ACCR Resilient NJ
Virtual Open House

February 10, 2022

Resilient NJ

Resilient NJ

Regional Planning for a Stronger New Jersey

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

AGENDA

- housekeeping
- intros
- visioning & engagement
- scenario planning
- scenario 1
- scenario 2
- scenario 3

PROJECT TEAM

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

ENGENUITY INFRASTRUCTURE

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

wsp

PERKINS EASTMAN

CDM Smith

RUTGERS
Edward J. Bloustein School of Planning and Public Policy

LOCAL OFFICE
LANDSCAPE & URBAN DESIGN

CP
CHPlanning
LIMITED

STEERING COMMITTEE

BRIGANTINE

V

PLEASANTVILLE

MARGATE CITY NEW JERSEY

SEAL OF COUNTY OF ATLANTIC 1837 NEW JERSEY

American Red Cross

CITY OF NORTHFIELD INCORPORATED 1905 NEW JERSEY

CITY OF ATLANTIC CITY INCORPORATED MARCH 1854

Thank you for being here.

You could be anywhere else right now, but you took the time to join this meeting and we want you to know that it is appreciated by our team.

Your participation in this meeting and other engagements will support our continued effort towards a Resilient NJ and your feedback from today's session can directly result in more funding opportunities for the scenario solutions we will review today.

PROJECT VISION & ENGAGEMENT

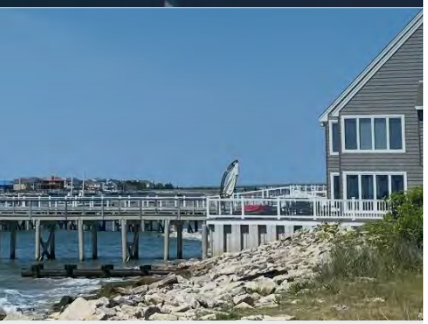
Resilient New Jersey Atlantic County Coastal Region Vision Statement:

> *"The Resilient New Jersey Atlantic County Coastal Region is a resilient and sustainable place where **protections from natural disasters, flooding, and sea level rise** enable the region to thrive; residents' **sense of belonging** and pride in their communities is enhanced by advancing quality of life through fair housing, accessible transportation, infrastructure improvements, and a diversified economy; and visitors are offered inviting recreational and cultural experiences that **honor the ocean and optimize the waterfront, public space, and regional assets that make the region an iconic destination**."*

what we heard:

this region matters.

This region is a diverse community, with a competitive economy, great places to visit and gather, iconic beaches and rich history make it worth protecting.



what we heard:

The Region is proud of its social fabric, diverse economy, and ecological assets

- A world class destination where people routinely come to connect – both with each other and with nature
- People gather in this Region for conventions, competitions, pageants, research, collaboration, and innovation
- Critical to South Jersey's economy, providing jobs in service, transportation, energy, healthcare, marine, and education sectors
- Values its large employers, and also sees the small businesses as the lifeblood of the Region
- Rich in ecological resources, and values its marshlands, parks, beaches, and waterways
- Characterized by its diversity of people, destinations, landscapes, activities, and ways of getting around
- Has continually reinvented itself, and is a place that works together to meet the challenges of the future
- Focused on innovation to harness opportunities in green technologies

RESILIENCE & ADAPTATION SCENARIOS

Resilience & Adaptation Scenario Goals

1. Respond to the vision identified by the region
2. Reduce anticipated flood impacts in 2070
3. Include actions that respond to immediate flooding concerns within the region
4. Protect or enhance natural resources and ecosystem function, as well as public access
5. Address the needs of socially vulnerable populations

SCENARIOS ARE BASED ON THE REGION'S ASSETS, VISIONS & RISKS

They will help answer these key questions:

1. What do we want to protect?
2. How can the region evolve to protect what we value?
3. Which vulnerable areas are at risk?

