

# OUR RESILIENT VILLAGE

A COMPREHENSIVE RESILIENT INFRASTRUCTURE  
STRATEGY FOR THE VILLAGE OF KEY BISCAYNE



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## WHO WE ARE

# THE VILLAGE OF KEY BISCAYNE

The Village of Key Biscayne offers nearby refuge from the bustle of Miami. Located on the southernmost sand barrier island of the continental United States, this residential community treasures its roots as a **haven for those seeking an island lifestyle**. Our Village boasts a thriving commercial district, 1.2 miles of sandy beach, a 5-star resort, and equally rich outdoor experiences. Incorporated in 1991, the community created a local government to give voice to its residents and foster collaboration with neighboring municipalities and agency partners. Settled between a county park – Crandon Park – and a state park – Bill Baggs Cape Florida State Park – and surrounded by the Biscayne Bay Aquatic Preserve, the Village's history and future is intimately connected to nature and the surrounding waters.

Sitting less than five feet above sea level, Key Biscayne is exposed to natural hazards and the growing consequences of environmental shifts. The Village's existing gravity-fed stormwater system is inadequate and will become less

### QUICK FACTS



**Median household income of \$151,410**



**15,000 residents - 25% growth from 2010-2023**



**1,400 single-family homes or duplexes**

effective as sea levels rise and rainstorms intensify. Our power and telecommunications lines are above ground, exposed to the elements, resulting in frequent power outages and loss of service during storm events. Roadways consistently flood during rain events, and both our bayside and oceanside shorelines face increasing risk from storm surge and erosion.

**Island stewardship matters to us all.** Ensuring future generations enjoy the island as we have in the past means we need to build a stronger, more resilient community today. Surpassing the rest of the state, the Village has seen over 25% growth in population since 2010 and is now home to close to 15,000 residents – all of whom will benefit from proactive action addressing our environmental threats. To safeguard our future, the Village is committed to continuous improvement of its services and protecting the high quality of life its residents expect. This plan sets our course for the investment needed to bolster our overall community resilience and **Elevate our Island Paradise**.



**7,500 condominium units**



**1,000+ business and professional licenses**



**7,000,000+ visitors per year**

For more information, visit: [keybiscayne.fl.gov](http://keybiscayne.fl.gov)

# FACING OUR THREATS

**Key Biscayne is no stranger to flooding.** Water surrounds our barrier island community on all sides. The Village rests on limestone bedrock saturated with groundwater. Heavy afternoon rains are a normal occurrence. The Village has taken steps toward reducing flooding since its founding, but in the face of rising sea levels, more frequent and intense rainstorms, and higher temperatures, more work is needed. These combined threats require upgrading Village infrastructure and enhancing government operations, services, and regulations to protect our quality of life.



## KEY TERMS

**Sea Level Rise:** Sea level rise is the increase in average sea levels in certain areas of the world due to the melting of glaciers and ice sheets, as well as the ocean expanding as it warms in response to a hotter atmosphere. On Key Biscayne, sea level has risen about a foot in the past 100 years and is anticipated to rise at a faster rate in the coming decades – 10 to 17 additional inches by 2040 and 21 to 40 inches by 2070 (SFRCCC, 2019 report).

**NOAA Intermediate High Projection:** The National Oceanic and Atmospheric Administration, or NOAA, is a federal agency that publishes sea level rise projections. The Village is using the Intermediate High Projection, which is the higher end of the most likely amount of sea level rise according to the Southeast Florida Regional Climate Change Compact, and the higher end of the sea level rise curves the State of Florida requires to be used for sea level rise planning. This projection was chosen by the Village Council because the Village can reasonably adapt to and plan for this condition, and it is not the least or most extreme scenario for sea level rise. This projection is also recommended for developing infrastructure projects with design lives that end before 2070.

**Stormwater System:** A stormwater system is a complex underground system of pipes, stormwater drains, outlets, drainage wells, and swales, all working together to direct, collect, and drain rainwater off roadways and away from buildings and public areas. In the Village, the system is fragmented and relies on gravity to move stormwater runoff.

**Dig Once:** Dig Once is a philosophy that aligns multiple infrastructure improvement projects and programs by location. Bundling different types of infrastructure upgrades and investments that share a location into one project lessens the impact of construction on the community.

# FACING OUR THREATS

Our island is threatened by the very forces of nature that make it an island paradise. These threats worsen as sea levels rise and rainfall intensifies. Without immediate and strategic action, these threats will impact our quality of life, the finances of the Village, and our economy.



## RAINFALL-INDUCED FLOODING

Rainfall-induced flooding is the most common form of flooding in the Village. The Village sees heavy rainfall from thunderstorms, cold fronts, and hurricanes. The Village's current stormwater system is intended to manage this type of flooding. However, as rainstorms intensify and sea levels rise, the aged system requires upgrading to ensure flood waters recede effectively and the system meets residents' expectations of passable roadways.



## TIDAL FLOODING

Tidal flooding, also known as nuisance flooding or sunny-day flooding, occurs outside of a storm event. King tides take place in the fall when tidal flooding is particularly extreme compared to the rest of the year. Tidal flooding in low-lying areas comes from both direct inundation from the shoreline and the groundwater as tides push water up through the stormwater system. When high tides coincide with intense rain events, water cannot drain to Biscayne Bay, causing street flooding until the tide recedes.



## GROUNDWATER FLOODING

Groundwater flooding is caused by water in the ground rising from significant rainfall, tides, or changes in bay or ocean water levels, primarily due to sea level rise. Key Biscayne rests on porous limestone, which causes our groundwater to fluctuate with sea levels. Eventually, sea level rise will push groundwater up above ground level without any rain, constantly flooding dry land and threatening critical infrastructure and ecosystems.



