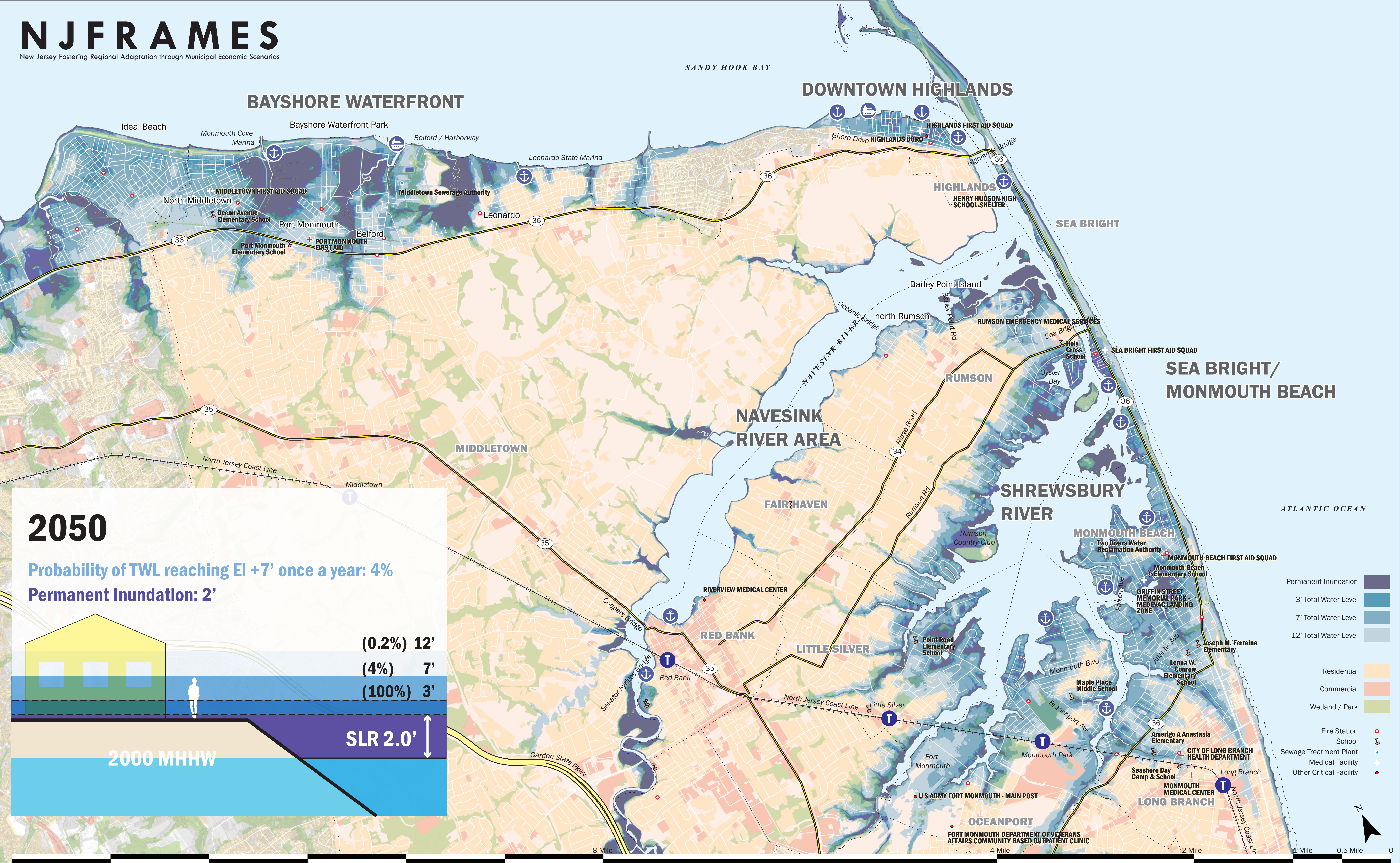


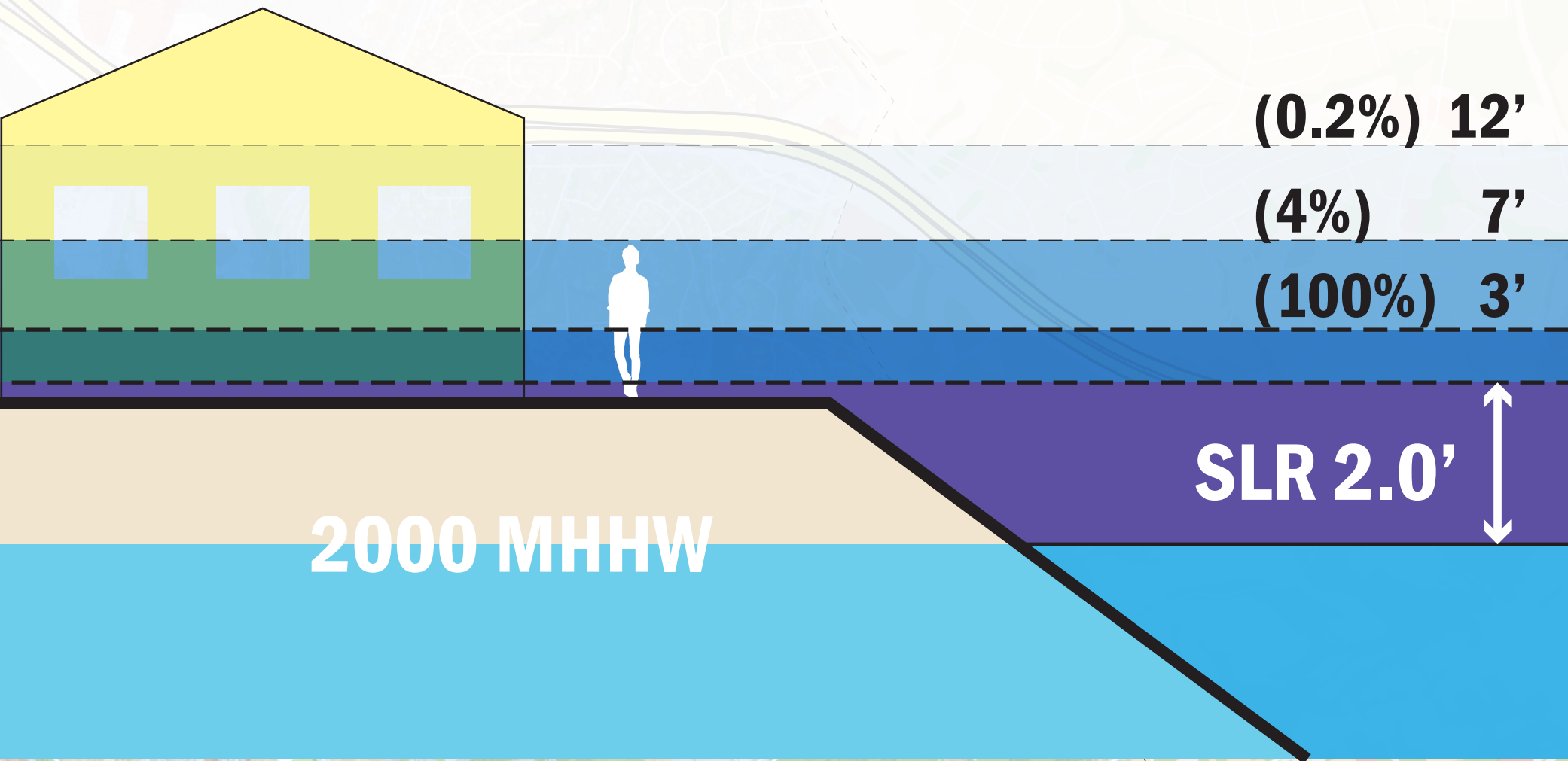
PROJECTED SEA LEVEL RISE AND FLOOD LEVELS : 2030



