

RESILIENCE ACCELERATOR

SOUTHEAST FLORIDA

WORKSHOP REPORT DESIGNING FOR REGIONAL RESILIENCE

AUGUST 2018

100

RESILIENT

CITIES

COLUMBIA

Center for
Resilient Cities
and Landscapes

RESILIENT

GREATER MIAMI
AND THE BEACHES

100 RESILIENT CITIES

100 Resilient Cities - Pioneered by The Rockefeller Foundation (100RC) helps cities around the world become more resilient to the social, economic, and physical challenges that are a growing part of the 21st century. 100RC provides this assistance through funding for a Chief Resilience Officer in each 100RC city who will lead the resilience efforts; resources for drafting a Resilience Strategy; access to private sector, public sector, academic, and NGO resilience tools; and membership in a global network of peer cities to share best practices and challenges. Learn more at www.100ResilientCities.org.

COLUMBIA UNIVERSITY'S CENTER FOR RESILIENT CITIES AND LANDSCAPES

The Center for Resilient Cities and Landscapes (CRCL) was established at the Columbia University Graduate School of Architecture, Planning and Preservation (Columbia GSAPP) in 2018. CRCL helps communities thrive in an age of climate uncertainty by convening workshops and pushing the design, funding, and implementation of innovative infrastructure projects in a range of global contexts. Directed by Professor Kate Orff and Managing Director Thaddeus Pawlowski, the Center extends Columbia University's leadership in climate-related work and support of interdisciplinary collaborations with external partners to engage the most serious and challenging issues of our time. Through related academic programming, the Center integrates resilience thinking into design education, bringing real-world challenges into the classroom to train future generations of design leaders.

CONTRIBUTORS

THE MIAMI FOUNDATION

The Miami Foundation partners with donors to champion causes and improve local quality of life in Miami. Since 1967, the Miami Foundation has done this by taking leadership on civic issues, investing in Miami's community and nurturing philanthropy. Thanks to more than 1,000 donors, the Miami Foundation currently manages over \$360 million in assets and has made almost \$300 million in grants that create opportunities for residents, make Miami-Dade County more resilient and foster home-grown creativity. Learn more at miamifoundation.org.

RESILIENT 305

As a part of 100 Resilient Cities, Resilient 305 is a unique partnership among Miami-Dade County, the City of Miami Beach and the City of Miami led by a Chief Resilience Officer from each local government. Together, Resilient 305 is creating a plan for the region that prepares for tomorrow—and includes everyone.

THE SOUTHEAST FLORIDA CLIMATE CHANGE COMPACT

In January 2010, Broward, Miami-Dade, Monroe, and Palm Beach Counties united to form the Southeast Florida Regional Climate Change Compact as a way to coordinate mitigation and adaptation activities across county lines. Since then, the four Compact counties have advanced local and regional responses to—and preparations for—the effects of climate change, including sea level rise, flooding, and economic and social disruptions. The Counties have expanded to work with a growing number of federal, state, regional, municipal, nonprofit, academic, and private sector partners.

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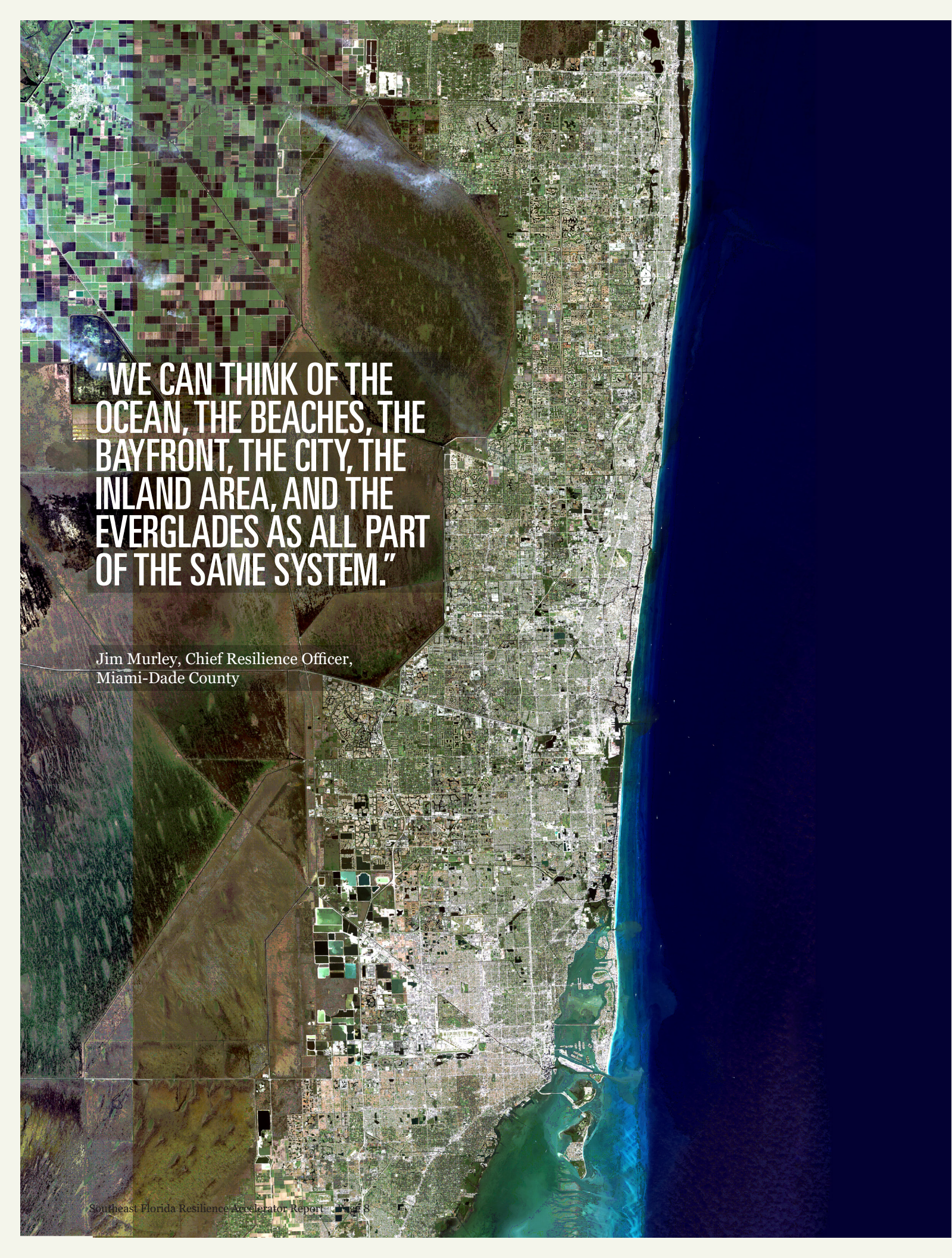
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OVERVIEW

Bold, innovative solutions and institutional transformation are needed to make Southeast Florida and its growing population more resilient to climate change threats.

When seen from space, Southeast Florida appears to be floating out into the deep blue of the Caribbean on one side and the deep green of the Everglades on the other. From this vantage, the clearly drawn edges and regularly-spaced grid of highways and major roads might lead one to mistake Southeast Florida as a construction that came into existence by a singular will and vision. In fact, the area encompasses four counties and nearly a hundred municipalities with 8.5 million people. No single idea or program of action brought the region into existence—it has been shaped by natural and human forces often working at enormous strain against each other. This has resulted in a place of unmistakable character, one that’s celebrated in art deco design, music, literature, film, and even a color palette reflecting the pastels of the sky, water and land: South Florida, a tropical destination of mysterious beauty.



An aerial photograph of South Florida, showing the Everglades on the left, a dense urban area in the center, and the ocean on the right. The image is used as a background for the text.

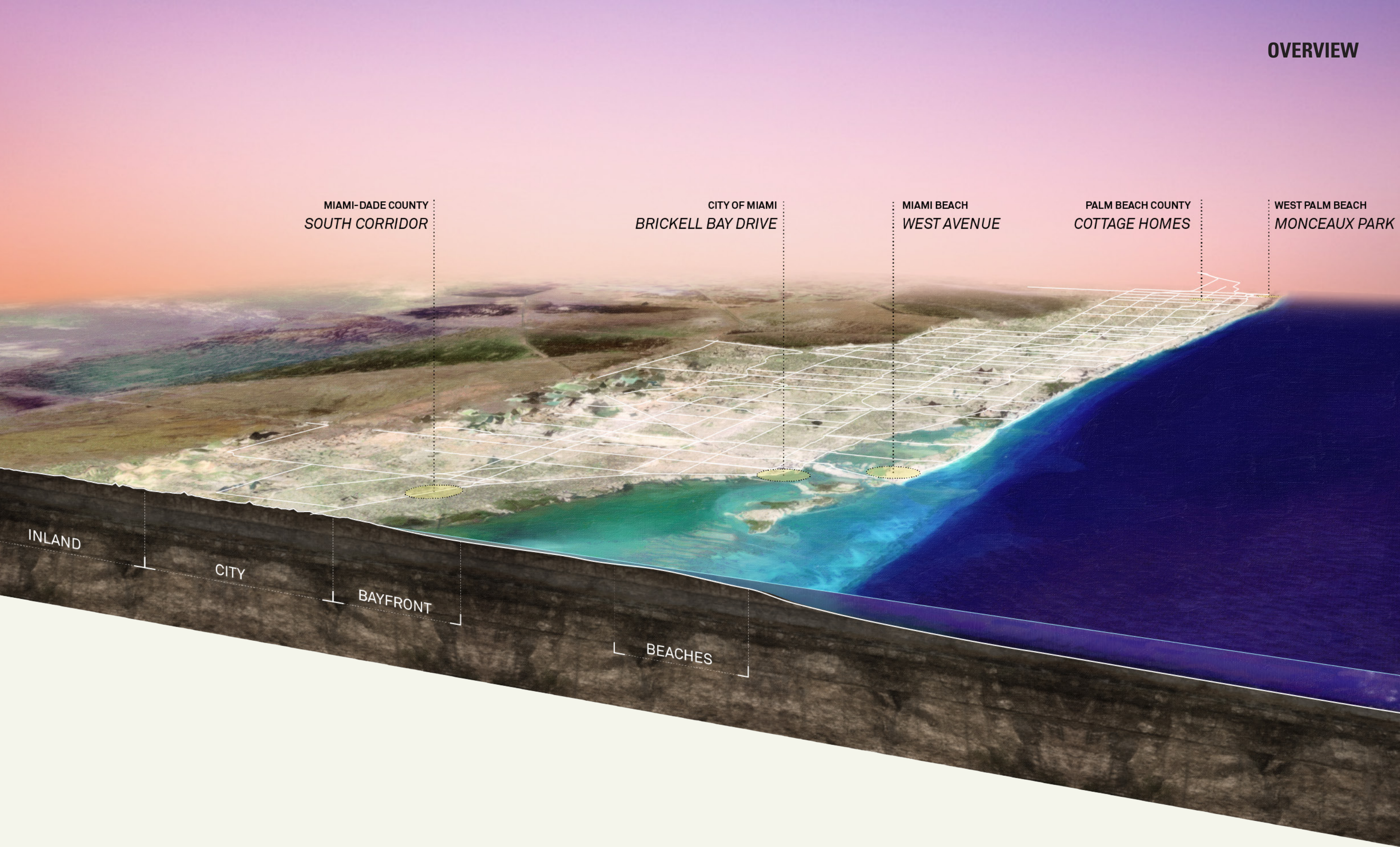
“WE CAN THINK OF THE OCEAN, THE BEACHES, THE BAYFRONT, THE CITY, THE INLAND AREA, AND THE EVERGLADES AS ALL PART OF THE SAME SYSTEM.”

Jim Murley, Chief Resilience Officer,
Miami-Dade County

During the last century, South Florida has experienced great waves of human settlement on the heels of massive investments in water and transportation infrastructure. Its people have faced challenges such as Hurricane Andrew in 1992 and Hurricane Irma in 2017, but they have shown resilience and a will to make this tropical paradise an attractive place to live and work. New people keep arriving and the region continues to grow. At the same time, the changing climate is bringing increasingly threatening coastal storms, regular tidal flooding from sea level rise, and more frequent and torrential rainstorms. Public investment in infrastructure and social support struggles to keep pace with this growth. There’s a widening gap between those for whom this paradise is a reality and those for whom it continues to be a fleeting fantasy. And for everyone, the changing climate creates an existential stress over all serious conversations about the future, casting a pall of anxiety over decisions. No one knows when the next storm will come or how bad the flooding will get, but everyone understands that the danger is compounding.

The severity of these challenges is not lost on residents and their leaders. They recognize bold and innovative solutions are needed, as is the institutional transformation to implement them. For this reason, CRCL and 100 RC chose Greater Miami and the Beaches to be the site of the first Resilience Accelerator. This program brings together experts and local leaders for an intensive multi-day planning, design, and implementation workshop, which aims to influence the resilience value of each project and challenge the people and institutions tasked with delivering the projects to be more holistic, anticipatory, reflective, innovative, and radically action-oriented in their work.

Chief Resilience Officers (CROs) Susy Torriente from the City of Miami Beach, Jane Gilbert from the City of Miami, and Jim Murley from Miami-Dade County are working together to develop a strategy that sets targets and prioritizes projects to build the region’s resilience. Each CRO selected one project in their jurisdiction that reflects a range of challenges identified in the Greater Miami and the Beaches Preliminary Resilience Assessment to test with the Resilience Accelerator workshop. Recognizing that challenges are not isolated, 100 Resilient Cities partnered with the Climate Compact and invited two projects from Palm Beach County to participate in the workshop.





