MIAMIBEACH

Sustainability Resiliency Committee Meeting
Commission Chambers
October 23, 2019 - 1:00 PM
Commissioner Mark Samuelian, Chair
Commissioner John Elizabeth Aleman, Vice-Chair
Commissioner Joy Malakoff, Member
Commissioner Ricky Arriola, Alternate
Elizabeth Wheaton, Liaison

REPORTS

1. REVIEW OF RESILIENCE STRATEGY WORKPLAN - PLANNED AND IN PROGRESS RESILIENCY PROJECTS

   City Manager's Office | Public Works | CIP

2. SUSTAINABILITY COMMITTEE

   Dave Doebler, Committee Chair

ACTION ITEMS

3. DISCUSSION ON ARTIFICAL REEFS

   Commissioner Arriola

   Environment and Sustainability

   Item C4 AI - May 16, 2018 Commission Meeting

4. DISCUSSION REGARDING TERMINATING THE CITY'S CONTRACT WITH COCA-COLA

   Commissioner Arriola

   Marking and Communications

   Item R9 I - July 17, 2019 Commission Meeting

5. DISCUSSION ON THE CITY PARTNERING WITH FPL EVOLUTION PROGRAM TO EXPAND EV-CHARGING STATIONS IN MIAMI BEACH

   Commissioner Samuelian

   Environment and Sustainability

   Item C4 N - September 11, 2019

6. DISCUSS THE CURRENT STATUS OF THE CITY'S TRANSITION PLAN FOR GAS BLOWERS

   Commissioner Samuelian

   Parks and Recreation | Public Works - Greenspace Divison | Sanitation

   Item C4 O - September 11, 2019 Commission Meeting

DISCUSSION ITEMS

7. DISCUSSION REFERRING A TASK TO THE CITY MANAGER'S READY TEAM: IN ORDER

TO BOTH OPTIMIZE PUBLIC ENGAGEMENT AND FACILITATE TIMELY COMPLETION OF PROJECTS

Commissioner Aleman

Marking and Communications

Item C4 V - July 25, 2018 Commission Meeting

8. DISCUSS THE PUMP STATIONS PLUMES ON WEST AVENUE

Commissioner Gongora

Public Works

Item C4 U - February 13, 2019

9. DISCUSS HAVING THE CITY PURSUE MITIGATION PROJECT FUNDING FROM THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Commissioner Samuelian

Office of Management and Budget | Grants Management

Item C4 P - September 11, 2019 Commission Meeting

10. DISCUSSION REGARDING THE FREQUENCY OF WATER TESTING IN MIAMI BEACH

Commissioner Steinberg

Environment and Sustainability

Item R9 S - September 11, 2019 Commission Meeting

11. DISCUSSION ON THE GRAND JURY REPORT REGARDING HEALTH OF BISCAYNE BAY WITH FOCUS ON HARD DEBRIS AND AN UPDATE ON WHAT THE CITY OF AVENTURA IS DOING IN RESPONSE

Commissioner Samuelian

Environment and Sustainability | Public Works

Item C4 S - September 11, 2019 Commission Meeting

DEFERRED ITEMS

12. DISCUSSION ON REQUIRING ALL COMMERCIAL LANDSCAPERS WORKING ON MIAMI BEACH TO ABIDE BY FLORIDA FRIENDLY LANDSCAPING STANDARDS

Commissioner Arriola

Environment and Sustainability | Public Works | Parks and Recreations

Item C4 T - September 11, 2019 Commission Meeting

13. DISCUSSION ON REPURPOSING OUR GOLF COURSES FOR THE FUTURE

Commissioner Ricky Arriola

Parks and Recreation | Public Works | Environment and Sustainability

Item C4 AB - May 16, 2018 Commission Meeting

14. DISCUSSION PERTAINING TO AMENDMENTS TO THE CITY CODE REGARDING POTENTIAL REQUIREMENTS FOR HIGHER ELEVATION FOR NEW COMMERICAL CONSTRUCTION THAT IS VULNERABLE TO FLOODING

Commissioner Aleman | Co-Sponsor Commissioner Arriola

Planning

Item CF D - July 17, 2019 Commission Meeting

15. DISCUSSION TO REVIEW THE PALM AND HIBISCUS ROAD ELEVATION EXPERIENCE

Commissioner Samuelian

Capital Improvement Projects

Item C4 Q - September 11, 2019 Commission Meeting

16. DISCUSSION ON CITY OF MIAMI BEACH STORMWATER, SANITARY SEWER, AND WATER INFRASTRUCTURE BEST MANAGEMENT PRACTICES

    Commissioner Micky Steinberg

    Environment and Sustainability

Item C4U - May 11, 2016 Commission Meeting

17. DISCUSSION REGARDING HOW GREEN INFRASTRUCTURE INCLUDING LIVING OR HYBRID SHORELINES CAN COMPLEMENT GREY INFRASTRUCTURE IN OUR CLIMATE ADAPATION ON-GOING WORK

    Commissioner Steinberg | Co-Sponsor Commissioner Malakoff

    Environment and Sustainability

Item C4 N - April 13, 2016 Commission Meeting

18. DISCUSSION REGARDING PRIVATE SEAWALLS

    City Commission

    City Manager's Office | Public Works

Item R7F - December 12, 2018 Commission Meeting

19. DISCUSS THE MOTION MADE BY THE SUSTAINABILITY COMMITTEE TO MAKE THE REDUCTION OF CO2 EMISSIONS A PRIMARY FOCUS OF THE FLEET ASSESSMENT

    Commissioner Samuelian

    Fleet Management

Item C4 S - July 17, 2019 Commission Meeting

20. DISCUSSION ON REQUIRING ALL NEW CITY VEHICLES PURCHASED AFTER 2020 TO BE 100% ELECTRIC (EXCEPT EMERGENCY VEHICLES)

    Commissioner Gongora

    Fleet Management

Item C4 R - September 11, 2019 Commission Meeting

21. DISCUSS THE STATUS AND IMPLICATIONS OF THE ACTION ITEMS ASSOCIATED WITH ONGOING WATER QUALITY COORDINATION WITH MIAMI-DADE COUNTY

    Commisioner Samuelian | Co-Sponser Commissioner Michael Gongora

    Environment and Sustainability

Item C4U - July 17, 2019 Commission Meeting

22. DISCUSS UPDATES TO THE CITY CODE REFERENCING TURTLE NESTING

    Commissioner Aleman | Co-Sponsors Commissioner Malakoff & Commissioner Samuelian

    Environment and Sustainability

Item C4 F - September 25, 2017 Commission Meeting

23. DISCUSS ARKUP'S LUXURY HOUSEBOATS AND THEIR EFFECTS ON BISCAYNE BAY AND THE QUALITY OF LIFE OF SURROUNDING RESIDENTS

    Commissioner Arriola

    Environment & Sustainability

Item R9 X - September 11,2019

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **REVIEW OF RESILIENCE STRATEGY WORKPLAN - PLANNED AND IN PROGRESS RESILIENCY PROJECTS**

RESPONSIBLE DEPARTMENT

City Manager's Office | Public Works | CIP

ANALYSIS

VERBAL REPORT AT COMMITTEE MEETING.

PRESENTATION BY HAZEN AND SAWYER: MIAMI BEACH SEWER AND WATER SYSTEM

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
No	No

ATTACHMENTS:

Description	Type
SRC Report October 2019	Memo
Hazen and Sawyer Presentation: Miami Beach Sewer and Water System	Other

SUSTAINABILITY AND RESILIENCY COMMITTEE PROJECTS PROGRESS REPORT

	Project Name	District	Scope of Work	Project Budget	Current Status	Anticipated Completion
Design						
1	First Street Imp Alton & Washington	South Beach	Improvements on First Street to include complete roadway reconstruction, elevation of the roadway to a minimum 3.7 NAVD elevation, utility removal/replacement, new storm drainage line installation, new storm pump station (120,000 gpm), force main installation, landscaping and lighting. Drainage improvements on Alton Road from South Point Drive to 5th Street and Washington Avenue from South Point Drive to 5th Street.	$24,000,000	Scheduled meeting with SOFNA Traffic and Safety Committee and Murano at Portofino association to present PS and outfall locations and discuss existing easements. Meeting scheduled for Oct 24th.	Fall 2021
2	Indian Creek -Street Drainage Imp. - Phase III	Middle Beach	Storm water drainage improvements on Indian Creek Drive and side streets from 25 Street to 41 Street, including completing the stormwater pump station at 32nd Street. Final pavement restoration of the roadway and sidewalk on Collins Avenue between 25 Street and 26 Street; Rebuilding and raising the roadway and sidewalk on Indian Creek Drive between 26 Street and 41 Street and new street lighting, signage and pavement markings.	$33,000,000	Notice to proceed # 1 was issued to the contractor on October 11, 2019, which started the pre-construction work such as scheduling, obtaining all the permits, preparing the maintenance of traffic (MOT) plan, and shop drawing submittal. It is anticipated that the construction will commence by the end of October 2019.	Fall 2021
3	Maurice Gibb Park Redesign (GOB)	Middle Beach	Renovation of the park to include soil remediation, a new playground with shade canopy, pavilion(s), a dog park, walkways, minor restroom renovations, landscaping with open sodded areas, irrigation, signage and park furnishings.	$7,020,681	The updated 60% documents have been reviewed by staff. Once the comments have been satisfactorily addressed the permit applications for Army Corps of Engineers, FDEP and Miami Dade County DERM will be submitted to start the environmental permitting process.	Spring 2022
4	Bayshore Park (Par 3) (GOB)	Middle Beach	A new passive community park to include environmental remediation, a central lake; open meadows and informal open play field areas; site grading; pavilion; 6 tennis courts with restroom facilities; children's playground; dog park; boardwalk and pathways; security lighting; vita course and fitness cluster; butterfly garden; linear water feature and parking lot. Resilient strategies proposed at the park include stormwater retention system, pervious pavement; solar panels for pedestrian lighting, energy efficient lighting and roof mounted solar panels.	$21,160,190	Proceeding towards 90% design. Pending Miami-Dade County Regulatory and Economic Resources (RER) environmental remediation/resiliency strategy approval. Staff continues to meet with RER on addressing some challenges posed by them to the original concepts. Bid advertisement early next year.	Spring 2021
5	Middle Beach Recreational Corridor Ph 3 (GOB)	Middle Beach	Construction of approximately 3,500 linear feet of an on-grade pedestrian walkway and the demolition of the existing wooden boardwalk from 24th to 45th street. Dune enhancements such as native dune vegetation species and beach compatible dune fill and irrigation systems will be provided for the landscaping. Path lighting will meet Florida Fish and Wildlife Commission's marine turtle nesting requirements.	$13,215,000	NTP 1 has been issued. Start of construction is expected in November	Fall 2021
6	North Beach Oceanside Park Renovation	North Beach	Renovation of the park to include pedestrian entrances with new gates, pedestrian beach access, walkways with lighting, refurbished restrooms and picnic shelters, site furnishings, open sodded areas, landscape and irrigation.	$12,700,000	Bids were received and all bids exceed the construction budget. The consultant is evalauting the bids, and evaluating modifications to the bidders to determine why the bids were high.	Spring 2021
7	Sunset Harbor Pump Station #3 Screen	Middle Beach	A perforated metal enclosure is being designed to screen the equipment at the Sunset Harbour Pump Station #3. The height of the screen will vary from 9'-0" above the traffic barricade adjacent to the generator, to 3'-0" at the westernmost portion of the pump station. At the eastern side, the enclosure will also serve as an entrance sign for the neighborhood.	$750,000	The 100 % Construction Documents have been submitted and are being reviewed by staff, in preparation to submit for permits.	Spring 2020
Preconstruction						

SUSTAINABILITY AND RESILIENCY COMMITTEE PROJECTS PROGRESS REPORT

	Project Name	District	Scope of Work	Project Budget	Current Status	Anticipated Completion
8	Brittany Bay Park	North Beach	This project includes the creation of a living shoreline between the existing remaining seawall and the concrete retaining / seawall. ADA-Accessible overlook that will allow park patrons to walk from the Park to the existing seawall's edge. The project is intended to enhance the surrounding riparian and intertidal environment by creating a new habitat for aquatic and terrestrial species and improving water quality via filtration of upland runoff. The Park renovations also include new concrete walkways, milling and resurfacing the existing parking lot, new trees, new exercise equipment, furniture, lighting and new landscaping.	$1,400,000	The plans are being reviewed by the City of Miami Beach Building Department, Miami Dade County DERM, FDEP and the Army Corps of Engineers. The Army Corp is severely delayed in reviewing projects, resulting in delays with other agencies.	Fall 2020
Construction						
10	Palm & Hibiscus Island Neighborhood Improvements	South Beach	This project includes a variety of aboveground and underground improvement such as new water main and service, new storm water drainage system including 3 pump stations, lining of the sanitary sewer system and replacing all the sewer laterals, raising the elevation and reconstruction of the roadways including installation of Geo Textile, new decorative street lights, speed tables, landscape, hardscape improvements, harmonization with private properties and undergrounding the franchise utilities on Hibiscus Island. Additional scope of services was added to the project to install 3 bi-fuel generators as well as, implementation of the new drainage criteria to install and harmonize a yard drain in each private property with the finished floor elevation (FFE) lower than the crown of road.	$48,938,882	Contractor has commenced site work in preparation for the arrival of the generators later this month. Staff continues to meet with residents to advance private drain permitting.	Spring 2020
11	Stormwater Pump Station at 19th Street East of Meridian	Middle Beach	Installation of a stormwater pump station, including an emergency generator and seawall reconstruction along Collins Canal near 19th Street and Meridian Avenue. A change order was approved for the extension of the Botanical Garden along the Dade Canal and a seawall at the Carl Fisher Clubhouse.	$8,400,000	The pump station is currently operational. DERM final certification is pending. For the Botanical Garden expansion, FPL encountered a conflict with a service connection to the County's Traffic Signal on Dade Blvd. Staff is working with the County and FPL to get it resolved, so that the FPL poles can be removed. For the Carl Fisher Seawall, SFWM was issued, DERM permit pending processing of fees. Permit from US Army Corps of Engineers is pending.	Completed December 2019 TBD
12	Venetian Islands Neighborhood Improvements	South Beach	Work includes site preparation, earthwork, demolition, storm drainage, roadway, concrete valley gutters, paving and grading, water main, lighting, and planting. Additional scope added included installation of six (6) stormwater pump stations, two per island, and automated meter reading technology.	$37,382,720	Additional data and testing was performed and completed.EOR to submit new pavement design to best achieve the desired service life of the road by October 18,2019. All six pump stations are operational, and pending DERM final approvals.	TBD Completed
13	Venetian Islands Seawalls	South Beach	This project entails seawall replacement, at two (2) locations consisting of precast concrete bulkhead panels, king piles, batter piles and concrete cap; and seawall cap raising at five (5) locations consisting in new concrete cap, batter piles and retaining walls, all locations within the Venetian Islands.	$650,000	Construction on hold, revised plans submitted to DERM for permit modifications as per field conditions.	TBD

SUSTAINABILITY AND RESILIENCY COMMITTEE PROJECTS PROGRESS REPORT

	Project Name	District	Scope of Work	Project Budget	Current Status	Anticipated Completion
14	West Avenue - Phase II Improvements - North of 14 Street	South Beach	West Avenue - Phase II Improvements North of 14th St - Scope includes Water, Sewer, Storm and above ground improvements from 14th Street north to the Collins Canal and include a new stormwater Pump Station and Baywalk at the end of Lincoln Road. Project is being re-designed to include the following resiliency items: Road elevation 3.7 NAVD; 10 year storm event; Mobility – 2 lanes with center continuous turn lane; Protected bike path; Street ends enhanced design; Permanent generators and 120,000 gpm pump station.	$79,158,564	Design of Water and Sewer System is 100% complete. Roadway, Landscaping, lighting, drainage and Pump Station Design is 90% complete. Meetings with part of the community is scheduled for mid October to present option on the location of Pump Station above ground components and screening concept. Expected date for start of construction is now for January 2020, pending DERM permits.	November 2022
15	West Avenue - Phase II Improvements - South of 14th Street	South Beach	West Avenue - Phase II Improvements South of 14th St. The scope includes Water, Sewer, Storm and above ground improvements from 14th Street south to 5th Street. Project is being re-designed to include the following resiliency items: Road elevation 3.7 NAVD; 10 year storm event; Mobility – 2 lanes with center continuous turn lane; Protected bike path; Street ends enhanced design; Elimination of street paving to allow for wider pedestrian sidewalks and more green areas; Permanent generators for existing pump stations.		Design of Water and Sewer System is 100% complete. Roadway, Landscaping, lighting, drainage is 90% complete. Expected date for start of construction is now for January 2020, pending DERM permits.	August 2021
TOTAL				**$287,776,037**		

Water and Sewer System Master Plans

October 23rd, 2019

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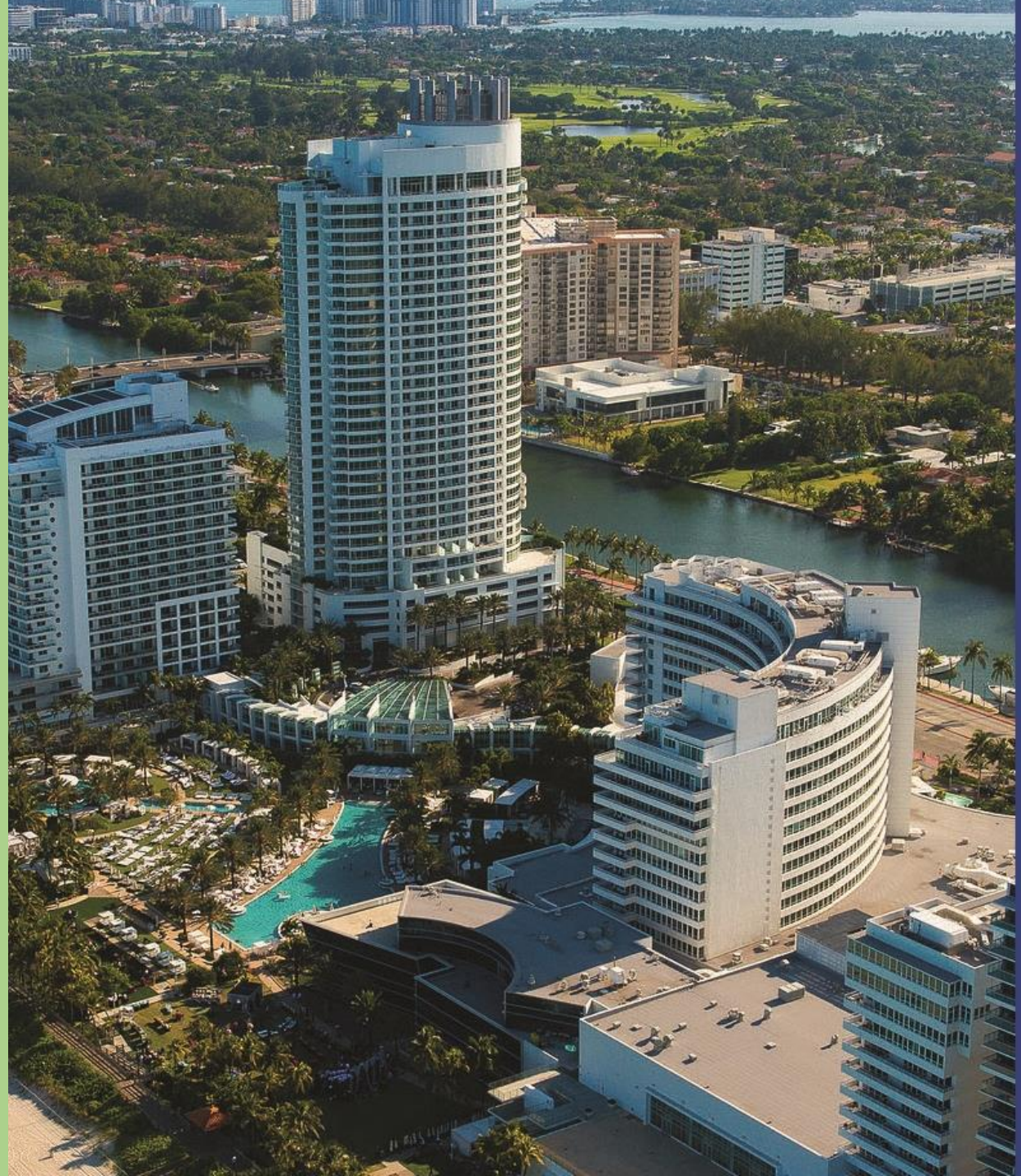
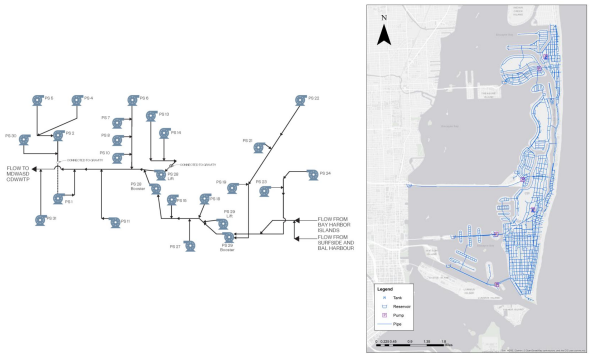
Master Plan Development



Methodology

Evaluation of the Existing System

Capacity Evaluation using **Hydraulic Modeling**



Evaluation of **Above Ground Assets**

Evaluation of **Underground Assets** (Risk Assessment)

Consequence of Failure (CoF)	Low Medium High
Probability of Failure (PoF)	Low Medium High

Capital Improvement Plan

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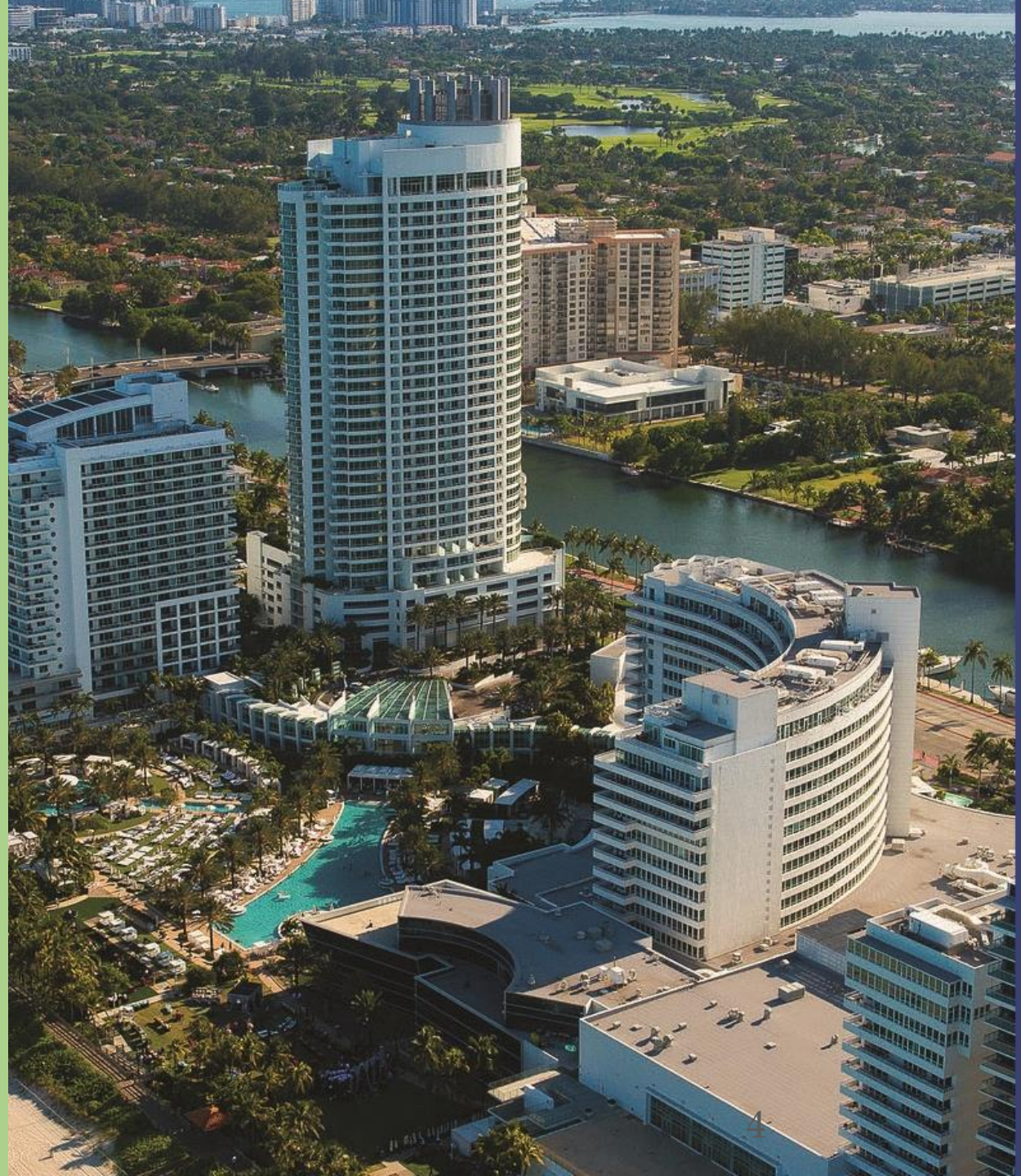
Population, Water Demand and Sewer Flows Forecast



Population Projections

Residents

+

Employees

+

Hotel Guests

Source: Traffic Analysis Zones (TAZ) Projections by Miami-Dade RER

2019	2045
96,000	121,000

Source: Traffic Analysis Zones (TAZ) Projections by Miami-Dade RER

2019	2045
70,000	96,000

Source: Current: Greater Miami Convention and Visitors Bureau, Future: Hazen

2019	2045
25,000	43,000

Population and Water Demand Projections

Equivalent Population

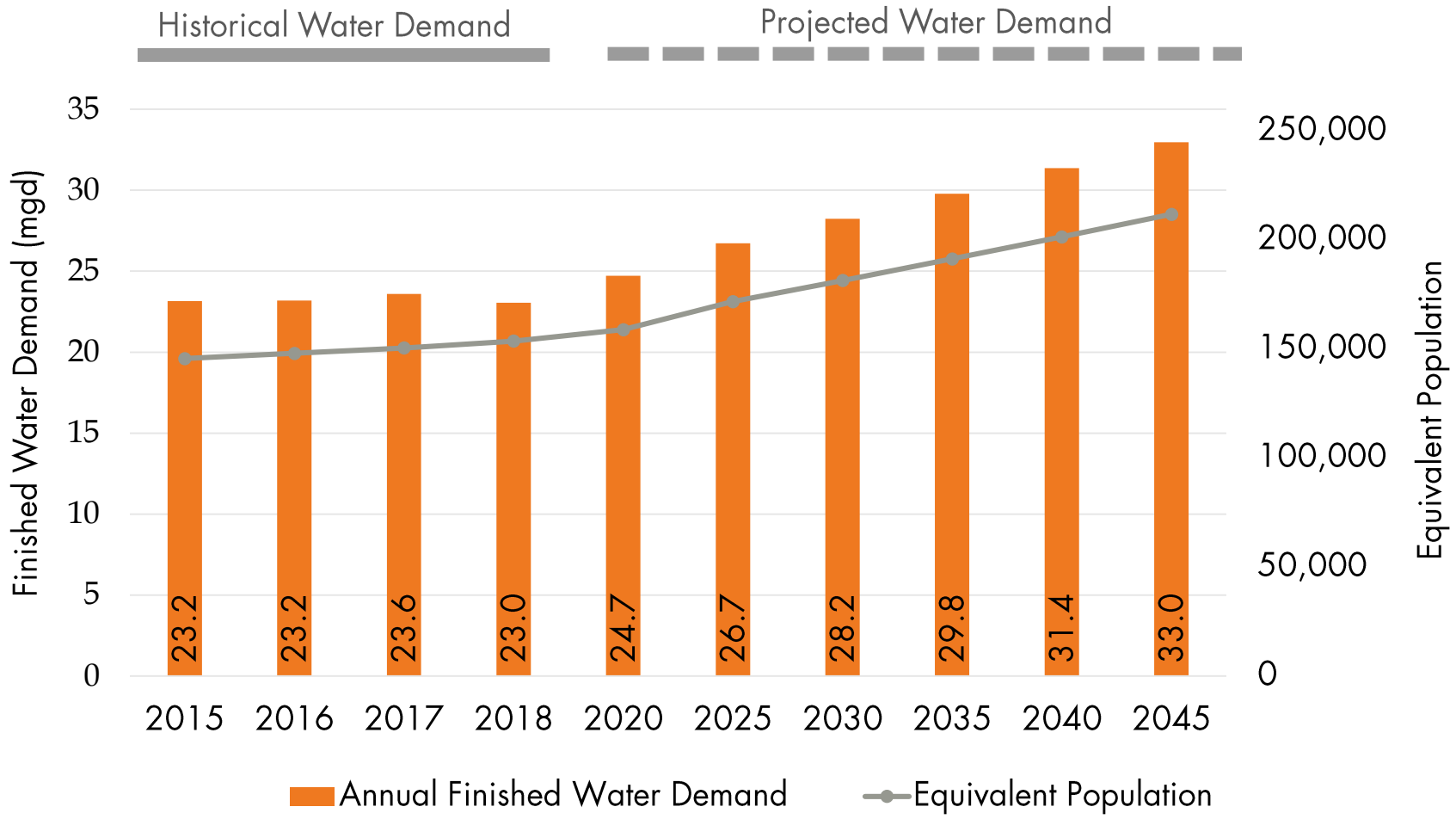
Residents (x 1)

\+

Employees (x 0.5)

\+

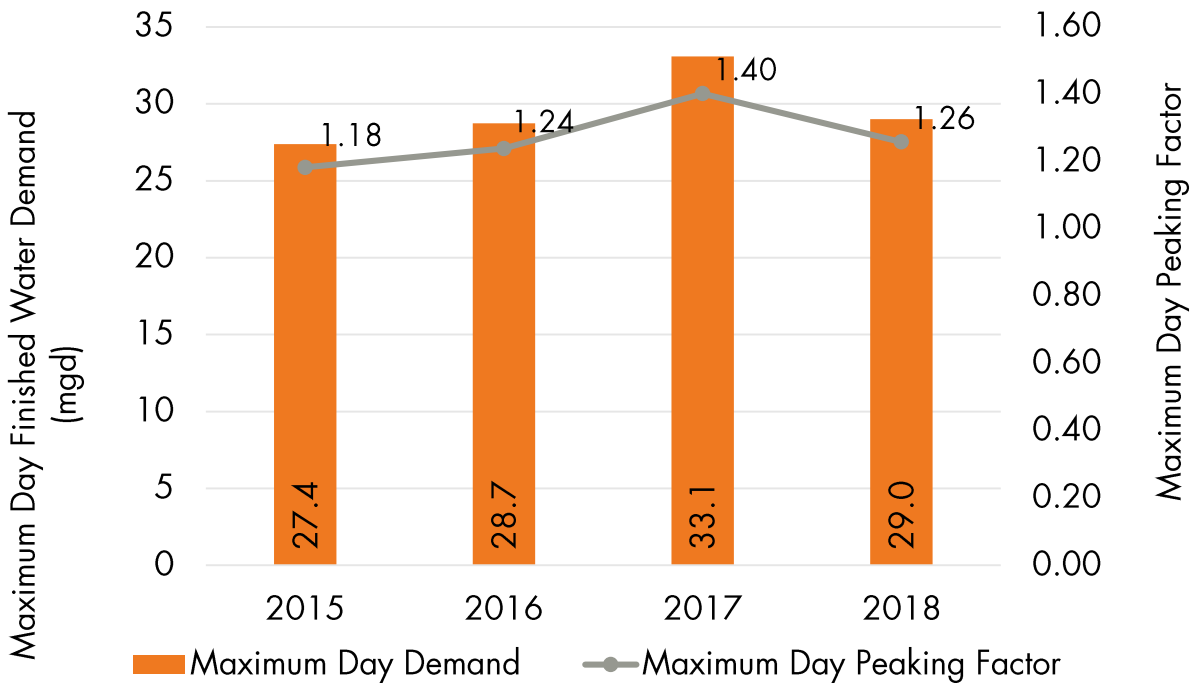
Hotel Guests (x 1)



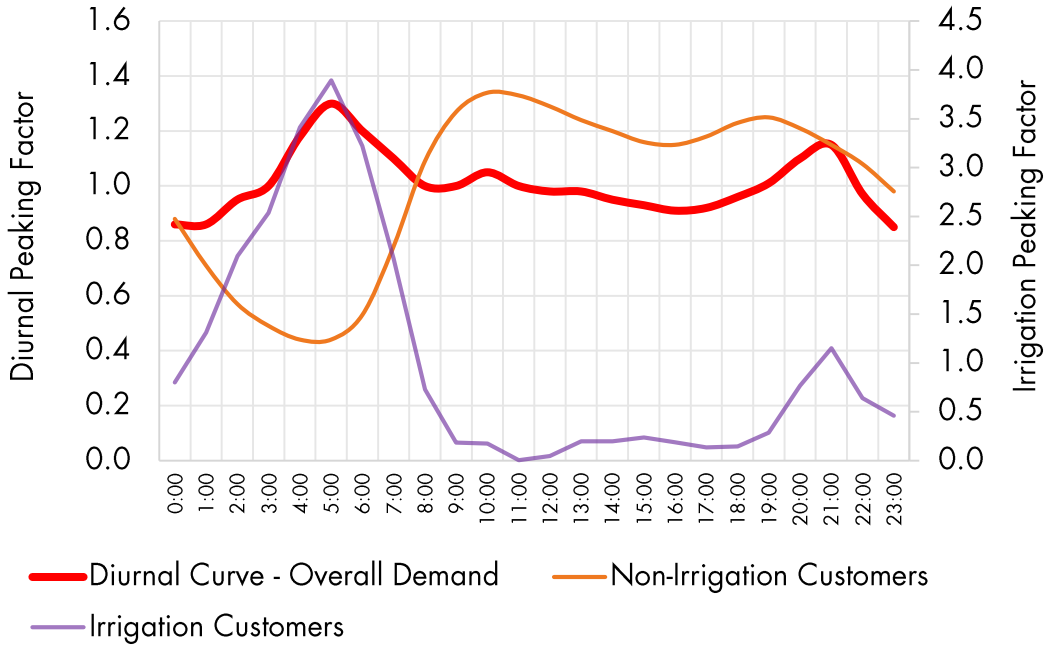
Seasonal and Diurnal Water Demand Fluctuations

The evaluation takes into account the day-to-day and hourly variations

Average maximum day peaking factor = 1.27



Overall diurnal peaking factor = 1.30



Estimation of Sewer Flows

Sewer Flows

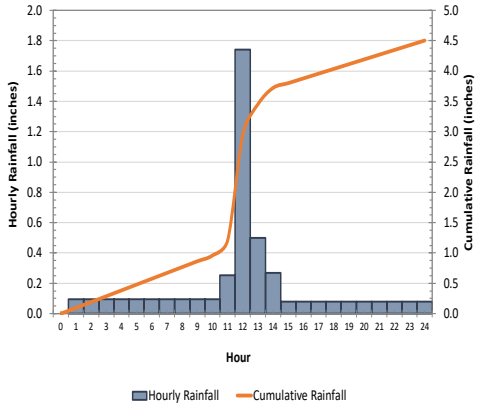
Base Sanitary Flow

- **96,000 residents**
- **70,000 Employees**
- **25,000 hotel guests**

Groundwater Infiltration (GWI)

Pipe age, material and distance to groundwater

Rainfall Dependent Infiltration and Inflow (RDII)