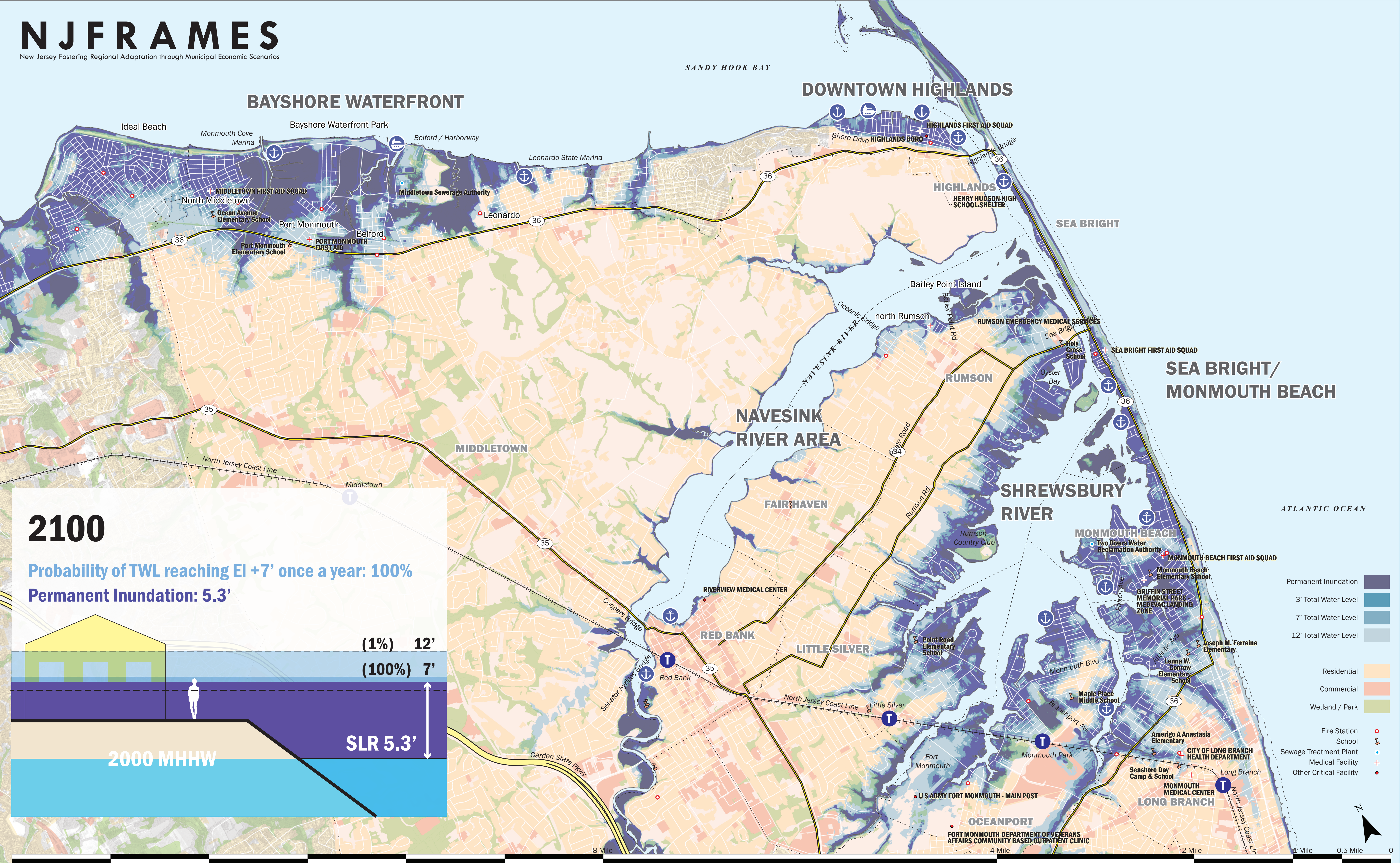
2050

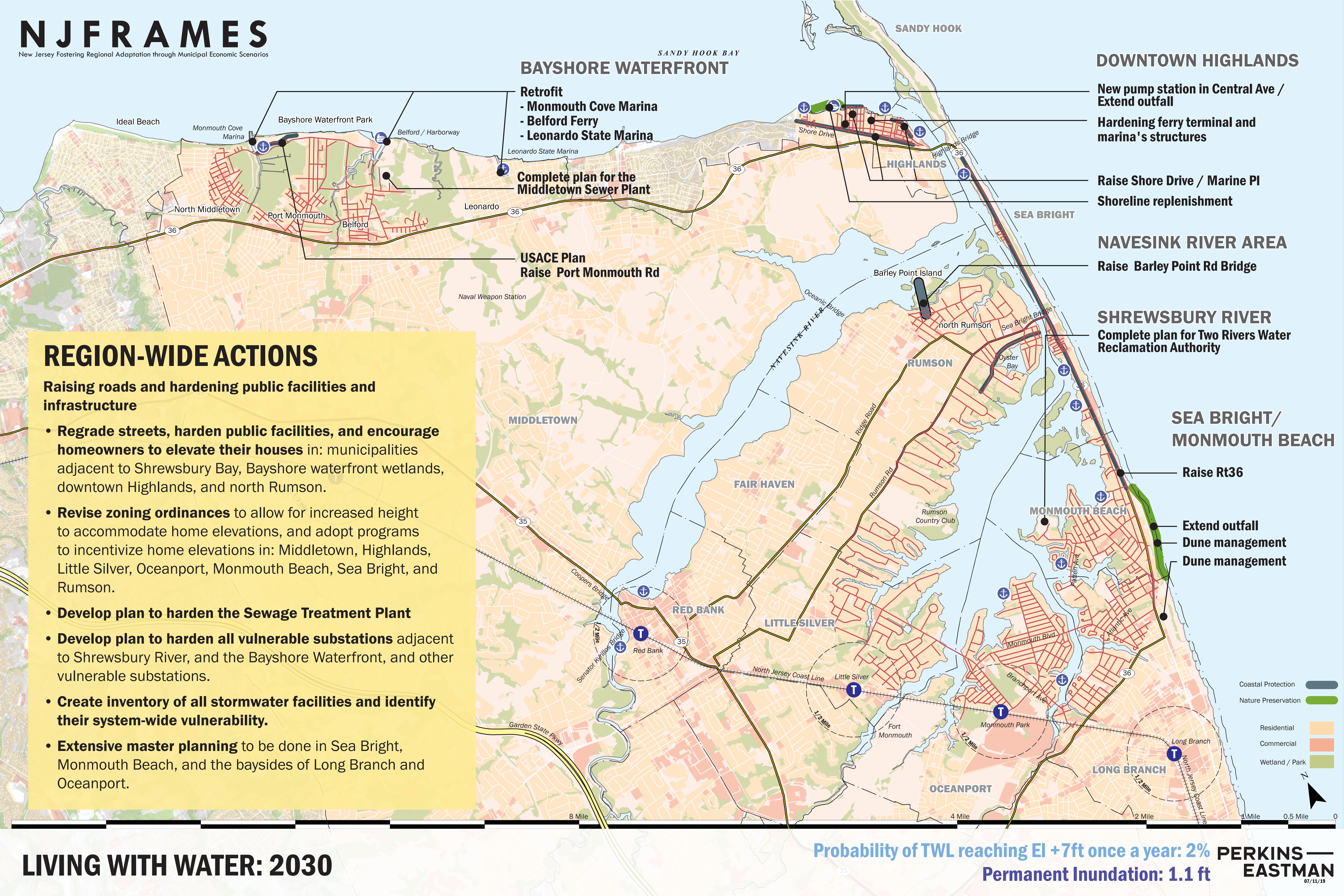
Probability of TWL reaching El +7' once a year: 4%

Permanent Inundation: 2'



PROJECTED SEA LEVEL RISE AND FLOOD LEVELS : 2050





BAYSHORE WATERFRONT

- Retrofit**
- Monmouth Cove Marina
 - Belford Ferry
 - Leonardo State Marina

Complete plan for the Middletown Sewer Plant

USACE Plan
Raise Port Monmouth Rd

DOWNTOWN HIGHLANDS

- New pump station in Central Ave / Extend outfall
- Hardening ferry terminal and marina's structures