RESILIENCE AND ADAPTATION SCENARIOS

What is a Resilience and Adaptation Scenario?

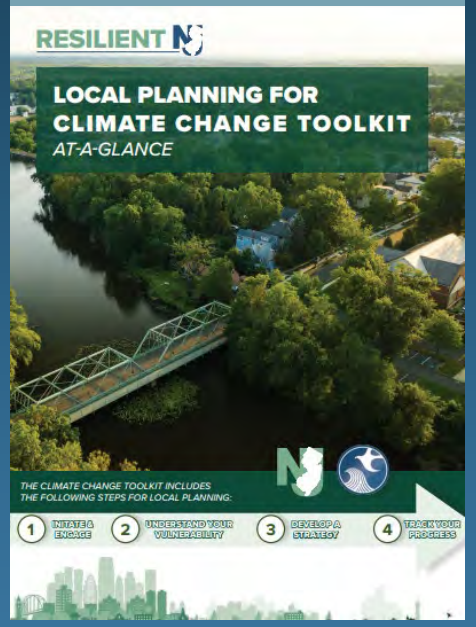
A suite of actions that will work collectively to increase resiliency over time.

What actions should be included?

FLOOD MITIGATION PROJECTS

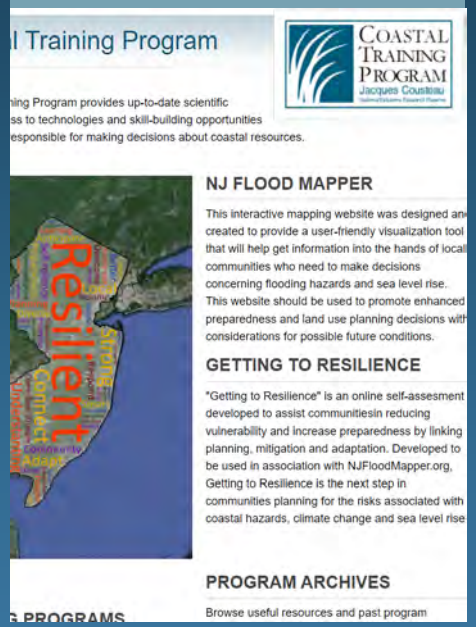
CAPITAL IMPROVEMENT PROJECTS

FUTURE STUDIES/ANALYSIS



PLANNING AND REGULATORY ACTIONS

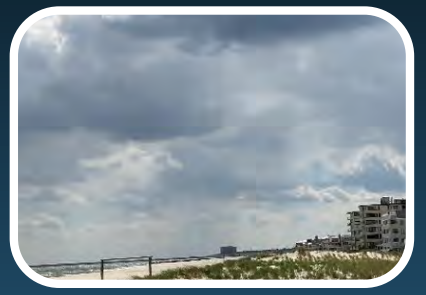
COMMUNICATION OR OUTREACH ACTIVITIES



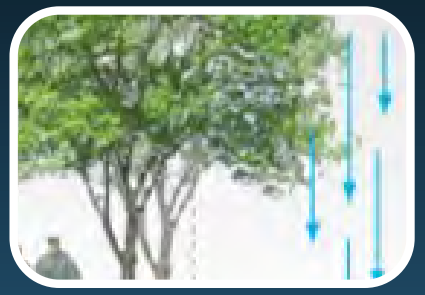
RESILIENCE CHECKLIST

- Vision
- Evaluation of Risk and Risk Reduction
- Cost Efficiency
- Capacity to Implement
- Environmental/Ecological
- Adaptation Over Time
- Outreach and Partnerships
- Health and Populations
- Socio-Economic