Water System Master Plan

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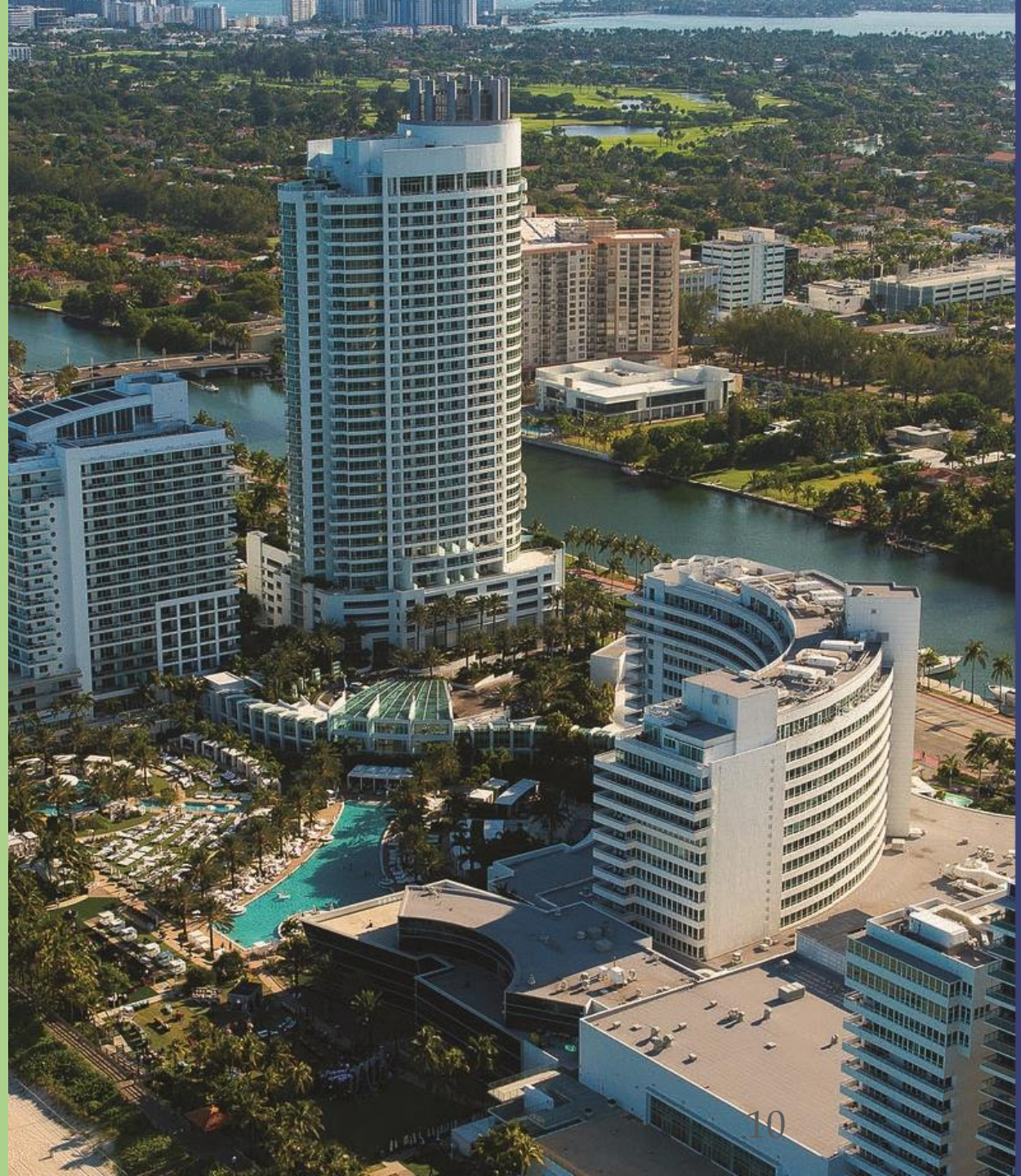
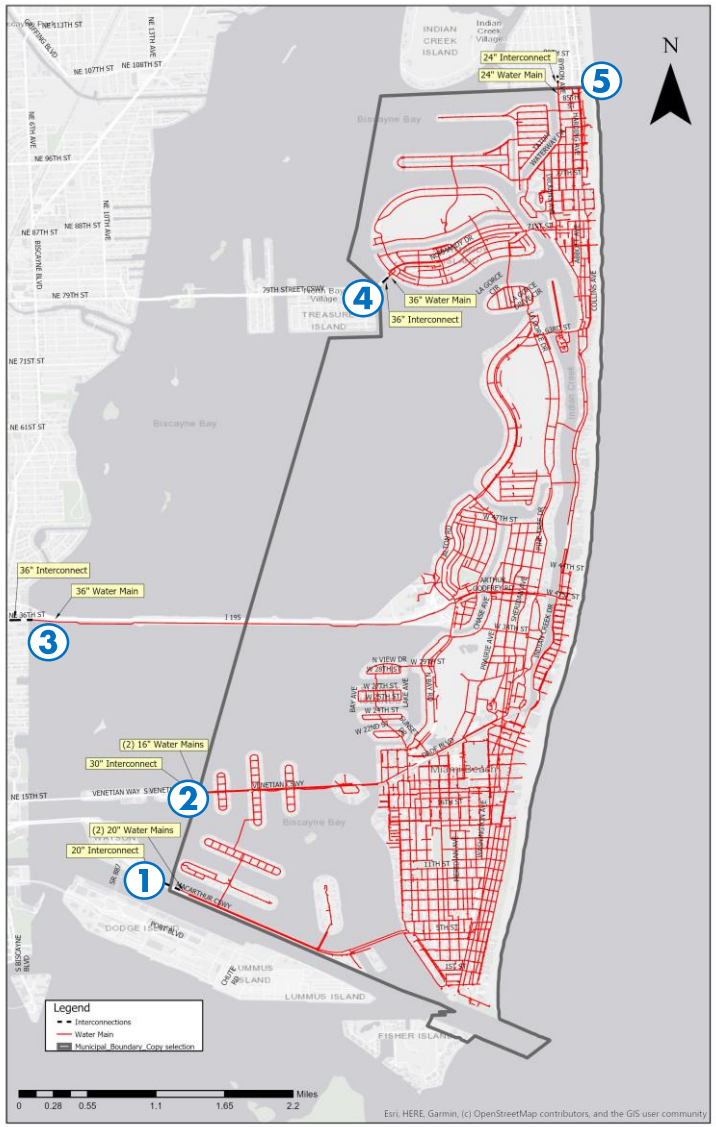
Summary of Existing Water Facilities



Existing Water Facilities



Miami Beach is a wholesale water customer of MDWASD

- Interconnects with MDWASD

1: 20-Inch water main on Watson Island (Mac Arthur Causeway)

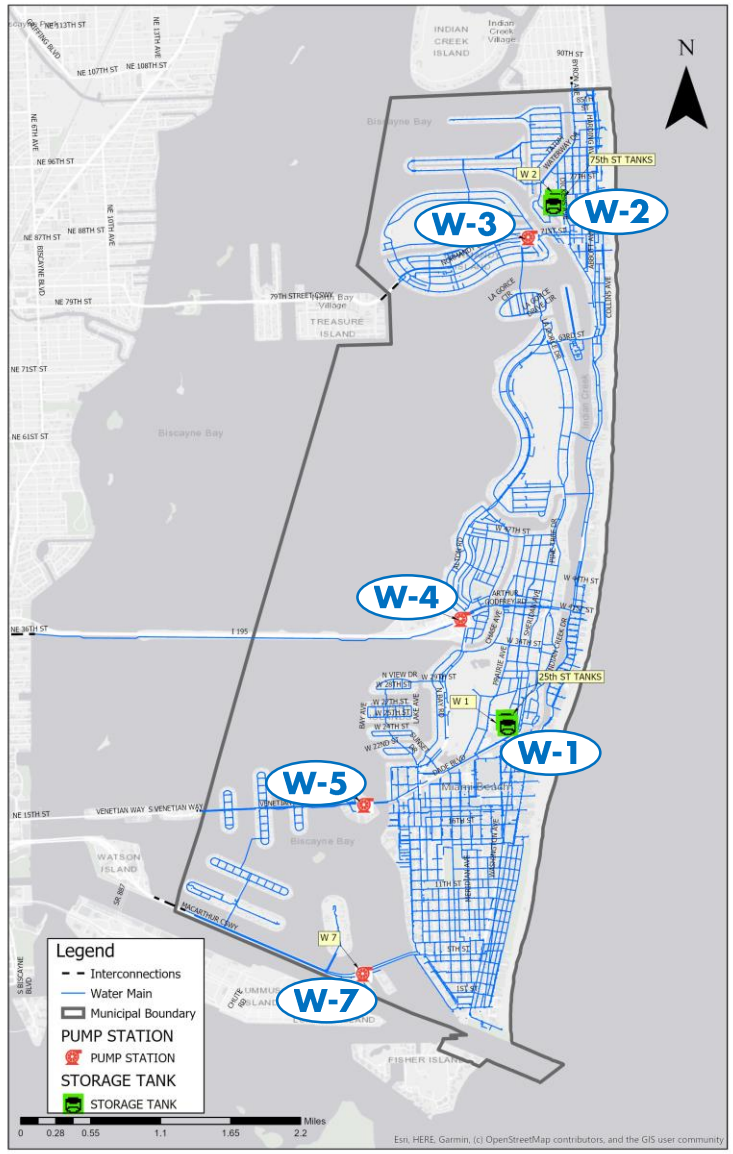
2: 30-Inch water main on San Marco Island (Venetian Causeway)

3: 36-Inch water main on Julia Tuttle Causeway (Norwood)

4: 36-Inch water main on Normandy Isle (79th Street Causeway)

5: 24-Inch water main on Byron Avenue (Emergency Interconnect)

Existing Water Facilities



The water pressure is boosted from the MDWASD Interconnects

- Main Facilities

W-1: 25th Street Booster Station and 2 x 3MG Storage Tanks

W-2: 75th Street Booster Station and 2 x 4MG Storage Tanks

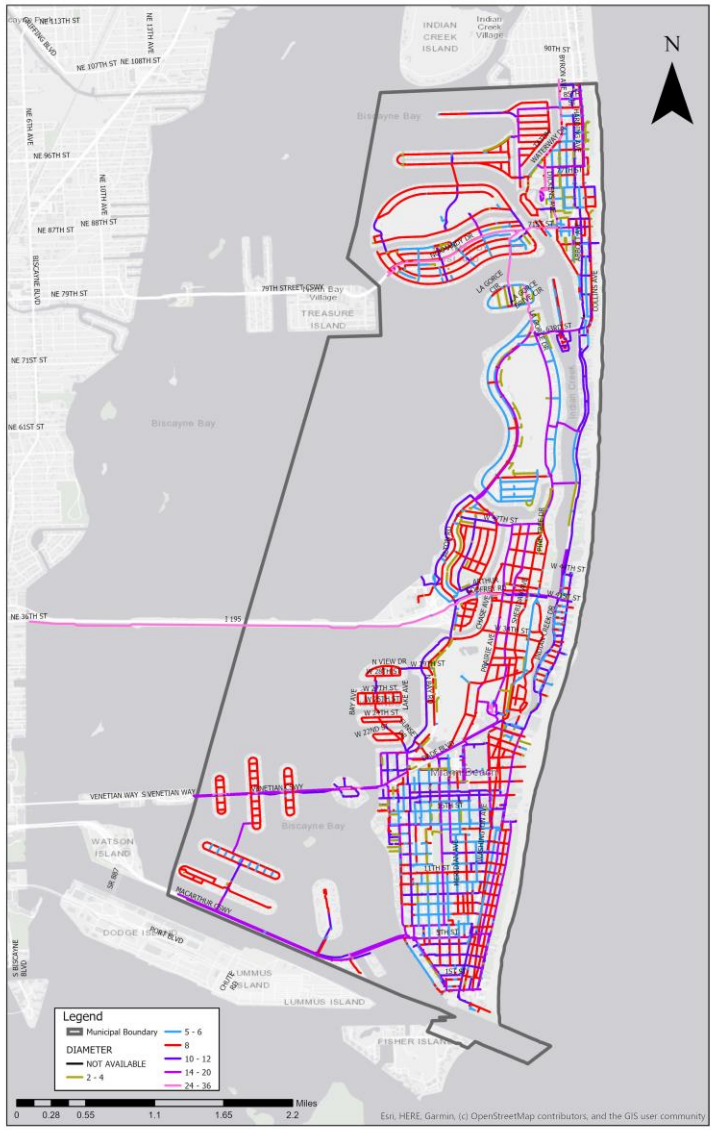
W-3: Normandy Isle Booster Station

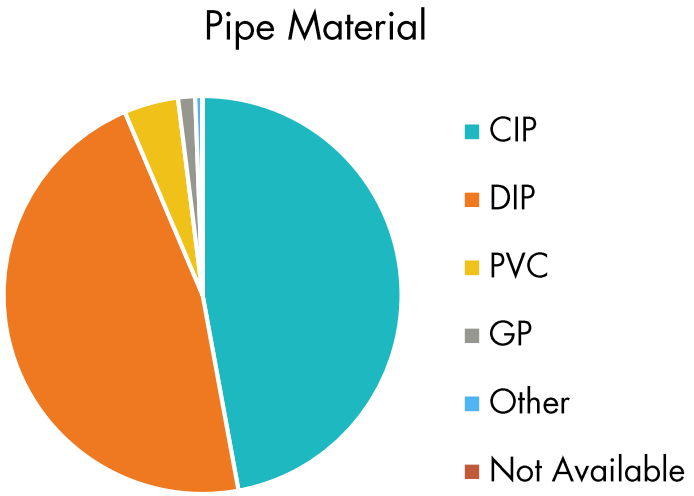
W-4: 41st Street Booster Station

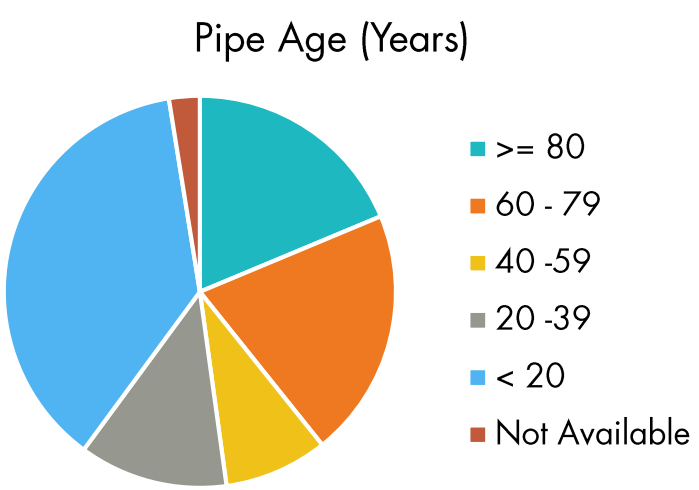
W-5: Belle Isle Booster Station

W-7: Terminal Island Booster Station

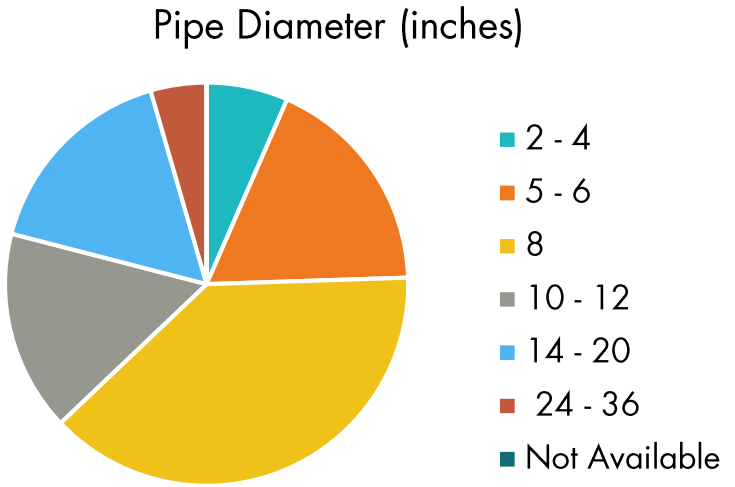
Water Distribution Network







Notes:
CIP = Cast Iron Pipe
DIP = Ductile Iron Pipe
GP = Galvanized Pipe
PVC = Polyvinyl Chloride Pipe



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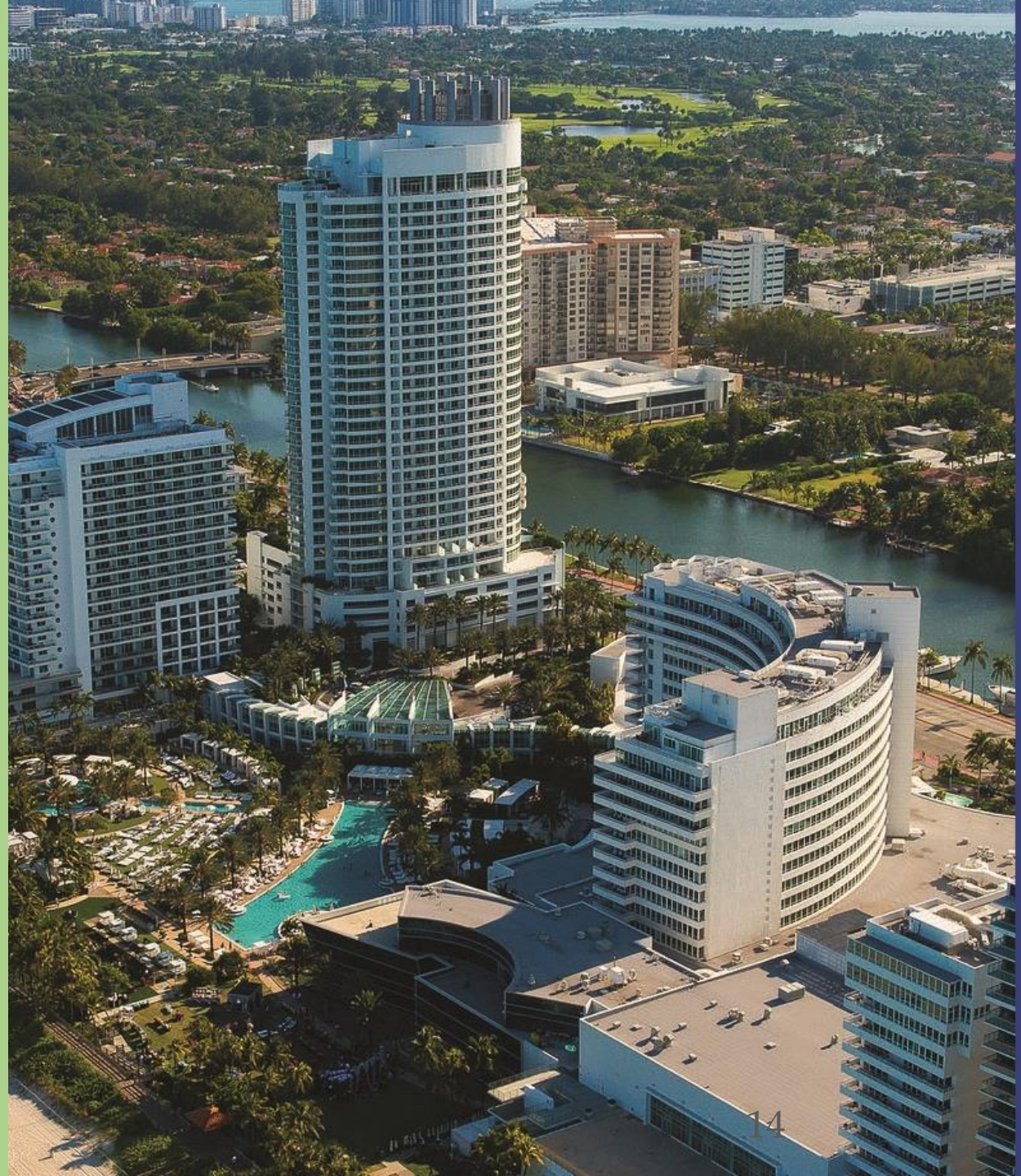
Water Distribution System Hydraulic Model



A dynamic computer model of the City's water system was created using Innovyze InfoWater

- Represents the components of the water system **starting at the points of connection with the MDWASD** system and the downstream pipe network
- **Developed using information from City's GIS database**, as-built records, pump curves, data collected during field visits, and other documentation provided by the City
- **Calibration** was conducted to obtain agreement between observed and model predicted flows

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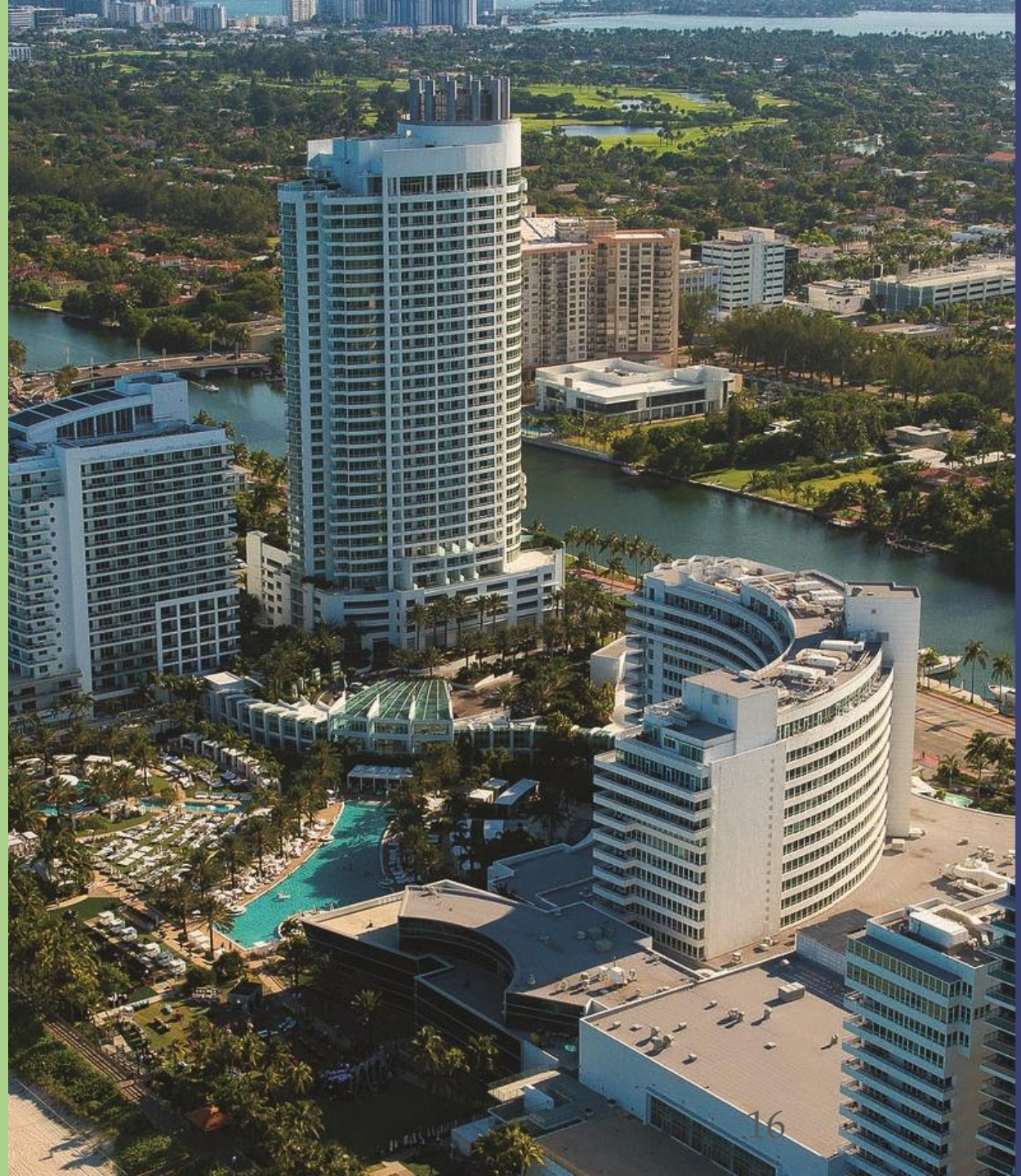
Water Supply System Evaluation



System evaluation conducted using the hydraulic model

Adequate Pressure

- During Maximum Day – Peak Hour Flows
- Pressures >= 35 psi

Fire Flow Adequacy

- Assessed based on land use
- Assessed large fire events in different parts of the network

Water Age Analysis

- Storage Tank Turnover
- System wide and localized water age evaluation

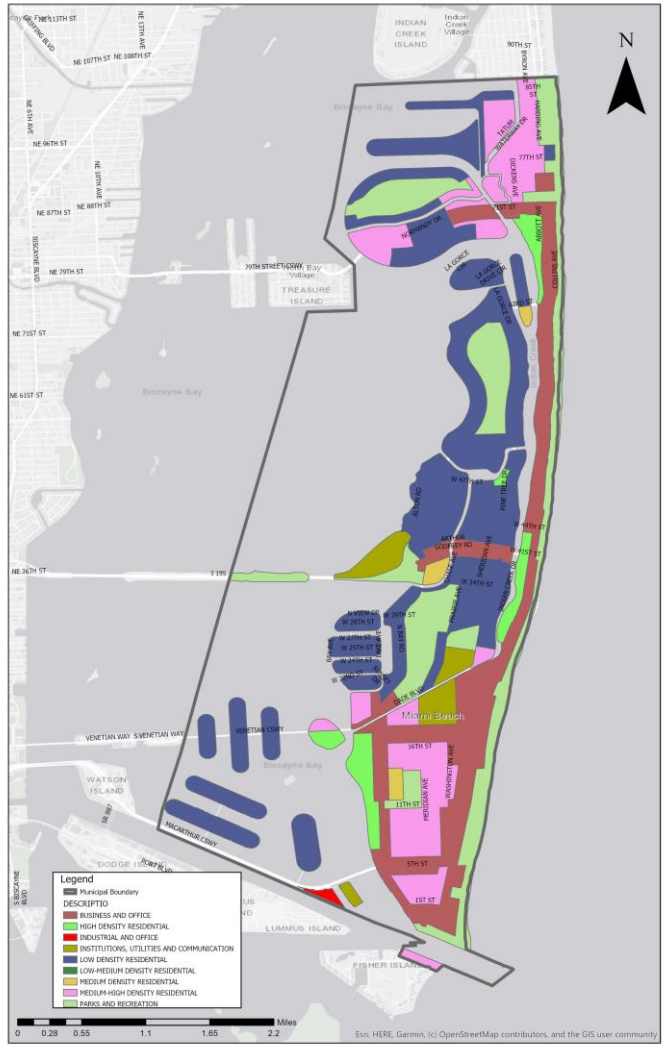
What-if Scenarios

- One of the 20" pipes from Terminal Island to the Beach offline
- Alternate supply from Byron Ave

The required water flow for fire suppression purposes from fire hydrants based on land use

Land Use Classification	Needed Fire Flow (gpm)
Business and Office	3,000
High Density Residential	3,000
Industrial and Office	3,000
Institutions, Utilities, and Communication	1,000
Low Density Residential	1,000
Low-Medium Density Residential	1,500
Medium Density Residential	2,000
Medium-High Density Residential	2,500
Parks and Recreation	750

A second step in evaluating fire flow availability was carried out evaluating the performance of the water system during large concentrated fire events at specific locations within the distribution system.



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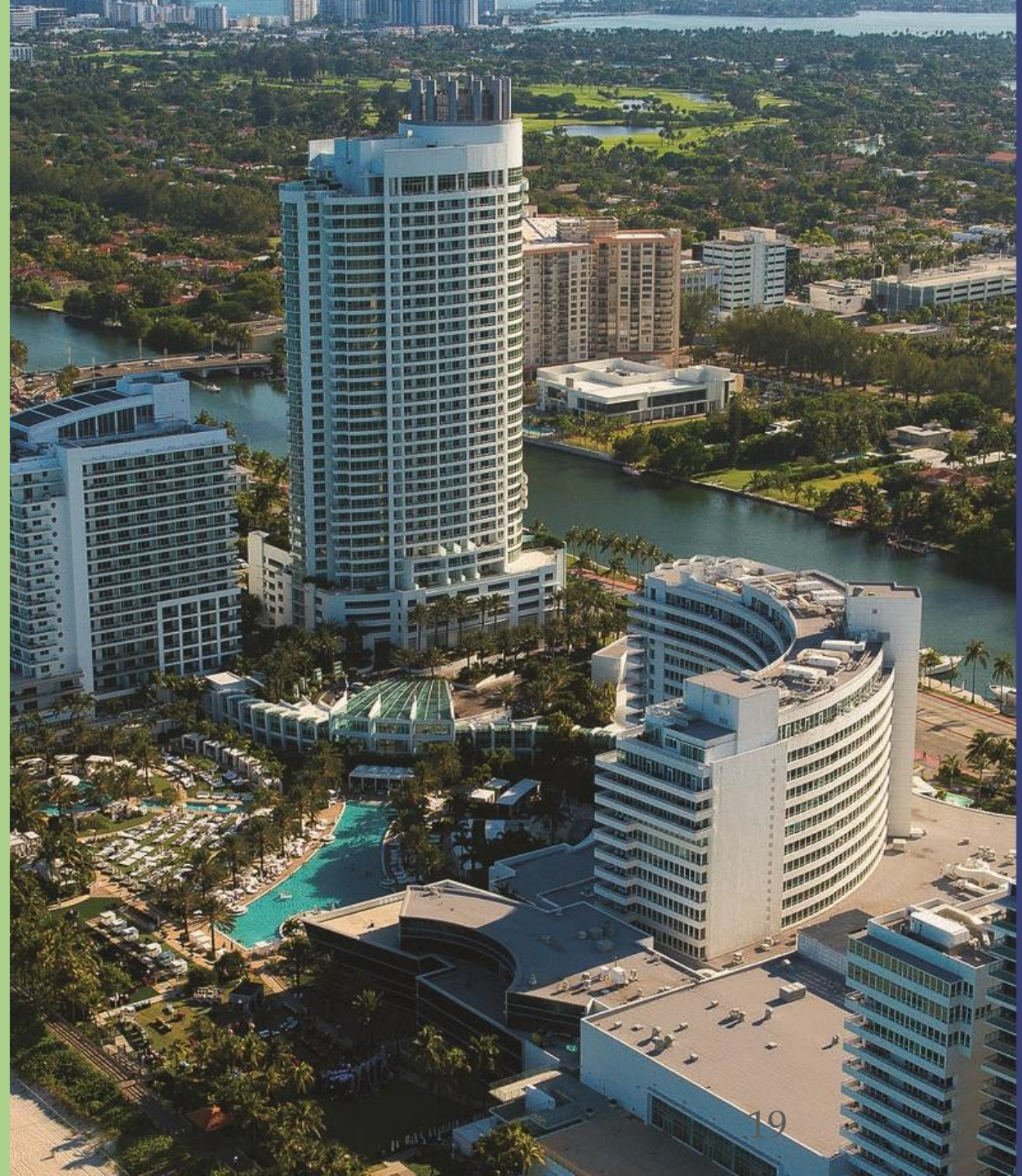
Risk Assessment and Renewal and Replacement (R&R) Projects for Water System Aboveground Assets



CIP Projects Identified as part of Condition Assessment of Water System Aboveground Assets

- Hazen performed a condition assessment of the major aboveground water and sewer assets
- Pump stations, storage tanks, and aerial crossings were evaluated
- Medium and high critically projects identified:
  - Two aerial crossing replacements: Venetian and MacArthur Causeway Aerial Crossings
  - Rehabilitation of six booster stations

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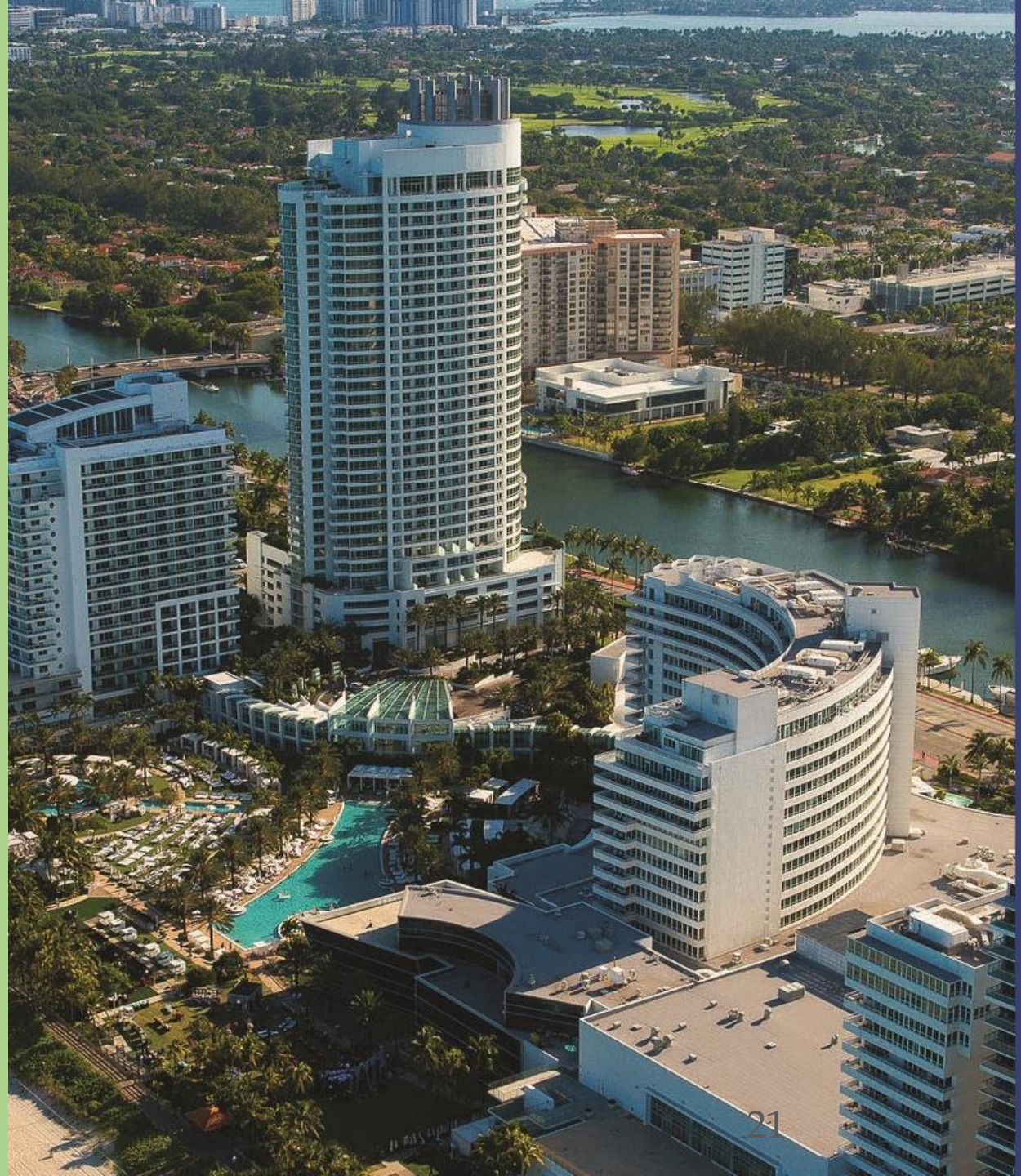
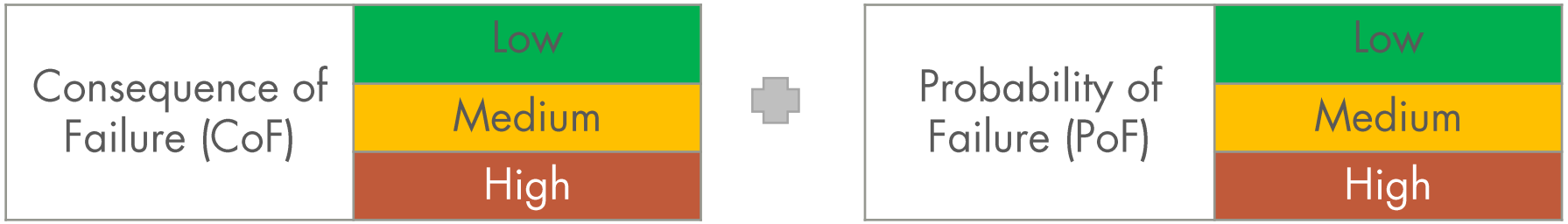
Risk Assessment and Renewal and Replacement (R&R) Projects for Water System Underground Assets



Risk Analysis Project Prioritization for Underground Assets

- R & R Project Prioritization was developed based on a Risk Analysis that combined Consequence of Failure (CoF) and Probability of Failure (PoF) to obtained a combined scored use to rank each project.
- Three levels (Low, Medium and High) were developed for CoF and PoF



CoF relates to factors such as the cost of repair, social/health impacts, and environmental impacts.

Consequence of Failure Criteria (Weight)	Range or Value	Score
Flow [a] (40%)	< 10 gpm	1
	10 – 50 gpm	2
	50 – 150 gpm	3
	150 – 500 gpm	4
	> 500 gpm	5
Land Use (40%)	Any other Land Use	1
	Business and Offices	5
Proximity to Major Roads (20%)	Other	1
	Collector Roads	2
	Federal / State Roads	3
	Divided Access / Major Roads	4
	Limited Access Roads	5

Note:
[a] 2019 DWF from hydraulic model.

A composite CoF was calculated for each water main segment based on the scores and relative weights presented in the table.