Raise Shore Drive / Marine Pl
Shoreline replenishment

NAVESINK RIVER AREA

Raise Barley Point Rd Bridge

SHREWSBURY RIVER

Complete plan for Two Rivers Water Reclamation Authority

SEA BRIGHT/ MONMOUTH BEACH

Raise Rt36

- Extend outfall
- Dune management
- Dune management

REGION-WIDE ACTIONS

Raising roads and hardening public facilities and infrastructure

- **Regrade streets, harden public facilities, and encourage homeowners to elevate their houses in:** municipalities adjacent to Shrewsbury Bay, Bayshore waterfront wetlands, downtown Highlands, and north Rumson.
- **Revise zoning ordinances** to allow for increased height to accommodate home elevations, and adopt programs to incentivize home elevations in: Middletown, Highlands, Little Silver, Oceanport, Monmouth Beach, Sea Bright, and Rumson.
- **Develop plan to harden the Sewage Treatment Plant**
- **Develop plan to harden all vulnerable substations** adjacent to Shrewsbury River, and the Bayshore Waterfront, and other vulnerable substations.
- **Create inventory of all stormwater facilities and identify their system-wide vulnerability.**
- **Extensive master planning** to be done in Sea Bright, Monmouth Beach, and the baysides of Long Branch and Oceanport.

BAYSHORE WATERFRONT

Beach Nourishment

**Connect to USACE Plan:
Raise Port Monmouth Rd**

**Raise Rt36 /
Elevate business
Elevate Homes
Raise streets and
public facilities**

NAVESINK RIVER AREA

- **Development Fees in Vulnerable Areas**

**Raise Black Point
Horseshoe**

**Raise Oceanic Bridge
& Coopers Bridge**

**Open Space and
recreation plan for
Swimming River**

**Planning Raise NJT
Coast line and bridge**

DOWNTOWN HIGHLANDS

**Raise all streets and public
facilities adjacent to shoreline**

Elevate home / business

**Open Space and recreation plan for
Veterans Memorial Park**

Raise Highlands Bridge

SEA BRIGHT/ MONMOUTH BEACH

- **Planning for open space requirement
for the entirety of the barrier island**

Raise all streets / Elevate Business

Raise Sea Bright Bridge

Elevate homes / business

SHREWSBURY RIVER

- **Expansion of wetlands
and an open space
requirement**

Elevate homes

**Open Space and
recreation plan**

Raise bridges

**Complete plans for
raising the NJ Coast
Line bridge**

**Floodproof
Development**

REGION-WIDE ACTIONS

Continue to be on **adapting existing structures, public infrastructure and rebuild existing public facilities.** Also includes **raising bridges**

- **Elevate streets and public facilities** in: Little Silver, Oceanport, Monmouth Beach, downtown Highlands, Sea Bright, and areas adjacent to wetlands in Middletown.
- **Elevate streets** south of Ridge Rd and in north Rumson.
- **Monmouth County and NJDOT to elevate** the Cooper Bridge, Oceanic Bridge, Highlands Bridge and their associated approaches.
- **Monmouth County and NJDOT to elevate** the Sea Bright Bridge, Patten Avenue, Monmouth Boulevard, and Atlantic Avenue bridges and their associated approaches.
- **NJ TRANSIT to complete plans for elevating** the NJ Coast Line bridge over the Navesink River, and the two bridges over the Shrewsbury River, and their associated approaches
- **Phased approach for public access expansion for all open space areas**
- **Resiliency bond program** to fund, **wetland credit program**, and other **green finance programs** to fund the transition of land into open space, floodable development

BAYSHORE WATERFRONT

DOWNTOWN HIGHLANDS

SEA BRIGHT/ MONMOUTH BEACH

Expansion of the Gateway National Recreation Area
Transition into a public access space
Foundation for living shoreline
Green infrastructure project.