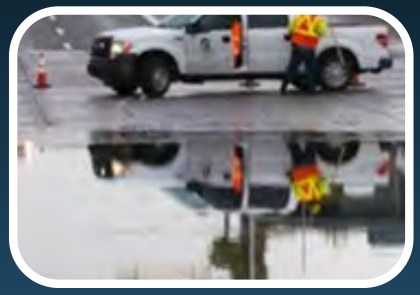
KEY CHALLENGES TO ADDRESS



SHORELINE PROTECTION



STORMWATER MANAGEMENT



ACCESS & TRANSPORTATION

POWER & COMMUNICATIONS

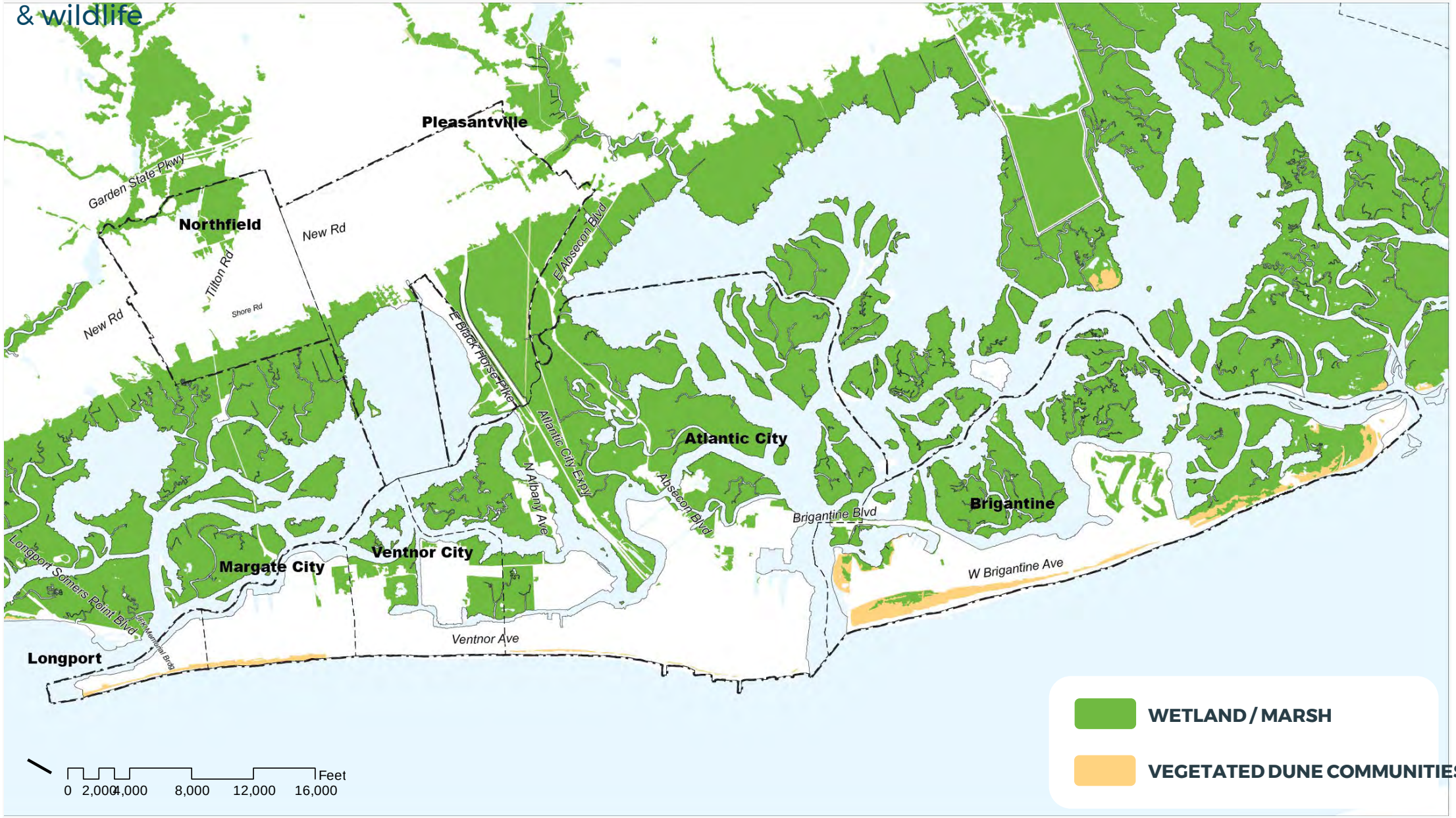
EQUITABLE ECONOMIC OPPORTUNITY

PUBLIC FACILITIES

COMMUNITY MEMBERS

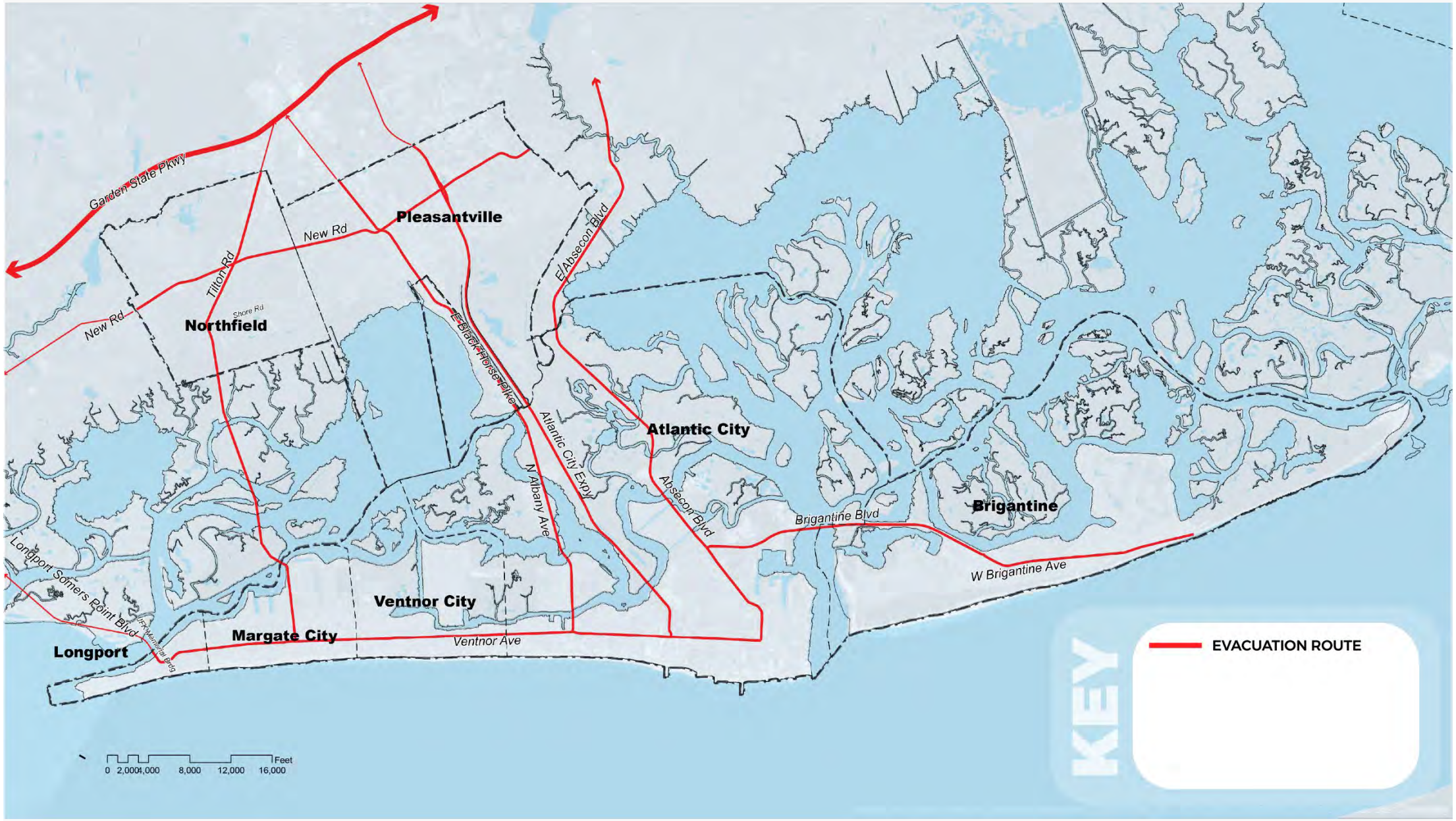
WHAT ARE WE TRYING TO PROTECT?