Consequence of Failure	Composite Score	Total Water Main Length (ft)
Low	< 1.8	452,190
Medium	1.8 – 2.6	198,200
High	> 2.6	323,640

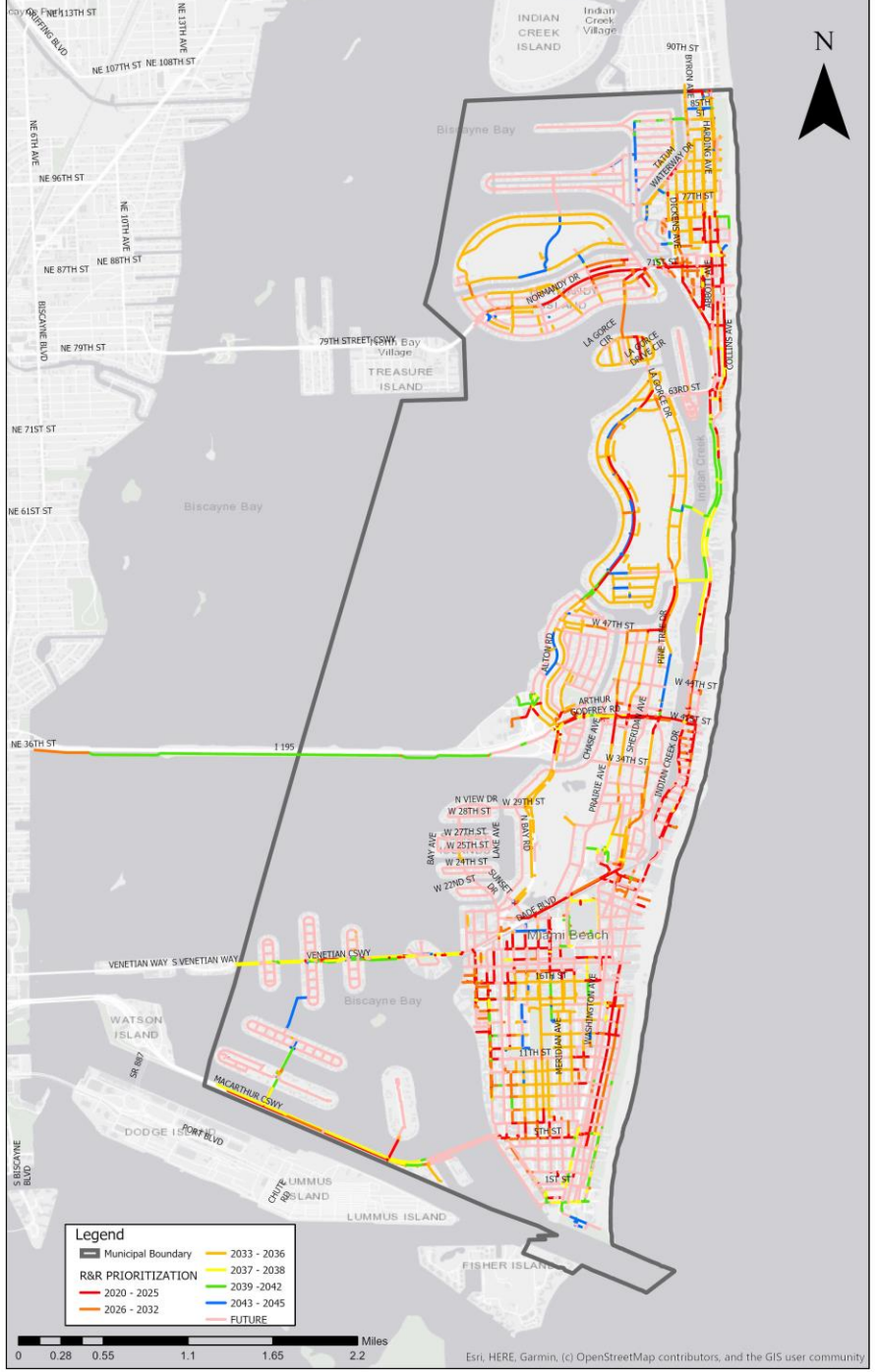
Water Mains' PoF and CoF ratings were combined in 3x3 matrix

Water Mains' Risk Matrix by Length (Feet)

Consequence of Failure (CoF)	Probability of Failure (PoF) Low	Medium	High
High	158,770 (16%)	46,780 (5%)	118,090 (12%)
Medium	82,230 (8%)	42,780 (4%)	73,190 (8%)
Low	222,190 (23%)	28,170 (3%)	201,830 (21%)

Recommended Replacement Timeframe

Consequence of Failure (CoF)	Probability of Failure (PoF) Low	Medium	High
High	Future	2037-2038	2020-2025
Medium	Future	2039-2042	2026-2032
Low	Future	2043-2044	2033-2036



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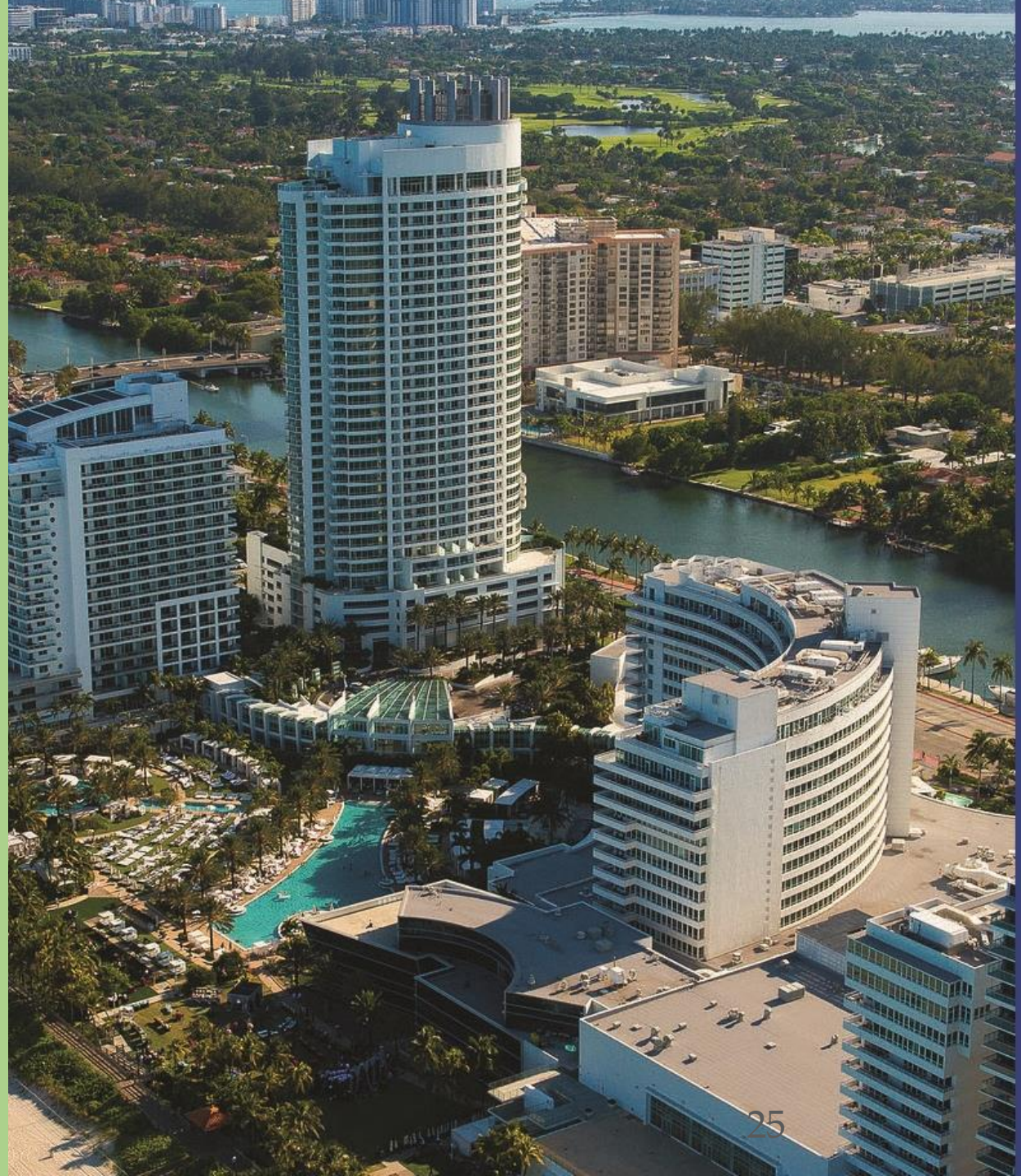
Water System Capital Improvement Program



Identified Water System Improvements Based on Evaluation of the Distribution System

49 CIP Projects Identified

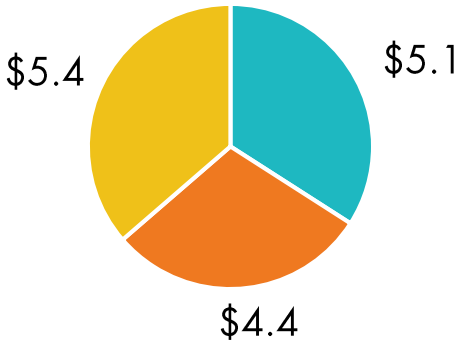
18 Capacity Based Improvements Identified (including improvements for fire flow)

31 R&R Based Improvements Identified

Total CIP Cost Through 2045 = **$167 M**

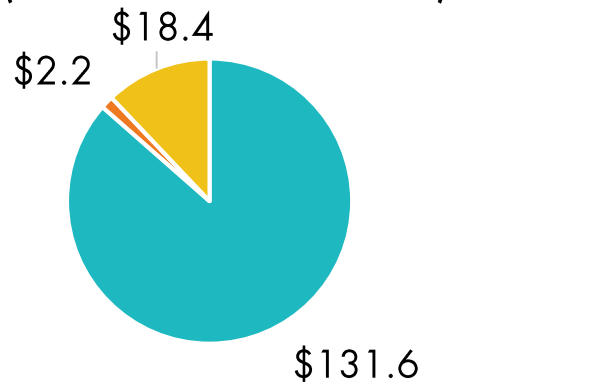
Capacity Based Improvement Projects

(Total Cost = $ 15 M)



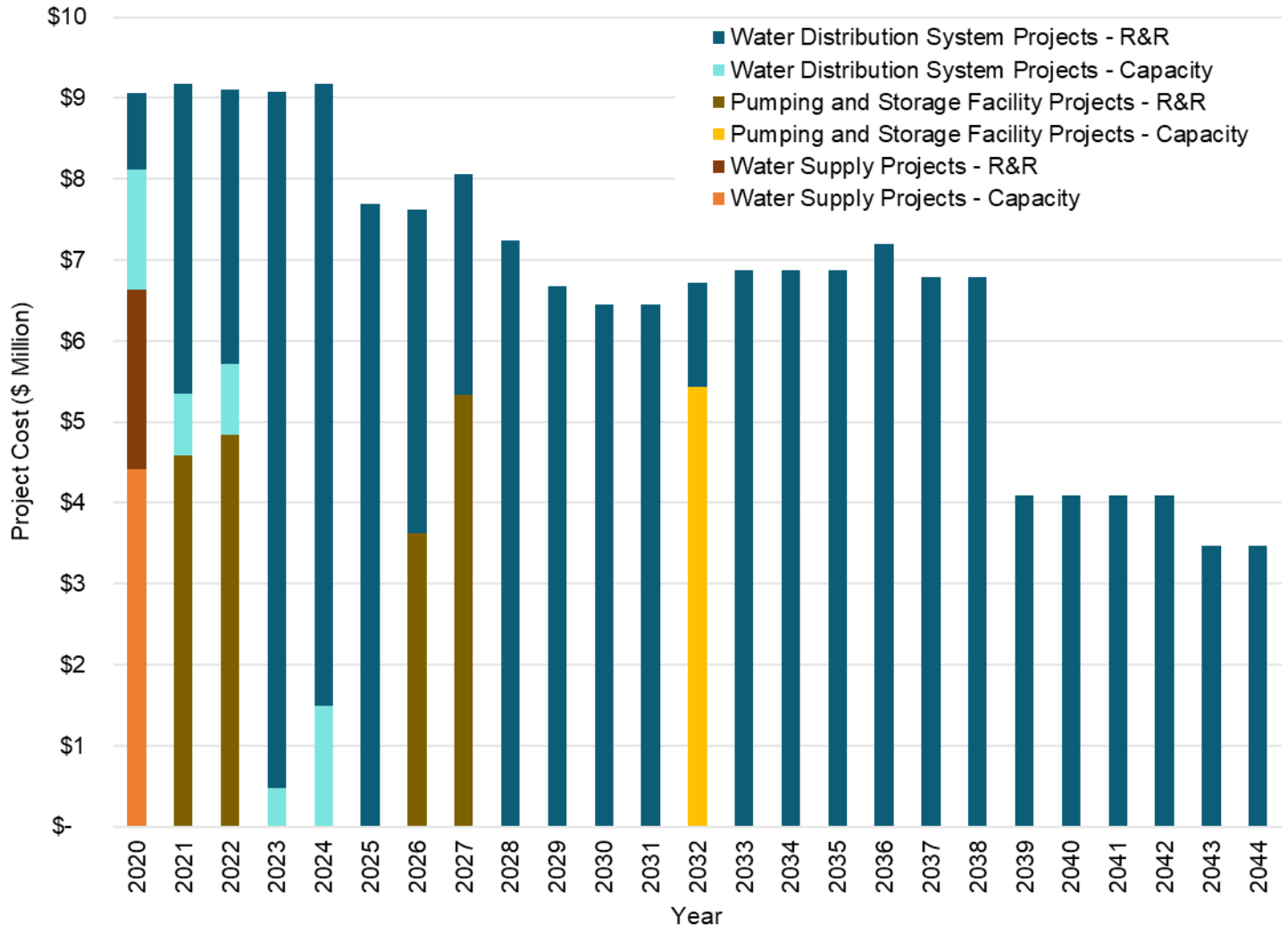
R&R Based Improvement Projects

(Total Cost = $ 152 M)



The total cost of the recommended projects in the Water Master Plan is $167 million (2018 dollars):

Water System CIP
$167M



Sewer System Master Plan

September 25, 2019

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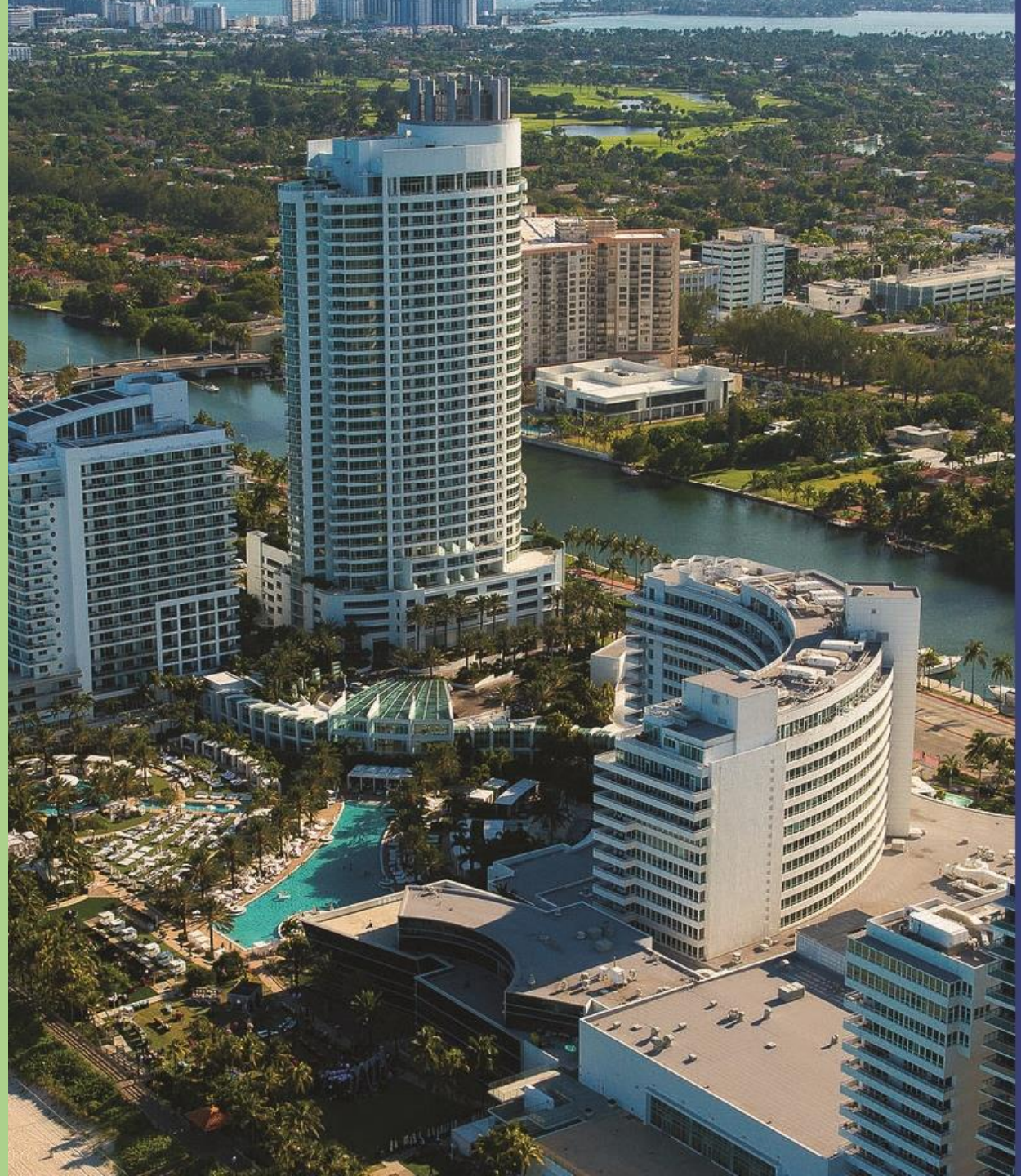
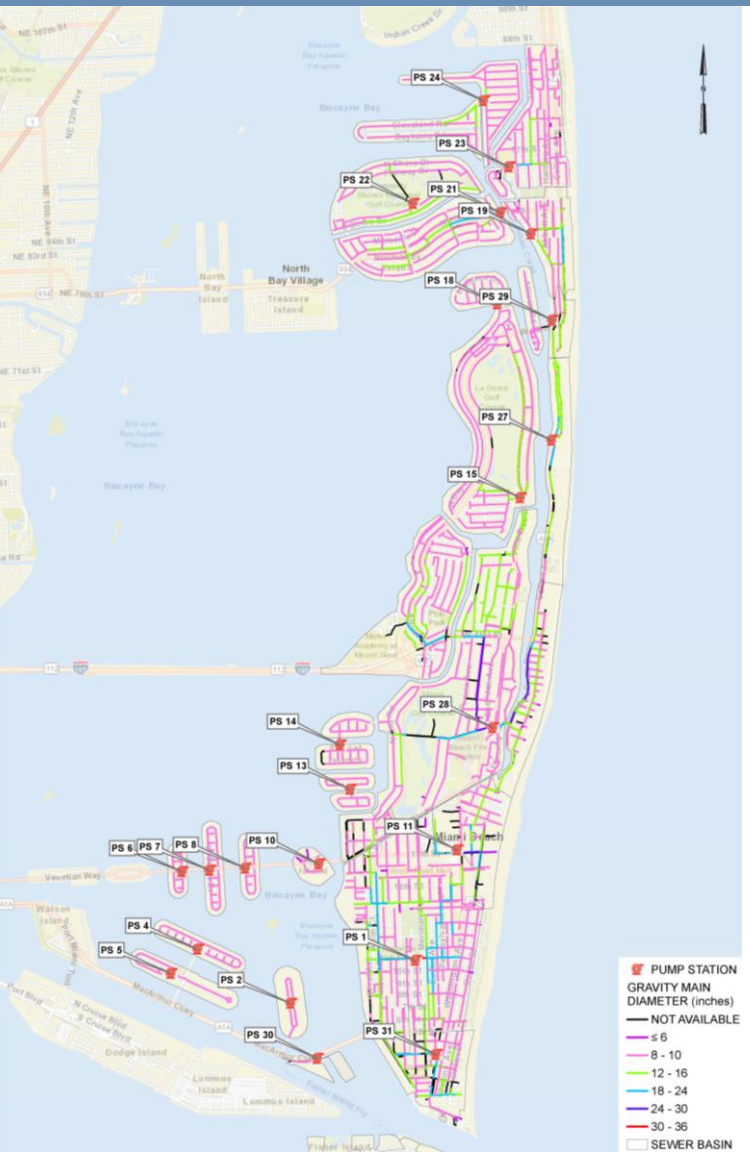
Summary of Existing Sewer System



Existing Sewer Collection and Transmission System



3,100 manholes

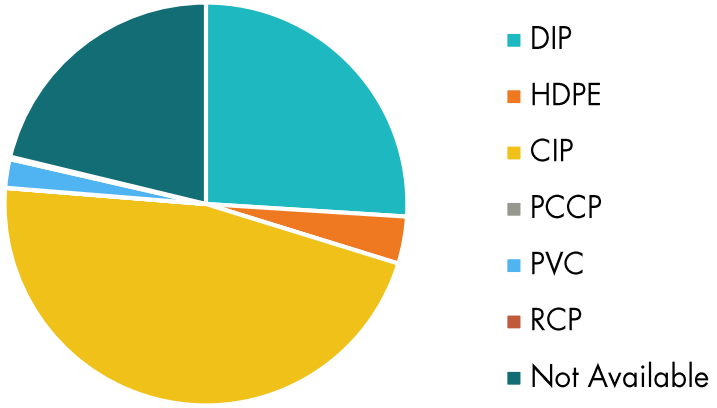
117 miles gravity sewer mains

24 miles active force mains

23 pump station service areas (basins)

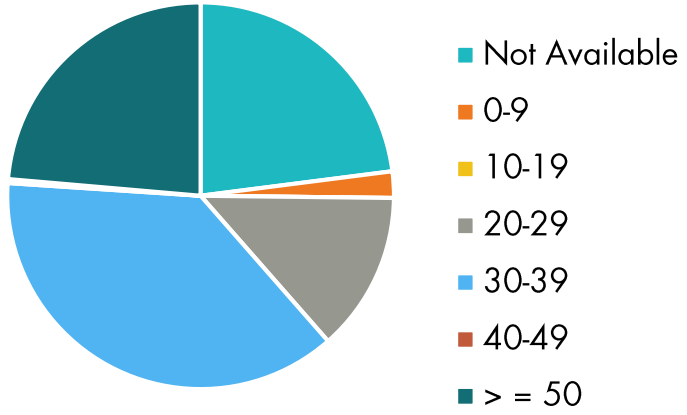
Sewer Force Main Network

Pipe Material

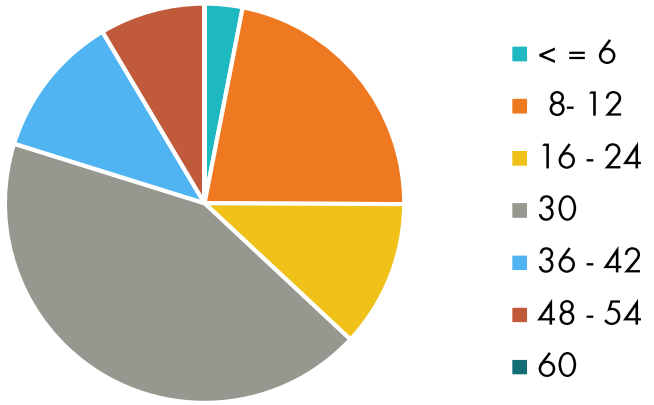


Notes:
CIP = Cast Iron Pipe
DIP = Ductile Iron Pipe
HDPE = high-density polyethylene
PCCP = Prestressed Concrete Cylinder Pipe
PVC = Polyvinyl Chloride Pipe
RCP = reinforced concrete pipe

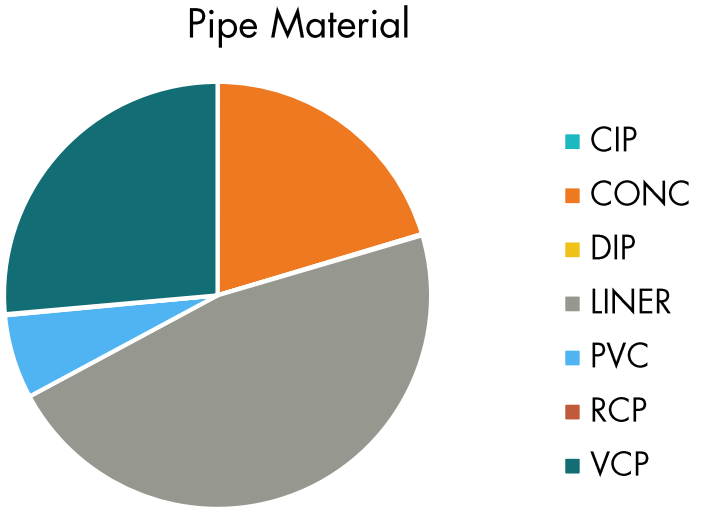
Pipe Age (years)

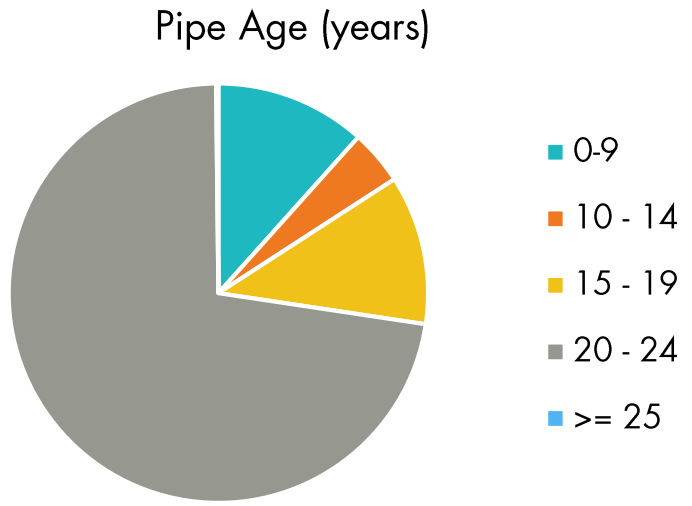


Pipe Diameter (inches)

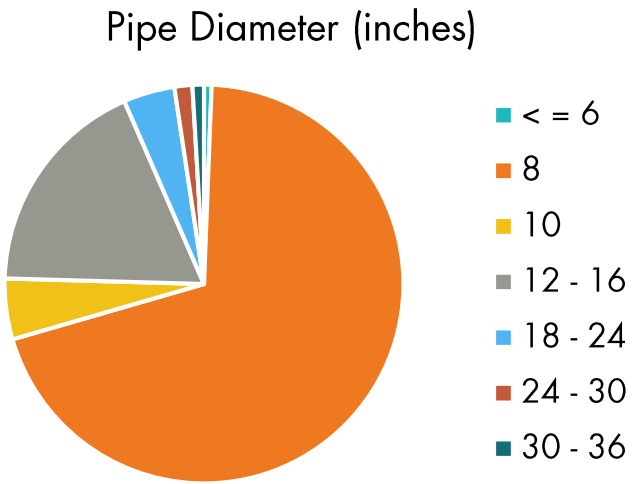


Sewer Gravity Main Network





Notes:
CIP = Cast Iron Pipe
CONC = Concrete
DIP = Ductile Iron Pipe
PVC = Polyvinyl Chloride Pipe
RCP = Reinforced Concrete Pipe
VCP = Vitrified Clay Pipe



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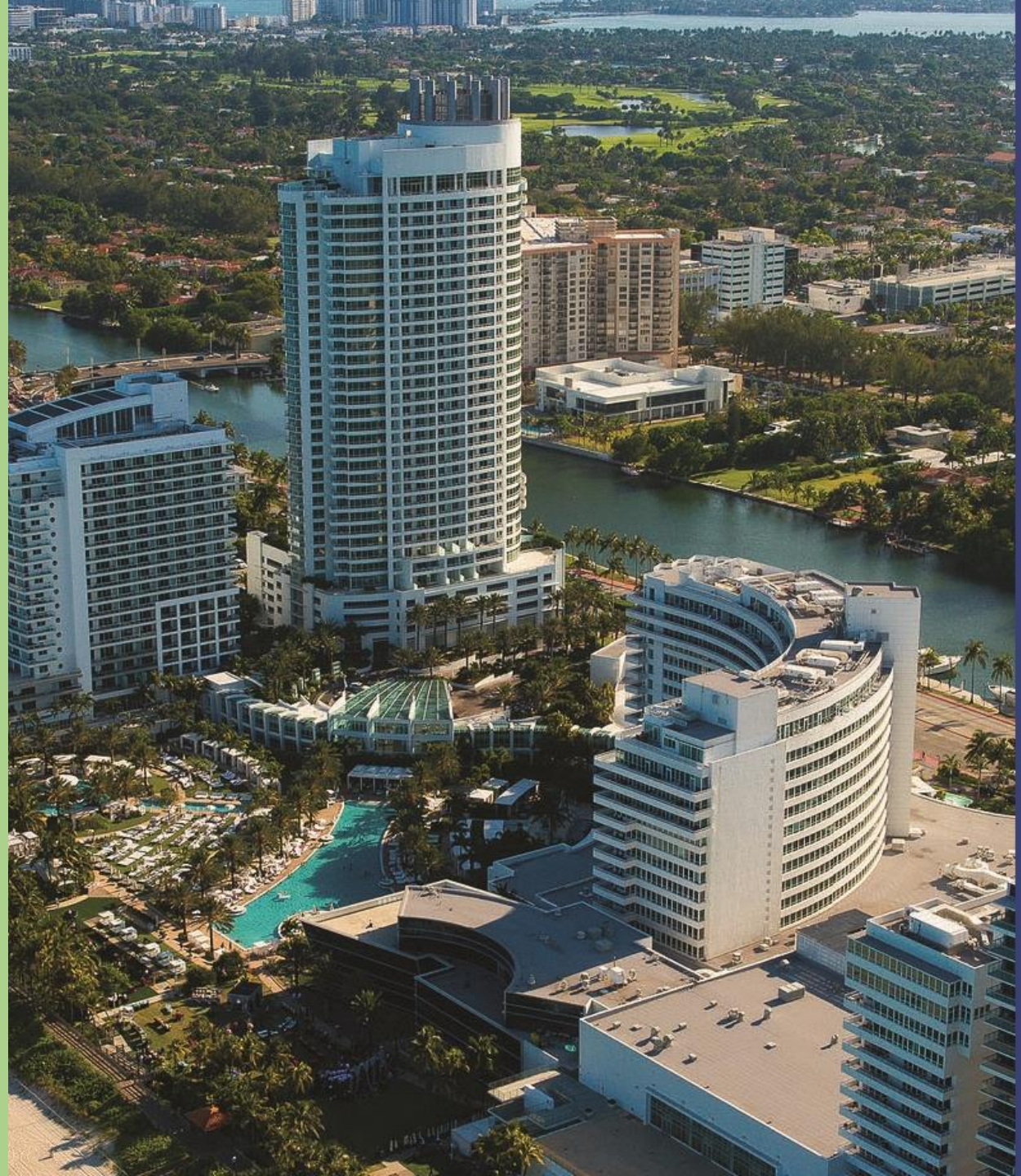
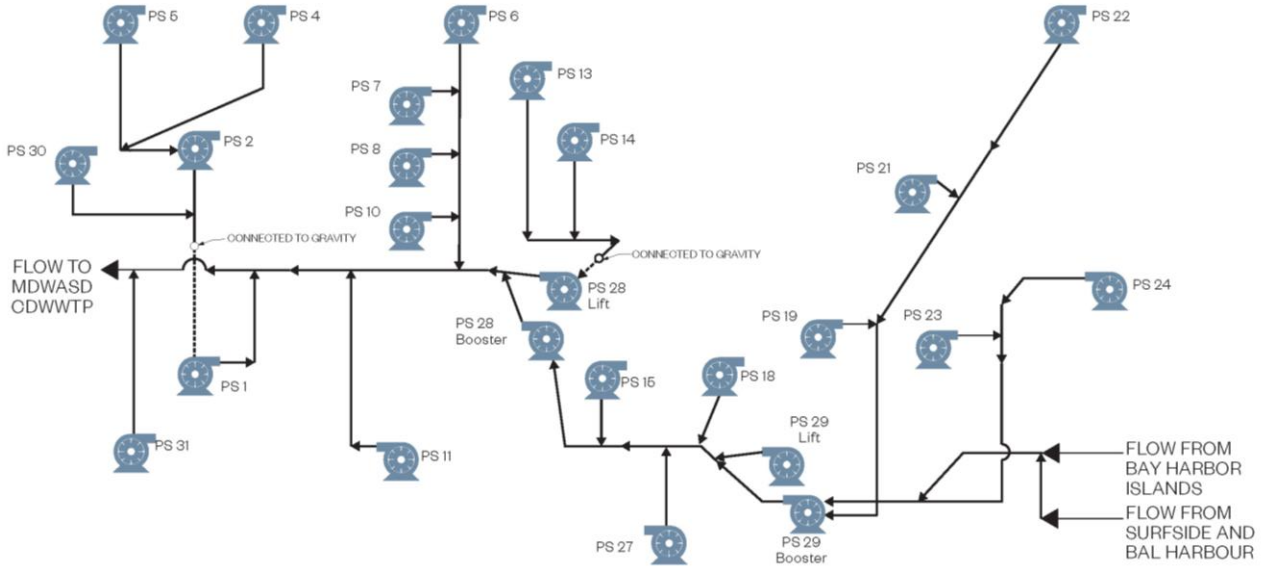
Force Main Hydraulic Model



Hydraulic Model (InfoWorks ICM)

The hydraulic model was used to perform extended period simulations to predict the following:

- Sanitary flow through all infrastructure components in network
- Hydraulic pressures at any point in the force main system
- Pumping capacity of each pump station
- Pumping capacity with standby pump out of service
- Pump station operating wet well levels
- Likelihood and location of SSOs



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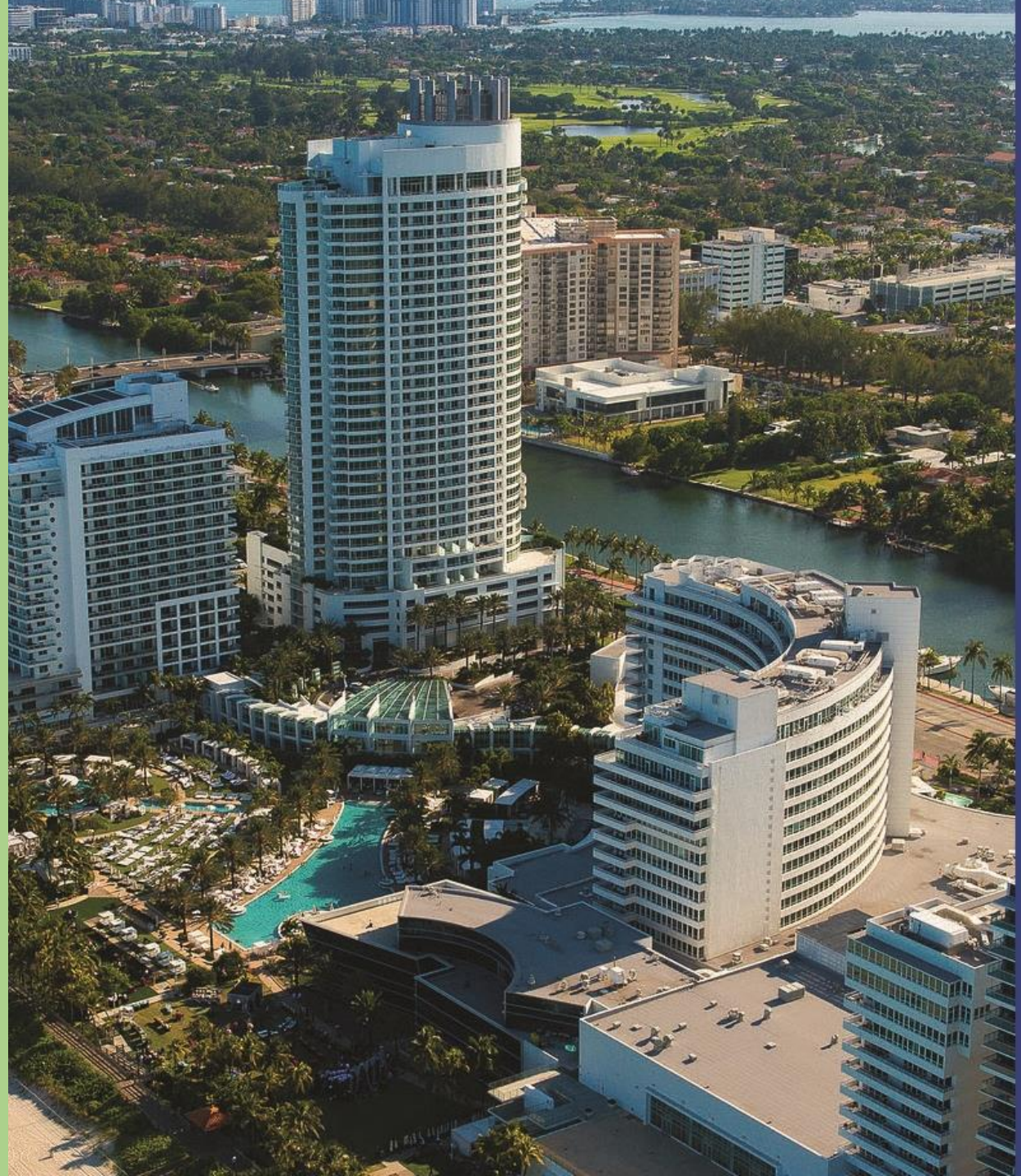
Evaluation of Sewer System Improvement Needs



Force Mains / Transmission - Capacity Based Improvement Projects

Recommended Capacity Improvement Projects		
ID	**Project Name**	**Timeframe**
4	Pump Station 2 parallel force main	2020 - 2024
5	Pump Station 4 parallel force main	2020 - 2024
6	Pump Stations 4 and 5 parallel force main	2020 - 2024
7	Pump Station 14 parallel force main	2020 - 2024
8	Pump Station 18 parallel force main	2020 - 2024
9	Pump Station 23 parallel force main	2020 - 2024
10	Pump Station 27 parallel force main	2020 - 2024
11	North Beach parallel force main and interconnect	2030-2034
12	Pump Stations 6, 7, and 8 flow rerouting	2020 - 2024

