incidents of school violence is less than 10 per 1,000 students for all public schools in the jurisdiction		
HS-7	Actions	1	Conduct a survey of community perceptions of safety recognizing that some crimes are not reported and to illuminate safety issues that need to be addressed	Monroe County Sheriffs Office Ongoing Web Survey	http://www.surveymonkey.com/s/8QDZJ69

HS-7	Actions	2	Adopt a <i>safe communities strategic plan (plan)</i> with a comprehensive, balanced approach that includes <i>violence prevention, intervention, suppression and enforcement</i> , and <i>reentry</i> strategies	Monroe County Sheriffs Office Strategic Plan 2013-2016	http://www.keysso.net/aboutso/strategic%20plan%202013-2016.pdf
HS-7	Actions	3	Educate the public and the media about the <i>plan</i> , its implementation, and successful programs and strategies	Nothing found	
HS-7	Actions	4	Develop partnerships with local agencies, nonprofit organizations, schools, and residents to implement the strategies and programs recommended in the <i>plan</i>		
HS-7	Actions	5	Establish cross-agency coordination and procedures to support balanced implementation of the <i>plan</i>		
HS-7	Actions	6	Perform ongoing data collection, evaluation, and monitoring from multiple agencies to track trends and identify emerging community needs		
HS-7	Actions	7	Implement <i>violence prevention</i> programs and strategies to address community-identified risk and protective factors		
HS-7	Actions	8	Implement school-based <i>violence prevention</i> programs and strategies, particularly in highly impacted, urban, and at-risk neighborhoods	The School Board of Monroe County Bylaws and Policies - 5517.01 - ANTI-BULLYING POLICY	http://www.neola.com/monroe-fl/search%5Cpolicies/po5517.01.htm

HS-7	Actions	9	Develop <i>violence intervention</i> programs and strategies to support at-risk families and youth and to prevent the escalation of violence		
HS-7	Actions	10	10. Adopt violence suppression and enforcement programs and strategies that support and build trust within the community	Monroe County Sheriff's Office received accreditation by the Commission on Accreditation for Law Enforcement Agencies (CALEA)	http://www.keysso.net/admin_divs/professional_standards/accreditation.htm#When%20did%20the%20Monroe%20County%20Sheriff%27s%20Office%20obtain%20accreditation?
HS-7	Actions	11	Create or support a multi-faceted, monitored <i>reentry</i> program for ex-offenders that includes training, education, mentoring, and employment opportunities and other support services to reduce recidivism	Monroe County Detention Center Inmate Programs	http://www.keysso.net/jail/detention_center_index.htm
NS-1	Outcomes	1	Designated Green Infrastructure: Option A: Demonstrate that 35% of the jurisdiction's land area has protected vegetated surfaces performing a minimum of 2 of the following functions: <ul style="list-style-type: none"> • Localized cooling through tree canopy cover, green roofs, or green walls • Water management through wetlands, stream buffers, and permeable surfaces • Recreation through parks and/or greenways --OR-- Option B: Demonstrate a 2-5% increase in land area with protected vegetated surfaces over time		

NS-1	Outcomes	2	<p>Green Infrastructure Distribution: Demonstrate that 85% of the population lives within a 1/2-mile walk distance from green infrastructure features that are performing a minimum of 2 of the following functions:</p> <ul style="list-style-type: none"> • Localized cooling through tree canopy cover, green roofs or green walls • Water management through wetlands, stream buffers, and permeable surfaces • Recreation through parks and/or greenways 		
NS-1	Actions	1	Create a community-wide green infrastructure plan that is integrated with other relevant local plans		
NS-1	Actions	2	Adopt local design criteria and associated codes that require proactive green infrastructure practices for new developments	Sec. 30-1614. - Open space requirements.	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest=%7B%22searchText%22:%22green%20infrastructure%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentTypes%22:%5B%22CODES%22%5D,%22productIds%22:%5B%5D%7D&nodeId=PTIICOR_CH30LADERE_ARTVIIENRE_DIV4ENST_S30-1614OPSPRE
NS-1	Actions	3	Adopt a policy requiring relevant departments be engaged during early reviews of proposed developments to ensure that project sites are evaluated for green infrastructure potential and environmental protections are put in place prior to construction	Sec. 30-1641. - Specific environmental design criteria.	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest=%7B%22searchText%22:%22green%20infrastructure%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentTypes%22:%5B%22CODES%22%5D,%22productIds%22:%5B%5D%7D&nodeId=PTIICOR_CH30LADERE_ARTVIIENRE_DIV5WERE_S30-1641SPENDECR

NS-1	Actions	4	Partner with key community groups and other stakeholders to ensure that green infrastructure practices are used in appropriate settings	The Islamorada Foundation. Public Charity, non-profit organization consisting of community volunteers. Established in June, 2010. Established to enhance the village parks, recreation areas and green spaces. Current Projects: advancement of Southwinds Park and downtown landscape lighting. No mention of local government financial contribution.	http://islamoradafoundation.org/about/about-the-islamorada-foundation/
NS-1	Actions	5	Create incentive programs to encourage land owners to adopt green infrastructure practices that link to the broader green infrastructure systems	Sec. 48-24. - Stormwater utility. There is hereby established a stormwater utility, which shall be the operational means of implementing and otherwise carrying out the functional requirements of the village's stormwater management system to construct or acquire stormwater improvements and provide stormwater management services. 08/23/2005	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest=%7B%22searchText%22:%22stormwater%20utility%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentTypes%22:%5B%22CODES%22%5D,%22productIds%22:%5B%5D%7D.&nodeId=PTICOOOR_CH48SPAS_ARTIISTAS_DIV2STUT_S48-24STUT
NS-1	Actions	6	Establish a green infrastructure monitoring program and regularly report on status of desired outcomes	Islamorada Design Review Manual: Administrative Design Review Standards Manual. Village's Administrative Design Review Standards adopted by Village Council on January 14, 2010 through Ordinance No. 10-01. Design Review applies to property with frontage on any major street (e.g., Overseas Highway, Old Highway) and all property within the Village Center (VC) zoning district. Design Review is part of the development review process as set forth in the LDRs and is reviewed by Village staff, the Development Review Committee and approved by the Director of Planning and Development Services (the "Director"). No Village Council approval is necessary unless a public hearing is expressly required (e.g. for Major Conditional Uses and structures over 10,000 square feet) or requested (e.g. Site Plan Approval and Minor Conditional Uses) for a Development Permit as set forth in the LDRs. Public notice is the same as required by the Code for the applicable development permits.. Examples: Roof Pitch, Awnings, Building transparency	http://www.islamorada.fl.us/Newsmanager/userfiles/file/Planning_Forms/design_review_manual.pdf
NS-1	Actions	7	Increase the percentage of funding invested in green infrastructure		

NS-1	Actions	8	Upgrade public spaces and public buildings based upon locally-adopted or recognized best practices in green infrastructure. Where possible, create demonstration projects to enhance public support	The Advancement of South Winds Park. Beginning November, 2012. Southwinds Park is a 1.1 acre piece of green space located at mm 82.1 on Upper Matecumbe Key, the former site of the Southwinds Motel and acquired by the Village of Islamorada with a grant from the state of FL in 2004. It is The Islamorada Foundation's intent to continue working with the Village of Islamorada and the FL Department of Community Affairs to advance Southwinds Park into a usable and recognizable downtown passive park and functional green space for public use. Preliminary plans include, but are not limited to, small covered pavilion(s), park benches, trash/recycle receptacles, drinking fountain, parking, bike racks, enhanced native landscaping and a focal point to commemorate Islamorada's fishing heritage. An initial 5 year operating/management lease is being sought to fulfill The Islamorada Foundation's efforts for the planned advancements.	http://islamoradafoundation.org/projects/
NS-1	Actions	9	Provide for ongoing maintenance of green infrastructure at level required to maintain evapotranspiring functions		
NS-2	Preliminary Step		Use a species-led or site-led approach to identify the invasive species of greatest threat, priority areas for protection, and critical entry points		
NS-2	Outcomes	1	Invasive Species Prevention: Show that no new invasive species have established themselves in the last 5 years in priority natural systems areas and critical entry points		
NS-2	Outcomes	2	Invasive Species Containment: Show that existing invasive species have not moved into priority natural systems areas and critical entry points		
NS-2	Outcomes	3	Invasive Species Eradication: Option A: Eradicate existing invasive species from priority natural systems areas and critical entry points --OR-- Option B: Demonstrate progress towards targets identified in the community's local integrated pest management plan		

NS-2	Actions	1	Develop a community-wide invasive species integrated pest management plan	Nothing local and FKNWS document doesn't cover geographic region of Islamorada	
NS-2	Actions	2	Adopt local ordinance requiring control of listed priority invasive species or enact a native plant ordinance for private and public landscaping	Ordinance 02-12	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFJAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2FNewsmanager%2Fuserfiles%2Ffile%2FOrdinances%2F02-12.pdf&ei=XAErVIPkD4OzggpS904BA&usq=AFOiCNGd1XIQ1erUPLA_MtAOD04OH-zX6Q&bvm=bv.76477589,d.eXY
NS-2	Actions	3	Partner with local volunteer groups or neighborhood associations to restore priority natural systems areas by planting native plants or improving local wildlife habitat	Florida Keys Invasive Species Task Force - Organized in 1996, this cooperative effort of local, state, and federal agencies, local non-profit groups and businesses, is dedicated to the elimination of invasive, non-native plants by combining programs and financial resources to develop and implement long-term Keys exotic removal and control. The Task Force promotes sound land management of public lands and rights-of-ways, and residential and commercial properties, to halt the spread of exotic plants and restore the native plant communities unique to the Keys.	http://www.floridainvasives.org/Keys/about.html

NS-2	Actions	4	Partner with local volunteer groups to monitor critical entry points or areas at greatest risk of invasive species invasion, and organize "weed pulls" and other invasive management actions	Florida Keys Invasive Species Task Force - Organized in 1996, this cooperative effort of local, state, and federal agencies, local non-profit groups and businesses, is dedicated to the elimination of invasive, non-native plants by combining programs and financial resources to develop and implement long-term Keys exotic removal and control. The Task Force promotes sound land management of public lands and rights-of-ways, and residential and commercial properties, to halt the spread of exotic plants and restore the native plant communities unique to the Keys.	http://www.floridainvasives.org/Keys/about.html
NS-2	Actions	5	Create a public education campaign or targeted outreach effort to inform residents and/or plant or animal sellers about the hazards of invasive species	Don't Plant A Weed! AlterNatives for Landscaping in the Florida Keys, a Plant Substitution Guide for the Florida Keys	http://www.floridainvasives.org/keys/AlterNatives%20Plant%20Guide.pdf
NS-2	Actions	6	Use incentive programs to encourage local businesses and private owners to grow and sell native or desirable plants and animals and not sell invasive species or other harmful plants and animals	KEYS' Tree Giveaway	http://www.keysenergy.com/giveaway.php
NS-2	Actions	7	Enforce regulations to control the use and sale of listed invasive species		
NS-2	Actions	8	Ensure that all local government-owned buildings use native plants or non-invasive species in landscaping	Sustainability Plan 2013	

NS-2	Actions	9	Take actions to prevent the spread of invasive species, especially in priority natural systems areas, such as monitoring, eradication, or other control programs	Monroe County Invasive Removal Crew - 10 program of funding for temporary crews to remove invasive species from lands owned by County.	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCMQFjAB&url=http%3A%2F%2Ffilemonroecounty.civicplus.com%2FAgendaCenter%2FViewItem%2F3540%3FfileID%3D3491&ei=r2fBVNifB8v4ggTelYDI8w&usq=AFQjCNHN2R07AR-JxnyKDN8rN_o_pH0l4w&bvm=bv.83829542,d.eXY&cad=rja
NS-3	Outcomes	1	Priority Natural System Areas: Option A: Achieve targets for acres of land conserved in priority natural systems areas identified in a locally-adopted natural systems or land conservation plan --OR-- Option B: Demonstrate incremental progress towards achievement of targets for acres of land conserved identified in a locally-adopted natural systems or land conservation plan		
NS-3	Outcomes	2	Wetlands, Streams and Shoreline Buffers: Achieve no-net-loss of these critical resources		
NS-3	Outcomes	3	Connectivity: Increase the area of land directly connected to regional natural systems in order to improve ecosystem services		
NS-3	Outcomes	4	Restoration: Reduce the difference between the actual acreage restored and targeted acreage established in the natural systems plan or land conservation plan		

NS-3	Actions	1	Develop a plan to protect and restore natural resources through land conservation, corridor connectivity, and restoration of biological integrity and function	Habitat Conservation Plan for Florida Key Deer and Other Protected Species on Big Pine Key and No Name Key, Monroe County, Florida	https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFJAA&url=https%3A%2F%2Ffiles.monroecounty.civicplus.com%2FDocumentCenter%2FHome%2FView%2F1286&ei=5wMrVODiM9CSgwShnYLODw&usg=AFQicNF4ic4DLNkesfSelKkMQ2-7H1rFYA&bvm=bv.76477589,d.eXY
				Florida Keys Carrying Capacity Study	http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0CCQQFJAB&url=http%3A%2F%2Fwww.floridajobs.org%2Ffdcp%2Fdcpc%2Facs%2Ffiles%2FFinalReportRule28-20.pdf&ei=AMrVJLcD8nxgwST0YCwDw&usg=AFQicNE0aimhTZWsIAzdXr-FQWmtZEOpmQ&bvm=bv.76477589,d.eXY
NS-3	Actions	2	Adopt land use regulations that establish appropriate wetland, stream, and shoreline buffer widths and adjacent land uses	<p>Sec. 30-1542. - Shoreline setback.</p> <p>All development within the shoreline setback shall be subject to the following standards and design criteria:</p> <p>(1)</p> <p>Principal structures shall be set back from the mean high water line (MHWL) or the landward extent of the mangroves as follows:</p> <p>(a)</p> <p>Twenty feet from the MHWL along legally altered shorelines including manmade canals, channels, and basins;</p> <p>(b)</p> <p>Thirty feet from the MHWL or the landward extent of the mangroves, whichever is further landward along open water shorelines not adjacent to manmade canals, channels, or basins which have been legally altered, provided that:</p>	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest=%7B%22searchText%22:%22shoreline%20buffer%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentType%22:%5B%22CODES%22%5D,%22productIds%22:%5B%5D%7D&nodeId=PTIICOOR_CH30LADERE_ARTVIIENRE_DIV2DOSHSUS_S30-1542SHSE

NS-3	Actions	3	Create an advisory board to inform land conservation and restoration activities		
NS-3	Actions	4	Partner with adjacent jurisdictions, state and federal agencies, and local or regional non-profit organizations to advance land conservation and restoration efforts	With County	
NS-3	Actions	5	Sponsor educational and outreach activities to increase ecological literacy and knowledge about natural resource protection		

NS-3	Actions	6	Adopt land use strategies to incentivize permanent land conservation		
NS-3	Actions	7	Implement local and market-based financing strategies to acquire land or development easements, or fund restoration and maintenance activities	Resolution 14-02-13. 14-02-13 EXHIBIT-A A RESOLUTION OF THE VILLAGE COUNCIL OF ISLAMORADA, VILLAGE OF ISLANDS, FLORIDA, NOMINATING CERTAIN PROPERTIES FOR PURCHASE BY THE MONROE COUNTY COMPREHENSIVE PLAN LAND AUTHORITY AS CONSERVATION LAND; REQUESTING THAT TITLE TO THE SUBJECT PROPERTIES BE TRANSFERRED TO THE VILLAGE AFTER ACQUISITION; AUTHORIZING THE MAYOR TO EXECUTE A CONSERVATION EASEMENT; AND PROVIDING FOR AN EFFECTIVE DATE.	http://www.islamorada.fl.us/Resolutions.asp
				South Florida Ecosystem Restoration Land Conservation Strategy. (2010).	http://www.evergladesplan.org/pm/land_acquisition/land_acq_strategy_report_2010.pdf
				Rural and Family Lands Protection Program of the Department of Agriculture and Consumer Services	http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/For-Landowners/Programs/Rural-and-Family-Lands-Protection-Program
NS-3	Actions	8	Restore, maintain, and monitor conserved natural lands to increase natural resource resilience, adaptability, and biological integrity	this is being done but would require significant time to compile all projects in past three years, would also require significant assistance from Monroe County staff and Land Authority to compile	

NS-4	Outcomes	1	<p>Concentration and Emissions: Option A: Achieve attainment or maintenance status for all measured criteria pollutants</p> <p>--OR--</p> <p>Option B: Part 1: Demonstrate a decrease in the annual concentration of the non-attainment criteria pollutant(s) that have the greatest impacts on public health, specifically PM 2.5, PM10, and ozone</p> <p>--AND--</p> <p>Part 2: Demonstrate a decrease trend in the annual number of days in which the Air Quality Index (AQI) exceeds 100 over the past 5 years</p>		
NS-4	Actions	1	Adopt regulatory strategies that permit or incentivize increased residential and employment densities and diverse uses in transit-served areas and areas identified for compact, mixed-use development	Code of Ordinances Sec. 30-503. - Transfer of development rights	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest={%22searchText%22:%22transfer%20development%20right%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentTypes%22:%5B%22CODES%22%5D,%22productIds%22:%5B%5D%5D}&nodeId=PTIICOOR_CH30LADERE_ARTIVADPR_DIV12TRDERI_S30-503TRDERITD
NS-4	Actions	2	Adopt performance-based parking pricing, establish parking maximums, or eliminate parking minimums in transit-served areas and areas identified for compact, mixed-use development, AND incorporate at least 2 other advanced parking strategies		
NS-4	Actions	3	In collaboration with a local university or health department, conduct a study to evaluate the health impacts of acute exposure to outdoor air pollutants, particularly in consideration of environmental justice and equity impacts	Regional Climate Action Plan Health Impact Assessment	http://www.southeastfloridacclimatecompact.org/wp-content/uploads/2014/09/REVISED-HIA-Final-Report-101514-1.pdf

NS-4	Actions	4	Collaborate with local industrial operations to reduce and minimize the release of noxious odors in the community		
NS-4	Actions	5	Partner with a local or regional organization to support one or more transportation management association(s) that promote rideshare programs and incentives for commuters to use alternative modes of transportation to work other than single-occupancy vehicles		
NS-4	Actions	6	Educate the public about the impacts of poor air quality on human health and the natural environment and the efforts they can take to reduce pollution and exposure		
NS-4	Actions	7	Enforce anti-idling regulations or burning restrictions to prevent emission of excess pollution, particularly on Air Quality Action Days	Anti-idling policy	http://www.google.com/url?sa=t&rct=i&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB4QFJAA&url=http%3A%2F%2Fwww.islamorada.fl.us%2Fnewsmanager%2Fuserfiles%2Ffile%2FSustainability%2FAnti_Idling_Policy.pdf&ei=wQgrVOXGMSuXgwSd6YBQ&usq=AFQjCNHmuUjCUOsv7rvLH-UUjCP-bnuiGg&bvm=bv.76477589,d.eXY
NS-4	Actions	8	Improve traffic signal timing or upgrade intersections to relieve congestion		
NS-4	Actions	9	Increase the mileage of sidewalks and dedicated bicycle infrastructure that connect people with destinations		
NS-4	Actions	10	Create or enhance programs aimed at increasing tree canopy through active planting or direct tree protections		
NS-4	Actions	11	Implement targeted programs to encourage residents to transition to cleaner products	Islamorada Hazardous Waste Program	http://www.islamorada.fl.us/newsmanager/userfiles/file/news/2015_HHC-Program.pdf
NS-5	Outcomes	1	Hydrologic Integrity: Demonstrate that the amount of water withdrawn from the system for human uses does not exceed the amount of freshwater entering the system through precipitation, river flow, and other sources		

NS-5	Outcomes	2	Biologic Integrity: Achieve a biological integrity rating of 'Very Good' or 'Good' based on EPA's 305(b) reporting requirements for all water bodies with appropriate designated uses		
NS-5	Outcomes	3	Chemical Integrity - Pollutants: Option A: Demonstrate pollutant loadings below Total Maximum Daily Load (TMDL) levels --OR-- Option B: Demonstrate a steady decrease in pollutant levels towards a long-term goal of below TMDL levels		
NS-5	Outcomes	4	Chemical Integrity - Usability: Demonstrate that all non-industrial water bodies are swimmable and fishable during 90% of days in the past year --OR-- Option B: Demonstrate a steady reduction in water closures of at least 2% annually towards achieving 90% of days being swimmable and fishable		
NS-5	Actions	1	Adopt a watershed management plan that integrates natural water bodies with human water	Monroe County Stormwater Management Master Plan	http://www.monroecounty-fl.gov/Documentview.aspx?DID=1119
NS-5	Actions	2	Adopt community regulations that protect water quality OR participate in a regional pollutant trading program that reduces watershed pollution levels	Code of Ordinances, Sec. 30-1543. - Shoreline environmental and	https://www.municode.com/library/fl/islamorada/codes/code_of_ordinances?searchRequest={%22searchText%22:%22water%20quality%22,%22pageNum%22:1,%22resultsPerPage%22:25,%22booleanSearch%22:false,%22stemming%22:true,%22fuzzy%22:false,%22synonym%22:false,%22contentType%22:%22CODES%22%5D,%22productIds%22:%22%5B%5D%22}&nodeId=PTIICOR_CH30LADERE_ARTVIIENRE_DIV2DOSHUS_S30-1543SHENDECR
NS-5	Actions	3	Create partnerships to address sources of non-point source water pollution not directly covered by local authority or control	South Florida Water Management District partnership with Monroe County.	http://www.sfwmd.gov/portal/page/portal/xweb%20-%20release%203%20water%20supply/local%20government%20comp%20plans
NS-5	Actions	4	Create an education campaign about ambient water quality, pollution prevention, mitigation, and restoration techniques	Florida Keys Water Watch Program Last Stand Water Quality Forums Keys Waterways Series Videos	http://monroe.ifas.ufl.edu/pdf/environment/fkww.pdf http://keysenvironmentalcalendar.org/wp/?s=water+quality&submit=Search https://www.youtube.com/user/WaterwaysTVShow


NS-5	Actions	5	Provide incentives to residents and developers to protect and restore critical watershed protection areas		
NS-5	Actions	6	Engage in restoration projects for critical water bodies and buffer zones that protect those water bodies	Village of Islamorada fronted \$100,000 to become part of the Monroe County Canal Restoration Project	
NS-5	Actions	7	Develop and provide water conservation programs to residents, businesses and agricultural water users in order to help ensure that the community is not depleting its water supply	FKAA Toilet Rebate Program - left message for Dana Vega 305-295-2262 on 2/13	http://www.fkaa.com/Residential%20Toilet%20Rebate%20Application%20form%202015.pdf
NS-5	Actions	8	Establish or partner with a group that routinely inventories and monitors natural water bodies for biological, chemical, and hydrological integrity	In collaboration with EPA's National Water Program Guidance, results posted in Best Practices and End of the Year Performance Report.	http://ocean.floridamarine.org/fknms_wqpp/products/wqpp/FKNMS%20Biennial%20Report%20201309.pdf
NS-6	Outcomes	1	Land Management: Option A: Use critical best management practices (BMPs) on 100% of working lands in the jurisdiction --OR-- Option B: Demonstrate a 2-5% increase in working lands utilizing critical BMPs over time		
NS-6	Outcomes	2	Certified Sustainable Harvests: Increase the number of certified sustainable harvesters for a locally-selected industry over time		
NS-6	Actions	1	Include considerations for protecting working lands and identifying areas where BMPs are necessary in the community's land conservation or natural resource plan		
NS-6	Actions	2	Convene owners and operators of working lands to promote sustainable harvesting practices		
NS-6	Actions	3	Educate owners and operators of working lands about current best management practices		
NS-6	Actions	4	Promote the value of locally produced, certified sustainable harvests and products to the public		
NS-6	Actions	5	Work with youth groups and community organizations to implement BMPs on local working lands		
NS-6	Actions	6	Provide conservation programs and services tailored to the needs of the working lands community		
NS-6	Actions	7	Encourage owners of working lands to conserve their properties in perpetuity		
NS-6	Actions	8	Implement financing strategies to conserve working lands and support ongoing restoration efforts		

Appendix F. Implementation Matrix



Light blue - Short-term (1-3 yrs.) recommendations
Light yellow - Medium-term (3-5 yrs.) recommendations
Light pink - Long-term (>5 yrs.) recommendations

Implementation Matrix

<div> Habitat Recommendations</div>									
Recommendation		STAR Identifier	Overlap with Current Sustainability Plan	Comprehensive Plan	Code of Ordinances	Budget/Capital Improvements Element	Timeframe	Funding Opportunity	Additional Notes
H.1	Update Stormwater Master Plan to include sea level rise assumptions and incorporate green infrastructure features as a priority.	NS-1(7)	Land, bullet #7	Update to Policy 1-4.5.1 in Future land Use Element to specify funding allocation for green infrastructure investments	New regulation in Chapter 30, Article VII, Division 4	Budgetary Implication	Short Term (1-3 yrs.)	Wildlife Conservation Society’s Climate Adaptation Fund	
H.2	Conduct a habitat analysis to document species, condition, size and location of trees within the Village. Focus particular attention on identifying priority areas where die-backs may be occurring in upland vegetation or habitat shifts with greater tolerance to tidal inundation. Also identify areas where up-gradient movement of natural tidal communities can occur (proximate to buttonwoods and mangroves). The inventory can serve as a tool to identify opportunities for strategy implementation as well as create a baseline to monitor changes over time.		Land, bullet #1 Land, bullet #3 Land, bullet #9			Budgetary Implication	Short Term (1-3 yrs.)	Florida Urban and Community Forestry Grant Program	
H.3	Identify the areas where living shorelines are most appropriate and develop guidance for implementation, monitoring, and evaluation taking into account future sea level rise projections and storm events.			Update to Objective 5-1.2 in Coastal Management Element		Budgetary Implication	Short Term (1-3 yrs.)	NOAA’s Coastal and Marine Habitat Restoration Grant Program	
H.4	Update requirements for ecological buffers (which may include increases depending on habitat type) and provide guidance on how to establish or adjust these buffers to accommodate sea level rise including the concept of “habitat migration corridors” that allow sensitive habitats and species to migrate inland or upland as sea level rises.			Update to Policy 4-3.2.5 in Public Facilities Element or Policy 6-1.6.1 in Conservation Element	New regulation (Section) in Chapter 30, Article VII, Division 4		Short Term (1-3 yrs.)		
H.5	Discourage the use of hard protection unless no other feasible alternative is available and require enhanced mitigation if it is not. Require any hard protection or mitigation designs be adapted to changing sea level and require monitoring of impacts over time.			Update to Policy 5-1.1.5 and 5-1.1.7 in Coastal Management Element to address designing for future sea level rise and monitoring of impacts	Amendment to Article VII, Division II, Section 30-1545 to include stronger language precluding hard protection		Medium Term (3-5 yrs.)		
H.6	Specify priority areas where hard shoreline protection structures should be removed (through property owner incentives), including areas where structures threaten the survival of wetlands and other habitat, or beaches, trails, and other recreational areas.			Update to Objective 5-1.2 in Coastal Management Element	New regulation (Section) in Chapter 30, Article VII, Division 2		Medium Term (3-5 yrs.)		