Natural Resources rivers, marshes, beaches & wildlife



PROTECT

Infrastructure evacuation routes

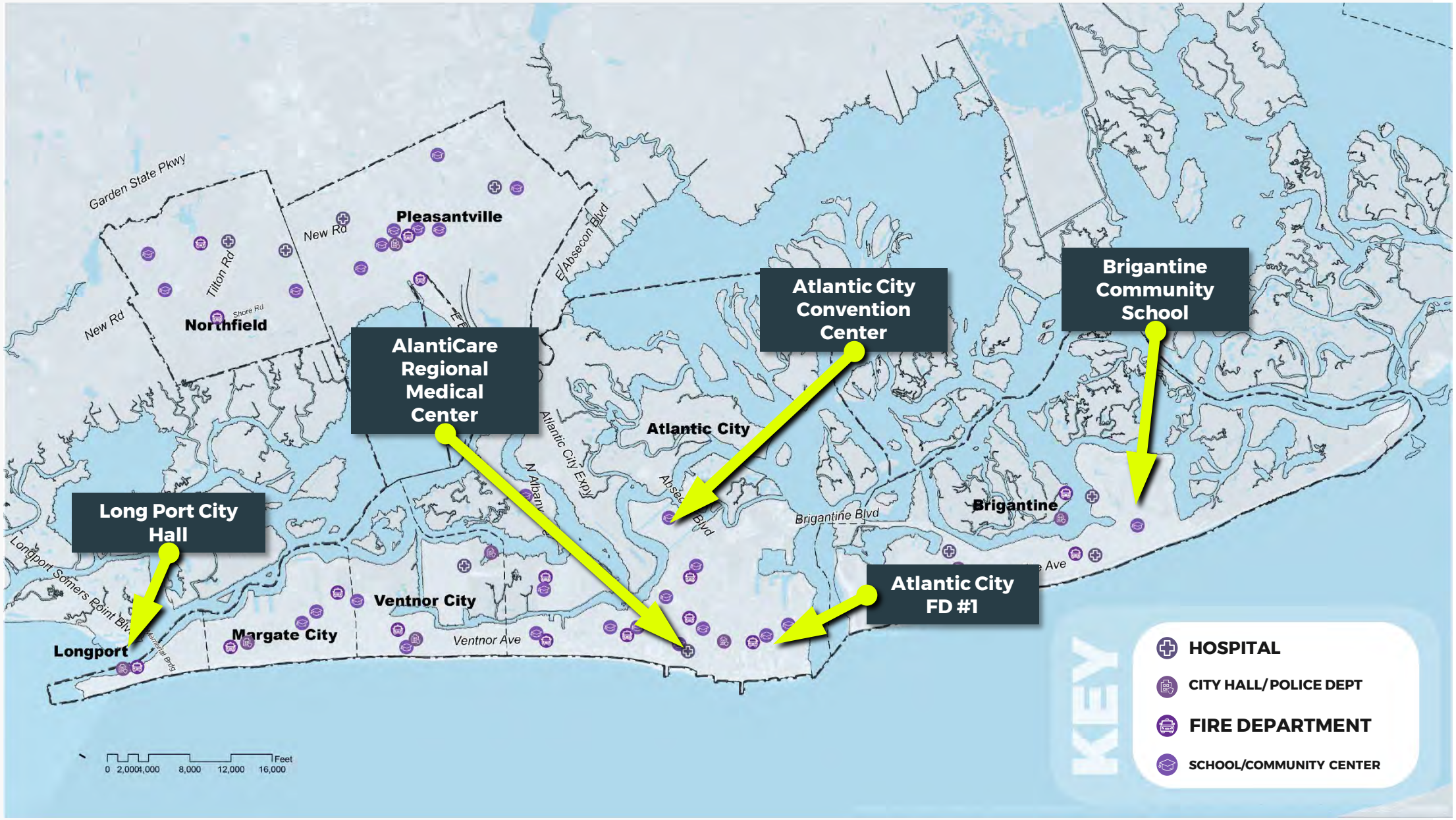


PROTECT

Infrastructure electrical equipment and pump stations