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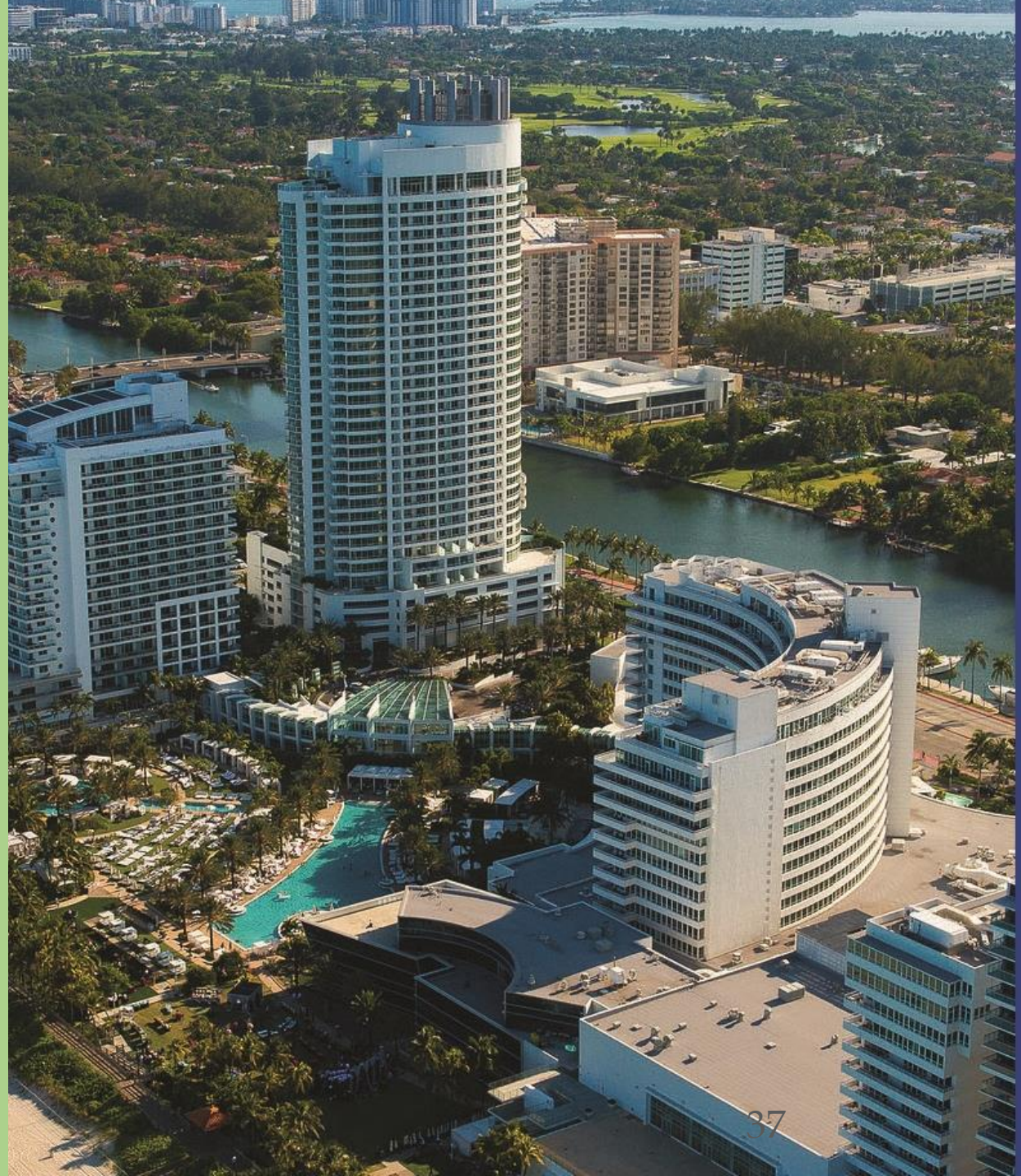
Risk Assessment and Renewal and Replacement (R&R) Projects for Sewer Aboveground Assets



CIP Projects Identified as part of Condition Assessment of Sewer System Aboveground Assets

The *Water and Sewer Renewal and Replacement Report* (Hazen, 2018) evaluated the aboveground assets (pump stations and aerial crossings) based on criticality

- Six (6) High Criticality Projects identified
- Eight (8) Medium Criticality Projects identified

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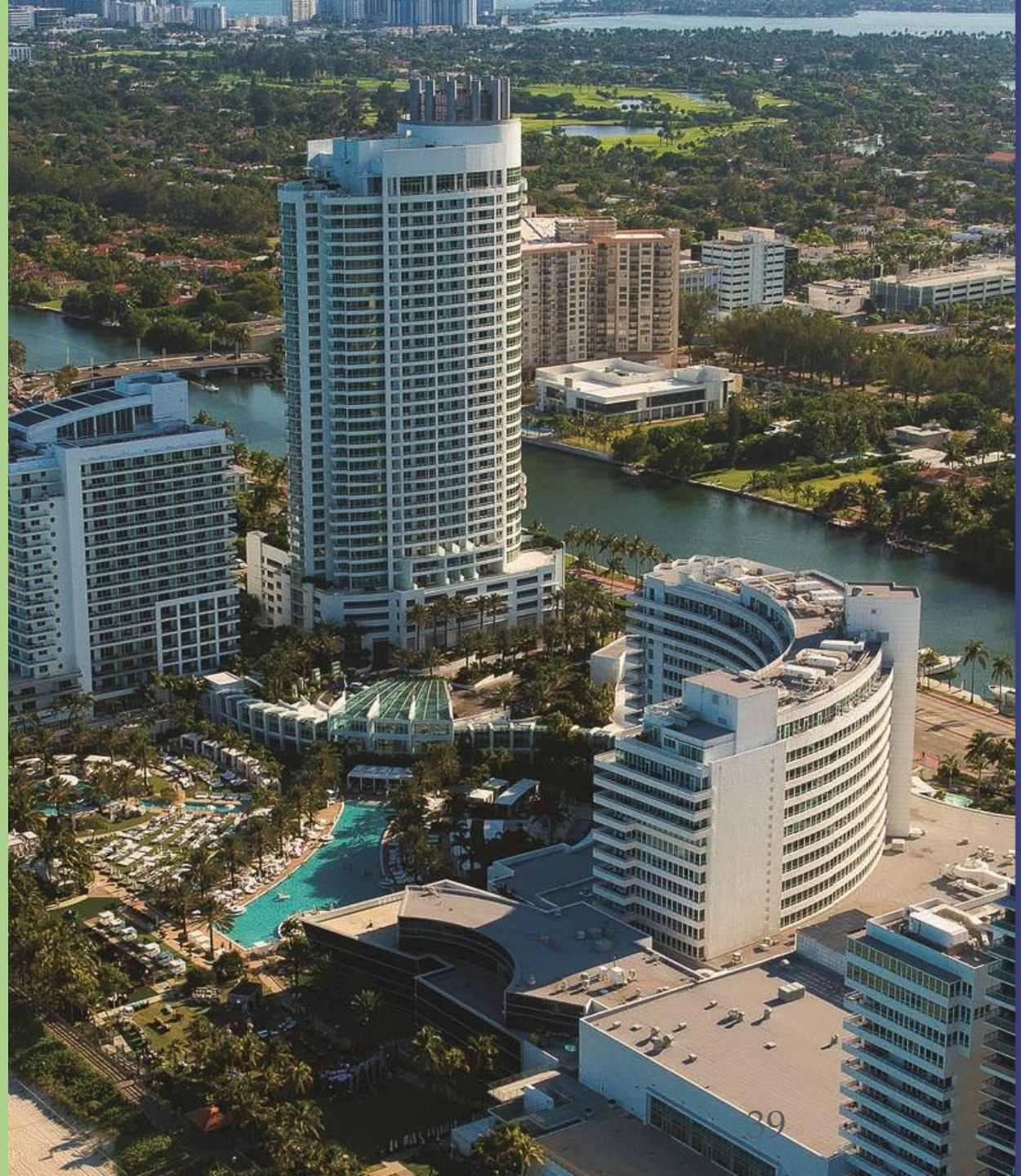
Risk Assessment and Renewal and Replacement (R&R) Projects for Sewer Underground Assets



Gravity Collection System Improvements Prioritization

a) Basins selected based on GPDIM

+

b) Basins selected based on RUL

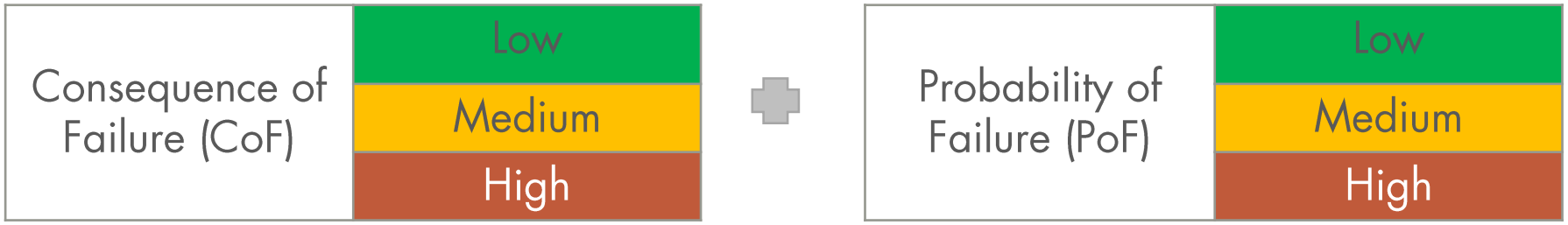
=

c) Basins selected for I/I improvements in the Master Plan

- The Collection System was evaluated using GIS and historical flow data available.
- Basins selected based on Gallons per Day per Inch-Mile (GPDIM) greater than 5,000 were combined with basins selected based on the remaining useful life (RUL) to obtain the recommended basin prioritization in the Master Plan.

Evaluation of Sewer Underground Assets - Risk Analysis Project Prioritization

- R & R Project Prioritization was developed based on a Risk Analysis that combined Consequence of Failure (CoF) and Probability of Failure (PoF) to obtained a combined scored use to rank each project.
- Three levels (Low, Medium and High) were developed for CoF and PoF



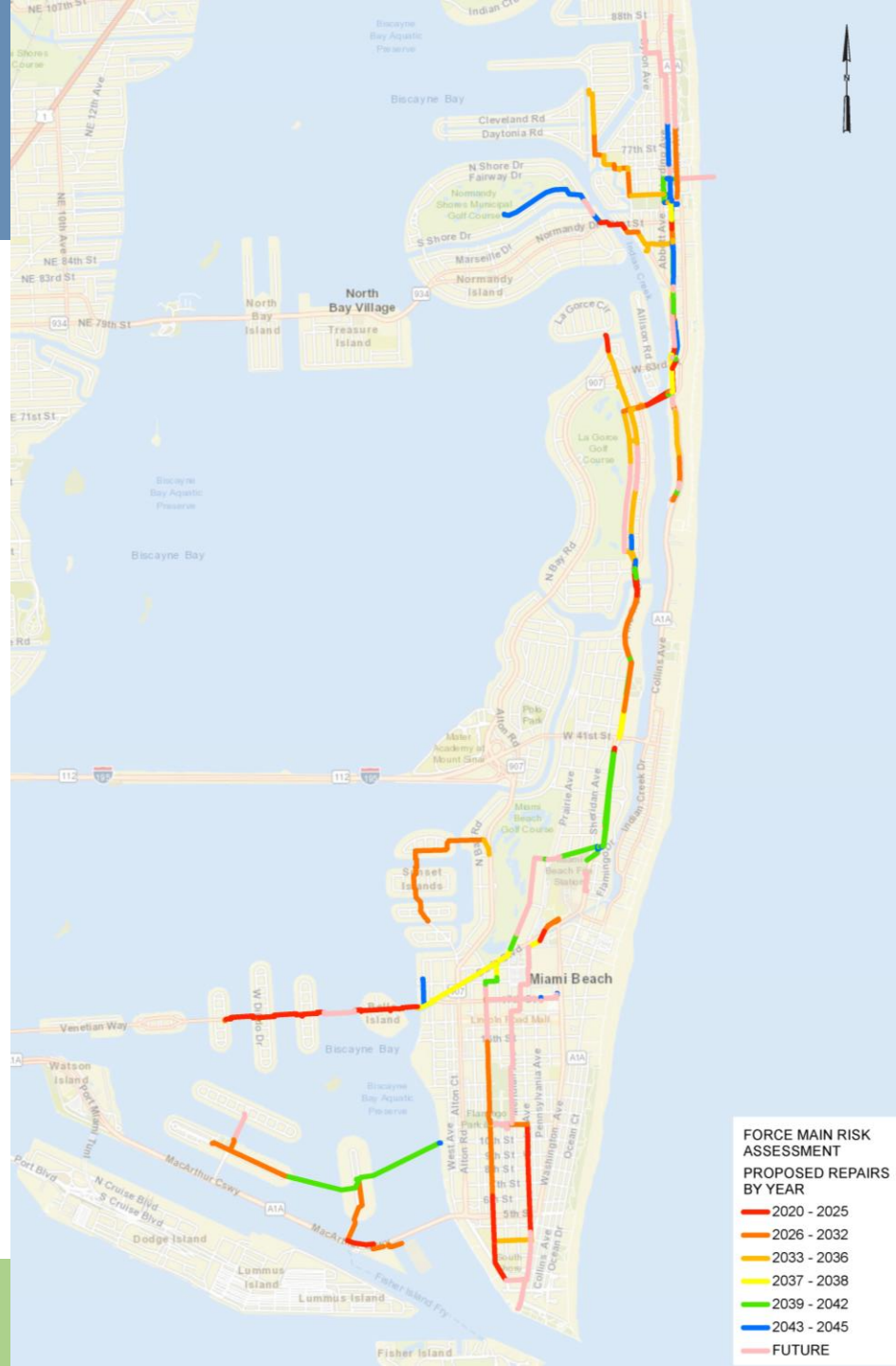
Force Mains' PoF and CoF ratings were combined in 3x3 matrix

Force Mains' Risk Matrix by Length (Feet)

Consequence of Failure (CoF)	Probability of Failure (PoF): Low	Medium	High
High	5,000 (4%)	10,000 (8%)	18,000 (14%)
Medium	12,000 (10%)	18,000 (14%)	28,000 (22%)
Low	10,000 (8%)	9,000 (7%)	16,000 (13%)

Recommended Replacement Timeframe

Consequence of Failure (CoF)	Probability of Failure (PoF): Low	Medium	High
High	Future	2037-2038	2020-2025
Medium	Future	2039-2042	2026-2032
Low	Future	2043-2044	2033-2036



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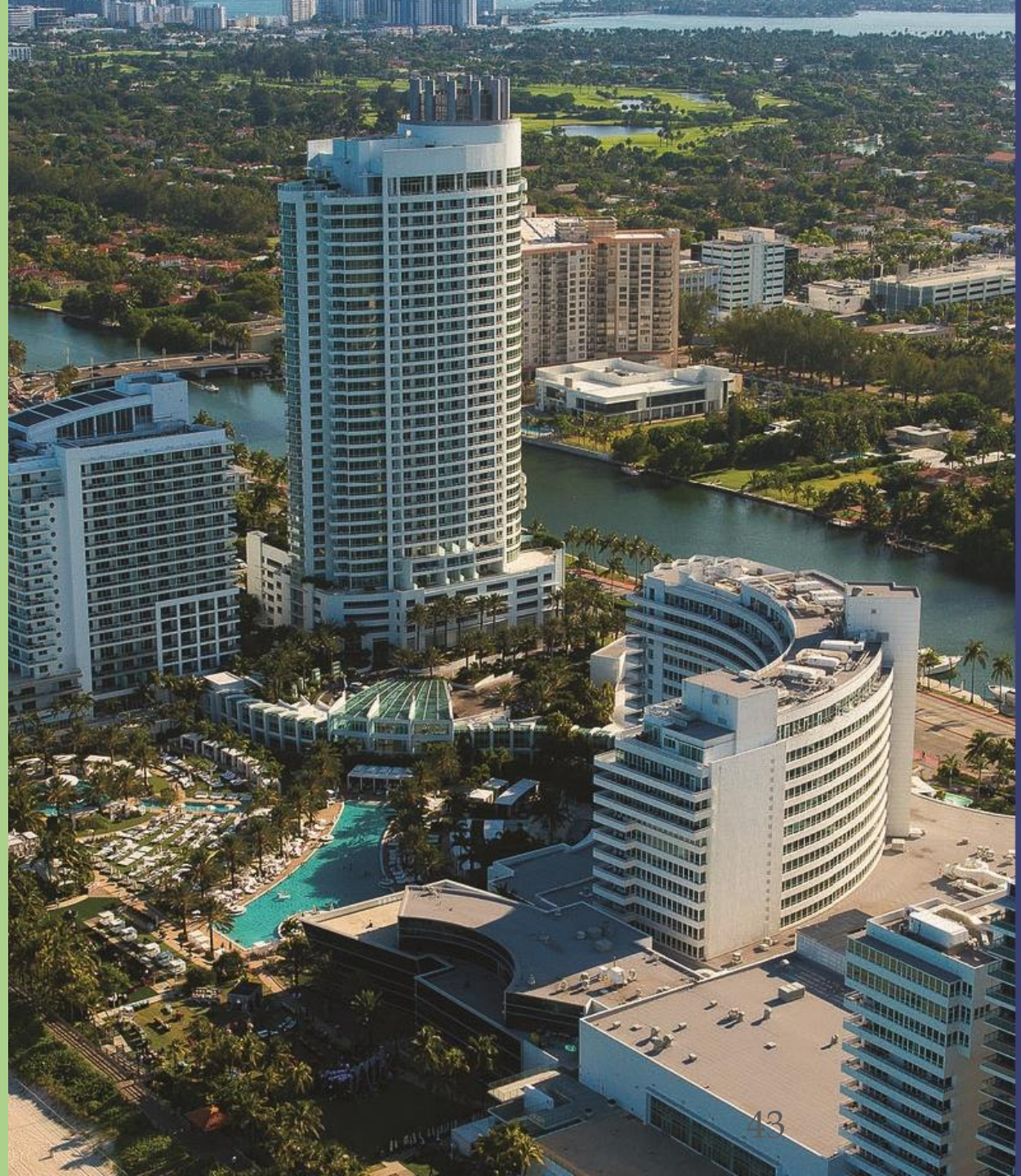
Sewer System Capital Improvement Program



43

Summary of Sewer System Recommended Improvements

64 CIP Projects Identified

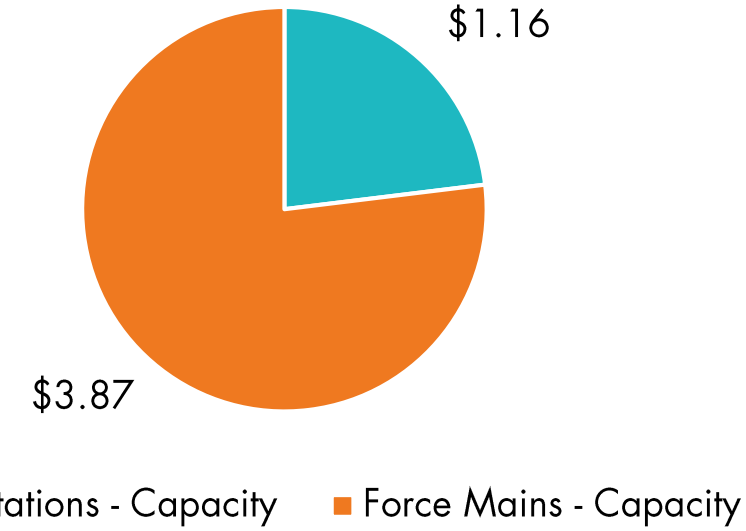
9 Capacity Based Improvements Identified

55 R&R Based Improvements Identified

Total CIP Cost Through 2045 = **$116 M**

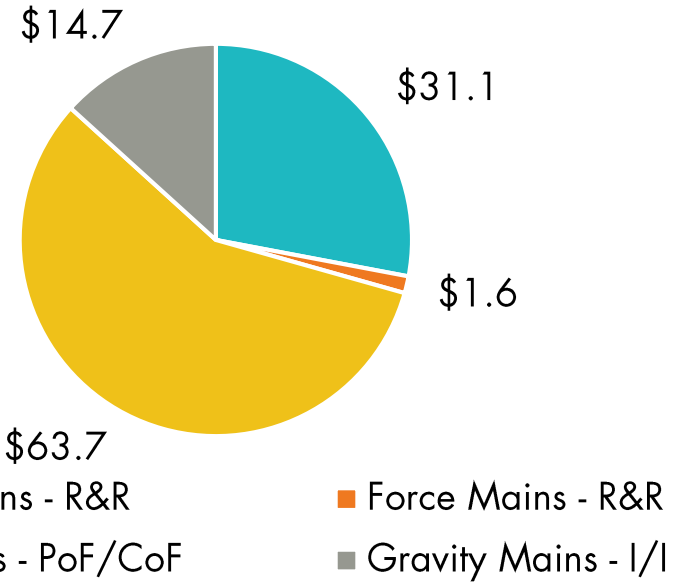
Capacity Based Improvements

(Total Costs = $5 M)



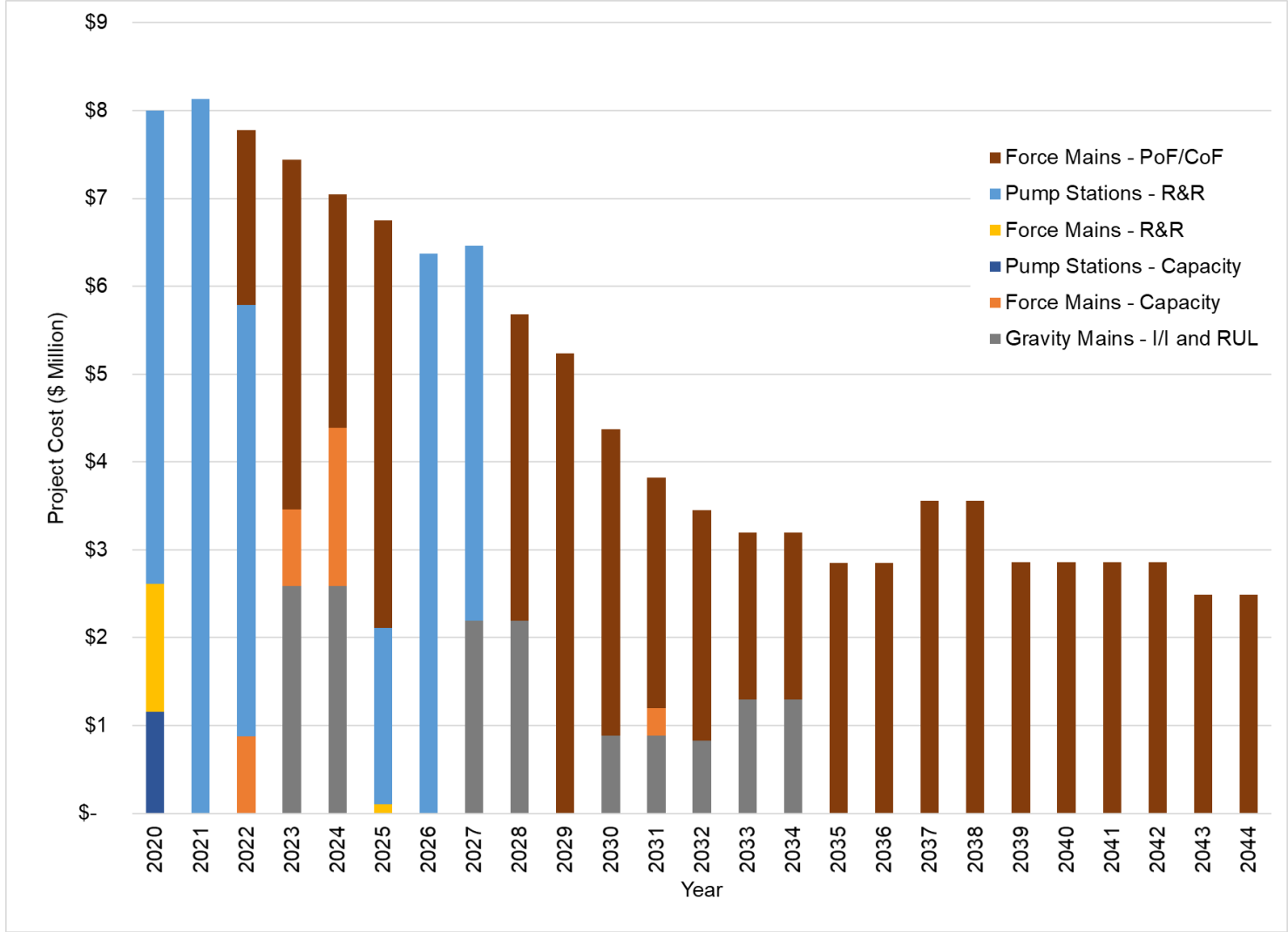
R&R Based Improvement Projects

(Total Costs = $ 111.1 M)



The total cost of the Sewer System recommended projects in the Master Plan is $116 million (2018 dollars):

Sewer System CIP
$116M



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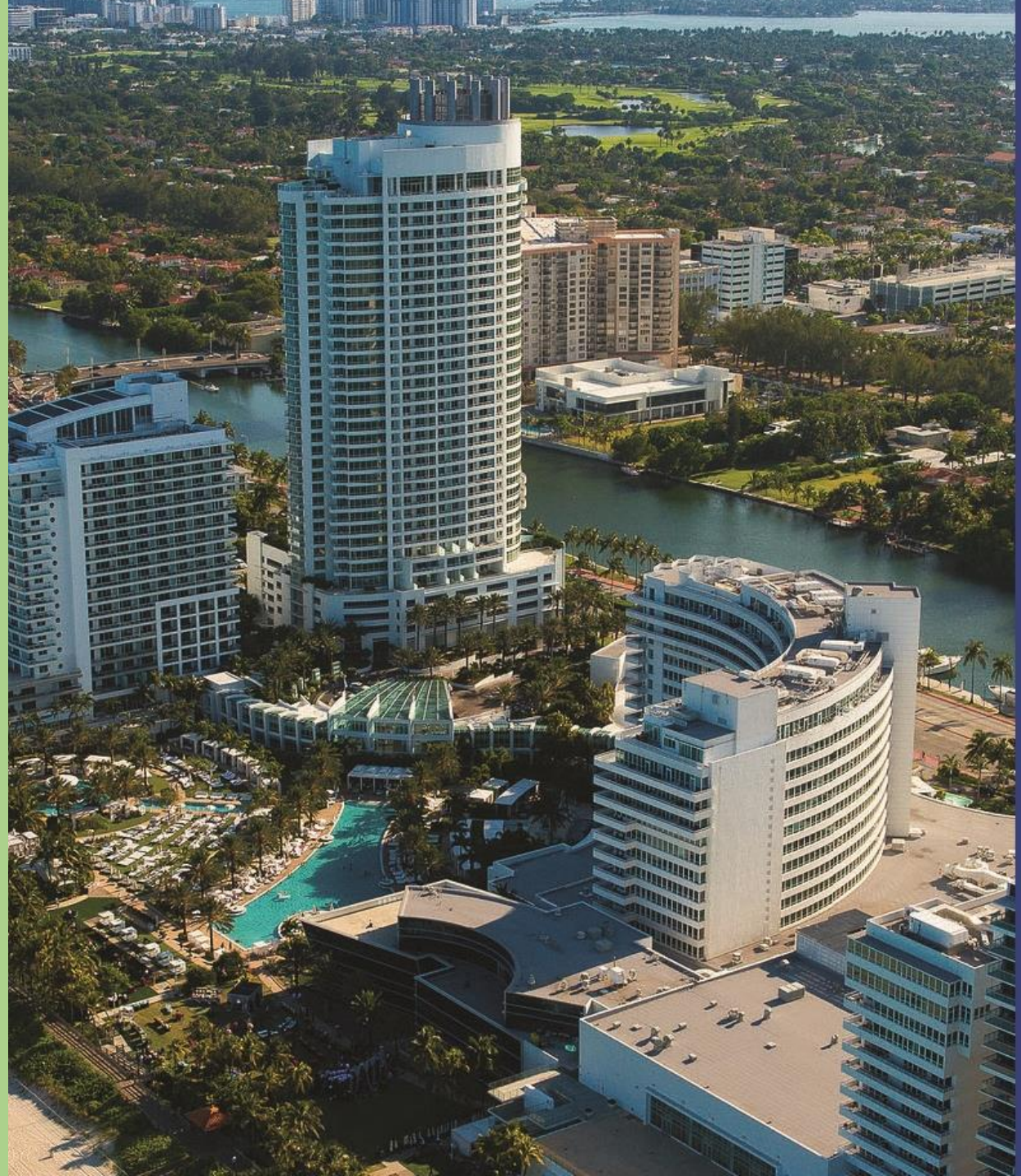
Questions/Comments



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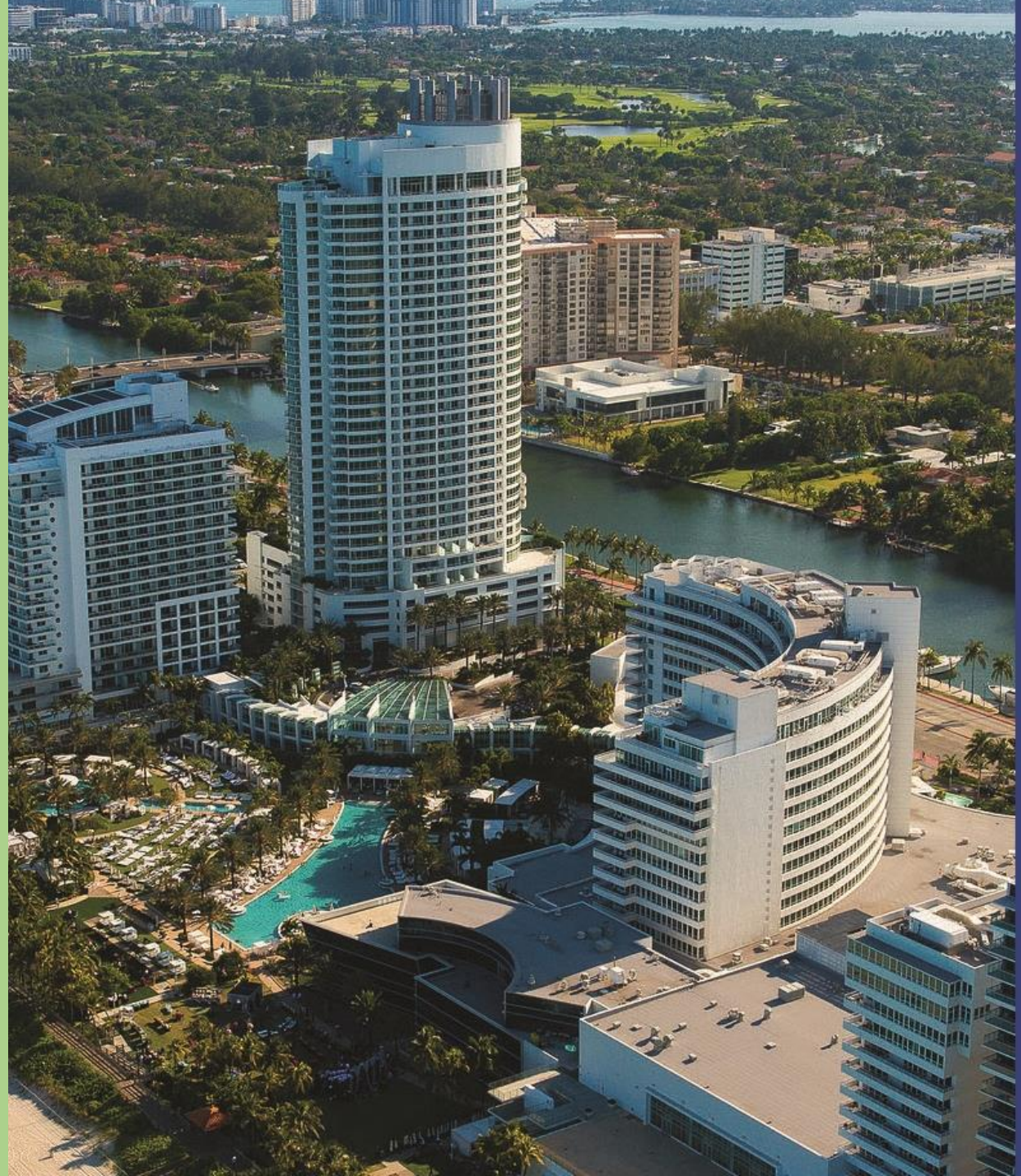
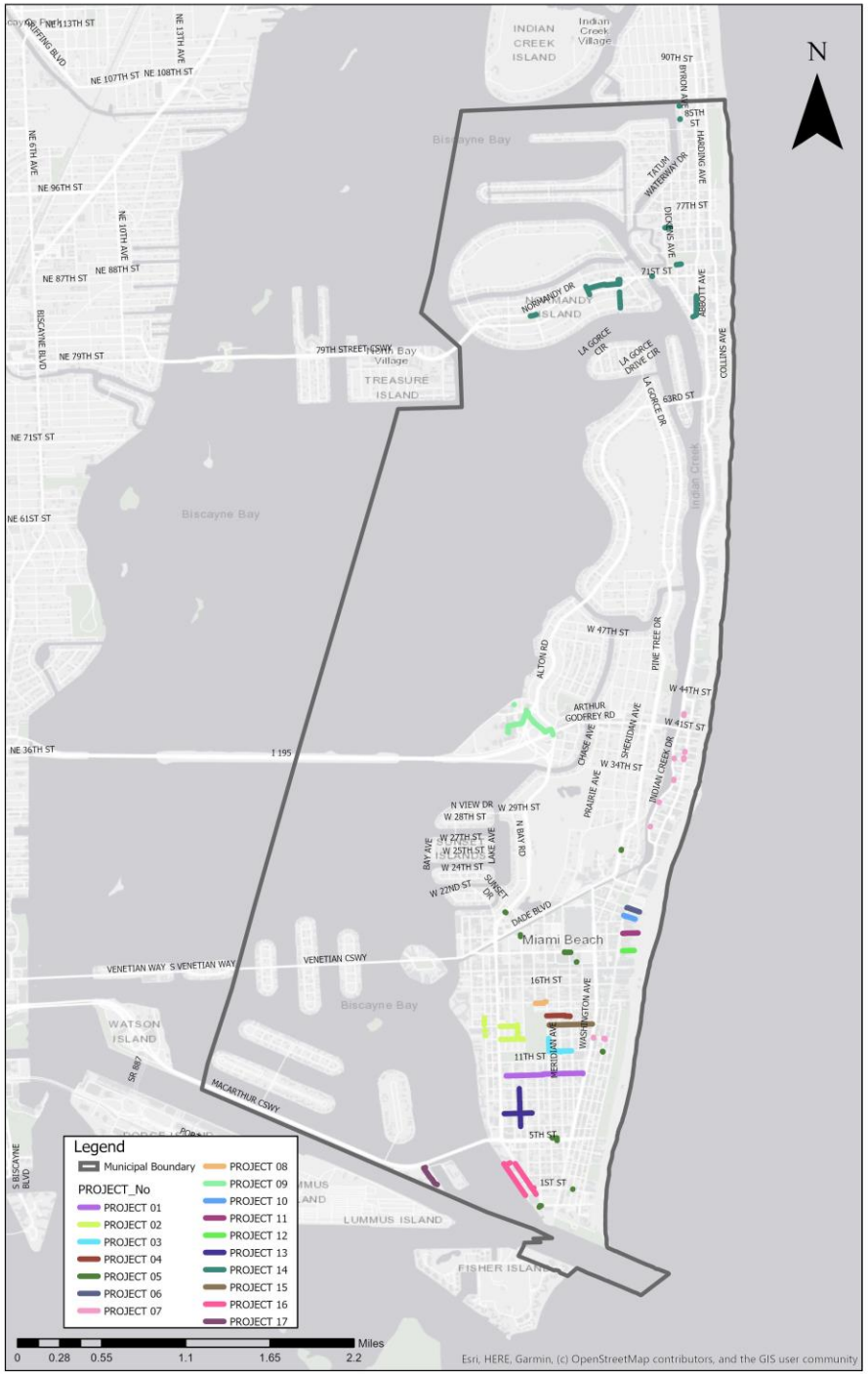
Bullpen



Water System Improvements



MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability and Resiliency Committee

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **SUSTAINABILITY COMMITTEE**

RESPONSIBLE DEPARTMENT

Dave Doebler, Committee Chair

ANALYSIS

VERBAL REPORT AT COMMITTEE MEETING.

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
No	

ATTACHMENTS:

Description	Type
No Attachments Available	

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION ON ARTIFICAL REEFS**

RESPONSIBLE DEPARTMENT

Environment and Sustainability

LEGISLATIVE TRACKING

Item C4 AI - May 16, 2018 Commission Meeting

SPONSORED

Commissioner Arriola

ANALYSIS

MEMO ATTACHED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	Yes

ATTACHMENTS:

Description	Type
Artifical Reefs Memo	Memo
Attachment A: Progress Report	Memo
Attachment B: ULINK Fact Sheet	Memo
Attachment C: Field Deployment of Coral-Breakwater Hybrid Reef	Memo

MIAMIBEACH

City of Miami Beach, 1700 Convention Center Drive, Miami Beach, Florida 33139, www.miamibeachfl.gov

COMMITTEE MEMORANDUM

TO: Sustainability and Resiliency Committee

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION ON ARTIFICIAL REEFS**

BACKGROUND

At the City Commission meeting on May 16, 2018, the Mayor and City Commission referred a discussion to the Sustainability and Resiliency Committee (SRC) on artificial reefs. The item was sponsored by Commissioner Ricky Arriola. At the SRC meeting on November 28, 2018, the University of Miami's Laboratory for Integrative Knowledge (ULINK) Coastal Resilience Team presented a partnership project with the City of Miami Beach to develop and test coastal resilience strategies that combine grey and green infrastructures to reduce the vulnerability of coastal communities.

The project was divided into two phases:

- Phase 1: Develop and test restoration strategies that combine gray (cement-based) and green (nature-based) defenses to protect our coast. Status: Completed (Attachment A – progress report).
- Phase 2: Complete a vulnerability and physical modeling to move the project into implementation and deployment. Status: in progress.

The researchers will use the knowledge gained to design plans for an artificial reef deployment in Miami Beach and implement a communications strategy to inform stakeholders on the benefits of nature-based coastal protection strategies for coastal resilience (Attachment B). The second phase of the project will be fundamental to apply lessons learned for the large-scale funding needed to deploy an artificial reef to enhance coastal resilience at meaningful scales.

ANALYSIS

City staff has been working with the ULINK Coastal Resilience team in order to implement the second phase of this project. City staff, ULINK Coastal Resilience, Miami-Dade County's Regulatory and Economic Resources (RER) and the U.S. Army Corps of Engineers (USACE) teams have discussed the development and implementation of a pilot project that looks at artificial reefs and natural reefs restoration in Miami Beach to reduce storm surge risk. The pilot will test the performance of coral fragments mounted onto modules under natural conditions and then, coral survivorship and growth will be monitored at pilot sites (Attachment C).