## STORM SURGE

Storm surge is when water from the ocean is driven onto land during a storm. The height of storm surge on Key Biscayne depends on the storm's distance from the island; its orientation when it makes landfall; its intensity, size, and speed; the shape of the coastline; and the depth of surrounding waters like Biscayne Bay.



## COASTAL EROSION

Coastal erosion happens when waves, wind, sea level rise, and other factors transport soil and sand away from the coast. Coastal development, storm events, jetties, inlets, and hardened shorelines exacerbate coastal erosion. The Village relies on its oceanside shoreline as the first line of defense from destructive ocean forces.



## WIND

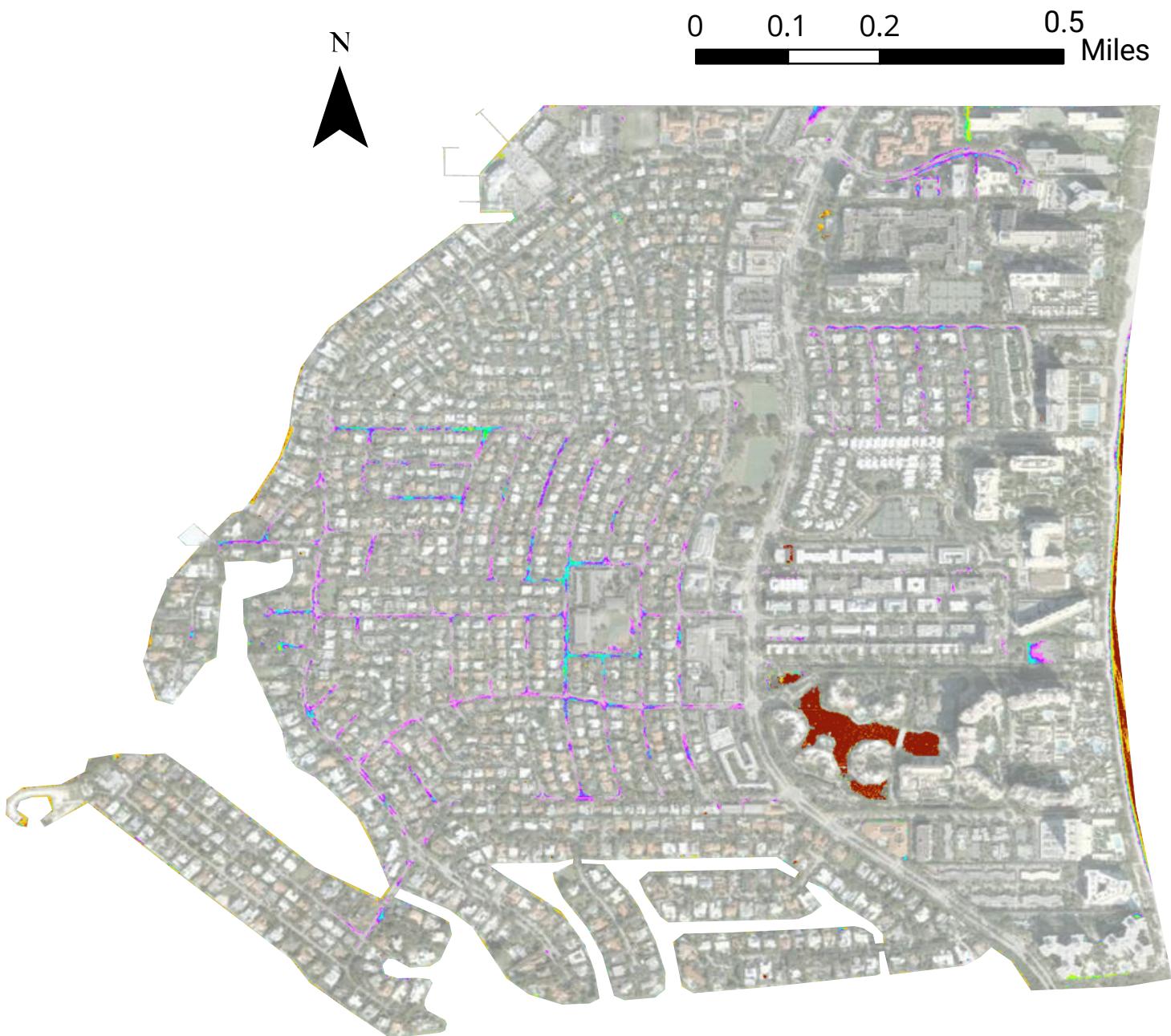
While our island community is clearly threatened by water, severe winds often accompany water during a thunderstorm or a hurricane. Addressing severe wind is critical to our resilience. Because of climate change, storms are intensifying, generating winds that interrupt power to our homes, businesses, and water and sewer pumping systems.