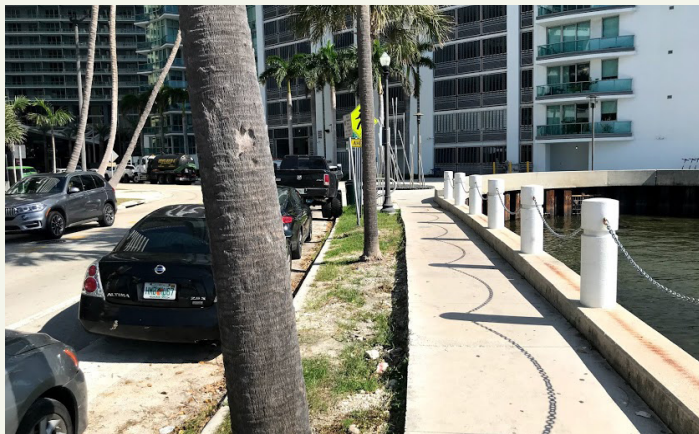
Rain storm in Miami Beach



Bus station on South Corridor



Military Trail in Palm Beach County



Waterfront Promenade on Brickell Bay Drive

“THIS ISN’T JUST ABOUT THESE FIVE PROJECTS, BUT THE TENS OF THOUSANDS OF PROJECTS IN THE YEARS AHEAD . . . FRANKLY, THERE IS NOT ENOUGH TIME OR MONEY TO NOT BE THINKING ABOUT THESE ISSUES WITH EVERYTHING THAT WE DO. THERE IS NO SUCH THING AS JUST A TRANSIT PROJECT ANYMORE, OR JUST A WATER PROJECT . . . EVERY PROJECT NEEDS TO BUILD RESILIENCE IN THE PLACES AND COMMUNITIES IT TOUCHES.”

Sam Carter, Resilience Accelerator Director,
100 Resilient Cities

PROCESS

PROJECT SELECTION

The Chief Resilience Officers (CROs) from the City of Miami Beach, the City of Miami, Miami-Dade County and Palm Beach County selected five projects for the Accelerator. Each project faces unique challenges based on its institutional and political context and unique geography; each project also has complex paths to implementation.

The projects chosen for the Accelerator span diverse areas of Southeast Florida, from the beaches to the bay front, the densest urban areas and the typical low density suburban, and even the exurban edges that rarely become the focus of design charrettes and public forums.

For each project, the CRO must identify the hidden costs and range of possible benefits, build consensus and a broad base of support, align stakeholder and inter-agency interests, and relate to the larger challenges of regional resilience.

SCOPING

The Accelerator team visited Southeast Florida for three days (June 4-6, 2018) to meet with municipal officials and project stakeholders, collect information for workshop planning and design, and try to understand and document each of the places where accelerated projects were proposed. During our time there, we visited the elegant shops, conspicuous pump stations, and elevated intersections along West Avenue in Miami Beach, the skyscrapers on raised plinths and aging condos along the palm-lined esplanade in Brickell, the plush green lawns and million-dollar homes along the bay in West Palm Beach, the nearly endless blacktop of highway and mall parking lots along the South Corridor, and the abandoned strip malls and communities living on the edge in unincorporated Palm Beach County. We spoke with mobilized homeowners, intrepid civil servants, environmental justice activists, academics, artists, and regular people; listened carefully and tried to design an event where many voices could be heard and progress made toward great challenges.



Monceaux Park in West Palm Beach

WORKSHOP

The workshop took place over three days (August 6-8, 2018) at Miami-Dade College - Wolfson Campus in Miami, Florida. Participants were grouped into project teams, which included the city and county staff working on the projects, stakeholders from other agencies and partner organizations, and subject matter experts from within the region and outside of it.

Each project team also had a facilitator and a visual facilitator to help guide the conversation and capture progress.

Throughout the workshop, participants received reports from the field by Misael Soto, the City of Miami Beaches and the ArtCenter of South Florida’s Artist-In-Residence, and Alissa Farina, Special Project Coordinator for the City of Miami Office of Resilience and Sustainability. Misael and Alissa visited each site over the course of the three days and recorded videos containing descriptions of conditions such as pedestrian traffic, environmental conditions, and weather, which were used to share project sites and characteristics with workshop participants.



Misael and Alissa waited at the bus stop at the future site of Palm Beach Counties Cottage Homes project



Misael called out the storm drains and mismatch of elevations on West Avenue



Misael pointed out the existing strict rules regulating public activity along Brickell Bay Drive

DAY 1



Dan Gelber, Mayor of Miami Beach, issued a call to action during the open public session that kicked off the workshop. This was followed by a three-minute rap video on climate change by Harvey Ruvin, Miami-Dade Clerk of Courts. Sam Carter then explained the purpose of the workshop and Jim Murley gave an overview of the unique history and geography of Southeast Florida. After this, each project owner presented their project and questions they wanted to answer over the course of the workshop. Members of the public were invited to offer ideas for the project during a lunchtime open reception. The project teams then reconvened for a series of exercises that framed the projects by relating the sites to future shocks and stresses, identifying specific implementation and design challenges, verifying the project, and articulating a project thesis.

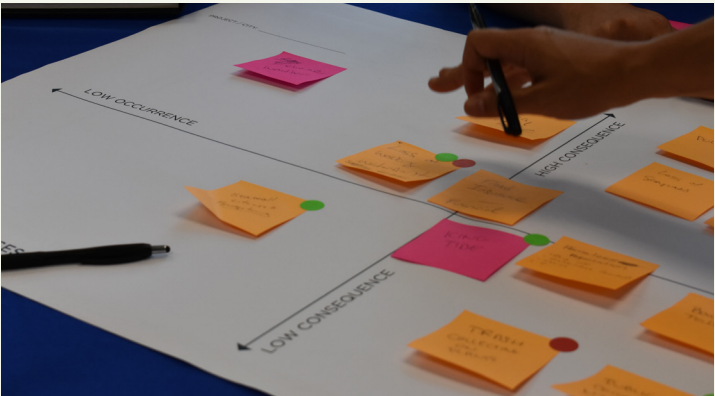
Miami-Dade Clerk of Courts Harvey Ruvin presenting his climate change rap



Miami Beach Mayor Dan Gelber welcoming participants



DAY 1



Teams meeting with the public and completing project framing exercises



Jim Murley presenting South Corridor project thesis

The second day of the workshop was an opportunity for the project teams to identify specific actions that would help achieve the project goals. Kate Orff, Director of SCAPE Studio, began by giving a presentation on nature-based solutions for flood protection, and Jason Hellendung, Vice President of Planning and Design at Tetra Tech, talked about best practices for working with communities on long range planning. Throughout the day, project teams were given feedback from subject matter experts, and they also had the opportunity to learn from each other.



Kate Orff, Founder and Principal, SCAPE Studio



Jason Hellendung, Vice President of Planning and Design, Tetra Tech



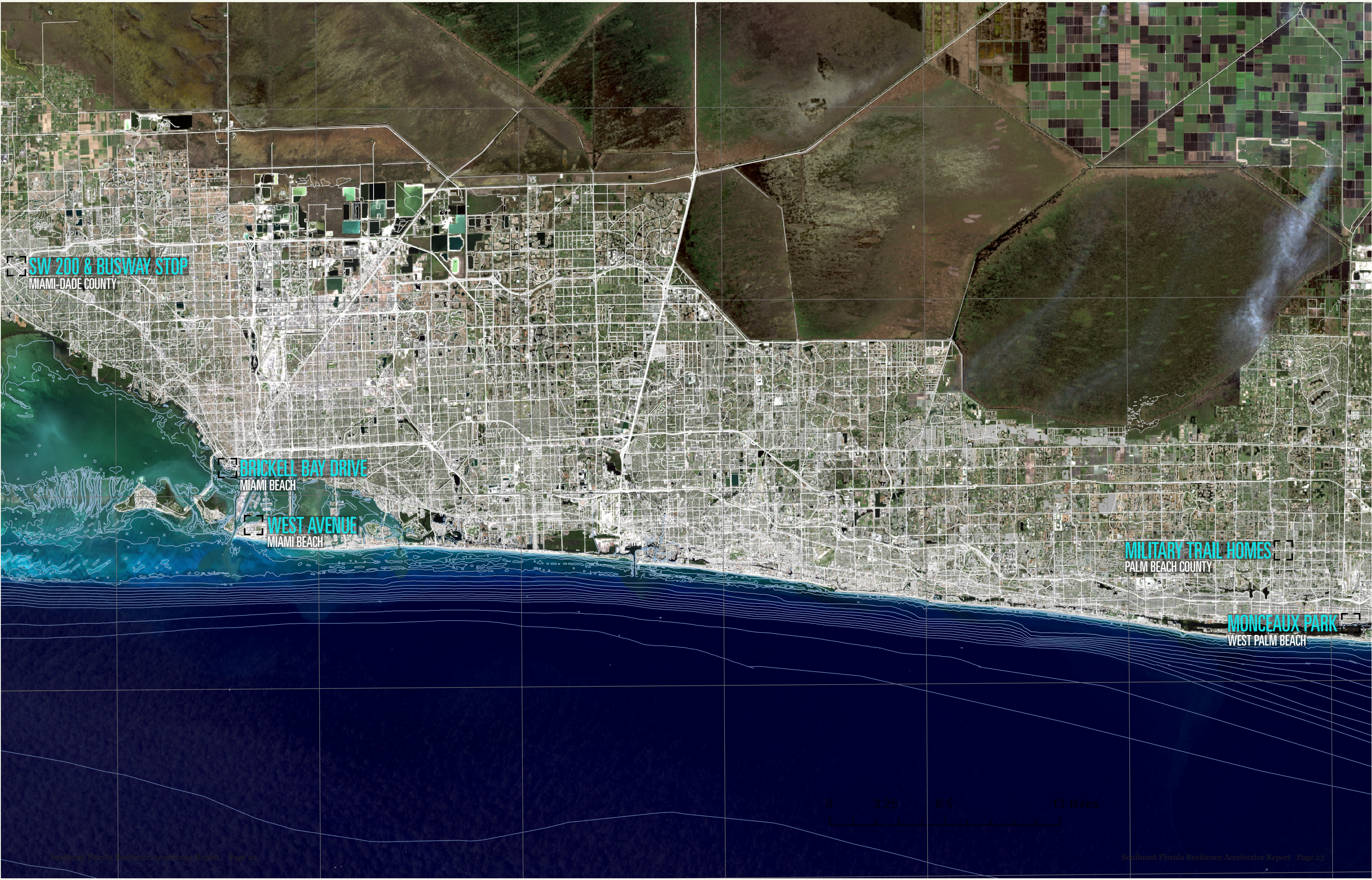
Participants working through design options



Participants at a critique session

Day three consisted of a series of exercises to develop implementation pathways. These included stakeholder engagement, financing and political support, followed by a closing session open to the public with presentations by project leads. The presentations described the long-term resilience outcomes of the project and highlighted specific actions that would be taken in the months ahead to advance the project. After the presentations, members of the public were invited to stay behind and talk with the project owners.





MONCEAUX PARK

Can a neighborhood park be a catalyst for multi-jurisdictional approach to restoring a natural coastline?

OVERVIEW

Monceaux Park is a patch of public space in a residential neighborhood on Lake Worth Lagoon, a brackish body of water between the Palm Beach barrier island and the mainland. When standing on the concrete seawall next to a shade-free, manicured lawn, one has to strain to imagine what the site looked like hundreds of years ago when the Calusa Indians fished among the mangroves and the water teemed with aquatic life.

Could the future of this place look more like this past?

Through their Living Shorelines program, the Natural Areas Conservancy and the Department of Environmental Resource Management at Palm Beach have been

implementing projects that enhance habitat for native species, improve water quality, and protect seawalls against wave energy and storm surge.

The Living Shorelines program is already having a positive impact on the water quality and native species habitat of Lake Worth Lagoon. At Monceaux Park, the city and county hope to explore how the seawall—aging and showing signs of wear—can be improved while simultaneously incorporating the Living Shorelines program and exploring opportunities for integrating with the storm-water management system. This initiative can potentially provide an opportunity teach the public about the past, present, and future ecology of the lagoon.





90 %
OF THE SEAWALL IN
WEST PALM BEACH
IS CITY-OWNED

OBJECTIVES

- Source design recommendations for an improved park, particularly the structure that contains the mangroves
- Plan for phasing and coordination of the seawall improvement, park design, and mangrove projects

KEY QUESTIONS

- What are some best practices for designing, building and maintaining living shorelines?
- How can a living shoreline park help provide flood mitigation, storm-water management, and neighborhood amenities?
- How can this localized project be best integrated with adjacent road reconstruction, storm-water management, and seawall reconstruction projects?
- Can a resilience education element be integrated into the park?