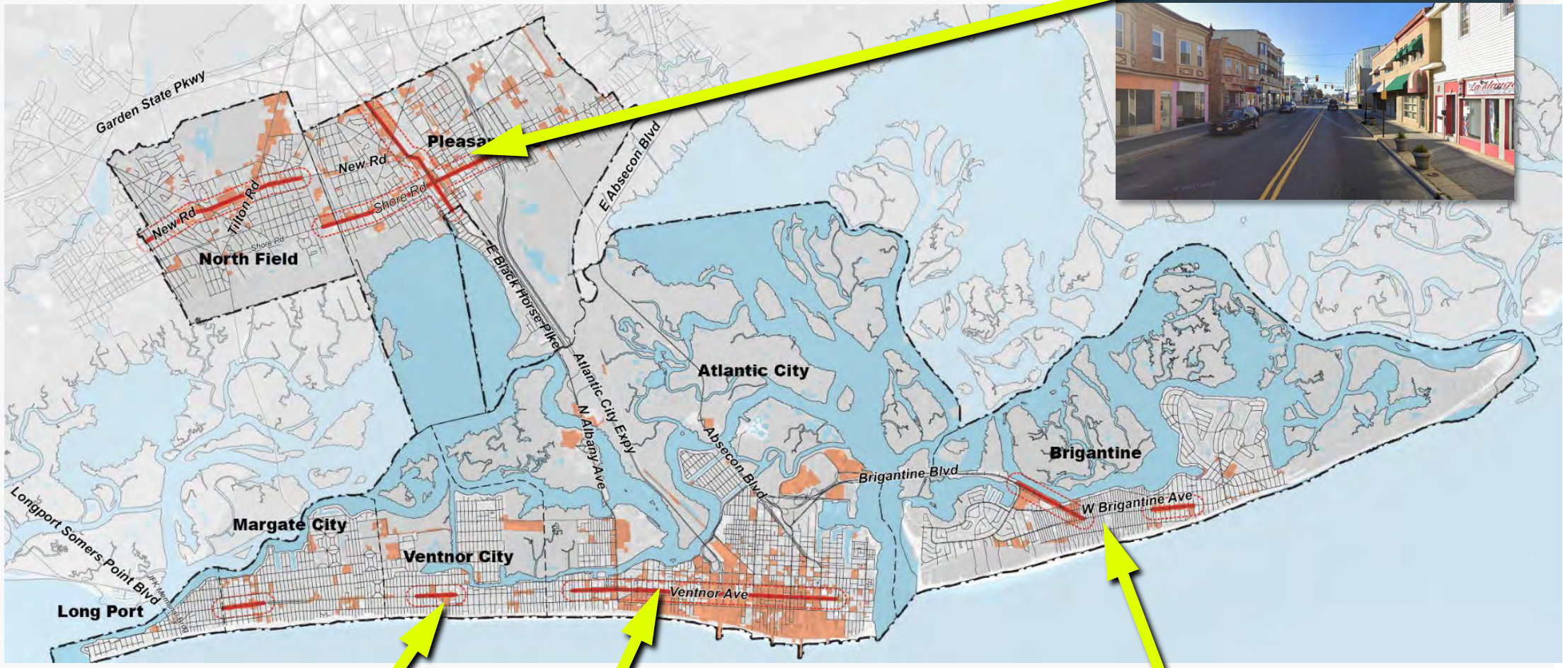
PROTECT

Infrastructure public facilities



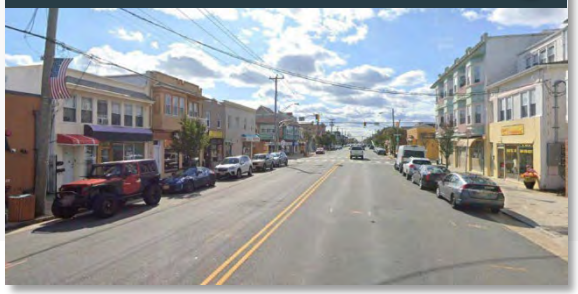
PROTECT

Infrastructure commercial corridors



Main Street at Pleasantville