Light blue - Short-term (1-3 yrs.) recommendations
Light yellow - Medium-term (3-5 yrs.) recommendations
Light pink - Long-term (>5 yrs.) recommendations

Implementation Matrix

H.7	Identify vulnerable habitats and open space for prioritized land acquisition and maintenance. The ability of a parcel to provide a means for sea level rise adaptation should be a criterion for acquisition. Rank higher properties that may allow landward migration of wetlands than properties that are currently or predicted to be inundated as waters rise.		Land, bullet #7	Update to Policy 1-4.5.1 in Future Land Use Element	New regulation in Chapter 30, Article VII, Division 4	Budgetary Implication	Medium Term (3-5 yrs.)		
H.8	Identify and map natural inundation buffers which could also provide sea level rise adaptation benefit.				New Division in Chapter 30, Article VII	Budgetary Implication	Medium Term (3-5 yrs.)	FDEP Coastal Partnership Initiative	
H.9	Add policies to require site-specific evaluation of potential sea level rise impacts to archeological and paleontological resources on a development site. This would include those, but not be limited to those, listed on the Historic Resources Survey list.			Update to Policy 5-1.13.1 of the Coastal Management Element			Medium Term (3-5 yrs.)		
H.10	Identify areas for habitat maintenance where the removal of exotics could improve the quality of that area to serve as a natural or soft protection option. Establish a maintenance schedule that factors in the benefits of managing habitat as a natural defense strategy against sea level rise impacts.					Budgetary Implication	Medium Term (3-5 yrs.)		
H.11	Identify impacts to public access and recreation that might result from sea level rise and maintain existing public access and visitor serving amenities so they are protected with maximum public access.			New Policy in Objective 7-1.1 of Recreation and Open Space Element		Budgetary Implication	Medium Term (3-5 yrs.)		
H.12	Identify and protect “core areas” within the Village with the best chances of persistence during sea level rise and perform intensive management of these areas and ex-situ conservation strategies which may include species relocation. Specific areas should focus on hammocks, beach areas and shorelines that may be stabilized considering impacts to listed species.					Budgetary Implication	Medium Term (3-5 yrs.)		
H.13	To further reduce the impacts of stressors on the natural system, create additional or more aggressive policies to reduce the use of pollutants and runoff entering natural systems and the marine system. Enhance education efforts on the benefits of improving water quality and the relationship between environmental stressors and exacerbated impacts from sea level rise.	NS-5(2)		Revision to Policy 1-4.5.4 in Future Land Use Element or Policy 6-1.5.1 in Conservation Element to include reducing chemical runoff	New regulation (Section) in Chapter 30, Article VII, Division 4 or 8		Long Term (>5 yrs.)	FDEP Section 319 Water Quality Grant; Clean Water State Revolving Fund	
H.14	Review and revise as necessary existing species and habitat impact avoidance, minimization, mitigation, and compensation standards and develop new standards as necessary to address impacts in a manner that incorporates climate change considerations. Prioritize replacement of vegetation standards related to “core areas” identified in H.12 above.				Update to Chapter 30, Article VII, Division 4, Section 30-1613		Long Term (>5 yrs.)		

Light blue - Short-term (1-3 yrs.) recommendations
Light yellow - Medium-term (3-5 yrs.) recommendations
Light pink - Long-term (>5 yrs.) recommendations

Implementation Matrix

H.15	Incorporate factors to consider sea level rise in habitat management and mitigation plans, for example impacts in right of ways. Comment on updates to Management Plans for State Parks regarding the projected impacts of sea level rise on those resources.			Update to Objective 5-1.6 in Coastal Management Element			Long Term (>5 yrs.)		
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Infrastructure and Built Environment Recommendations

Recommendation		STAR Identifier	Overlap with Current Sustainability Plan	Comprehensive Plan	Code of Ordinances	Budget/Capital Improvements Element	Timeframe	Funding Opportunity	Additional Notes
I.1	Improve data related to properties and infrastructure facilities including digitizing all building footprints and linking flood elevation certificate information where available (finished flood elevations). Maintain a GIS database of all facilities and infrastructure.					Budgetary Implication	Short Term (1-3 yrs.)		
I.2	Identify key segments and other road segments for retrofits with coordinating agencies or in the Capital Improvements Element. Develop database of real-time flood impacts to road segments providing anecdotal evidence that will serve as the basis for more detailed survey-based analysis if necessary.					Budgetary Implication	Short Term (1-3 yrs.)		
I.3	Establish adaptation action areas or zoning overlays where enhanced or higher elevation and additional design criteria will be developed to protect infrastructure (such as water and wastewater) and development. Periodically revisit criteria as certain sea level rise milestones or thresholds are approached (by year or by level of rise).			New Goal or Policy in Coastal Management Element			Short Term (1-3 yrs.)		
I.4	Establish triggers for retrofit, relocation or removal of a structure impacted by changing site conditions such as when erosion is within a certain distance of the foundation; when monthly high tides are within a certain distance of the finished floor elevation; or when a setback decreases to a certain width. Consider the following concepts in development and redevelopment principles: <ul style="list-style-type: none">Address sea level rise in “non-conforming” structure policies;Address sea level rise in redevelopment or replacement of existing structures;			Update to Objective 1-2.2 in Future Land Use Element			Short Term (1-3 yrs.)		

Light blue - Short-term (1-3 yrs.) recommendations
Light yellow - Medium-term (3-5 yrs.) recommendations
Light pink - Long-term (>5 yrs.) recommendations

Implementation Matrix

	<ul style="list-style-type: none">Use rolling easements in property development and redevelopment strategy;Enhance Transfer of Development Rights program parameters to account for sea level rise impacts by directing growth to land outside of potentially vulnerable areas.								
I.5	Explore funding and grant opportunities for voluntary acquisition programs or voluntary retrofit programs. Consider the need for user-based assessments for capital or neighborhood retrofits where needed.						Short Term (1-3 yrs.)		
I.6	Incentivize new “resiliency” construction standards such as Resilience STAR™ (U.S. Department of Homeland Security), the Institute for Business and Home Safety’s FORTIFIED Home™, FORTIFIED Commercial, FORTIFIED Safer Business, FORTIFIED for Safer Living® or RELi standards. Other systems related to infrastructure project analysis include Envision and Infrastructure Voluntary Evaluation Sustainability Tool (“INVEST”).			Update to Coastal Management Element Objective 5-1.6	Update to Chapter 6 or Chapter 30		Short Term (1-3 yrs.)		
I.7	To address the compounding impacts of poor water quality with sea level rise, update any required best management practices for water quality improvement such as those that provide greater infiltration/inflow of rainwater, increased stormwater capture and/or water recycling programs, the use of low impact on natural retention strategies development, improved maintenance procedures for public sewer mains, policies to address impaired private sewer laterals, and other proactive measures.		Stormwater, bullet #5	Update to Policy 6-1.5.1 in Conservation Element		Budgetary Implication	Short Term (1-3 yrs.)	South Florida Water Management District Cooperative Funding Program	
I.8	Update Landscape Manual and landscaping requirements in the Code to more specifically require water conservation efforts in private landscaping within the Village.				Update to Chapter 30, Article V, Division 6, Section 30-825 and 826	Budgetary Implication	Medium Term (3-5 yrs.)		
I.9	Draft an ordinance to address natural forces’ degradation and damage to public roads, streets, highways, bridges, sidewalks, curbs and curb ramps, crosswalks, bicycle ways, hiking and walking paths and trails, underpasses, overpasses, and other improved public rights-of-way used for travel and recreation or other appropriate infrastructure.				Update to Chapter 30, 34 or 50		Medium Term (3-5 yrs.)		
I.10	Conduct a comprehensive review of the Code for potential improvements to address future flood risk. For example, add a provision to the Residential and Nonresidential Building Permit Allocation Evaluation Criteria and Awards related to future flood risk. The provision could incentivize elevation above base flood elevation and design of property serving infrastructure and mechanical systems that factor in future flood risk.				Update to Chapter 30, Article IV, Division 11, Section 30-476		Medium Term (3-5 yrs.)		

Light blue - Short-term (1-3 yrs.) recommendations
Light yellow - Medium-term (3-5 yrs.) recommendations
Light pink - Long-term (>5 yrs.) recommendations

Implementation Matrix

I.11	Work with FDOT to develop site surveys of road bed elevation and, as appropriate, suggest engineering designs to raise portions of U.S. Highway 1 that currently show vulnerability to nuisance tidal flooding by 2030.			Update to Intergovernmental Coordination Element Objective 8-1.4		Budgetary Implication	Long Term (>5 yrs.)		
I.12	Utilize the tidal flood vulnerability maps for roads as a guide for a public outreach campaign to develop a photographic record that documents the date, time, and severity of nuisance tidal flooding events.					Budgetary Implication	Long Term (>5 yrs.)		



Village Buildings and Key Facilities

Village Buildings and Key Facilities Recommendations

Recommendation		STAR Identifier	Overlap with Current Sustainability Plan	Comprehensive Plan	Code of Ordinances	Budget/Capital Improvements Element	Timeframe	Funding Opportunity	Additional Notes
VB.1	Consider sea level rise impacts in capital planning by identifying critical assets (habitat and infrastructure) over time through enhanced data sets and field observations to continually plan for managed relocation of at-risk facilities, and/or other measures to ensure continuity of at risk assets. When risk is identified, consider repair and maintenance, elevation or spot-repair of key components, or fortification of structures where needed including when to consider managed retreat rather than continue with repairs and maintenance in light of sea level rise.			New Goal or Policy in Capital Improvements Element		Budgetary Implication	Short Term (1-3 yrs.)		
VB.2	Conduct detailed site-level flood exposure audits for the wastewater pump station facility at 142 Sunshine Blvd. and the Islamorada Wastewater Treatment Plant to determine above ground elevations and, as appropriate, structural flood resistance for electronics and mechanical components. Develop detailed GIS datasets, including bottom of invert elevation for access and junction points, to support site-level vulnerability assessments of underground wastewater infrastructure within the Village of Islamorada.					New Budget Item	Short Term (1-3 yrs.)	FEMA’s Pre-Disaster Mitigation Grant Program; FEMA’s Hazard Mitigation Grant Program; FEMA’s Flood Mitigation Assistance Program	
VB.3	Develop long-term flood resilience alternatives for Fire Station #19, located at 74070 Overseas Highway (close coordination with FDOT will be required to ensure transport access to this facility is maintained).					New Budget Item	Short Term (1-3 yrs.)		
VB.4	Development and maintenance of recording protocols and, as necessary, engineering assessments to assess resilience of below-grade pipes and pump infrastructure to increased saltwater incursion associated with sea level rise.					New Budget Item	Short Term (1-3 yrs.)		

Light blue - Short-term (1-3 yrs.) recommendations
Light yellow - Medium-term (3-5 yrs.) recommendations
Light pink - Long-term (>5 yrs.) recommendations

Implementation Matrix

VB.5	Develop and maintain a comprehensive GIS-based inventory that includes building footprints, finished first floor elevation data, and elevations of accessory electrical equipment for all existing critical infrastructure and Village of Islamorada facilities.					Budgetary Implication	Short Term (1-3 yrs.)		
VB.6	Link energy efficiency upgrades to capital asset improvements, renovations, or additions.		Energy, bullet #1 Energy, bullet #2		New Article in Chapter 34 or New Division in Chapter 30, Article VII to address energy		Short Term (1-3 yrs.)		
VB.7	Conduct American Society of Heating, Refrigerating, and Air-Conditioning Engineers Level I or Level II energy audits on Village facilities to identify energy conservation measures.					Budgetary Implication	Short Term (1-3 yrs.)	Energy Foundation	
VB.8	Optimize planning, management and maintenance of Village assets to reduce GHG emissions.			New Goal in Public Facilities Element focused on GHG reductions or energy conservation	New regulation (article) in Chapter 34 on Energy Conservation		Short Term (1-3 yrs.)		
VB.9	Negotiate terms to allow for Village to purchase plug-in electric or plug-in hybrid vehicles.		Transportation, bullet #3				Short Term (1-3 yrs.)	Energy Foundation	
VB.10	Conduct feasibility studies for alternative energy at Village facilities.					Budgetary Implication	Short Term (1-3 yrs.)	Energy Foundation	



Adaptation Strategies

Adaptation Strategies for Homes and Businesses Recommendations

Recommendation		STAR Identifier	Overlap with Current Sustainability Plan	Comprehensive Plan	Code of Ordinances	Budget/Capital Improvements Element	Timeframe	Funding Opportunity	Additional Notes
AS.1	Continue discussing sea level rise vulnerability with residents and stakeholders, along with the importance of having a method to weigh different adaptation actions against one another to ensure the most beneficial strategies are implemented. Implement this through annual workshops on the progress of implementing the Islamorada Matters Plan. Annual workshops should occur at the beginning of the capital budgeting process.		Other, bullet #2	New Climate Change Element or Update to Coastal Management Element Objective 5-1.6	New Division in Chapter 30, Article VII on Climate Change	Budgetary Implication	Short Term (1-3 yrs.)		
AS.2	Development and implementation of a geographic database (GIS and listing of “events”) for Village employees (and interested residents) to document the time and location of nuisance flood events that affect neighborhoods and facilities in neighborhoods. Development of such a database					Budgetary Implication	Short Term (1-3 yrs.)	FDEP Coastal Partnership Initiative; FEMA's Hazard Mitigation Grant Program; FEMA's Flood Mitigation Assistance Program	

Light blue - Short-term (1-3 yrs.) recommendations
Light yellow - Medium-term (3-5 yrs.) recommendations
Light pink - Long-term (>5 yrs.) recommendations


Implementation Matrix

	over the course of several years will not only raise public awareness about any increase in tidal flood issues, but will also provide critical data that can inform future decisions to elevate or otherwise adapt roads with vulnerability to future sea level rise. Database should be updated and reported upon at Annual workshop described in AS.1.								
AS.3	Ensure that future flood vulnerability assessments in Islamorada build upon the work in the Islamorada Matters project and continue efforts to develop a more complete digital record of Elevation Certificates for homes and businesses. Use, integrate and improve Elevation Certificate record to promote higher confidence in flood risk assessments, providing a basis for development of a building by building prioritization for flood retrofit and/or rebuilding as conditions warrant.					Budgetary Implication	Short Term (1-3 yrs.)	FDEP Coastal Partnership Initiative	
AS.4	Pursue funding strategies and tools to help private property owners elevate structures in the FEMA Velocity flood zone.				New regulation (section) in Chapter 6, Article III		Short Term (1-3 yrs.)	Hazard Mitigation Grant Program; Flood Mitigation Assistance Program	
AS.5	Continue coordinating Village adaptation efforts with other municipalities and Monroe County to increase benefits, ensure a more regional impact and strengthen the Village’s individual efforts.			Update to Intergovernmental Coordination Element Objective 8-1.4			Short Term (1-3 yrs.)		
AS.6	Develop a framework for using new knowledge to engage with residents so that consensus on an eventual adaptation action is both data and stakeholder driven. Expand communications on sea level rise and align them with future efforts within the CRS program to provide information about areas predicted to experience more flooding impacts in the future due to sea level rise (for example CRS Credit 322.c).		Other, bullet #2			Budgetary Implication	Short Term (1-3 yrs.)	FDEP Coastal Partnership Initiative; FEMA's Hazard Mitigation Grant Program; FEMA's Flood Mitigation Assistance Program	
AS.7	Conduct additional study of an initiative to elevate and floodproof buildings within Islamorada. Identify additional barriers to elevating strategies such as height restrictions that may curtail the ability of someone to construct to higher elevations. <ul style="list-style-type: none">• Provide updates in Village communications as needed on progress made on Islamorada Matters Plan.• Highlight “demonstration” projects to provide examples of benefits to residents and business owners.• Distribute information about Islamorada Matters planning effort at Village events.				New Ordinance in Chapter 6, Article III	Budgetary Implication	Medium Term (3-5 yrs.)	FDEP Coastal Partnership Initiative; FEMA's Hazard Mitigation Grant Program; FEMA's Flood Mitigation Assistance Program	
AS.8	In future modeling efforts, model benefits and costs of joint action for adapting roads and buildings.					Budgetary Implication	Medium Term (3-5 yrs.)	FDEP Coastal Partnership Initiative; FEMA's Hazard Mitigation Grant Program;	

Light blue - Short-term (1-3 yrs.) recommendations
Light yellow - Medium-term (3-5 yrs.) recommendations
Light pink - Long-term (>5 yrs.) recommendations

Implementation Matrix

								FEMA's Flood Mitigation Assistance Program	
AS.9	Collaborate to consider mandatory construction setbacks that prohibit construction and significant redevelopment in areas that will likely be impacted by sea level rise within the life of the structure.			New Policy in Objective 8-1.4 in Intergovernmental Coordination Element	New regulation (Section) in Chapter 30, Article II		Medium Term (3-5 yrs.)		
AS.10	Strengthen rebuilding restrictions for nonconforming structures.			New Policy in Objective 1-2.2 in Future Land Use Element	New regulation (Section) in Chapter 30, Article II		Medium Term (3-5 yrs.)		
AS.11	Develop incentive program for developers and property owners who relocate structures landward, site development in upland areas, conserve open space along the shoreline, and/or preserve or restore natural flood buffers.				New regulation (Section) in Chapter 30, Article VII	Budgetary Implication	Medium Term (3-5 yrs.)		

<div><div>Sustainability Recommendations</div></div>									
Recommendation		STAR Identifier	Overlap with Current Sustainability Plan	Comprehensive Plan	Code of Ordinances	Budget/Capital Improvements Element	Timeframe	Funding Opportunity	Additional Notes
S.1	Promote a cultural shift aimed at saving money and reducing carbon emissions.		Other, bullet #2	New Policy in Objective 1-4.7 of Future Land Use Element	New regulation (article) in Chapter 34 on Energy Conservation		Short Term (1-3 yrs.)		
S.2	Consistently highlight available and pending incentives for residents desiring to perform energy retrofits or renewable energy deployment. Work with Florida Keys Electric Cooperative on promoting their programs.		Other, bullet #2				Short Term (1-3 yrs.)	Energy Foundation	
S.3	Achieve recognition as a Bicycle Friendly Community or Walk Friendly Community.	HS-1(6)		New Objective or Policy or Update to Transportation Element Policy 2-1.5.2	New Ordinance in Chapter 30, Article VII	Budgetary Implication	Short Term (1-3 yrs.)	People for Bikes Community Grant Program; Map 21 Surface Transportation Program and Transportation Alternative Program	
S.4	Train inspectors to enforce water/energy efficiency standards in adopted building codes.	CE-5(7)		Update to Conservation Element Policy 6-1.13-4	Update to Chapter 2, Article III, Division 3, Section 2-142 to require this training	Budgetary Implication	Short Term (1-3 yrs.)	Energy Foundation	
S.5	Adopt more energy efficiency regulations for buildings within the jurisdiction.	CE-2(6)	Energy, bullet #4	Update to Conservation Element Policy 6-1.13.4	New Ordinance in Chapter 6, Article II adopting efficiency mandating regulations; New Article in Chapter 34		Short Term (1-3 yrs.)		

Light blue - Short-term (1-3 yrs.) recommendations
Light yellow - Medium-term (3-5 yrs.) recommendations
Light pink - Long-term (>5 yrs.) recommendations

Implementation Matrix

					on Energy Conservation				
S.6	Implement specific programs/services or create facility upgrades that transition community towards use of alternatives modes of transportation and low-emissions vehicles. Look for opportunities to improve the efficiency of Village fleet.	CE-2(8)				Budgetary Implication	Medium Term (3-5 yrs.)	Renewable Energy and Energy-Efficient Technologies Grant Program; Energy Foundation	
S.7	Create incentives to help relocate residents from hazardous areas.	HS-6(7)			New Ordinance in Chapter 6, Article III or new regulation in Chapter 46, Article II, Section 46.32	Budgetary Implication	Medium Term (3-5 yrs.)	Flood Mitigation Assistance Program; Pre-Disaster Mitigation Program; Residential Construction Mitigation Program	
S.8	Adopt a waste management plan that identifies the community’s greatest sources of waste, sets formal waste reduction targets and establishes actions to help reach waste reduction goals.	CE-7(1)		Update to Public Facilities Element Goal 4-4	New Ordinance in Chapter 46	Budgetary Implication	Medium Term (3-5 yrs.)	FDEP Small County Consolidated Grants	
S.9	Collaboratively create/ run at least two targeted recycling programs at key locations throughout the community.	CE-7(7)	Waste, bullet #2; Waste, bullet #3; Waste, bullet #4; Waste, bullet #5	Update to Public Facilities Element Policy 4-4.1.1	New Ordinance in Chapter 46, Article II	Budgetary Implication	Medium Term (3-5 yrs.)	FDEP Small County Consolidated Grants	
S.10	Implement incentives ensuring that residents and businesses are working toward community waste reduction targets.	CE-7(5)			New regulation in Chapter 46, Article II, Section 46.32		Medium Term (3-5 yrs.)		
S.11	Implement specific programs and services or create facility upgrades that reduce waste in the community.	CE-2(9)	Waste, bullet #3			Budgetary Implication	Medium Term (3-5 yrs.)	FDEP Small County Consolidated Grants; Energy Foundation	
S.12	Create guidelines to encourage incorporation of active building design features in new buildings.	HS-1(3)		New Objective or Policy or Update to Future Land Use Element Objective 1-2.1	New regulation in Chapter 6, Article II		Long Term (>5 yrs.)		
S.13	Adopt an energy/water use information disclosure ordinance requiring energy/water users to disclose consumption levels.	CE-5(3)			New Ordinance in Chapter 34, Article II or III; New Article in Chapter 34 on Energy Conservation		Long Term (>5 yrs.)		
S.14	Adopt specific product bans that will significantly advance progress towards waste reduction goals. For example, bans on single use plastic grocery bags and disposable food containers have been banned in other U.S. cities.	CE-7(2)		Update to Public Facilities Element Goal 4-4	New Ordinance in Chapter 46		Long Term (>5 yrs.) (if state statute eliminated)		

Appendix G. Islamorada Survey and Responses



Islamorada Goal Prioritization Survey

Preliminary Questions

*1. Are you currently employed?

- ☐ No, not currently employed.
- ☐ No, retired.
- ☐ Yes, in the public sector.
- ☐ Yes, in the private sector.
- ☐ Yes, I am a homemaker.
- ☐ Yes, I run my business from home.

*2. Are you a full-time or part-time resident of the Village of Islamorada?

- ☐ Full-time resident of Islamorada.
- ☐ Part-time resident of Islamorada.
- ☐ Don't live in Islamorada but own a business in Islamorada
- ☐ Don't live in Islamorada but work in Islamorada
- ☐ Neither, a visitor.

*3. Out of the Seven (7) Sustainability Tools for Assessing and Rating Communities ("STAR") Goal Areas below, which is your top priority?

- ☐ Built Environment (Evaluates community development patterns, livability and design characteristics with an emphasis on access and choice for all residents regardless of income)
- ☐ Climate & Energy (Aims to reduce climate impacts and increase resource efficiency in order to create safer and healthier communities)
- ☐ Natural Systems (Helps communities protect and restore the natural resource base that supports life)
- ☐ Health & Safety (Recognizes that the development of healthy, safe and resilient communities requires proactive efforts to prevent disease, injury, and premature death by fortifying protective features and reducing risk factors that undermine healthy outcomes)
- ☐ Economy & Jobs (Promotes equitably shared prosperity and access to quality jobs)
- ☐ Education, Arts & Community (Promotes an educated, cohesive and socially connected community)
- ☐ Equity & Empowerment (Promotes equity, inclusion and access to opportunity for all residents)

Islamorada Goal Prioritization Survey

STAR Goal Area Prioritization Questions

***4. In relation to the Built Environment, please rank the following potential recommendations. (Select one ranking for each described action)**

	Extremely important	Somewhat important	Neutral on this	Less important	Totally unimportant
Enforce noise and light standards during permitting, design and construction of projects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establish a program that eliminates existing sources of light pollution from government entities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adopt a policy or code requiring walkability standards for new developments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support temporary creative neighborhood uses (like farmers markets or community gardens) for vacant properties and greyfields (properties somewhat disturbed but with no original pristine vegetation).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adopt a complete streets policy to address all users (policy that states that streets are designed for safety, comfort and convenience of pedestrians, bicyclists, drivers and public transit users).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increase the mileage of sidewalks connecting people with destinations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Establish or support a community-wide public bike share program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

Islamorada Goal Prioritization Survey

***5. In relation to Climate & Energy, please rank the following potential recommendations.
(Select one ranking for each described action)**

	Extremely important	Somewhat important	Neutral on this	Less important	Totally unimportant
Require that internal decisions by local government departments use the most current climate science and that staff monitor climate change impacts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enforce regulations or offer incentives to encourage residents and businesses to shift behavior to prepare for future climate change impacts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adopt energy efficiency regulations for buildings within the Village.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adopt a renewable energy or alternative fuel targets for publicly-owned/government facilities and vehicles.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Install electric vehicle charging stations within the Village.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adopt an energy/water use disclosure ordinance requiring users to disclose consumption levels.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Train inspectors to enforce energy/water efficiency standards in adopted building codes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

Islamorada Goal Prioritization Survey

***6. In relation to Health & Safety, please rank the following potential recommendations.
(Select one ranking for each described action)**

	Extremely important	Somewhat important	Neutral on this	Less important	Totally unimportant
Create guidelines to encourage incorporation of active building design in new buildings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Become actively recognized as a Bicycle Friendly Community or Walk Friendly Community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adopt a "health in all policies" statement or policy commitment to be applicable to all local decision-making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce or eliminate toxic pesticides in locally-owned or managed buildings (e.g public facilities/government buildings) through the use of pest management techniques.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create insurance or other incentive structures to help remove residents from hazardous areas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Implement highest priority utility improvements listed in local mitigation strategy or other similar plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>				

Islamorada Goal Prioritization Survey

***7. In relation to Natural Systems, please rank the following potential recommendations.
(Select one ranking for each described action)**

	Extremely important	Somewhat important	Neutral on this	Less important	Totally unimportant
Increase the percentage of funding invested in green infrastructure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop a community-wide invasive species integrated pest management plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enforce regulations to control the use or sale of invasive species.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Partner with local or regional organizations to support one or more transportation management associations that promote rideshare programs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Educate the public on the impacts of poor air quality on human health and the natural environment and efforts they can take to reduce pollution and exposure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create or enhance programs aimed at increasing tree canopy through active planting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide incentives to residents and developers to protect critical watershed protection areas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)

Islamorada Goal Prioritization Survey

Climate Change and Sea Level Rise Questions

*8. How would you rate the overall sustainability of the Village of Islamorada? (1 is best)

- ☐ 1 - We are a very sustainable community.
- ☐ 2 - We are doing good, but could do better.
- ☐ 3 - I don't have a view either way.
- ☐ 4 - We are not doing nearly enough, but are doing some small things.
- ☐ 5 - We have real challenges on this and no success.

Why?

*9. How prepared do you think the Village of Islamorada is to deal with the impacts of climate change and sea level rise?

- ☐ The Village is very prepared to deal with the impacts of both.
- ☐ The Village is minimally prepared, but making significant progress toward becoming prepared.
- ☐ I don't have a view either way on the Village's preparedness.
- ☐ The Village is not nearly prepared enough and needs to do more quickly.
- ☐ The Village hasn't even begun to prepare.

Other (please specify)

10. What do you think is the most important thing the Village of Islamorada can do to prepare for sea level rise? (pick 3)

- ☐ Work to address flooding on roads and in neighborhoods.
- ☐ Develop a capital improvements plan focused on preparing Village infrastructure and buildings.
- ☐ Allow increased height to roof levels within the Village to deal with sea level rise.
- ☐ Make sure Village land acquisitions address sea level rise predictions for the future.
- ☐ Ensure that NEW development incentives address climate preparedness.
- ☐ Pursue funding sources to help residents and businesses make their properties more resilient to sea level rise.
- ☐ Nothing, only the residents and businesses should prepare, and they should pay for their own preparations.

Other (please specify)

Islamorada Goal Prioritization Survey

*11. What more can the Village do to be better prepared for disasters and extreme weather events? (pick 2)

- ☐ Perform an annual review and assessment of all plans, procedures, resources and trainings based on emergency response incidents and demands.
- ☐ Distribute emergency kits or supplies to low income or vulnerable populations in advance of such disasters/events.
- ☐ Create insurance or incentive structures to help remove residents from hazardous areas.
- ☐ Increase the percentage of funding invested on green infrastructure to mitigate storm damage.
- ☐ Implement highest priority utility improvements listed in the local mitigation strategy or other similar plan.

Other (please specify)

*12. Which of these needs to be best understood in the Village of Islamorada in terms of linking healthcare/health impacts and climate change? (pick 2)

- ☐ Extreme heat risks to aging and vulnerable segments of the population.
- ☐ Pest management to address increased risk of vectorborne diseases.
- ☐ Asthma, respiratory allergies and airway disease risks as heat and humidity increase.
- ☐ Foodborne disease and the resulting impact on nutrition.
- ☐ Mental health impacts from increased extreme weather events and heat waves.
- ☐ Waterborne diseases attributable to changing precipitation patterns, stronger storm events, and rising waters.

Other (please specify)

*13. What do you perceive are the biggest threats to the Village of Islamorada from climate change and sea level rise? (List or explain)

Islamorada Goal Prioritization Survey

Thank You!