## EXTREME HEAT

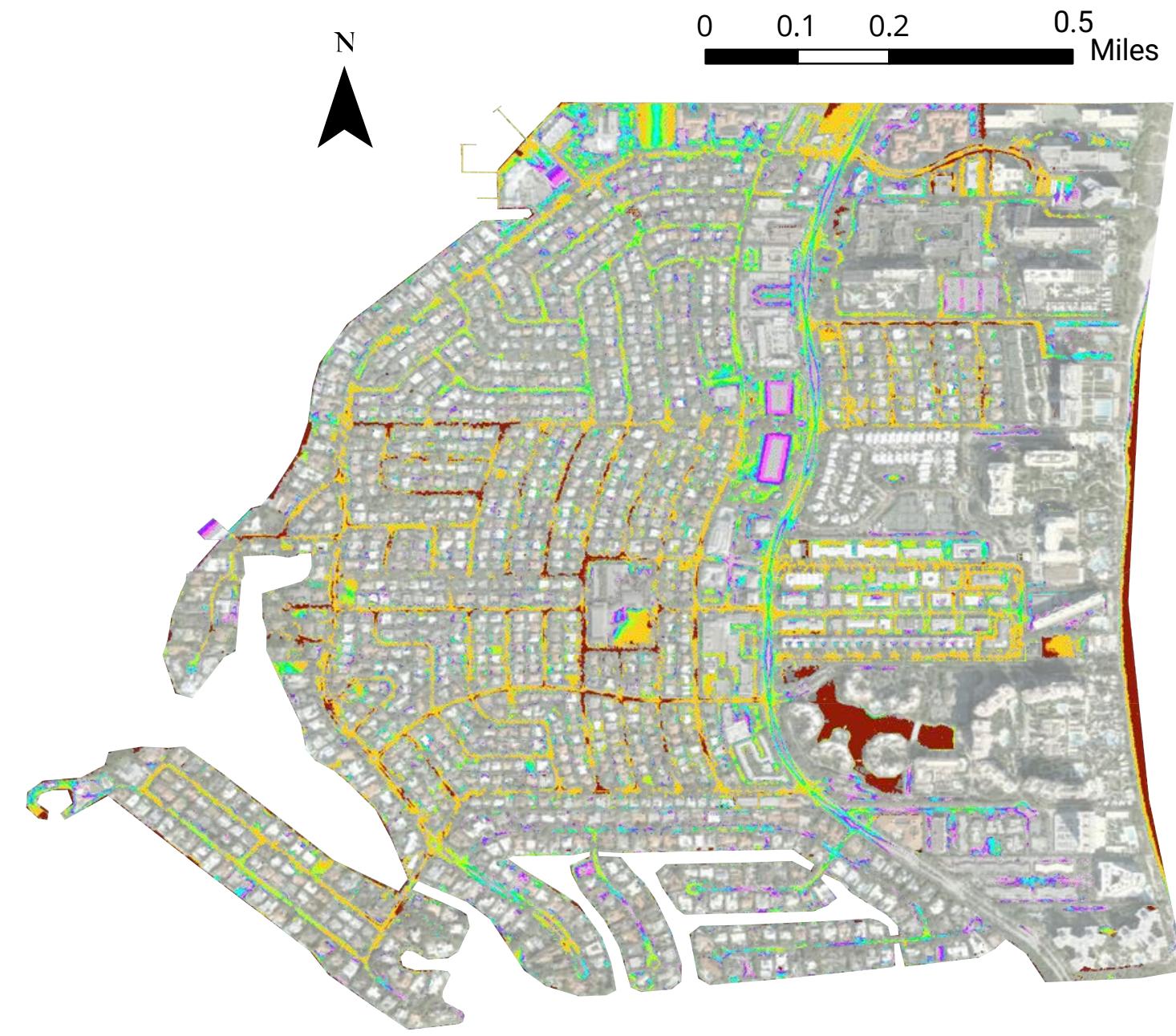
Extreme heat events are periods of excessively hot or humid weather. As global temperatures rise, we are expected to experience more days and nights of extreme heat in the Village. Extreme heat is a pressing public health risk, particularly for our young and elderly residents.

## Tidal Flooding Days in 2040 without Action



Without infrastructure updates, large portions of the low-lying areas of the Village will see tidal flooding without any rain by 2040. This map uses the Intermediate High Projection from the National Oceanic and Atmospheric Administration (NOAA). This estimates a little under 10 inches of additional sea level rise between now and 2040.

## Tidal Flooding Days in 2070 without Action



Without infrastructure updates, by 2070, almost every roadway within the Village will experience routine tidal flooding without any rain. Large sections of the community will be permanently underwater. This map uses the Intermediate High Projection from the National Oceanic and Atmospheric Administration (NOAA). This projection estimates over 32 inches of additional sea level rise between now and 2070.

Days	Number of Flood
31-60 Days	Green
6-10 Days	Light Green
11-15 Days	Purple
16-20 Days	Dark Purple
21-30 Days	Dark Teal
365 Days	Red

# THREATS STRESS OUR VULNERABILITIES

As a barrier island community, we cannot eliminate environmental threats, but we can take steps to significantly reduce how much they impact our community. Vulnerability describes how susceptible we are to the impact of threats. Our vulnerabilities are:



**We are a low-lying barrier island with a largely unprotected shoreline.**



**We have an aging stormwater system in need of upgrades.**



**We have exposed electrical and telecommunications infrastructure.**



**We are built out with limited space for new infrastructure.**



**We have regulations that are incompatible with our resiliency goals.**

For example, newer homes on Key Biscayne have finished floor elevations well above the elevation of the low-lying roadway that floods. Older homes were built at the same elevation of the road and therefore are extremely vulnerable to flooding.



Photos of a low-lying house (above, left) and condominium (above, right) that flooded during a 2022 rainstorm show how vulnerable low-lying structures flood, yet nearby elevated properties do not. While the condominium residences did not flood, the parking garage was inundated and damaged. A more elevated structure (below) did not flood even though the adjacent roadway flooded.



The maps on the previous pages show how many days we might see sunny-day flooding in 2040 and 2070 without any action. Maps like these indicate which roadways and parts of our community are vulnerable to flooding. While we cannot eliminate all flooding, by upgrading our stormwater system, for example, we can reduce the severity of flooding and reduce the vulnerability and risk to a business, home, or condominium.

