

COMMUNITY DEVELOPMENT BLOCK GRANT –MIT
HURRICANE IRMA FUNDING PROPOSAL

GENERAL PLANNING SUPPORT
FLORIDA KEYS REGIONAL RESILIENCE
PLAN AND NEIGHBORHOOD
LIVABILITY OUTREACH AND
PLANNING

JULY 30, 2020

MONROE COUNTY
BOARD OF COUNTY COMMISSIONERS
2798 OVERSEAS HIGHWAY
MARATHON, FLORIDA 33050



RHONDA HAAG
CHIEF RESILIENCE OFFICER

DRAFT DRAFT DRAFT
**COMMUNITY DEVELOPMENT BLOCK GRANT-
MITIGATION PROGRAM**

**FLORIDA KEYS REGIONAL RESILIENCE PLAN AND
NEIGHBORHOOD LIVABILITY OUTREACH AND PLANNING**

PROJECT DESCRIPTION

1) Project Purpose, Area of Benefit and Activities

Project Purpose

The Florida Keys is among the most vulnerable communities in the nation to rising sea levels, with a 120-mile archipelago of islands. Most neighborhoods, critical facilities, and infrastructure are at or near sea level.

The purpose of the Regional Resilience Plan is to involve all **six Keys** local governments in a three-phased sea level rise resilience strategy based upon collection and integration of uniform mobile LiDAR Data, infrastructure vulnerability analysis and neighborhood livability outreach and planning. To date, Monroe County and the five municipal jurisdictions have not coordinated to build a unified comprehensive regional strategy for resilience. Most of our municipalities lack the funding and staff resources to address these mounting threats. In addition, we believe a coordinated regional approach to these regional challenges would be most cost effective and would yield multiple community benefits. The Regional Resilience Plan provides the foundation to unify this vision of a rising tide for all of the Florida Keys.



The United States Army Corps of Engineers (USACE) is currently conducting a simultaneous coastal storm risk management feasibility study to evaluate impacts of sea level rise on the cost of the Florida Keys. It is vital to note, however, that the USACE's study does not evaluate the impact of sea level rise on local roadways. Maintaining access to residential neighborhoods is at the core of this

Area Benefit

This regional project will benefit all jurisdictions in Monroe County including all five municipal governments and unincorporated Monroe County. The jurisdictions which have endorsed this project include:

- Key West
- Marathon
- Islamorada (TBD)
- Layton
- Key Colony Beach
- Unincorporated Monroe County

The US Army Corps of Engineers coastal storm risk management feasibility study does not evaluate sea level rise inundation of local roadways. Communities within the Florida Keys must understand how roadways will impacted in order to understand the ongoing viability and access to residential neighborhoods.

Calculate LMI Area within Monroe County: TBD

Description of Activity

The Regional Resilience Plan will include three (3) phases:

- **Phase I: GIS LiDAR Data Collection – (Cities Only)**
Collect LiDAR elevation survey data for 249 miles of locally maintained roads in the five municipalities of Monroe County.
- **Phase II: Vulnerability Analysis and Planning: (Cities Only)**
Identify water inundation levels over time, and it's effect on critical services and lifelines (roads, critical facilities). This analysis will include policy guidance for implementation of resilience strategies as well as prioritized recommendations for road elevation and closely associated critical infrastructure.
- **Phase III: Neighborhood based Resilience Planning: (County Only)**
Select up to 6 high risk and low-income neighborhoods across all jurisdictions as case studies to identify resilience related solutions, functionality, and quality of life issues specific to each.

2) Risk Mitigated

Too long. List others too: Current inundation. Future inundation. Costs associated with public elevation. Savings related to private elevation. Tax base affects.

Surrounded by the waters of the Atlantic Ocean and Gulf of Mexico most homes, businesses, infrastructure and facilities are at or near sea level in the Florida Keys. The County and cities maintain hundreds of miles of local roads, some of which routinely experience sea level rise, during the fall "king tide" season. Neighborhoods and businesses throughout this island chain have experienced anywhere from a few inches to a foot or more of sea water on low coastal roads, lasting from a few days to weeks or even months.

Monroe County has been analyzing their infrastructure needs for the past decade, leading to one of their first work products, the YEAR 5-year Sustainability and Resilience action plan (Greenkeys.info). Following this plan, the County has been actively identifying and filling data gaps to determine community inundation over time.

Initial evaluations revealed a variety of overlapping conditions including: onshore winds, heavy rains, and astronomically significant tides, which acted together, to make some secondary roads impassable.

Monroe County then prioritized two pilot projects for roads elevation and storm water drainage improvement. These two low-lying neighborhoods were inundated for months during the 2016 King Tides, one of them making national headlines for 90 days of inundation. One island neighborhood experienced varying levels of deep water on their roads for more than 90 days straight in 2019, daily impacting residents' access to and from their homes, especially the elderly and handicapped. This neighborhood and others in the Keys have garnered national and international media attention to their plight of the rising seas.

These Road Elevation Pilot Projects will reveal the many tradeoffs involved with elevation and improving drainage in the Keys, especially regarding costs. The project merges climate change science / modeling, with transportation engineering / planning to develop a long-term roads and neighborhood adaptation plan based on transparent levels of design criteria, sea level rise projections, and adaptation methodology. It brings climate change science to the local level, building upon previous efforts, and also bringing together policy, science, engineering, finance and planning aspects. The results will help prepare valuable assets such as the County's roadway infrastructure for the current and future impacts of climate change. The outcomes of this project will include a detailed Implementation Work Plan for long-term road infrastructure adaptation projects to prepare for sea level rise.



