South Florida
Resilient Redesign

Dense Urban Community
South Beach
Miami Beach, Florida
Project Team

- Project Team (in alphabetical order):
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- Special thanks to the Royal Netherlands Embassy
Site Overview

- 85,000 residents in Miami Beach

- South Beach is 2.5 square miles of high-density urban land in Miami Beach

- Representative of:
  - High-density urban with mixed uses;
  - High concentration of historic properties; and,
  - Low-lying area with sunny day flooding.

- Economics
Community Characteristics

- Dune/Beach/Bay Ecosystems
- Historic Nature
- Walkability
- Land Use Diversity
- Views/Landscape – “The Water Connection”
- Population diversity
Infrastructure

- Municipal Separate Storm Sewer System owned and operated by Miami Beach
- Sanitary sewer locally operated by Miami Beach, but goes to Miami-Dade County WASD treatment plant in Virginia Key
- Potable water supplied by Miami-Dade County
- Power supplied by FP&L
- Roadway owned by City of Miami Beach, Miami-Dade County and FDOT
Design Considerations

- Flooding
  1. Storm surge
  2. Rainfall (runoff)
  3. Tidal/Sea Level Rise
     - 2 feet by 2060

- Soil porosity/permeability

- Politics

- Economics
  (+ incentives)

- Limited space
Sea Level Rise

Simulations showing tidal flooding at 2 feet of sea level rise.
Design Considerations

- Culture of car dependency
- Historic preservation
- Aging/existing infrastructure
- Greenspace
- Water quality
- Storm surge exposure
- Evacuation routes
- Availability of space for water storage
- Public Health Implications
Concept 1: Raised infrastructure with integrated transit, increased water storage options, and protective bayfront promenade.
Design Concepts

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Adapted Street Section
Design Concepts

Concept 1: Raised infrastructure with integrated transit, increased water storage options, and protective bayfront promenade
Concept 2: Storm surge protection - Boulevard levee, flood control gates and storm surge barriers
Design Concepts

Concept 3: Resilient urbanization and land re-adjustment strategy
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Adapted existing building (2-7 stories)

Adapted infrastructure (+2-3 feet)

Base flood elevation

10'-15'

Transition habitable zone

P.R.O.W.

Transition sidewalk area

New adapted building

Incentive bonus

As of right

Elevated and Higher Density Buildings Section
Additional Recommendations

- Develop historic building preservation plan

- Establish Adaptation Action Areas

- Create sustainability fund with developer incentives

- Establish tax and/or user fees for sustainable initiatives
  - Special tax districts
Implementation

• Continue existing initiatives
  ▫ Prescribed seawall height
  ▫ Pump station design criteria
  ▫ Raise base flood elevations
  ▫ Swale reclamation program
  ▫ Elevated electrical panels

• Phase implementation of other short-term recommendations

• Research, further develop, and vet suggested long-term strategies
Next steps

- Work collaboratively with partners to find new and improved solutions
- Fill data gaps on the local environment
- Identify funding opportunities for resiliency projects
- Work with similar cities to implement recommendations across the region