***14. Would you allow your response(s) to be quoted directly in the Islamorada Matters Sustainability Plan?**

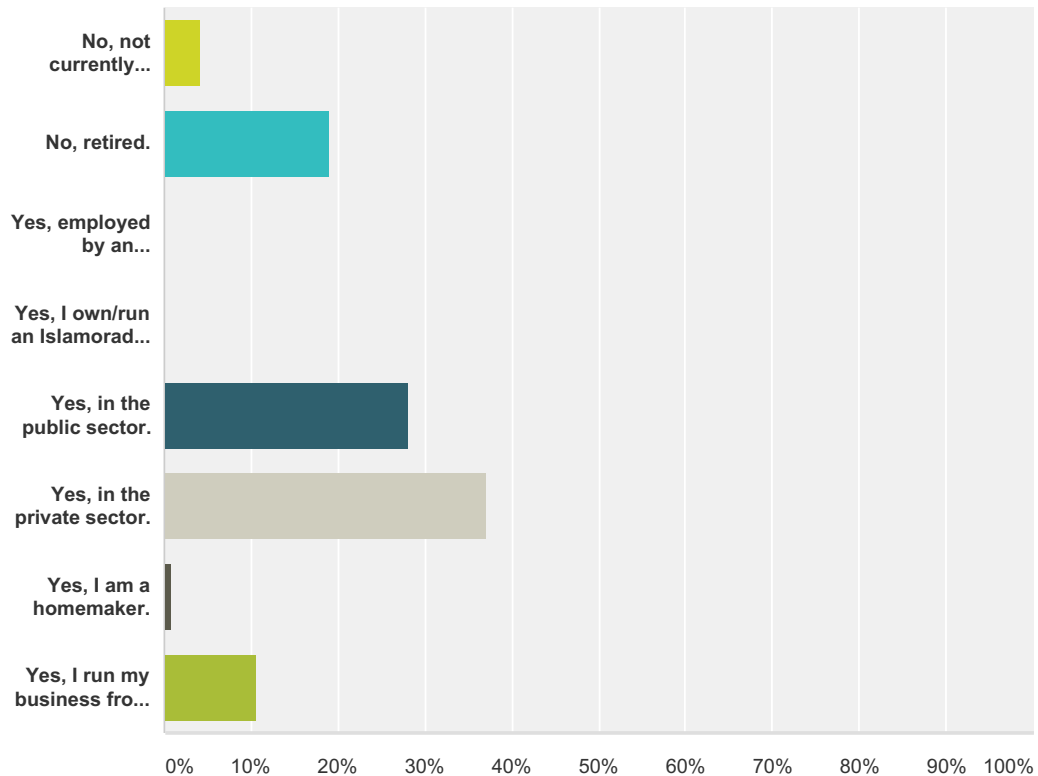
☐ Yes

☐ No

If yes, please provide your name, email, and phone number

Q1 Are you currently employed?

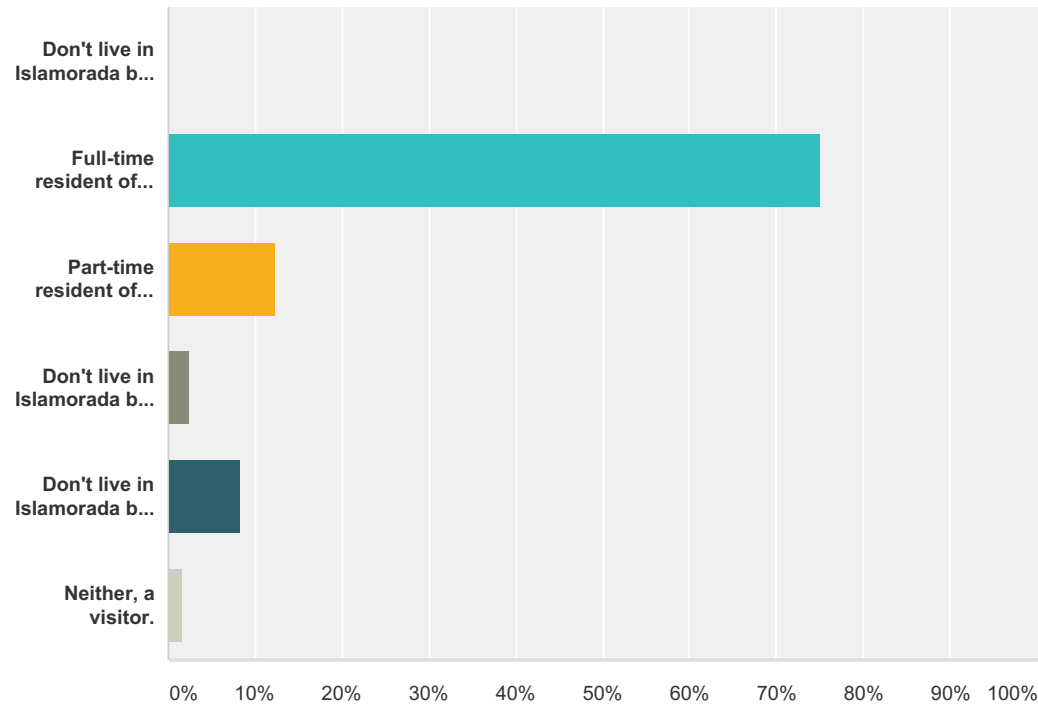
Answered: 121 Skipped: 0



Answer Choices	Responses	
No, not currently employed.	4.13%	5
No, retired.	19.01%	23
Yes, employed by an Islamorada business.	0.00%	0
Yes, I own/run an Islamorada business.	0.00%	0
Yes, in the public sector.	28.10%	34
Yes, in the private sector.	37.19%	45
Yes, I am a homemaker.	0.83%	1
Yes, I run my business from home.	10.74%	13
Total		121

Q2 Are you a full-time or part-time resident of the Village of Islamorada?

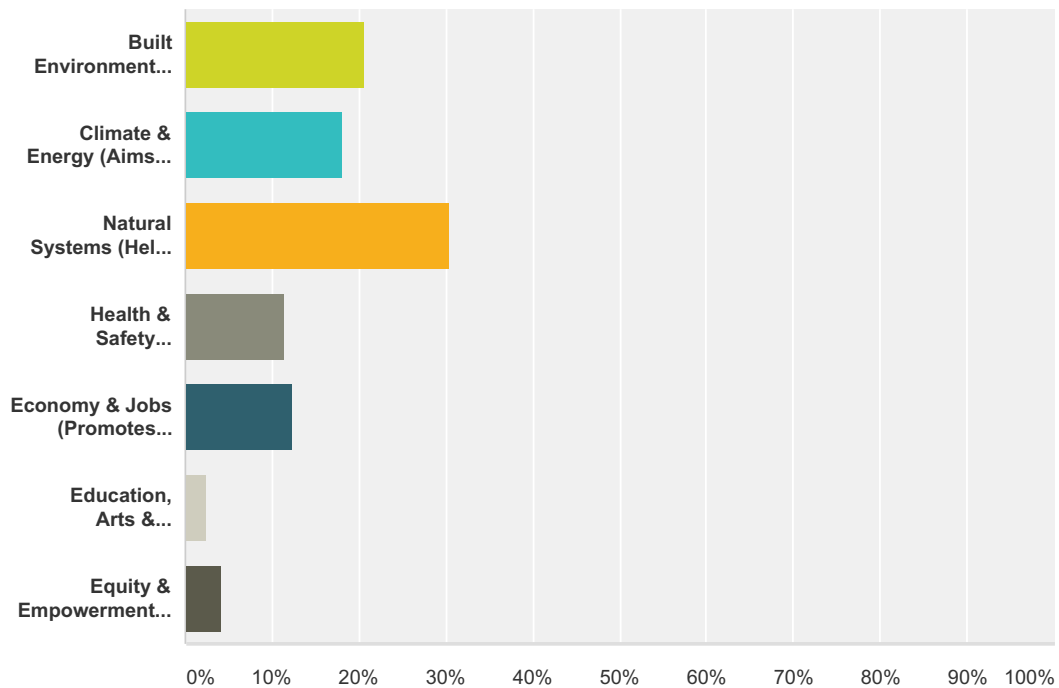
Answered: 121 Skipped: 0



Answer Choices	Responses	
Don't live in Islamorada but own a business in Islamorada	0.00%	0
Full-time resident of Islamorada.	75.21%	91
Part-time resident of Islamorada.	12.40%	15
Don't live in Islamorada but own a business in Islamorada	2.48%	3
Don't live in Islamorada but work in Islamorada	8.26%	10
Neither, a visitor.	1.65%	2
Total		121

Q3 Out of the Seven (7) Sustainability Tools for Assessing and Rating Communities ("STAR") Goal Areas below, which is your top priority?

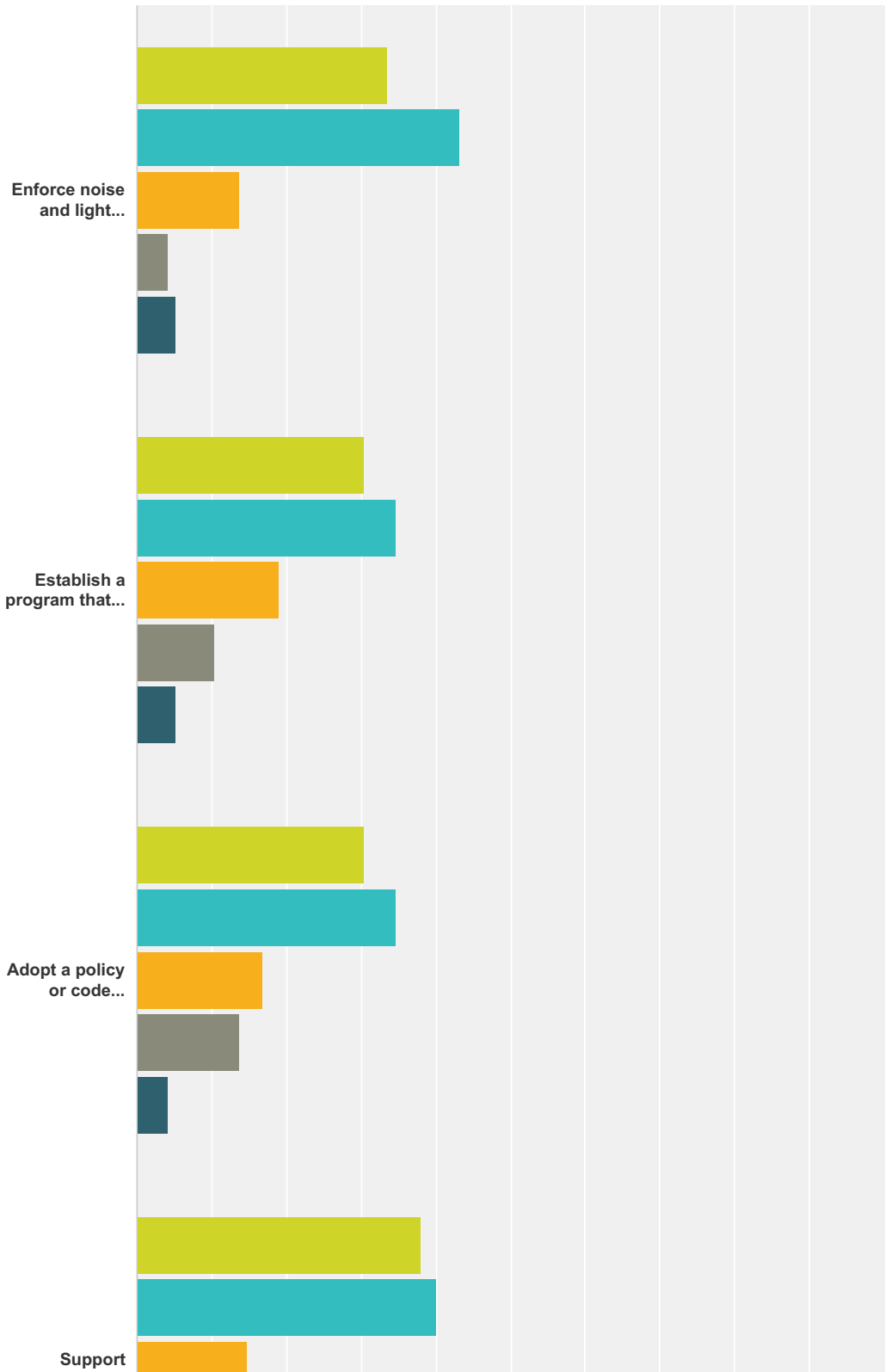
Answered: 121 Skipped: 0

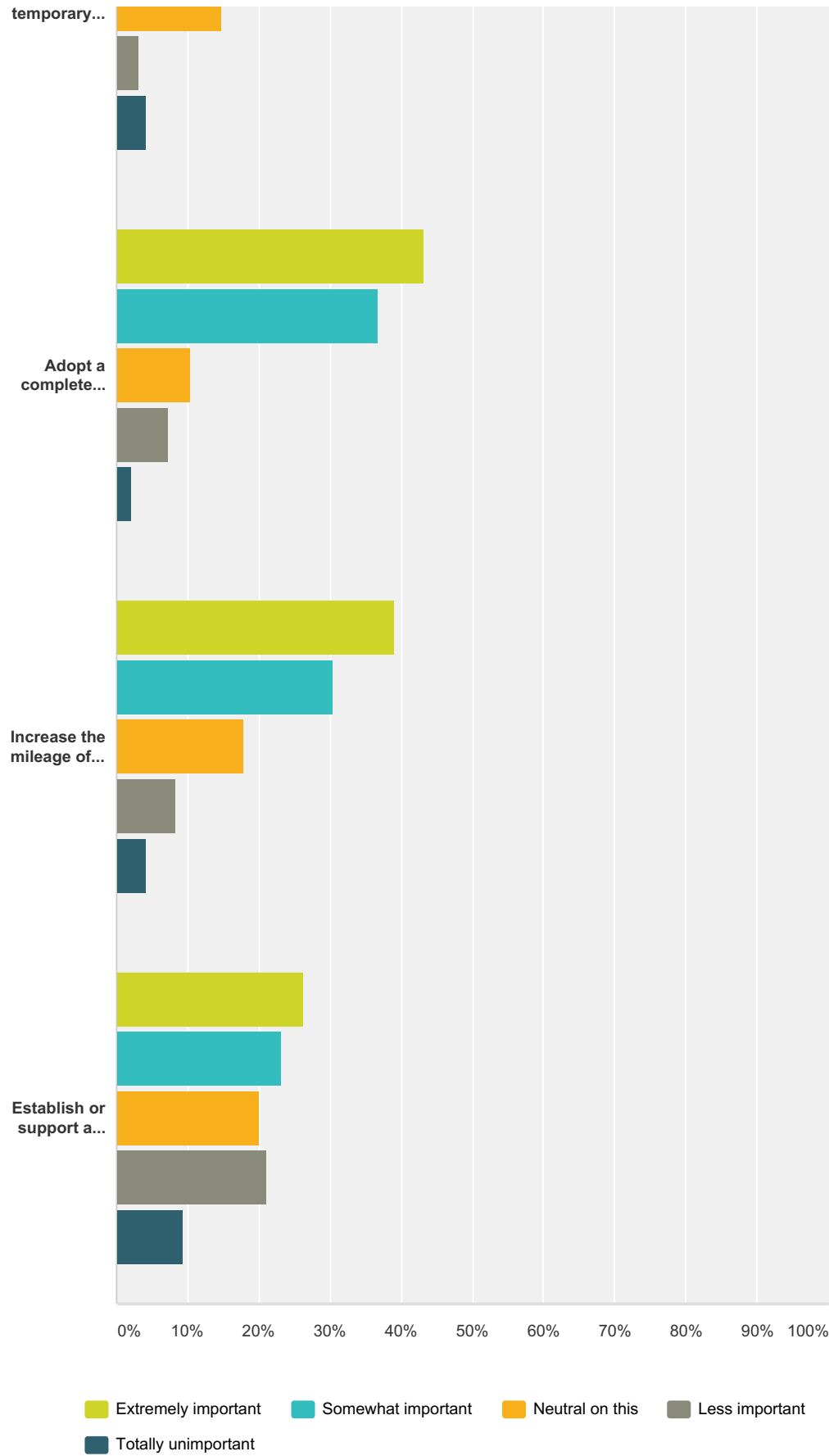


Answer Choices	Responses
Built Environment (Evaluates community development patterns, livability and design characteristics with an emphasis on access and choice for all residents regardless of income)	20.66% 25
Climate & Energy (Aims to reduce climate impacts and increase resource efficiency in order to create safer and healthier communities)	18.18% 22
Natural Systems (Helps communities protect and restore the natural resource base that supports life)	30.58% 37
Health & Safety (Recognizes that the development of healthy, safe and resilient communities requires proactive efforts to prevent disease, injury, and premature death by fortifying protective features and reducing risk factors that undermine healthy outcomes)	11.57% 14
Economy & Jobs (Promotes equitably shared prosperity and access to quality jobs)	12.40% 15
Education, Arts & Community (Promotes an educated, cohesive and socially connected community)	2.48% 3
Equity & Empowerment (Promotes equity, inclusion and access to opportunity for all residents)	4.13% 5
Total	121

Q4 In relation to the Built Environment, please rank the following potential recommendations. (Select one ranking for each described action)

Answered: 95 Skipped: 26

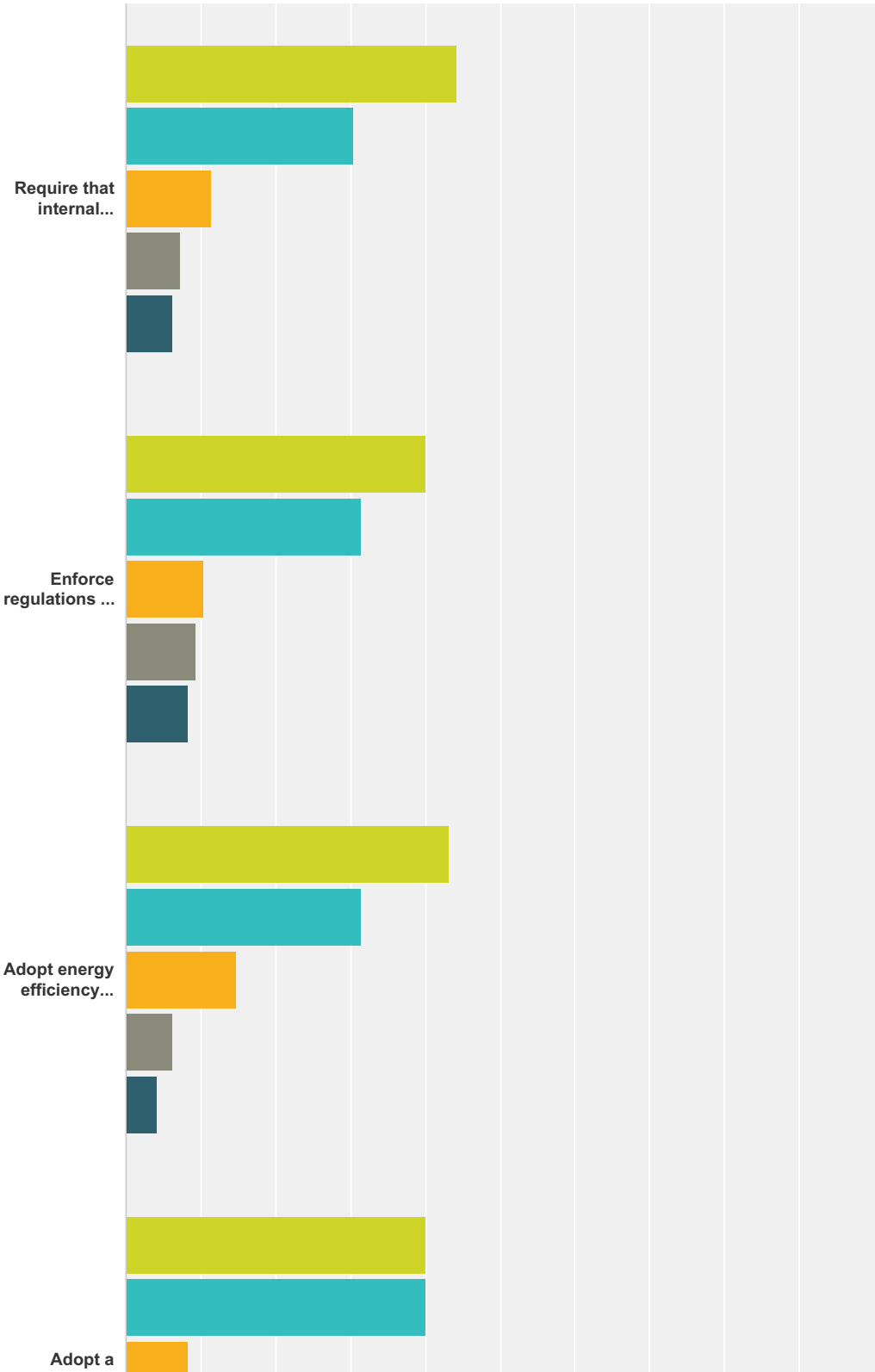


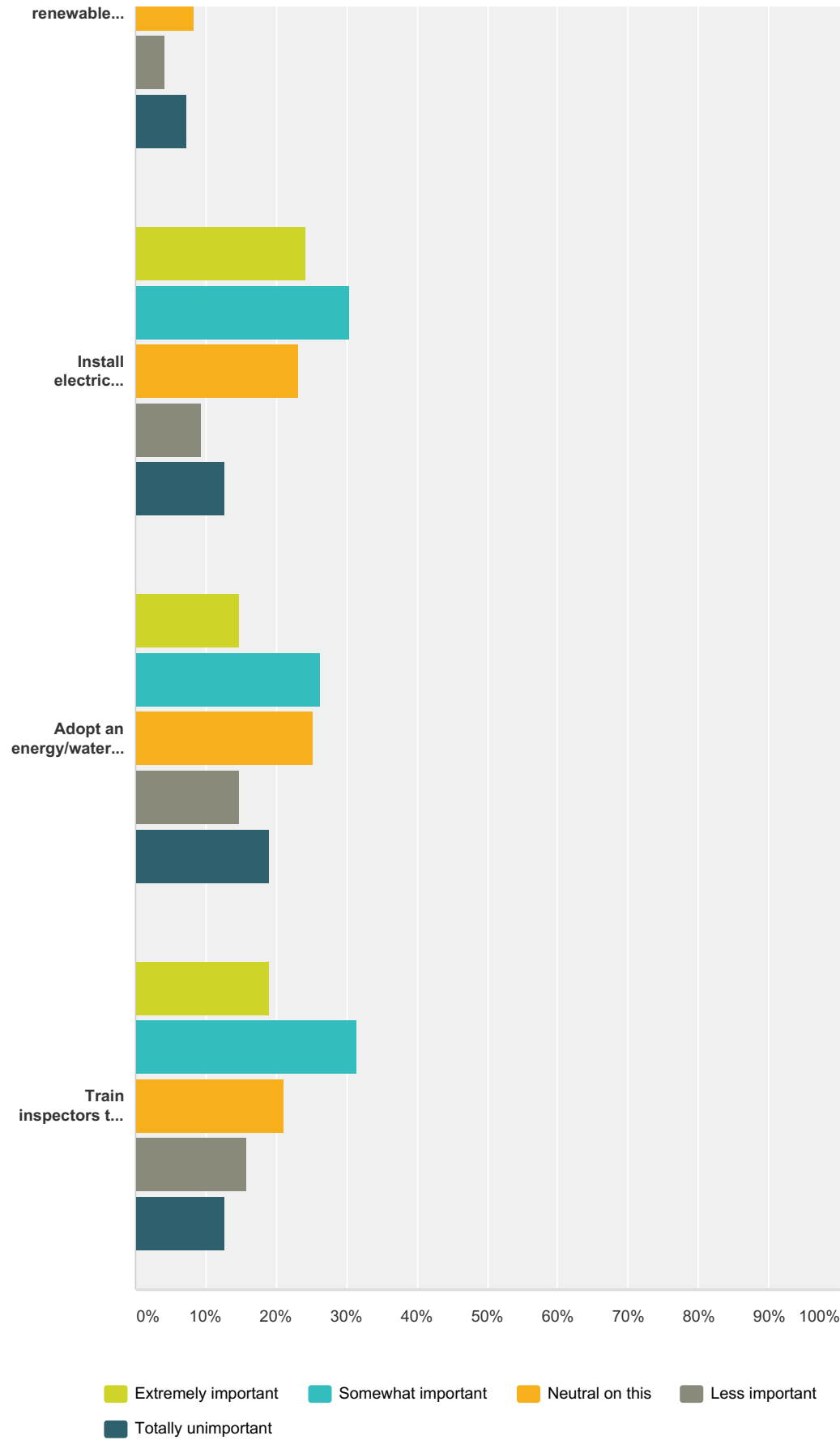


	Extremely important	Somewhat important	Neutral on this	Less important	Totally unimportant	Total
Enforce noise and light standards during permitting, design and construction of projects.	33.68% 32	43.16% 41	13.68% 13	4.21% 4	5.26% 5	95
Establish a program that eliminates existing sources of light pollution from government entities.	30.53% 29	34.74% 33	18.95% 18	10.53% 10	5.26% 5	95
Adopt a policy or code requiring walkability standards for new developments.	30.53% 29	34.74% 33	16.84% 16	13.68% 13	4.21% 4	95
Support temporary creative neighborhood uses (like farmers markets or community gardens) for vacant properties and greyfields (properties somewhat disturbed but with no original pristine vegetation).	37.89% 36	40.00% 38	14.74% 14	3.16% 3	4.21% 4	95
Adopt a complete streets policy to address all users (policy that states that streets are designed for safety, comfort and convenience of pedestrians, bicyclists, drivers and public transit users).	43.16% 41	36.84% 35	10.53% 10	7.37% 7	2.11% 2	95
Increase the mileage of sidewalks connecting people with destinations.	38.95% 37	30.53% 29	17.89% 17	8.42% 8	4.21% 4	95
Establish or support a community-wide public bike share program.	26.32% 25	23.16% 22	20.00% 19	21.05% 20	9.47% 9	95

Q5 In relation to Climate & Energy, please rank the following potential recommendations. (Select one ranking for each described action)