The ULINK Coastal Resilience team used their one-of-a-kind wave tank at the SUSTAIN lab to test different man-made reef designs (including different berm heights and shapes, as well as different coral species, sizes) under simulated storm wind and wave conditions in order to determine the best structures to be placed during the pilot. Along with the model being tested at the SUSTAIN lab, the ULINK team will be able to compare the results under the modelling and under natural conditions. The pilot will provide first-ever actual measurements of reductions in wave energy as a result of deployment both with and without restored coral.

The goal is to have a pilot installed offshore within the next 12 months. The Environment and Sustainability Department has been working with the ULINK team and the environmental agencies on permitting and site selection. The construction is currently unfunded and ULINK is seeking funding.

CONCLUSION

The following is presented to the members of the Sustainability and Resiliency Committee for discussion. Staff recommends the SRC accept the pilot in concept so staff can finalize the site location and proceed with proving permitting assistance and project installation.

ATTACHMENTS

A- Progress report
B- ULINK fact sheet
C- Field Deployment of Coral-Breakwater Hybrid Reef

SMT/ESW/FCT

Summary of Activities

Our Phase II collaboration goal was to create a science-based design framework to develop and test restoration strategies that combine gray (cement-based) and green (nature-based) defenses to reduce the vulnerability of coastal communities to the impacts of ocean waves and wave-driven flooding. Specifically, we chose to evaluate the benefits to people and property that could be provided by combining submerged breakwaters, designed to dissipate wave energy, with active coral restoration. To accomplish this, our team worked to integrate physical modeling, coastal engineering, architectural and infrastructural risk evaluation, social and economic analyses, ecological assessments, coral resilience experiments, in partnership with local government, materials scientists, and leading coastal modelers. In collaboration with our local (City of Miami Beach) and NGO (The Nature Conservancy) partners, we selected two candidate areas along the valuable and vulnerable shoreline of Miami Beach to focus our efforts with the long-term goal of designing an artificial reef that combines grey and green infrastructure to maximize the benefits of these barriers for coastal protection.

In our second year of funding, we will complete the vulnerability and physical modeling and will move into an implementation and deployment phase. We will use the knowledge gained to design plans for an Artificial Reef (AR) future deployment in Miami Beach and to implement a communications strategy to inform stakeholders on the benefits of nature-based coastal protection strategies for enhanced coastal resilience. Although the permitting process may prevent us from a full AR deployment in Year 2, we will have made significant progress on design, development of local partnerships needed for a successful deployment, and the implementation of a communication strategy to foster stakeholder participation and buy-in. This work will get us shovel-ready to apply for the large-scale funding needed to deploy an AR to enhance coastal resilience at meaningful scales.

Major Accomplishments

SUSTAIN tank experiments

We evaluated the wave dissipation effects of coral reefs through the physical testing of a coral reef model using the UM SUSTAIN facility. To separate the effects of wave breaking and friction (the two major vectors of wave-energy dissipation), physical testing was conducted on two distinct reef model configurations, one which included only a breakwater, and a second which included a breakwater populated with coral skeletons, mimicking a reef restoration scenario (Figure 1). Testing the breakwater structure without corals captured the effect of wave shoaling and/or breaking under negligible friction. The breakwater structure was then populated with coral skeletons to capture the combined effect of wave-breaking and bottom friction caused by corals. The resulting coral array was composed of skeletons of the Caribbean staghorn coral, *Acropora cervicornis*, a species commonly employed in coral restoration in South Florida and presently grown in the UM coral nurseries.

Wave height measurements before and after the breakwater models revealed that there was significant reduction in wave height of **up to 40.5%** as waves moved towards the shore. Comparisons of a breakwater-only to a breakwater-with-reef showed that the **corals reduce up an additional 7% of that wave height, for a total of 47.5% reduction** (Figure 2). The difference in dissipation between the breakwater model and the coral reef model is attributed to friction from the coral skeletons. These benefits are even higher when looking at wave energy dissipation.

Ecological Site Assessment

The health of the reef tract offshore of Miami Beach was assessed for coral restoration viability. We examined coral cover and coral species diversity to identify the areas that could ecologically benefit most from reef restoration. Data from the Florida Reef Resilience Program (FRRP) was analyzed and used to identify areas with low and high cover and coral species richness. Using these data, we identified two areas (offshore of the 11th St. and 63rd St. areas) as sites that would benefit the most from restoration (Figure 3).

Meanwhile, we initiated a field assessment of coral growth and survivorship gradients along the reef of Miami Beach to evaluate the current potential of reef environments to support coral growth. At 7 reef sites (Figure 4), nursery “tree” structures were deployed, with each housing 60 coral fragments. The initial size of corals was measured at deployment and each fragment will be measured again after 3-4 months to assess growth. In addition, we attached temperature and light data loggers to each nursery structure to further characterize the environmental conditions. At each site, surveys were conducted measuring the relief, benthic composition, and coral cover/abundance. Hydrodynamic profiling (wave energy measurements) and water quality testing of each site will also be performed in late summer (Aug-Sept). These combined datasets (on coral growth/survivorship,

ecological and environmental characteristics, water quality and hydrodynamic profiles) will allow us to determine which sites to consider as priority areas from an ecological and coastal protection standpoint, and which sites are suitable for coral growth and therefore restoration. Preliminary data show low structural complexity (<20 cm relief), and low coral abundance (<2 species per site, <1% coral cover) for all sites, both of which suggest a potential benefit from future restoration.

Because the 63rd St. region of Miami Beach was selected as an area of particular risk to coastal flooding by our partners, we established a test restoration site on the reef habitat in this area. We planted 900 nursery-grown staghorn corals at this site. The site will be monitored for 1 year to assess site viability for reef restoration.

Building the Thermal Resilience of Restored Corals

Our approach to building coastal resilience incorporates attempts to increase the climate resilience of outplanted corals. We are incorporating the development and testing of state-of-the-science approaches (recently highlighted in a 2019 National Academy of Sciences report) to build thermal tolerance into our restoration efforts. First, we tested several methods of 'stress-hardening' corals through controlled pre-exposure to stress. Using laboratory and field-based approaches, we tested whether: (1) acute exposure to high light; (2) acute exposure to photochemical inhibitors; and (3) chronic exposure to thermally variable [18– 34.5°C] nursery environments, resulted in corals that were better able to survive subsequent thermal stress. We were successfully able to apply these treatments with no short-term negative consequences (i.e., similar survivorship to 'control' colonies of the same genotype that were maintained in our regular nurseries). After >10 months we collected samples of these outplanted colonies and they are currently in a month-long 'stress test' in our controlled lab systems. We expect to know which of these treatments results in an increase in thermal tolerance by the end of August. Secondly, we have begun testing whether local managed relocation of corals (assisted gene flow) of corals sourced from warmer habitats in southern Biscayne Bay can be used to increase the climate resilience of restoration efforts in cooler environments off Miami Beach.

Communications Strategy

To conduct formative research for developing a communication strategy, a questionnaire (IRB approved) that measures, among other variables, understanding of vulnerability from waves, risk knowledge, beliefs about coastal resilience solutions, and trusted information sources is currently being distributed to residents of Miami Beach and other similar coastal barrier municipalities using paid Qualtrics services and the help of City of Miami Beach (CMB).

We are currently working with CMB to hold focus group discussions with residents (once results from the questionnaire are available) to build on our findings and obtain an in-depth/nuanced understanding from a smaller group of residents. Once the formative research is completed, we will finalize our communication strategy (overall approach) and tactics (actual materials). In the meantime, we have begun developing outreach materials and have produced a short, informative video about our project and about coastal resilience with a local focus. We are working with CMB to put the video link on their website, newsletters, and other sources.

We have also enlisted a graduate student from the School of Communications to create content posters about the different components of our project, scheduled to be completed by September. In collaboration with GRID-Arendal, we also built a small-scale, portable wave tank to engage the public at outreach events, which we premiered at the Tortuga Music Festival in April 2019.

Vulnerability Assessment

We aggregated primary data for transect analysis in the Flamingo Park swath of Miami Beach (11th St.), including GIS and other data sets. Data were collected in the field (with the assistance of research assistants from local agencies, and the collaboration of the Office of Resilience of Miami-Dade County), and through a GIS platform. Data sets were merged into GIS to develop a predictive risk model for existing conditions. When the final data sets from the U-LINK team's scientists and engineers are shared in Year 2, a last set of models will be run to compare with the initial model, thereby understanding the role coral reefs play in protecting urban areas. Vulnerability will be assessed by parcel within the Synoptic Survey's transect. The Synoptic Survey layers have been translated into a series of user-friendly graphics, including a vulnerability assessment map of Flamingo Park (Figure 5), to be shared publically and with the CMB and the Miami Dade County (MDC) Offices of Resilience.

Finally, census data and Miami Dade County public income data were combined with a digital elevation model to create a predictive landscape model of risk to flooding for our focus areas of Miami Beach (Figure 6). This analysis revealed an area of high risk between 47th St. and 63rd St (also an area identified as a restoration focus based on reef ecology and status).

Site Selection

A major achievement for our team was the identification of two sites for potential deployment of a test submerged artificial hybrid reef structure. These sites were chosen for different reasons. The site off of 63rd St. was selected because the area experiences frequent flooding and is considered high-risk based on vulnerability models assessing income and population density, and was identified as a priority area for beach erosion control by MDC (Miami Dade County, 2010). Our second site, off Flamingo Park (11th St,) contains a historic preservation district, areas of critical infrastructure and was selected based on the output of our urban vulnerability model. Both of these sites were also identified as target sites that would benefit ecologically from reef restoration, as the habitats adjacent to both sections of shoreline have very low coral cover, species diversity, and rugosity (metrics that are enhanced through active coral reef restoration).

Stakeholder Participation

City of Miami Beach:

In Year 1, we engaged CMB officials as a group on five occasions through in-person meetings and conference calls. The initial meetings were used to describe our project and identify specific areas where collaboration was needed: 1) permitting for the future deployment of an AR, and 2) development and dissemination of a communications strategy describing the value of nature-based defenses for coastal resilience. CMB officials from the Environment and Sustainability Department (S. Torriente, F. Tonioli) agreed to make contacts with the appropriate staff members to help us in this process. After this meeting we were asked to present our program to the CMB Commission. Drs. Baker and Lirman presented the goals of our project on 11/28/18 to the full CMB Commission (video link: https://miamibeachfl.new.swagit.com/videos/11282018-1165). After these initial meetings, we had in-person meetings with the permitting staff of the Department of Regulatory and Economic Resources at Miami-Dade County's Environmental Protection Agency (S. Thanner) and the director of the Miami-Dade County's Park and Recreation Division (M. Nardi). After our meeting with the MDC permit staff, we jointly drafted a set of steps to help guide the permitting process which will be initiated in Year 2 of our program. Our most recent interaction with CMB included a visit by city officials to RSMAS and our SUSTAIN wave tank facilities, where the staff saw first-hand how we run our wave mitigation experiments using hybrid (cement + corals) structures.

In addition to these team meetings, individual co-PIs have had separate meetings with the relevant CMB staff to collaborate in different project components and tasks. Dr. Chao has had semi-monthly meetings with the CMB and MDC Office of Resilience officers, with the aim of updating them on our efforts and solicit insights on the implementation of our Urban Vulnerability Assessment. CMB and MDC officials have requested the results of the synoptic survey once completed, and we plan to continue this mutually beneficial partnership into Year 2. Dr. Ramaprasad met with K. Pulido, outreach expert in the CMB Communications department, who agreed to help distribute our communications strategy questionnaire and to assist with the set-up for focus groups with a diverse pool of respondents from CMB. These focus groups are scheduled for Fall 2019.

The Nature Conservancy (TNC):

In Year 1, we conducted 4 video conference and phone meetings with our partners from TNC (Dr. Mike Beck, Dr. Borja Reguero) to discuss the program, SUSTAIN experiments, and the model outputs that TNC will provide for our site selection analyses. We have not been able to meet in person due to the busy schedules of our California-based TNC colleagues. TNC and the USGS published the national assessment of the value of natural coastal defenses in June 2019. The publication of this report lifted a moratorium imposed by USGS and opened the door for TNC to now run their models focused on our two candidate sites, the results of which we expect to have in September. These runs will provide us with key input into site selection for the permitting and potential deployment of our pilot AR structures (i.e., depth, distance to shore, size).

ECOncrete:

In summer 2019, we met in-person and by phone with representatives of the coastal engineering firm ECOncrete (https://econcretetech.com). This firm works on shoreline enhancement and artificial reef projects around the world. We have now developed a partnership to assist with the design of our AR modules as well as providing concrete samples to determine their viability to hold and grow corals for our hybrid structures. Establishing partnerships with engineering firms such as ECOncrete will help provide the expertise and resources we will need for full implementation in the future. In Year 2, we will continue to foster these partnerships as well as look for local firms that can assist with funding and deployment expertise.

Description of any challenges you encountered. How were those challenges managed?

Coordinating our team's progress and deliverables was our team's most significant challenge. Early in Phase II we felt we were not meeting our self-imposed deadlines and important discussions and decision-making were being stymied by the use of email for communication, impeding our progress as a team. We solved this by increasing our meeting frequency to semi-weekly on a fixed schedule, even if all team members could not attend every meeting. Members who were not in attendance were still updated via meeting summaries. We still continued our small-group conversations and exchanges as project tasks proceeded, but having a set schedule for all-PI meetings has helped us meet our deliverables on time.

Another challenge was coordinating a site visit to RSMAS with our key partners at CMB. We overcame this challenge through persistence and calendar juggling and were ultimately able to host a meeting with 8 members of the Sustainability and Resiliency Committee to discuss public engagement, permitting, and future shared project endeavors in June 2019.

During the initial steps of the communications strategy development, collecting data from CMB residents, even using Qualtrics, has been challenging due to low response rates. We are working to resolve this by expanding into other relevant coastal municipalities like Key Biscayne and North Beach.

Finally, we faced difficulties associated with arranging the payment of the subcontract with The Nature Conservancy. As the U-LINK funds are not from grants or contracts, the business office did not allow us to negotiate a sub-award. Instead, we were required to draft a consulting agreement which was not accepted as form of payment by the University of California, Santa Cruz (where the TNC scientists are based). We finally negotiated a direct consulting agreement with the lead PI, but this was not an easy process from the perspective of the business office. Future U-LINK projects that include sub-awards should be aware of this issue. At RSMAS, the office of sponsored programs and the business office do not follow the same procedures and establishing formal policies and procedures with the Business Office for U-LINK fund disbursements would be beneficial.

Proposed outcomes for Year 1, and how and whether each was met successfully

1. Milestone: *Obtain an initial list of candidate sites based on output of physical models from our partners at The Nature Conservancy* (TNC).
   Outcome: **COMPLETED**: Two focal sites were selected; one adjacent to 63rd St., and one adjacent to Flamingo Park.
2. Milestone: *Evaluate candidate sites within ULINK team and with the CMB: (a) Meet with local resilience, environmental preservation and planning officers to identify and rank potential sites within CMB, (b) Select final site based on available physical, economic, social data.*
   Outcome: (a, b) **COMPLETED**: (see prior milestone)
3. Milestone: *Perform ecological assessments of top 3-5 candidate reef sites*
   Outcome: **COMPLETED**: Ecological assessments were expanded to perform a "gradient" analysis of 7 reef sites along the length of Miami Beach.
4. Milestone: *Conduct hydrodynamic field testing of top sites using Spoondrift Spotter buoys*.
   Outcome: **IN PROGRESS**: We opted to use Seahorse Tilt Current Meters, which can be deployed sub-surface, and for longer periods of time. These instruments are being purchased and tests will be conducted in Sept-Oct 2019.
5. Milestone: *Synoptic survey for urban areas: (a) Aggregate primary data for transect analysis, including GIS based data and supplementary data sets, (b) Incorporate secondary data from Community Engagement Survey (see Communications Strategy) into transect analysis data set, (c) Incorporate tertiary data from Citizen Reporters (see Communications Strategy) into transect analysis data set, (d,e,f) Perform Synoptic Survey of sites, complete dissect and quadrat analysis within transect site, complete Urban Impact Analysis.*
   Outcome: a) **COMPLETED**: Data aggregation was completed as planned, (b) **IN PROGRESS**: The community

engagement survey is underway and will be completed by the end of Year 1, (c) **DELAYED**: The Communication PI and the CMB are determining how to better engage citizens and increase their participation. Plans are underway for community focus groups and workshops. Survey data will be incorporated into the Synoptic Survey and into the predictive model, (d,e,f) **IN PROGRESS**: To be completed in Year 2, as projected.

6. Milestone: *Review artificial reef designs and materials*
   Outcome: (a) **IN PROGRESS**: Concrete testing is ongoing by testing different compositions of concrete and measuring coral attachment, growth, and survivorship, (b) **COMPLETED:** We conducted a literature review of >90 publications on artificial reefs and our team is working to write and submit a review of studies that focus on hydrodynamics and flow fields of artificial reefs.
7. Milestone: *Perform Expected Damages Approach for economic analysis of urban areas*
8. Outcome: a) **COMPLETED**: Our partners at TNC produced a report that models risk and avoided damages in insurance costs and building protections from wave-driven flooding, (b) **COMPLETED**: A GIS analyses based on census and income data was integrated with a Digital Elevation Model (DEM) to get a "bird's-eye view" of income-based and population density-based risk to flooding, which will be refined in Year 2 by the urban planning team's more focused research model. The outcomes of the GIS analysis are linked here: https://umiami.maps.arcgis.com/apps/MapSeries/index.html?appid=667a57c19b2148aca2ebc27a2ded724e, (c) **IN PROGRESS:** We are working to incorporate social vulnerability parameters within the Synoptic Survey and the Urban Impact Assessment. This will be completed in Year 2.
9. Milestone: *Implement coral restoration test plots at MBC sites*
   Outcome: **COMPLETED**: 900 staghorn corals were planted at a reef site in the 63rd St. focal area showing high coral survivorship and high restoration potential. Furthermore, coral growth and survivorship was measured at 7 sites with using restoration structures (Fig 4)
10. Milestone: *Outplanting and monitoring of thermotolerant corals*
    Outcome: **COMPLETED**: Ten staghorn coral genotypes (5 from northern sites and 5 from southern sites) were experimentally stressed using a variety of different approaches, including a chronic stress treatment. Fragments have been outplanted at two sites. Differences in thermal tolerance after >10 months are now being assessed.
11. Milestone: SUSTAIN Testing: (a) Build hybrid gray/green infrastructure models, (b) Assess parameters 1-9 (Parameters Table from proposal), (c) Submit research report to scientific journals.
    Outcome: (a) **COMPLETED**: A reef model with two different slopes was constructed and employed for testing in SUSTAIN, (b) **IN PROGRESS:** 54 tests were conducted at SUSTAIN in the presence of the reef model to investigate the influence on wave characteristics. The analysis of the corresponding data is in progress, (c) **IN PROGRESS:** A paper on our study was accepted at the American Society of Civil Engineering's Coastal Structures 2019 Conference. A manuscript is in preparation for Limnology and Oceanography: Methods.
12. Milestone: (a) Draft a community engagement survey, (b) Development of Facebook site for two-way communication, (c) Conduct community engagement survey within selected urban transect site, (d,e) Conduct stakeholder focus groups of representative community members, develop communications strategy and tactics, (f) project video development, (g) Build portable miniature model wave tank development and use at outreach event.
    Outcome: (a) **COMPLETED**: Team members sent questions that were then integrated into a survey questionnaire (attached), (b) **DELAYED:** We are exploring the use of the CMB website instead of an independent Facebook page for dissemination of our communication content to stakeholder, (c) **IN PROGRESS:** A questionnaire is currently being distributed to residents of Miami Beach with the help of Qualtrics and the City of Miami Beach outreach coordinator, **DELAYED:** (d,e) Scheduled for Year 2 as proposed, (f) **IN PROGRESS:** Footage for a short, informative film for our stakeholders is in the editing phase, (g) **COMPLETED**: We built a miniature model wave tank, which has been used at outreach events such as the Tortuga Music Festival in April 2019.
13. Milestone: Foster team building, Co-PI Integration, and strategic planning with partners
14. Outcome: **COMPLETED**: Our team made it a priority to spend the necessary time integrating new members and defining our respective roles, monthly meetings were increased to twice monthly. Though initially a challenge, we were able to hold several meetings with CMB staff as well as host them at RSMAS in June 2019. The TNC agreement was signed in July 2019 and model runs are in progress. We developed a strategic partnership with ECOcrete as described.

List of publications, grant applications submitted and planned, white papers, etc.

Public Meetings and Outreach Events:
Florida Master Naturalist Program, October 2018, March 2019
Women in Science Day, November, 2018
South Miami-Dade Cultural Arts Center, 'Science Squad' panel presentation, November 2018
CMB Sustainability and Resiliency Committee Commissioners meeting, November 2018
Tortuga Music Festival, Conservation Village table, April 2019
Urbanism Summit panel presentation, May 2019
Frost Science IMPACT student internship, June-July 2019
City of Coral Gables Chamber of Commerce meeting, keynote speech, July 2019

Conferences:
Cabral G, Karp R, Palacio-Castro AM, Strueben M, Lirman D, Baker A (2018) Testing *in situ* stress-hardening techniques to increase the climate resilience of a coral restoration program in South Florida. *Reef Futures* conference, Key Largo, FL

Carrick JV, Lirman D, Haus BK, Rhode-Barbarigos L, Baker A, Ruiz Merchan J, Amendolara J, Mehta S, Smith A. (2018). Using wave-tank experiments to evaluate the influence of coral reefs on wave dynamics. *Reef Futures* conference, Key Largo, FL

Chao, S. R., and Ghansah, B. (2019). A modified method for assessing the vulnerabilities of coastal buildings: Case study of Miami-Florida. ACSA 108TH Annual Meeting, San Diego, CA

Haus BK, Rhode-Barbarigos L, Lirman D, Baker A, Carrick J, Mehta S, Ruiz Merchan J, Amendolara J. (2018). Laboratory Investigation of Wave energy dissipation over submerged coral reef structures. *3rd Latin American Symposium on Water Waves*, Medellin, Colombia

Ruiz-Merchan J, Haus BK, Rhode-Barbarigos L, Lirman D, Baker A, Camilo Restrepo J, Otero Diaz L, Carrick J, Amendolara J. (2018). Laboratory investigation of impact of the infragravity wave on coral reef structures. *3rd Latin American Symposium on Water Waves*, Medellin, Colombia

Papers:
Carrick JV, Ghiasian M, Rhode-Barbarigos L, Haus BK, Baker A, Lirman D. (in prep). Documenting the ability of restored coral reefs to dissipate wave energy and protect shorelines within a wave simulator tank system. *Limnology and Oceanography Methods*

Rhode-Barbarigos et al. (in press) American Society of Civil Engineering's (ASCE) Coasts, Oceans, Ports, and Rivers Institute (COPRI) Coastal Structures 2019 Conference - Paper accepted

Grant applications:
National Fish and Wildlife Foundation, National Coastal Resilience Fund - pre-proposal accepted. Full proposal submitted July 2019.

Florida Sea Grant - proposal submitted Feb 2019 (not funded).

A prospectus detailing the team capabilities was solicited by the InterAmerican Development Bank (IADB). Representatives from the IADB have met on several occasions with PI Haus who is leading this effort to secure additional funding for coastal resilience work in the Caribbean region. Co-PIs are A Baker, D Letson, D Lirman, A Nanni and L Rhode-Barbarigos.

Media Coverage
June 6, 2019 - NBC-6 hurricane feature –Hurricane Simulator Simulates Coastal Concerns
https://www.nbcmiami.com/on-air/as-seen-on/UM-Hurricane-Simulator-Researches-Coastal-Concerns_Miami-510886112.html

Tortuga Music Festival outreach event:
https://www.facebook.com/umiamiulink/posts/449148352488966

Urban risk story map:
https://umiami.maps.arcgis.com/apps/MapSeries/index.html?appid=667a57c19b2148aca2ebc27a2ded724e

Figures

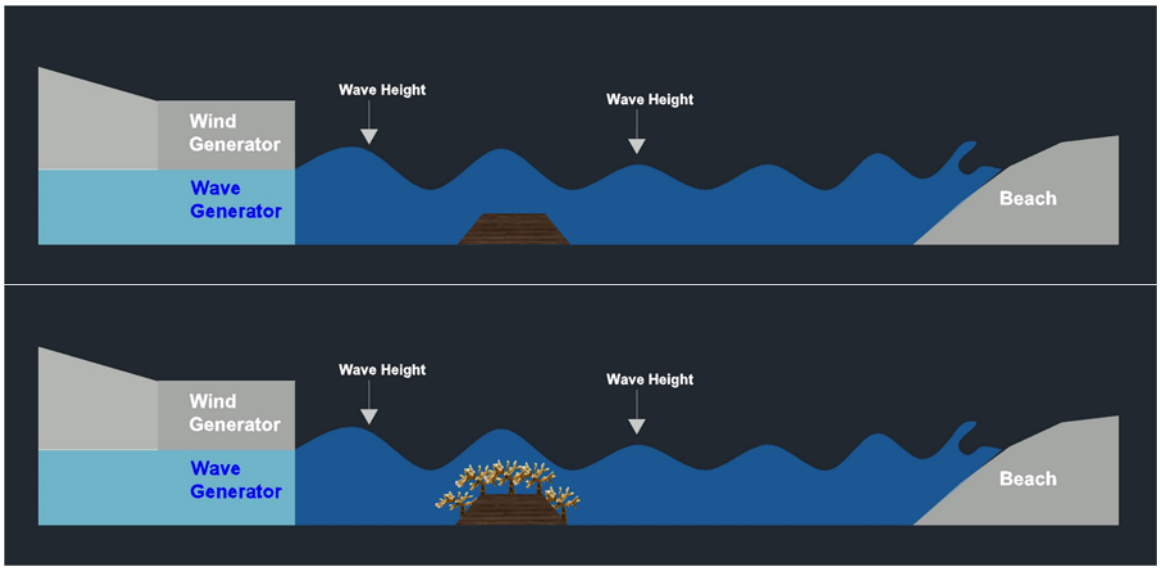


Figure 1. Illustration of the experimental set-up for evaluating the effect of breakwaters and corals on wave properties.

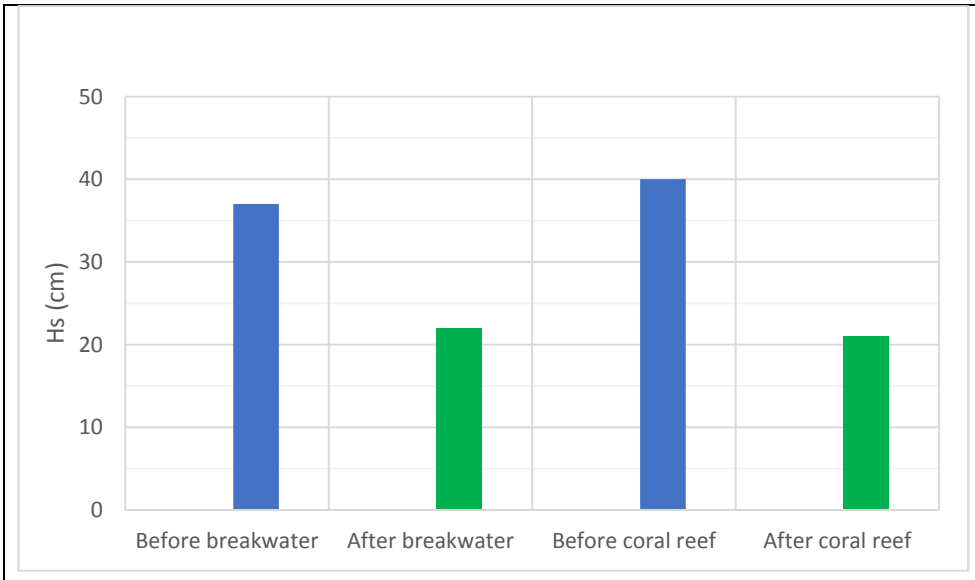


Figure 2. Wave height (H_s) before and after the model breakwater/coral reef calculated from measurements taken with a still water depth of 55cm and a periodic wave with 0.2Hz frequency and 15cm amplitude. The breakwater-only configuration showed a 40.5% decrease in significant wave height (H_s) and the breakwater+coral configuration showed a 47.5% decrease.

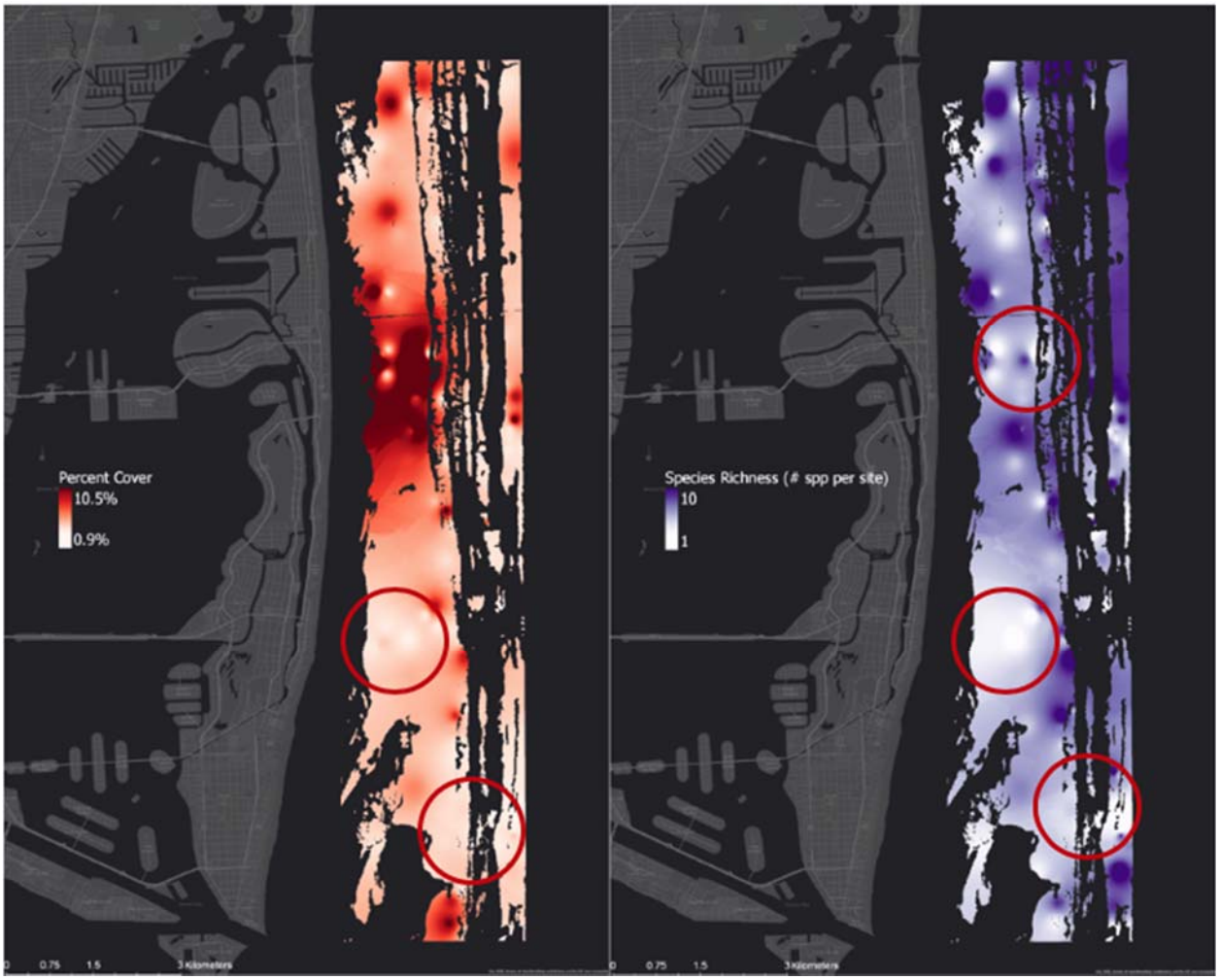


Figure 3. Percent cover (left) and species richness (right) of corals on reefs off of Miami Beach, FL. Colored areas mask the hardbottom and reef substrate off the coast of Miami Beach (Florida Unified Reef Map, FWC). “Cold spot” interpolated regions are indicated with red circles. Data taken from 2005 - 2017 by the Florida Reef Resilience Program.

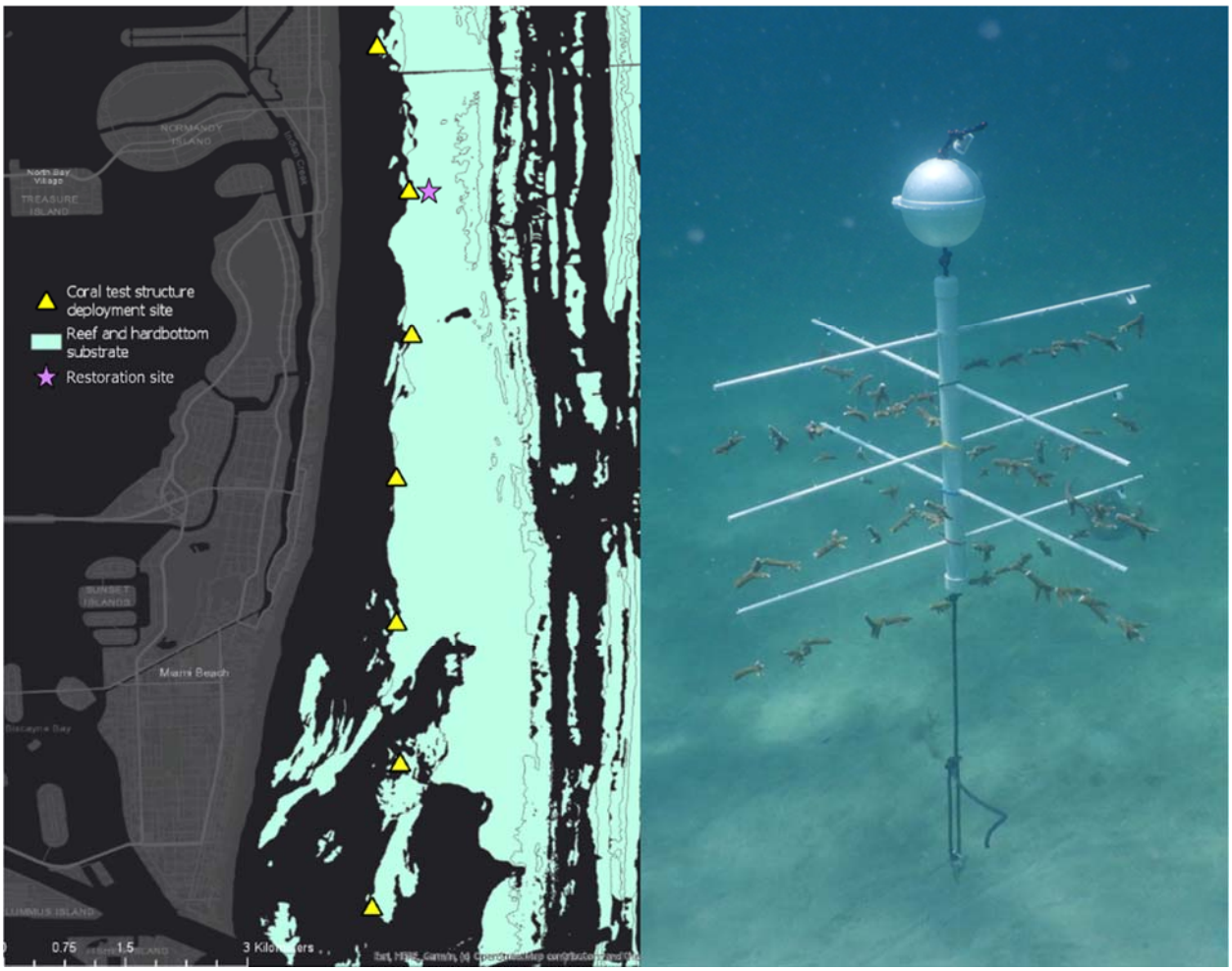


Figure 4. Map (left panel) of the locations where coral nursery tree structures (right panel) were deployed at 7 sites offshore from the City of Miami Beach.