# WITHOUT ACTION THESE ARE OUR RISKS

When a threat is combined with a vulnerability, a risk becomes apparent. While the likelihood of a major hurricane directly hitting Key Biscayne is low, the consequences would be severe – this makes a major hurricane a significant risk for our community. Frequent events like sunny-day flooding or a heavy rainstorm may not have as severe of an impact as a major hurricane, but they are still a significant risk for the Village.

We already feel the impacts of climate change. Heavier rainfall causes deeper and longer-lasting flooding on our streets, and stronger hurricanes cause greater beach erosion. The impacts will only worsen if we do not act.



Increase in damage leads to decrease in property value.



Increase in Insurance Costs and Decrease in Insurability



Decline in Economic Activity



Increase in Infrastructure Cost with a Declining Tax Base



Decrease in Quality of Life



The Village has assembled a strong team ready for the challenge of executing this ambitious Resilient Infrastructure and Adaptation Program to secure our future. All hands are on deck, including our mission-oriented Village Manager, our Chief Resilience Officer, our Capital Improvements Manager, our Public Works Director, and our Planning Director. Together, they bring the vision, experience, and partnerships needed to effectively implement our long-term strategy.

**Inaction is not an option.** By acting decisively, we will build a sustainable and resilient Key Biscayne, and our residents will experience clear benefits from our infrastructure investment.



## OUR COMMITMENT TO OUR RESIDENTS



Develop a comprehensive Resilient Infrastructure and Adaptation Program that protects our way of life and Elevates our Island Paradise.



Plan and execute projects such that they minimize disruption.



Focus on solutions that preserve our environment and provide multiple benefits.



Develop partnerships to include the best talent, technologies, and practices.



Clearly communicate with our residents and meaningfully include them in the conversation.



Pursue external funding to maximize the investment in our community.

# A VILLAGE OF PROGRESS & ACTION

The Village has already taken important steps toward laying the foundation for creating a resilient community. The update to our stormwater master plan, completion of our undergrounding plan, and resident approval of the \$100 million Resiliency General Obligation Bond, have set the stage for significant and meaningful infrastructure improvements. This strategy document, along with the Resilient Infrastructure Integration and Implementation Plan, will coordinate all planning, design, and construction efforts while aligning the funding required to efficiently invest the Village's tax dollars.

**Our most important stakeholder and partner in this effort is you – our residents.** The success of this strategy hinges on your support, will to act, and patience to see this program through to completion. When you voted to approve the \$100 million resilience bond in 2020, you set this process in motion and made it possible to be a resilient Village and protect our quality of life for decades to come.

**IN 2022, THE VILLAGE TEAM SECURED CLOSE TO  
\$1.2 MILLION IN GRANTS AND ARE WAITING TO  
HEAR ABOUT AN ADDITIONAL \$5.2 MILLION.**



## INSTALL BACKFLOW PREVENTERS ACROSS THE VILLAGE

The Village is actively working to reduce the frequency and magnitude of tidal flooding events. Near-term solutions include the installation of backflow preventers on all outfalls. These devices prevent tidal waters from entering our streets via drains during non-rainy, high-tide periods, also known as sunny-day flooding.

# RECOGNIZING OUR ACCOMPLISHMENTS

Although the Village is developing a comprehensive plan to guide future work, significant steps have already been taken to improve our community as we undertake our ambitious Village-wide Resilient Infrastructure and Adaptation Program.

- **Analyzing existing conditions:** We will understand the status and condition of all parts of our community so that we can prioritize improvements.
- **Completed Village-wide LiDAR survey:** LiDAR allows us to measure the elevations of all parts of the Village in the detail needed to do future work.
- **Designing the K-8 elementary school stormwater basin upgrade:** This is a major stormwater project that will alleviate flooding around the school.
- **Coordinating with the U.S. Army Corps of Engineers for the Beach and Back Bay study:** This study will guide the Corps' investment in our community to better protect our shoreline.
- **FPL designing electrical undergrounding:** Undergrounding our electric lines will create a more resilient community and improve service reliability.
- **Developing an agreement with Miami-Dade Water and Sewer Department for water and sewer systems:** By working together, we can reduce the need to dig multiple times.
- **Creating a seawall ordinance:** Seawalls and living shorelines serve as a flood barrier for our community, and the ordinance will stimulate a public-private partnership for flood protection.
- **Developing Complete Streets design standards:** We are updating the design standards for our roadways to create a better and safer community.
- **Executing immediate flood control and mitigation projects:** Where we know it floods and we can improve the existing stormwater system, we are doing so as quickly as possible.



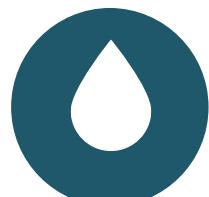
# OUR LINES OF EFFORT

The Village has five critical **Lines of Effort** that guide how we will implement infrastructure projects and change policies and regulations to support our resilience efforts. These Lines of Effort are aligned with our Resilient Infrastructure Strategy and Resilient Infrastructure Integration and Implementation Plan.



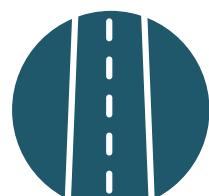
## Shoreline Protection

The Village, in partnership with the U.S. Army Corps of Engineers (USACE) and Miami-Dade County, is developing solutions to protect both the ocean and bayside shoreline of our island.



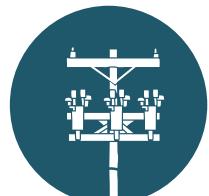
## Stormwater System Upgrades

The Village is working with internationally recognized engineering firms to redesign and rebuild our aged and disconnected stormwater drainage system.