Matt Mitchell
Environmental Manager,
Department of Environmental Resource Management,
Palm Beach County
Project Owner

Peter Jenkins
Senior Program Manager, 100RC
Facilitator

Gideon Finck
Associate Research Scholar, CRCL
Support

Rod Braun
Climate Program Manager,
The Nature Conservancy
Subject Matter Expert

Lauren Ordway
Senior Program Officer,
Institute for Sustainable Communities
Subject Matter Expert

Jennifer Báez
Environmental Program Supervisor,
Palm Beach County

Chip Green
Professional Engineer,
Department of Environmental Resource Management,
Palm Beach County

Kelly Martin
Department of Environmental Resource Management
Palm Beach County

Suzanne Berglund
Environmental Manager,
West Palm Beach

Michael Rittenhouse
Sustainability Program Coordinator,
West Palm Beach

PROJECT TEAM

“A REGIONAL ISSUE IN SOUTHEAST FLORIDA IS THAT A LOT OF OUR WATER WAYS HAVE BEEN CHANNELIZED. SEAWALLS SERVE A STRUCTURAL PURPOSE, BUT BY NATURE ARE HARD, GREY, AND DO NOT PROVIDE A LOT OF HABITAT STRUCTURE. LIVING SHORELINES CAN HELP US GO FROM GREY TO GREEN.”

Matt Mitchell, Palm Beach County

PROJECT FRAMING

The workshop began with the project team acknowledging that Monceaux Park and the surrounding neighborhood are vulnerable to storm surge, which will become more frequent with sea level rise. These areas are also at risk because the existing seawall, maintained by the City of West Palm Beach, is in poor condition.

As a result, Monceaux Park is an opportunity to refine the limits along the public waterfront. Palm Beach County Living Shoreline projects are planned collaboratively with the municipality, but they are typically designed and implemented separately. Existing municipal infrastructure like seawalls usually define the project limits, and it’s often these hard limits that restrain the development of integrated living shorelines.

Through the workshop exercises, the team identified a need for better information to be used in the planning process, including topography and bathymetry, understanding long-term maintenance costs, phasing of adjacent projects, and the ability to capture the economic value of a healthy lagoon.

However, the team still felt supported in the project due to the existing resources they identified such as funding, in-house designers, goodwill from the community and stakeholders, and a larger climate plan that drives their work.



Figure 3.1: Early concept

DESIGN DEVELOPMENT

On the second day of the workshop, the team began exploring how the design of Monceaux Park could tackle a more ambitious agenda: Not just supplementing the existing seawall, but replacing it with an integrated, living shoreline. City engineers acknowledged that the seawall at Monceaux, like the seawalls elsewhere in Palm Beach, would need to be replaced in the coming years, so the engineers were interested in discussing alternative strategies that would allow the construction of a living shoreline to stabilize soil, slow the movement of water, and create habitat.

Rather than constructing mangrove planters on the seaward side of a seawall, living shorelines could be constructed from tiered and terraced gabion walls. Modular pieces of

gabion walls could be replaced with planters with several types of plant communities, including intertidal species and upland species. This thickened edge would be bordered on its inland side with a less-prominent, knee-high floodwall, which would be partially accessible to the public, allowing the edge to be accessible in ways that the current edge is not.

The project team made the case that this strategy would reduce costs to Palm Beach in several ways: It would relieve pressure on the seawall, whose incremental replacement will be extremely costly to the city in the years to come, and it could potentially the reduce cost of park maintenance by lessening the need for irrigation and mowing.

IMPLEMENTATION

On day three, the team created a roadmap for implementation that emphasized the need for close coordination among the agencies. It includes short-term and long-term approaches to phasing, starting with the living shoreline construction on the seaward side of the seawall and eventually further construction to replace the seawall and continue inland.

The next project step is conducting a feasibility study with a detailed cost estimation. Beyond Monceaux Park, the City of West Palm Beach will need to consider a plan to transform a larger number of seawalls and consider negotiations with property owners. The city and county will need to work to identify and implement similar projects along the city's more than 30 miles of existing seawall.

NEXT STEPS

- Feasibility study of proposed seawall
- Joint working meetings between City of West Palm Beach and County Beach County

DAY 3



Figure 3.2: Edge types

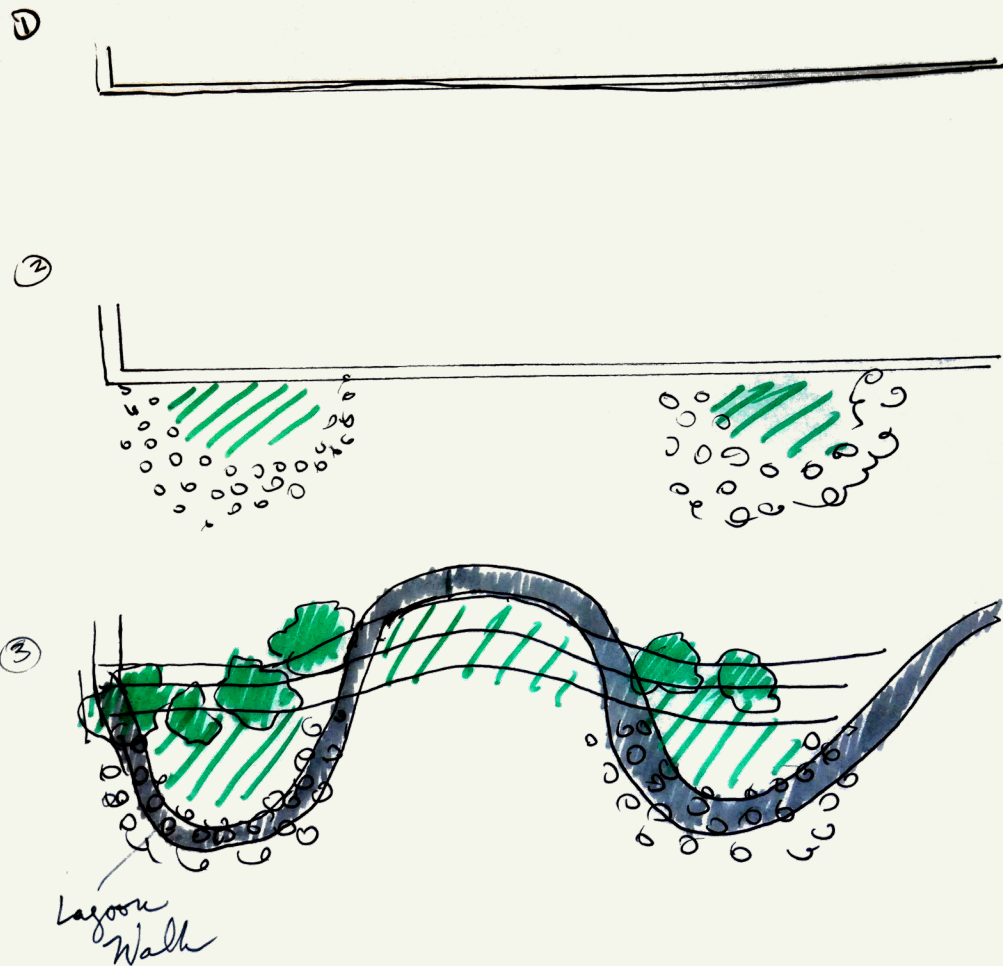


Figure 3.3: Phasing concept

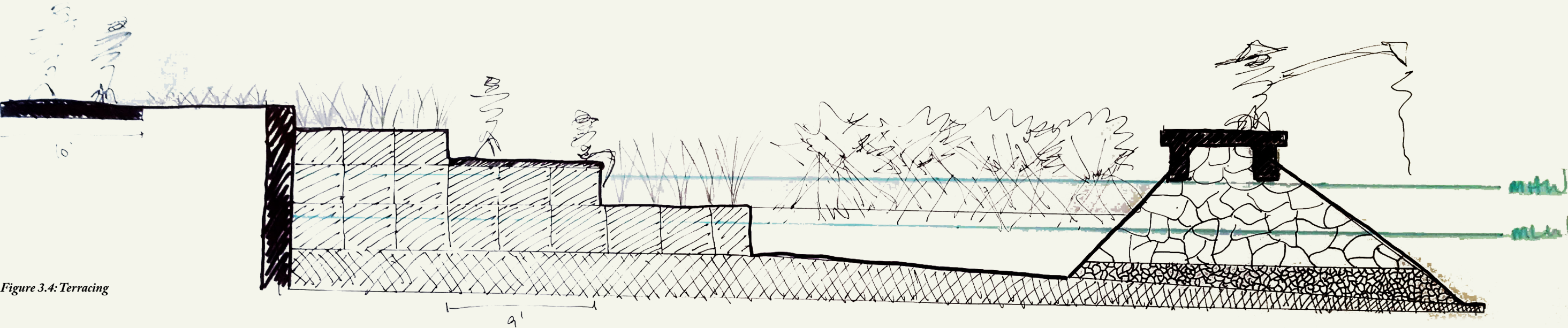


Figure 3.4: Terracing



MILITARY TRAIL HOMES

Can a community of small homes offer a gateway to a better life for people in need of support?

OVERVIEW

An abandoned County Tax Collector’s office sits among the fast food chains, auto-shops, and taquerias of Military Trail, a highway running through Palm Beach County. Behind its crumbling parking lot, where iguanas bask in the sun, a few children meander on their bikes; they live in the neighborhood of small homes pushed back away from the highway.

After recognizing that the land under the abandoned office had been platted for small homes many years before, officials in Palm Beach County are now interested in transforming the site into cottage homes that will serve as transitional housing for the County’s increasing homeless population.

OBJECTIVES

- Create design principles for Request for Proposals
- Agree on a conceptual design for housing that will support people struggling with homelessness

KEY QUESTIONS

- What innovative design solution can create a welcoming community for extremely low- and low-income people in a car-oriented commercial strip?
- How can this low-cost, small-footprint housing provide a model for developing other types of housing in the region?



Margi Nothard and Andrew Hayes working on layout options for rapid re-housing

Eric McClellan
Facilities Development & Operations Strategic Planning Director, Palm Beach County
Project Owner

Eric Wilson
Associate Director, Resilience Accelerator, 100RC
Facilitator

Linda Schilling,
Associate Research Scholar, CRCL
Support

Andrew Hayes
Faculty, FAU
Subject Matter Expert

Margi Nothard
Design Director, Glavovic Studio
Subject Matter Expert

Michael Arkin
Arkin Builders

Neha Martin
Regional Manager,
Lending = Community Development

Carl Blencowe
President, Super Green Solutions

Megan Houston
Director, Office of Resilience, Palm Beach County

James Green
Director of Community Services, Palm Beach County

Michelle Finnernan
Intern, Palm Beach County

Bud Chenny
Manager, Capital Facilities Development & Operations,
Palm Beach County

PROJECT TEAM



DAY 1



The project team mapping out shocks and stresses

PROJECT FRAMING

The project team selected by Megan Houston, Director of Resilience for Palm Beach County, began the workshop by identifying the top shocks and stresses that the future housing development needs to consider: an opioid epidemic, economic instability, extreme heat, mobility challenges, and potential violence. The group also determined the project should be able to serve single mothers. The conversation then moved into challenges in regulation and maintenance of the proposed rapid re-housing site. The day ended with the articulation of a project thesis:

**PALM BEACH COUNTY
WILL DEVELOP RESILIENT,
DIGNIFIED COTTAGE HOMES
TO PROMOTE SELF-
SUFFICIENCY AND INSPIRE
FUTURE SMALL-SCALE
AFFORDABLE HOUSING TO
FULFIL A VITAL NEED.**

DESIGN DEVELOPMENT

The team divided into two groups on the second day, one focused on developing a strategy for the RFP requirements and programming and the other group focused on design proposals to inspire the RFP. The expertise of both Margi Nothard and Andrew Hayes shed light on the importance of complementary programming in and around the complex. Daycare centers, schools, and shared community facilities will help sustain household dynamics and ensure a successful transition to permanent housing. Neha Martin also contributed by exploring the possibility of partnerships that could help shape the community by connecting the housing complex to other initiatives being developed in the Palm Beach County such as fresh produce gardens and renewable energy technologies.