Ventnor Avenue at Ventnor City

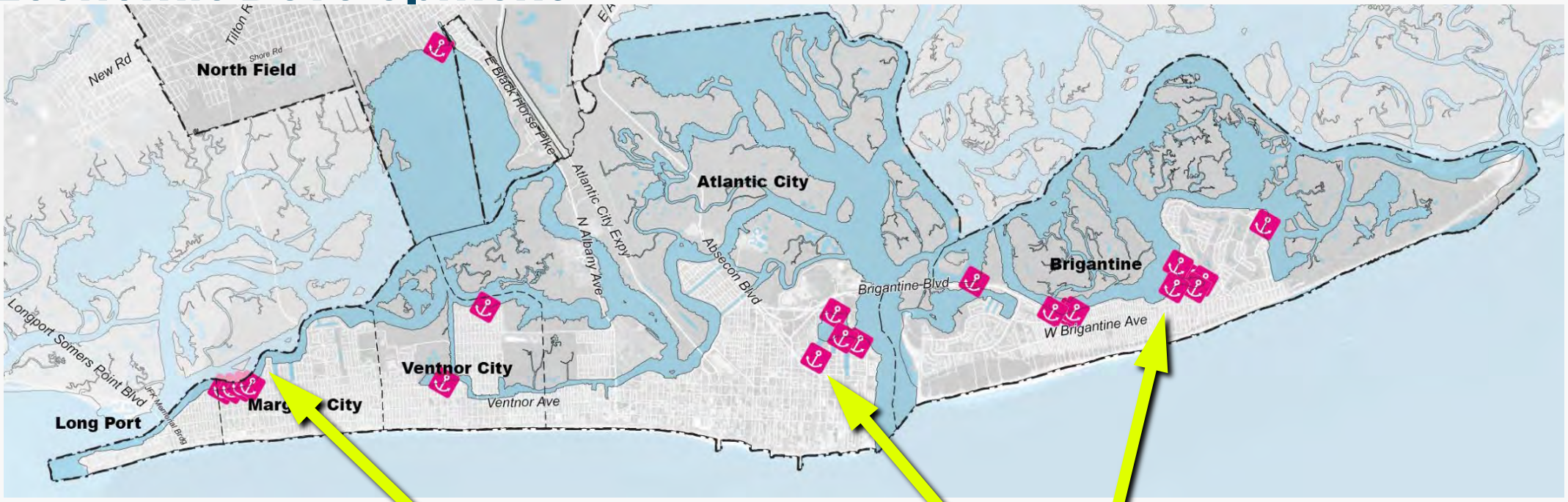


Ventnor Avenue at Atlantic City

West Brigantine Avenue at Brigantine

PROTECT

Economic Development marinas