The residents and businesses of the five municipalities located in the Florida Keys are just as vulnerable to the rising seas. However, because they are small and were heavily impacted by Hurricane Irma in 2017, these municipalities have been unable to afford the level of resilience planning work the County has implemented. Despite their willingness to partner with the county on such work, the financial burden has been too great. Therefore, this grant application includes two phases of work to support resilience planning for local neighborhoods in the five municipalities in the County (Phase 1 and Phase 2). By first receiving the road based LIDAR elevation data (Phase 1) and then superimposing the predicted sea level rise levels in the vulnerability study (Phase II) communities are able to develop capital improvements and road planning policy based upon the vulnerability analysis. This may include modifications to zoning and land use maps to make land use and spending decisions. The project will provide a detailed regional resilience plan for neighborhoods and will cover every mile of local roadway from the northern tip of the Keys to the southernmost tip in Key West.

In addition, up to six of the most vulnerable neighborhoods in the County will be selected for pilot projects to provide a detailed analysis of specific sea level rise adaptations for their neighborhood

in Phase 3. Frequent and in-depth community meetings will be held to not only communicate the potential alternatives of road elevations and storm water drainage improvements needed in their neighborhood, but to learn about and understand the needs and limitations of the residents affected by these infrastructure adaptations. Detailed analyses will be conducted of the conditions of the local roadways; availability of land for wider and elevated roads; potential size and placement of drainage structures; potential consequences of higher roads such as difficulty of access for the handicapped and elderly and loss of yard space and loss of walkability to and from their homes; benefits of higher roads including longer term access to their homes and potential recreational possibilities from new green space, impact on historical and cultural resources. Finally the potential costs to the County and the residents to maintain newly elevated roads will be presented. The research on these pilot neighborhoods studies will provide needed and important information for the County's and municipalities' future grant applications to help fund the anticipated billions of dollars in design and construction costs of the much-needed roadway improvements.

3) Work Plan and Staffing Plan

Keys-wide Collaboration: The Regional Resilience Plan will be led by a Leadership Team, consisting of each of the jurisdictions representing a diverse range of expertise including the following: **NEED A Resume FOR EACH REPRESENTATIVE.**

- Monroe County: Rhonda Haag, Chief Resilience Officer
- Key West: Alison Higgins, Chief Resilience Officer
- Marathon: George Garrett, Assistant City Manager
- Islamorada: Seth Lawless, City Manager
- Key Colony Beach: Chris Moonis
- Layton: Skip Haring

Due to the large number of stakeholders, this coordination effort will be extensive and vitally important. Monroe County will coordinate and manage the project and be the CDBG-MIT GPS sub applicant and administer the grant funds in compliance with HUD and DEO requirements. The Leadership Team will report directly to the County. At a minimum, the Leadership Team will coordinate vendor acquisition and other contractual support, review work products, co-host public engagement activities within their jurisdiction, and prioritize neighborhood case studies..



Monroe County is especially suited to lead the Regional Resilience Plan project due to extensive climate change work over the last decade:

- **Data:** Unincorporated Monroe County recently completed \$531,000 of mobile LiDAR elevation data for its 311 miles of county-maintained roads. The County then contracted with an experienced team of science and engineering consultants to

conduct a \$1.9 Million Vulnerability Analysis that combines the LiDAR roads elevation data with projected sea level rise conditions. This grant applications hopes to receive funding to emulate this effort for the 5 municipalities.

- **Pilot Projects:** When the 2016 King Tides proved unbearable for two low-lying neighborhoods, the County approved two pilot projects for neighborhood resilience, which included the elevation of the road and storm water drainage improvement. These projects are providing important information regarding design and construction of road elevations in the Keys and provide important information about potential costs.
- **Planning for the Future:** Monroe County has developed data, projection models, plans, and pilot programs to build the resilient infrastructure of tomorrow and mitigate inadequate, aging structures. In 2016, the County began its implementation of the *GreenKeys Plan*, which outlines specific actions for long-term community resilience. In addition, the County adopted goals, objectives and policies into its *Comprehensive Plan* to consider new vulnerabilities. Also, the Florida Keys limits development through local ordinances required by state law to ensure safe evacuation in advance of a hurricane. In 2023, the Keys are projected to be at maximum development capacity, which will present legal challenges for both the state and local governments when private landowners cannot develop their land.
- **Advanced Methodologies and Technologies:** The 2015 *Monroe Countywide Local Mitigation Strategy (LMS)* recognizes future scenarios for increased flood risk due to sea level rise and will be updated in 2020 to incorporate mitigation measures gained over the past four years through resiliency planning efforts. Recently, Monroe County received a grant from the *Florida Department of Environmental Protection* to develop *Adaptation Action Areas* that target programs for infrastructure and nature-based resiliency, land acquisition and voluntary buyouts, business mitigation assistance prioritizing the designated Opportunity Zone, hardening or the restoration of shorelines with natural vegetation, the elevation of homes and other critical public facilities, and potential resiliency regulations for private developments to accommodate current and future flood risk.