DAY 2

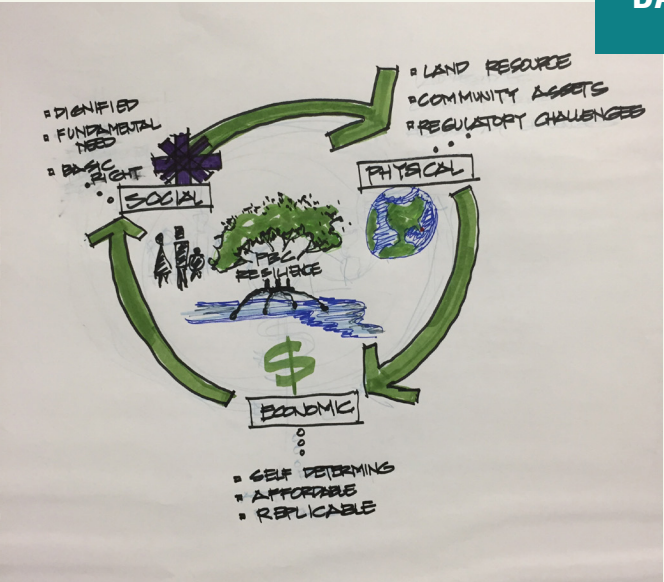


Figure 4.1: Concept diagram for Military Trail Homes resilience strategy

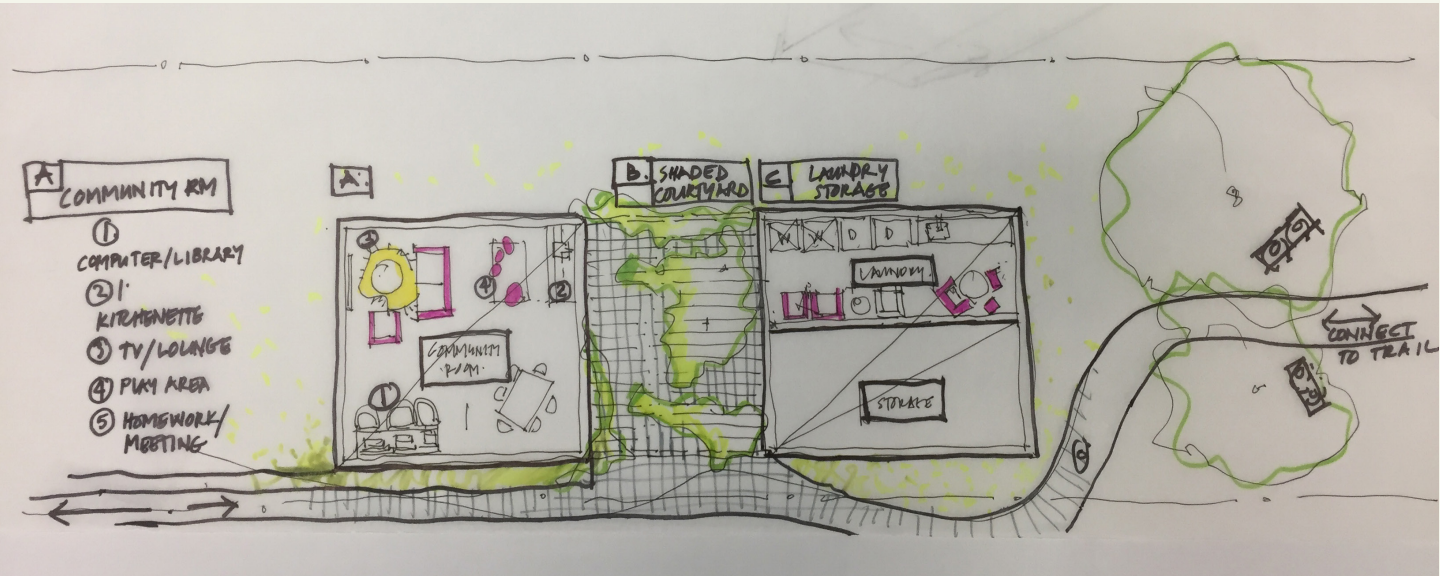


Figure 4.2: Layout design for a communal laundry and recreation space – Margi Nothard

DAY 2



Figure 4.3: Typologies Studies – Andrew Hayes



Figure 4.4: Proposed Plan – Andrew Hayes



Figures 4.5 & 4.6: Vision for community amenities along the canal – Linda Schilling and Michelle Finnernan

IMPLEMENTATION

On the third day, the team defined the guiding principles to include in the RFP, which will be issued in fall/winter 2018. There was a sense of excitement and hope that this project will also “inspire other cities in the region to realize that you can find infill opportunities to solve the affordable housing crisis that a lot of South Florida is experiencing,” said Megan Houston.

Lastly, as a newly appointed Director of Resilience, Megan began exploring how the County can implement similar workshops and create cross-disciplinary teams to align on a resilience vision for all capital improvement projects in the region.

NEXT STEPS

- Director of Resilience will work with the Department of Facilities Development & Operations to incorporate resilience outcomes into Request for Proposals
- Release Developer RFP and Operator RFP in fall/winter 2018.

DAY 3

GUIDING PRINCIPLES FOR A RESILIENT TRANSITIONAL HOUSING SCHEME:

- OPTIMIZE EFFICIENT LAND USE, MAINTAIN AFFORDABILITY, AND INCLUDE BASIC COMMUNITY AMENITIES
- FOSTER COMMUNITY COHESION AND PROMOTE HEALTHY LIVING
- LIMIT IMPACTS OF CAR STORAGE
- MINIMIZE ENERGY AND WATER CONSUMPTION, ACHIEVE COUNTY SUSTAINABILITY GOALS, AND MINIMIZE COSTS FOR TENANTS
- DESIGN FOR BUILDINGS THAT CAN ADAPT FOR A VARIETY OF CLIENT NEEDS
- INCORPORATE PHYSICAL RESILIENCE FEATURES
- INCORPORATE ON-SITE SOCIAL ENTERPRISE OPPORTUNITIES
- INTEGRATE ART PROJECTS OR ARTIST INVOLVEMENT IN THE PROJECT
- PROMOTES MULTICULTURAL ENVIRONMENT

BRICKELL BAY DRIVE

Can a resilient waterfront mitigate flood risk while providing environmental, social, and economic benefits?

OVERVIEW

In the dense core of the City of Miami, a small section of Brickell Bay Drive runs along Biscayne Bay. This section, with an existing waterfront promenade and two-way street, is a place for residents to meet the waterfront. Drivers may go out of their way to cruise along the stretch next to the Bay, but few others come here unless they happen to live nearby. Aging condominiums and high-end hotels surrounding the road; in 2018, storm surge from Hurricane Irma came over the seawall and into the neighborhood, bringing filthy water and a reminder to the City of Miami that Brickell is increasingly susceptible to flooding.

Driven by the recent floods, the need to replace the existing seawall, and drawings by an inspired resident and architect, the City of Miami brought the Brickell Bay Drive project to the workshop to explore how the city could develop the park to provide better flood protection, better access to the waterfront for all residents, and enhance natural and native species. The City of Miami would also like to review and provide recommendations to the existing Baywalk Standards.





KEY QUESTIONS

- What are design options for this site that would maximize a mix of flood risk mitigation, environmental, and social and economic benefits?
- How do we build more resilient design thinking into the City's waterfront standards?
 - Seawall Heights: Establish a new minimum height standard for seawalls and determine adaptability over time and discuss how the City might get to a new design height standard. The current height is at 5'NGVD or about 3.5' NAVD. This does not take into account current king tides and storm surge or future conditions. Miami Beach changed its seawall height requirement to 5.7' NAVD, which is essentially two feet higher with a provision.
 - Green Infrastructure Elements: Options for enhancing ecosystem, storm water quality, and human waterfront experiences in addition to mitigating flood risk. How does one build these in and incentivize/require the private sector to do the same?
- What are the permitting hurdles that need to be addressed for green infrastructure?
- How would we approach a robust economic cost benefit analysis of different design options? It must be inclusive of environmental and social benefits as well as quantifiable flood mitigation.
- How might we structure a public private financing of this project and build in revenue streams to offset operation costs?
- How might we approach long-term adaptability in this area and future land use considerations?

OBJECTIVES

- Advance specific design recommendations for the park
- Revise Baywalk design standards



Team in the process of sketching out a near term design implementation

Jane Gilbert
Chief Resilience Officer, City of Miami
Project Owner

Jeremy Calleros Gauger
Deputy Director of Planning, City of Miami
Project Owner

Sam Carter
Director of Resilience Accelerator, 100RC
Facilitator

Kate Orff
Director, SCAPE Studio
Subject Matter Expert

Georine Pierre
Associate Research Scholar, CRCL
Support

Steven Williamson
Director of Office of Capital Improvements
City of Miami

Keith Ng
Capital Improvements, City of Miami

Albert Gomez
Innovation Advisor, Sea Level Rise Committee and
Miami Climate Alliance

Ana Benatuil
Architect, Gensler

Kathryn Cabrisas
Department of Resilience and Public Works,
City of Miami

Alan Dodd
Director of Department of Resilience and Public Works,
City of Miami

Douglas Thompson
Principal and Landscape Architect

Maria Molia
Water Control Section Manager, Miami-Dade County

PROJECT TEAM



Jane Gilbert describing existing conditions in the Brickell Bay area



Figures 5.1: Proposed Brickel Adaptation Area District

PROJECT FRAMING

A team of people from City of Miami planning, capital improvements, public works, and environmental resources began the day by identifying the top shocks and stresses for Brickell Bay. These include a lack of multi-modal connectivity, aging infrastructure, increased heat, high traffic volume, lack of affordable housing, and flooding. The team agreed that the proposed project would mitigate most stresses but that it also has the potential to exacerbate the lack of affordable housing and increase traffic congestion.

The team then explored available resources, challenges, and gaps. The project has the potential to receive initial funding from the Miami Forever bond, but it first must obtain community consensus and overcome regulatory challenges. Finally, the team articulated a vision statement for the project that encompassed a larger district scale.

THE BRICKELL ADAPTATION AREA DISTRICT WILL DEMONSTRATE NEW CITY-WIDE DESIGN STANDARDS TO PREPARE THE CITY FOR FLOOD RISK AND IMPROVE THE PUBLIC'S ACCESS TO THE BAY.

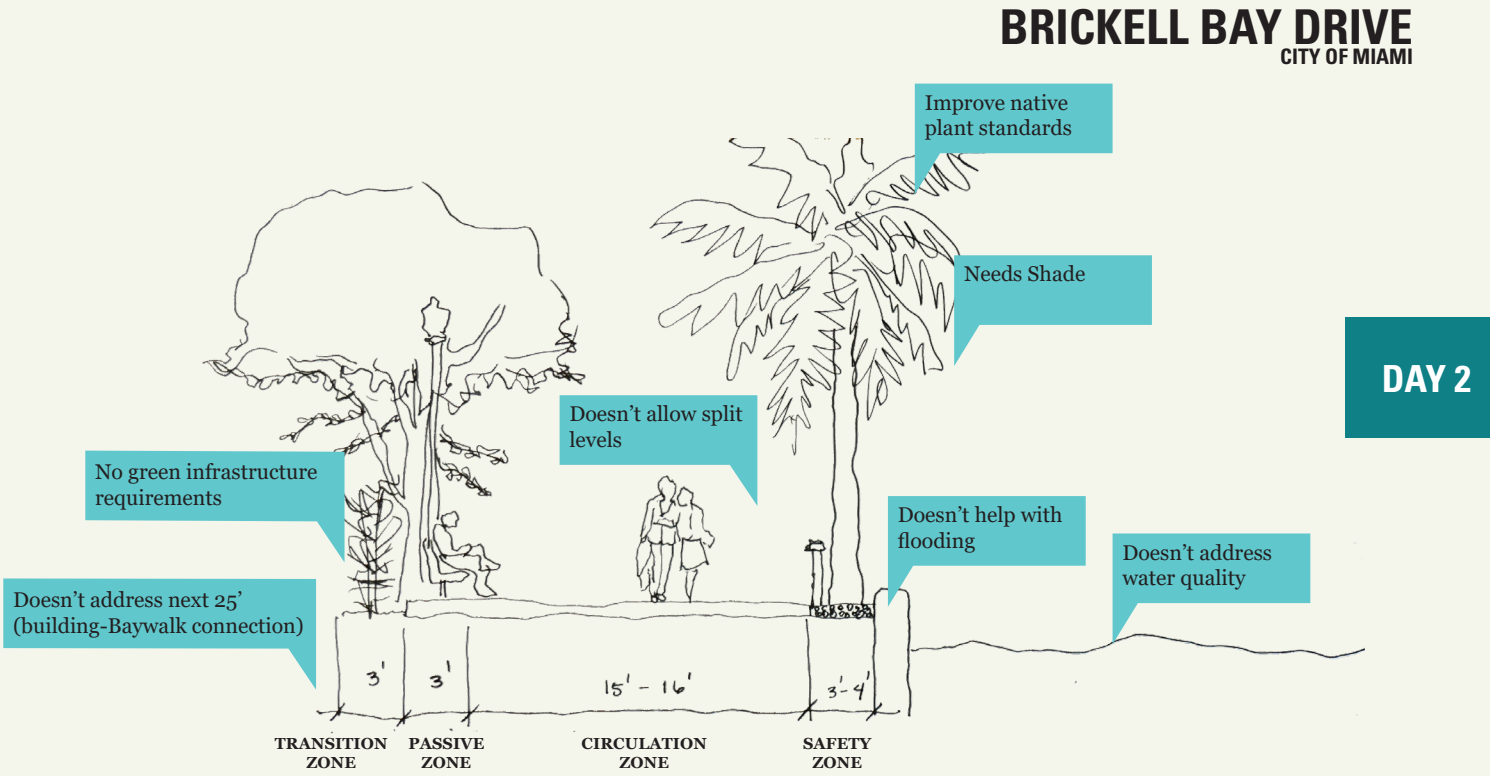


Figure 5.2: Miami 21 Current Baywalk Standards & Critique

DESIGN DEVELOPMENT

Participants began the second day with an initial critique of the current waterfront design standards. They identified issues such as a lack of green infrastructure requirements and the need to improve native plant standards, flood risk protection, and increase shading. They noted that at the specific site, existing standards do not allow for split-level elevation, direct access to the water, or an integrated connection between Brickell Bay’s waterfront, 25’ public right of way and local, private-owned building property. As a response, the team identified guidelines for development including pedestrian and bike circulation, water quality improvement, risk and insurance rate reduction through the transition from a VE to AE zone, habitat restoration, tourism, workforce development, stormwater plans, and performance-based standards. The team decided there is an urgent need for these design guidelines and a public process should begin immediately.

The team proposed exploring the establishment of an “adaptation action district” or zoning overlay that would enable the City to set special zoning and building design requirements. It may also make sense to develop a financing mechanism to ensure current and future developers share the cost of infrastructure investment.