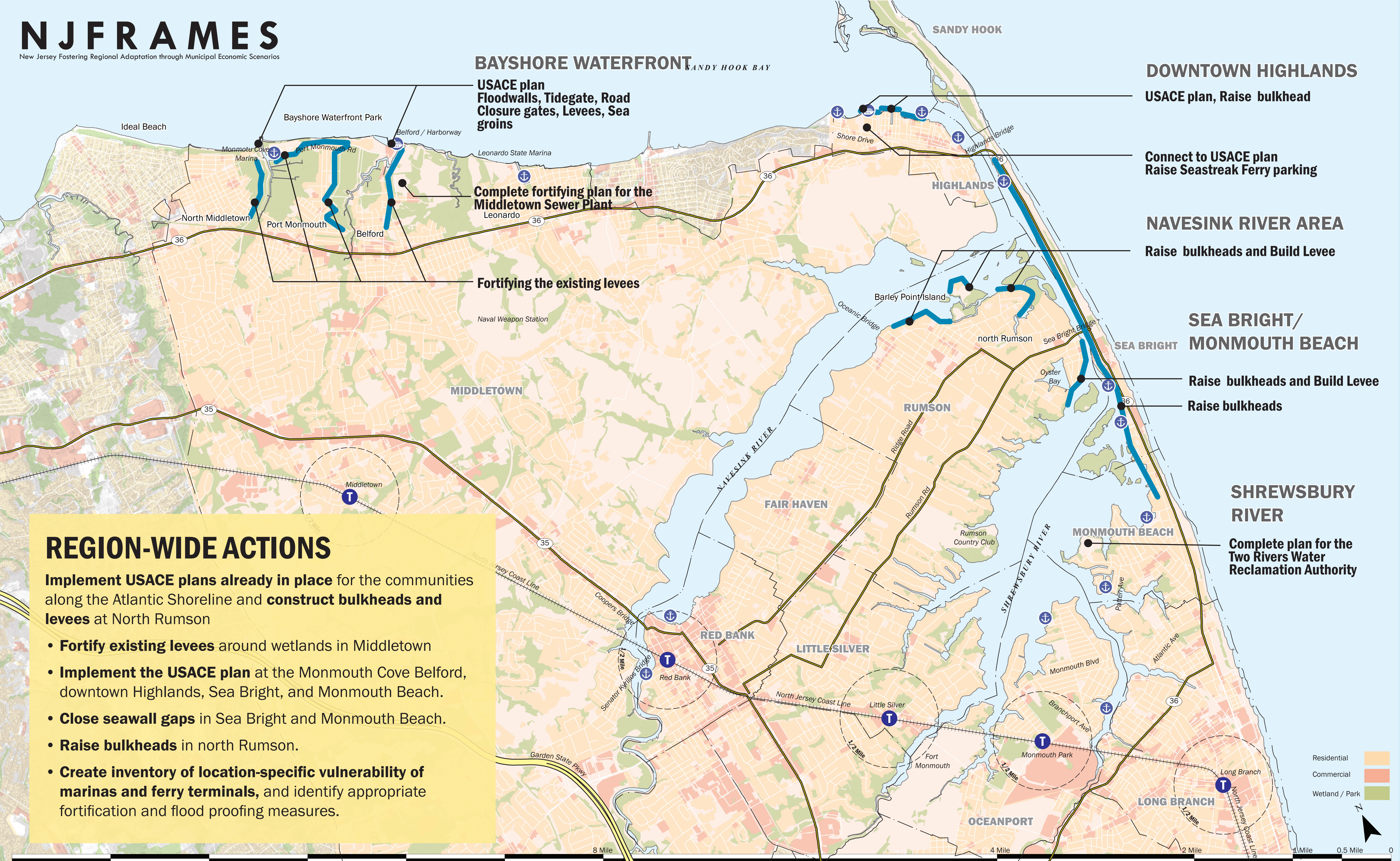
SHREWSBURY RIVER

Expand protection measures, including built protection up to EL +12'

REGION-WIDE ACTIONS

Hardening transportation infrastructure necessary to support the greater Jersey Shore region

- **NJ TRANSIT to elevate** the NJ Coast Line bridge over the Navesink River, and the two rail bridges over the Shrewsbury River, and their associated approaches.
- **NJDOT to elevate** vulnerable sections of Route 36 in Middletown
- **The expansion of the Gateway National Recreation Area** and **the barrier island transition** back to its original function as a dynamic natural area protecting the back side of the Shrewsbury estuary



BAYSHORE WATERFRONT

USACE plan Sand dunes, Seagrains

Connect to USACE plan Levees and Berm

Connect to USACE plan Tide gates at Leonardo State Marina

fortifying Middletown Sewer Plant

Connect to USACE plan Raising bulkhead

Fortifying the existing levees

DOWNTOWN HIGHLANDS

Connect to USACE plan Levees and Berm

Two-rivers flood gate

NAVESINK RIVER AREA

Living Shoreline

Wetland restoration

Landscaping and vegetation ordinance

SEA BRIGHT/ MONMOUTH BEACH

- Incentivize through tax abatement property owners to build bulkheads or levees up to 7'
- Shrewsbury flood gate