4) Project Funding

- **Phase I: GIS LiDAR Data Collection – (Cities Only)**
Collect LiDAR elevation survey data for 249 miles of locally maintained roads in the five municipalities of Monroe County. The total cost for this phase is **\$572,500**

| | Mileage | Budget |
|------------|---------|------------|
| Islamorada | 69 | \$ 130,000 |
| Key West | 93 | \$ 280,000 |
| Marathon | 78 | \$ 147,000 |
| Layton | 2 | \$ 4,000 |

| | | |
|------------------|------------------|------------------|
| Key Colony Beach | 7 | \$ 11,500 |
| Total | 249 Miles | \$572,500 |

- **Phase II: Vulnerability Analysis and Planning: (Cities Only)**

The vulnerability analysis will identify where the water inundation will be within various points of time, and how much the water will rise affecting critical services and lifelines (roads, critical facilities). The total cost for this phase is estimated at **\$ 1,975,000**

| Phase II Funding Allocation Request by Jurisdiction | Mileage | Budget |
|---|------------------|---------------------|
| Islamorada | 69 | \$416,771.08 |
| Key West | 93 | \$561,734.94 |
| Marathon | 78 | \$471,132.53 |
| Layton | 2 | \$12,080.32 |
| Key Colony Beach | 7 | \$42,281.13 |
| Unincorporated Monroe County | NA | NA |
| Total | 249 Miles | \$ 1,504,000 |

- **Phase III: Neighborhood based Resilience Planning: (County Only)**

Select up to 6 highest risk and low-income neighborhoods to identify resilience related challenges, functionality, and quality of life issues specific to each of the pilot neighborhoods. The project is estimated at **\$ 450,000**.

| Phase III Funding Allocation Request by Jurisdiction | Mileage | Budget |
|--|-----------|------------------|
| Islamorada | NA | NA |
| Key West | NA | NA |
| Marathon | NA | NA |
| Layton | NA | NA |
| Key Colony Beach | NA | NA |
| Unincorporated Monroe County | 311 Miles | \$450,000 |
| Total | | \$450,000 |

Total Budget Funding Request for the Project by Jurisdiction

| Total Funding Allocation Request by Jurisdiction | Phase I | Phase II | Phase III | Total |
|--|-------------------|---------------------|------------------|---------------------|
| Islamorada | \$130,000 | \$416,771.08 | \$ 0 | \$546,771 |
| Key West | \$280,000 | \$561,734.94 | \$ 0 | \$841,735 |
| Marathon | \$147,000 | \$471,132.53 | \$ 0 | \$618,133 |
| Layton | \$4,000 | \$12,080.32 | \$ 0 | \$16,080 |
| Key Colony Beach | \$11,500 | \$42,281.13 | \$ 0 | \$53,781 |
| Unincorporated Monroe | 0 | NA | \$450,000 | \$450,000 |
| Total | \$ 572,500 | \$ 1,504,000 | \$450,000 | \$ 2,526,500 |

5) Anticipated Outcome

This Community Development Block Grant – Mitigation Program (CDBG-MIT) funding will allow Monroe County and all 5 municipal governments within to:

- Obtain and utilize high accuracy data as the underpinning to all decision making.
- Continue planning and policy development efforts to project sea level rise on island infrastructure and the environment, creating a Keys-wide plan for resilience.
- Prioritize and develop decision making criteria to elevate and improve stormwater along roadways that connect to critical evacuation routes including retention, drainage, and treatment to enhance water quality.
- Integrate protection, retreat and accommodation strategies for neighborhoods throughout Monroe County.
- Identify and prioritize critical infrastructure for relocating from low-lying areas; hardening it against future storms or flooding; or elevating it for future resilience.
- Identify and prioritize natural shorelines to protect inland areas and/or harden shorelines for resilience.
- Based upon the resulting data from the vulnerability analysis, policy priorities of the local leadership, and available financial support, identify neighborhoods to elevate or replace homes to mitigate the impacts of flooding and sea level rise.
- Identify homes for buyout within low-lying areas with repetitive loss properties or those that are not suitable for redevelopment.
- Continue to collaborate together to increase our resilience as a whole.

6) Comprehensive Plan Integration

Attach: Executive Summary of the Comprehensive Plan

TBD

Community Development Block Grant-Mitigation Program

Florida Keys Regional Resilience Plan and Neighborhood Livability Outreach and Planning

Capacity Plan

1,500 word limit

Provide a strategic plan overview that addresses goals, stakeholders, the work plan, (major tasks and deliverables), resources (staffing and budget) and monitoring/quality controls. Identify the staff members who will be responsible and/or positions that will be filled for the GPS project management and maintenance. Provide a short profile on each person on your current staff who perform project-related tasks and a position description for any new hires who will be assigned to project work. If your project will require specific tools or skilled personnel, such as mapping do you have the capabilities and the staff to complete your plan? Attach a Word document with the planning team's CV/resumes into the zip folder. Describe the circumstances under which this plan will be updated and detail how subsequent updates will be funded.

Goals

The goal of this project is create a countywide uniform geospatial database and to complete a sea level rise vulnerability study to support long-term infrastructure resilience. The project will also evaluate up to 6 pilot neighborhood based resilience plans.



Stakeholders

The key regional stakeholders for this project are the residents of Monroe County and the cities of Islamorada, Marathon, Layton, Key Colony Beach, and Key West. All residents, visitors, and businesses will ultimately be impacted by the economic, environmental, and/or social impacts of sea level rise in this vulnerable island community. For over a decade, the governmental administration and leadership have aggressively explored viable community solutions and this is the next important step to understanding not only which neighborhoods are at greatest risk, but also how to build more resilient neighborhoods by maintaining roadway access. The roadway

elevation and storm-water draining mapping (Phase 1) and vulnerability analysis (Phase 2) will benefit each of the five municipal jurisdictions who currently lack the detailed analysis to understand the vulnerability of the infrastructure and neighborhoods to sea level rise. The Phase 3 pilot neighborhood resilience plans will be developed in the identified highest risk, low income neighborhoods vulnerable to sea level rise. The long-term benefit of this project, however, is that it will create a countywide unified important step toward building sea level rise resilience.