The design proposal projects that by 2060, the waterfront will have a new private property setback allowing for maximum greenspace; mangrove buffers with coastal native plants species to increase biodiversity; elevated streetscape and inland grading to allow for maximized risk protection; public recreational activities; and an amphitheater demonstration area that becomes a place maker at the end of SE 14th Street with split levels for increased density.

The team discussed strategies for ensuring equitable access to the park by improving city transit along the metro rail on SW 1st Ave that connects to SE 14th Street. The team also identified an opportunity to integrate green corridors at Simpson Park.

DAY 2

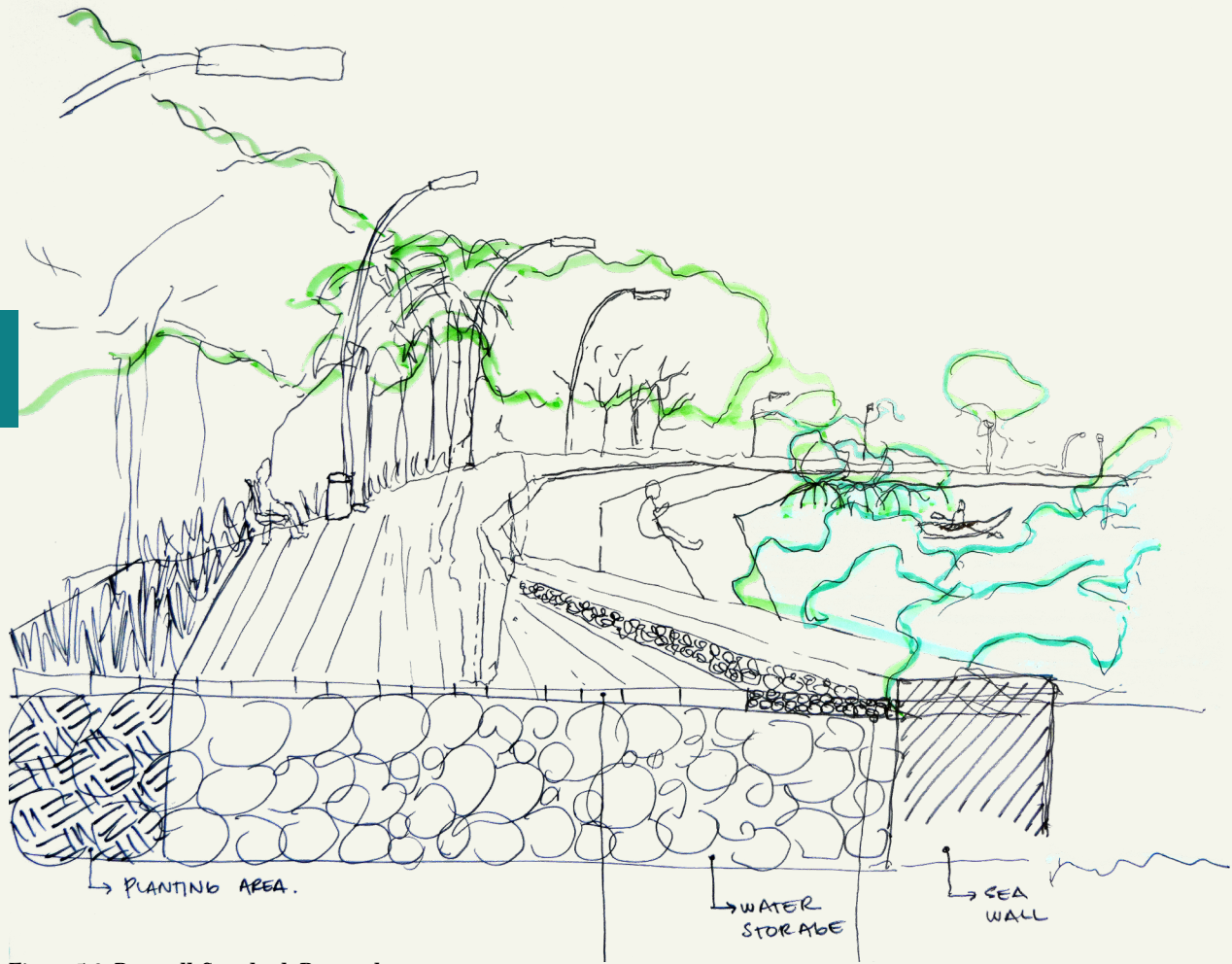


Figure 5.3: Baywalk Standards Proposal

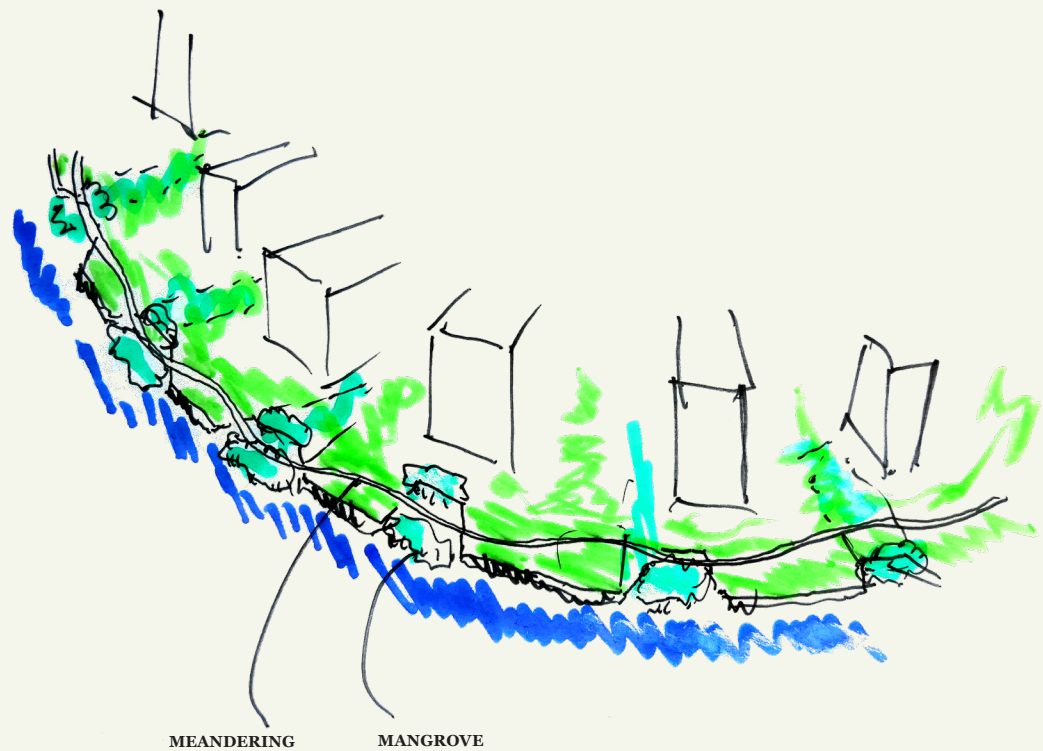


Figure 5.4: Brickell Bay Drive Concept Drawing

IMPLEMENTATION

The team created an implementation timeline and next steps on day three. The city will start a process to revise the design standards immediately. The city will also initiate a collaborative stakeholder engagement process to build a green corridor with strong pedestrian and bike connections to Simpson Park and the Underline and then begin project planning and design.

NEXT STEPS

- Initiate public process on design guidelines for Baywalk standards
- Begin stakeholder engagement and planning process for Brickell Bay Drive District

DAY 3

IMPLEMENTATION PATHWAY

DESIGN STANDARD DEVELOPMENT
PROJECT PLANNING & DESIGN
COLLABORATIVE STAKEHOLDER ENGAGEMENT

CONSTRUCTION

BID/TIF INSTITUTIONALIZATION

OPERATION

PLANNING + DESIGN

2021

CONSTRUCTION

2023

OPERATION + MAINTENANCE

- City funding (Forever bond, other)
- State
- Federal
- Philanthropy
- Private Developers

- City funding (Forever bond, other)
- State
- Federal

- City funding
- BID / TIF

WEST AVENUE

How can a neighborhood preserve its character and economic vitality while adapting to the realities of climate change?

OVERVIEW

The City of Miami Beach is a mecca for fashion and culture and a national treasure of art and architecture, attracting millions of visitors and billions of dollars in real estate investment. It is also located on barrier islands with a high water table where “sunny day flooding” has become the new normal for many residents. Rising sea levels and more frequent and torrential rainstorms are challenging local officials to take bold and immediate steps.

In the last few years, the City of Miami Beach has begun to make major improvements to the stormwater system. These involve converting the

gravity-based system to a pump-based system and elevating streets, first in Sunset Harbor and then on West Avenue, where work began with three pump stations and raised intersections at several major cross streets. These intersections have been elevated between one and three feet above current street elevation, but this presents challenges related to cohesiveness of the urban fabric and community buy in. How is the space between the raised public right of way and future buildings—that will be constructed at various times and various elevations—negotiated? And how can there be a public process by which these decisions are made when they have major impacts on the immediate area and the entire city?

Residents, neighborhood associations, and the general public have been calling for the project to be reconsidered, leading the City of Miami Beach to propose the West Avenue street elevation and improvements project to the Resilience Accelerator. The City aspired to hear from global experts on its community engagement strategies and communications, as well as the actual design of the streets.





Elizabeth Wheaton presents the storytelling strategy for the project

OBJECTIVES

- Generate a “change order” to the existing stalled contract for street elevation and harmonization
- Bring fresh perspectives to address concerns about public process, urban design, construction mitigation maintenance and operations and storm water management.

KEY QUESTIONS

- What are some strategies for managing a public process that achieves city goals while respecting the concerns of adjacent property owners?
- How should current and future uses of the street—passenger vehicles, loading, emergency vehicles, bicycles, and pedestrians—be considered in the design of the street?
- What kind of streetscape approaches and planting can be considered that might help to harmonize the grade change from public to private space?
- Are there harmonizing strategies that should be considered within private property, and what could be the role of the public in incentivizing/subsidizing these?
- What are some design strategies for the current and proposed pump stations?
- How can construction nuisances be minimized?
- What is the optimal street elevation level?

Elizabeth Wheaton

Director of Environment & Sustainability,
City of Miami Beach
Project Owner

Susy Torriente

Chief Resilience Officer, City of Miami Beach
Project Co-owner

Claire Bonham-Carter

Principal, Director of Sustainable Development, AECOM
Facilitator

Grga Bašić

Senior Research Scholar, CRCL
Support

Jason Hellendrung

Vice President of Planning & Design, Tetra Tech
Subject Matter Expert

Andrew Salkin

Senior Vice President, 100RC
Subject Matter Expert

Sonia Chao

Research Associate Professor,
University of Miami
Subject Matter Expert

Sabrina Baglieri

Senior Capital Improvement Projects Coordinator,
City of Miami Beach

Kelly Hitzing

Landscape Architect, Savino Miller

Luis Leon

Assistant Vice President, Schwebke-Shiskin & Associates

David Hoot

Engineering Consultant, CES

Jose Gonzalez

Transportation Director, City of Miami Beach

Jose Ferrer

Transportation Assistant Director, City of Miami Beach

Miguel Anchia

Fire Department Chief, City of Miami Beach

Mike Fischer

Chief Operating Officer,
Ric-Man Construction Inc

Juan Meizoso

Division Chief, City of Miami Beach

Monica Beltran

Assistant Director Parking Department, City of Miami Beach

Luis Soto

City Engineer, City of Miami Beach

Tom Mooney

Planning Director, City of Miami Beach

Sanjukta Sen

Landscape and Architectural Designer,
James Corner Field Operations

PROJECT TEAM



DAY 1

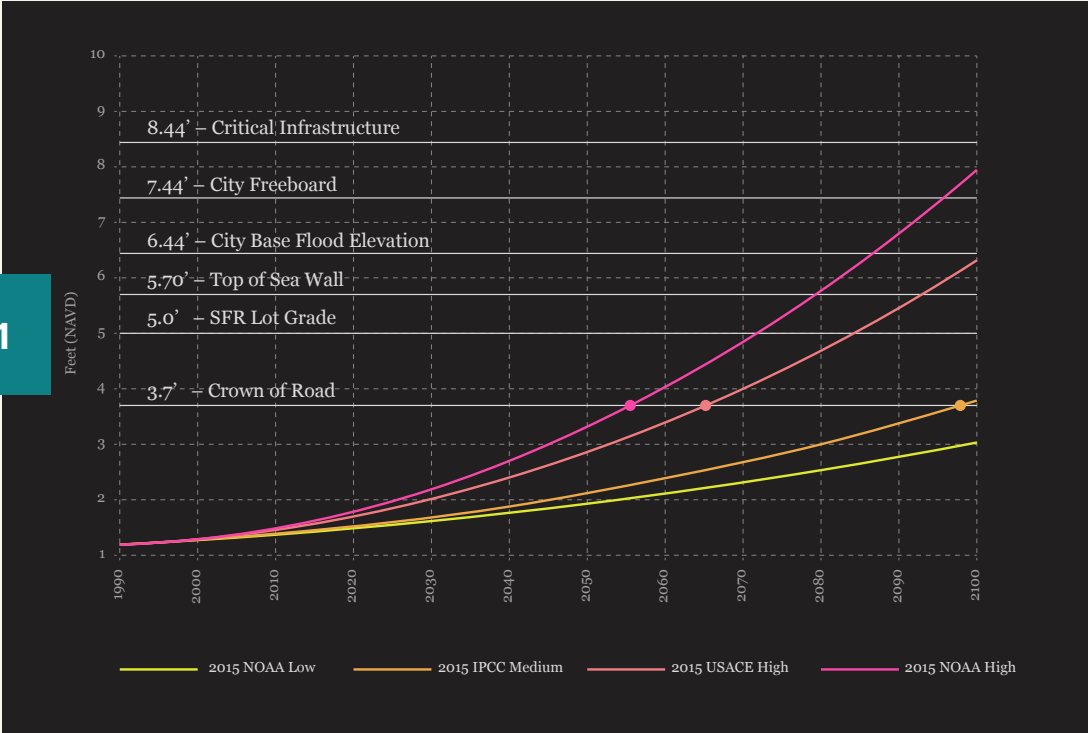


Figure 6.1: Southeast Florida Regional Climate Compact: Sea Level Rise Projections (2015) + 1.2 ft NAVD (High Astronomical Tide)

PROJECT FRAMING

On the first day of the workshop, the team was able to dive into designing a vision statement for the project because everyone understood the flood risk, aging infrastructure, and need for improved mobility. Through the process of establishing a vision, the project team agreed the city needs to establish an integrated planning and design process for all city projects and work on building community consensus on policy. The team also acknowledged that the impacts of the street elevation process require enhanced coordination and communication with property owners to successfully harmonize public and private properties.