## Roadway Improvements

The Village will redesign and rebuild roadways to maximize the effectiveness of the stormwater drainage system to reduce flooding while building a streetscape that improves traffic flow, safety, and water quality through green infrastructure.



## Utility Hardening

The Village is working with Florida Power & Light (FPL), telecommunications, and Miami-Dade Water and Sewer District (WASD) to underground the electrical power system and replace aged water and sewer lines.



## Regulatory Modernization

The Village is updating its critical policies, building standards, zoning regulations, and ordinances to weave adaptation for resilience into everything we build in the Village.



## HOW DO WE ADAPT?

Adapting to changing environmental conditions like stronger wind, more frequent flooding, and sea level rise can be organized and planned. By adopting a **Dig Once** philosophy alongside a comprehensive Resilient Infrastructure Strategy and Resilient Infrastructure and Adaptation Program, we will minimize inconvenience to residents during the construction process while reducing the impact of environmental threats.

Adaptation will take many forms, from changing policy and operations to retrofitting and rebuilding infrastructure. Constructing flood barriers or floodproofing can arm the Village against rainfall, tidal flooding, and storm surge. Relocating critical machinery like mechanical and electrical systems reduces risk to property and human life during flooding events and storm surges. Policy changes across the entire Village can weave resilience concepts into building and zoning codes for uniform application. This strategy, paired with the Resilient Infrastructure Integration and Implementation Plan, will be our roadmap to adaptation, ensuring all infrastructure upgrades are coordinated, streamlined, and completed cost effectively.



# CHARTING OUR COURSE FOR THE FUTURE



Developing the Resilient Infrastructure Strategy is only the first step. We must implement the plan, look long-term, and update the strategy as needed. This strategy will be integrated with the work the Village is already doing and the upcoming infrastructure investments and policy changes, all aligned with the **Lines of Effort**.

## DEVELOP AND ADOPT THE RESILIENT INFRASTRUCTURE STRATEGY

We are developing a Village-wide plan for the design and upgrade of our infrastructure, addressing the Village's vulnerabilities, needs, and priorities.



## CHART AND LAUNCH THE RESILIENT INFRASTRUCTURE AND ADAPTATION PROGRAM

Strategic planning will create efficiencies and reduce inconveniences for residents and businesses by following a **Dig Once** policy that aligns all our **Lines of Effort**.



- Shoreline Protection
- Stormwater System Upgrades
- Roadway Improvements
- Utility Hardening
- Regulatory Modernization

## EXECUTE THE LONG-TERM RESILIENT INFRASTRUCTURE INTEGRATION AND IMPLEMENTATION PLAN

The Village will execute the plan by increasing efficiencies and reducing the impact to residents.



## ASSESS AND REFINE THE PROGRAM TO ADDRESS EVOLVING INFRASTRUCTURE AND COMMUNITY NEEDS

Based on periodic evaluations of the program's implementation and resident feedback, the Village will adjust the program to ensure the desired outcome is achieved.

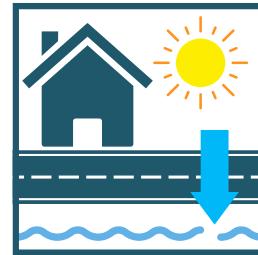
OUR  
RESILIENT  
VILLAGE



# CREATING BENEFITS FOR OUR RESIDENTS

The foundation of this comprehensive Resilient Infrastructure Strategy is to provide clear benefits to residents, including visitors and businesses, while protecting our quality of life. Resident benefits define the development of policies, plans, and projects to create a sustainable and resilient future for our island community.

Each action taken by the Village will help to achieve at least one resident benefit. The five overarching benefits align with the Village's critical **Lines of Effort**.

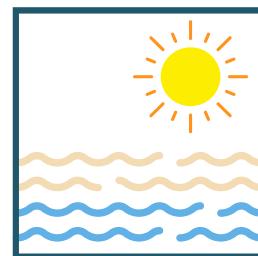


## REDUCED CHRONIC FLOODING

With the increase in population and rising seas, addressing flooding from higher tides, extreme rainfall events, and rising groundwater levels is urgent. Mitigating flooding will protect property, lives, and our economy today and into the future.

### Actions:

- Reduce the frequency and magnitude of tidal and rainfall flooding through infrastructure upgrades and innovative policy.
- Plan for rising groundwater levels by modeling future conditions and upgrading building standards accordingly.
- Identify policy changes that create opportunities to reduce flooding for all infrastructure and development projects across the entire community.

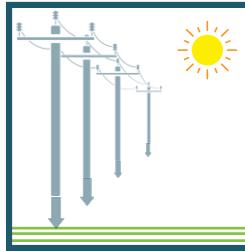


## PROTECTED SHORELINE AND BOUNDARIES

The Village takes great pride in the quality of our beach. It is an essential resident benefit and a driver of our local economy. Preserving our shoreline is guided by three key priorities: the quality of the beach and coastal public spaces; the physical coastal protection provided by our beach; and the preservation of the environment for critical species.

### Actions:

- Improve operations and maintenance to enhance the quality of our beaches and coastal public spaces.
- Coordinate the long-term planning and investment in beach renourishment and other coastal protection to maintain it as a protective barrier.
- Educate the public to preserve and enhance the natural coastal habitat and integrity of the dune line.



## INCREASED SERVICE RELIABILITY, SAFETY, AND AESTHETICS

The Village is committed to increasing our service reliability across all basic human services, including stormwater, water supply, sewers, electricity, and telecommunications. Undergrounding powerlines will increase service reliability by providing consistent energy for residents and critical infrastructure like stormwater pump stations and sewer lift stations. Undergrounding overhead powerlines preserves telecommunications and data service during storm events.