Workplan

The following tasks will be accomplished within three major phases:

Phase I: GIS LiDAR Data Collection (Cities Only)

The unincorporated County recently completed the mobile LiDAR elevation survey data collection of its **311 miles** of County-maintained roads, storm-water drainage structures, and other vital infrastructure components. The mobile LiDAR was only performed for County-maintained roads, and not for roads maintained by the municipalities. There are another **249 miles** of locally maintained roads in the five municipalities in the Keys.

During this project phase, a unified regional LiDAR database and maps will be created to lay a standardized foundation for the evaluation of infrastructure, facilities, and neighborhoods. This project shall provide mobile LiDAR elevation data for up to 249 miles of roads in the municipalities of Islamorada (60 miles), Layton (2 miles), Marathon (63 miles), Key Colony Beach (7 miles) and Key West (93 miles) and include storm water drainage structures. The collected data will become public record and available to any interested entity after completion of the grant. Once completed, all Monroe County entities will have the same type and level of LiDAR data, helping to bridge the gap between the County and the municipalities.

Phase II: Vulnerability Analysis and Planning (Cities Only)

In the second phase, this project employ the data and conduct a comprehensive vulnerability analysis of the roads, storm water drainage infrastructure and critical facilities for each municipal jurisdiction. The vulnerability analysis will identify where the water inundation will be within various points of time, and how much the water will rise affecting critical services and lifelines (roads, critical facilities). This Analysis is currently being conducted for County-maintained roads and has not been included in this grant application. The Analysis will only be conducted for the five municipalities. The following tasks shall be conducted for each municipality that participates in the regional resilience planning activities:

In close coordination with the cities, the vulnerability analysis will include:

- **Geocoded maps:** This project will fund the development of numerous geographic information system (GIS) geocoded map layers depict all County and municipal roadway segments indicating, mean high water elevation clearance, roadway

pavement conditions accompanied by the anticipated service life relative to the condition of the existing roadway surfaces, tidal data, historical flooding, future flood prone area, utilities, signs, signals, storm water structures, bridges, and environmental information from a range of sources.

- **Engineering Analysis:** Prioritize roadway segments based on vulnerability including population density, flood vulnerability, proximity to critical facilities, social services, and other important lifelines, evacuation route designation, and other constraints such as funding, service life and others.
- **Flood Mitigation Concept Development:** For extremely vulnerable roadway segments develop adaptation improvement plans to include pavement design, utilities, maintenance of traffic, signing, landscape, storm water design, bridges, current condition, environmental impact assessment, evaluation of needed permits, right-of-way analysis, cost estimates and benefit cost analysis.
- **Policy, Regulatory, Legal and Funding Analysis:** Conduct an in-depth policy and legal review and prepare a summary of the following: future growth, roads liability, level of service, regulatory issues, funding issues related to the resilience strategy.
- **Cost Benefit Analysis:** The vulnerability analysis should also include a cost benefit analysis. This will be vital for the community's leadership to understand the future budgetary impacts of climate change.
- **Maintenance Costs:** The designs should incorporate calculations of maintenance costs for prioritized projects.
- **Project List:** A prioritized list of road elevation and infrastructure projects to build resilience within the next 10 years is the outcome of this process.
- **Policy Recommendations:** The final deliverable will also include recommended policy revisions to the city's Comprehensive Plans.

Phase III: Neighborhood based Resilience Planning: County Only

Upon completion of Phase 1 and Phase 2, the leadership team will use the data, maps, and analysis to select pilot neighborhoods in highest risk areas and low to moderate income census tracts. The neighborhood based planning will refine the ability to implement specific sea level rise resilience initiatives within the pilot neighborhoods. We will develop resilience strategies and identify related challenges to functionality and quality of life specific to each of the pilot neighborhoods.

The information for the plan will be developed through a series of neighborhood outreach meetings and personalized outreach to homeowners. Conduct public outreach meetings in the pilot communities to meet with the residents, identify their needs and concerns, communicate available options for neighborhood road resilience and obtain feedback.

Once the appropriate adaptations strategy is identified the projects must be ranked using criteria such as the following:

- level of inundation and frequency to be contemplated
- type and height of existing mean high water
- groundwater elevation
- type and height of adaptation measures generally proposed

- storm water management
- potential funding strategies
- a policy analysis of the “levels of service” the County may or may not be able to provide to residents given the challenges of cost versus the level of sea level rise the County is facing.

What the Study and the Plan will *not* provide are identification of challenges and issues specific to each neighborhood, neighborhood outreach meetings and conceptual plans specific to each neighborhood.

Identify handicapped or vulnerable residents within the communities who may have difficulty navigating access to newly elevated road, driveway or mailbox.

Identify potential benefits and losses each neighborhood project may bring, i.e. access, walkability, recreational opportunities, private property encroachment, affordability, etc.

Develop drawings and images illustrating the potential inundation of the roads from sea level rise, the available options for road adaptation and the look of each option if built.

Conduct a cost benefit analysis of each pilot project, measuring the cost of implementation and maintenance versus the construction cost and the life cycle of the project.