CONSIDERING THE NEED TO ADAPT TO SEA LEVEL RISE STRESSORS AND INVEST IN INFRASTRUCTURE (USING BEST AVAILABLE DATA AND PUBLIC ENGAGEMENT), WE PROPOSE INTEGRATED PLANNING AND IMPROVED ABOVE AND BELOW GROUND STREETSCAPE TO REDUCE INSTANCES OF FLOODING AND IMPROVE QUALITY OF LIFE.

DESIGN DEVELOPMENT

On day two, the team split into a larger policy group and a smaller, but equally important design team. More emphasis was placed on policy and communication strategies than on design alterations.

The policy team outlined a storytelling strategy for the project with the following outline:

- 1) Identify why the city and community need to do something. *For example, sea level rise, high groundwater, and aging infrastructure.*
- 2) Identify what will happen if nothing is done.
- 3) Identify what will happen if the project is done per the status quo. *For example, what are the consequences if the city replaces the roads at the standard height?*
- 4) Identify the benefits of the proposed strategy.

The storytelling structure was then used to guide the development of a city-wide Decision-Making Tool. The tool lists all design options with their parameters, including costs, protections, and potential co-benefits. The city will use this tool to guide decisions as it continues to confront adaptation strategies.

The design team also proposed significant changes to the above ground streetscape, prioritizing pedestrians and bike lanes over cars in accordance with the Approved Transportation Master Plan. The proposal dedicates 40' of 70' right of way to pedestrians by removing a parking lane and adding green infrastructure consisting of bioswales, trees, and permeable pavers. In addition, the team created a diagram with proposed harmonization typologies that can be used in discussion with property owners. And in an effort to push boundaries, the design team imagined what other solutions could look like, such as a floating road.

DAY 2

OPTIONS		+	COST		=	PROTECTION	
Road Elevation	_ ft		\$	_		Sea Level Rise	_ in
Pipes	_ in		\$	_		Storm Surge	_ ft
Pumps (& Associated Generators)	_ #		\$	_		King Tide	_ ft
Green Infrastructure	_ volume					Rain	_ yr/storm
Groundwater Pumping	_ volume					Ground Water	_ ft
Deep Water Injection	_ volume						
						Time	_ years
CO-BENEFITS							
Green Space	_ sqft						
Bike Lanes	_ ft						
Street Ends	_ sqft						

Figure 6.2: Framework for city's new Project Scoping and Decision Making Tool

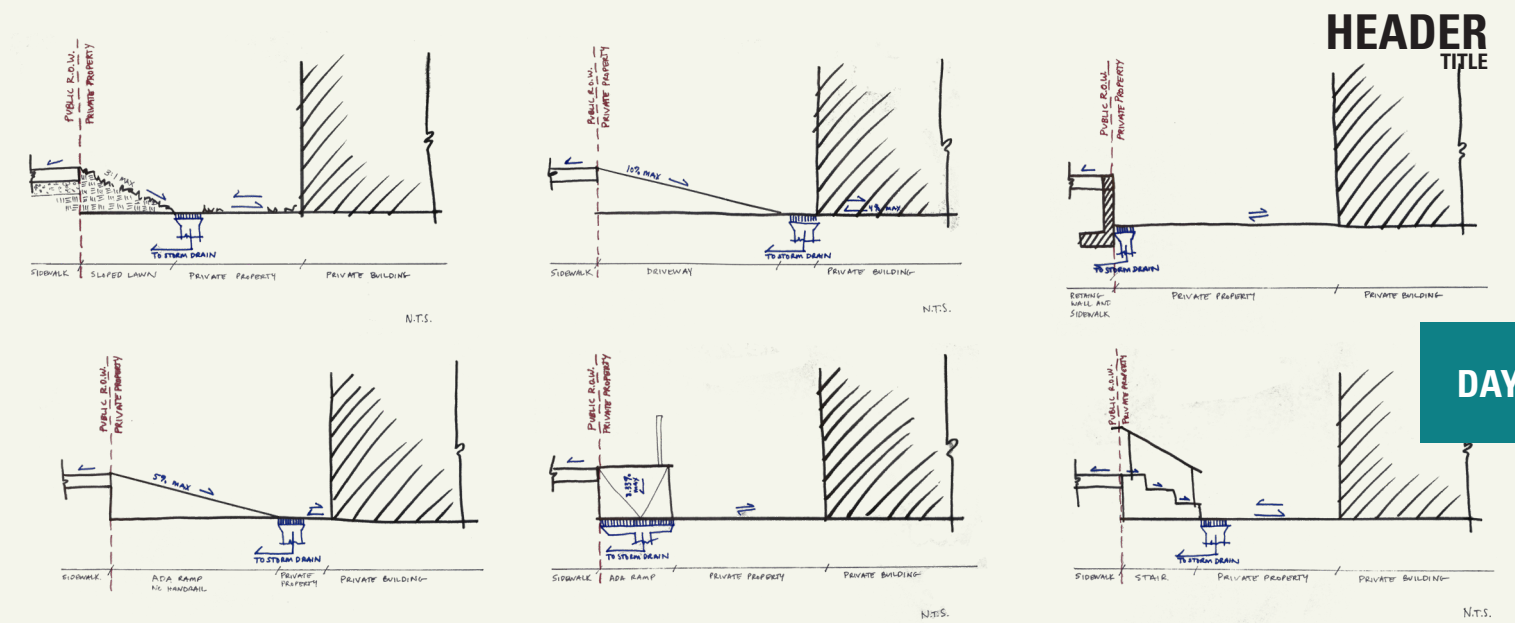


DAY 2

Participants working through design options



Figure 6.3: Street end concept design for 10th street



DAY 2

Figure 6.4: Harmonization Example Typologies delivering design solutions for each property, including drainage - Kelly Hitzing

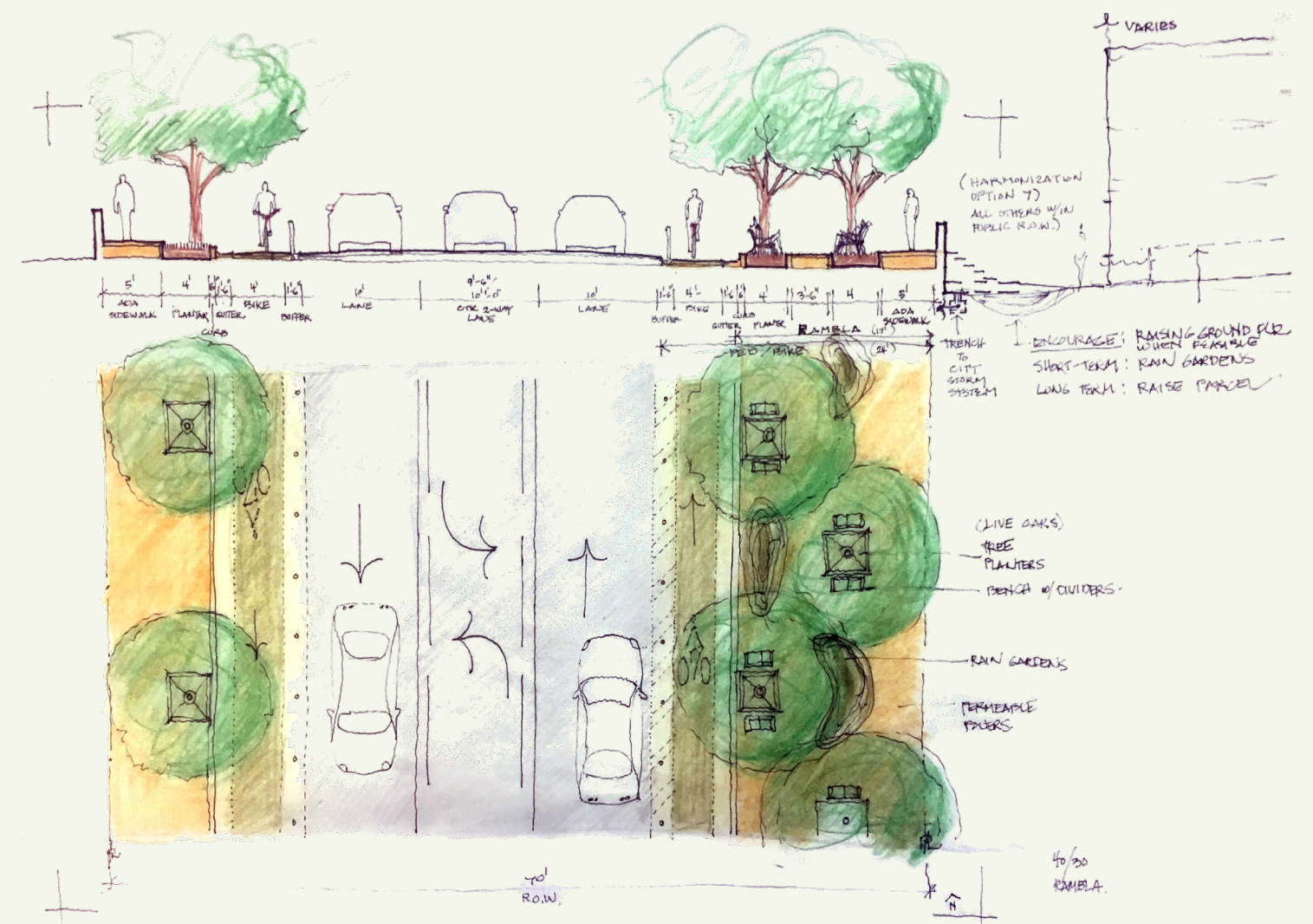


Figure 6.5: Typical section of 8th to 14th Streets delivering intent of Approved Transportation Plan, prioritizing pedestrians and bike lanes - Sonia Chao

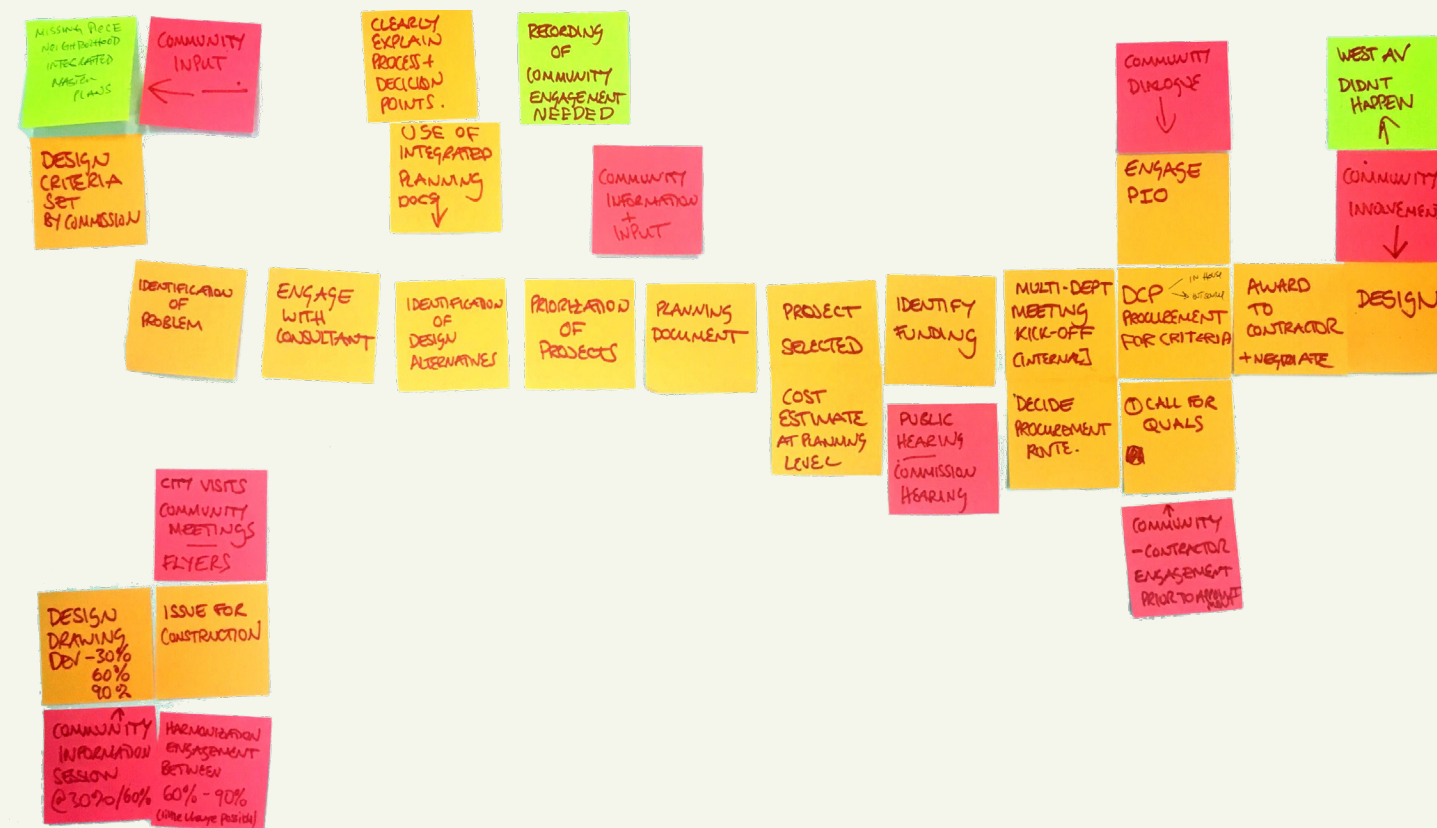


Figure 6.6: Improved Stakeholders & Engagement Strategy

WE WILL CONTINUE TO ADAPT TO SEA LEVEL RISE—
WE ARE IN THIS TOGETHER IN THE EVOLUTION OF OUR
COMMUNITY TO IMPROVE QUALITY OF LIFE.