Raise bulkheads and Build Levee

Living Shoreline

Wetland restoration

Landscaping and vegetation ordinance

SHREWSBURY RIVER

Fortifying the Two Rivers Water Reclamation Authority

Raise bulkheads and Build Levee

Living Shoreline

Wetland restoration

Landscaping and vegetation ordinance

REGION-WIDE ACTIONS

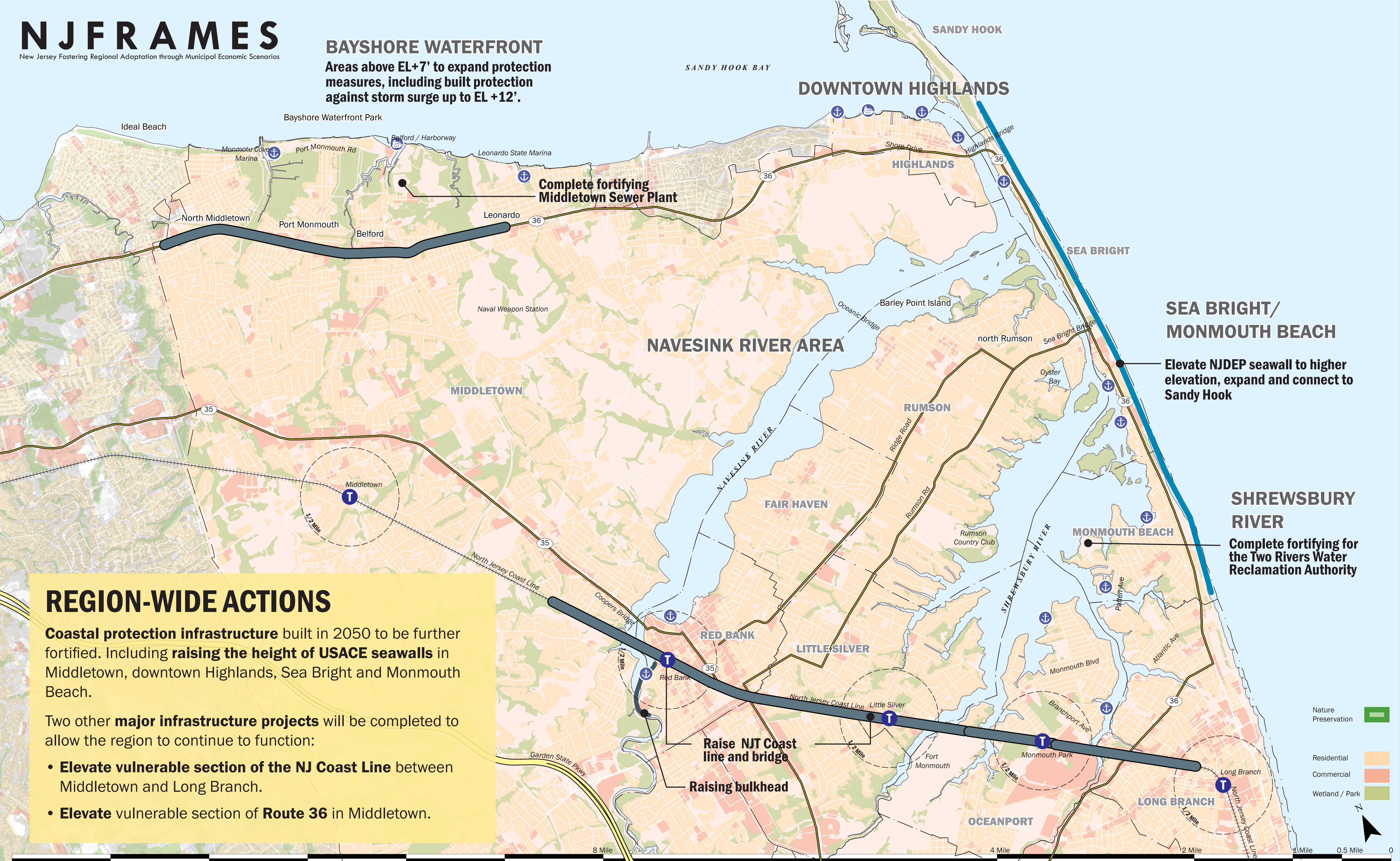
All communities with shorelines along the Atlantic Ocean, Navesink River, and Shrewsbury Bay will engage in **fortifying their shorelines and critical facilities:**

- Elevate and complete construction of levees on Middletown wetlands.
- Implement USACE plan at the Monmouth Cove Belford.
- Incentivize property owners adjacent to the Shrewsbury River in Little Silver, Oceanport, and Monmouth Beach, Rumson, and Sea Bright, to **raise bulkheads or build levees up to 7'**.
- NJDEP to start planning and design for new floodgates at the Cooper Bridge and the Sea Bright Bridge.
- The Two Rivers Water Reclamation Authority and Middletown Sewerage Authority to construct a **7' berm** to protect the **Two Rivers Water Reclamation Authority and the Middletown Sewer Plant**

Build bulkhead or levees
Residential
Commercial
Wetland / Park

BAYSHORE WATERFRONT

Areas above EL+7' to expand protection measures, including built protection against storm surge up to EL +12'.



REGION-WIDE ACTIONS

Coastal protection infrastructure built in 2050 to be further fortified. Including **raising the height of USACE seawalls** in Middletown, downtown Highlands, Sea Bright and Monmouth Beach.

Two other **major infrastructure projects** will be completed to allow the region to continue to function:

- **Elevate vulnerable section of the NJ Coast Line** between Middletown and Long Branch.
- **Elevate** vulnerable section of **Route 36** in Middletown.

BAYSHORE WATERFRONT

- Rolling easements
- Shore Protection Overlay Zone
- Non-contiguous parcel clustering, Residential Cluster Development ordinance