Develop final recommendation report for each neighborhood project, including recommended road elevations and drainage based on science, engineering, community input and needs, and other factors (list...)

Deliverables: Final recommendation reports for each pilot neighborhood project, including recommended road elevations and drainage based on science, engineering, community input and needs.

The plans will focus not only on structural design but also explore the socio-economic factors impacting the project, the community, and the lives of the residents. Following are two examples of issues to be explored in pilot community resilience plans:

- **Example 1:** When elevating roadways, the road must be made wider to accommodate runoff needs. Additional private property right of way may be

needed to accommodate wider roadways, which may encroach upon private property. As a result, changes to the Comprehensive Plan and Land Development Code may be needed.

- **Example 2:** Environmental regulations now mandate that storm water may not be routed directly into the pristine ocean water of the Florida Keys without storm water treatment. Installation of the storm water treatment infrastructure may require vacant land. If vacant land is not available, it may be difficult to design an engineering solution. Furthermore, the storm water treatment system is extremely costly driving up the cost of roadway elevation in the Florida Keys.

Based upon the neighborhood analysis and cost benefit analysis, it may not be a prudent investment of limited public dollars to elevate all vulnerable roads. How will these priorities be established by the community leaders? Are there decision-making triggers, which could guide the leadership on when abandonment might be the best option and could this be supported by buy-out programs?

Resources (Staffing and Budget)

Project Administrator: Rhonda Haag: The Project Manager oversees all aspects of the building process, working closely with engineers and architects to develop plans, establish timetables, and determine labor and material costs. They are responsible for ensuring the project is completed on budget and within scope. The Project Manager ensures ongoing coordination with all members of the Project Team and the Regional Leadership Team. She develops the Work Plan, and verifies that work is conducted in accordance with local, state, and federal requirements detailed in the sub-receipt agreement. The Project Manager is also responsible for communicating with the regional leadership team, administrative and politically elected officials, and key stakeholder organization locally and regionally on the status of the Project. She will approve budgetary issues, financial expenditures, revenues and ensure sufficient resources are available. The Executive will also resolve conflicts among staff, vendors, contractors, permitting agencies, the public and others.

Regional Leadership Team

In support of this project, we propose to develop a Regional Leadership Team that will cooperatively establish project goals, major objectives, monitor the implementation timeline and ensure that contractual requirements are met. The leadership may also provide coordination with community stakeholders and regional organizations such as the Regional Planning Council

and the Southeast Florida Climate Change Compact. The Leadership Team will consist of a representative from each of the participating jurisdictions as follows:

- Monroe County: Rhonda Haag, Chief Resilience Officer
- Key West: Alison Higgins, Chief Resilience Officer
- Marathon: George Garrett, Assistant City Manager
- Islamorada: Seth Lawless, City Manager
- Key Colony Beach: Chris Moonis
- Layton: Skip Haring

Regional Leadership Team duties may include:

- Participate in Regional Leadership Team coordination meetings/conference calls
- Provide technical expertise and guidance to local community needs and priorities
- Contributing to overall project objectives
- Completing individual deliverables
- Review and approve task orders for vendor services
- Monitor work deliverables within jurisdictional boundaries
- Provide lessons learned for regional coordination

Judith Clarke: Senior Director of Roads and Engineering

Mrs. Clarke will support the project as a subject matter expert when local knowledge is necessary to support data collection, analysis, and policy recommendations. Mrs. Clarke will also invariably support long-term project planning for Capital Improvements related to road elevations, drainage improvement, and policy decision related to sea level rise.

Budget

- **Phase I: GIS LiDAR Data Collection – (Cities Only)**

Collect LiDAR elevation survey data for 249 miles of locally maintained roads in the five municipalities of Monroe County. The total cost for this phase is **\$572,500**

| | Mileage | Budget |
|------------------|-----------|------------|
| Islamorada | 69 | \$ 130,000 |
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| Total | 249 Miles | \$572,500 |

- **Phase II: Vulnerability Analysis and Planning: (Cities Only)**

The vulnerability analysis will identify where the water inundation will be within various points of time, and how much the water will rise affecting critical services and lifelines (roads, critical facilities). The total cost for this phase is estimated at

\$ 1,975,000

| Phase II Funding Allocation Request by Jurisdiction | Mileage | Budget |
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| Key West | 93 | \$561,734.94 |
| Marathon | 78 | \$471,132.53 |
| Layton | 2 | \$12,080.32 |
| Key Colony Beach | 7 | \$42,281.13 |
| Unincorporated Monroe County | NA | NA |
| Total | 249 Miles | \$ 1,504,000 |

- Phase III: Neighborhood based Resilience Planning: (County Only)**
 Select up to 6 highest risk and low-income neighborhoods to identify resilience related challenges, functionality, and quality of life issues specific to each of the pilot neighborhoods. The project is estimated at \$ **450,000**.

| Phase III Funding Allocation Request by Jurisdiction | Mileage | Budget |
|--|-----------|------------------|
| Islamorada | NA | NA |
| Key West | NA | NA |
| Marathon | NA | NA |
| Layton | NA | NA |
| Key Colony Beach | NA | NA |
| Unincorporated Monroe County | 311 Miles | \$450,000 |
| Total | | \$450,000 |