### Actions:

- Underground overhead lines to enhance uninterrupted service for all electrical utilities and communications systems.
- Invest in back-up power for critical infrastructure to ensure continuous operations, even during storms and hurricanes.



## STRENGTHENED READINESS FOR STORMS AND EMERGENCIES

With the increase of extreme rain events, expansion of the tropical storm season, and strengthening of storms and hurricanes, the Village is actively improving preparations for all types of emergencies to create a safer and stronger community.

### Actions:

- Thoughtfully plan and invest to reduce risk to critical infrastructure and improve emergency response capabilities.
- Harden critical infrastructure to ensure it continuously operates, as needed.
- Create clear plans and community outreach protocols for responding to emergencies and disasters.



## ENHANCED QUALITY OF LIFE

The Village is committed to elevating the quality of life of our island paradise by focusing on investments that impact daily lives. By improving mobility and reducing congestion, creating a more sustainable island, and improving parks and open spaces, our residents, businesses, and visitors will be able to enjoy our island community to the fullest.

### Actions:

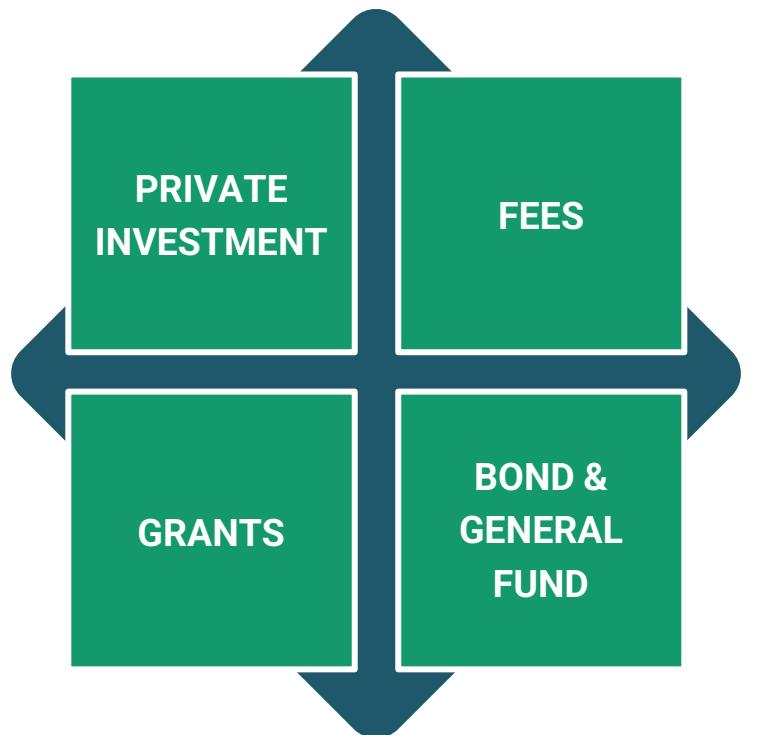
- Improve mobility and congestion, and utilize roadway upgrades to address other challenges, including flooding, safety, and security.
- Synchronize all roadway and other infrastructure improvements to accomplish a **Dig Once** philosophy.
- Apply sustainable approaches to reduce our carbon footprint by prioritizing nature-based solutions, transitioning to clean energy, and encouraging energy efficiency upgrades.

# ASSESSING FUNDING & FINANCING

As a local government, we have several options to finance the infrastructure upgrades needed to be more resilient. A key part of our strategy is to reduce the cost of projects by adopting a **Dig Once** philosophy and bundling infrastructure upgrades by geographic area, timeframe, and technical characteristics. It is not possible to upgrade the infrastructure across the entire community all at once. Design and construction work, therefore, will be phased and funded incrementally. Traditionally there are four mechanisms local governments use to fund infrastructure projects: taxes, fees, grants, and private investments.

The private sector can invest in public projects through public-private partnerships.

Local, state, and federal government agencies, as well as private foundations, offer grants the Village can apply for.



Fees are costs for specific services provided by the Village, like our stormwater fee.

Property taxes are the primary mechanism that fund local governments in Florida - this is our general revenue, which pays back our bond.

## OUR BOND, FEES, AND GENERAL FUND

The Village plans to rely heavily on loans and bonds to finance the implementation of resilient infrastructure upgrades. The Clean Water State Revolving Fund (CWSRF) and The Federal Water Infrastructure Finance and Innovation Act (WIFIA) offer low-interest loans to municipalities for water infrastructure upgrades. These loans are usually backed by a “fee” like the stormwater fee.

Bonds are a common financing mechanism and must have a defined source of revenue backing them, generally taxes or fees. On November 3, 2020, residents of the Village of Key Biscayne voted in favor of the VKB Resilience Infrastructure General Obligation Bond or GO Bond. Up to \$100 million can be borrowed by the Village to protect our shoreline, underground or harden our utilities, and improve our roadways to help alleviate street flooding. As a general obligation bond, the bond is financed through an additional tax assessment based on property values, also called an ad valorem tax.

## LEVERAGING STATE INVESTMENT

The Village is taking advantage of historic state investment in resilience. Over \$1 billion has been allocated through the new Resilient Florida Grant Program over the past two years. The Florida Department of Environmental Protection (FDEP) is also the entity that manages the Biscayne Bay Water Quality Grant, CWSRF loan program, and Beach Management Funding Assistance Program.

## IDENTIFYING FEDERAL FUNDING OPPORTUNITIES

As an urban coastal community, there are limited opportunities for federal funds, but where we can, we will apply for funding. The Federal Government through the Federal Emergency Management Agency (FEMA) offers grants through the Hazard Mitigation Grant Program (HMGP) for communities to implement resiliency improvements that will prevent future losses and damages from federally declared disasters. The Village submits requests for funding through this program whenever the grant opens in the aftermath of a disaster that has impacted our community.