WE WILL COMMUNICATE TO EDUCATE AND LISTEN.

WE WILL INTEGRATE INTERNALLY ON CITY PROJECTS.

WE WILL INTEGRATE ALL CITY PROJECTS WITH THE
PRIVATE REALM.

IMPLEMENTATION

On day three, the team applied their decision-making tool to the West Avenue project and confirmed their decision to move forward with the street elevation project at the site.

Near-term next steps:

- Meet internally and to refine the Decision-Making Tool
- Engage with the community and West Avenue Neighborhood association
- Present the project to the Sustainability and Resilience Community and City commission
- Task the engineers to refine their change order and submit it to the contractor to price out and for City commission consideration and approval
- Meet with each property owner and consult on what harmonization will look like on their property

Long-term next steps:

- Incorporate the Decision-Making tool and framework into regular city business
- Improve communication with communities on all projects in the public realm

DAY 3

KEEP AT GRADE			ELEVATE	
		RAISE TO 2030 SLR	RAISE TO 2030 SLR	RAISE TO 2030 SLR
CROWN OF ROAD HEIGHT	Existing	3.2'	3.7' 2.7' SLR + 1.0'	4.2'-4.7'
RESULT	Road degraded within 5 years (N Bay Rd)	Unknown performance (risky)	Protected for lifespan of the project	To meet Florida Compact 2020 SLR update
ASSET LIFE / BOND CYCLE	< 5 years	< 30 years	30 years	30+ years

Figure 6.7: Applied decision matrix for street elevation



SOUTH CORRIDOR TRANSIT HUBS

MIAMI-DADE COUNTY

Can investments in a transit station build social resilience and point toward a new pattern of sustainable development and mobility?

OVERVIEW

One may not detect anything notable about the topography while driving south along U.S. Highway 1 past the strips malls and parking lots. However, the road follows the Miami Rock Ridge, a limestone outcrop created by the remains of sea creatures over millions of years, which is the highest ground in South Florida. This was also the alignment of Florida East Coast Railroad, completed by Henry Flagler in 1912 to connect the Florida Keys to West Palm Beach and points north. Today, a bus route runs along this same line connecting the cities of Pinecrest, Palmetto Bay, and Cutler Bay to Homestead. In 2017, Hurricane Irma tore shade tarps off bus stations leaving bus riders exposed to the relentless heat. As one rider said, “We can deal with other things, but without a roof it’s impossible.”

The Miami-Dade County Strategic Miami Area Rapid Transit Plan (SMART), is an ambitious project designed to advance six rapid transit corridors that will allow the region to grow as a more connected city. The South Corridor is a priority because the area is underserved by transit and it's experiencing the fastest population growth in Miami-Dade County. Despite this clear latent demand, overall transit ridership has been declining in the region. The reasons for this are not clear, but the legacy of automobile-oriented planning and a lack of investment in the transit user experience could be partially to blame.

KEY QUESTIONS

- How can future transit stops be considered a community asset and potentially provide an anchor for long-term intensification of underutilized land along transit corridors?
- How can interventions/programming of transit stops help educate and engage the public in the region's long-term resilience planning?
- How can we connect future transit stations to easily accessible mobility choices such as on demand vehicles, circular buses, bike, and pedestrian links?



South Dade Transitway Stop. The SMART Plan intends to advance six of the PTP's rapid transit corridors, along with a network system of Bus Express Rapid Transit (BERT) service, in order to implement mass transit projects in the county.

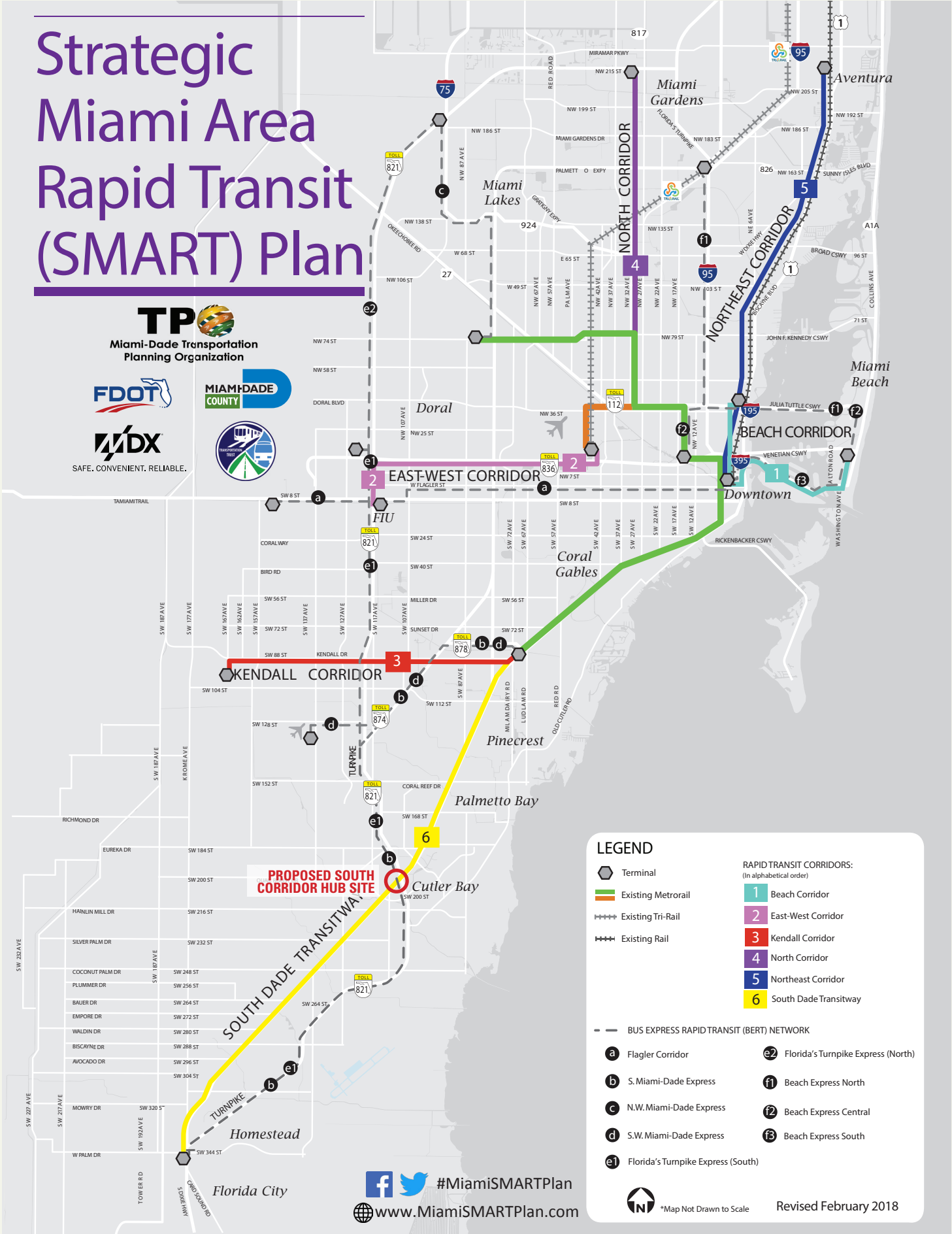
OBJECTIVES

- Generate enthusiasm for transportation improvements
- Develop concept design for proposed bus/train stations program that increases social resilience



Workshop participants got a glimpse of the existing bus sites and passengers during the workshop transit projects in the county

Strategic Miami Area Rapid Transit (SMART) Plan





Carlos Cruz-Casas shares SMART Plan vision with participants

- Jim Murley**
Chief Resilience Officer,
Miami-Dade County
Project Owner
- Thad Pawlowski**
Managing Director, CRCL
Facilitator
- Michelle Mueller**
Project Manager, 100RC
Facilitator
- Michael Berkowitz**
Director, 100RC
Subject Matter Expert
- Shekeria Brown**
Exectutive Director,
South Florida Development Coalition
Subject Matter Expert

- Lauren Swan**
Landscape Architect, AECOM
- Vine Seijas**
Former Developer, Miami-Dade County
- Carly Grimm**
Associate, Blizin Sumberg
- Luiza Leite**
Urban Designer, Dover Kohl
- Robert Piatkowski,**
Town Planner, Dover Kohl
- Xu Zhang**
Urban Designer, Dover Kohl
- Meg Daly**
Founder and President, The Underline
- Carlos Cruz-Casas**
Assistant Director of Strategic Planning,
Miami-Dade Transit

PROJECT TEAM



Jim Murley presenting Miami's regional context

PROJECT FRAMING

Jim Murley selected the project team for the workshop with the range of expertise needed to formulate the resilient transit program. The team included a specialist in transit-oriented design and planning from Dover Cole, an expert in affordable housing and community development from the South Florida Development Coalition, and an expert in pedestrian networks and parks from the Underline. Jim selected South Miami Heights, near the intersection Caribbean Boulevard and U.S. Highway 1, as an appropriate testing ground for the transit stop program. The team began by mapping the local stresses and shocks in the neighborhood. These centered on the challenges associated with the escalating housing costs in the neighborhood, which is marked by low income renters and

homeowners; the medium income is \$36,522. There was also concern that the very wide highway, depressed Southland Mall, and other blight might contribute feelings of lack of safety and access to public space, air pollution, and traffic.

In the second exercise, the team began to discuss what would be one of the central conversations of the workshop: Who should be responsible for designing, delivering, and owning this program going forward. The team aligned around the idea that the program would be detailed in the Resilience Strategy and further developed by the CRO's office thereafter. The day ended with a reiteration of the project thesis:

Considering

THE RELATED
MOBILITY,
HOUSING,

AND CLIMATE
CHANGE NEEDS

CORE VALUES

we propose

A SET OF
GUIDELINES TO
ACCOMMODATE
GROWTH

IN DENSE,
RESILIENT AND
EQUITABLE HUBS

PROJECT

and given

THE SMART PLAN

PROBLEM /CHALLENGE

which will

ENHANCE QUALITY
OF LIFE OF NEW
AND EXISTING
RESIDENTS

WHILE PRESERVING
THE NATURAL SYSTEMS
IN EXISTING
NEIGHBORHOODS

IMPACT

,

!