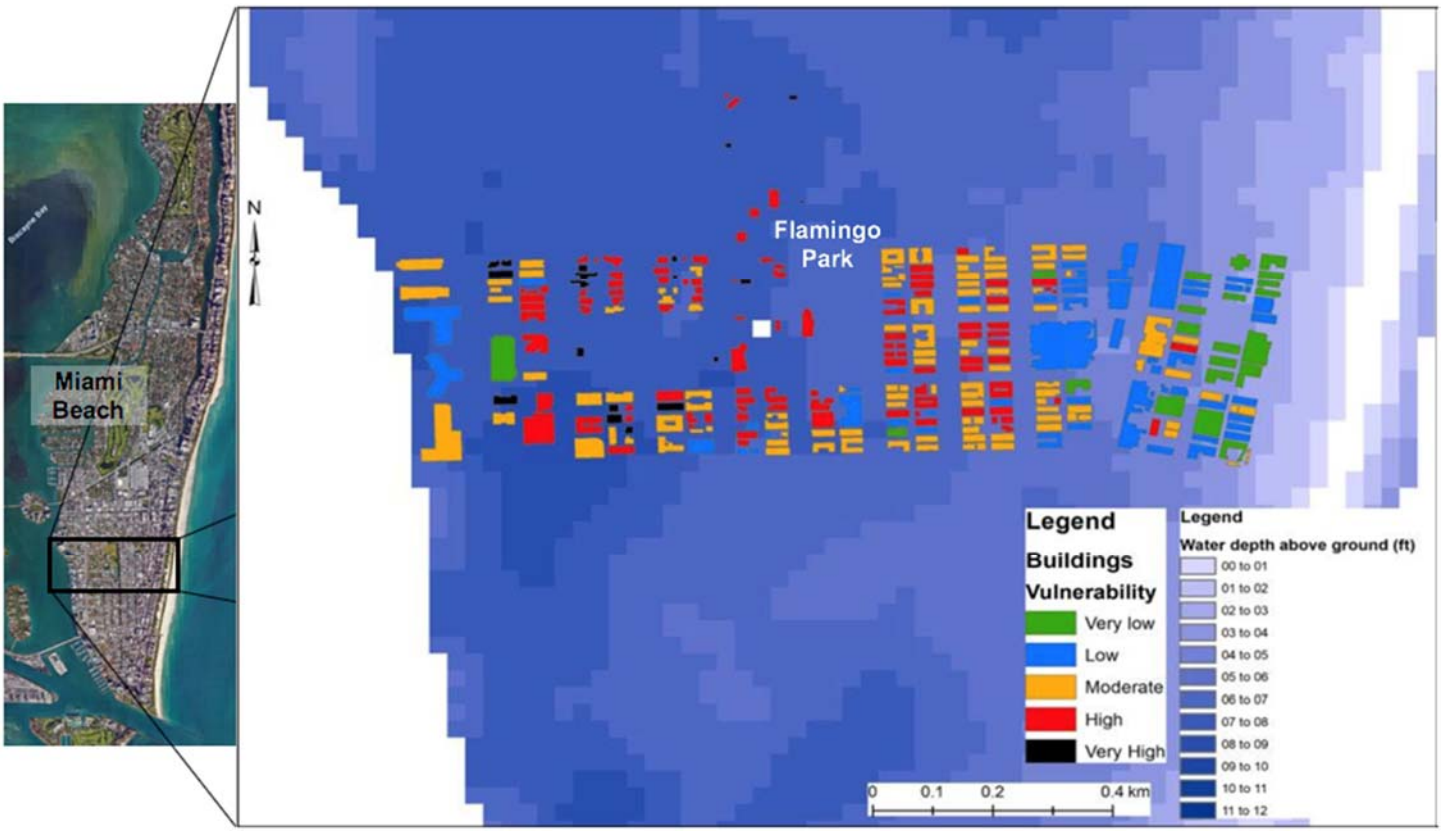


Figure 5. Vulnerability Model for Flamingo Park transect through South Miami Beach. Total weighted vulnerability scores, incorporating seven physical parameters (flooding depth, distance to waterbody, number of stories score, building material, finished floor elevation, effective year built, and distance to an evacuation facility) are shown from on color scale. 40% of buildings analyzed within the study site were either high (red) or very high (black). Flood inundation depth of a Category 5 (Saffir-Simpson scale) storm surge is layered.

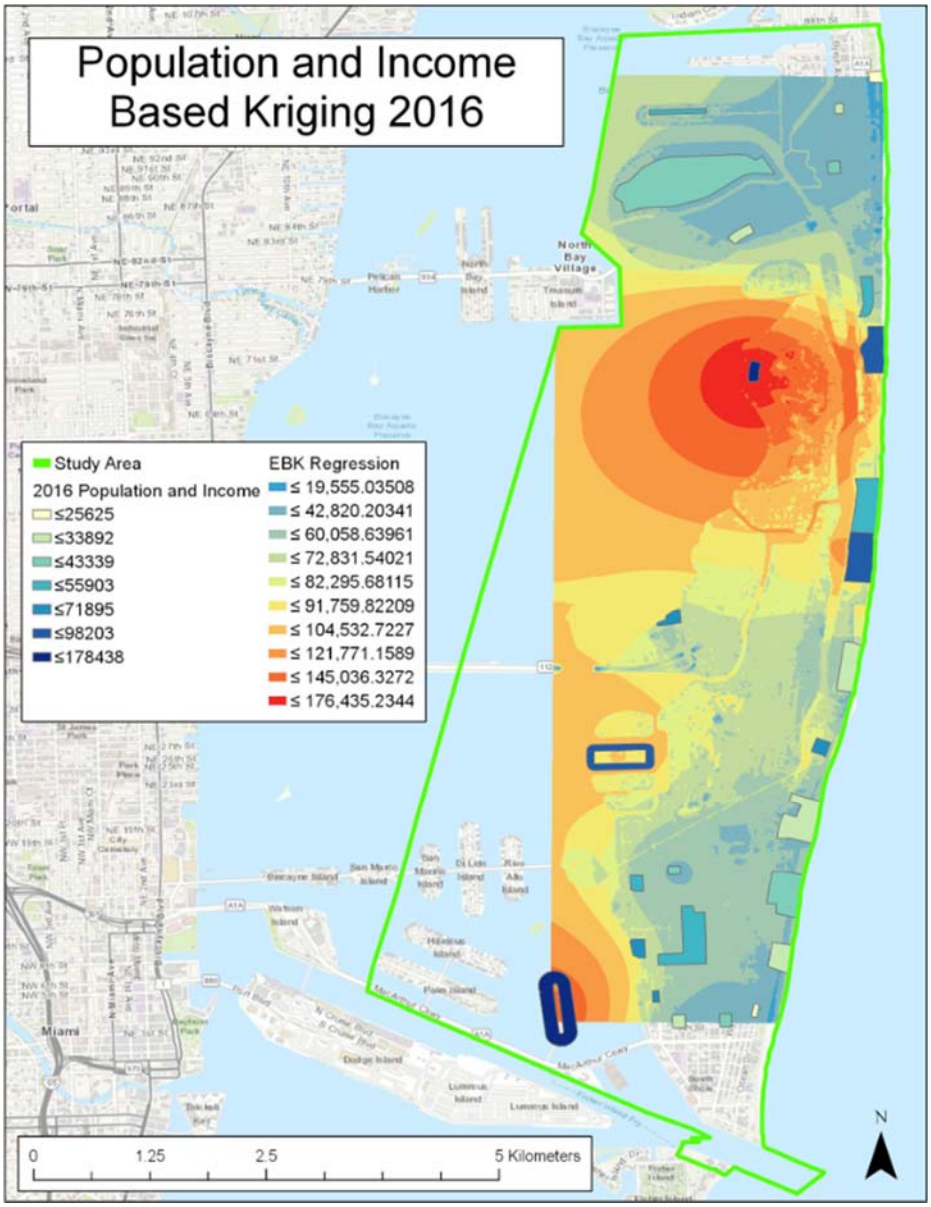


Figure 6. Miami Beach study area in which income data and population density data was interpolated to reveal potential areas of high risk. Data was interpolated using an Empirical Bayesian Kriging (EBK) method. Higher risk areas are shown in darker red. The model reveals a region of high risk encompassing a large section of Miami Beach between 47th St. and 63rd St (red and orange).

UNIVERSITY OF MIAMI

ULINK

University of Miami's Laboratory for INtegrative Knowledge (ULINK) supports teams of scholars from multiple disciplines in collaborative, problem-based inquiry to address the complex challenges of society.

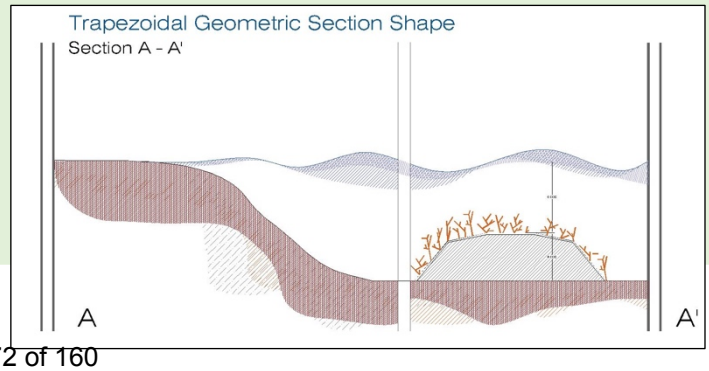
The **ULINK Coastal Resilience** team merges expertise from ocean sciences, structural & coastal engineering, marine ecology & biology, architecture & urban planning, and communications, building a truly interdisciplinary approach to find solutions at the intersection of shoreline, humans, and habitat. Our goal is to create a science-based **design framework** to develop and test **coral restoration strategies that combine gray (cement-based) and green (nature-based) defenses** to reduce the vulnerability of coastal communities to the impacts of ocean waves and wave-driven flooding. Our project has several components, described below.

Experiments in the SUSTAIN wind-wave tank

Housed at the Rosenstiel School of Marine and Atmospheric Science, **the SUrge STructure Atmosphere Interaction (SUSTAIN) laboratory** is home to the world's largest wind-wave tank capable of simulating up to a category 5 hurricane. This facility allows us to investigate at a fine scale the physical dynamics of waves as they interact with corals and model breakwater structures. As waves travel from one end of the tank to the other, they carry energy towards the model shoreline. By measuring the wave height before and after the breakwater model, we can determine the amount of energy that is reduced by the breakwater. To date, we have run over 50 experiments to test the reduction in wave energy under different wind and wave conditions, and have found that we can make engineered structures *more* effective at protecting our coasts **by at least 15%** by adding corals to their surface!

Testing structures in the field

Combining our laboratory findings with field measurements is critical to ensuring that these hybrid structures are practical and effective in the real world! We are currently working towards the deployment of a **coral-breakwater hybrid artificial reef** that will lie offshore of Miami Beach. If deployed, this artificial reef will not only provide insight on how much a coastline can be protected by a hybrid reef, but has the potential to create habitat for fish, attract divers and snorkelers, enhance biodiversity, and stabilize sediment nearshore. All these benefits and more will be rigorously monitored by our research team.



Bolstering thermal resilience of corals

Thermal bleaching is a process in which corals lose their algal symbionts as a stress response to higher water temperatures. This process can be fatal for the coral, because they rely heavily on their symbionts for energy and survival.

It's not always enough to simply restore corals back to an environment in which they are still threatened. Our biologists are in the process of building strains of corals that are themselves resilient to thermal bleaching. By bleaching and recovering corals in controlled settings, these corals may become "**stress-hardened**" to real-world bleaching events, and thereby more resilient to climate changes. These are the corals that will be prioritized in our restoration work and in our artificial reef hybrid structures.

Modeling urban vulnerability to coastal hazards

What are the human benefits to coastal protection measures such as our hybrid artificial reef design? In order to answer this question, we need to better understand the residents and stakeholders that live and work in our coasts. Our team's urban planning experts are creating **urban vulnerability models**, layering our community's physical vulnerability and risk to flooding with demographic data. In this way, we can both target more vulnerable populations that could stand to benefit from coastal protection, and quantify benefits from a modeled restoration scenario.

Communicating with stakeholders

Our work is contingent upon the support and engagement of our communities. For this reason, we are developing a full-scale **communications strategy** to **inform, engage, and win support** from stakeholders in the City of Miami Beach. Currently, we are in the formative research phase, distributing surveys and conducting stakeholder focus groups. Once this stage is completed, we will develop a series of outreach materials to be distributed, including a short film, handouts, and even a virtual reality experience!

Partnerships

Our research would not be possible were it not for the support of the partners we have made. **The City of Miami Beach Sustainability and Resiliency Committee and Communications Team** have been our champions, whether it be helping launch our permitting discussions or facilitating communications research with residents. Experts from **The Nature Conservancy** have also consulted with us to model the benefits of restoration for coastal protection in Miami Beach. We look forward to continuing to grow these relationships and achieve our mutual goals.

The ULINK Coastal Resilience Team:

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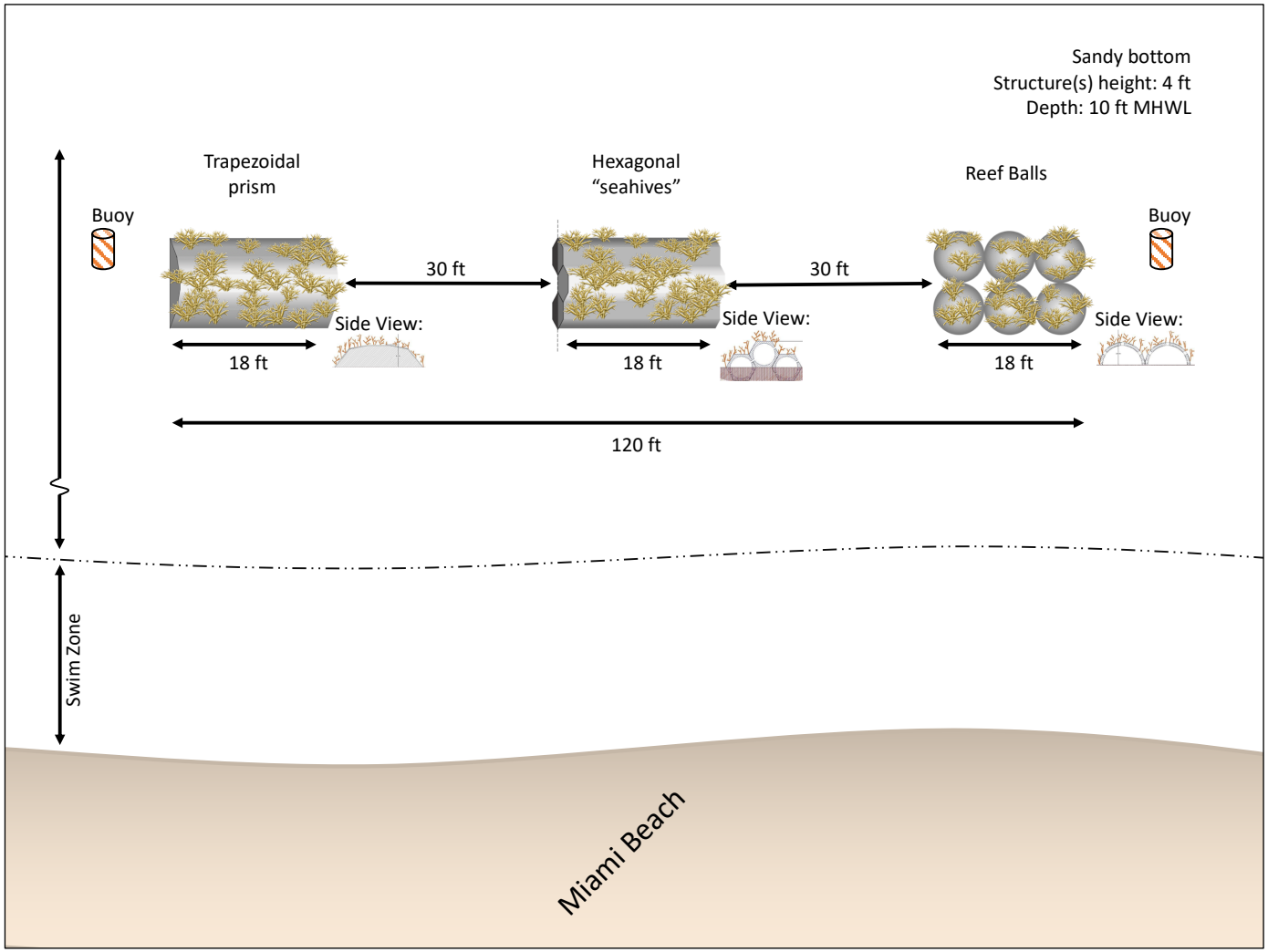
Dr. Jyotika Ramaprasad, School of Communications, jyotika@miami.edu
Dr. Landolf Rhode-Barbarigos, Civil, Architectural and Environmental Engineering, landolfrb@miami.edu
Jane Carrick, Marine Biology and Ecology, jcarrick@rsmas.miami.edu
Mohammad Ghiasian, Civil, Architectural and Environmental Engineering, sxg1236@miami.edu

Field Deployment of Coral-Breakwater Hybrid Reef

We have made excellent progress in all areas of our project, with the ultimate goal of deploying real-world experimental structures offshore of Miami Beach. By deploying these structures, we will be able to collect critical data that will inform not only our own design framework, but coastal science on a larger scale. Recently, our team has worked to understand permitting requirements and to develop designs for such a structure. The figure below illustrates our field deployment plan:



Our design combines three types of concrete sub-structures:

1. Trapezoidal prism
2. Hexagonal "seahives"
3. Reef Balls

These structures will be:

1. Populated with restoration corals
2. Parallel to shore
3. Approx. 18 ft in length
4. Modular units of 500 lbs min
5. 4 feet high from substrate
6. In 10 feet of depth (MHWL), minimum 6 ft clearance
7. Deployed in sandy-bottom,
8. Deployed away from critical wildlife habitat, hardbottom, and swim zones
9. Perforated to create shelter for marine life
10. Parallel to shore
11. Spaced at least 30 feet

MIAMIBEACH

Item 4.

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION REGARDING TERMINATING THE CITY'S CONTRACT WITH COCA-COLA**

RESPONSIBLE DEPARTMENT

Marking and Communications

LEGISLATIVE TRACKING

Item R9 I - July 17, 2019 Commission Meeting

SPONSORED

Commissioner Arriola

BACKGROUND

On July 17, 2019 an item discussing the termination of the city's agreement with Coca Cola was dual referred to both the Finance and Sustainability committees. The item was first heard at the September 25, 2019 Sustainability meeting where the chair of the sustainability sub-committee provided a list of options to share with Coca Cola.

ANALYSIS

After the September 25 meeting, the following recommendations from the citizen chaired sustainability committee were shared with Coca Cola and they have since contacted me to let me know that they are working on a response.

Coca-Cola makes products that represent #2 (bottle caps) and #4 (plastic bottles) on the top shoreline items collected. They have made commitments around the world, and we'd like them to bring them here. Either they can make some modest changes that fit in with their stated corporate sustainability goals, or we can renegotiate or rebid the contract.

i. Contract price list must either 1) have ONLY aluminum cans available for purchase or 2) require aluminum can options for all products they want to sell (water, soda). If we already have cans, then we need to do something to make sure that the default is aluminum cans.

ii. Coca-Colas lists in its sustainability report they want to "Make our packaging 100%

recyclable globally by 2025—and use at least 50% recycled material in our packaging by 2030." Great. Through our contract, we should require plastic bottles to be made of 100% recyclable content with 25% or higher of recycled content by 2021 and progressively increase.

iii. In Coca-Cola's own 2018 Sustainability Plan, they commit to "Helping collect the equivalent of 75% of primary packaging". In Britain, Coca-Cola announced the ambitious goal of collecting one can or bottle for every such item sold. We would like that here in Miami Beach. We want to hear how they plan to do that here in our community.

1. *Fund collection and recycling on the sand and islands*
2. *Institute 'Cash for Trash' programs for schools (cleanups)*
3. *_____*

iv. Tethered caps – Plastic drink containers should only be allowed on the market if their caps and lids remain attached, meaning they will be easier to collect as well as prevent loose caps from entering the stormwater systems (into the ocean). This exists, but requires a re-tooling of their equipment (if they don't sell the brands that already have this)

v. Print must be directly on the bottle instead of plastic wrap labels which easily come off

vi. Publicly support a bottle deposit program in the State of Florida (like they did in the UK)

Additionally, I have attached Coca Cola's activation plans for both the upcoming Veterans Day Parade as well as World Kindness Day as they do include sustainability initiatives.

Is this a Resident Right to Know item?	**Does this item utilize G.O. Bond Funds?**
No	No

ATTACHMENTS:

Description	Type
Coca Cola November Activations	Other

City of Miami Beach Nov Events

Annual Veteran's Day Parade Activation

Nov 11, 2019

From 9am to 2pm: Lineup/ setup Time: 9:00 am; and Breakdown starts at 1:30pm

Annual Veteran's Day Parade

Parade

- Event Flow: 4 Coke BA's will walk in the parade next to the branded vintage truck and hand out the Patriotic Garden Grow Stake American flags
- Giveaways: Patriotic Garden Grow Stake American flags (see slide 6)
- 1 RMM lead + 6 brand ambassadors
- Uniforms will be provided by CF – black shirt with logo

Annual Veteran's Day Parade

Picnic

- Event Activity: sampling, games and photo opp
- Footprint: 35'x10'
  - Trailer dimensions: 14' L x 7.5' W
  - And each tent is 10' x 10'
- Coke FL sampling trailer
  - 4oz wet sampling of Coke Cinnamon and Sprite Winter Spiced Cranberry
- Two branded 10'x10' tents
- Two branded 6' tables
- GIF machine for pictures (next slide)
  - Customize the overlay to include City Miami logo
- Outdoor lawn games
  - Cornhole, Connect Four, Jenga
- Giveaways: Reusable straws

Coke Cinnamon and Sprite Winter Spiced Cranberry are the biggest bets for the Holidays

GIF Machine

- Footprint requirement: 10’x10’ space (included in the total footprint requested)
- Need power outlet, or team can bring a generator
- Guests and friends are able to take a boomerang style picture, and have it emailed or texted to them for download

Annual Veteran's Day Parade

Premiums

- APPROVED Reusable straws from Promotional Breezes
  - Stainless Steel Straw, Silicone Tip and Non-Woven Travel Pouch, Reusable, Includes Wire Cleaning Brush with logos of Coca-Cola script and City of Miami in the red pouch, all in white
  - 2,000 qty
  - To distribute during the PICNIC
  - Possibility to include a 11cm *5cm card inside with customized message

Need to have the message from the City by Fri 10/11

and

- PROPOSED Patriotic Garden Grow Stake Flags from Bagley
  - Handheld Cardstock Flag with plantable Growstakes are perfect for patriotic holidays and events. The seed embedded paper can be planted to grow beautiful wildflowers. All of our products are made in the USA from 100% recycled paper and embedded with native, non-GMO seeds
  - 2,000 qty
  - To distribute during the PARADE

Need to gain approval from the City by Fri 10/11

Miami Beach City of Kindness

“Be Kind to each other, Be Kind to the Earth”

Nov 13, 2019

Time TBD

Sustainability Day

City of Miami "REFRESH AND REUSE" Surprise and Delight

- We will take the "Be Kind to each other, Be Kind to the Earth" to the next level and reward residents & tourists that are doing their part recycling a bottle or can while out in Miami Beach
- Possibility to partner with Publix, Domino's pizza, or any other local food that is a Coke customer
- Lucky recyclers win coupon for free 20oz Coca-Cola and [sub; or pizza; or anything] in their Miami Beach location
  - TBD how many coupons we will give away during this day, and for how many hours our agency team will be walking around to identify and reward the lucky recyclers
  - Fun execution around noontime could be pulling in local media to cover
- The activation will end with a sampling of ice-cold Coca-Cola beverages in front of one of the locations from the retail or food partner
  - Retail or food partner gets some positive sustainability rub
  - Retail or food partner gets additional traffic

PS: images FPO as an example of similar program done by Coke in Charlotte

City of Miami beach gains **recognition for supporting recycling** and use digital media and PR to announce the initiative.

We could also create:

- Posters announcing bin locations
- Static clings for vending machines around the city
- A certificate or for example a car magnet that states this person is “Kind to the Earth”

COMMITMENT TO SUSTAINABILITY

Local Impact. Global Reach. Coke Florida is committed to sustainability and making a positive difference in our Florida communities through four areas:

RECYCLING

WATER STEWARDSHIP

RESILIENCY

LITTER & WASTE REDUCTION

#CokeFlorida

cokeflorida.com

Coca-Cola
BEVERAGES FLORIDA

Proud Official Beverage of the City of Miami Beach

www.cocacolaflorida.com

Thank You

Daniela Venda | Manager, Consumer Engagement

10117 Princess Palm Avenue, Suite 400, Tampa, Florida 33610

c. 813.629.5887 | dvenda@cocacolaflorida.com

www.cocacolaflorida.com

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION ON THE CITY PARTNERING WITH FPL EVOLUTION PROGRAM TO EXPAND EV-CHARGING STATIONS IN MIAMI BEACH**

RESPONSIBLE DEPARTMENT

Environment and Sustainability

LEGISLATIVE TRACKING

Item C4 N - September 11, 2019

SPONSORED

Commissioner Samuelian

ANALYSIS

MEMO ATTACHED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
Commission After Action	Memo
FPL EV Program Memo	Memo
Attachment A: Evolution Program Fact Sheet	Memo
Attachment B: FPL EV Charging Equipment Agreement	Memo

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission
FROM: Jimmy L. Morales, City Manager
DATE: September 11, 2019

SUBJECT: REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE - DISCUSSION ON THE CITY PARTNERING WITH FPL EVOLUTION PROGRAM TO EXPAND EV-CHARGING STATIONS IN MIAMI BEACH.

RECOMMENDATION

The administration recommends that the City Commission refer the item to the Sustainability and Resiliency Committee for discussion and recommendation.

Legislative Tracking

Environment and Sustainability

Sponsor

Commissioner Mark Samuelian

MIAMIBEACH

City of Miami Beach, 1700 Convention Center Drive, Miami Beach, Florida 33139, www.miamibeachfl.gov

COMMITTEE MEMORANDUM

TO: Sustainability and Resiliency Committee

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION ON THE CITY PARTNERING WITH FPL EVOLUTION PROGRAM TO EXPAND EV-CHARGING STATIONS IN MIAMI BEACH**

BACKGROUND

On September 11, 2019, the Mayor and City Commission referred a discussion to the Sustainability and Resiliency Committee regarding the City partnering with Florida Power & Light (FPL) EVolution program to expand Electric Vehicles (EV) charging stations in Miami Beach.

ANALYSIS

FPL EVolution EV charging stations program (Attachment A) is a turn-key program, where FPL provides the installation of EV charging stations to municipalities at selected agreed areas. FPL is responsible for all the electrical infrastructure installation, as well as all permits, licenses and approvals necessary for the installation and operation of the EV charging station equipment. Under this program, the EV charging station would belong to FPL and the final user would be able to use the EV charging station for free. The City would be responsible for paying for the electricity used by the EV charging stations. Within FPL's agreements there were several requests regarding the use of the property, length of agreement and its renewal, data usage, insurance, indemnification, amongst others (Attachment B).

Given the current agreements the city has with Blink and Tesla, FPL Evolution's program would be a better fit for municipal operations rather than a citywide program since the city would be responsible for all the energy consumption from the EV charging. As the city is also working on greening its fleet, this program would present an opportunity to create the needed electrical infrastructure in city's garages for the municipal fleet usage. Having the cost of electrical infrastructure supported by FPL, would allow the city to invest in the purchase of EVs instead.

CONCLUSION

The following is presented to the members of the Sustainability and Resiliency Committee for discussion. Staff recommends continuing negotiation with FPL to proceed with a partnership to provide EV stations for the city fleet.

ATTACHMENTS

A- Evolution program fact sheet
B- FPL EV Charging equipment Agreement

FPL EVOLUTION

EV use *accelerates*

Advancements in battery technology and other improvements have triggered a rapid increase in electric vehicle (EV) use here and across the nation. In Florida alone, EV ownership has increased 300% since 2013, making it the fourth largest EV state in the country.[1] And, the adoption of EVs shows no sign of slowing down. Automotive manufacturers continue to produce more and better vehicles than ever before – currently more than 20 battery-electric models in all. For the first time, the average battery-range for all new 2019 EV models is expected to exceed 200 miles.

SHIFTING GEARS
ONE OF EVERY FIVE VEHICLES SOLD IN THE U.S. WILL BE BATTERY POWERED BY 2030.[2]

FPL EVolution: Charges ahead

The efficient growth of EVs relies on the availability and access to more charging infrastructure. Workplace charging is one of the most effective ways to promote the adoption of electric vehicles.

FPL EVolution – an innovative plan to install an estimated 600 new EV-charging stations at approximately 100 locations throughout our service area

By partnering with leading organizations like yours, FPL EVolution will create more than a thousand "charging points" for current and future EV drivers. This high-tech initiative will accelerate the adoption of EVs and generate valuable data to help us ensure the continued reliability of the energy grid for all FPL customers.

FPL EVOLUTION CHARGING LOCATIONS WILL INCLUDE:

» MAJOR HIGHWAYS

» LARGE EMPLOYERS

» POPULAR DESTINATIONS

FPL EVolution provides partners at no cost:

» **EV-charging equipment**
» **Installation and maintenance**
» **Dedicated EV-parking signage**

Our partners agree to:

» **Seven-year commitment with the option to renew**
» **Offer charging as a free amenity for their employees**
» **Cover the cost of EV charging at host site's current electric rate**

FPL EVolution charging: a state-of-the-art amenity with numerous benefits

» **Enhances brand image**
» **Reinforces commitment to sustainability**
» **Contributes to LEED certification**
» **Increases employee engagement**
» **Attracts and retains top-talent**

EVs GET A JOLT
FPL EVOLUTION COULD INCREASE THE AVAILABILITY OF CHARGING STATIONS BY MORE THAN

50%[3]

WHEN WORKPLACE CHARGING IS AVAILABLE, EMPLOYEES ARE

6x

MORE LIKELY TO PURCHASE AN EV[3]

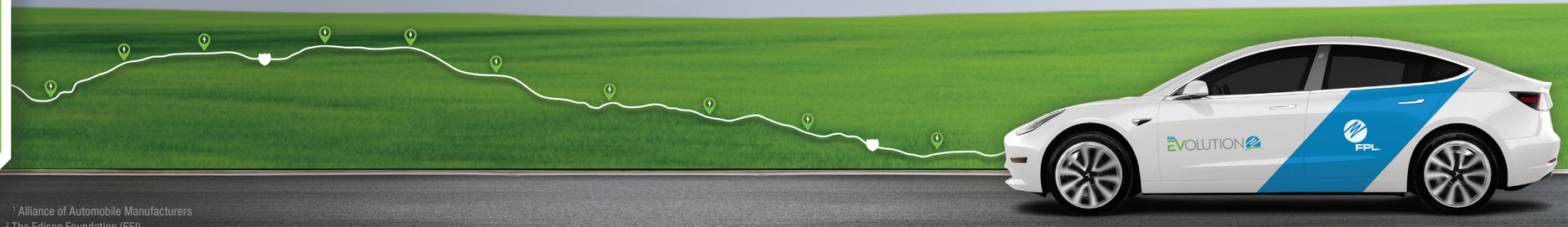
PROGRAM HIGHLIGHTS

» NEW EV-CHARGING INFRASTRUCTURE AT 100+ LOCATIONS

» MORE THAN 1,000 "CHARGING POINTS" AT 600 NEW EV-CHARGING STATIONS

» DEDICATED PARKING SPACES FOR EV CHARGING

» START OF EQUIPMENT INSTALLATIONS: SUMMER 2019



[1] Alliance of Automobile Manufacturers
[2] The Edison Foundation (EEI)
[3] U.S. Department of Energy (April 2019)

ELECTRIC VEHICLE CHARGING EQUIPMENT AGREEMENT

This ELECTRIC VEHICLE CHARGING EQUIPMENT AGREEMENT ("Agreement") is made this ___ day of _____, 20__, by and between _____ ("Host"), with a location at _____ (the "Property") and Florida Power & Light Company, a Florida corporation ("Company"), with an address at 700 Universe Blvd CEA/JB, Juno Beach, FL, 33408. Host and Company are sometimes individually referred to herein as a "Party" and collectively as the "Parties."

WHEREAS, Company desires to install and own electric vehicle charging and related equipment, including electrical power inverters, interconnection equipment, electrical wiring, underground conduit, wire and cable management systems, charging stations, electric meters, metering and switch cabinets, and power distribution boxes (the "Equipment") on the Property and Host desires to have the Equipment installed and agrees to permit Company to utilize the Property upon the terms and conditions set forth below.

NOW THEREFORE, in consideration of the mutual promises contained herein and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

1. Use. During the Term, Host agrees that Company may use the Property for the purposes of, and has the sole right (at Company's cost and in Company's sole discretion) of, constructing, installing, operating, inspecting, maintaining, repairing, enlarging, modifying, removing (at any time), testing and replacing the Equipment and any additional equipment required to dispense electricity to charge electric vehicles, together with the following rights: (a) the right of ingress and egress 24 hours-a-day, 7 days a week; (b) the right, at Company's sole cost and expense, to paint/stripe and to install signage (in either case, in a manner substantially similar to the form attached hereto as Exhibit B) on and around the Equipment; and (c) Company's quiet enjoyment of the Property needed for purposes of this Agreement shall not be disturbed. The location of the Equipment is as described in Exhibit A.

2. Term. Subject to this Section 2, the initial term of this Agreement shall terminate on the seventh (7th) anniversary of the date on which commissioning for the Equipment was completed (the "Initial Term"), and unless terminated earlier as herein provided, shall automatically renew on a year-to-year basis after the Initial Term until the tenth (10th) anniversary of the date on which commissioning for the Equipment was completed (each year, a "Renewal Term," and each Renewal Term together with the Initial Term, the "Term"). If either Party elects not to renew this Agreement for a Renewal Term, then such Party must give a written notice of termination to the other Party at least 90 days prior to the expiration of the then-current Initial Term or Renewal Term, as applicable. In the event such notice is delivered, no further automatic extensions shall occur and this Agreement shall terminate at the end of the then-existing Initial Term or Renewal Term, as applicable. The Company may terminate this Agreement at any time and for any reason by giving 30 days' prior written notice to Host.

3. Cooperation. In general, the Parties agree to cooperate to achieve the purposes and intent of this Agreement. Host shall cooperate as necessary with Company (at no cost to Host) in Company's efforts to obtain all permits, licenses and approvals necessary for the installation and operation of the Equipment. Company will not permit any lien against the Property arising from the installation or operation of the Equipment. Company shall (i) pay any personal property tax which is attributable to the Equipment, and (ii) be the sole recipient and beneficiary of any and all such federal and/or state tax credits, and other financial incentives arising from the installation and/or operation of the Equipment. If Company determines it to be necessary or desirable, the Company may record a memorandum of agreement in the public records of the county in which the Property is located and Host shall sign such memorandum of agreement (if needed). The right to access and use of Host's electrical system(s) includes for purposes of powering Company's computer equipment used in monitoring the electricity dispensed from the Equipment and record system data to evaluate charging behavior. Host understands and acknowledges that Company and/or its contractors will gather data and information from the Equipment with respect to vehicle charging activity, vehicle usage and technical performance of the vehicle and Equipment. Company shall own all rights to such data and information. Host acknowledges that such data and information will be used and disclosed by Company and third parties for the purpose of understanding and evaluating the impact of electric vehicles on transit systems and the electric power grid, for use in regulatory reporting, industry forums, case studies or other similar activities, in accordance with applicable laws and regulations. The Host will share information requested by the Company (including, but not limited to, baseline data requests, electric vehicle information and user surveys).

4. Payment of Electricity. Host is responsible for paying all consumption costs for electricity dispensed from the Equipment at the rate paid by Host.

5. Charge for Use of Equipment. Host agrees that users of the Equipment will not be charged for using the Equipment.

6. Interference. During the Term, Host shall not Interfere, or cause or permit to be caused any Interference, with the Equipment. For purposes of this Agreement, "Interfere" and "Interference" shall mean interference with Company's use, operation, access, maintenance or repair of the Equipment including: (a) subject any portion of the Equipment to any lien or encumbrance unless the holder thereof delivers a non-disturbance agreement; and (b) sale, transfer, assignment, lease or sublease any portion of the Property other than subject to Host's rights hereunder.

7. Insurance. Each Party will maintain at all times during the Term, the following insurance: (a) commercial general liability insurance with limits of One Million Dollars ($1,000,000) per occurrence combined single limit for bodily injury and property damage; (b) business automobile liability insurance with limits of One Million Dollars ($1,000,000) for bodily injury and property damage; and (c) workers' compensation insurance in compliance with Florida statutes. Such policy or policies shall be issued by companies authorized to do business in the State of Florida with a minimum A.M. Best financial rating of "A– VII". Company has the right to meet the

insurance designated in this section through any combination of self-insurance, primary or excess coverage. Host shall also maintain "all risk" property insurance, with limits in the amount of the full replacement cost of the Property and improvements. Each Party, for itself and its respective insurers, waives any right to assert any claim against the other Party to the extent such claim is covered by the waiving Party's insurance. Each Party shall waive all rights of subrogation of its respective insurers.

8. Indemnification. Each Party (the "Indemnifying Party") shall indemnify the other Party (the "Indemnified Party") from and against all losses, claims, damages or expenses, including attorneys' fees, incurred by the Indemnified Party in connection with any claims for personal injury or death to persons and damage to property (including environmental damage) arising under this Agreement during the Term, to the extent arising from the negligence or willful misconduct of the Indemnifying Party, its agents, employees, representatives, contractors, affiliates or sub-contractors. Subject to the next sentence, neither Company nor Host shall be liable to the other for consequential, special, exemplary, punitive, indirect or incidental losses or damages or for any loss of use, cost of capital, loss of goodwill, lost revenues or loss of profit, nor shall any parent, subsidiary, affiliate or employee of either Party have any liability under this Agreement, and Company and Host each hereby releases the other and each of such persons and entities from any such liability. The foregoing exclusion shall not be construed to limit recovery under any indemnity or defense obligation of Host under this Agreement related to third party claims. In no event shall the aggregate damages payable by a Party hereunder for any reason whatsoever exceed Three Hundred Thousand U.S. Dollars ($300,000.00). Notwithstanding the foregoing, this Section 8 shall not be construed or interpreted as a waiver of Host's sovereign immunity and the limits established in Section 768.28, Florida Statutes. This section shall survive the expiration or earlier termination of this Agreement.

9. Equipment to Remain Personal Property of Company and Relocation of Equipment. The Equipment is and will remain the property of Company, its successors or assigns, regardless of its use or manner of attachment to the Property. Host agrees to execute such further documentation as is reasonably necessary to ensure that the Equipment does not constitute, and is not deemed to be, a fixture attached to the Property. During the Term, Host may request, in writing, that Company move the Equipment to another location on the Property. If Company approves such relocation, in its commercially reasonable discretion, Company shall, at the Host's cost and expense, relocate such Equipment on terms mutually agreed upon by the Parties.