Total Budget Funding Request for the Project by Jurisdiction

| Total Funding Allocation Request by Jurisdiction | Phase I | Phase II | Phase III | Total |
|--|-------------------|---------------------|------------------|---------------------|
| Islamorada | \$130,000 | \$416,771.08 | \$ 0 | \$546,771 |
| Key West | \$280,000 | \$561,734.94 | \$ 0 | \$841,735 |
| Marathon | \$147,000 | \$471,132.53 | \$ 0 | \$618,133 |
| Layton | \$4,000 | \$12,080.32 | \$ 0 | \$16,080 |
| Key Colony Beach | \$11,500 | \$42,281.13 | \$ 0 | \$53,781 |
| Unincorporated Monroe | 0 | NA | \$450,000 | \$450,000 |
| Total | \$ 572,500 | \$ 1,504,000 | \$450,000 | \$ 2,526,500 |

Vendor

In support of this project, Monroe County, in coordination with the Regional Leadership Team, will solicit the services of two contractors to complete Phases I, II, and III of the project. The first vendor will be responsible for the collection of geospatial data through the use of ground level LiDAR technology for each of the jurisdictions. The unincorporated Monroe County has already completed Phase I and II and this project and, therefore, can draw upon the experience to ensure that data collection meets the overall project needs.

The second vendor will be solicited to provide the engineering and planning services for Phases II and III. This vendor must successfully complete the Phase II Vulnerability Analysis for the cities (note: Monroe County has previously completed this work) and conduct the Phase III neighborhood analysis.

All procurement process will comply with the procurement standards in 2 C.F.R. §200.318 - §200.326 when procuring property and services under this Agreement.

Monitoring /Quality Control

The Project Manager is responsible for ensuring that all contractual requirements of the CDBG-MIT Subapplicant agreement and vendor contracts are met. This manager is responsible for coordinating every aspect of the project from reviewing and approving contract terms to coordinating deadlines, approving budgets and ensuring procurement follows Federal Register and grantor requirements, ensures schedules and budget requirements are maintained, assists with procurement and closeout of all contracts and grants. The Project Manager will process all invoices from vendors and grant reimbursement requests and coordinate reimbursement to the municipal jurisdictions.

The Finance and Budgeting Department, the Clerk of the Court, as well as the County Attorney Office, will work with the Project Manager to ensure procurement follows Federal Register and grantor requirements, ensures schedules and budget requirements are maintained, assists with procurement and closeout of all contracts and grants.

Attach personnel resumes: To be Added

Community Development Block Grant-Mitigation Program

Countywide Neighborhood Flood Mitigation / Planning Project

Community Value

1,500 word limit

Describe: The project's value to the community in normal circumstances and in times of natural disasters. Include: The community lifelines served this project; How the project enhances community resilience; Public notice of the planned project; and Community involvement in the project planning process.

Community Value

Frequent, but relatively "low impact" flooding events result in a variety of consequences to both the County and its residents. Prolonged saltwater inundation causes damage to personal and real property, the loss of access to residential homes, and the ability for first responders to access the flooded neighborhoods in times of emergency. This consequence is pronounced as the tidal schedule often acts to keep flooding in place for six hours or more. The flood waters are brackish resulting in more significant damage to automobiles and any other structure or material that come into contact with the flood waters.

In developing the proposed mitigation solution, the County was forced to accept the reality that it possessed limited ability to actually "prevent" the flooding conditions. Monroe County is almost uniformly low-lying, set upon porous limestone that allows water to easily penetrate it from all directions. Building a "ring", with assorted positive pumping capacity, around the neighborhoods would not keep the floodwater out. In addition, as reflected in FEMA's Flood Insurance Study, significant flooding events, e.g, the "50-year" flood, would simply overtop any attempt to keep flood waters outside of a barrier.

Of all the options investigated, elevating key sections of roadway in order to eliminate, to the greatest extent feasible, impassable flooding conditions, generally provides the most benefit for the effort. Even within this solution, there was a limit to how high critical sections of road could be elevated. A road section elevated to such a height would simply become an island in and of itself in the surrounding elevations were corresponding lower.

Benefit low and moderate income persons

TBD – Countywide impact requires LMI calculation for the entire county.

Community Value During Disasters

The local county and city roads provide lifesaving access for search and rescue operations, emergency medical services, and entry of goods and supplies. Without functioning roadways, operational storm-water systems, and supporting infrastructure neighborhoods cannot remain viable in the long-term or recover in the immediate aftermath of a disaster.

Community Lifelines: With the development of the Countywide Neighborhood Flood Mitigation Planning Project, we would be strengthening numerous Monroe County lifelines including the following:



Safety and Security: This project will evaluate the continued functionality and access to residential neighborhoods, supporting infrastructure, and facilities. The ongoing viability of communities will rest upon the access to lifesaving services and critical facilities as well as maintain environmentally healthy system.



Health and Medical: Emergency medical care and movement of patients relies upon continued access and functionality of neighborhood roadways. Flooded roadways, failing storm-water system, and other factors will pose a direct threat to residents.



Transportation: Continued movement of vital good and services by land, air, and sea will be affect by this analysis. Roadways form the foundation of land-based transportation.

Community Resilience

Monroe County, Florida, encompasses the uniquely beautiful natural environment of the Florida Keys and is among the most vulnerable communities in the nation to rising sea levels, with a 120-mile archipelago of islands most of which are at or near sea level. The county and cities recognize the need for immediate, coordinated, and visionary action to address the impacts of a changing climate and ensure the entire region provides for resilience for its more than 560 miles of locally maintained roads and infrastructure. Monroe County's GreenKeys Climate Change and Sustainability Plan includes cross-cutting strategies and various road and infrastructure adaptation goals. The recommendation for a Roads Adaptation Plan is Green Keys item 2-14, which specifies that the County shall conduct a County-wide roads analysis to identify near-term roads subject to inundation risk, including nuisance flooding, and that include related green infrastructure where appropriate.