SMART RESILIENT HUBS GOALS

SOUTH CORRIDOR TRANSIT HUBS MIAMI-DADE COUNTY

DAY 2

1. APSORB & ADAPT

2. PREPARE & PROTECT

3. ENHANCE MULTIMODAL SUSTAINABLE MOBILITY

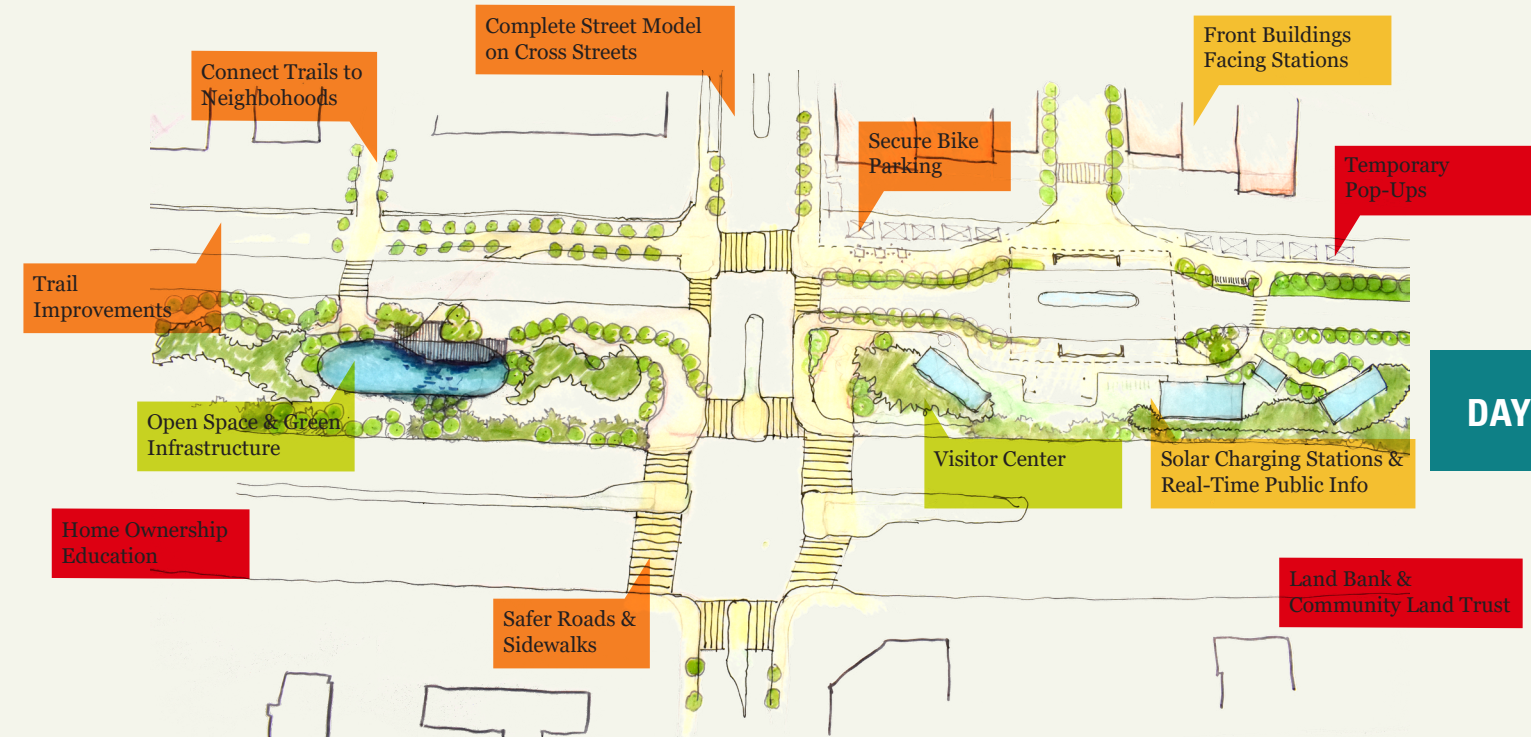
4. REDUCE DISPARITY

DESIGN DEVELOPMENT

The team began the second day with an overview of existing transit-oriented development plans and other relevant documents that could provide useful precedents. Following this, the team organized into two groups, one focused on the development of a policy and program statement and the other focused on the physical planning of the station. The teams also received feedback from subject matter experts to help further narrow and refine the scope of the proposed program.

The large scale of the SMART plan means there are many actors and uncoordinated planning and communication. The table agreed on both a short-term and long-term

vision for these transportation hubs and nodes, drawing from Meg Daly's experience as founder of the Underline and Shekeria Brown's experience in community housing. The table established four goals for the transit hubs: Adapt to Change, Prepare and Protect Communities, Enhance Multi-modal Sustainable Mobility, and Reduce Disparities. The team outlined a mix of policy, programming, and capital improvements that can be made to achieve those goals. They emphasized equity and a demand for existing programs on home ownership and enhancing tenant rights. The team explored opportunities for the County to purchase land along the corridor for future development and policies to negotiate with future developers.



1. ABSORB AND ADAPT | 2. PREPARE AND PROTECT | 3. ENHANCE MULTIMODAL SUSTAINABLE MOBILITY | 4. REDUCE DISPARITY

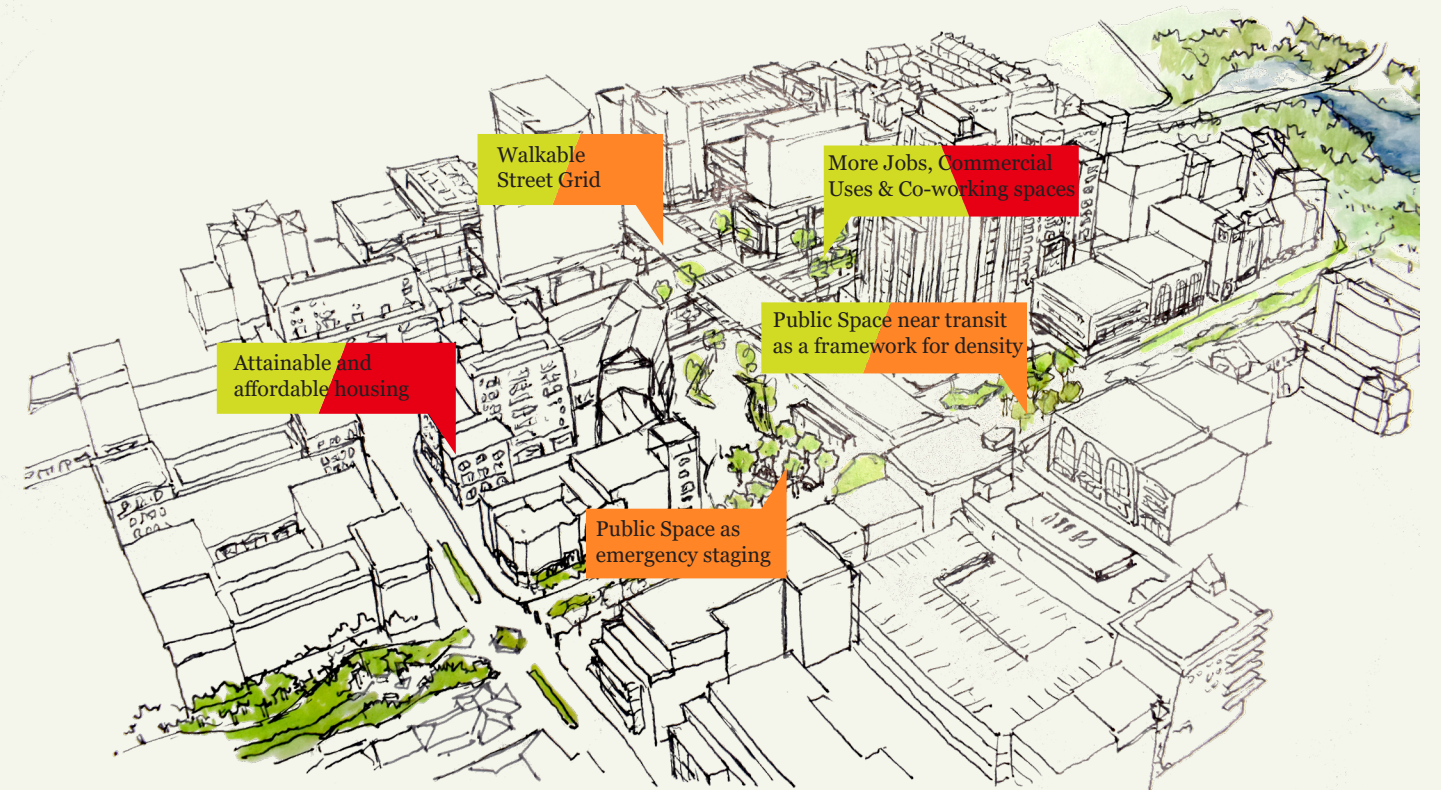


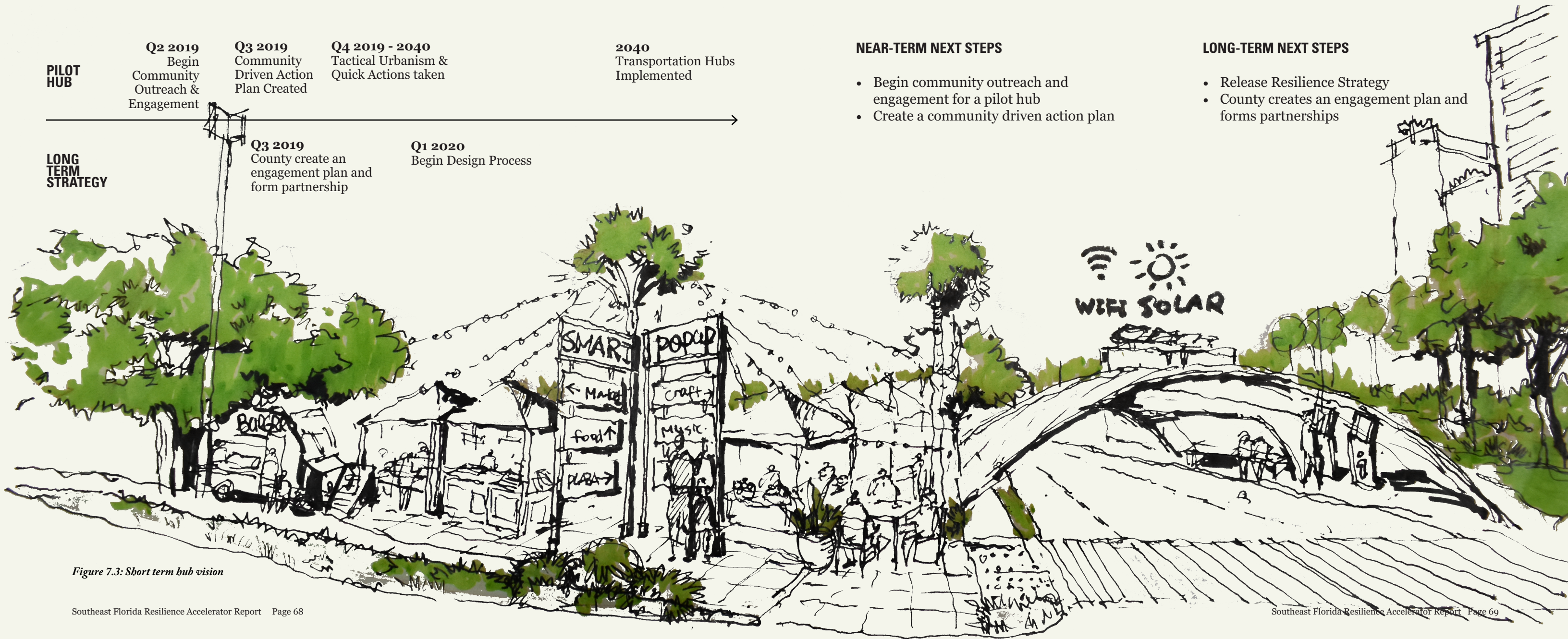
Figure 7.2: Smart Resilient Hubs – long-term goals

IMPLEMENTATION

On the third day, the team outlined an approach to implementation that includes a pilot hub and longer-term strategy for all corridors. It reflects the County’s vision to implement transit stations in the near term that will develop over time into Smart Resilient Hubs. The future hubs will be dense nodes of development that use clean energy and multiple modes of transit, while providing emergency shelter, and affordable services.

Jim ended the workshop by calling for each County station to be more than a place where people access transportation “but also a place where people can come and gather and get information and meet new people in their community.” He emphasized that “to get to these conceptual outcomes means a lot of planning, a lot of coordination, and a lot of engagement with the community.” It will be a long process to realize the audacious hubs but now is the time to begin thinking about future plans for the region.

RESILIENT 305 WILL PLAN AND IMPLEMENT RESILIENT TRANSPORTATION HUBS THAT REDUCE ECONOMIC DISPARITY, INCREASE RIDERSHIP, CONNECT COMMUNITIES AND PREPARE AND PROTECT CITIZENS.





CONCLUSION

The August 2018 workshop occurred at a critical moment for many of the participants. For the Chief Resilience Officers and the city officials involved, the workshop happened while they were developing a Resilience Strategy. It offered an opportunity for them to ground some of the concepts which they had been working on in real projects. For the newly establish Center for Resilient Cities and Landscapes, it was the first opportunity to test the Resilience Accelerator program with 100 Resilient Cities. The workshop forced this team to make a program concept operational in short amount of time. Important lessons were learned—here are a few of them:

1. There is a baseline value in convening people away from their daily schedules to explore new ideas. To capture the full value of convening, there has to be clear follow up so group learning and collaboration can be carried forward.
2. Projects at different stages need different research and workshop programs.
 - Project definition (i.e., Miami-Dade) would benefit from targeted research up front such as case studies; the workshop program should be more prescribed.
 - Project preparation (Miami and Palm Beach County) is best served by this type of definition/design/implementation charrette, but it could benefit from pre-defined design scenarios.
 - Project development/repositioning (Miami Beach and West Palm Beach) needs more extensive research on the project work to date and positions of major stakeholders—more stakeholder engagement before and during workshop.
3. The Accelerator will likely be better for cities with existing Resilience Strategies.
4. Research/workshop design could focus more on application of strategy to specific place and project.
5. When no strategy exists, the Accelerator should create a clear local definition of resilience and ensure established goals recognize city-wide or local risk—based on evidence, not perception—and transformational need.

Finally, the Center for Resilient Cities and Landscapes would like to thank all participants for joining us on this learning journey, especially those who helped organize the event.