Answered: 95 Skipped: 26

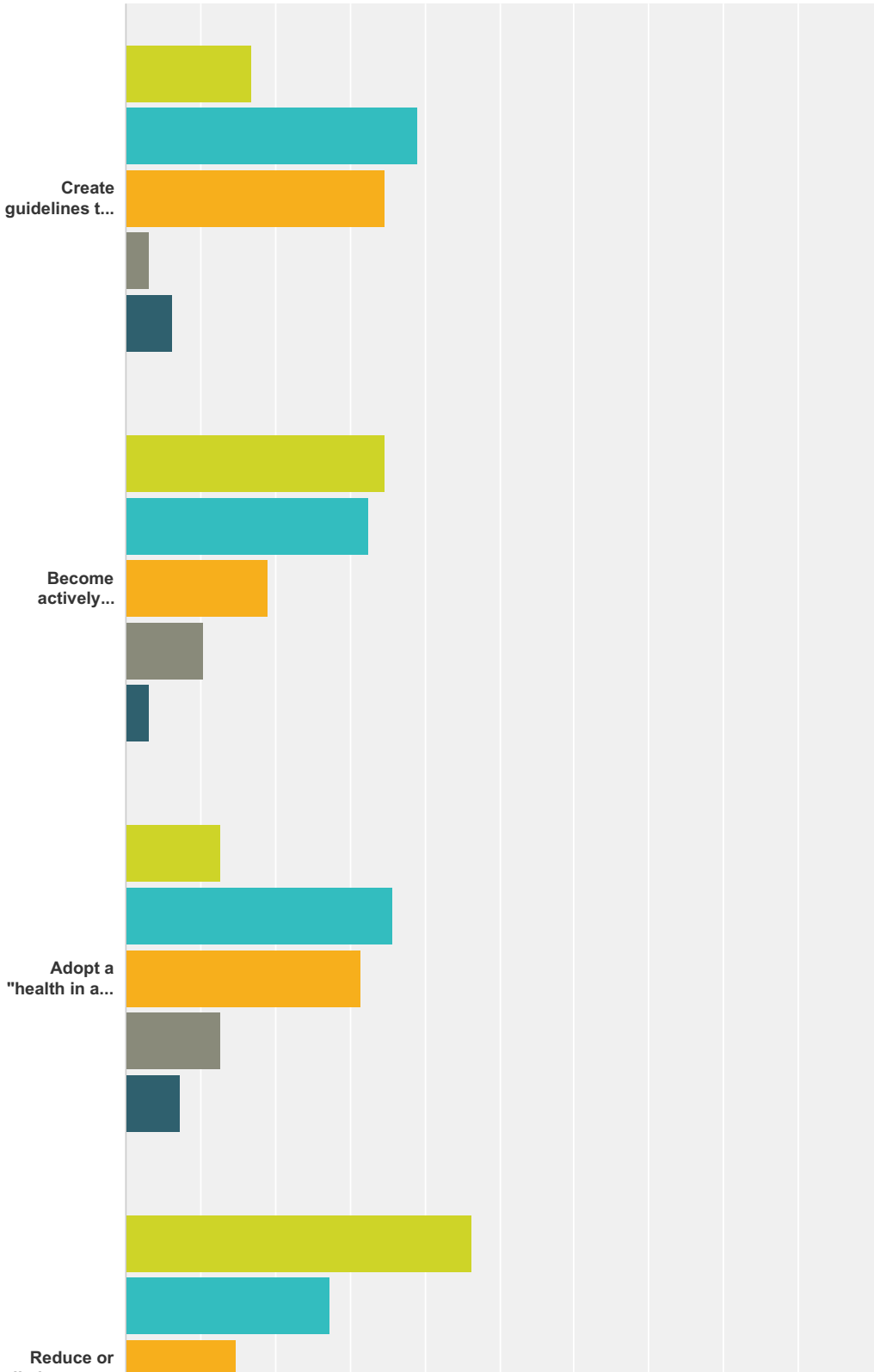


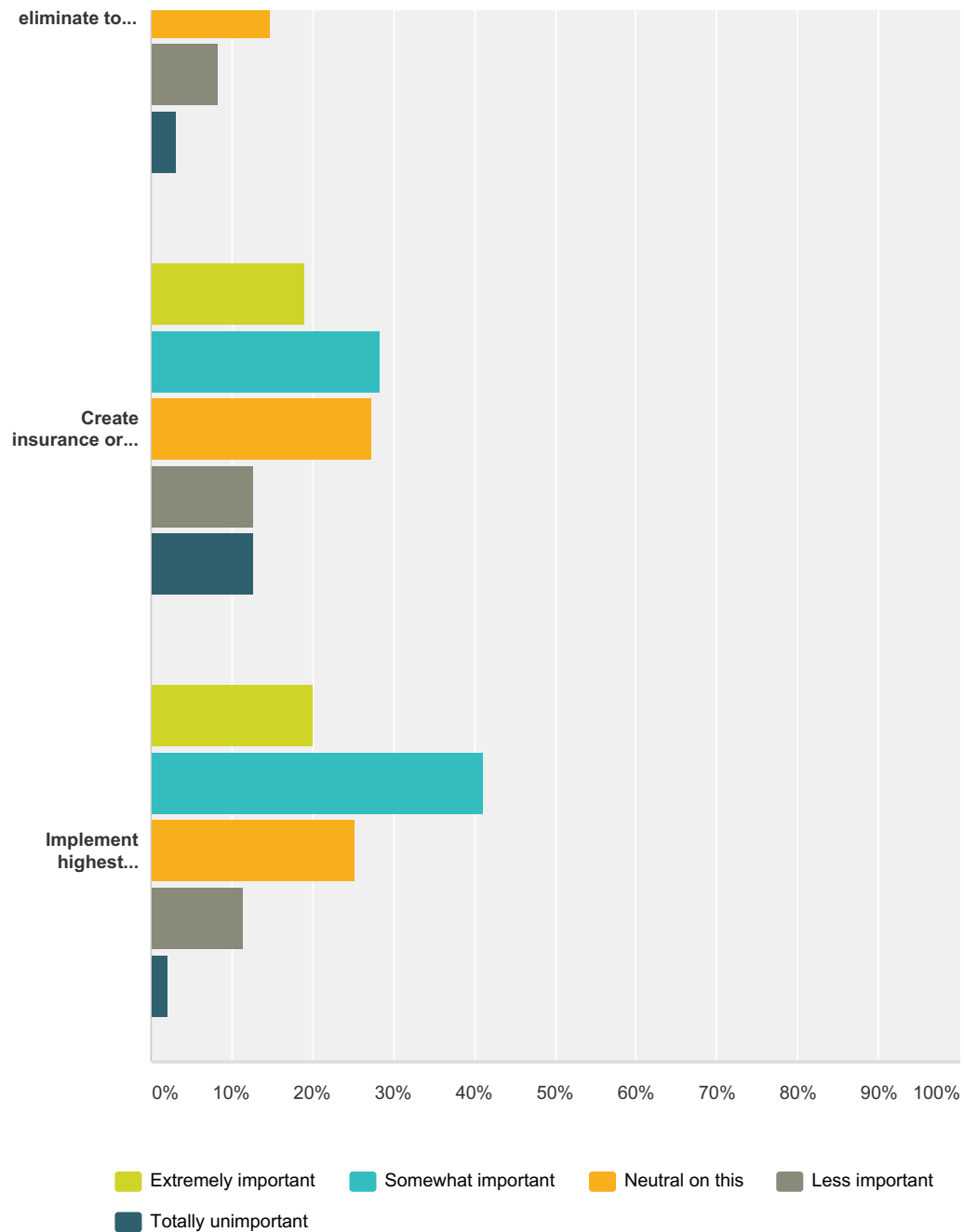


	Extremely important	Somewhat important	Neutral on this	Less important	Totally unimportant	Total
Require that internal decisions by local government departments use the most current climate science and that staff monitor climate change impacts.	44.21% 42	30.53% 29	11.58% 11	7.37% 7	6.32% 6	95
Enforce regulations or offer incentives to encourage residents and businesses to shift behavior to prepare for future climate change impacts.	40.00% 38	31.58% 30	10.53% 10	9.47% 9	8.42% 8	95
Adopt energy efficiency regulations for buildings within the Village.	43.16% 41	31.58% 30	14.74% 14	6.32% 6	4.21% 4	95
Adopt a renewable energy or alternative fuel targets for publicly-owned/government facilities and vehicles.	40.00% 38	40.00% 38	8.42% 8	4.21% 4	7.37% 7	95
Install electric vehicle charging stations within the Village.	24.21% 23	30.53% 29	23.16% 22	9.47% 9	12.63% 12	95
Adopt an energy/water use disclosure ordinance requiring users to disclose consumption levels.	14.74% 14	26.32% 25	25.26% 24	14.74% 14	18.95% 18	95
Train inspectors to enforce energy/water efficiency standards in adopted building codes.	18.95% 18	31.58% 30	21.05% 20	15.79% 15	12.63% 12	95

Q6 In relation to Health & Safety, please rank the following potential recommendations. (Select one ranking for each described action)

Answered: 95 Skipped: 26



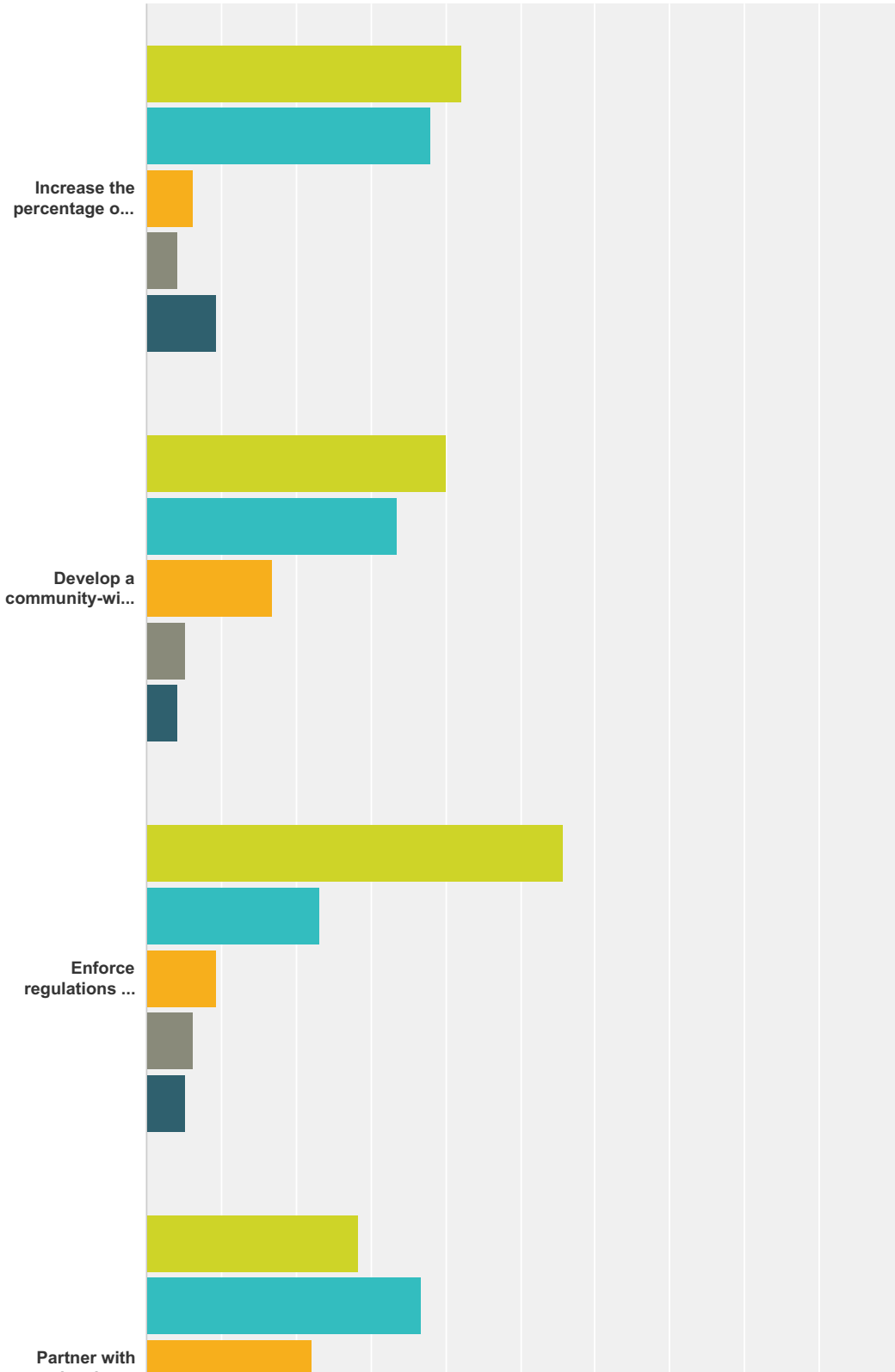


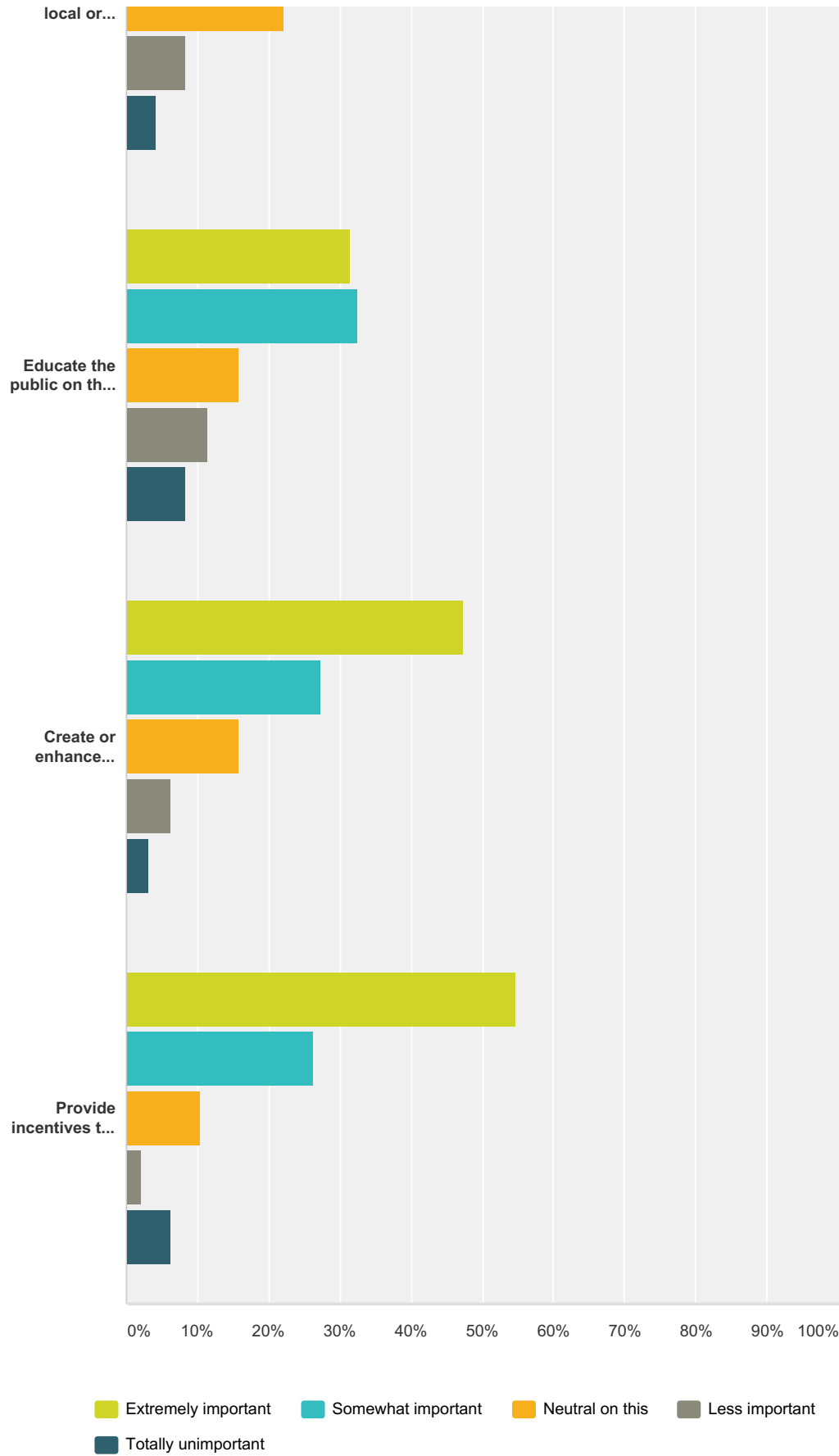
	Extremely important	Somewhat important	Neutral on this	Less important	Totally unimportant	Total
Create guidelines to encourage incorporation of active building design in new buildings.	16.84% 16	38.95% 37	34.74% 33	3.16% 3	6.32% 6	95
Become actively recognized as a Bicycle Friendly Community or Walk Friendly Community.	34.74% 33	32.63% 31	18.95% 18	10.53% 10	3.16% 3	95
Adopt a "health in all policies" statement or policy commitment to be applicable to all local decision-making.	12.63% 12	35.79% 34	31.58% 30	12.63% 12	7.37% 7	95
Reduce or eliminate toxic pesticides in locally-owned or managed buildings (e.g public facilities/government buildings) through the use of pest management techniques.	46.32% 44	27.37% 26	14.74% 14	8.42% 8	3.16% 3	95
Create insurance or other incentive structures to help remove residents from hazardous areas.	18.95% 18	28.42% 27	27.37% 26	12.63% 12	12.63% 12	95

Implement highest priority utility improvements listed in local mitigation strategy or other similar plan.	20.00% 19	41.05% 39	25.26% 24	11.58% 11	2.11% 2	95
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Q7 In relation to Natural Systems, please rank the following potential recommendations. (Select one ranking for each described action)

Answered: 95 Skipped: 26

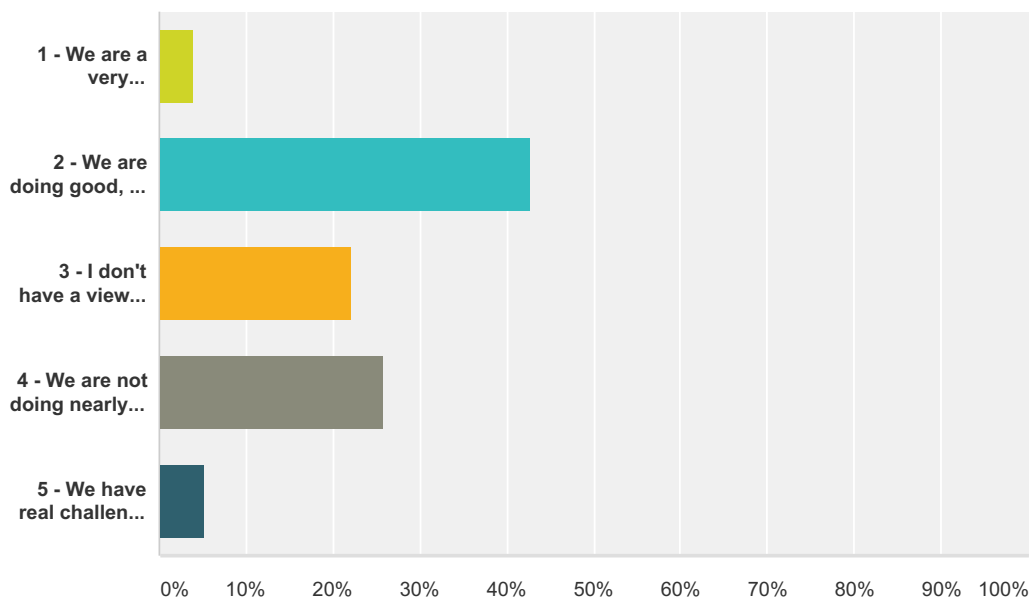




	Extremely important	Somewhat important	Neutral on this	Less important	Totally unimportant	Total
Increase the percentage of funding invested in green infrastructure.	42.11% 40	37.89% 36	6.32% 6	4.21% 4	9.47% 9	95
Develop a community-wide invasive species integrated pest management plan.	40.00% 38	33.68% 32	16.84% 16	5.26% 5	4.21% 4	95
Enforce regulations to control the use or sale of invasive species.	55.79% 53	23.16% 22	9.47% 9	6.32% 6	5.26% 5	95
Partner with local or regional organizations to support one or more transportation management associations that promote rideshare programs.	28.42% 27	36.84% 35	22.11% 21	8.42% 8	4.21% 4	95
Educate the public on the impacts of poor air quality on human health and the natural environment and efforts they can take to reduce pollution and exposure.	31.58% 30	32.63% 31	15.79% 15	11.58% 11	8.42% 8	95
Create or enhance programs aimed at increasing tree canopy through active planting.	47.37% 45	27.37% 26	15.79% 15	6.32% 6	3.16% 3	95
Provide incentives to residents and developers to protect critical watershed protection areas.	54.74% 52	26.32% 25	10.53% 10	2.11% 2	6.32% 6	95

**Q8 How would you rate the overall sustainability of the Village of Islamorada?
(1 is best)**

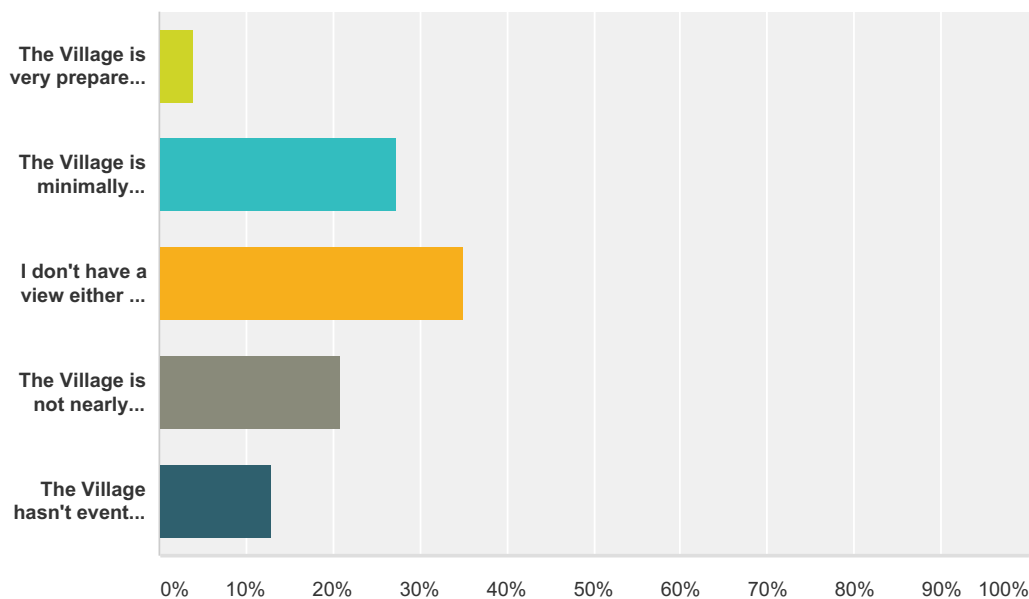
Answered: 77 Skipped: 44



Answer Choices	Responses	
1 - We are a very sustainable community.	3.90%	3
2 - We are doing good, but could do better.	42.86%	33
3 - I don't have a view either way.	22.08%	17
4 - We are not doing nearly enough, but are doing some small things.	25.97%	20
5 - We have real challenges on this and no success.	5.19%	4
Total		77

Q9 How prepared do you think the Village of Islamorada is to deal with the impacts of climate change and sea level rise?

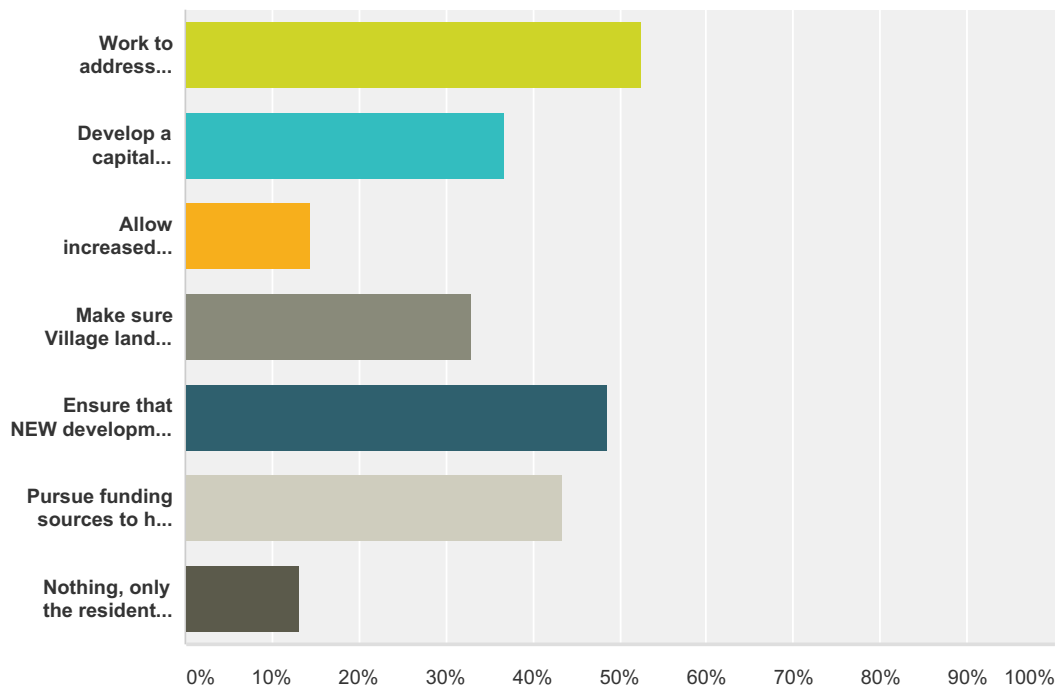
Answered: 77 Skipped: 44



Answer Choices	Responses	
The Village is very prepared to deal with the impacts of both.	3.90%	3
The Village is minimally prepared, but making significant progress toward becoming prepared.	27.27%	21
I don't have a view either way on the Village's preparedness.	35.06%	27
The Village is not nearly prepared enough and needs to do more quickly.	20.78%	16
The Village hasn't even begun to prepare.	12.99%	10
Total		77

Q10 What do you think is the most important thing the Village of Islamorada can do to prepare for sea level rise? (pick 3)

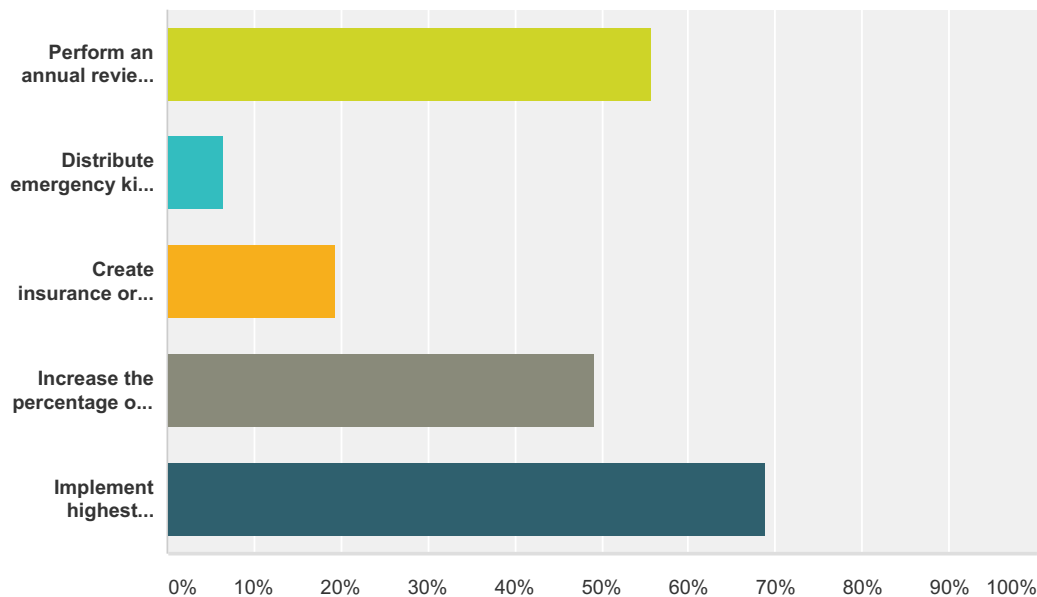
Answered: 76 Skipped: 45



Answer Choices	Responses	
Work to address flooding on roads and in neighborhoods.	52.63%	40
Develop a capital improvements plan focused on preparing Village infrastructure and buildings.	36.84%	28
Allow increased height to roof levels within the Village to deal with sea level rise.	14.47%	11
Make sure Village land acquisitions address sea level rise predictions for the future.	32.89%	25
Ensure that NEW development incentives address climate preparedness.	48.68%	37
Pursue funding sources to help residents and businesses make their properties more resilient to sea level rise.	43.42%	33
Nothing, only the residents and businesses should prepare, and they should pay for their own preparations.	13.16%	10
Total Respondents: 76		

Q11 What more can the Village do to be better prepared for disasters and extreme weather events? (pick 2)

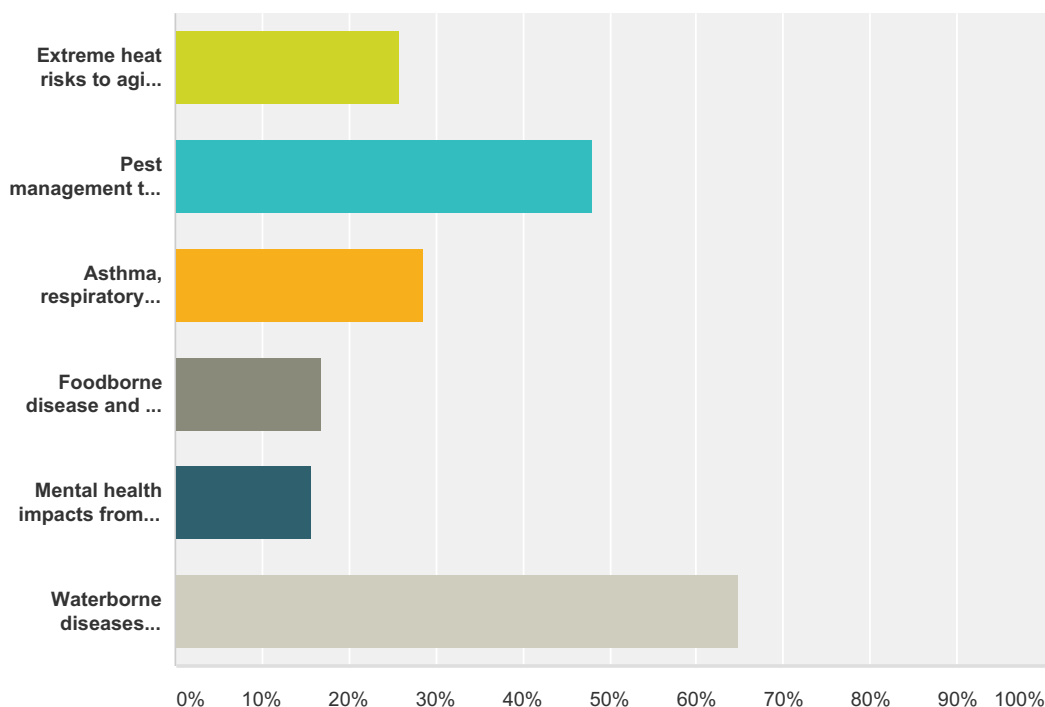
Answered: 77 Skipped: 44



Answer Choices	Responses
Perform an annual review and assessment of all plans, procedures, resources and trainings based on emergency response incidents and demands.	55.84% 43
Distribute emergency kits or supplies to low income or vulnerable populations in advance of such disasters/events.	6.49% 5
Create insurance or incentive structures to help remove residents from hazardous areas.	19.48% 15
Increase the percentage of funding invested on green infrastructure to mitigate storm damage.	49.35% 38
Implement highest priority utility improvements listed in the local mitigation strategy or other similar plan.	68.83% 53
Total Respondents: 77	

Q12 Which of these needs to be best understood in the Village of Islamorada in terms of linking healthcare/health impacts and climate change? (pick 2)

Answered: 77 Skipped: 44



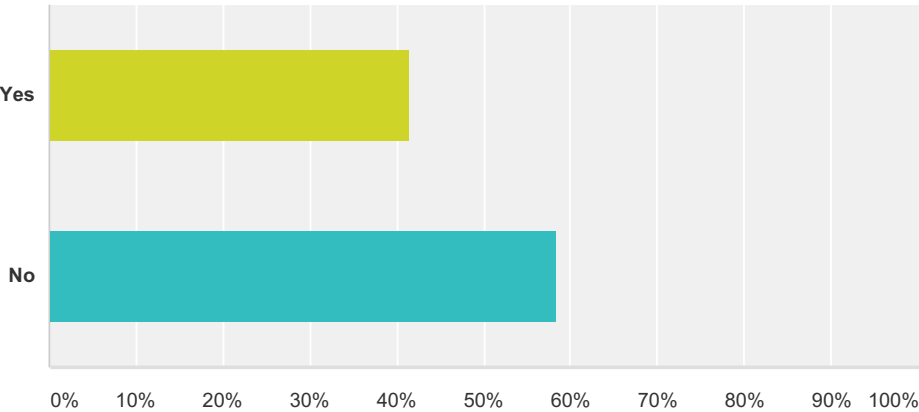
Answer Choices	Responses	
Extreme heat risks to aging and vulnerable segments of the population.	25.97%	20
Pest management to address increased risk of vectorborne diseases.	48.05%	37
Asthma, respiratory allergies and airway disease risks as heat and humidity increase.	28.57%	22
Foodborne disease and the resulting impact on nutrition.	16.88%	13
Mental health impacts from increased extreme weather events and heat waves.	15.58%	12
Waterborne diseases attributable to changing precipitation patterns, stronger storm events, and rising waters.	64.94%	50
Total Respondents: 77		

Q13 What do you perceive are the biggest threats to the Village of Islamorada from climate change and sea level rise? (List or explain)

Answered: 77 Skipped: 44

Q14 Would you allow your response(s) to be quoted directly in the Islamorada Matters Sustainability Plan?