DOWNTOWN HIGHLANDS

- Rolling easement
- Shore Protection Overlay Zones

- Non-contiguous parcel clustering
- Residential Cluster development ordinances

SEA BRIGHT/ MONMOUTH BEACH

- Rolling easement
- Shore Protection Overlay Zones

SHREWSBURY RIVER

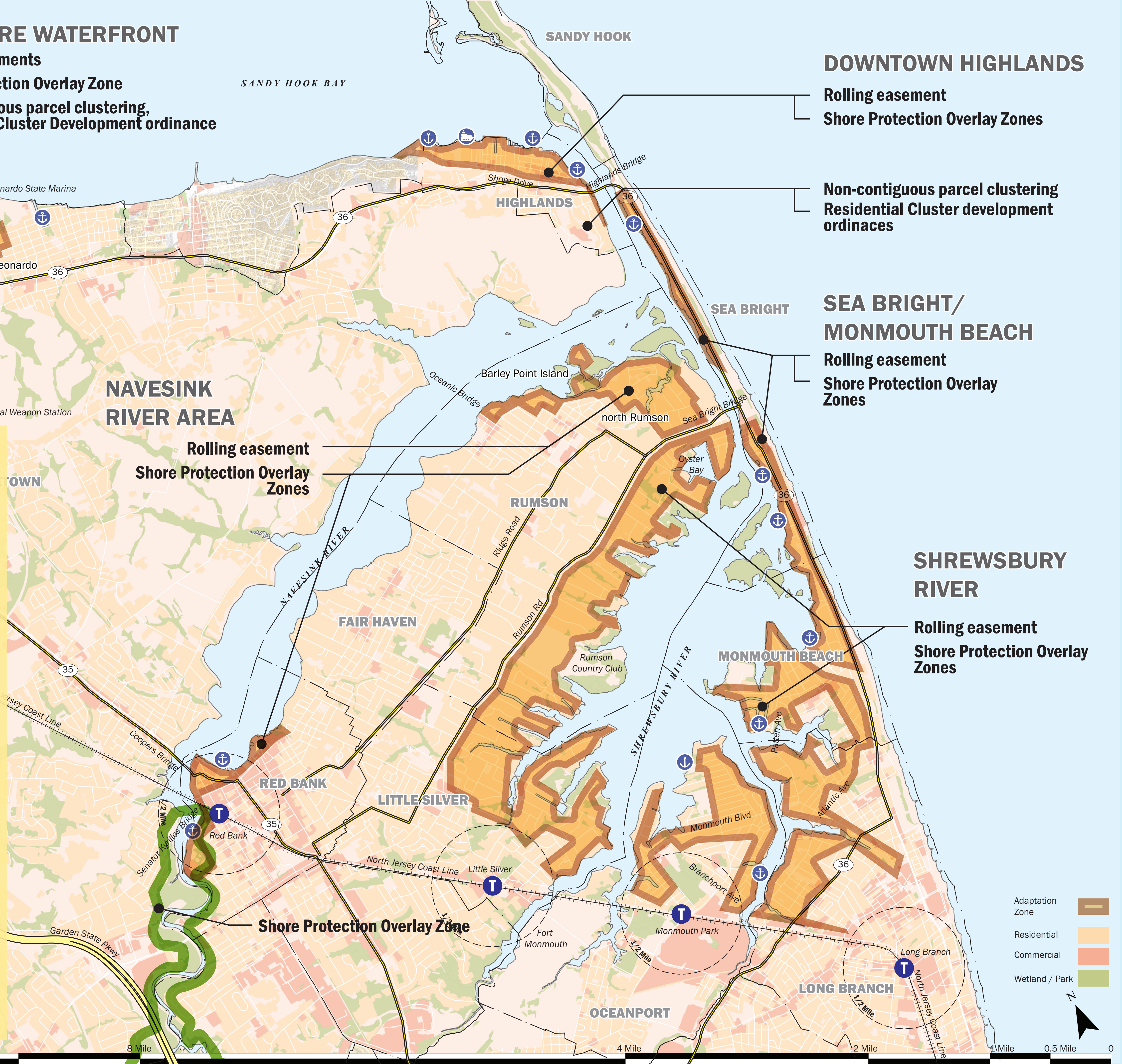
- Rolling easement
- Shore Protection Overlay Zones

REGION-WIDE ACTIONS

Regulatory measures to facilitate the encroachment of waterfront properties

Start **planning for the more significant land use changes** that will need to take place in the following 20 year period and to form a regional body to help provide **direction and coordination for the longer term actions**

- **Adopt Shore Protection Overlay Zones** in Little Silver, Oceanport, Monmouth Beach, Rumson, downtown Highlands, Sea Bright, Red Bank, and Middletown.
- **Consider non-contiguous parcel clustering and residential cluster development ordinances** in Middletown and downtown Highlands.
- **Implement Rolling Easements** in municipalities adjacent to Shrewsbury River, Middletown wetlands, and north Rumson.
- **Complete a regional study for Transfer of Development Rights and relocation of marinas.**
- **Establish the “Two Rivers Coastal Commission”** with the 15 municipalities of the Twin Rivers region.



BAYSHORE WATERFRONT

Continue to use rolling easements
Update shore protection overlay zones

SANDY HOOK BAY

SANDY HOOK

DOWNTOWN HIGHLANDS

Continue to use rolling easements
Update shore protection overlay zones

Encouraging development

SEA BRIGHT/ MONMOUTH BEACH

Continue to use rolling easements
Update shore protection overlay zones

SHREWSBURY RIVER

Continue to use rolling easements
Update shore protection overlay zones

Complete plans for the relocation of the Two Rivers Water Reclamation Authority

REGION-WIDE ACTIONS

- **Update Shore Protection Overlay Zones** in Little Silver, Oceanport, Monmouth Beach, Rumson, Downtown Highlands, Sea Bright, Red Bank, and Middletown.
- **Adopt non-contiguous parcel clustering and residential cluster development ordinances** in Middletown and downtown Highlands.
- **Continue use of Rolling Easements** in municipalities adjacent to Shrewsbury River, Middletown wetlands, and north Rumson.
- Twin River Coastal Commission to **establish a Transfer of Development Rights program and revise zoning in the areas identified as receiving areas to accommodate increased development.**
- Two Rivers Water Reclamation Authority to **complete plans for the relocation**
- **Designate Middletown wetlands as an Ecological Reserve.**