10. Representations. Each Party represents and warrants to and covenants with the other Party that: (a) such Party has full right, power and authority to execute this Agreement and that this Agreement shall bind and benefit the Parties and their respective successors and assigns; and (b) such Party's execution and performance of this Agreement will not violate any laws, ordinances, covenants or other agreement binding on such Party. Additionally, Host represents and warrants to Company that it has good and unencumbered title to the Property either free and clear of any liens, mortgages or other encumbrances, or if any lien, mortgage or other encumbrance exists, then such lien, mortgage or other encumbrance (or any environmental restriction) will not prevent the performance of this Agreement or burden or encumber the Equipment.

11. Default. An "Event of Default" means that a Party fails to fully perform any of its covenants under this Agreement within sixty (60) calendar days after such defaulting Party receives written notice of such default from the non-defaulting Party; provided, however, if such default cannot reasonably be cured within such sixty (60) day time period, defaulting Party shall not be deemed in default hereunder if defaulting Party has commenced to cure such default within said sixty (60) day time period and thereafter continues with diligence to complete the cure of such default.

12. Remedies. Upon an Event of Default as set forth in Section 11, non-defaulting Party may (i) perform, or cause to be performed, on behalf and at the expense of defaulting Party, any or all of the undertakings or obligations as to which defaulting Party remains in default, in which event defaulting Party will reimburse non-defaulting Party for such actual reasonable costs and expenses, within forty-five (45) days following receipt of invoice and supporting documentation; (ii) exercise any remedy that such non-defaulting Party may have at law or in equity and (iii) terminate this Agreement upon 30 days' prior written notice if the defaulting Party has not cured such default by the expiration of such 30-day period. Notwithstanding the preceding sentence, Host may not perform any right or obligation of Company under Section 1 or take any other action that relocates or physically alters any of the Equipment.

13. Assignment. Neither Party shall assign this Agreement or any interest herein without the prior written consent of the other Party; provided, that the Parties acknowledge that the Equipment may be covered by Company's utility financing structure.

14. Notices. All notices, demands, requests, consents, approvals and other instruments required or permitted to be given pursuant to this Agreement shall be in writing, signed by the notifying Party, or officer, agent or attorney of the notifying Party, and shall be deemed to have been effective upon delivery if served personally, including but not limited to delivery by messenger, overnight courier service or by overnight express mail, or on the third (3rd) business day after posting if sent by registered or certified mail, postage prepaid, return receipt requested, and addressed as follows:

To Host: To the address set forth in the Preamble above.

To Company: To the VP of Development at the address set forth in the Preamble above with an e-mail copy to FPLEVolution@fpl.com.

15. No Guarantees or Warranties. NOTWITHSTANDING ANYTHING TO THE CONTRARY HEREIN, THE PARTIES ACKNOWLEDGE THAT COMPANY IS NOT PROVIDING ANY GUARANTEES (INCLUDING GUARANTEES OF PERFORMANCE) OR WARRANTIES OF ANY KIND, WHETHER STATUTORY, EXPRESS, OR IMPLIED (INCLUDING ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL WARRANTIES ARISING FROM COURSE OF DEALING OR USAGE OF TRADE), UNDER THIS AGREEMENT.

16. Additional Equipment. In the event Host desires to have installed on the Property any additional electric vehicle charging and related equipment, the Host shall notify Company, in writing, of such desire and Company shall, within 30 days after the receipt of such notice, notify the Host in writing of the terms and conditions pursuant to which Company is willing to so install such additional equipment. If the Parties cannot agree on the terms and conditions for installing such additional equipment within 60 days after the Host's receipt of

Company's terms and conditions, then the Host may engage a third-party to so install such additional equipment; provided, however, the Host shall use commercially reasonable efforts to share (or cause such third party to share) data and information from such additional equipment with respect to vehicle charging activity, vehicle usage and technical performance of the vehicle and such additional equipment.

17. Removal or Sale at End of Term. Within ninety (90) days after the expiration of the Term, Company shall, in its sole discretion, either (a) remove all charging stations installed by Company at the at the Property under this Agreement or (b) agree to sell such charging stations to Host on terms and conditions mutually agreed upon by the Parties.

18. Miscellaneous.

(a) **Compliance with Laws**. Each Party shall perform its obligations under this Agreement in accordance with all applicable codes, laws, rules, regulations, orders and ordinances of federal, state, regional, local and municipal governmental agencies.

(b) **Amendment**. No modification, waiver or amendment of this Agreement or of any of its conditions or provisions shall be binding upon a Party unless in writing signed by that Party.

(c) **Governing Law; Waiver of Jury Trial**. This Agreement shall be subject to and governed by the laws of the State of Florida, without regard to its conflict of laws principles. The Parties agree that any action or proceeding arising out of or related in any way to this Agreement shall be brought solely in a court of competent jurisdiction in the State of Florida. EACH OF THE PARTIES HERETO HEREBY KNOWINGLY, VOLUNTARILY, AND INTENTIONALLY WAIVES THE RIGHT EITHER OF THEM MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LITIGATION BASED HEREON, OR ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS AGREEMENT.

(d) **Severability; Counterparts, Publicity**. Should any provision of this Agreement be held, in a final and un-appealable decision, to be either invalid, void or unenforceable, the remaining provisions of this Agreement shall remain in full force and effect, and the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling. This Agreement may be executed in counterparts, which together shall constitute a single instrument. Neither Party shall issue any press release or otherwise publicize the existence or the terms of this Agreement without the prior written approval of the other Party, which approval will not be unreasonably withheld or delayed; provided that general advertising that refers to a "partnering" (or other terminology of similar import) of either Party with the other Party for the purposes of any of the transactions contemplated hereby, but does not expressly reference this Agreement or disclose any of the terms hereof, shall not be subject to the provisions of this subsection. Filings required by applicable law for any regulatory authority shall, by itself, not be deemed to violate the preceding sentence.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized officers as of the date first above written.

Host:	**Company (Florida Power & Light Company):**
By: _____ Name: Title:	By: _____ Name: Title:

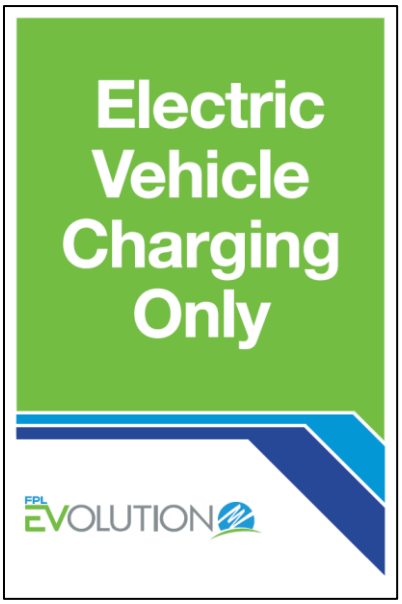
Exhibit A-- Location of Equipment

Property Address: [_____].

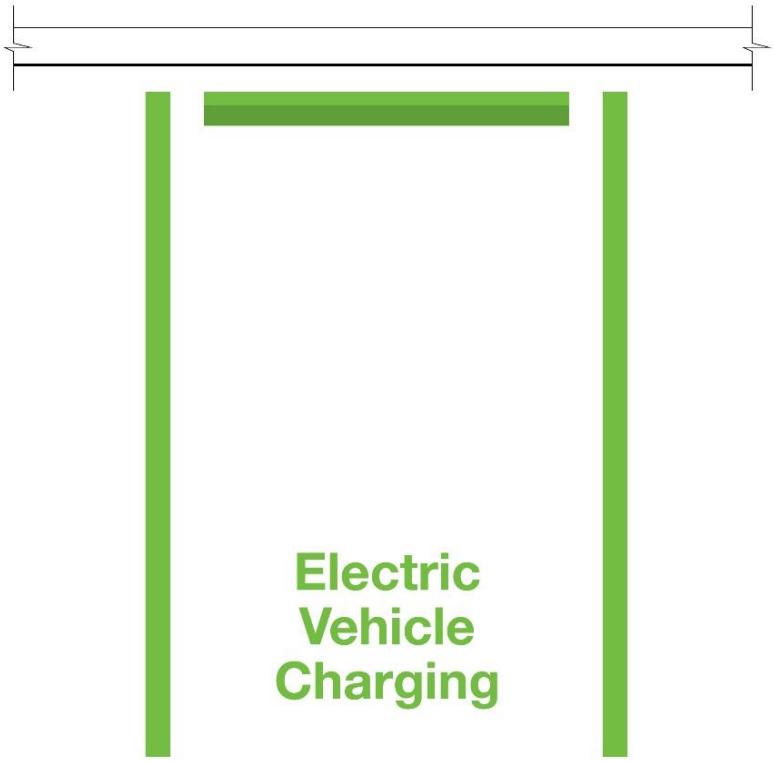
Number of Spaces: Up to [___] spaces.

Map:

Exhibit B—Form of Signage



Parking Stall Signage (~12" x ~18")



Parking Stall Striping

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSS THE CURRENT STATUS OF THE CITY'S TRANSITION PLAN FOR GAS BLOWERS**

RESPONSIBLE DEPARTMENT

Parks and Recreation | Public Works - Greenspace Divison | Sanitation

LEGISLATIVE TRACKING

Item C4 O - September 11, 2019 Commission Meeting

SPONSORED

Commissioner Samuelian

ANALYSIS

VERBAL REPORT AT COMMITTEE MEETING.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
Commission After-Action	Memo
Reso. No. 2017-29867	Resolution

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission
FROM: Commissioner Mark Samuelian
DATE: September 11, 2019

SUBJECT: REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE TO DISCUSS THE CURRENT STATUS OF THE CITY'S TRANSITION PLAN FOR GAS BLOWERS.

ANALYSIS

The Sustainability and Resiliency Committee should review the City's current plans and status of said plans to transition away from gas blowers. This topic was discussed during a previous Neighborhoods and Community Affairs Committee meeting and, given that it is a topic of frustration for residents due to noise levels and potential pollution, a more comprehensive update is warranted.

Legislative Tracking

Commissioner Mark Samuelian

2017-29867

RESOLUTION NO.

A RESOLUTION ACCEPTING THE RECOMMENDATIONS OF THE SUSTAINABILITY AND RESILIENCY COMMITTEE AND THE FINANCE AND CITYWIDE PROJECTS COMMITTEE TO TRANSITION TO NON-GAS POWERED LEAF BLOWERS FOR ALL CITY LANDSCAPE MAINTENANCE OPERATIONS AND DIRECTING THE CITY ADMINISTRATION TO REQUEST ALL CURRENT CITY LANDSCAPE MAINTENANCE CONTRACTORS TO VOLUNTARILY COMPLY FOR THE DURATION OF THEIR CONTRACTS AND, FURTHER, DIRECTING THE CITY ADMINISTRATION TO REQUIRE NON-GAS POWERED LEAF BLOWERS IN ALL FUTURE BIDS FOR CITY LANDSCAPE MAINTENANCE WORK.

WHEREAS, at its February 10, 2016 meeting, the City Commission discussed the elimination and/or phasing out of gas-powered leaf blowers and converting to the use of a less noisy and environmentally friendly alternative. The Mayor and City Commission referred the discussion to the Sustainability and Resiliency Committee for further direction; and

WHEREAS, at its June 15, 2016 meeting, the Sustainability and Resiliency Committee discussed the item. A motion was made to have the Sanitation Division reach out to a manufacturer to coordinate a temporary pilot program to test blower models that would produce less noise. At the March 1, 2017 City Commission meeting, a dual referral of this matter was made to the Sustainability and Resiliency Committee and to the Finance and Citywide Projects Committees; and

WHEREAS, at its March 8, 2017 meeting, the Sustainability and Resiliency Committee unanimously approved a recommendation that the City transition to the use of non-gas powered leaf blowers; and

WHEREAS, at its March 17, 2017 meeting, the Finance and Citywide Projects Committee also recommended moving forward with the transition to non-gas powered leaf blowers, while continuing to use the existing gas-powered blowers through their life cycle; and

WHEREAS, in view of the above-referenced Committee recommendations, the City Administration recommends that all current City landscape maintenance operators and contractors be requested to voluntarily comply by utilizing non-gas powered leaf blowers for their duration of the contracts and that all future bids for City landscape maintenance work require the use of non-gas powered leaf blowers.

NOW, THEREFORE, BE IT DULY RESOLVED BY THE MAYOR AND CITY COMMISSION OF THE CITY OF MIAMI BEACH, FLORIDA, that the Mayor and City Commission hereby accept the recommendations of the Sustainability and Resiliency Committee and the Finance and Citywide Projects Committee to transition to non-gas powered leaf blowers for all City landscape maintenance operations, direct the City Administration to request all current City landscape maintenance contractors to voluntarily comply for the duration of their contracts and, further, direct the City Administration to require non-gas powered leaf blowers in all future bids for City landscape maintenance work.

PASSED and **ADOPTED this** 17 day of May, 2017.

ATTEST:

5/25/17

Rafael E. Granado, City Clerk

MIAMI BEACH INCORPORATED MARCH 26TH 1915

Philip Levine, Mayor

APPROVED AS TO FORM & LANGUAGE & FOR EXECUTION

5/19/17

City Attorney DT Date

T:\AGENDA\2017\4 - April\Public Works\leaf blowers RESO.docx

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission
FROM: Jimmy L. Morales, City Manager
DATE: May 17, 2017

SUBJECT: A RESOLUTION ACCEPTING THE RECOMMENDATIONS OF THE SUSTAINABILITY & RESILIENCY COMMITTEE AND THE FINANCE AND CITYWIDE PROJECTS COMMITTEE TO TRANSITION TO NON-GAS POWERED LEAF BLOWERS FOR CITY OPERATIONS AND CONTRACTORS.

RECOMMENDATION

The Administration recommends approving the resolution.

ANALYSIS

At the February 10, 2016 meeting, the City Commission discussed the elimination and/or phasing out of gas-powered leaf blowers, to a less noisy and environmentally friendly alternative. The Mayor and City Commission referred the discussion to the Sustainability & Resiliency Committee for further direction.

At its June 15, 2016 meeting, the Sustainability & Resiliency Committee discussed the item. A motion was made to have the Sanitation Division reach out to a manufacturer to coordinate a temporary pilot program to test blower models that would produce less noise. At the March 1, 2017 City Commission agenda, a dual referral to the Sustainability & Resiliency Committee and Finance and Citywide Projects Committees were made.

At its March 8, 2017 meeting, the Sustainability & Resiliency Committee unanimously approved the transition to non-gas powered leaf blowers. At its March 17, 2017 meeting, the Finance and Citywide Projects Committee also recommended moving forward with the transition to non-gas powered leaf blowers, while continuing to use the existing gas-powered blowers through their life cycle.

Leaf blowers, widely used in yard maintenance, are the subject of repeated complaints related to air pollution from combustion products and fugitive dust, as well as noise pollution, particularly from gas-powered motors. Several local, state, and federal agencies across the U.S. have published reports concluding that there are potential health and environmental impacts associated with leaf blowers.

Alternatives to gas-powered leaf blowers include electric leaf blowers, electric mowers, and manually-operated tools such as rakes and brooms. Electrically-operated leaf blowers are the

preferred alternative to gas-powered leaf blowers because they provide plenty of power without producing exhaust emissions or as much noise. While noise emissions from the average gas-powered leaf blower measures about 65-75 decibels (dB) at 50 feet, electric-powered models on average measure about 65 dB at the same distance. Furthermore, electric-powered leaf blowers for both personal and commercial uses generally fall within the same price range as similar gas-powered blowers. The main difference between the two leaf blower types is that the batteries for the electric model last between 30 to 130 minutes of continuous run time and therefore its operation for professional purposes requires a supplemental power source such as a long extension cord, a back-up battery, and a high-speed battery charger.

The City of Santa Barbara in California has banned gas-powered leaf blowers and regulated other types of leaf blowers since 1997. According to several reports, the City has not incurred increased expenditures beyond a one-time cost of $90,000 to replace their gas-powered leaf blowers with electric-powered blowers and has experienced little to no impact on their municipal operations since the ban went into effect. Conversely, the City of Claremont in California opted to replace leaf blowers with rakes and brooms following the enactment of their leaf blower ban and quantified a 6% increase in staff hours. However, the increase in man hours needed to maintain the same level of service in our tropical environment is expected to be much greater and would have substantial impact on our sanitation, public works and parks operations.

The City of Miami Beach owns and operates over 40 leaf blowers for its Greenspace Management, Sanitation, and Parks & Recreation operations. All leaf blowers currently, except two which were purchased for the pilot program are gas-powered. In addition, City contractors currently use over 15 gas-powered leaf blowers for their operations. The cost of substituting the City's current stock of gas-powered leaf blowers for cordless battery-powered units is estimated at approximately $1,200 per unit (Attachment A), or $48,000, which includes the professional (heavy duty) wireless electric leaf blower, backpack battery, and high speed charging unit. It should be noted that this estimate does not consider staff or contractor time required to learn how to operate new equipment or the costs for back-up batteries, additional chargers, etc.

With regard to City landscape maintenance contractors making the transition to battery operated leaf blowers, the City's Greenspace Management Division currently has approximately $2.5 million in landscape maintenance contracts which expire in March 2018. The direction to utilize battery operated leaf blowers on City owned or controlled properties will entail a revision of the contract language and an increased cost for maintenance services, as the expense for additional non-standard equipment will be passed on from the vendor to the City. Should the City Commission accept the recommendation of the Sustainability & Resiliency to phase out gas-powered leaf blowers, current landscape maintenance vendors will be asked to voluntarily comply with the directive for the remainder of their existing maintenance contracts. Once the contracts expire, during the new bid process the City could solicit bid alternatives for the exclusive use of battery operated leaf blowers on all City properties.

Attachments: A – Joe Blair Garden Supply Cost Estimate

CONCLUSION

The Administration will not purchase additional gas powered leaf blowers.

Legislative Tracking
Public Works

Sponsor
Commissioner Michael Grieco

ATTACHMENTS:

	Description
D	Leaf blower estimate

DATE
2/17/16
TIME
12:36
SALESMAN
079/079
STORE
1

Joe Blair

320 NE 79th ST.
MIAMI, FL 33138

305-757-5554

www.joeblairlawnmower.com

INVOICE
574163
P/O NUMBER
WORK ORDER
PAGE
1 of 1

BILL TO ACCOUNT: 2100
CITY OF MIAMI BEACH PUBLIC
WORKS,GREENSPACE ROW DEP.
2100 MERDIAN AVE
MIAMI BEACH,FL.33139

SHIP TO ACCOUNT
CITY OF MIAMI BEACH PUBLIC
WORKS,GREENSPACE ROW DEP.
2100 MERDIAN AVE
MIAMI BEACH,FL.33139

Tax Exempt # 230932987154

ALL PROPERTY BELONGS TO JOE BLAIR GARDEN SUPPLY UNTIL PAID IN FULL. NO RETURNS ON SPECIAL ORDERS. ELECTRICAL COMPONENTS AND STORM SALES.

CUSTOMER PICKUP

Shipped VIA:

ORD	SHIP	B/O	LINE	PART NUMBER	DESCRIPTION	LIST	NET	AMOUNT
				OMARLEON MIAMIBEACHFL.GOV				
1	1		STE	BG66L	BG66L HAND HELD BLOWE	269.95	189.56	189.56
				SN- 1.				
1	1		STE	BGA100	BGA 100		276.46	276.46
1	1		STI	48654006501	AR900 LITH ION		671.46	671.46
1	1		STI	4850-430-5702	CHARGER	129.95	119.95	119.95

QUOTE ONLY

SUB TOTAL	1257.43
MISC	0.00
LABOR	0.00
Tax: 7.000	0.00
DOWN PAYMENT	
INVOICE TOTAL	1257.43

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION REFERRING A TASK TO THE CITY MANAGER'S READY TEAM: IN ORDER TO BOTH OPTIMIZE PUBLIC ENGAGEMENT AND FACILITATE TIMELY COMPLETION OF PROJECTS**

RESPONSIBLE DEPARTMENT

Marking and Communications

LEGISLATIVE TRACKING

Item C4 V - July 25, 2018 Commission Meeting

SPONSORED

Commissioner Aleman

BACKGROUND

Various City departments currently have, or contract, Public Information Specialists (PIS) that are dedicated to various specific projects or studies throughout the city, including those pertaining to resilient infrastructure projects. The purpose of the PIS is to conduct door-to-door outreach, hold community meetings, send regular email updates and act as the general point-person for these specific projects.

On October 16, 2019 the external communications plan was presented to commission for formal adoption. The External Communications Plan was created to streamline communications with our residents and ensure timely, thorough and consistent information of the same.

As part of the City of Miami Beach's resiliency building efforts, the City Manager's Office is working to empower civic engagement practices, as recommended by the Urban Land Institute (ULI). Through the adoption of the Engagement Plan, the City is adopting an integrated strategic communications and resident engagement plan that will keep messages consistent, relationships trustworthy and residents knowledgeable throughout urban innovation, revitalization and adaption projects.

ANALYSIS

Currently when the city begins a project, a department will either assign an internal PIS or contract with an

approved list of vendors to assign one to act as the external point-person for the project. The External Communications Plan now includes standardized outlines pertaining to when during a project the PIS should engage with the community.

From time to time project timelines get off track because the public process is re-opened after decisions have been made at previous public forums. When additional meetings with the public are held after decisions are made, after the 30 % design, delays occur and generally costs increase. By including the details ahead of time as to what residents will be communicated with during each public engagement opportunity, we believe this could significantly reduce or eliminate this.

The following is the analysis and recommendation for defined public engagement tollgates:

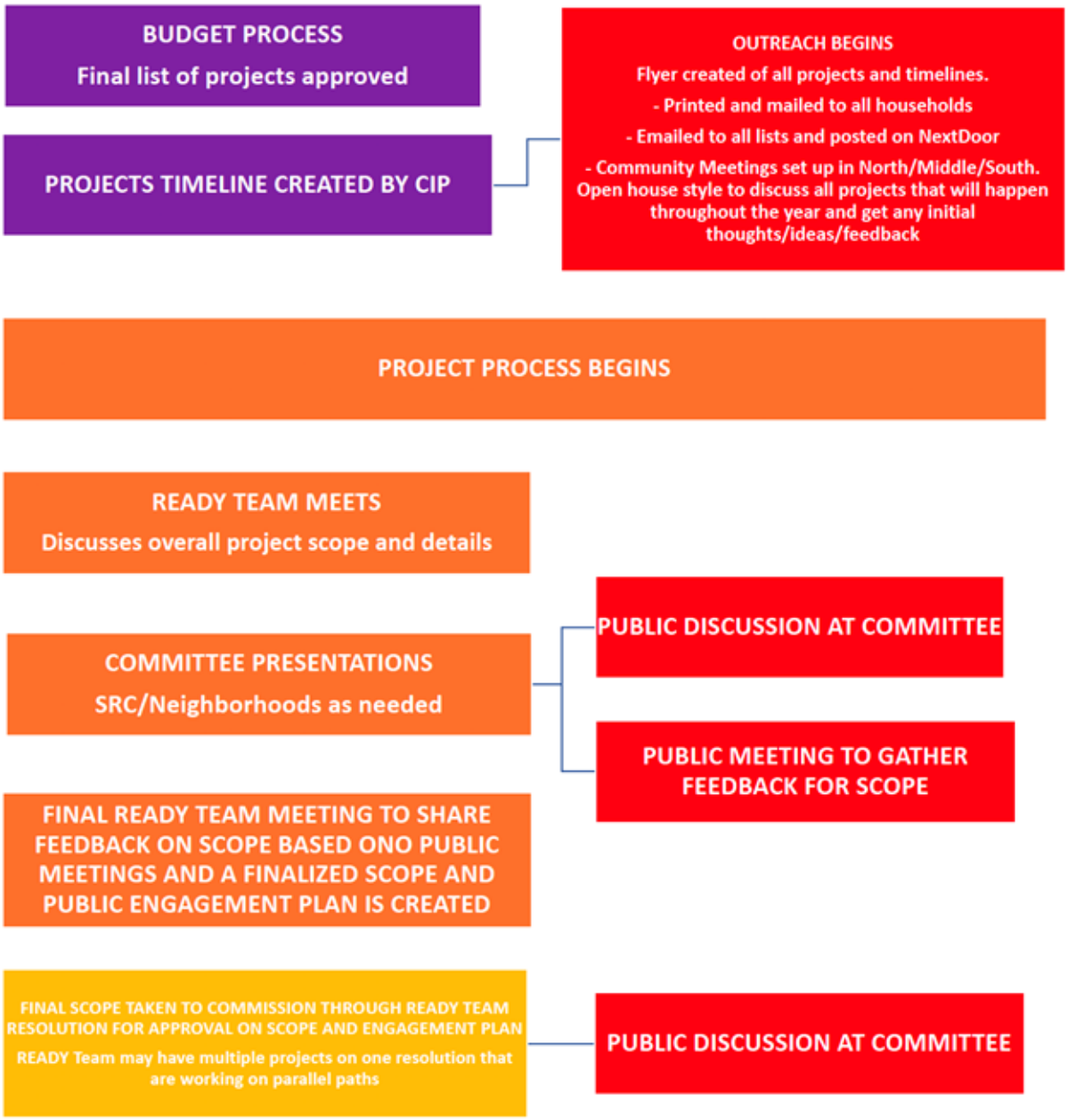
Goals

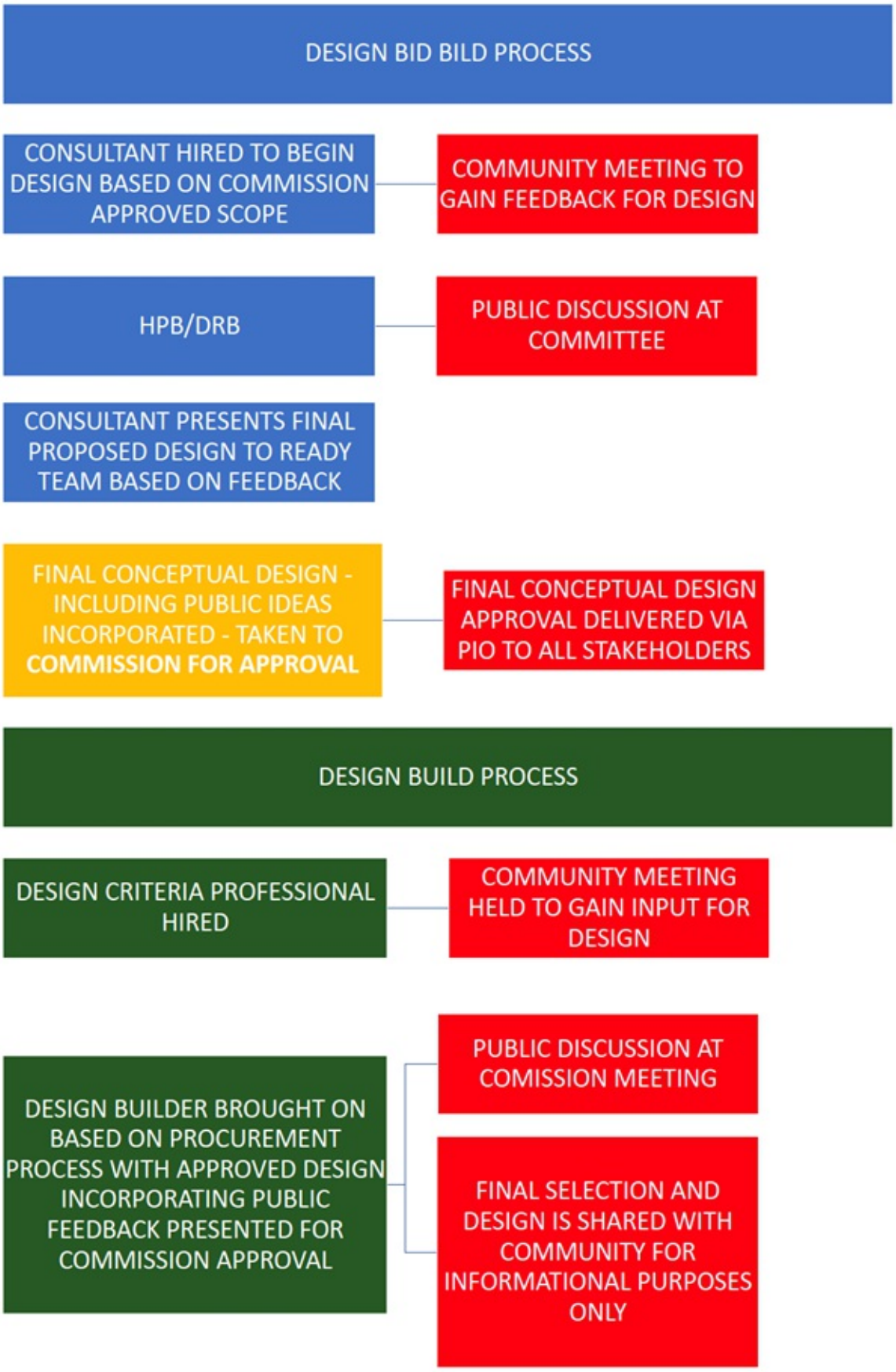
- Document all questions and responses.
- Teach residents/stakeholders how/when they will be engaged in the process.
    - In what capacity would the public feedback be requested.
- Provide Administration and Commission with a clear understanding of controversial items in the early stages.
- Create clear guidelines for gathering community feedback on city projects.

Challenges

- Stakeholders can change
    - Staff, Property Owners, Neighborhood Leadership.
- Programs change
    - Residents/stakeholders may not be aware of changes in programs/ city policies.
- "Blank Check" expectations
    - Residents/stakeholders may expect the city to spend more than what is budgeted.
    - Scope Creep
- "Commissioner Override"
    - When the Commission interferes in the eleventh hour, it can cause significant delays.
    - Commission override can lead to public distrust.

Recommended Road Map for Neighborhood Improvement Projects


BUDGET PROCESS
Final list of projects approved
PROJECTS TIMELINE CREATED BY CIP
OUTREACH BEGINS
Flyer created of all projects and timelines.
- Printed and mailed to all households
- Emailed to all lists and posted on NextDoor
- Community Meetings set up in North/Middle/South. Open house style to discuss all projects that will happen throughout the year and get any initial thoughts/ideas/feedback
PROJECT PROCESS BEGINS
READY TEAM MEETS
Discusses overall project scope and details
COMMITTEE PRESENTATIONS
SRC/Neighborhoods as needed
PUBLIC DISCUSSION AT COMMITTEE
PUBLIC MEETING TO GATHER FEEDBACK FOR SCOPE
FINAL READY TEAM MEETING TO SHARE FEEDBACK ON SCOPE BASED ONO PUBLIC MEETINGS AND A FINALIZED SCOPE AND PUBLIC ENGAGEMENT PLAN IS CREATED
FINAL SCOPE TAKEN TO COMMISSION THROUGH READY TEAM RESOLUTION FOR APPROVAL ON SCOPE AND ENGAGEMENT PLAN
READY Team may have multiple projects on one resolution that are working on parallel paths
PUBLIC DISCUSSION AT COMMITTEE


DESIGN BID BILD PROCESS
CONSULTANT HIRED TO BEGIN DESIGN BASED ON COMMISSION APPROVED SCOPE
COMMUNITY MEETING TO GAIN FEEDBACK FOR DESIGN
HPB/DRB
PUBLIC DISCUSSION AT COMMITTEE
CONSULTANT PRESENTS FINAL PROPOSED DESIGN TO READY TEAM BASED ON FEEDBACK
FINAL CONCEPTUAL DESIGN - INCLUDING PUBLIC IDEAS INCORPORATED - TAKEN TO COMMISSION FOR APPROVAL
FINAL CONCEPTUAL DESIGN APPROVAL DELIVERED VIA PIO TO ALL STAKEHOLDERS
DESIGN BUILD PROCESS
DESIGN CRITERIA PROFESSIONAL HIRED
COMMUNITY MEETING HELD TO GAIN INPUT FOR DESIGN
DESIGN BUILDER BROUGHT ON BASED ON PROCUREMENT PROCESS WITH APPROVED DESIGN INCORPORATING PUBLIC FEEDBACK PRESENTED FOR COMMISSION APPROVAL
PUBLIC DISCUSSION AT COMISSION MEETING
FINAL SELECTION AND DESIGN IS SHARED WITH COMMUNITY FOR INFORMATIONAL PURPOSES ONLY

Engagement Defined at Budget Process

Final list of projects approved in the capital plan including timeline.

Outreach would include:

- Flyer
- Dedicated email
- Social
- Public Open Houses similar to G.O. Bond with different areas

Engagement Defined at Planning Phase

In the Planning Phase of any future Neighborhood Improvement Project, the Jacobs Engineering Group will be tasked with preparing the Design Criteria Package (DCP.)

- In the development of the DCP an initial public meeting will be held to present the scope of the work that may have an impact, such as:
    - Undergrounding of the electrical poles
    - Height of the roadway
    - On-street parking impacts
    - Utility relocations (i.e, water, sanitary sewer)
    - Stormwater
    - Sidewalk impacts
    - Blue/Green Infrastructure
- In the initial meeting, the project team will provide the public an opportunity to comment on the following topics:
    - Landscaping
    - Street ends improvements
    - Multi-modal transportation options (i.e: bike lanes)

Engagement Defined at Design Phase

During the Design Phase of a future Neighborhood Improvement Project, the project team will host a second public meeting to present the conceptual design. The team will present the following:

- Pump station locations
- Width of the roadway
- Number of lanes
- Swale impacts
- Typical roadway cross section
- Roadway elevation
- Impacts to on-street parking
- Sidewalks
- Streets ends
- Plant selection for landscaping
- Phasing and construction sequencing

During the final design, the team will discuss harmonization needs with each property and provide all property owner with an opportunity to make minor changes including the location of the stormwater drains and landscaping placements.

Engagement Defined at Pre-Construction

The pre-construction public meeting will take place to present the following:

- Discuss the Construction Schedule
- What to expect during construction

Engagement Defined During Construction

The project team will provide updates and advisories on a regular basis to the community as well as meet with stakeholders.

CONCLUSION

The External Communications Plan aims to enhance resident communications and engagement activity performance by increasing message consistency, trusting relationships and knowledge-sharing between local government and public sectors. The defined project tollgates are meant to assist in the consistency, relationship building and overall increased communications between government and residents.

Is this a Resident Right to Know item?

No

Does this item utilize G.O. Bond Funds?

No

ATTACHMENTS:

Description	Type
No Attachments Available	

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSS THE PUMP STATIONS PLUMES ON WEST AVENUE**

RESPONSIBLE DEPARTMENT

Public Works

LEGISLATIVE TRACKING

Item C4 U - February 13, 2019

SPONSORED

Commissioner Gongora

ANALYSIS

VERBAL UPDATE TO BE PRESENTED ON THE DAIS.

Applicable Area

South Beach

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
No Attachments Available	

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSS HAVING THE CITY PURSUE MITIGATION PROJECT FUNDING FROM THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT**

RESPONSIBLE DEPARTMENT

Office of Management and Budget | Grants Management

LEGISLATIVE TRACKING

Item C4 P - September 11, 2019 Commission Meeting

SPONSORED

Commissioner Samuelian

ANALYSIS

MEMO ATTACHED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?

No

Does this item utilize G.O. Bond Funds?

No

ATTACHMENTS:

	Description	Type
🗋	Commission After Action	Memo
🗋	Mitigation Funding Memo	Memo

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission
FROM: Commissioner Mark Samuelian
DATE: September 11, 2019

SUBJECT: REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE TO DISCUSS HAVING THE CITY PURSUE MITIGATION PROJECT FUNDING FROM THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.

ANALYSIS

As per an 08/06/2019 Miami Herald article (attached), the Department of Housing and Urban Development (HUD) is giving the State of Florida funding to mitigate disasters,

"We've allowed states in the past to use their disaster money on mitigation, but this is the first time it's been specifically allocated for mitigation projects that are focused on future events," the HUD official said...Examples of mitigation projects include hardening electrical grids and building roads that are better suited to withstand storms."

So far, HUD has allocated $633 million to the State of Florida. This funding can greatly complement the City's ongoing resiliency and storm water plans, and should be aggressively pursued to ensure the City gets its fair share.

This referral should discuss City work to-date and planned actions to secure this and any other related new funding sources to support our resiliency programs.

Legislative Tracking

Commissioner Mark Samuelian

ATTACHMENTS:

Description

- Miami Herald Article on HUD Project Mitigation Funds

POLITICS

HUD is giving Florida money to mitigate disasters. But Puerto Rico will have to wait

BY ALEX DAUGHERTY

AUGUST 02, 2019 02:46 PM

WASHINGTON

The Department of Housing and Urban Development is doling out $16 billion to states and territories for projects that prevent future disaster damage, including $633 million to Florida.

But Puerto Rico, which is set to receive $8.29 billion, will have to wait.

“We were particularly concerned about the controls Puerto Rico had in place,” a senior HUD official said on a background call with reporters Friday. “We’re giving them $20 billion, which is larger than Louisiana received after Hurricane Katrina. It’s a huge sum of money which increases our risk.”

HUD officials are concerned that recent protests in Puerto Rico that caused Gov. Ricardo Rosselló to announce his resignation along with a potential constitutional crisis over naming his successor will make it harder to ensure that funds are being spent properly.

While state officials in Florida and other states like Texas and Louisiana will be officially notified of the new grant program within weeks, an action that allows them to start submitting proposals to federal officials responsible for giving out the money, Puerto Rico and the U.S. Virgin Islands will get access to the money at a later time. The HUD official wouldn’t say when the money would be available for the territories.