In 2021, the Bipartisan Infrastructure Investment and Jobs Act (IIJA) was signed into law to provide over \$550 billion in new infrastructure spending. Of that, \$47 billion is geared toward critical infrastructure needs that target resilience and climate change issues. In 2022, the Inflation Reduction Act (IRA) was passed with \$369 billion in energy and climate related funding. The Village is diligently working to identify opportunities to access federal funding and will apply where feasible.



# ON-THE-GROUND IMPLEMENTATION IN ACTION

The Village has taken significant steps toward building a more resilient and sustainable community.

## CREATING A LONG-TERM BEACH MANAGEMENT PLAN

Resident Benefit: Protected Shoreline and Boundaries

In 2018, the Village made an effort to be included in the United States Army Corps of Engineers (USACE) Shoreline Protection Program for Miami-Dade County, which would support the long-term management of our oceanside beach. In 2022, the Corps decided to postpone including the Village in its Shoreline Protection Program due to the unknown potential impacts of flooding from the western bayside of the island. The Village is working with the Corps to develop a course of action to answer that question. The bay and ocean side studies will provide a whole island shoreline protection solution, allowing the Village to be included in the USACE Shoreline Protection Program – bringing significant amounts of federal dollars to our community over the next 50 years.

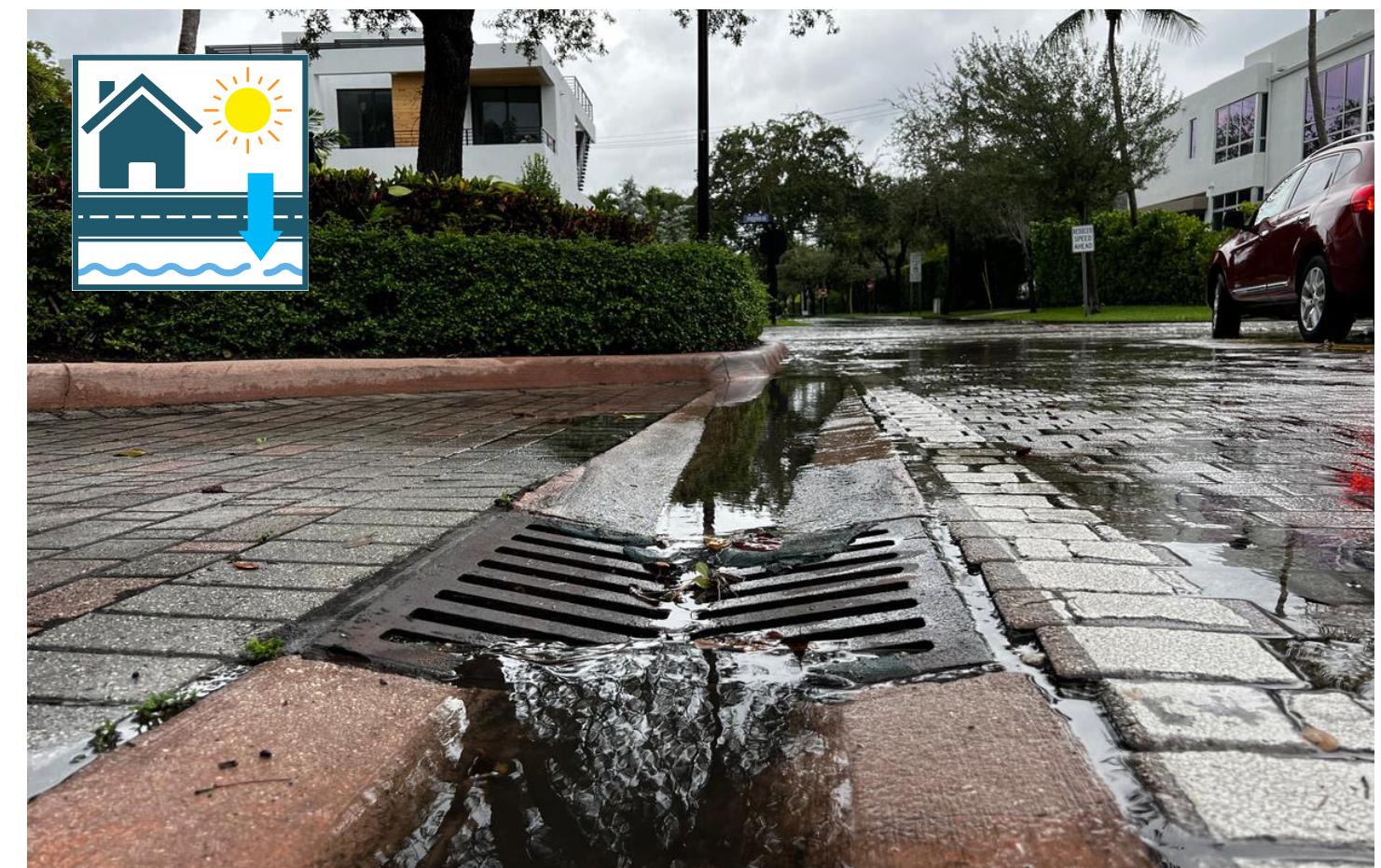
### R-105.5 BEACH CLUB TYPICAL IMPROVEMENTS



## MODELING FLOODING ACROSS THE COMMUNITY TO FULLY UNDERSTAND OUR STORMWATER SYSTEM

Resident Benefit: Reduced Chronic Flooding

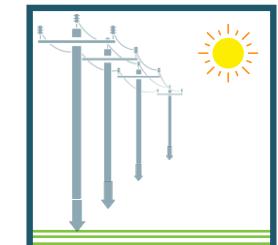
With sea levels rising, the current stormwater system has lost and will continue to lose its ability to drain. Our aged and fragmented system uses gravity to drive water out to the bay, but as sea levels rise, there will be less gravitational force to push water off the island. The Village completed a comprehensive Village-wide Stormwater Master Plan to mitigate street flooding and maximize the stormwater system capacity. Projects are being designed with the goal of implementing stormwater system upgrades for the areas most in need over the next few years.