Community Involvement in the Planning Process

As the Florida Keys, the State of Florida, and the nation face the threat of sea level rise, we will all be in a position to make difficult decision. This project is an important linkages to advance not only the understanding of the data surrounding sea level rise, but also to educate the public, build awareness of future impacts, and collaborate on solutions to building community resilience. As the county and municipal jurisdictions begin to face the real and impending costs associated with

rising seas, the strategic policy decisions will be highly challenging. This project will provide important empirical evidence to inform these challenging conversations. While Phase I and II are largely data driven activities, they lay the foundation for Phase III the neighborhood based planning initiatives. We propose the following public engagement activities during Phase III:

Neighborhood Based Public Meetings: Once the Project Manager, planning consultants, and key stakeholders have completed the initial neighborhood based analysis, and drafted an initial plan, we will conduct one neighborhood based public meeting for each neighborhood that details conditions, triggers and allows public input on key decision points including the following:

1. Identify their community preferences, special needs and concerns of how sea level rise will impact their quality of life. The meeting must be used to communicate available options for neighborhood road, stormwater management, and infrastructure resilience.
2. Identify handicapped or vulnerable residents within the communities who may have difficulty navigating access to newly elevated road, driveways or mailboxes
3. Identify potential benefits and losses each neighborhood project may bring, i.e. access, walkability, recreational opportunities, private property encroachment, affordability, etc.
4. Develop drawings and images illustrating the potential inundation of the roads from sea level rise, the available options for road adaptation and the look of each option if built. This visual reinforcement provides powerful incentive to seek unified solutions.
5. Conduct a cost benefit analysis of each pilot project, measuring the cost of implementation and maintenance versus the construction cost and the life cycle of the project. In the most vulnerable areas, the best solutions may not be road elevation but instead may involve retreat strategies triggering the need to support relocations.
6. Develop final recommendation report for each neighborhood project, including recommended road elevations and drainage based on science, engineering, community input and preferences, public safety, environmental quality and conservation, as well and long-term economic viability.

Regional Input: The unique environmental and geography of the Florida Keys demand unique solutions to the challenges of sea level rise. Monroe County has been an active member of the South Florida Regional Climate Change Compact and recently hosted to the 2020 Climate Change Summit in Key West. While we understand the importance and value of regional engagement with our neighboring counties, the policy and structural solutions to rising sea in the Florida Keys are very different than those in Monroe County, Broward County, or Palm Beach

County. We welcome the technical expertise and lessons learned from our regional partners, but find sea level rise implementation to require local adaptation.

Once we draft our plan, we will post it online for review throughout the region with an opportunity for public comment. The plans will also be forwarded to important community partners in the region including the South Florida Regional Planning Council, the South Florida Regional Climate Change Compact, ...**NEED TO HIGHLIGHT REGIONAL COMPONENTS HERE**

Leadership Approval: Engagement of the political and administrative leadership in unincorporated Monroe County and each of the municipal jurisdictions in sea level rise implications has been noticeably forward thinking. Monroe County is the most vulnerable Florida community, it is also one of the most progressive in acknowledging the upcoming challenges and tackling viable solutions. Monroe County is currently engaged in three simultaneous projects with vital sea level rise implications including the **USACE coastal storm vulnerability study, the Department of Environmental Protection (DEP) grant funded Adaptation Action Areas policy implementation project, and the Stormwater Resilience Project.** Each of these projects illustrates the counties commitment to building a stronger and more resilient Florida Keys. This project similarly advances the countywide understanding to maintain residential roadways and thereby sustaining housing.

Upon completion of all project elements, each of the jurisdictions will present the findings to their elected officials at a public meeting.

FL CDBG Mitigation

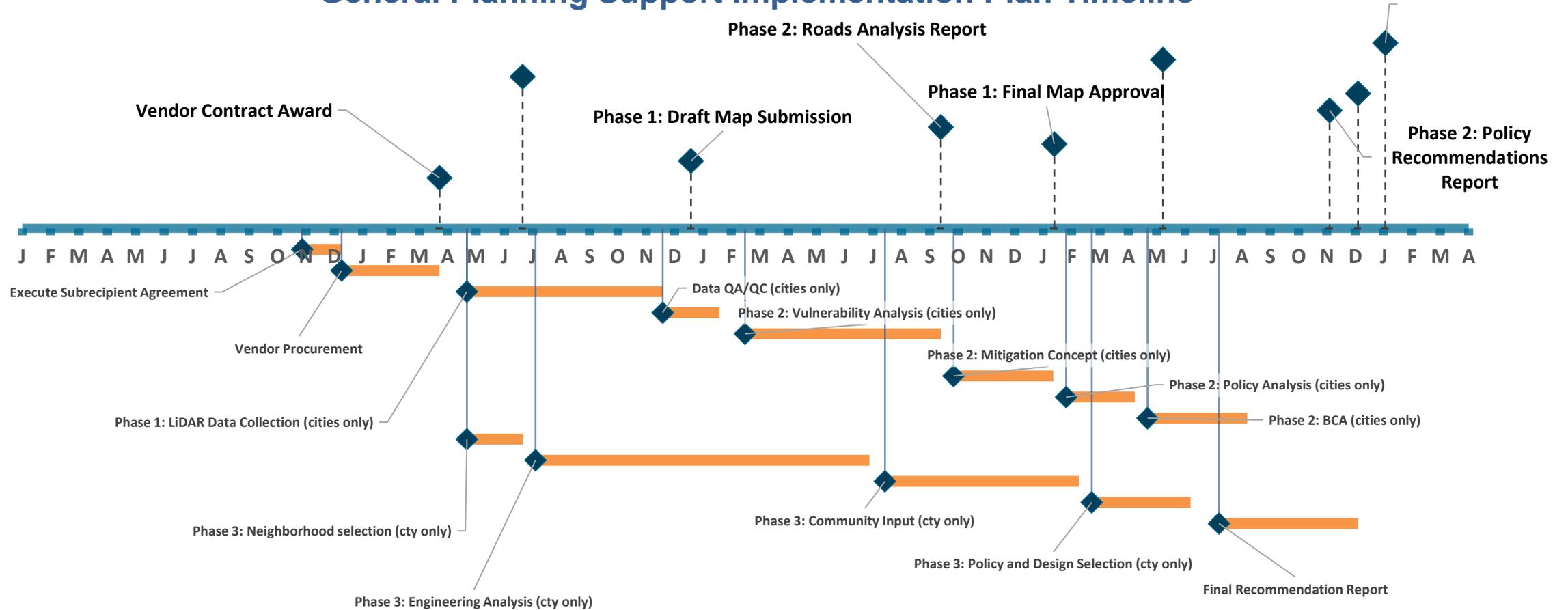
General Planning Support Program Project Budget (Template)