Answered: 77 Skipped: 44



Answer Choices	Responses	
Yes	41.56%	32
No	58.44%	45
Total		77

Q13 What do you perceive are the biggest threats to the Village of Islamorada from climate change and sea level rise? (List or explain)

Answered: 77 Skipped: 44

#	Responses	Date
1	car traffic; traffic on it's way to Cuba; putting a TROLLEY on the Old Road by Jerry Hernandez - very abusive use of our ONLY alternate road during high traffic season; trashy US I will deter tourists; TDC promoting the Keys way, way, way too much; no one is having a good time in traffic!!!! and the locals can't even go to the grocery store often unless they have time to spend hours on the road; people will want to MOVE to a lovelier place, the place that Ron Levy and the original crowd imagined when they proposed the VILLAGE - an idyllic, enjoyable, low density town. it is being ruined big time.	5/25/2015 2:59 PM
2	none	5/22/2015 8:58 PM
3	-	5/21/2015 12:35 PM
4	We lose what little beaches we have in Islamorada, thereby eliminating a great portion of our tourist industry.	5/21/2015 10:26 AM
5	Water levels	5/20/2015 11:16 PM
6	Devaluation of property. Inability to acquire insurance for wind and flood. Regulations that may only be for the wealthy to afford.	5/20/2015 5:44 PM
7	inaction by an old-person, got-miner council	5/20/2015 5:41 PM
8	allowing too many people to enter the keys who do not respect the condition the Keys are in and they should be held accountable as well in preserving the environment and community	5/20/2015 5:05 PM
9	people, buildings and climate	5/20/2015 4:43 PM
10	loss of already limited affordable housing in low lying areas, downstairs enclosures, etc.	5/20/2015 4:37 PM
11	Water born pollution	5/20/2015 4:17 PM
12	Lack of funding, planning and protocol.	5/20/2015 4:03 PM
13	I think threats from climate change and sea level rise are minimal	5/20/2015 3:52 PM
14	I am neutral on this subject	5/20/2015 3:31 PM
15	If the climate continues to change and the waters continue to rise, our island may one day find itself under water. I'm not sure there is truly a way to prepare for that potential disaster.	5/20/2015 3:24 PM
16	Loss of property and evacuation ability.	5/20/2015 3:21 PM
17	Salt Water	5/20/2015 3:10 PM
18	a hurricane!	5/20/2015 3:09 PM
19	Flooding roads and neighborhoods.	5/19/2015 9:49 AM
20	the lack of discussion or knowledge of the subject to make the best decisions for our community.	5/18/2015 8:20 PM
21	No comment	5/18/2015 1:42 PM
22	impact on the local economy	5/18/2015 12:09 PM
23	flooding	5/17/2015 11:24 AM
24	Flooding and erosion	5/16/2015 6:07 PM
25	Control growth to the point of not growing faster than the infrastructure of devices.	5/16/2015 11:46 AM
26	1.Flooding 2.Salt water intrusion 3.Governor Scott	5/15/2015 3:24 PM

27	Flooding of street and roads - resulting in reduced real estate sales - ultimately hurting the economic base.	5/15/2015 12:10 PM
28	Reduced tax base Loss of building land abandonment of structures Impact to tourism	5/15/2015 11:41 AM
29	Street flooding	5/14/2015 10:56 AM
30	that the people in charge actually believe this is happening and to think they have any power to change it. God help us	5/13/2015 5:04 PM
31	If the Village isn't prepared with streets that do not flood then we are going to be under-water.	5/13/2015 2:57 PM
32	Losing property	5/13/2015 2:05 PM
33	Flooded neighborhoods and highways.	5/12/2015 4:22 PM
34	infrastructure damage homes to roads	5/12/2015 4:15 PM
35	no opinion	5/12/2015 10:57 AM
36	Loss of homes and beaches. I have lost Approx 15 feet of ocean front beach within the last. 5 years Real estate values are Declining due to this threat as property is less desirable and threatened. We need a barrier to protect us from the Rising water.	5/11/2015 6:37 PM
37	flooding	5/9/2015 10:20 AM
38	I think the whole thing is a hoax and a way to raise taxes to pay those who are creating the hoax	5/8/2015 1:22 PM
39	i would worry about extreme weather	5/8/2015 11:30 AM
40	There are many not prepared for any type of significant flooding. Trailers and dwellings at ground level. But, being at sea level, it's difficult. Need to be create incentives to get these people out of these situations before a significant event occurs.	5/8/2015 11:18 AM
41	more extreme and frequent weather patterns.	5/8/2015 10:46 AM
42	Flooding	5/8/2015 9:31 AM
43	N/A	5/8/2015 8:57 AM
44	Isolation from the mainland.	5/8/2015 7:55 AM
45	loss of viable land area, including roads and buildings	5/7/2015 11:36 PM
46	no opinion	5/7/2015 8:42 PM
47	Flooding of roads and homes.	5/7/2015 7:57 PM
48	Highway accessibility & shoreline loss	5/7/2015 7:10 PM
49	I personally do not believe that the climate will be changing any differently than it has over the past thousands of years - During periods where there are many storms, property values drop, then rise again after calm years. These are low lying islands, you are not going to stop nature.	5/7/2015 6:32 PM
50	Flooding	5/7/2015 5:52 PM
51	Health is the biggest concern	5/7/2015 5:50 PM
52	Flooding. Damage to drinking water delivery piping.	5/7/2015 4:33 PM
53	not working in conjunction with the other municipalities in the county	5/7/2015 4:31 PM
54	The threat of hurricanes from warmer oceans and the impact of the sea level rising threaten everyone living in the village in every way. I'm not sure what answer you need?	5/7/2015 4:23 PM
55	nothing	5/7/2015 4:21 PM
56	Nothing... please	5/7/2015 4:20 PM
57	increased storms and flooding	5/7/2015 4:15 PM
58	Roads from Stock Island to Florida City will all flood quickly. They flood right now with very high tides.	5/7/2015 4:15 PM
59	RISK Management	5/7/2015 3:52 PM

60	Flooding	5/7/2015 3:03 PM
61	I think the biggest threat is the lack of awareness and willingness to prepare for the rising seas. A community with it's history and lifestyle so intertwined with the sea should be aware of the many risks it holds. The entire Village is threatened by sea level rise, and we as a community, need to start planning for the future impacts.	5/7/2015 1:28 PM
62	Flooding and wind damage	5/7/2015 12:27 PM
63	Financial sustainability with eventual decline of property values	5/7/2015 7:39 AM
64	OVERPOPULATION	5/6/2015 9:33 AM
65	Unknown	5/6/2015 9:27 AM
66	people with little or no experience in such things running a very sensitive and important city. It seems like "thats how we've always done it" is our motto here.	5/6/2015 8:14 AM
67	potential for increased flooding events	5/6/2015 7:54 AM
68	The highway becoming impassable during high tide or storm events	5/5/2015 6:23 PM
69	Increased flooding from rain and surge incidents Increased small disasters that won't meet the thresholds that qualify for federal dollars meaning more of the recovery burden will fall to the local governments	5/5/2015 5:49 PM
70	There won't be an Islamorada if you don't get your heads out of the sand. None of this matters if property values halve and homes go underwater. I've lost about 25' of beach in 6 years. Need to do something QUICKLY (maybe like Ft. Lauderdale). And don't impede, rather support homeowners who want to save their property. Code enforcement has gotten much more antagonistic. Should be on homeowners side.	5/5/2015 4:36 PM
71	over reacting.Climate change occurred 1000 years ago and the Florida indigenous people survived with very few resources.we will survive tomorrow.	5/5/2015 2:46 PM
72	People	5/5/2015 11:57 AM
73	Flooding low lying areas, and the increase in depth of H2O as it relates to the reef system. This would allow for greater wave action to reach shore which in turn will create a much greater danger from strong storms that pass by. This will also start to change the make up of the flats system which would then impact the economy as the fishery would change.	5/5/2015 11:48 AM
74	road flooding	5/5/2015 11:17 AM
75	Sea level rise and nothing can be done but leave the area.	4/16/2015 10:48 AM
76	Loss of land adjacent to the highway and buildings. Increased flood insurance costs.	4/16/2015 10:29 AM
77	The continual flooding that will occur.	4/16/2015 9:58 AM

Appendix H. Budget and 5-Year Capital Improvements Plan



TAB 2

RESOLUTION NO.

A RESOLUTION OF THE VILLAGE COUNCIL OF ISLAMORADA, VILLAGE OF ISLANDS, FLORIDA, ADOPTING THE FINAL BUDGET OF THE VILLAGE FOR THE FISCAL YEAR COMMENCING ON OCTOBER 1, 2015, AND ENDING ON SEPTEMBER 30, 2016; AUTHORIZING EXPENDITURE OF FUNDS ESTABLISHED BY THE BUDGET; PROVIDING FOR BUDGETARY CONTROL; PROVIDING FOR PERSONNEL AUTHORIZATION; PROVIDING FOR GIFTS AND GRANTS; PROVIDING FOR AMENDMENTS; PROVIDING FOR ENCUMBRANCES; PROVIDING FOR ISSUANCE OF CHECKS; PROVIDING FOR POST AUDIT; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE

NOW THEREFORE, BE IT RESOLVED BY THE VILLAGE COUNCIL OF ISLAMORADA, VILLAGE OF ISLANDS, FLORIDA, AS FOLLOWS:

Section 1. Budget Approved and Adopted. The final budget of the Village for the fiscal year beginning on October 1, 2015, and ending September 30, 2016 (the "Budget") was considered at public hearings on September 9, 2015 and September 21, 2015 and is hereby approved and adopted. A copy of the Final Budget of the Village is attached as Exhibit "A" and incorporated by this reference.

Section 2. Expenditure of Funds Appropriated in the Budget Authorized. Funds appropriated in the Budget may be expended by and with the approval of the Village Manager in accordance with the provisions of the Charter and applicable law. Supplemental appropriations or the reduction of appropriations, if any, shall be made in accordance with the Village Charter.

Section 3. Budgetary Control. The Budget establishes an initial limitation on expenditures by department or category total. The total sum allocated to each department, category or line item for operating and capital expenses may be increased or decreased by the Village Manager in accordance with the provisions of this Resolution and the Village Charter.

Section 4. Personnel Authorization. The Budget enumerates all authorized budgeted positions for appointment by the Village Council or Village Manager. The Village Manager may add or delete positions provided that any additions shall not increase the Village's total budgeted funds for Fiscal Year 2015-2016.

Section 5. Grants and Gifts. When the Village receives monies from any source, be it private or governmental, by Grant, Gift, or otherwise, to which there is attached as a condition of acceptance any limitation regarding the use or expenditures of the monies received, the funds so received need not be shown in the Budget nor shall said Budget be subject to amendment of expenditures as a result of the receipt of said monies, but said monies shall only be disbursed and applied toward the purposes for which the said funds were received. To ensure the integrity of the Budget, and the integrity of the monies received by the Village under Grants or Gifts, all monies received as contemplated above must, upon receipt, be segregated and accounted for based upon generally accepted accounting principles and where appropriate, placed into separate and individual trust and/or escrow accounts from which any money drawn may only be disbursed and applied within the limitations placed upon the Gift or Grant.

Section 6. Amendments. Upon the passage and adoption of this Budget, if the Village Manager determines that a department, category or line item will exceed its original allocation, the Village Manager is authorized and directed to modify any department or category total or line item of the Budget so long as the modification does not exceed the Village's total budgeted funds for Fiscal Year 2015-2016. The Village Manager shall prepare for approval a resolution amending the Budget to reflect such department, category or line item reallocation for presentation to the Village Council within thirty (30) days of the date of the reallocation.

Section 7. Encumbrances. All outstanding encumbrances at September 30, 2015 shall lapse at that time; and any lapsed capital outlay encumbrances shall be re-appropriated into the Fiscal Year budget starting on October 1, 2015.

Section 8. Checks Issued. Checks issued from or withdrawals made from accounts maintained by the Village in public depositories shall be signed as provided by resolution or ordinance of the Council.

Section 9. Post Audit Provided. State law provides for annual post audits of the Village's financial accounts. The Village Manager is authorized to take all steps necessary to cause such post audit to be made by a certified public accountant or firm of such accountants in accordance with applicable law.

Section 10. Severability. The provisions of this Resolution are declared to be severable and if any section, sentence, clause or phrase of this Resolution shall for any reason be held to be invalid or unconstitutional, such decision shall not affect the validity of the remaining sections, sentences, clauses, and phrases of this Resolution but they shall remain in effect, it being the legislative intent that this Resolution shall stand notwithstanding the invalidity of any part.

Section 11. Effective Date. This Resolution shall be effective immediately upon adoption.

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PASSED AND ADOPTED this 21st day of September, 2015 at _____ P.M.

Motion to adopt by _____, seconded by _____.

FINAL VOTE AT ADOPTION

VILLAGE COUNCIL OF ISLAMORADA, VILLAGE OF ISLANDS

Mayor Mike Forster _____

Vice Mayor Deb Gillis _____

Councilman Jim Mooney _____

Councilman Chris Sante _____

Councilman Dennis Ward _____

MIKE FORSTER, MAYOR

ATTEST:

KELLY TOTH, VILLAGE CLERK

APPROVED AS TO FORM AND LEGALITY
FOR THE USE AND BENEFIT OF ISLAMORADA,
VILLAGE OF ISLANDS:

ROGET V. BRYAN, VILLAGE ATTORNEY

BUDGET SUMMARY
ISLAMORADA, VILLAGE OF ISLANDS
FISCAL YEAR 2015-2016

THE PROPOSED OPERATING BUDGET EXPENDITURES OF ISLAMORADA, VILLAGE OF ISLANDS, ARE 30.7% MORE THAN LAST YEAR'S TOTAL

NOTE: Operating budget expenditures exclude expenditures of bond proceeds for capital outlay.

	GENERAL FUND	SPECIAL REVENUE FUNDS	CAPITAL PROJECTS FUND	DEBT SERVICE FUND	ENTERPRISE FUNDS	TOTALS
Millage Rates Per \$1,000	2.6459	0.000	0.000	0.000	0.000	2.6459
Fund Balances/Reserves/Net Assets, October 1, 2015	\$ 4,379,428	\$ 657,640	\$ 2,950,830	\$ -	\$ 97,948,308	\$ 105,936,206
REVENUES						
Ad valorem taxes (net of discounts)	7,244,420	-	-	-	-	7,244,420
Other Taxes	805,000	-	-	-	-	805,000
Licenses and permits	1,072,500	-	-	-	-	1,072,500
Intergovernmental	944,200	1,017,320	2,100,000	-	-	4,061,520
Impact Fees	-	68,500	192,000	-	-	260,500
Fines and Forfeitures	66,500	-	-	-	-	66,500
Grants	-	-	-	-	7,500,000	7,500,000
Charges for Services	768,300	-	-	-	7,526,000	8,294,300
Non-ad Valorem Assessments	-	1,641,960	-	-	2,882,500	4,524,460
Interest and Miscellaneous	85,000	22,000	1,000	-	25,100	133,100
TOTAL REVENUES	10,985,920	2,749,780	2,293,000	-	17,933,600	33,962,300
OTHER FINANCING SOURCES						
Transfers In	-	-	-	1,439,600	2,575,000	4,014,600
Lease Proceeds	-	-	-	-	-	-
Loan Proceeds	-	-	-	-	-	-
TOTAL OTHER FINANCING SOURCES	-	-	-	1,439,600	2,575,000	4,014,600
TOTAL REVENUES, BALANCES AND OTHER SOURCES	\$ 15,365,348	\$ 3,407,420	\$ 5,243,830	\$ 1,439,600	\$ 118,456,908	\$ 143,913,105
EXPENDITURES/EXPENSES						
General Government	\$ 3,284,221	\$ -	\$ 130,000	\$ -	\$ -	\$ 3,414,221
Public Safety	6,087,410	-	242,970	-	-	6,330,380
Physical Environment	1,130,720	1,809,210	52,000	-	5,081,640	8,073,570
Culture and Recreation	1,683,570	-	43,000	-	1,132,190	2,858,760
Debt Service	-	-	-	1,439,600	2,222,300	3,661,900
TOTAL EXPENDITURES/EXPENSES	12,185,920	1,809,210	467,970	1,439,600	8,436,130	24,338,830
OTHER FINANCING USES						
Transfers Out	-	589,700	3,049,900	-	-	3,639,600
Fund Balances/Reserves/Net Assets, September 30, 2016	3,179,426	1,008,512	1,725,960	-	110,020,778	115,934,676
TOTAL EXPENDITURES, BALANCES AND OTHER USES	\$ 15,365,347	\$ 3,407,420	\$ 5,243,830	\$ 1,439,600	\$ 118,456,908	\$ 143,913,104

THE TENTATIVE, ADOPTED, AND/OR FINAL BUDGETS ARE ON FILE IN THE OFFICE OF THE ABOVE MENTIONED TAXING AUTHORITY AS A PUBLIC RECORD.

**ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - FINAL**

GENERAL FUND REVENUES

Account	Account Title	FY 15-16 Final Budget
Ad Valorem Taxes		
001-0000-311.00.00	Ad Valorem Taxes (net of 4% discount)	7,244,420
001-0000-313.50.00	Communication Services Tx	280,000
001-0000-313.70.00	Franchise Fee-Solid Waste	525,000
		8,049,420
Licenses and permits		
001-0000-322.00.00	Building Permits	900,000
001-0000-323.00.00	Contractor Registration Fees	9,500
001-0000-329.00.00	Other Licenses & Permits	8,000
001-0000-329.00.20	In Lieu of Lndscp Mitigat	10,000
001-0000-329.01.10	Vacation Rental Licenses	140,000
001-0000-343.40.00	Const. Debris Trans. Fee	5,000
		1,072,500
Intergovernmental		
001-0000-334.49.01	FDOT Traffic Signal Maint.	2,500
001-0000-335.12.10	State Rev Share-Sales Tax	237,830
001-0000-335.14.01	Mobile Home License Tax	1,700
001-0000-335.15.00	Alcoholic Beverage Licenc	14,000
001-0000-335.18.00	Local Gov Half-Cent Sales	600,000
001-0000-335.21.00	FF Supplemental Compensation	4,500
001-0000-335.70.01	Windley Key Surcharge - DEP	6,000
001-0000-336.00.00	DEP Payment in Lieu of Taxes	2,670
001-0000-337.70.01	TDC Maintenance Agreement	40,000
001-0000-337.70.02	FL Boater Imprv Grnt Moco	20,000
001-0000-338.10.00	County Share of Occ Licns	15,000
		944,200
Fines and Forfeitures		
001-0000-354.00.00	Violations of Local Ordn	50,000
001-0000-359.00.00	Traffic Enforc/Fines&Forf	15,000
001-0000-359.00.10	Local Trainin/Fines&Forf	1,500
		66,500
Charges for Services		
001-0000-342.40.00	Emergency Services Fees	180,000
001-0000-342.90.00	Fire Inspection Fees	8,000
001-0000-343.90.00	Development Permit App Fees	70,000
001-0000-344.00.00	Cost Recovery	50,000
001-0000-362.01.00	IFP-Special Events	20,000
001-0000-362.01.01	Recreation Camps	20,000
001-0000-362.02.00	IFP-Park Entrance Fee	120,000
001-0000-362.04.00	IFP-Pool Entrance Fee	30,000
001-0000-362.04.01	IFP-Pool Rental	50,000
001-0000-362.05.01	IFP-Memberships Village	15,000
001-0000-362.05.02	IFP-Memberships Monroe Co	6,000

**ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - FINAL**

GENERAL FUND REVENUES

Account	Account Title	FY 15-16 Final Budget
001-0000-362.06.01	Swimming Lessons/Teams	45,000
001-0000-362.06.02	Diving Lessons/Teams	25,000
001-0000-362.06.04	Tennis Instruction	100,000
001-0000-362.06.05	Water Aerobics	8,000
001-0000-362.06.06	Synchronized Swimming	3,000
001-0000-362.06.07	Yoga Instruction	5,000
001-0000-362.06.09	IFP Comm Ctr Rec Programs	6,000
001-0000-362.07.01	Retail Sales	800
001-0000-362.08.00	IFP Facilities Rentals	5,000
001-0000-369.06.00	WEX Fuel Credit Revenue	1,500
		768,300
Interest and Miscellaneous		
001-0000-341.20.01	Special Event / Fire Watch	15,000
001-0000-361.00.00	Interest Earnings	5,000
001-0000-369.00.00	Miscellaneous Income	35,000
001-0000-369.04.00	BPAS Applications	5,000
001-0000-369.07.00	Foreclosure Registry Fee	5,000
001-0000-388.10.00	Sale of Cap Assets	5,000
001-0000-388.20.00	Insurance Proceeds	15,000
		85,000
001-0000-390.00.00	Use of Unassigned Fund Balance	1,200,000
	TOTAL REVENUES	12,185,920

**ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - FINAL**

GENERAL FUND EXPENDITURES

Account	Account Title	FY 15-16 Final Budget
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EXPENDITURES

GENERAL GOVERNMENT

Village Council

001-0100-511.11.10	Council Stipends	60,000
001-0100-511.21.10	FICA & Medicare	4,600
001-0100-511.31.10	Professional Services	168,000
001-0100-511.34.10	Contractual Services	5,000
001-0100-511.40.10	Leg & Edctl Travel & Exp	15,000
001-0100-511.41.20	Telephone	3,500
001-0100-511.48.10	Public Relations	10,000
001-0100-511.49.40	Dues & Subscriptions	1,000
001-0100-511.52.10	Operating Supplies	6,000

Village Council 273,100

Village Attorney

001-0200-514.12.10	Full-Time Wages	156,700
001-0200-514.13.10	Overtime	1,000
001-0200-514.21.10	FICA & Medicare	12,100
001-0200-514.22.10	Pension Benefits	17,700
001-0200-514.23.10	Insurance Benefits	13,400
001-0200-514.31.10	Professional Services	3,000
001-0200-514.31.20	General Legal Services	75,000
001-0200-514.31.25	Litigation-Legal Services	200,000
001-0200-514.40.10	Travel & Lodging	5,000
001-0200-514.41.20	Telephone	1,500
001-0200-514.41.30	Postage & Freight	500
001-0200-514.48.10	Public Relations	500
001-0200-514.49.40	Dues & Subscriptions	4,000
001-0200-514.49.45	Training	3,000
001-0200-514.51.10	Office Supplies	1,500

Village Attorney 494,900

Village Manager

001-0300-512.12.10	Full-time Wages	370,020
001-0300-512.14.10	Overtime Wages	1,000
001-0300-512.14.10	Part-time Wages	13,000
001-0300-512.21.10	FICA & Medicare	29,380
001-0300-512.22.10	Pension Benefits	14,810
001-0300-512.23.10	Insurance Benefits	39,840
001-0300-512.31.10	Professional Services	30,000
001-0300-512.40.10	Travel & Lodging	5,000
001-0300-512.41.20	Telephone	2,000

**ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - FINAL**

GENERAL FUND EXPENDITURES

Account	Account Title	FY 15-16 Final Budget
001-0300-512.48.10	Public Relations	500
001-0300-512.49.40	Dues & Subscriptions	2,000
001-0300-512.49.45	Training	1,500
001-0300-512.51.10	Office Supplies	1,500
	Village Manager	510,550
Village Clerk		
001-0400-512.12.10	Full-time Wages	96,900
001-0400-512.14.10	Overtime Wages	1,000
001-0400-512.21.10	FICA & Medicare	7,490
001-0400-512.22.10	Pension Benefits	3,880
001-0400-512.23.10	Insurance Benefits	14,400
001-0400-512.31.10	Professional Services	8,000
001-0400-512.40.10	Travel & Lodging	2,500
001-0400-512.41.10	Advertising	1,500
001-0400-512.41.20	Telephone	800
001-0400-512.41.30	Postage & Freight	1,000
001-0400-512.44.10	Equipment Rental	20,000
001-0400-512.46.60	Maintenance Contracts	30,000
001-0400-512.49.40	Dues & Subscriptions	1,000
001-0400-512.49.45	Training	1,200
001-0400-512.51.10	Office Supplies	3,500
	Village Clerk	193,170
Planning and Development Services		
001-0800-515.12.10	Full-time Wages	331,130
001-0800-515.14.10	Overtime Wages	5,000
001-0800-515.21.10	FICA & Medicare	25,340
001-0800-515.22.10	Pension Benefits	13,250
001-0800-515.23.10	Insurance Benefits	49,350
001-0800-515.31.10	Professional Services	30,000
001-0800-515.31.30	Architects & Engineers	60,000
001-0800-515.34.20	Printing & Binding	1,000
001-0800-515.40.10	Travel & Lodging	5,000
001-0800-515.41.10	Advertising	10,000
001-0800-515.41.20	Telephone	1,200
001-0800-515.41.30	Postage & Freight	5,000
001-0800-515.43.40	Gas & Oil	1,000
001-0800-515.46.20	Vehicle R&M	1,000
001-0800-515.46.30	Equipment R&M	3,000
001-0800-515.49.40	Dues & Subscriptions	4,000
001-0800-515.49.45	Training	3,500
001-0800-515.51.10	Office Supplies	2,500
	Planning and Development Services	551,270

**ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - FINAL**

GENERAL FUND EXPENDITURES

Account	Account Title	FY 15-16 Final Budget
Finance & Administration		
001-1800-519.12.10	Full-time Wages	181,910
001-1800-519.14.10	Overtime Wages	2,000
001-1800-519.21.10	FICA & Medicare	14,070
001-1800-519.22.10	Pension Benefits	7,280
001-1800-519.23.10	Insurance Benefits	28,760
001-1800-519.24.10	Workers' Compensation	105,000
001-1800-519.32.10	Financial Services	65,000
001-1800-519.34.10	Contractual Services	25,000
001-1800-519.40.10	Travel & Lodging	5,000
001-1800-519.41.10	Advertising	2,500
001-1800-519.41.20	Telephone	1,000
001-1800-519.41.30	Postage & Freight	2,000
001-1800-519.43.10	Electricity	32,000
001-1800-519.43.20	Water & Wastewater	10,000
001-1800-519.44.10	Equipment Rental	4,000
001-1800-519.45.10	General Insurance	350,000
001-1800-519.49.30	Employee Testing	4,200
001-1800-519.49.40	Dues & Subscriptions	800
001-1800-519.49.45	Training	2,000
001-1800-519.51.10	Office Supplies	5,000
001-1800-519.51.30	Operating Supplies & Expenses	10,000
Finance & Administration		857,520
IT & Communications		
001-1900-519.12.10	Full-time Wages	128,550
001-1900-519.14.10	Overtime Wages	2,000
001-1900-519.21.10	FICA & Medicare	9,990
001-1900-519.22.10	Pension Benefits	5,150
001-1900-519.23.10	Insurance Benefits	16,520
001-1900-519.31.10	Professional Services	100,000
001-1900-519.34.10	Contractual Services	25,000
001-1900-519.40.10	Travel & Lodging	1,000
001-1900-519.41.20	Telephone	50,000
001-1900-519.41.30	Postage & Freight	500
001-1900-519.43.40	Gas & Oil	500
001-1900-519.46.20	Vehicle R&M	500
001-1900-519.46.60	Maintenance Contracts	10,000
001-1900-519.49.40	Dues & Subscriptions	500
001-1900-519.49.45	Training	3,500
001-1900-519.52.10	Operating Supplies	50,000
IT & Communications		403,710
TOTAL GENERAL GOVERNMENT		3,284,220

**ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - FINAL**

GENERAL FUND EXPENDITURES

Account	Account Title	FY 15-16 Final Budget
PUBLIC SAFETY		
Building Services		
001-0500-515.12.10	Full-time Wages	438,890
001-0500-515.14.10	Overtime Wages	10,000
001-0500-515.21.10	FICA & Medicare	33,580
001-0500-515.22.10	Pension Benefits	17,560
001-0500-515.23.10	Insurance Benefits	65,790
001-0500-515.31.10	Professional Services	50,000
001-0500-515.34.20	Printing & Binding	500
001-0500-515.40.10	Travel & Lodging	4,000
001-0500-515.41.20	Telephone	3,000
001-0500-515.41.30	Postage & Freight	1,000
001-0500-515.43.40	Gas & Oil	5,500
001-0500-515.46.20	Vehicle R&M	2,500
001-0500-515.46.60	Maintenance Contracts	1,000
001-0500-515.49.40	Dues & Subscriptions	3,000
001-0500-515.49.45	Training	5,000
001-0500-515.51.10	Office Supplies	9,000
001-0500-515.52.50	Uniforms	1,500
	Building Services	651,820
Code Enforcement		
001-0600-515.12.10	Full-Time Wages	136,680
001-0600-515.14.10	Overtime Wages	2,500
001-0600-515.21.10	Fica & Medicare	10,460
001-0600-515.22.10	Pension Benefits	5,570
001-0600-515.23.10	Insurance Benefits	24,580
001-0600-515.31.10	Professional Services	6,000
001-0600-515.40.10	Travel & Lodging	3,000
001-0600-515.41.20	Telephone	2,500
001-0600-515.41.30	Postage & Freight	1,000
001-0600-515.43.40	Gas & Oil	3,000
001-0600-515.46.20	Vehicle R&M	2,000
001-0600-515.49.40	Dues & Subscriptions	500
001-0600-515.49.45	Training	2,500
001-0600-515.51.10	Office Supplies	1,000
001-0600-515.52.50	Uniforms	500
	Code Enforcement	201,790
Local Law Enforcement (MCSO)		
001-1500-521.12.10	Full Times Wages	41,210
001-1500-521.14.10	Overtime Wages	500
001-1500-521.21.10	FICA & Medicare	3,200
001-1500-521.22.10	Pension Benefits	1,650
001-1500-521.23.10	Insurance Benefits	8,180
001-1500-521.31.10	Professional Services	1,795,680
001-1500-521.41.20	Telephone	3,000

**ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - FINAL**

GENERAL FUND EXPENDITURES

Account	Account Title	FY 15-16 Final Budget
001-1500-521.41.30	Postage & Freight	500
001-1500-521.43.40	Gas & Oil	80,000
001-1500-521.44.10	Equipment Rental	500
001-1500-521.46.30	Equipment R&M	3,000
001-1500-521.51.10	Office Supplies	3,000
001-1500-521.52.10	Operating Supplies	5,000
001-1500-521.52.20	Uniforms	1,000
Local Law Enforcement (MCSO)		1,946,420
Fire Rescue		
001-4100-522.12.10	Full-Time Wages	1,680,850
001-4100-522.12.12	Holiday Wages	43,590
001-4100-522.13.20	Part Time Wages	78,000
001-4100-522.13.25	Volunteer Stipends	30,000
001-4100-522.14.10	Overtime Wages	161,530
001-4100-522.21.10	FICA & Medicare	152,540
001-4100-522.22.10	Pension Benefits	416,750
001-4100-522.23.10	Insurance Benefits	222,720
001-4100-522.31.10	Professional Services	80,000
001-4100-522.40.10	Travel & Lodging	20,000
001-4100-522.41.10	Advertising	1,500
001-4100-522.41.20	Telephone	32,000
001-4100-522.41.30	Postage & Freight	1,200
001-4100-522.43.10	Electricity	25,000
001-4100-522.43.20	Water & Wastewater	22,000
001-4100-522.43.40	Gas & Oil	40,000
001-4100-522.44.10	Equipment Rental	1,700
001-4100-522.45.10	General Insurance	5,000
001-4100-522.46.10	Building R&M	10,000
001-4100-522.46.20	Vehicle R&M	35,000
001-4100-522.46.30	Equipment R&M	20,000
001-4100-522.46.60	Maintenance Contracts	23,000
001-4100-522.49.30	Employee Testing	18,000
001-4100-522.49.40	Dues & Subscriptions	6,000
001-4100-522.49.45	Training	20,000
001-4100-522.51.10	Office Supplies	6,000
001-4100-522.52.10	Operating Supplies	115,000
001-4100-522.52.20	Uniforms	20,000
Fire Rescue		3,287,380
TOTAL PUBLIC SAFETY		6,087,410

**ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - FINAL**

GENERAL FUND EXPENDITURES

Account	Account Title	FY 15-16 Final Budget
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PHYSICAL ENVIRONMENT

Public Works

001-1200-541.12.10	Full-time Wages	421,410
001-1200-541.13.20	Part Time Wages	25,460
001-1200-541.14.10	Overtime	8,000
001-1200-541.21.10	FICA & Medicare	34,800
001-1200-541.22.10	Pension Benefits	16,860
001-1200-541.23.10	Insurance Benefits	96,290
001-1200-541.40.10	Travel & Lodging	2,000
001-1200-541.41.20	Telephone	5,300
001-1200-541.43.10	Electricity	66,000
001-1200-541.43.20	Water & Wastewater	137,800
001-1200-541.43.40	Gas & Oil	40,000
001-1200-541.44.10	Equipment Rental	2,500
001-1200-541.46.10	Building R&M	70,000
001-1200-541.46.20	Vehicle R&M	20,000
001-1200-541.46.30	Equipment R&M	20,000
001-1200-541.46.40	Grounds R&M	95,500
001-1200-541.46.50	Other R&M	5,000
001-1200-541.46.80	KTCP R&M	4,000
001-1200-541.49.40	Dues & Subscriptions	1,300
001-1200-541.49.45	Training	5,000
001-1200-541.51.10	Office Supplies	2,500
001-1200-541.52.10	Operating Supplies	45,000
001-1200-541.52.50	Uniforms	6,000
Public Works		1,130,720

TOTAL PHYSICAL ENVIRONMENT 1,130,720

CULTURE AND RECREATION

Parks & Recreation

001-6010-572.12.10	Full-Time Wages	536,930
001-6010-572.13.20	Part-Time Wages	121,220
001-6010-572.14.10	Overtime Wages	30,000
001-6010-572.21.10	FICA & Medicare	52,650
001-6010-572.22.10	Pension Benefits	21,480
001-6010-572.23.10	Insurance Benefits	100,290
001-6010-572.34.10	Contractual Services	200,000
001-6010-572.34.20	Printing & Binding	1,000
001-6010-572.40.10	Travel & Lodging	1,000
001-6010-572.41.10	Advertising	2,000
001-6010-572.41.20	Telephone	9,500
001-6010-572.41.30	Postage & Freight	500
001-6010-572.43.10	Electricity	120,000
001-6010-572.43.20	Water & Wastewater	200,000
001-6010-572.43.40	Gas & Oil	10,000
001-6010-572.44.10	Equipment Rental	3,500

ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - FINAL

GENERAL FUND EXPENDITURES

Account	Account Title	FY 15-16 Final Budget
001-6010-572.46.10	Building R&M	25,000
001-6010-572.46.20	Vehicle R&M	1,000
001-6010-572.46.30	Equipment R&M	25,000
001-6010-572.46.40	Grounds R&M	40,000
001-6010-572.46.60	Maintenance Contracts	20,000
001-6010-572.46.70	Marine Resources Program	35,000
001-6010-572.49.10	Bank Fees	6,000
001-6010-572.49.15	Special Events	25,000
001-6010-572.49.40	Dues & Subscriptions	1,500
001-6010-572.49.45	Training	2,000
001-6010-572.51.10	Office Supplies	2,500
001-6010-572.52.10	Operating Supplies	85,000
001-6010-572.52.20	Rec Camp Op Supplies	2,500
001-6010-572.52.50	Uniforms	3,000
	Parks & Recreation	1,683,570
	TOTAL CULTURE AND RECREATION	1,683,570
	TOTAL EXPENDITURES	12,185,920

**ISLAMORADA, VILLAGE OF ISLANDS
FUND BALANCE**

GENERAL FUND

		PROJECTED		
		10/1/2014 Balance	FY 14-15 Activity	9/30/2015 Balance
001-0000-280.00.00	Nonspendable	43,467	(3,467)	40,000
001-0000-281.00.00	Restricted - MCSO Training	34,795	1,957	36,752
001-0000-281.00.01	Restricted - KTCP Endowment	191,855	(1,322)	190,532
001-0000-282.00.00	Committed - Landscape Mitigation	72,760	10,021	82,781
001-0000-282.00.01	Committed - Canal Restoration	15,495	(15,495)	0
001-0000-282.00.03	Committed - CityView / Harris	24,686	(24,686)	(0)
001-0000-282.00.04	Committed - FRS Employer Contributions	-	(100,000)	(100,000)
001-0000-283.00.00	Assigned	57,408	(57,408)	-
001-0000-284.00.00	Unassigned	3,336,712	792,651	4,129,363
TOTAL		3,777,178	602,250	4,379,428
Total Projected General Fund Expenditures @ 9/30/2015		10,247,280		
Unassigned Fund Balance Benchmark (25% of Expenditures)		2,561,820		
Projected Unassigned Fund Balance @ 9/30/2015		4,129,363		
		40.30%		
Unassigned Fund Balance Amount Above Benchmark		1,567,543		
Proposed Use of Fund Balance FY 2015-2016		1,200,000		
Total Projected Unassigned Fund Balance @ 9/30/2016		3,179,428		

ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - Final

TRANSPORTATION FUND

REVENUES

103-0000-312.41.00	1st Local Option Fuel Tax	294,500
103-0000-312.42.00	2nd Local Option Fuel Tax	127,590
103-0000-335.12.20	State Rev Sharing - Municipal Fuel	73,000
103-0000-335.18.00	Local Government Half Cent Sales Tax	500,000
103-0000-338.00.40	Monroe County - Supp Fuel Tax	22,230
103-0000-361.00.00	Interest Earnings	1,000
TOTAL REVENUES		<u><u>1,018,320</u></u>

EXPENDITURES

103-1200-541.64.30	Public Works Project - Venetian Shores & Venetian Way - guardrails, trees and coral boulders along canals and canal ends	115,000
103-1200-541.64.31	Architect and engineer costs for Art District Parking Plan	12,000
103-1200-581-91.02	Transfer to Govtl Debt Service (300)	589,700
TOTAL EXPENDITURES		<u><u>716,700</u></u>

REVENUES OVER (UNDER) EXPENDITURES 301,620

FUND BALANCE:

	<u>10/1/2015</u> <i>Balance</i> <i>(Projected)</i>	<u>FY 2015-2016</u> <i>Activity</i> <i>(Projected)</i>	<u>9/30/2016</u> <i>Balance</i> <i>(Projected)</i>
Restricted -			
Transportation Maintenance Activity	-	301,620	301,620
Street Overlay & Paving Activity	-	-	-
TOTAL	<u><u>-</u></u>	<u><u>301,620</u></u>	<u><u>301,620</u></u>

ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - Final

SOLID WASTE FUND

REVENUES

105-0000-343.40.00	Non-ad Valorem Assessments		
	Estimated # of Residential Units	4,220	
	Assessment per Residential Unit	405.30	
	Gross Revenue	1,710,366	
	Less 4% Early Payment Discount	(68,415)	
			1,641,960
105-0000-361.00.00	Interest		500
	TOTAL REVENUES		<u>1,642,460</u>

EXPENDITURES

Personnel			
105-1200-534.12.10	Full-time Wages		7,350
105-1200-534.21.10	FICA & Medicare		570
105-1200-534.22.10	Pension Benefits		300
105-1200-534.23.10	Insurance Benefits		830
			<u>9,050</u>
Operating			
105-1200-534.33.43	Residential Solid Waste Fees		1,623,160
105-1200-534.33.44	Consultant & Misc Costs		10,000
			<u>1,633,160</u>
	TOTAL EXPENDITURES		<u>1,642,210</u>

REVENUES OVER (UNDER) EXPENDITURES 252

FUND BALANCE:

	<u>10/1/2015</u>	<u>FY 2015-2016</u>	<u>9/30/2016</u>
	<u>Balance</u>	<u>Activity</u>	<u>Balance</u>
	<u>(Projected)</u>	<u>(Projected)</u>	<u>(Projected)</u>
Committed	67,350	252	67,602
TOTAL	<u>67,350</u>	<u>252</u>	<u>67,602</u>

ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - Final

CAPITAL PROJECT FUND

REVENUES

Impact Fees	
Transportation	40,000
Public Safety	30,000
Library	2,000
Parks & Recreation	120,000
Local Govt Infrastructure Surtax	2,100,000
Interest	1,000
TOTAL REVENUES	<u>2,293,000</u>

EXPENDITURES

Monroe County - Library ILA (90% of Impact Fees)	1,800	
Land Acquisition to meet FAR 28-19 Requirements	25,000	
Local Law Enforcement (MCSO) - Vehicles	86,970	
Fire Rescue		
Irrigation Meters (3)	6,000	
New Hydrant installation X 4	30,000	Impact Fees
SUV Replacement	35,000	
Parks & Recreation		
Chlorinator	4,700	
Shade Structures	15,000	
Heat Pump (1)	5,000	
Tiki Hut (10' x 20')	10,000	Impact Fees
Maintenance Utility Vehicle	4,000	
Sand Spreader	2,500	
Public Works		
ToughBook Laptop	3,500	
Zero Turn Riding Mower	9,500	
Cargo Van	23,000	
Floating Kayak Launch (Green Turtle Hammock)	3,000	
Library Beach Park Playground Equipment	13,000	
IT & Communications		
Computer Leases, Software & Hardware	75,000	
Planning		
CityView Enhancements	10,000	
Large Format Scanner / Plotter	20,000	
Building		
CityView Enhancements	10,000	
Large Format Scanner / Plotter	20,000	
Laptops / Tablets for Inspectors	10,000	
Inspector Vehicle	20,000	
Code Enforcement		
CityView Enhancements	5,000	
Vehicle	20,000	

ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - Final

CAPITAL PROJECT FUND

Transfers Out	
To Debt Service Fund	849,900
To Wastewater Fund (450) for debt	100,000
To Wastewater Fund (451) for debt	2,000,000
To Marina Enterprise Fund	100,000
 TOTAL EXPENDITURES	 <u><u>3,517,870</u></u>
 REVENUES OVER (UNDER) EXPENDITURES	 <u><u>(1,224,870)</u></u>

FUND BALANCE:		<u>10/1/2015</u>	<u>FY 2015-2016</u>	<u>9/30/2016</u>
		<i>Balance</i>	<i>Activity</i>	<i>Balance</i>
		<i>(Projected)</i>	<i>(Projected)</i>	<i>(Projected)</i>
Committed				
	Impact Fees			
	Fire Rescue	128,902	-	128,902
	Parks & Recreation	479,280	110,000	589,280
	Transportation	181,327	40,000	221,327
	Library	11,805	200	12,005
	Capital Outlay/Infra Sales Tax	2,149,516	(1,375,070)	774,446
	TOTAL	<u><u>2,950,830</u></u>	<u><u>(1,224,870)</u></u>	<u><u>1,725,960</u></u>

ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - Final

DEBT SERVICE FUND

REVENUES

Transfer from Capital Project Fund	849,900
Transfer from Transportation Fund	589,700
TOTAL REVENUES	<u>1,439,600</u>

EXPENDITURES

Paid from Local Discretionary Sales Surtax - Capital Project Fund	
Capital Lease - Pierce Pumper Truck	
Principal	90,500
Interest	4,600
Public Improvement Revenue Refunding Bond, Series 2004B	
Principal	530,000
Interest	71,000
Public Improvement Revenue Bond, Series 2004A	
Principal	90,000
Interest	12,100
Public Improvement Revenue Bond, Series 2003	
Principal	45,600
Interest	6,100
	<u>849,900</u>
Paid from Local Option Fuel Taxes and/or Half Cent Sales Tax - Transportation Fund	
Series 2013 Paving Loan	
Principal	340,000
Interest	172,500
Series 2012 Refunding of Series 2007	
Principal	27,000
Interest	50,200
	<u>589,700</u>
TOTAL EXPENDITURES	<u>1,439,600</u>

REVENUES OVER (UNDER) EXPENDITURES -

Fund Balance

October 1, 2015 (Projected)	-
Net Change in Fund Balance - FY 2016 (Projected)	-
September 30, 2016 (Projected)	<u>-</u>

ISLAMORADA, VILLAGE OF ISLANDS

FY 2015-2016 Budget - Final

AFFORDABLE HOUSING FUND

REVENUES

108-0000-363.29.01	Impact Fees-Other	68,500
108-0000-384.10.00	Wet Net Lease Revenue	20,000
108-0000-361.00.00	Interest Earnings	500
	TOTAL REVENUES	89,000

EXPENDITURES

108-0000-554.31.00	Sewer Hookup Subsidies	30,000
108-0000-554.31.10	Professional Services	10,000
	TOTAL EXPENDITURES	40,000

REVENUES OVER / (UNDER) EXPENDITURES	49,000
Addition To / (Use of) Fund Balance	

FUND BALANCE:		<i>10/1/2015</i>	<i>FY 2015-2016</i>	<i>9/30/2016</i>
		<i>Balance</i>	<i>Activity</i>	<i>Balance</i>
		<i>(Projected)</i>	<i>(Projected)</i>	<i>(Projected)</i>
108-0000-282.00.00	Committed	515,290	49,000	564,290
108-0000-283.00.00	Assigned	75,000	-	75,000
	TOTAL FUND BALANCE	590,290	49,000	639,290

ISLAMORADA, VILLAGE OF ISLANDS
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PYH MARINA ENTERPRISE FUND

OPERATING REVENUES

401-0000-347.20.01	Dock Revenue	720,000
401-0000-347.20.02	Diesel Fuel Revenue	110,000
401-0000-347.20.03	Electric & Cable Revenue	72,000
401-0000-347.20.04	Ramp Revenue	24,000
401-0000-347.20.05	Unleaded Fuel Revenue	300,000
401-0000-347.20.06	Miscellaneous Revenue	25,000
TOTAL OPERATING REVENUES		<u>1,251,000</u>

OPERATING EXPENSES

Personnel

401-1100-575.12.10	Full Time Wages	186,270
401-1100-575.14.10	Overtime Wages	5,000
401-1100-575.21.10	FICA & Medicare	14,640
401-1100-575.22.10	Pension Benefits	7,460
401-1100-575.23.10	Insurance Benefit	38,820
401-1100-575.24.10	Workers' Compensation	5,000
		<u>257,190</u>

Operations

401-1100-575.31.20	Legal Services	2,500
401-1100-575.34.10	Contractual Services	4,000
401-1100-575.41.10	Advertising	14,000
401-1100-575.41.20	Telephone	5,500
401-1100-575.43.10	Electricity	80,000
401-1100-575.43.20	Water & Wastewater	20,000
401-1100-575.44.30	Property Rental	5,500
401-1100-575.45.10	General Insurance	60,000
401-1100-575.46.30	Equipment R&M	60,000
401-1100-575.46.40	Grounds R&M	20,000
401-1100-575.49.10	Bank Fees	35,000
401-1100-575.51.10	Office Supplies	2,000
401-1100-575.52.10	Operating Supplies & Expenses	8,000
401-1100-575.52.11	Op Supplies-RESALE ITEMS	350,000
401-1100-575.52.50	Uniforms	1,500
		<u>668,000</u>

TOTAL OPERATING EXPENSES 925,190

Operating Income (Loss) 325,810

ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - Final

PYH MARINA ENTERPRISE FUND

OTHER REVENUES

401-0000-361.10.00	Interest Earnings	-
401-0000-381.00.10	Transfer from Capital Projects Fund	150,000
	TOTAL OTHER REVENUES	150,000

OTHER EXPENSES

401-1100-575.59.00	Depreciation Expense	207,000
401-1100-575.70.20	Debt Service Interest	62,300
401-1100-575.73.00	Other Debt Service Costs	-
401-1100-575.95.02	Loss - Sales of Cap Assets	-
	TOTAL OTHER EXPENSES	269,300

Other Income (Loss) (119,300)

Total Income (Loss) / Change in Net Position	206,510
plus Bond/Loan Proceeds	-
less Debt Service Principal	421,200
less Capital Outlay	-
plus Depreciation	207,000
Revenues Over (Under) Expenses	<u>(7,690)</u>

NET POSITION

	<u>10/1/2015</u> <i>Balance</i>	<u>FY 2015-2016</u> <i>Activity</i>	<u>9/30/2016</u> <i>Balance</i>
	<i>(Projected)</i>	<i>(Projected)</i>	<i>(Projected)</i>
Inv in Cap Assets, net of debt	2,673,564	214,200	2,887,764
Unrestricted (deficit)	10,164	(7,690)	2,475
TOTAL NET POSITION	2,683,728	206,510	2,890,238

ISLAMORADA, VILLAGE OF ISLANDS
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WASTEWATER UTILITY ENTERPRISE FUND
Operations

REVENUES

450-0000-343.50.00	NPK Assmt Bal Payoff	30,000
450-0000-343.55.02	NPK Annual Assmt Pmts	350,000
451-0000-343.50.04	RSA Assmt Bal Payoffs	50,000
451-0000-343.55.03	RSA1 Annual Assmt Pmts	1,130,000
451-0000-343.55.04	RSA2 Annual Assmt Pmts	1,130,000
450-0000-343.56.00	Customer Charges	6,300,000
450-0000-381.91.20	Transfer fm Capital Proj Fund	2,100,000
	TOTAL REVENUES	11,090,000

EXPENSES

450-0000-512.12.10	Full Time Wages	197,720
450-0000-512.21.10	FICA & Medicare	15,130
450-0000-512.22.10	Pension Benefits	7,920
450-0000-512.23.10	Insurance Benefits	20,880
450-0000-512.24.10	Workers Comp	1,500
	Personnel	243,150
450-0000-512.31.10	Consultants & Misc	150,000
450-0000-512.31.20	General Legal Service	50,000
450-0000-535.31.30	Architects & Engineers	365,400
450-0000-512.34.10	O&M Contract Monthly	730,000
450-0000-512.34.13	Treatment KLWTD	1,650,000
450-0000-512.34.14	Res. Grinder Pump Program Maint.	186,000
450-0000-512.34.20	FKAAs Billing & Collection	65,000
450-0000-512.41.10	Advertising	2,500
450-0000-512.41.20	Telephone	3,000
450-0000-512.41.30	Postage and Freight	1,000
450-0000-512.43.10	Electricity	112,000
450-0000-512.45.10	General Insurance	170,000
450-0000-512.46.10	Wastewater System R&M	120,000
450-0000-512.51.10	Office Supplies & Expenses	3,000
450-0000-512.52.00	Repair & Replacement	164,000
450-0000-512.59.00	Depreciation Expense	1,000,000
	Operating	4,771,900
450-0000-517.72.00	NPK Debt Service - Interest	160,000
451-0000-517.72.00	RSA Debt Service - Interest	2,000,000
	Debt Service	2,160,000
	TOTAL EXPENSES	7,175,050

ISLAMORADA, VILLAGE OF ISLANDS
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WASTEWATER UTILITY ENTERPRISE FUND
Operations

Total Income (Loss)/Change in Net Position	3,914,950
plus Depreciation Expense	1,000,000
less:	
450-0000-517.71.00 NPK Debt Service - Principal	550,000
451-0000-517.71.00 RSA Debt Service - Principal	1,500,000
Revenues Over/(Under) Expenses	2,864,950

NET POSITION		<i>10/1/2015</i>	<i>FY 2015-2016</i>	<i>9/30/2016</i>
		<i>Balance</i>	<i>Activity</i>	<i>Balance</i>
		<i>(Projected)</i>	<i>(Projected)</i>	<i>(Projected)</i>
450-0000-274.00.00	Inv in Cap Assets, net of debt	14,270,334	1,050,000	15,320,334
450-0000-275.00.00	Restricted	265,385	(265,385)	-
450-0000-276.00.00	Unrestricted	1,475,930	3,130,335	4,606,265
	TOTAL NET POSITION	16,011,649	3,914,950	19,926,599

ISLAMORADA, VILLAGE OF ISLANDS
FY15-16 Budget - Final

WASTEWATER UTILITY ENTERPRISE FUND
Capital Project

REVENUES

451-0000-334.00.00	Mayfield Grant	7,500,000
451-0000-381.91.01	Transfer from Transportation Fund	325,000
451-0000-384.00.02	Loan/Bond Proceeds	-
	TOTAL REVENUES	7,825,000

EXPENSES

	Total Income (Loss)/Change in Net Position	7,825,000
	less Capitalized Expenses:	
451-0000-535.12.10	Full Time Wages	65,910
451-0000-535.21.10	FICA & Medicare	5,050
451-0000-535.22.10	Pension Benefits	2,640
451-0000-535.23.10	Insurance Benefits	6,960
451-0000-535.24.10	Workers Comp	500
	Personnel	81,060
451-0000-535.72.00	Debt Service Interest	10,000
	Debt Service	10,000
451-0000-535.31.30	Architects & Engineers	370,000
451-0000-535.63.01	RSA-DBO Construction & Admin	3,975,000
451-0000-535.63.04	Paving (CRB Ineligible)	325,000
450-1000-535.63.50	NPK-Addtl Lat/Vac Cans	525,000
	Capital Outlay	5,195,000
	TOTAL CAPITALIZED EXPENSES	5,286,060
	Revenues Over (Under) Expenses	2,538,940

NET POSITION

		<u>10/1/2015</u>	<u>FY 2015-2016</u>	<u>9/30/2016</u>
		<u>Balance</u>	<u>Activity</u>	<u>Balance</u>
		<u>(Projected)</u>	<u>(Projected)</u>	<u>(Projected)</u>
451-0000-274.00.00	Inv in Cap Assets, net of debt	49,789,375	5,286,060	55,075,436
451-0000-275.00.00	Restricted	37,536,000	(3,500,000)	34,036,000
451-0000-276.00.00	Unrestricted	(8,455,313)	6,038,940	(2,416,373)
	TOTAL NET POSITION	78,870,063	7,825,000	86,695,063

ISLAMORADA, VILLAGE OF ISLANDS
FY 2015-2016 Budget - Final

STORMWATER ENTERPRISE FUND

Non-Ad Valorem Assessment \$32.00 / ESU

REVENUES

470-0000-343.75.00	Stormwater Assessment	192,500
470-0000-361.10.00	Interest Earnings	100
	TOTAL REVENUES	192,600

EXPENSES

Personnel

470-0000-512.12.10	Full-Time Wages	7,350
470-0000-512.21.10	FICA & Medicare	570
470-0000-512.22.10	Pension Benefits	300
470-0000-512.23.10	Insurance Benefits	830
		9,050

Operating

470-0000-538.31.20	General Legal Services	2,000
470-0000-538.34.10	Contractual Services	38,000
470-0000-538.41.10	Advertising	500
470-0000-538.43.10	Electricity	1,000
470-0000-538.46.30	Equipment R&M	1,000
470-0000-538.46.70	Stormwater Relief	-
470-0000-538.59.00	Depreciation Expense	15,040
		57,540