## UNDERGROUNDING OUR ELECTRICAL LINES AND UPGRADING OUR INFRASTRUCTURE

Resident Benefit: Increased Service Reliability, Safety, and Aesthetics

The Village's focused effort on undergrounding utilities is aimed at increasing service reliability across all governmental functions, including the operation of a future pumped stormwater system. With the completion of the Underground Master Plan in 2019, the Village has a guide for undergrounding electrical utilities and telecommunications.



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# WE KNOW THAT INACTION IS NOT AN OPTION

## **Sea levels are continuing to rise.**

Flooding events will become more frequent. Today, flooding challenges end-of-day school pick-ups and people's ability to leave their homes to run errands, go to work, or visit local business. Our community will become a less desirable place to live and visit as flooding increases.

## **Hurricanes are getting stronger and wetter.**

Hurricanes Ian and Nicole, which did not directly hit the Village, significantly eroded our beach and flooded our streets. Not only did the flooding inconvenience our community, but our beaches were damaged, and their protective qualities reduced.



## **Stronger storms come with stronger winds.**

These strong winds can take down power lines and leave the Village without power for long periods of time. Our community already experiences power outages that will become more frequent if left unaddressed.

## **Flooding events will make it harder to respond to emergencies.**

Not only can roadways be impassable, but flooded roadways take longer to travel. We need to ensure that our first responders can address an emergency as quickly as possible.

**This is our home, and our island paradise is a way of life worth protecting.**

# OUR FUTURE & THE BENEFITS OF ACTION

There is an opportunity to turn our challenges into opportunities. This significant investment in our future will bring a broad range of benefits to the residents of Key Biscayne, including protecting property values, ensuring we remain a desirable location for businesses, and being an ideal neighborhood to raise families.

For beachfront communities, shorelines and their dunes act as a first line of defense against storms. Key Biscayne has a history of beach restoration projects, most recently completing a beach renourishment in 2021. Preserving our 1.2-mile oceanside shoreline not only ensures it functions well as a first line of defense, but it also supports the local economy as a tourism destination and the conservation of our local biodiversity as a critical habitat for several species of turtles that nest on our beach.

King tides and rain events will only intensify as the climate changes. Upgrading the stormwater system will improve drainage of our roadways and prevent damage to the public assets and private properties caused by flooding.

With more than 15,000 people currently residing in Key Biscayne and only one way in and out via the Rickenbacker Causeway, improved roadways for safe and functional mobility, as well as evacuation routes, are imperative to the overall safety of the island.

Our utility systems are vulnerable, and the cost of undergrounding will only increase over time. Undergrounding electrical and telecommunications lines will ensure residents and businesses will not experience power outages as frequently. Equally important, undergrounding will provide continuous power to stormwater pump stations that will keep our roads passable during flood events.

The vitality of the island is dependent on our efforts to adapt and prepare for the future. Updating our codes, zoning, and building standards to align with our resilience goals will ensure the Village's infrastructure upgrades and private redevelopment work together to reinforce our resilience.

**BY MAKING A SIGNIFICANT INVESTMENT NOW,  
WE WILL PRESERVE AND ENHANCE  
OUR QUALITY OF LIFE TODAY AND  
FOR GENERATIONS TO COME.**

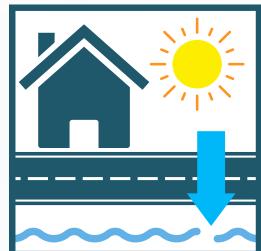


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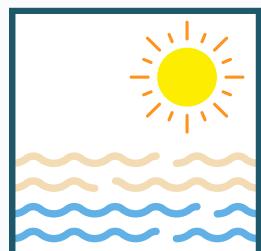
# OUR RESILIENT VILLAGE



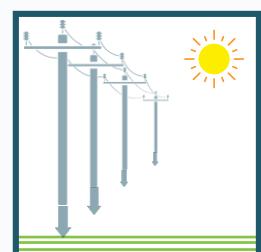
In the face of mounting environmental threats and clear vulnerabilities, by working together, we can create a sustainable and resilient Key Biscayne for today and the generations to come. Our Resilient Infrastructure Strategy and the associated Resilient Infrastructure and Adaptation Program will be our guide to **Elevating Our Island Paradise**. Working together we will create:



**A Village free of chronic flooding.**



**A Village with a strong and beautiful shoreline.**



**A Village with reliable and safe service under varying conditions.**



**A Village ready for storms and emergencies.**



**A Village with unparalleled quality of life.**



## LAUNCHING OUR RESILIENT INFRASTRUCTURE AND ADAPTATION PROGRAM

In 2023, the Village of Key Biscayne will be launching a comprehensive Resilient Infrastructure and Adaptation Program based on this strategy. The program will integrate and implement all efforts of the Village, which are organized through our critical five **Lines of Effort** to maximize resident benefits and reduce inconveniences. By focusing on leveraging all funding options and following a **Dig Once** philosophy, we will achieve greater value for the infrastructure dollars being spent. Working together, we will be able to **ELEVATE OUR ISLAND PARADISE**.