| Project Name: | Florida Keys Regional Resilience Plan and Neighborhood Livability Outreach and Planning | Primary Contact Name and Phone Number: | Rhonda Haag | | Official Applicant Entity Name: | Monroe County, Board Of County Commissioners and the cities of Islamorada, Key Largo, Marathon, Key Colony Beach, and Key West |
|--|---|--|------------------|----------------------------------|---|--|
| Project | | Budget | | | Notes | |
| Description | CDBG-MIT Amount | Other non CDBG-MIT Funds | Source of Funds* | Total Funds (CDBG-MIT and Other) | | |
| Phase 1: GIS LiDAR Data Collection | \$ 572,500 | NA | | \$ 572,000 | Collect LiDAR elevation survey data for 249 miles of locally maintained roads in the five municipalities of Monroe County. Islamorada 69 miles \$ 130,000 Key West 93 miles \$ 280,000 Marathon 78 miles \$ 147,000 Layton 2 miles \$ 4,000 Key Colony Bch 7miles \$ 11,500 | |
| Phase II: Vulnerability Analysis and Planning: (Cities Only) | \$ 1,504,000 | NA | | \$1,504,000 | Identify where the water inundation will be within various points of time, and how much the water will rise affecting critical services and lifelines (roads, critical facilities). Islamorada 69 miles \$416,771.08 Key West 93 miles \$561,734.94 Marathon 78 miles \$471,132.53 Layton 2 miles \$12,080.32 Key Colony Beach 7 miles \$42,281.13 | |
| Phase III: Neighborhood based Resilience Planning: County only | \$ 450,000 | NA | | \$ 450,000 | Select up to 6 high risk neighborhoods in the unincorporated county only to identify resilience related challenges, functionality, and quality of life issues specific to each of the pilot neighborhoods. | |
| Totals: | \$2,526,500 | NA | | \$2,526,500 | | |

*** All funds identified for use on your project must be fully disclosed and detailed to ensure budget accuracy and no duplication of benefits. Show the sources and amounts of other funds needed to complete the project below, including local funds and grants from other agencies. Any anticipated or committed funds must also be included.**

| Source of Other Funds | Amount |
|------------------------------|---------------|
| 1. NA | |
| 2. | |

General Planning Support Implementation Plan Timeline



Tasks

| Start | End | Duration | Label |
|-------|-------|----------|--------------------------------|
| 11/02 | 12/15 | 43 | Execute Subrecipient Agreement |
| 12/15 | 04/01 | 107 | Vendor Procurement |

| | | | | |
|-------|-------|--|-----|---|
| 05/01 | 12/01 | | 214 | Phase 1: LiDAR Data Collection (cities only) |
| 12/01 | 02/01 | | 62 | Data QA/QC (cities only) |
| 03/01 | 10/01 | | 214 | Phase 2: Vulnerability Analysis (cities only) |
| 10/15 | 02/01 | | 109 | Phase 2: Mitigation Concept (cities only) |
| 02/15 | 05/01 | | 75 | Phase 2: Policy Analysis (cities only) |
| 05/15 | 09/01 | | 109 | Phase 2: BCA (cities only) |
| 09/15 | 12/01 | | 77 | Phase 2: Project List (cities only) |
| 05/01 | 07/01 | | 61 | Phase 3: Neighborhood selection (cty only) |
| 07/15 | 07/15 | | 365 | Phase 3: Engineering Analysis (cty only) |
| 08/01 | 03/01 | | 212 | Phase 3: Community Input (cty only) |
| 03/15 | 07/01 | | 108 | Phase 3: Policy and Design Selection (cty only) |
| 08/01 | 12/31 | | 152 | Final Recommendation Report |
| | | | | |

Milestones

| Date | Label |
|----------|-------------------------------|
| 4/1/2021 | Vendor Contract Award |
| 1/1/2022 | Phase 1: Draft Map Submission |
| 2/2/2023 | Phase 1: Final Map Approval |

Notes

Record project notes below

Insert timeline notes here