TOTAL EXPENSES 66,590

Total Income (Loss) / Change in Net Position	126,010
plus Depreciation Expense	15,040
less Capital Outlay	300,000
Revenues Over/(Under) Expenses	<u>(158,950)</u>

NET POSITION

	<u>10/1/2015</u> <i>Balance</i> <i>(Projected)</i>	<u>FY 2015-2016</u> <i>Activity</i> <i>(Projected)</i>	<u>9/30/2016</u> <i>Balance</i> <i>(Projected)</i>
Inv in Cap Assets, net of debt	191,910	284,960	476,870
Unrestricted (deficit)	190,958	(158,950)	32,008
TOTAL NET POSITION	382,868	126,010	508,878

ISLAMORADA, VILLAGE OF ISLANDS

STAFFING COMPARISON
FY 2014-15 ADOPTED BUDGET VS FY 2015-16 PROPOSED BUDGET

Dept	Position Title	FTEs FY 14-15	FTEs FY 15-16	Inc (Dec)
<u>GENERAL FUND</u>				
Village Attorney				
	Village Attorney	0.80	0.80	-
	Legal Assistant	0.80	0.80	-
		1.60	1.60	-
Village Manager				
	Village Manager	0.80	0.80	-
	Assistant Village Manager/P.I.O.	1.00	1.00	-
	Environmental Resources Program Manager	1.00	1.00	-
	Human Resources Manager	-	1.00	1.00
	Management Analyst	-	1.00	1.00
	Environmental Resource Assistant	-	0.50	0.50
		2.80	5.30	2.50
Village Clerk				
	Village Clerk	1.00	1.00	-
	Deputy Village Clerk	1.00	0.75	(0.25)
		2.00	1.75	(0.25)
Finance & Administration				
	Finance Director	0.80	0.75	(0.05)
	Human Resources Manager	1.00	-	(1.00)
	Staff Accountant	0.80	0.75	(0.05)
	Grants/Procurement Administrator	1.00	1.00	-
	Cashier/Accts Payable Clerk	1.00	1.00	-
		4.60	3.50	(1.10)
IT & Communications				
	Director of IT & Communications	1.00	1.00	-
	IT Systems Engineer	1.00	-	(1.00)
	IT Software Applications Specialist	1.00	-	(1.00)
	Broadcast Assistant	1.00	1.00	-
		4.00	2.00	(2.00)
Building Services				
	Chief Building Official	1.00	1.00	-
	Senior Inspector/Plans Examiner	1.00	1.00	-
	Plans Examiners/Inspectors	2.00	2.00	-
	Building Services Coordinator	1.00	1.00	-
	Permit Clerk	2.00	2.00	-
	Scanning Clerk	1.00	1.00	-
		8.00	8.00	-
Planning & Development Services				
	Planning and Development Director	1.00	1.00	-
	Administrative Assistant	1.00	1.00	-
	Principal Planner	1.00	-	(1.00)
	Sr. Planner	1.00	1.00	-
	Planner	1.00	2.00	1.00
	Associate Planner	1.00	1.00	-
		6.00	6.00	-

ISLAMORADA, VILLAGE OF ISLANDS

STAFFING COMPARISON
FY 2014-15 ADOPTED BUDGET VS FY 2015-16 PROPOSED BUDGET

Dept	Position Title	FTEs FY 14-15	FTEs FY 15-16	Inc (Dec)
Public Works (& Transportation)				
	Public Works Director	0.80	0.80	-
	Operations Manager	1.00	1.00	-
	Building Maintenance Staff	1.00	1.00	-
	Roadway Maintenance Staff	8.00	8.00	-
	Security - Anne's Beach	0.50	1.00	0.50
	Part Time Litter Removal (2 PT)	0.50	1.00	0.50
		11.80	12.80	1.00
Code Enforcement				
	Senior Code Enforcement Officer	1.00	1.00	-
	Code Compliance Officer	1.00	2.00	1.00
	Part-Time Code Compliance Officer	0.70	-	(0.70)
		2.70	3.00	0.30
Local Law Enforcement (MCSO)				
	Adm Asst to the Police District Cmdr	1.00	1.00	-
		1.00	1.00	-
Fire Rescue				
	Fire Chief	1.00	1.00	-
	Assistant Chief	1.00	1.00	-
	Admin Assistant to the Fire Chief	1.00	1.00	-
	Fire Inspector/Training Officer	1.00	1.00	-
	EMT	4.00	5.00	1.00
	Paramedic	20.00	19.00	(1.00)
	On Call	1.20	1.20	-
		29.20	29.20	-
Parks & Recreation				
	Parks and Rec/Marine Resources Director	0.75	0.75	-
	Parks Program Manager	1.00	1.00	-
	Park Operations Coordinator	1.00	1.00	-
	Administrative Assistant	1.00	1.00	-
	Head Lifeguard/Pool Operator	1.00	1.00	-
	Sr. Lifeguard	1.00	1.00	-
	Lifeguard	2.00	2.00	-
	Facility Attendant	-	1.00	1.00
	Crew Chief - IFP Grounds	1.00	1.00	-
	IFP Facility/Grounds Maint Worker	2.00	2.00	-
	Marina/IFP Maintenance Worker	0.50	0.50	-
	Part Time and Seasonal Workers	8.50	6.50	(2.00)
		19.75	18.75	(1.00)
TOTAL - GENERAL FUND		93.45	92.90	(0.55)
<u>SPECIAL REVENUE FUNDS</u>				
Solid Waste Fund				
	Public Works Director	0.10	0.10	-
		0.10	0.10	-
TOTAL - SPECIAL REVENUE FUNDS		0.10	0.10	-

ISLAMORADA, VILLAGE OF ISLANDS

STAFFING COMPARISON

FY 2014-15 ADOPTED BUDGET VS FY 2015-16 PROPOSED BUDGET

Dept	Position Title	FTEs FY 14-15	FTEs FY 15-16	Inc (Dec)
<u>ENTERPRISE FUNDS</u>				
PYH Marina Fund				
	Head Dockmaster	1.00	1.00	-
	Dockmaster	1.00	1.00	-
	Assistant Dockmaster	2.00	2.00	-
	Marina/IFP Maintenance Worker	0.50	0.50	-
	Parks and Rec/Marine Resources Director	0.25	0.25	-
		4.75	4.75	-
Wastewater Utility Fund				
	Wastewater Utility Director	1.00	1.00	-
	Sr. Administrative Assistant	1.00	1.00	-
	Wastewater Accountant	1.00	-	(1.00)
	Deputy Village Clerk	-	0.25	0.25
	Village Manager	0.20	0.20	-
	Finance Director	0.20	0.25	0.05
	Staff Accountant	0.20	0.25	0.05
	Village Attorney	0.20	0.20	-
	Legal Assistant	0.20	0.20	-
		4.00	3.35	(0.65)
Stormwater Utility Fund				
	Public Works Director	0.10	0.10	-
		0.10	0.10	-
TOTAL - ENTERPRISE FUNDS		8.85	8.20	(0.65)
GRAND TOTAL - ALL FUNDS		102.40	101.20	(1.20)
<hr/>				
	Full-Time	91.00	92.00	1.00
	Part-Time	11.40	9.20	(2.20)
		<hr/> 102.40	<hr/> 101.20	(1.20)
	Sheriff's Contract Personnel	16.00	16.00	-
		<hr/> 118.40	<hr/> 117.20	(1.20)

ISLAMORADA, VILLAGE OF ISLANDS
FIVE YEAR CAPITAL IMPROVEMENT PROGRAM
FY 2015-2016 through FY 2019-2020

		Prior FY	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
<u>TRANSPORTATION PROJECTS</u>								
Funding Sources								
	Local Option Gas Taxes	277,360	7,850	-	-	-		285,210
	2013 Revenue Bond Proceeds	2,722,640	317,150	-	-	-		3,039,790
	Total Funding Sources	\$ 3,000,000	\$ 325,000	\$ -	\$ -	\$ -		\$ 3,325,000
Expenditures								
	Village-wide Public Road Asphalt Overlay Project	3,000,000	325,000	-	-	-		3,325,000
	Total Expenditures	\$ 3,000,000	\$ 325,000	\$ -	\$ -	\$ -		\$ 3,325,000
<u>WASTEWATER PROJECTS</u>								
Funding Sources								
	FDEP State Revolving Fund Loans	33,696,000	-	-	-	-		33,696,000
	Mayfield State Grant Proceeds	-	5,286,060	-	-	-		5,286,060
	Total Funding Sources	\$ 33,696,000	\$ 5,286,060	\$ -	\$ -			\$ 38,982,060
Expenditures								
	Remaining Service Area Wastewater Collection System	33,696,000	5,286,060	-	-	-		38,982,060
	Total Expenditures	\$ 33,696,000	\$ 5,286,060	\$ -	\$ -			\$ 38,982,060
<u>STORMWATER PROJECTS</u>								
Funding Sources								
	Non-Ad Valorem Assessments	-	300,000	200,000	200,000	200,000	200,000	1,100,000
	Local Government Discretionary Sales Surtax	-	-	100,000	100,000	100,000	100,000	400,000
	Total Funding Sources	\$ -	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 1,500,000
Expenditures								
	Neighborhood Stormwater Projects	-	300,000	300,000	300,000	300,000	300,000	1,500,000
	Total Expenditures	\$ -	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 1,500,000

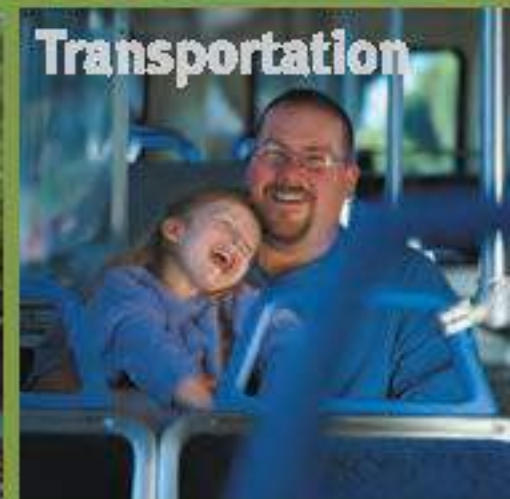
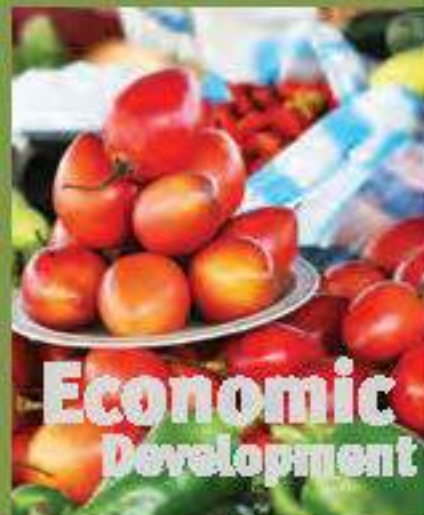
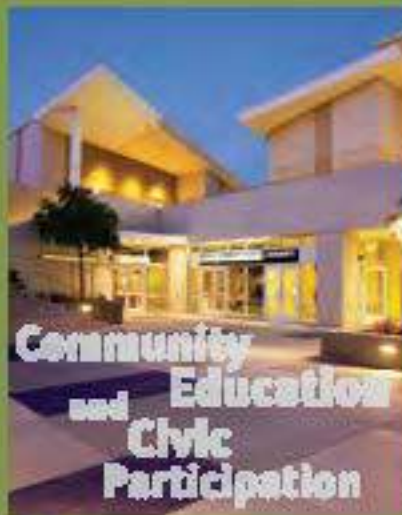
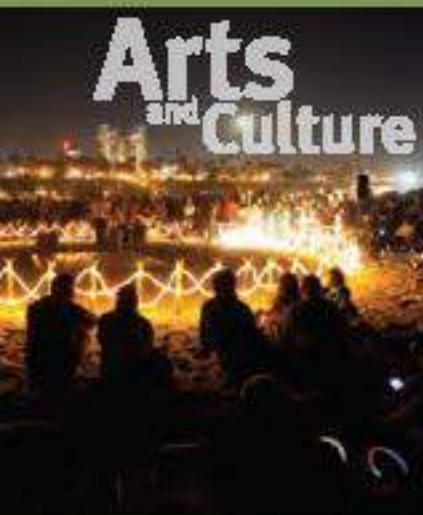
ISLAMORADA, VILLAGE OF ISLANDS
FIVE YEAR CAPITAL IMPROVEMENT PROGRAM
FY 2015-2016 through FY 2019-2020

		Prior FY	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	TOTAL
<u>GRAND TOTALS</u>								
Funding Sources								
Transportation		3,000,000	325,000	-	-	-	-	3,325,000
Wastewater		33,696,000	5,286,060	-	-	-	-	38,982,060
Stormwater		-	300,000	300,000	300,000	300,000	300,000	1,500,000
Grand Total Funding Sources		\$ 36,696,000	\$ 5,911,060	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 43,807,060
Expenditures								
Transportation		3,000,000	325,000	-	-	-	-	3,325,000
Wastewater		33,696,000	5,286,060	-	-	-	-	38,982,060
Stormwater		-	300,000	300,000	300,000	300,000	300,000	1,500,000
Grand Total Expenditures		\$ 36,696,000	\$ 5,911,060	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 43,807,060

Appendix I. Sample Report Card



Sustainable Santa Monica



2012 Sustainable City Report Card

The Sustainable City Plan was created to enhance our resources, prevent harm to the natural environment and human health, and benefit the social and economic well-being of the community for the sake of current and future generations.

The Sustainable City Report Card

The Sustainable City Plan sets very aggressive goals for a sustainable city and Santa Monica has received national recognition for its sustainability efforts. This report card describes how we are doing at meeting our aggressive sustainable city goals and highlights areas of success and challenges that face our community in nine goal areas.

Grading

The primary grade given for each goal area reflects the progress on the part of the community to reach the adopted Sustainable City Plan goals. The grade is based on analysis of indicator data and evaluation of progress toward meeting the targets for each of the goal areas. To better understand this grade, it is important to consider the aggressive vision of sustainability adopted by the community and the extent to which regional conditions and factors are influential. The effort grade for each goal area reflects the level of effort and commitment in the community that is currently focused on achieving the goals.

Background

On September 20, 1994 Santa Monica's City Council adopted the city's first Sustainable City Program to ensure that Santa Monica can continue to meet its current environmental, economic and social needs without compromising the ability of future generations to do the same. The program has evolved since its adoption and has been responsible for many positive changes in the community. In 2003, City Council adopted an expanded version of the program called the Sustainable City Plan, which was developed by a diverse group of community stakeholders and lays out far reaching sustainability goals for the community. In 2012, Santa Monica began a comprehensive update of the Sustainable City Plan in order to lay the foundation for future sustainability successes.

Additional information is available at www.sustainablesm.org. If you have questions, please contact the Office of Sustainability and the Environment at [310.458.2213](tel:310.458.2213) or environment@smgov.net.

Sustainable City Plan – Guiding Principles

The Santa Monica Sustainable City Plan is founded on ten Guiding Principles that provide the basis from which effective and sustainable decisions are made.

- 1 The Concept of Sustainability Guides City Policy**
- 2 Protection, Preservation, and Restoration of the Natural Environment is a High Priority of the City**
- 3 Environmental Quality, Economic Health and Social Equity are Mutually Dependent**
- 4 All Decisions Have Implications to the Long-term Sustainability of Santa Monica**
- 5 Community Awareness, Responsibility, Participation and Education are Key Elements of a Sustainable Community**
- 6 Santa Monica Recognizes Its Linkage with the Regional, National, and Global Community**
- 7 Those Sustainability Issues Most Important to the Community Will be Addressed First, and the Most Cost-Effective Programs and Policies Will be Selected**
- 8 The City is Committed to Procurement Decisions which Minimize Negative Environmental and Social Impacts**
- 9 Cross-sector Partnerships Are Necessary to Achieve Sustainable Goals**
- 10 The Precautionary Principle Provides a Complimentary Framework to Help Guide City Decision-Makers in the Pursuit of Sustainability**

Sustainable Santa Monica

Sustainability Successes 2012

Resource Conservation:

Water Wonders: Water demand has decreased by 14 gallons per person per day.

Expanding Efficiency: More than 700 water saving devices were installed in homes and businesses throughout the city.

Solar Success: To date, there are 377 grid connected solar projects in the city representing 2.945 megawatts of solar capacity.

Compost Collection: The food waste composting program kept more than 4,000,000 pounds of food waste out of the landfill.

Environmental and Public Health:

Diligent Disposal: Community members using the Household Hazardous Waste Programs kept nearly 250,000 pounds of hazardous materials and 32,000 pounds of household batteries out of the landfill.

Resource Reuse: More than 64,000,000 gallons of urban runoff were harvested and treated for reuse at the Santa Monica Urban Runoff Recycling Facility.

Market Madness: Sales are up 5% at four thriving farmers' markets that provide fresh, locally grown produce to nearly a million visitors each year!

Better Bags: Implementation of the Single Use Carryout Bag Ban eliminated 21,000,000 plastic bags from circulation throughout the city.

Transportation:

Cool Carpools: Average vehicle ridership increased to 1.67, thus exceeding the Sustainable City Plan target of 1.5.

Biking is Big: Bike lanes, routes and sharrows were installed on 18 miles of city streets.

Pedal Parking: The bike valet program parked 24,000 bikes for free at 217 community events around the city.

Friendly Fuels: Public electric vehicle charging stations were installed at 24 locations adding to the more than 100 EV charging stations already available at private locations.

Economic Development:

Community Commerce: To date, 518 businesses have joined Buy Local Santa Monica and demonstrated their commitment to our local community.

Local Leadership: Nineteen businesses were recognized for their exceptional commitment to sustainable practices through the Green Business Certification Program and the Sustainable Quality Awards.

Going Green: More than 730 environmental measures were implemented by 20 local businesses as part of the Sustainable Works Business Greening Program.

Open Space and Land Use:

Outstanding Open Space: Santa Monica's open space system now includes 245 acres of state beach and 27 community parks.

Total Trees: An additional 1,384 new trees were added to the existing 34,500 public trees in Santa Monica's urban forest.

Beautiful Beach: More than 213,500 people visited Annenberg Community Beach House and 3,949 people participated in the Beach=Culture series.

Housing:

Housing Hope: 101 affordable housing units were completed and construction began on an additional 354 affordable housing units.

Complete Communities: More than 90% of all new housing units are within a mile of a transit stop, open space and a grocery store.

Affecting Affordability: The City's progressive legal protections helped to keep 35% of the rent controlled units affordable to low and very-low income tenants.

Community Education and Civic Participation:

Creating Community: More than 600,000 people visit Bergamot Station and 6,000,000 people visit the Santa Monica Pier annually.

People Participate: Nearly 9,000 people participated in the Santa Monica Festival and 20,000 people attended the AltCar and AltBuild Expos.

Environmental Education: More than 800 people participated in the Sustainable Works Community Greening Program.

Individual Input: Voter turnout in the November 2010 off year election was 65%, thus exceeding the Sustainable City Plan target of 50%!

Human Dignity:

Homeless Help: Project Homecoming helped 266 previously homeless individuals reunite with family and friends able to offer permanent housing and ongoing support.

Safe Streets: Serious crimes against persons and property dropped 4.8%.

Community Care: The Human Services Grants Program provided over \$7,400,00 to support local family, disability, employment and homeless services.

Arts and Culture:

Adding Arts: City Council approved the addition of an Arts and Culture Goal Area in the Sustainable City Plan.

Creative Culture: The full spectrum of cultural, artistic and design goods and services known as the Creative Sector employ 43% of Santa Monica residents.



Resource Conservation



Grading History

<i>Year</i>	<i>Grade</i>	<i>Effort</i>
2005	C	A
2006	C+	A
2007	C	A-
2008	C+	A-
2010	B-	A-
2012	B	A-

Goals:

Decrease consumption of non-local, non-renewable, non-recyclable energy, water, materials and fuels / Promote renewable resource use

Resource Conservation

2012 *Grade* *Effort*
B A-

- The grade improvement reflects reduced water use, improved waste diversion rates, increases in community renewable energy use and the availability of local water supply.
- The citywide diversion rate exceeds the Sustainable City Plan target of 70%. The target diversion rate of 70% equals 5.3 pounds per resident per day. In 2011, the diversion rate decreased to 3.7 pounds per resident per day.
- The newly expanded food waste composting program kept more than 4,000,000 pounds of food waste out of the landfill.
- Citywide water demand dropped from 11.9 million gallons per day in 2009 to 11,700,000 gallons per day. This represents a 15% drop from the 2006 high of 13,800,000 gallons per day.
- More than 700 water saving devices were installed in homes and businesses though out the city. As a result of these and other measures, water demand has decreased by 14 gallons per person per day.
- The Charnock Well Field Restoration Project was completed. Santa Monica now receives 51% of its water supply from local sources.
- Solar Santa Monica continues to deploy energy efficiency, solar power and clean distributed generation in the community. To date, there are 377 grid connected solar projects in the city representing 2.945 megawatts of solar capacity.
- Currently, 25% of the energy used within the city comes from renewable sources. Nearly 4% comes from solar installations and 21% from the utility's renewable portfolio.
- Investments in energy efficiency were offset by growth and energy use increased by 1%.





Environmental and Public Health



Grading History

<i>Year</i>	<i>Grade</i>	<i>Effort</i>
2005	B	A
2006	B-	A
2007	C	A-
2008	C	A-
2010	C+	A-
2012	C+	A-

Goals:

Minimize or eliminate the use of hazardous and toxic materials and the levels of pollutants entering the air, soil and water



Environmental and Public Health

2012	Grade	Effort
	C+	A-

- The consistent grade reflects steady progress improving Santa Monica Bay health and a demonstrated commitment to reduce pollution and toxics use communitywide while recognizing the local and regional challenges to ensuring clean air, soil and water.
- Implementation of the Watershed Management Plan continued to provide results. Days under warning at local beaches during the dry season dropped 22%, although there were 13 more days with wet weather warnings.
- More than 700 water saving devices and 130 storm water mitigation projects were installed in homes and businesses throughout the city. More than 64,000,000 gallons of urban runoff were harvested and treated for reuse at the Santa Monica Urban Runoff Recycling Facility.
- In an effort to reduce marine debris, the City implemented the Single Use Carryout Bag Ban which eliminated 21,000,000 plastic bags from circulation.
- The Santa Monica Farmers’ Markets celebrated their 30th anniversary. Sales are up 5% at four thriving farmers’ markets that provide access to fresh, locally grown produce to nearly 1,000,000 visitors annually.
- Santa Monica, the first city to sign the Cool Foods Pledge, continued to emphasize the purchase of local, organic, less processed foods that avoid excess packaging. More than 800 Community Meatless Monday Cookbooks were distributed for free and include vegetarian recipes contributed by 60 community members.
- Community members using the Household Hazardous Waste Programs kept nearly 250,000 pounds of hazardous materials, including e-waste, and 32,000 pounds of household batteries out of the landfill. Battery collection tubes are located at 40 city offices and 60 locations throughout the community.





Transportation



Grading History

<i>Year</i>	<i>Grade</i>	<i>Effort</i>
2005	C-	A
2006	C	A
2007	C+	A
2008	C+	A
2010	C+	A
2012	B-	A

Goals:

Maximize mobility and access /
Reduce traffic and pollution
associated with transportation

Transportation

2012 *Grade* *Effort*
B- A

- The grade improvement reflects continued improvement in average vehicle ridership and a strong commitment to local and regional transportation solutions while recognizing the city is far from reaching its transportation related goals.
- The City continued to achieve results with its ridesharing programs. Local average vehicle ridership (AVR) increased from 1.64 last year to 1.67 this year and exceeds the Sustainable City Plan target of 1.5.
- The bike valet program parked more than 24,000 bikes for free at more than 215 community events around the city. Additionally, 18 miles of bike lanes, routes and sharrows were installed to improve bicycle accessibility and safety. The opening of the Santa Monica Bike Center provided 360 bike parking spaces in downtown Santa Monica.
- Traffic collisions decreased 6% from the previous year and reflect increased investments in public education and infrastructure to improve bicycling, walking and driving safety.
- At its highest point, 87% of the City's municipal fleet was fueled by alternative fuels. This has decreased to 72% because of restrictions on storing biodiesel in underground storage tanks.
- Public electric vehicle charging stations were installed at 24 locations adding to the more than 100 EV charging stations already available at private locations.
- Big Blue Bus ridership increased 3.7% over the previous year to more than 18,947,00 boardings. 100% of Big Blue Bus' fleet runs on alternative fuels and a record 58% of residents report using the Big Blue Bus.
- Expo Light Rail will arrive in Santa Monica in 2016 with projected ridership of 64,000 boardings per day.
- Santa Monica is a leading advocate for regional transportation planning to enhance mobility and relieve congestion. However, traffic congestion remains a significant issue in the community.





Economic Development



Grading History

<i>Year</i>	<i>Grade</i>	<i>Effort</i>
2005	B	C+
2006	B	B+
2007	B	A-
2008	B	A-
2010	B	A-
2012	B	A-

Goals:

Nurture a diverse, stable local economy that supports the basic needs of community members / Increase sustainable business practices

Economic Development

2012 *Grade* *Effort*
B A-

- The consistent grade reflects the continued strength of the local economy and growth in local green business while recognizing the challenges presented by cost of living and the jobs housing balance.
- Santa Monica's economy remained strong and diverse. Between 2004 and 2011 no single sector of the economy represented more than 25% of the total economic activity, a positive sign of resiliency.
- The top three sectors were the Information sector, Professional, Science and Technology sector and the Finance sector. The Healthcare sector and the Finance sector have traded off in the third position from 2006–2011.
- In 2011, other sectors represent about 53% of the total payroll of businesses in the city, meeting the target for this indicator.
- There are over 77,000 jobs in Santa Monica, generating a combined payroll of more than \$5,800,000,000.
- The City, Chamber of Commerce, Convention and Visitors Bureau and Sustainable Works continue to collaborate on programs that support local businesses.
- There are 518 businesses enrolled in the Buy Local Santa Monica program.
- Nineteen Santa Monica businesses were recognized for their exceptional commitment to sustainable practices through the Green Business Certification Program and the Sustainable Quality Awards.
- An additional 20 businesses implemented more than 730 environmental measures while participating in the Sustainable Works Business Greening Program.
- The rising cost of living and an unbalanced ratio of jobs to housing make it difficult for people to live near their workplace, exacerbating traffic and parking problems. Santa Monica's projected jobs/housing balance increased to 1.54 this year after dropping to 1.44 in 2009.





Open Space and Land Use



Grading History

<i>Year</i>	<i>Grade</i>	<i>Effort</i>
2005	B+	A
2006	A-	A
2007	A-	A
2008	A-	A
2010	A-	A
2012	A-	A

Goals:

Develop and maintain a diverse open space system that supports the community and the natural environment / Create mixed-use urban villages

Open Space and Land Use

2012 *Grade* *Effort*
A- A

- The consistent grade reflects the city's commitment to maintaining a sufficient and diverse open space system as well as efforts to create land use and transportation policies that promote mixed-use, transit-oriented development.
- There are 245 acres of state beach and 27 community parks in Santa Monica's open space system. Park accessibility continues to be good with more than 90% of residents living within 1/2 mile of open space.
- The Urban Forest Master Plan was completed and 1,384 new trees were added to the 34,500 existing public trees. Santa Monica's urban forest further diversified in terms of average age and tree species.
- The City developed the first carbon offset pilot project under the California Air Resources Board's new urban forest protocol. The project focuses on calculating the greenhouse gas emission impacts of planting 1,000 new trees.
- More than 213,500 people visited Annenberg Community Beach House over the year and 3,949 people participated in 44 events in the Beach=Culture series.
- The City continues to promote open space development. Construction is underway on a seven acre park in the Civic Center and the designs were approved for Santa Monica's first universally accessible playground.
- A number of mixed-use development projects that combine housing, office and retail space were approved to help reduce traffic and parking congestion and encourage walking, biking and transit use.
- Expo Light Rail is scheduled to reach Santa Monica in 2016 and planning for the Expo Light Rail stations is underway.