“We’ve allowed states in the past to use their disaster money on mitigation, but this is the first time it’s been specifically allocated for mitigation projects that are focused on future events,” the HUD official said.

Examples of mitigation projects include hardening electrical grids and building roads that are better suited to withstand storms. HUD said it wants to give states and territories "as much flexibility as possible" when deciding which projects will best use the federal funds.

HUD typically allocates funds for disaster recovery, such as helping people rebuild homes. In Florida, HUD was given $1.8 billion from Congress after Hurricane Irma and the agency has allocated $615 million to the state so far. In Puerto Rico, HUD was given $19 billion from Congress after Hurricane Maria and the agency has allocated $1.5 billion to the territory so far.

States like Florida that receive notice from the federal government of the funds in the next few weeks must submit grant applications by early next year. After HUD reviews and approves the application, which typically takes about 60 days, the funds will be available to spend through a line of credit.

It's not clear when Puerto Rico and the Virgin Islands, which is set to receive $774 million from HUD, can begin applying for their allocated funds or what the deadline for grant applications will be. HUD officials said they have a team of five to six people in Puerto Rico monitoring grant applications to prevent a misuse of funds.

President Donald Trump has falsely claimed on multiple occasions that Puerto Rico received more than $90 billion in Hurricane Maria relief. The actual figure is $42.4 billion, according to the Federal Emergency Management Agency.

"We have serious concerns and we want to make sure we're pumping the brakes and being prudent," the HUD official said. "We feel that we owe that to the American taxpayer."

MIAMIBEACH

City of Miami Beach, 1700 Convention Center Drive, Miami Beach, Florida 33139, www.miamibeachfl.gov

COMMITTEE MEMORANDUM

TO: Sustainability and Resiliency Committee

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSS HAVING THE CITY PURSUE MITIGATION PROJECT FUNDING FROM THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT**

RESPONSIBLE DEPARTMENT
Office of Management and Budget | Grants Management Division.

LEGISLATIVE TRACKING
Item C4P – September 11, 2019 Commission Meeting.

SPONSORED
Commissioner Samuelian.

ANALYSIS

Introduction
The State of Florida has been allocated more than $633 million in federal funding for disaster mitigation projects. These funds are available through the U.S. Department of Housing and Urban Development's newly created Community Development Block Grant – Mitigation (CDBG-MIT) Program which was formed in response to the 2016 and 2017 presidentially declared disasters.

Process
The Florida Department of Economic Opportunity (DEO) will serve as the administrator and fiscal agent for Florida for the CDBG-MIT Program. Congress, the U.S. Department of Housing and Urban Development (HUD) and States and Local Governments all have a role in the process.

1. Action by Congress:
   - Congress Approves the Appropriation.
2. Actions by HUD:
   - HUD calculates and announces allocations.
   - HUD publishes a Notice with the Federal Register.
   - HUD awards CDBG-MIT Funds.
3. Actions by States and Local Governments:
   - States and local governments administer the CDBG-MIT grant program directly or distribute funds to subrecipients or subgrantees.

DEO will lead the state's efforts in creating the federally required State Action Plan that will provide a high-level strategy for how the funding will be used to address disaster mitigation. The State Action Plan will be developed in partnership with state agencies that are working on resiliency efforts and will include input from local communities and stakeholders. DEO must submit the State Action Plan to HUD for review by February 3, 2020.

At least 50% of this allocation must address mitigation needs in the HUD-designated Most Impacted and Distressed (HUD MID) counties. Miami-Dade is included in the HUD MID. In additional, at least 50% of the CDBG-MIT funds must benefit low- and moderate-income persons. DEO will have a public engagement process which will include:

- At least three (3) public hearings – one (1) prior to the public comment period.
- A 45-day comment period.
- A Citizen Advisory Committee.
- Webinars.
- Stakeholder Meetings.

Purpose of CDBG-MIT Funds

The purpose of CDBG-MIT funds is to protect communities from major disasters in the future through disaster mitigation projects.

HUD's definition of mitigation is: *"Activities that increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship, by lessening the impact of future disasters."*

Disaster-related activities are those that can demonstrate a logical connection between the impacts of the disaster and the activity's contribution to community recovery. Examples of eligible activities may include, but are not limited to:

- Rebuilding homes and infrastructure damaged by the disaster.
- Providing assistance to affected business owners.
- Restoring the housing stock through new construction or rehabilitation/reconstruction.
- Rebuilding or replacing impacted infrastructure, such as road and bridge repair, water and wastewater facilities.
- Providing funding for activities that address job losses, impacts to tax revenues and impacts to businesses, such as job training, workforce development, loans and grants to businesses and improvements to commercial/rental districts.

HUD has emphasized the importance of broad-based, local and regional mitigation projects that will have long-lasting effects on community risk reduction. HUD also expects grantees to enhance the impact of HUD-funded investments with "more stringent building and zoning codes which will help to limit damage from future severe weather events." This is an eligible cost under the CDBG-MIT program.

Timeline and Current Status

Date	Action	Status
February 3, 2020	Deadline for the State Mitigation Action Plan to be submitted by DEO to HUD.	DEO is currently working on the Action Plan, it has not yet been released. DEO will post the Action Plan for no less than 30 calendar days to solicit public comment before submitting it to HUD.
August 23, 2019	HUD published the Federal Register necessary for the Florida Department of Economic Opportunity to work with partners to develop the federally required State Mitigation Action Plan.	Completed.
April 11, 2019	One-year anniversary of HUD announcing state of Florida would receive $633,485,000 for mitigation activities.	Completed.
April 11, 2018	HUD announced state of Florida would receive $633,485,000 for mitigation activities in Florida communities that experienced major declared disaster events during 2016 and 2017.	Completed.

Conclusion

The Administration maintains a full listing of mitigation projects, many of which may be eligible for CDBG-MIT funding. After review of the State Mitigation Action Plan, the Administration will compile a listing of eligible projects to apply for. The Administration will return to the Sustainability and Resilience Committee with an update and recommendation after the Action Plan is posted.

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION REGARDING THE FREQUENCY OF WATER TESTING IN MIAMI BEACH**

RESPONSIBLE DEPARTMENT

Environment and Sustainability

LEGISLATIVE TRACKING

Item R9 S - September 11, 2019 Commission Meeting

SPONSORED

Commissioner Steinberg

ANALYSIS

MEMO ATTACHED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?

No

Does this item utilize G.O. Bond Funds?

No

ATTACHMENTS:

	Description	Type
🗋	Commission After Action	Memo
🗋	Water Quality Memo	Memo

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission

FROM: Commissioner Micky Steinberg

DATE: September 11, 2019

SUBJECT: DISCUSSION AND REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE REGARDING THE FREQUENCY OF WATER QUALITY TESTING IN MIAMI BEACH.

ANALYSIS

Please add to the September 11, 2019 Commission Agenda a discussion and referral to the Sustainability and Resiliency Committee regarding the frequency of water quality testing in Miami Beach.

Applicable Area

Citywide

Is this a Resident Right to Know item?

No

Does this item utilize G.O. Bond Funds?

No

Legislative Tracking

Commissioner Micky Steinberg

MIAMIBEACH

City of Miami Beach, 1700 Convention Center Drive, Miami Beach, Florida 33139, www.miamibeachfl.gov

COMMITTEE MEMORANDUM

TO: Sustainability and Resiliency Committee

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION REGARDING THE FREQUENCY OF WATER TESTING IN MIAMI BEACH**

BACKGROUND

On September 11, 2019, the Mayor and City Commission referred a discussion to the Sustainability and Resiliency Committee (SRC) regarding the frequency of water testing in Miami Beach.

ANALYSIS

Water testing in Miami Beach occurs for two different purposes. On the beaches, ocean waters are tested to determine whether they are safe for swimming and recreation. The data is used to inform whether a swim advisory is warranted. On the bay, the water is tested to determine the health of Biscayne Bay and inform the city's decisions in stormwater management and pollution prevention. The data is used to determine where staff time, resources and funding will provide the greatest environmental benefit.

Beach Sampling for Recreation

The Miami-Dade County Department of Health (DOH) collects weekly water quality samples in the Atlantic Ocean off of select beach locations as part of the Florida Healthy Beaches program (http://www.floridahealth.gov/environmental-health/beach-water-quality/index.html). In Miami Beach, the DOH collects samples at four established sampling points: the beaches in the vicinity of 1st Street, 21st Street, 53rd Street, and 73rd Street. At the request of the city, DOH also samples the ocean water in the vicinity of 81st Street. The samples are tested for enterococcus, a type of fecal indicator bacteria that is used to determine the potential presence of disease-causing organisms in salt water. The results of the tests are available 24 hours after they are collected and are used to determine whether a swim advisory is warranted.

If enterococcus levels are present above the State's recreational water quality standard of 35 CFU/100mL in a sample, the DOH will issue a swim advisory for the affected beach. The City immediately alerts visitors and residents of the swim advisory through e-mail, press releases, hand delivered notices, and posted signage. The DOH will re-test the affected location the following day and will lift a swim advisory once enterococcus levels test below the State's recreational water quality standard.

Bay Sampling for Stormwater Management

Water quality testing in Biscayne Bay is conducted monthly by Pace Analytical, Inc. and City of Miami Beach staff at approximately 35 stations citywide. These sampling locations were added voluntarily by the City as an extension of the larger Biscayne Bay sampling network, which Miami-Dade County has been monitoring on a monthly basis for more than 40 years. Consistent with the County's methodology, the samples are analyzed for physical (i.e., temperature), chemical (i.e., nutrients) and biological (i.e., enterococcus) parameters. City staff reviews the sampling results as they come in each month, as well as annually to inform stormwater management decisions.

CONCLUSION

The current water testing frequencies for the beaches and the bay are consistent with industry standards for their intended purpose. The Administration recommends continuing weekly testing for the beaches as part of the Florida Healthy Beaches program and monthly testing for the bay through the city's water quality monitoring program.

SMT/ESW/MK

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION ON THE GRAND JURY REPORT REGARDING HEALTH OF BISCAYNE BAY WITH FOCUS ON HARD DEBRIS AND AN UPDATE ON WHAT THE CITY OF AVENTURA IS DOING IN RESPONSE**

RESPONSIBLE DEPARTMENT

Environment and Sustainability | Public Works

LEGISLATIVE TRACKING

Item C4 S - September 11, 2019 Commission Meeting

SPONSORED

Commissioner Samuelian

ANALYSIS

VERBAL REPORT AT COMMITTEE MEETING.

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
Commission After Action	Memo

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission
FROM: Commissioner Mark Samuelian
DATE: September 11, 2019

SUBJECT: REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE TO DISCUSS THE GRAND JURY REPORT REGARDING HEALTH OF BISCAYNE BAY WITH FOCUS ON HARD DEBRIS AND AN UPDATE ON WHAT THE CITY OF AVENTURA IS DOING IN RESPONSE.

ANALYSIS

The Grand Jury Report regarding the health of Biscayne Bay was issued on August 9, 2019. While the report does not specifically mention the City of Miami Beach nor its pumps, it does assert the following:

"We urge all levels of government to participate in earnest efforts to implement whatever recommendations they can to ensure a healthy future for our Bay and our groundwater. The broad and beautiful lagoon that we know today as Biscayne Bay has always had a special magnetism...Yet, as we express our love for Biscayne Bay's beauty, marine life and its ecology, we too often shy away from our daily actions that may be slowly strangling this thing we say we cherish."

We should seek to learn from this report and take action. Specifically, the discussion should focus on hard debris as well as any other opportunities (e.g., capturing excessive nutrients). In addition, the City of Aventura has already begun taking measures,

“Grates have been installed on all storm drains in the City of Aventura, to block debris from entering into the drainage system. Consequently, the quality of the water emptying into the intra-coastal waterways in that area has improved.”

The City of Miami Beach should look into and inform the Commission with an update on the ongoing actions of City of Aventura in this matter.

The report may be found in the link below:
https://docmgmt.miamibeachfl.gov/WebLink/DocView.aspx?id=256139&dbid=0&repo=CityClerk

Legislative Tracking

Commissioner Mark Samuelian

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION ON REQUIRING ALL COMMERCIAL LANDSCAPERS WORKING ON MIAMI BEACH TO ABIDE BY FLORIDA FRIENDLY LANDSCAPING STANDARDS**

RESPONSIBLE DEPARTMENT

Environment and Sustainability | Public Works | Parks and Recreations

LEGISLATIVE TRACKING

Item C4 T - September 11, 2019 Commission Meeting

SPONSORED

Commissioner Arriola

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
No	Yes

ATTACHMENTS:

Description	Type
Commission After Action	Memo

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission

FROM: Vice-Mayor Ricky Arriola

DATE: September 11, 2019

SUBJECT: REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE TO DISCUSS REQUIRING ALL COMMERCIAL LANDSCAPERS WORKING ON MIAMI BEACH TO ABIDE BY FLORIDA FRIENDLY LANDSCAPING STANDARDS.

ANALYSIS

The Miami-Dade State Attorney's recent Grand Jury Report on "The Health of Biscayne Bay" highlighted the sensitive state of our marine ecosystem. In an effort to reduce herbicide and fertilizer runoff that was mentioned in the report, I am asking the Sustainability and Resiliency Committee to consider requiring all commercial landscapers conducting business on Miami Beach to abide by Florida Friendly Landscaping (FFL) standards. FFL emphasizes the use of salt-tolerant and drought-tolerant plants that do not require harmful chemicals to thrive and also promotes other environmentally sustainable landscaping practices.

Applicable Area

Citywide

Is this a Resident Right to Know item?

Yes

Does this item utilize G.O. Bond Funds?

No

Legislative Tracking

Vice-Mayor Ricky Arriola

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION ON REPURPOSING OUR GOLF COURSES FOR THE FUTURE**

RESPONSIBLE DEPARTMENT

Parks and Recreation | Public Works | Environment and Sustainability

LEGISLATIVE TRACKING

Item C4 AB - May 16, 2018 Commission Meeting

SPONSORED

Commissioner Ricky Arriola

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?

Yes

Does this item utilize G.O. Bond Funds?

ATTACHMENTS:

Description	Type
No Attachments Available	

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION PERTAINING TO AMENDMENTS TO THE CITY CODE REGARDING POTENTIAL REQUIREMENTS FOR HIGHER ELEVATION FOR NEW COMMERICAL CONSTRUCTION THAT IS VULNERABLE TO FLOODING**

RESPONSIBLE DEPARTMENT

Planning

LEGISLATIVE TRACKING

Item CF D - July 17, 2019 Commission Meeting

SPONSORED

Commissioner Aleman | Co-Sponsor Commissioner Arriola

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
No Attachments Available	

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION TO REVIEW THE PALM AND HIBISCUS ROAD ELEVATION EXPERIENCE**

RESPONSIBLE DEPARTMENT

Capital Improvement Projects

LEGISLATIVE TRACKING

Item C4 Q - September 11, 2019 Commission Meeting

SPONSORED

Commissioner Samuelian

ANALYSIS

ITEM DEFERRED.

Applicable Area

South Beach

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

Strategic Connection

Environment & Infrastructure - Reduce risk from storms, high tides, groundwater, and sea level rise.

ATTACHMENTS:

Description	Type
Commission After Action	Memo

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission
FROM: Commissioner Mark Samuelian
DATE: September 11, 2019

SUBJECT: REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE TO REVIEW THE PALM HIBISCUS PROJECT ROAD ELEVATION EXPERIENCE.

ANALYSIS

The City's road raising policy is a critical issue for our stormwater program and is currently being reviewed by Jacobs Engineering. We should always seek to improve our program by learning from our projects and Palm Hibiscus is our most recent experience. Therefore, we should review:

- The impact of road raising on project duration (i.e., what was incremental project duration?)
- The costs of road raising (i.e., how much money was spent on road raising activities and what would have been costs to implement pumps, new pipes/ infrastructure, etc. with nominal changes to road elevation?)
- The impacts on private property and actions required by property owners
- Palm Hibiscus Project results to-date with respect to effectiveness of road raising
- Lessons learned to inform policy making

Legislative Tracking

Commissioner Mark Samuelian

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION ON CITY OF MIAMI BEACH STORMWATER, SANITARY SEWER, AND WATER INFRASTRUCTURE BEST MANAGEMENT PRACTICES**

RESPONSIBLE DEPARTMENT

Environment and Sustainability

LEGISLATIVE TRACKING

Item C4U - May 11, 2016 Commission Meeting

SPONSORED

Commissioner Micky Steinberg

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
No	No

ATTACHMENTS:

Description	Type
No Attachments Available	

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION REGARDING HOW GREEN INFRASTRUCTURE INCLUDING LIVING OR HYBRID SHORELINES CAN COMPLEMENT GREY INFRASTRUCTURE IN OUR CLIMATE ADAPTION ON-GOING WORK**

RESPONSIBLE DEPARTMENT

Environment and Sustainability

LEGISLATIVE TRACKING

Item C4 N - April 13, 2016 Commission Meeting

SPONSORED

Commissioner Steinberg | Co-Sponsor Commissioner Malakoff

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
No Attachments Available	

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION REGARDING PRIVATE SEAWALLS**

RESPONSIBLE DEPARTMENT

City Manager's Office | Public Works

LEGISLATIVE TRACKING

Item R7F - December 12, 2018 Commission Meeting

SPONSORED

City Commission

ANALYSIS

TO BE SUBMITTED WITH SUPPLEMENTAL.

UPDATE

Supplemental #1 09.24.19 - Private Seawall Memo

Supplemental #2 09.24.19 - RFI Private Financing Options

Supplemental #3 09.24.19 - Seawall Steps Flyer

Supplemental #4 09.24.19 - Broward County Proposed ARTICLE XXV Resiliency Standards

Applicable Area

Middle Beach

Is this a Resident Right to Know item?

Yes

Does this item utilize G.O. Bond Funds?

ATTACHMENTS:

Description	Type

No Attachments Available

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSS THE MOTION MADE BY THE SUSTAINABILITY COMMITTEE TO MAKE THE REDUCTION OF CO2 EMISSIONS A PRIMARY FOCUS OF THE FLEET ASSESSMENT**

RESPONSIBLE DEPARTMENT

Fleet Management

LEGISLATIVE TRACKING

Item C4 S - July 17, 2019 Commission Meeting

SPONSORED

Commissioner Samuelian

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
Commission After Action	Memo

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission
FROM: Commissioner Mark Samuelian
DATE: July 17, 2019

SUBJECT: REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE TO DISCUSS THE MOTION MADE ON MAY 28, 2019 BY THE SUSTAINABILITY COMMITTEE TO MAKE THE REDUCTION OF CO2 EMISSIONS A PRIMARY FOCUS OF THE FLEET ASSESSMENT.

ANALYSIS

The Sustainability Committee met on May 28, 2019 and passed the following motion:

Motion to support all efforts to make the reduction of C02 emissions a primary focus of the fleet assessment, including providing appropriate funding, considering total cost of ownership, and prioritizing the use of electric vehicles.

Legislative Tracking

Commissioner Mark Samuelian

ATTACHMENTS:

Description

- Sustainability Committee Motion

MIAMIBEACH

City of Miami Beach, 1700 Convention Center Drive, Miami Beach, Florida 33139, www.miamibeachfl.gov

Jimmy L. Morales, City Manager
Tel: 305-673-7010 , Fax: 305-673-7782

NO. LTC # **353-2019**

LETTER TO COMMISSION

TO: Mayor Dan Gelber and Members of the City Commission

FROM: Jimmy L. Morales, City Manager

DATE: June 18, 2019

SUBJECT: Sustainability Committee Motions

The purpose of this Letter to Commission is to provide you with correspondence received from the Sustainability Committee regarding the motions made at the meeting held May 28, 2019.

Attachment: Sustainability Committee Motions

SMT/ESW/FCT/YP

MIAMI BEACH
RISING
ABOVE

City of Miami Beach Sustainability Committee

David Doebler, Chair

Members:
Jeremy Waks
Mohammed Islam
Luiz Rodrigues
Max Litt

TO: Mayor Dan Gelber and Members of the City Commission

FROM: David Doebler, Sustainability Committee Chair

DATE: June 18, 2019

SUBJECT: Sustainability Committee Motions

Dear Mayor and Honorable City Commission:

The Sustainability Committee met on May 28, 2019 and passed the motion below:

- Motion to support all efforts to make the reduction of CO_2 emissions a primary focus of the fleet assessment, including providing appropriate funding, considering total cost of ownership, and prioritizing the use of electric vehicles

As an Advisory Committee, we sincerely ask that consideration be given to the above motion.

Sincerely,

David Doebler
Chairperson, Sustainability Committee

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSSION ON REQUIRING ALL NEW CITY VEHICLES PURCHASED AFTER 2020 TO BE 100% ELECTRIC (EXCEPT EMERGENCY VEHICLES)**

RESPONSIBLE DEPARTMENT

Fleet Management

LEGISLATIVE TRACKING

Item C4 R - September 11, 2019 Commission Meeting

SPONSORED

Commissioner Gongora

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
Commission After Action	Memo

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission

FROM: Commissioner Michael Gongora

DATE: September 11, 2019

SUBJECT: REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE - DISCUSSION ON REQUIRING ALL NEW CITY VEHICLES PURCHASED AFTER 2020 TO BE 100% ELECTRIC (EXCEPT EMERGENCY VEHICLES).

ANALYSIS

Please place on the September 11 Commission agenda, a referral to the Sustainability and Resiliency Committee to begin the process of requiring all new City vehicles purchased after 2020 to be 100% Electric (except emergency vehicles). The Sustainability Committee passed a motion in May to support fleet management reductions of CO2 emissions. These vehicles have a lower total cost of ownership than traditional gasoline vehicles. New York City now operates more than 1,224 on-road EVs and plug-in hybrids and released a report that says "Electric cars are now the cheapest option for its fleet" https://qz.com/1571956/new-york-city-says-electric-cars-cheapest-option-for-its-fleet/. Please feel free to contact Diana Fontani should you have any questions regarding this item.

Applicable Area

Citywide

Is this a Resident Right to Know item?

Yes

Does this item utilize G.O. Bond Funds?

No

Legislative Tracking

Commissioner Michael Gongora

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSS THE STATUS AND IMPLICATIONS OF THE ACTION ITEMS ASSOCIATED WITH ONGOING WATER QUALITY COORDINATION WITH MIAMI-DADE COUNTY.**

RESPONSIBLE DEPARTMENT

Environment and Sustainability

LEGISLATIVE TRACKING

Item C4U - July 17, 2019 Commission Meeting

SPONSORED

Commisioner Samuelian | Co-Sponser Commissioner Michael Gongora

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
No Attachments Available	

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSS UPDATES TO THE CITY CODE REFERENCING TURTLE NESTING**

RESPONSIBLE DEPARTMENT

Environment and Sustainability

LEGISLATIVE TRACKING

Item C4 F - September 25, 2017 Commission Meeting

SPONSORED

Commissioner Aleman | Co-Sponsors Commissioner Malakoff & Commissioner Samuelian

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?	Does this item utilize G.O. Bond Funds?
Yes	No

ATTACHMENTS:

Description	Type
No Attachments Available	

MIAMIBEACH

COMMITTEE MEMORANDUM

TO: Sustainability Resiliency Committee Meeting

FROM: Jimmy L. Morales, City Manager

DATE: October 23, 2019

SUBJECT: **DISCUSS ARKUP'S LUXURY HOUSEBOATS AND THEIR EFFECTS ON BISCAYNE BAY AND THE QUALITY OF LIFE SURROUNDING RESIDENTS**

RESPONSIBLE DEPARTMENT

Environment & Sustainability

LEGISLATIVE TRACKING

Item R9 X - September 11,2019

SPONSORED

Commissioner Arriola

ANALYSIS

ITEM DEFERRED.

Applicable Area

Not Applicable

Is this a Resident Right to Know item?

No

Does this item utilize G.O. Bond Funds?

Yes

ATTACHMENTS:

Description	Type
Commission After Action	Memo

MIAMIBEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission

FROM: Vice-Mayor Ricky Arriola

DATE: September 11, 2019

SUBJECT: DISCUSS ARKUP'S LUXURY HOUSEBOATS AND THEIR EFFECTS ON BISCAYNE BAY AND THE QUALITY OF LIFE OF SURROUNDING RESIDENTS.

ANALYSIS

Arkup, LLC is a company that produces luxury houseboats. Arkup houseboats are different than others in that they use hydraulic piledriving to anchor in place; this is harmful to our precious bay bottom. The Arkup houseboat has been observed driving its pilings all around Biscayne Bay. A number of residents in the South of Fifth, West Avenue, Palm/Hibiscus/Star Islands, and Venitian Islands neighborhoods have reached out to our office about the issue because they know how I feel about mooring fields and my strong desire to protect our resident's privacy, quality of life, and marine ecosystem. I ask that the Commission discuss this issue an explore ways to regulate these houseboats, including working with the State of Florida to prohibit them in Florida's coastal waters.

Applicable Area

Citywide

Is this a Resident Right to Know item?

Yes

Does this item utilize G.O. Bond Funds?

No

Legislative Tracking

Vice-Mayor Ricky Arriola

ATTACHMENTS:

	Description
🗋	Arkup - Miami Herald Article

Miami Herald

MIAMI-DADE COUNTY

This houseboat of the future is a $5.5 million floating home designed for sea level rise

BY LINDA ROBERTSON

APRIL 30, 2019 09:20 AM

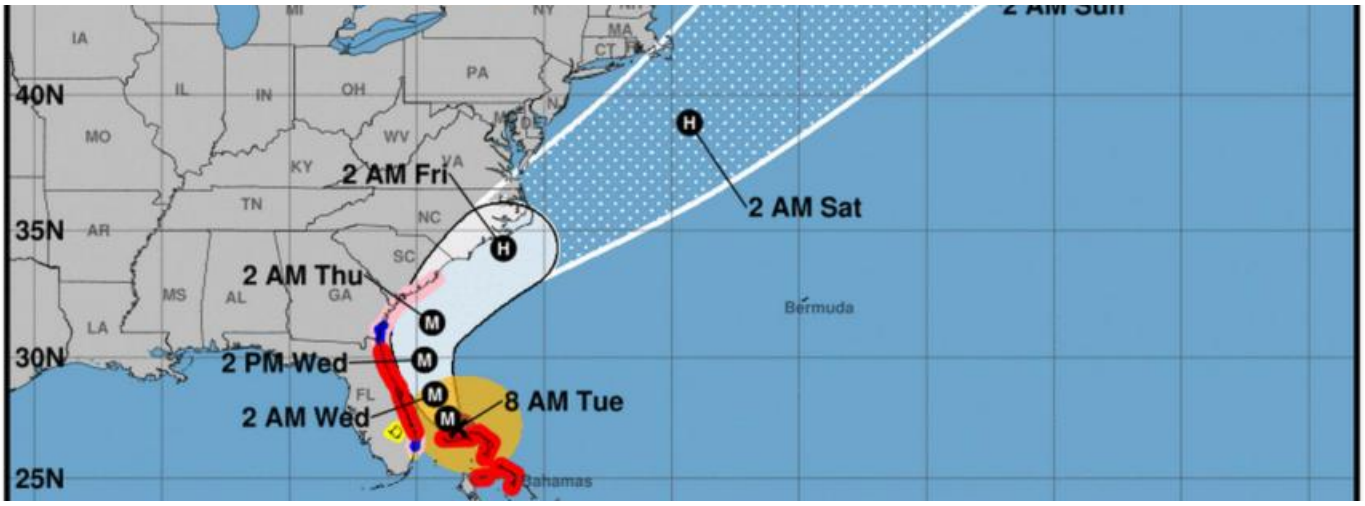
The Arkup houseboat, a green-energy luxury floating home that can adapt to sea rise, docks off Palm Island near Miami Beach. The floating house has solar panels, impact resistant windows and can withstand hurricane winds of up to 155 miles per hour. BY **MATIAS J. OCNER**

Why let sea rise sink your Miami lifestyle when you can go with the flow aboard the Arkup houseboat?

Arkup was designed with the ingenious engineering feature of four hydraulic pilings that stabilize the vessel on the sea floor or allow it to lift like a house on stilts above floodwaters, king tides and hurricane-whipped storm surges. South Florida sea levels are projected to rise 6 to 12 inches by 2030, 14 inches to nearly three feet by 2060, and 31 inches to nearly seven feet by 2100, according to the Southeast Florida Climate Change Regional Compact Sea Level Rise Work Group. Miami Beach and the Keys may be inundated first, but the entire region is recognized as one of the most vulnerable on the planet.

In this brave new waterworld, Arkup will keep you high and dry on your floating home.

TOP ARTICLES



Hurricane Dorian 'beginning to inch northwestward' while still pounding the Bahamas

Noah, who constructed his ark to withstand 40 days and 40 nights of apocalyptic rain and Biblical flooding, would approve. He probably could not afford the modern version, which has a sticker price of $5.5 million, but he would like the comfort, spacious bathrooms and retractable swimming platform.

Arkup, solar-powered and equipped with a rainwater-collecting-and-purifying system, is a self-sustaining home, a green adaptation for our blue future.

The Arkup houseboat, a green-energy luxury floating home that can adapt to sea rise, docks off Palm Island near Miami Beach on Saturday, April 27, 2019. The floating house has solar panels, impact resistant windows and can withstand hurricane winds of up to 155 miles per hour. MATIAS J. OCNER *MOCNER@MIAMIHERALD.COM*

"It's more like a house than a boat but you never lose the unmistakable feeling that you're on the water," said Nicolas Derouin, managing director of Arkup.

Arkup was built in Miami by Derouin and Arnaud Luguet, two French engineers who live here and have a passion for the oceans, renewable energy and environmental preservation.

They have witnessed the impact of climate change and sea level rise in their adopted hometown and around the world. On Monday, Indonesia announced it will move its capital out of Jakarta, a swampy, flood-prone and drowning metropolis of 30 million people.

"It is happening before our eyes," Derouin said. "Coastal areas are the most desirable but also the most at risk. Miami is implementing resiliency measures. We hope Arkup can be a small part of the solution."

Derouin and Luguet were inspired by the Dutch floating communities of IJburg and Schoonschip.

"In the Netherlands, one third of the country is below sea level," Derouin said. "They want to develop housing alternatives. Instead of fighting the water, live on it."

Nicolas Derouin

Lake Union in Seattle has 500 permanently docked houseboats. Paris has restaurants, a hotel and is building a 2024 Olympic venue on the River Seine. Dubai has floating vacation homes. In San Francisco, where Sausalito has a houseboat community, the Danish firm BIG has proposed building an archipelago of floating villages connected by ferries on the bay. The Lincoln Harbor Yacht Club in Weehawken, N.J., which was devastated by Superstorm Sandy, may reinvent its marina as a houseboat haven.

"We decided to design a boat that looks and feels like Miami, is compatible with a subtropical climate and gives the owner the freedom and flexibility to move," Derouin said.

Their ultimate goal is to create an affordable model, develop floating neighborhoods and partner with island hotels to build eco-bungalows on surrounding waters.

"We want to design small apartments on the water for students, townhouses for families," Derouin said. "We want to create housing solutions for a broader audience. That's the vision behind Arkup."

Arkup's eco-friendly luxury yacht, the mansion on water is a marvel whether you choose to tie up at a dock, cruise around the ocean or live above the water. The houseboat can be yours for about $6 million, or more.
By **David Caraccio**

Derouin and Luguet collaborated with Dutch firm Waterstudio and pioneering aqua-tect Koen Olthuis, who has designed a floating mosque, floating prison, floating spa and floating resort and helped conceptualize a proposed development of 29 private islands with lavish sustainable homes — a villa flotilla — on Maule Lake in North Miami Beach.

"He is an advocate of urban planning on the water," Derouin said.

You may have noticed Arkup — which was unveiled at the Miami Boat Show in February — docked at Star Island and now Palm Island. You can see it from the MacArthur Causeway. With its floor-to-ceiling windows, it looks like a large glass box.

On board, it doesn't look or feel like a boat. No rocking, for one thing. It has two air-conditioned levels, with 9-1/2-foot ceilings on the first floor and 8-1/2-foot ceilings on the second. There are three bedrooms upstairs with three full and roomy bathrooms — no cramped and tilting heads on this boat — and two balconies.

There is 2,600 square feet of indoor space and 1,750 square feet of outdoor space.

Downstairs, there's an inviting living room, kitchen, dining area, two bathrooms and a small room with a Murphy bed that could be an office or guest quarters. Interior design is by Brazilian company Artefacto. A sliding outdoor deck adds 500 square feet of floor space when fully extended.

At the stern, the swim platform can be lowered into the water to create a mini pool. There's a boat lift for your kayak or amphibious vehicle.

The bow deck has an outdoor kitchen and console controls for navigation and operating the 136-hp rotating electric thrusters, which emit no noise and require no diesel fuel, and the anchoring system, which allows adjustments of each piling to level the boat.

Interior of the Arkup houseboat, a green-energy luxury floating home that can adapt to sea rise, docked off Palm Island near Miami Beach on Saturday, April 27, 2019. MATIAS J. OCNER *MOCNER@MIAMIHERALD.COM*

Arkup has a maximum speed of 7 knots and a range of 20 nautical miles that can be increased with additional battery banks or a backup generator.

“We can’t match the navigational capacity and speed of a yacht,” Derouin said. “You couldn’t cruise around the world, but you could use Arkup in the Bahamas or British Virgin Islands, for example.

“Our vessel is 75 feet long and 32 feet wide and we have the same livable space as a yacht that is 110 feet long. Arkup is for people who prioritize space and comfort over speed and range.”

Arkup’s steel hull and superstructure is built to withstand Category 4 hurricane winds (up to 156 mph). The 40-foot-long pilings, or spuds, enable the boat to anchor in up to 25 feet of water and elevate above the waves. The draft is five feet. It’s got a 4,000-gallon freshwater tank and an equal-sized tank for waste water. The 2,400-square-foot roof is covered with 36-kilowatt capacity solar panels that recharge the battery.

“A motor yacht is the opposite of sustainable,” Derouin said, pointing to a gigantic yacht parked behind Arkup and to passing motorboats that pause while curious passengers take a look at Arkup. “Large engines. Massive fuel consumption. Pollution. On Arkup you can live completely off the grid with no bills for energy or water. It is zero emission, carbon neutral. In this house, you don’t need to rebuild your seawalls or move your air conditioner to higher ground. Compared to the costs of a waterfront home, Arkup is competitive.”

Plus it’s got panoramic views of the downtown skyline and dolphins swimming by the side deck.

So far, the partners have one buyer and a waiting list of potential buyers who want to take the boat for a test drive.

“We’ve had an amazing response,” Derouin said. “Our clientele includes owners of private Caribbean islands who think Arkup is better than building a beach house. Or people who live full or part time in Miami and want a toy for the weekends, to take friends out on the bay. We have people who live elsewhere and Arkup would be their second or vacation home. And people who see it as their primary home, docked at a marina. It’s a luxury product for a niche market but our dream is to develop affordable versions with the same principles.”

Miamians who don’t want to flee could take to the sea. As oceans swell and coastlines shrink, trade house for houseboat.

“We need more entrepreneurs and scientists developing innovative ideas because climate change is not slowing down,” Derouin said. “Here’s one new way to live in harmony with the water.”

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David Magee

The zoning for a boat. The water front house is behind this "boat" has it's view blocked but this "houseboat." The only gain here is that it effectively changes the land use from boat parking to building a house. If I had a water front lot and someone built this in front of my house I'd be unhappy to say the least. The water front lot has lost value as it isn't really water front anymore.

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Hayes Almand

If you move it, the land regained its value lol.

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He drank and fired his weapon. Inside his home were pitbulls and cocaine, cops say.

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When police finally searched Deladiel Ernesto Caminero's apartment, they found four baggies of cocaine and seven dogs, two of them pitbulls, police said.

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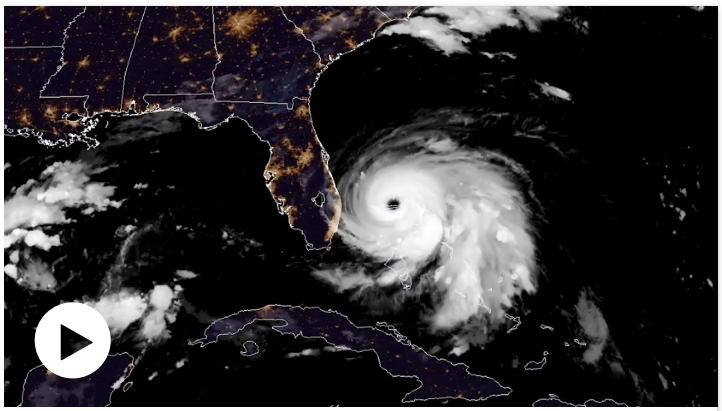

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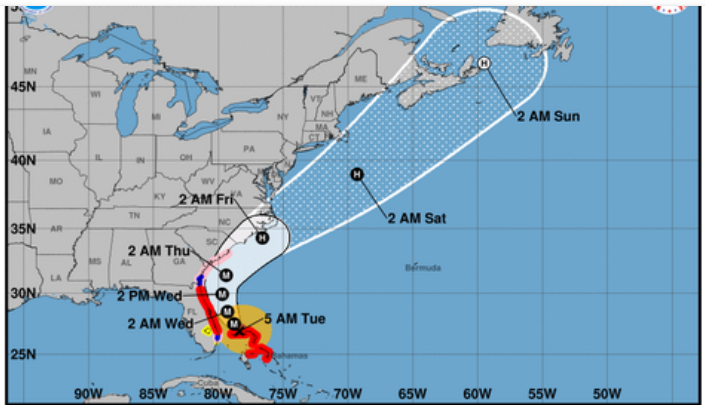

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