NAVESINK RIVER AREA

Continue to use rolling easement
Update shore protection overlay zones

MIDDLETOWN

RUMSON

FAIR HAVEN

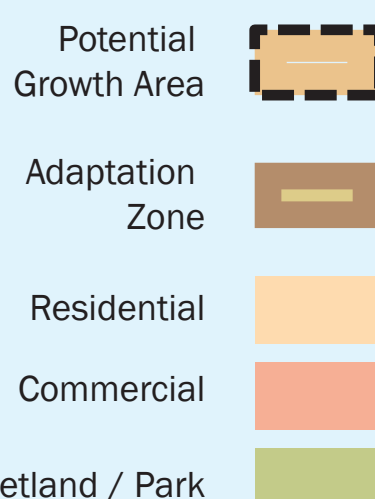
RED BANK

LITTLE SILVER

MONMOUTH BEACH

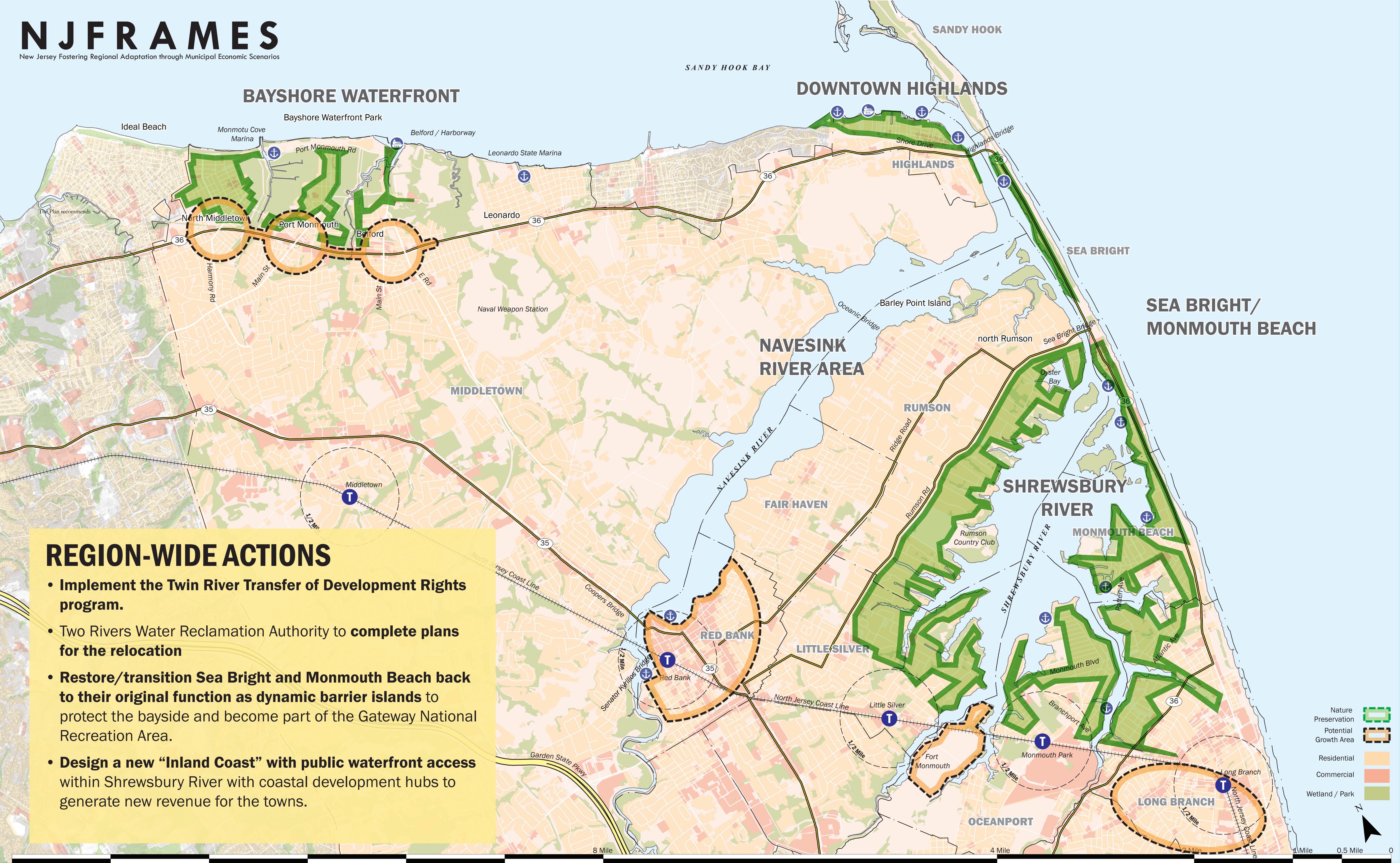
OCEANPORT

LONG BRANCH



MOVING AWAY FROM THE WATER: 2050

Probability of TWL reaching EI +7ft once a year: 4% PERKINS — EASTMAN
Permanent Inundation: 2ft
07/11/19



REGION-WIDE ACTIONS

- Implement the Twin River Transfer of Development Rights program.
- Two Rivers Water Reclamation Authority to **complete plans for the relocation**
- **Restore/transition Sea Bright and Monmouth Beach back to their original function as dynamic barrier islands** to protect the bayside and become part of the Gateway National Recreation Area.
- **Design a new “Inland Coast” with public waterfront access** within Shrewsbury River with coastal development hubs to generate new revenue for the towns.

MOVING AWAY FROM THE WATER: 2100

Probability of TWL reaching El +7ft once a year: **100%**
Permanent Inundation: **5.3ft**

PERKINS — EASTMAN
07/11/19