Housing



Grading History

<i>Year</i>	<i>Grade</i>	<i>Effort</i>
2005	D-	A
2006	D	A
2007	D	A
2008	C	A
2010	C	A
2012	C	A

Goals:

Provide a mix of affordable, livable and green housing types for people of all socio-economic, cultural and household groups

Housing

2012 *Grade* *Effort*
C A

- The consistent grade reflects the continued loss of housing affordability as well as the City's commitment to retaining existing and providing additional affordable housing units.
- The City is committed to providing a mix of affordable and livable housing throughout the community for people of all socioeconomic, cultural, and household groups.
- All rent-controlled units retain the protections given by the Rent Control Law including just-cause eviction protections. However, the affordability of more than half of the city's rent controlled housing units has been lost due to state-mandated vacancy decontrol in 1999.
- The controlled housing stock affordable to low and very-low income residents continues to decrease from 86% before state-mandated vacancy decontrol to 35% in 2011.
- In an effort to provide additional housing stability for Santa Monica residents, Santa Monica voters approved Measure RR in November 2010 which extends further protection against eviction to all tenants.
- In addition to preserving the existing stock of affordable rental units, the City is investing in the development of new affordable housing. In 2011, 101 units of affordable housing were completed and construction began on an additional 354 affordable housing units citywide.
- More than 90% of all new housing units are within a 1/4 mile of a transit stop, open space and a grocery store.





Community Education and Civic Participation



Grading History

<i>Year</i>	<i>Grade</i>	<i>Effort</i>
2005	B+	A
2006	A-	A
2007	A-	A
2008	A-	A
2010	A-	A
2012	A-	A

Goals:

Community members participate actively and effectively in civic affairs and community improvement efforts

Community Education and Civic Participation

2012 *Grade* *Effort*
A- A

- The consistent grade reflects significant participation in major community events and civic affairs.
- Voter turnout in the November 2010 off year election was 65%, thus exceeding the Sustainable City Plan target of 50%!
- The seven member City Council held 26 meetings and 158 community members served on 21 different Boards, Commissions and Task Forces.
- More than 1,398,710 patrons visited the Santa Monica Public Library and 1,716 people participated in Citywide Reads.
- Nearly 9,000 people participated in the Santa Monica Festival and almost 20,000 people attended the AltCar and AltBuild Expos.
- Annually 600,000 people visit Bergamot Station which is Southern California's largest art gallery complex and cultural center. Six million people visit the Santa Monica Pier and the famed Ferris Wheel.
- More than 800 people took the next step towards a more sustainable lifestyle by participating in the Sustainable Works Community Greening Program.
- There were 643 student poster submissions in the annual Sustainable Santa Monica Art Contest and more than 80 student sculpture submissions made out of reclaimed materials showcased throughout the community.





Human Dignity



Grading History

<i>Year</i>	<i>Grade</i>	<i>Effort</i>
2005	N/A	A
2006	B-	A
2007	B-	A
2008	B-	A
2010	B	A
2012	B+	A

Goals:

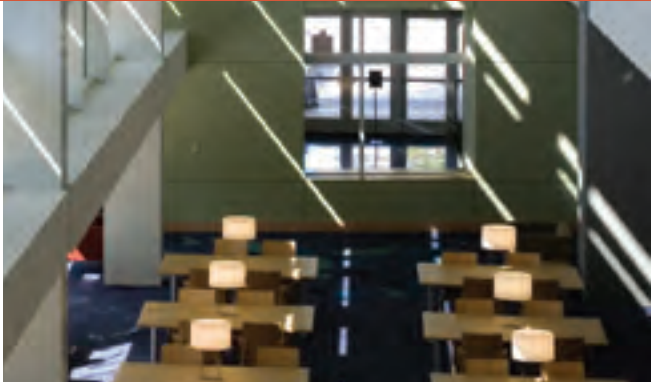
All community members are able to meet their needs, have adequate access to housing, health care, education, employment, and are empowered to enhance the quality of their lives



Human Dignity

2012 *Grade* *Effort*
B+ A

- The grade improvement reflects the concrete progress being made by the community to ensure that all residents are able to meet their basic needs and feel safe in their community.
- Santa Monica is proactive in supporting the ability of its residents to meet their basic needs and live with dignity. The Human Services Grants Program provided over \$7,400,000 to support local family, disability, employment and homeless services.
- Communitywide implementation of the Action Plan to Address Homelessness resulted in maintenance of the significant reduction in homelessness first observed in 2010 census.
- A 16% reduction in homeless people observed in the downtown area indicates that targeted outreach in the area has been effective. During this period, the shelter count increased by 6% over the previous year due primarily to a new temporary Upward Bound House Winter Shelter Program for homeless families.
- Project Homecoming helped 266 previously homeless individuals reunite with family and friends able to offer permanent housing and ongoing support.
- Santa Monica residents report feeling safe in their communities and feel empowered to meet their basic needs. Serious crimes against persons and property dropped 4.8% in 2011.
- The Office of Emergency Management was launched in 2011 to improve the community’s ability to respond and recover from disasters. More than 3,800 community members registered with SM Alerts to receive pertinent emergency information and notifications.





Arts and Culture



*NEW SUSTAINABLE CITY
GOAL AREA!*

Glow 2010, photo by Bill Short

Arts and Culture

NEW SUSTAINABLE CITY GOAL AREA!

- The integration of arts and culture into sustainable community planning efforts reflects the vital role they play in developing and sustaining vibrant local communities.
- In May 2012, City Council approved the addition of an Arts and Culture goal area in the Sustainable City Plan.
- The new Arts and Culture goal area includes the following goals: 1) Retain and nurture Santa Monica's arts community and resources, 2) Increase cultural participation and provide greater access to a diversity of cultural programs for all ages, and 3) Enhance the long term sustainability of Santa Monica's creative sector.
- The creative sector includes the production of a full spectrum of cultural, artistic and design goods and services. This sector employs 43% of Santa Monica residents and includes close to 9% of local jobs.
- Santa Monica is home to more than 1,600 arts-related businesses that employ more than 11,000 people.



Sustainable Santa Monica

“I think any goal this community sets for itself, and is willing to work to accomplish, will be accomplished... whether in my time or another time. That’s the beauty of this city.”

Ken Edwards, 1941-1985

City Council Member and Mayor

For more information please visit **www.sustainablesm.org**

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Appendix J. Model Ordinance



Environmentally Compromised Road Segments—A Model Ordinance¹

Thomas Ruppert, Esq.,² John Fergus,³ and Alex Stewart⁴

Introduction

The authors developed this model ordinance in direct response to the events outlined in the legal case *Jordan v. St. Johns County*.⁵ An article detailing the legal research supporting the design of this article will be forthcoming.

Matter in brackets [...] in the following model ordinance represents material that either may or must be tailored to any specific local government considering adopting this ordinance in whole or in part. The numbers appearing in the draft ordinance in brackets were numbers placed there by the authors as an example of numbers that could be used by a local government seeking to reach a balance between assisting property owners as much as possible with access to their property while also seeking to protect other taxpayers and roads by not dedicating an unreasonable amount of resources to a small portion of the local government's road system.

In addition, based on Florida Statute Section 336.045(6), it may be necessary to have a comprehensive plan amendment to allow variation from design standards.⁶

¹ Thank you to several attorneys that made useful comments, suggestions, and additions to a draft of this model ordinance, including Bob Shillinger, Monroe County Attorney; Chris Ambrosio, Monroe County Attorney's Office; Peter Morris, Monroe County Attorney's Office; Christine Limbert, Monroe County Attorney's Office; Patrick McCormack, St. Johns County Attorney's Office, and Erin Deady of Erin L. Deady, P.A. All errors remain those of the authors.

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⁵ Robert & Linnie Jordan, et al v. St. Johns County, Case No. CA05-694 (Fla. 7th Jud. Cir. May 21, 2009), *aff'd in part, rev'd in part by* Jordan v. St. Johns County, 63 So. 3d 835, 837 (Fla. 2011).

⁶ Fla. Stat. §336.045(6) ("If the governing body of a county or municipality has adopted a design element as part of its comprehensive plan pursuant to part II of chapter 163, the department shall consider such element during project development of transportation facilities. The design of transportation facilities constructed by the department within the boundaries of that county or municipality must be consistent with that element to the maximum extent feasible.").

* Numbers in brackets can be expected to change based on local conditions.

Caveat: This ordinance and any commentary are for educational and policy-discussion purposes. They do not constitute legal advice and do not create an attorney-client relationship. Local governments should not implement this model, in whole or in part, without consulting their attorney for specific legal advice.

PREAMBLE

The purpose of this Ordinance is to address (a) The natural forces' degradation and damage to public roads, streets, highways, bridges, sidewalks, curbs and curb ramps, crosswalks, bicycle ways, hiking and walking paths and trails, underpasses, overpasses, and other improved public rights-of-way used for travel or recreation (hereinafter "right(s)-of-way," "road(s)," or "roadways" (however, in no event shall such reference to "road(s)" or "roadways" be construed to refer to private rights-of-way, private roads, or other improved private rights-of-way used for travel)), (b) The significant costs of construction, maintenance, remediation, repair, and operations incurred by governmental entities with respect to these naturally damaged roadways, and (c) To establish procedures and means that may be taken by the governmental entity to maintain a reasonable level of meaningful access to private properties connected to the roadways or to abandon the roadways and terminate public maintenance responsibility thereof.

WHEREAS, [ADDITION OF LOCALLY RELEVANT INFORMATION AS NEEDED AND AVAILABLE]; and

WHEREAS, erosion, flooding, and other environmental challenges may pose challenges to effective maintenance of [CITY/COUNTY] roads either now or in the future; and

WHEREAS, rising mean sea level increases the rate at which oceanfront land will be eroded, the elevation to which a given storm surge will rise, and increases flooding risk due to impacts on [CITY/COUNTY]'s stormwater system; and

WHEREAS, pursuant to Florida Statutes (FS) Ch. 334, the Florida Department of Transportation (DOT) has the power to develop and adopt uniform minimum standards and criteria for the design, construction, maintenance, and operation of public roads, and such adopted standards allow for design exceptions in some circumstances; and

WHEREAS, Section 336.045, FS provides for the uniform minimum standards for design, construction, and maintenance of streets, roads, highways, bridges,

* Numbers in brackets can be expected to change based on local conditions.

sidewalks, curbs and curb ramps, crosswalks, bicycle ways, underpasses, and overpasses; and

WHEREAS, Section 163.3178(1), FS, provides it is the intent of the Legislature that local governments restrict development activities where such activities would damage or destroy coastal resources and that such plans protect human life and limit public expenditures in areas that are subject to destruction by natural disaster; and

WHEREAS, Section 163.3178(2)(f), FS requires local governments that must have Coastal Elements of their Comprehensive Plans to include development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in coastal areas which result from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise; and

WHEREAS, Section 163.3177(6)(g)6, FS, requires local governments to limit public expenditures that subsidize development in coastal high hazard areas; and

WHEREAS, through the enactment of Section 627.351(6)(a)5.b., FS, the Florida Legislature has discouraged development on certain properties by prohibiting Citizens Property Insurance Corporation from insuring newly constructed or substantially renovated major structures on properties seaward of the coastal construction control line established pursuant to Section 161.053, FS, or within the Coastal Barrier Resources System as designated by 16 U.S.C. ss. 3501-3510 [REFERENCE TO THE COASTAL BARRIER RESOURCES SYSTEM MAY NOT BE APPLICABLE TO SOME LOCAL GOVERNMENTS]; and

WHEREAS, through the enactment of the Coastal Barrier Resources Act, 16 U.S.C. ss. 3501-3510, the U.S. government has discouraged development by prohibiting most federal expenditures that would encourage development in designated coastal areas deemed worthy of protection [REFERENCE TO THE COASTAL BARRIER RESOURCES SYSTEM MAY NOT BE APPLICABLE TO SOME LOCAL GOVERNMENTS]; and

WHEREAS, [CITY/COUNTY] has in place a comprehensive plan policy [ADD REFERENCE TO POLICY] to limit expenditures that subsidize development in coastal high hazard areas; and

WHEREAS, the [CITY/COUNTY] is aware of the potential for coastal erosion, flooding, or a rising water table to cause damage to private property and roads and other infrastructure [CITE TO LOCAL VULNERABILITY ASSESSMENT OR LOCAL DOCUMENTATION OF EROSION/FLOODING]; and

WHEREAS, the Fifth District Court of Appeal of Florida concluded in *Jordan v. St. Johns County*, 63 So.3d 835 (Fla. 5th DCA 2011) that a county must provide

* Numbers in brackets can be expected to change based on local conditions.

a reasonable level of public road maintenance that affords meaningful access to land unless the county has followed the statutory procedures for abandoning it; and

WHEREAS, St. Johns County and the plaintiffs reached a settlement, among other things, obligating St. Johns County to make good-faith efforts to maintain the condition of the road at issue in Jordan v. St. Johns County; and

WHEREAS, the accommodation between St. Johns County and plaintiffs provides a basis for a means to balance private property rights and community interests; and

WHEREAS, it is anticipated that the disruptive impacts of sea-level rise on [CITY/COUNTY] will increase and passage of this Ordinance provides adequate time for owners of potentially at-risk properties to adjust their reasonable investment-backed expectations; and

WHEREAS, the [CITY/COUNTY] seeks to place limits on exorbitant maintenance costs for certain road segments or lawsuits that can reasonably be anticipated and avoided;

NOW, THEREFORE,

Environmentally Compromised Road Segments Ordinance

1. Ordinance purpose and authority

This ordinance specifically creates exceptions to the Levels of Service (LOS) and design standards for roads established by [COUNTY/CITY] for those roadways that meet the criteria below. Pursuant to the State of Florida, Department of Transportation, Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (May 2011 edition) (a.k.a. “Florida Greenbook”), any road categorized as “environmentally compromised” under this ordinance shall be the subject of a requested design/maintenance exception based on the justification process in Chapter 14 of the Florida Greenbook.

2. Definitions

- a. “Environmentally challenging location” means a location where typical road construction, remediation or repair criteria and standards are infeasible due to naturally occurring conditions resulting in:
 - i. Environmental conditions that repeatedly damage or threaten the road to the extent that standard automobiles and light trucks, law enforcement patrol cars or fire and medical

* Numbers in brackets can be expected to change based on local conditions.

emergency vehicles, or vehicles providing services such as trash collection are not able to safely use the road per the documented determination of an appropriate local authority or official; or

- ii. Environmental conditions that require materials or processes to maintain, repair, or rebuild the road that are not standard materials or processes for other roads in the [COUNTY/CITY]; or
- iii. Environmental conditions where the presence, maintenance, repair, or rebuilding of the road has an identifiable detrimental impact on a natural resource (such as, but not limited to, a wetland, dune, estuary, sanctuary, hammock, shoreline, habitat management or wildlife conservation area) or adjacent private property; or
- iv. Environmental conditions where maintenance, repair, or rebuilding activities necessary to keep the road in service increase or exacerbate the detrimental impact of the road on a natural resource or adjacent private property; or
- v. Locations being subject to permitting or mitigation requirements of a state or federal agency for activities that would be considered routine maintenance and repair in other locations in [COUNTY/CITY] and not subject to such permitting requirements.

b. “Environmentally compromised local road segment” means a segment of local road, as defined in Florida Statute Section 334.03(14), in an environmentally challenging location for which one of the following conditions exists:

- i. The annual per-mile cost averaged over [three (3)] consecutive fiscal years to maintain the paved road segment to the same standard as is common among similar roads in the [COUNTY/CITY] (excluding already-designated environmentally compromised road segments) exceeds by a factor of [four (4)] or more the annual per-mile cost to maintain roads (excluding already-designated environmentally compromised road segments) [COUNTY/CITY]-wide averaged over the same period; or
- ii. The annual per-mile cost in a given fiscal year to maintain the paved road segment to the same standard as is common among other roads in the [COUNTY/CITY] (excluding already-

* Numbers in brackets can be expected to change based on local conditions.

designated environmentally compromised road segments) exceeds by a factor of [six (6)] or more the annual per-mile cost to maintain roads (excluding already-designated environmentally compromised road segments) [COUNTY/CITY]-wide averaged over the given fiscal year plus the [two (2)] immediately preceding fiscal years. This does not include periodic rebuilding of road segments provided that the need for rebuilding is not more frequent than normal for similar roads in the [COUNTY/CITY] due to the environmentally challenging location.

- c. “Environmentally compromised collector-road segment” means a collector road segment, as defined in Florida Statute Section 334.03(4), in an environmentally challenging location for which one of the following conditions exists:
 - i. The annual per-mile cost averaged over [three (3)] consecutive fiscal years to maintain the paved road segment to the same standard as is common among other roads in the [COUNTY/CITY] (excluding already-designated environmentally compromised road segments) exceeds by a factor of [five (5)] or more the annual per-mile cost to maintain roads (excluding already-designated environmentally compromised road segments) [COUNTY/CITY]-wide averaged over the same period; or
 - ii. The annual per-mile cost in a given fiscal year to maintain the paved road segment to the same standard as is common among other roads in the [COUNTY/CITY] (excluding already-designated environmentally compromised road segments) exceeds by a factor of [eight (8)] or more the annual per-mile cost to maintain roads (excluding already-designated environmentally compromised road segments) [COUNTY/CITY]-wide averaged over the given fiscal year plus the [two (2)] immediately preceding fiscal years.
- d. In this ordinance, “environmentally compromised road segment” includes both “environmentally compromised local road segments” and “environmentally compromised collector road segments.”

3. Process for designating environmentally challenging locations and environmentally compromised road segments

- a. The elected officials of the [COUNTY/CITY] will designate environmentally

* Numbers in brackets can be expected to change based on local conditions.

challenging locations and environmentally compromised local or through-road segments by ordinance. The ordinance must include at least the following information:

- i. The basis upon which the designation is based, and
 - ii. The beginning and end point of the environmentally challenging location or environmentally compromised road segment as measured in feet from the centerline of the nearest intersecting right-of-way, and
 - iii. The parcel number, street address number, and owner's name, as listed by the Property Appraiser's or Tax Collector's Office, of all parcels fronting the designated location, and
 - iv. The parcel number, street address number, and owner's name, as listed by the Property Appraiser's or Tax Collector's Office, of all parcels whose property owners must pass over that road segment to access their property, and
 - v. A map showing the designated environmentally challenging location or environmentally compromised road segment, the measurements from the nearest intersection specified in 3.a.ii. preceding, and the boundaries, parcel numbers, and street address numbers of parcels identified in 3.a.iii. and 3.a.iv immediately preceding.
- b. The [COUNTY/CITY] will mail, U.S. Mail Return Receipt Requested or equivalent, at least 30 days prior to the first reading of the draft ordinance, notice in conformance with the requirements of Section 125.66, FS (County) and Section 166.041, FS (Municipality), to each property owner listed in the draft ordinance, at the address of record maintained by the Property Appraiser's Office or Tax Collector's Office, a notice of the first reading. The notice will include either a draft copy of the ordinance or a place and dates and times when individuals can obtain a copy of the draft ordinance.
- c. The [COUNTY/CITY] will post where it normally posts official notices of meetings at least 30 days prior to the first reading of the ordinance the notice mailed to property owners as well as a list of the parcels and owners listed in the draft ordinance.

* Numbers in brackets can be expected to change based on local conditions.

4. Signage of Environmentally Compromised Road Segments

Any road segment designated as an environmentally compromised road segment shall, within one month of designation, be clearly marked at the beginning and end of the segment as well as at any access points from intersecting public roads and, if applicable, at intervals of no greater than one-half mile. Such notice shall, in compliance with the Florida Greenbook, Chapter 18, comply with “Conventional Road” size and design requirements in the Federal Highway Administration’s (FHWA) Manual on Uniform Traffic Control Devices. Such signage shall state: “WARNING: [DAMAGED, ERODED, or other warnings as appropriate to the specific situation such as STANDING WATER, NARROWED ROAD, BROKEN ASPHALT, DETERIORATED SHOULDER, WASHOUTS, or other wording as appropriate] road surface ahead. Road may not be suitable for all types of traffic.”

5. Maintenance Standard for Environmentally compromised road segments

- a. The maintenance standard for designated environmentally compromised road segments will be the standard to which the road segment can be maintained with expenditures that do not exceed by more than [twenty-five percent (25%)] the per-unit-area cost sufficient to categorize the segment as an environmentally compromised road segment. [COUNTY/CITY] will not exceed the per-unit-area cost threshold for designation plus [twenty-five percent (25%)] for maintenance for any environmentally compromised road segment from general road maintenance funds. This limitation does not apply to additional funding sources not available for [COUNTY/CITY]-wide road maintenance, such as, but not limited to, grants or funds from a special-benefit unit such as the one described below in 7.a.-d.
- b. In a good-faith effort to reasonably maintain environmentally compromised road segments, to provide meaningful access for property owners, and to balance these with responsible management of public fiscal resources, [COUNTY/CITY] will spend [COUNTY/CITY]-wide on an average per-unit-area basis over any [three] consecutive fiscal years, at least [one and one half (1.5)] times the average per-unit-area cost to maintain all other roads (excluding already designated environmentally compromised road segments) [COUNTY/CITY]-wide over the same period up to the point where:
 - i. The average cost to maintain all environmentally compromised road segments over the [three] most recently completed fiscal years equals or exceeds [one hundred percent (100%)] of the cost to maintain all other road segments in the [COUNTY/CITY] during the same period, in which case, at the discretion of the

* Numbers in brackets can be expected to change based on local conditions.

[COUNTY/CITY] legislative body, the [COUNTY/CITY] reserves the option to spend no more than [half (50%)] its road maintenance funds in each of the current and next fiscal years on environmentally compromised road segments, apportioned among the segments at the discretion of the [COUNTY/CITY] legislative body; or

- ii. The per-unit-area cost in a given fiscal year to maintain all environmentally compromised road segments exceeds by a factor of [ten (10)] or more the per-unit-area cost to maintain roads (excluding already-designated environmentally compromised road segments) [COUNTY/CITY]-wide averaged over the [three (3)]most recently completed fiscal years, in which case, at the discretion of [COUNTY/CITY] elected officials, the [COUNTY/CITY] reserves the option to spend no more funds on environmentally compromised road segments during that fiscal year and no more than [half (50%)] its road maintenance funds in the next fiscal year on environmentally compromised road segments, apportioned among the segments at the discretion of the [COUNTY/CITY] legislative body.

6. Lack of meaningful access of property

- a. One or more owners of properties who lack meaningful access to their property due to severe degradation or loss of an environmentally compromised road segment shall, in writing, request assistance from the [COUNTY/CITY] Clerk:
 - i. To open negotiations with all property owners affected, as defined in 3.a.iii. and 3.a.iv. above, by the environmentally compromised road segment, to facilitate affected owners creating among themselves mutual easements for access to properties lacking meaningful access; or
 - ii. To establish a statutory way of necessity as provided for in Florida Statutes subsection 704.10(2). [COUNTY/CITY] shall assist such property owners as feasible and deemed reasonable by [COUNTY/CITY].
 - iii. [COUNTY/CITY] shall assist such property owners as feasible and deemed reasonable by [COUNTY/CITY].
- b. If the [COUNTY/CITY]'s involvement and assistance as noted in 6.a.i. and 6.a.ii. does not result in meaningful access for all affected property owners, [COUNTY/CITY] shall not be held liable for the inability of property owners to secure access since [COUNTY/CITY] is neither directly

* Numbers in brackets can be expected to change based on local conditions.

nor indirectly responsible for the natural causes that created the environmentally compromised road segment and had informed property owners in a timely manner via this ordinance of the potential for such loss.

- c. Properties without pre-existing development or with pre-existing development that has not been subject to documented consistent and active use for the preceding three years shall have no claim on [COUNTY/CITY] for any assistance or damages since any such claim would involve speculative losses and since [COUNTY/CITY] was neither directly nor indirectly responsible for the natural causes that created the environmentally compromised road segment and had informed property owners in a timely manner via this ordinance of the potential for such loss.

**7. *Additional Funding for Environmentally Compromised Road Segments:
Creation of MSBU***

- a. [COUNTY/CITY] may, at its discretion, establish a Municipal Services Benefit Unit (MSBU) or utilize other lawful assessment powers, to raise additional funds for maintenance of environmentally compromised road segments. The process for this is established in Ordinance _____.
- b. A positive vote of eligible electors in a referendum to establish an MSBU per Ordinance _____ for an environmentally compromised road segment is not binding upon the [COUNTY/CITY] legislative body. However, such positive vote shall be a requirement if the [COUNTY/CITY] wishes to have authority to issue bonds for work with the MSBU funds as a repayment method for the bonds.
- c. In case of establishment of an MSBU for an environmentally compromised road segment, the [COUNTY/CITY] will continue to contribute at least the amount specified in Section 5 above towards maintenance of the road segment.
- d. Establishment of an MSBU does not abrogate the [COUNTY/CITY]'s authority to abandon environmentally compromised road segments as established in Section 3 of this ordinance. However, an environmentally compromised road segment with an MSBU may not be abandoned during any period in which the MSBU is to serve as the repayment method for outstanding bonds issued on the basis of the MSBU. If an environmentally compromised road segment with an active MSBU is abandoned by [COUNTY/CITY], any funds remaining in the MSBU shall be refunded to the property owners in proportion to the amount contributed by owners on behalf of each property involved.
- e. The [COUNTY/CITY] shall also be permitted to utilize **other authority to**

* Numbers in brackets can be expected to change based on local conditions.

established a funding or assessment mechanism as permitted by law.

8. Termination of environmentally compromised road segment designation:

All or a portion of an environmentally compromised road segment that has not been abandoned by [COUNTY/CITY] that is contiguous to that portion of the [COUNTY/CITY]'s road network that is not environmentally compromised shall no longer be so designated at such time as for [three (3)] consecutive fiscal years the per-unit-area cost to maintain it to the same as is common among other roads in the [COUNTY/CITY] is less than [one and one half (1.5)] times the average per-unit-area cost to maintain roads (excluding environmentally compromised road segments) [COUNTY/CITY]-wide over the same period.

9. Abandonment of Environmentally Compromised Road Segments

a. Abandonment to an authorized entity

- i. Upon the written and notarized request delivered to the [COUNTY/CITY] Clerk of at least [ten percent (10%)] of the property owners whose sole means of public or private road access is the environmentally compromised road segment, at the next [COUNTY/CITY] election the [COUNTY/CITY] will conduct a referendum among such property owners to determine whether a supermajority as specified in 336.125(1)(a)2, FS of such property owners voting in that referendum approve the [COUNTY/CITY] abandoning the compromised segment of right-of-way and any portion of right-of-way which the compromised segment separates from the rest of the [COUNTY/CITY]'s road network and deeding it to the property owners as a non-dedicated roadway to maintain as those property owners desire at their expense. If the referendum is successful, the [COUNTY/CITY]'s legislative body will hold a vote on abandoning that portion of right-of-way and deed it to a properly authorized entity of those property owners.
- ii. For purposes of this subsection, a "properly authorized entity" means an entity that fulfills the requirements of Section 336.125, FS.
- iii. If such an abandonment is approved by the electors and executed by the [COUNTY/CITY], no compensation shall be due the property owners since: 1) easements for access are available, 2) [COUNTY/CITY] is neither directly nor indirectly

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responsible for the natural causes that created the environmentally compromised road segment, and 3) [COUNTY/CITY] had informed property owners by this ordinance in a timely manner of the potential for such loss.

b. Abandonment without a properly authorized entity.

- i. Upon the written and notarized request delivered to the Clerk of [COUNTY/CITY] of at least [ten percent (10%)] of the property owners whose sole means of public or private road access is the environmentally compromised road segment, the [COUNTY/CITY] shall, at the next [COUNTY/CITY] election, hold a referendum in which property owners whose sole means of public or private road access is the environmentally compromised road segment may vote to request that the [COUNTY/CITY] abandon the environmentally compromised road segment, and any portion of right-of-way which the compromised segment separates from the rest of the [COUNTY/CITY]'s road network, per the statutory process in Section 336.125, FS. The [COUNTY/CITY] legislative body shall consider such abandonment upon an affirmative vote of at least the percentage specified in 336.125(1)(a)2 of the electors eligible for the referendum.
- ii. Prior to abandonment by [COUNTY/CITY], [COUNTY/CITY] will assist affected property owners as specified in sections 6.a.i., 6.a.ii., and 6.a.iii above.
- iii. If such abandonment is approved by the electors and executed by the [COUNTY/CITY], no compensation shall be due the property owners if easements for access are available.

c. After a road segment has been continuously designated as environmentally compromised for [six (6)] years, [COUNTY/CITY] may choose, regardless of the desires of affected property owners, to abandon such road segment, and any portion of right-of-way which the compromised segment separates from the rest of the [COUNTY/CITY]'s road network, per the processes in Chapter 336, FS.

- i. Prior to abandonment by [COUNTY/CITY], [COUNTY/CITY] will assist affected property owners as specified in sections 6.a.i., 6.a.ii., and 6.a.iii., above.
- ii. If such abandonment occurs, no compensation shall be due the property owners if easements for access are available. If compensation is due for a taking of property rights due to lack of

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access, compensation will be determined based on a property value assuming the level of access available during the last year prior to road abandonment.

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