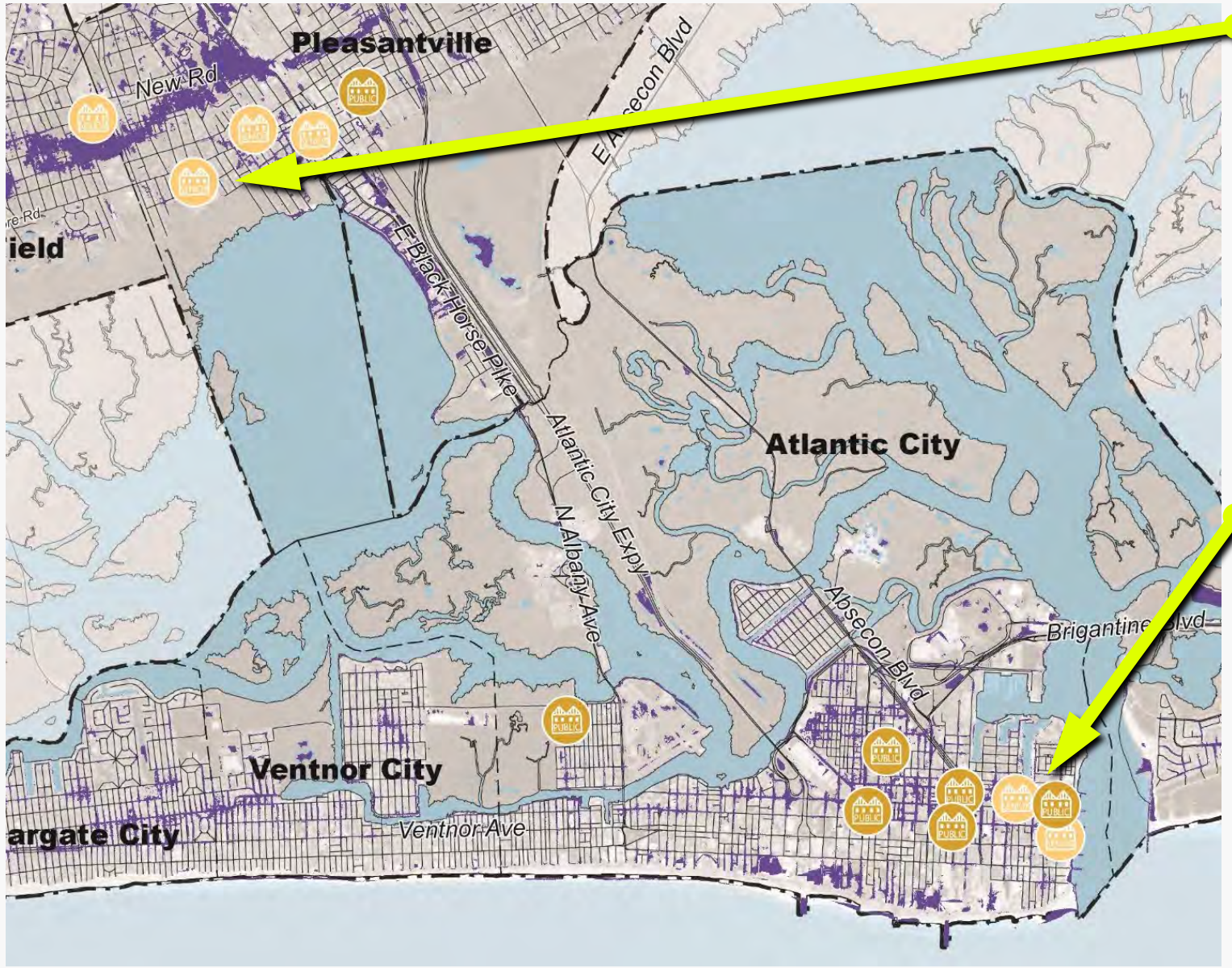
Island Aqua Park at Margate City

State Marina at Atlantic City

North Point Marina at Brigantine

PROTECT

Economic Development vulnerable populations



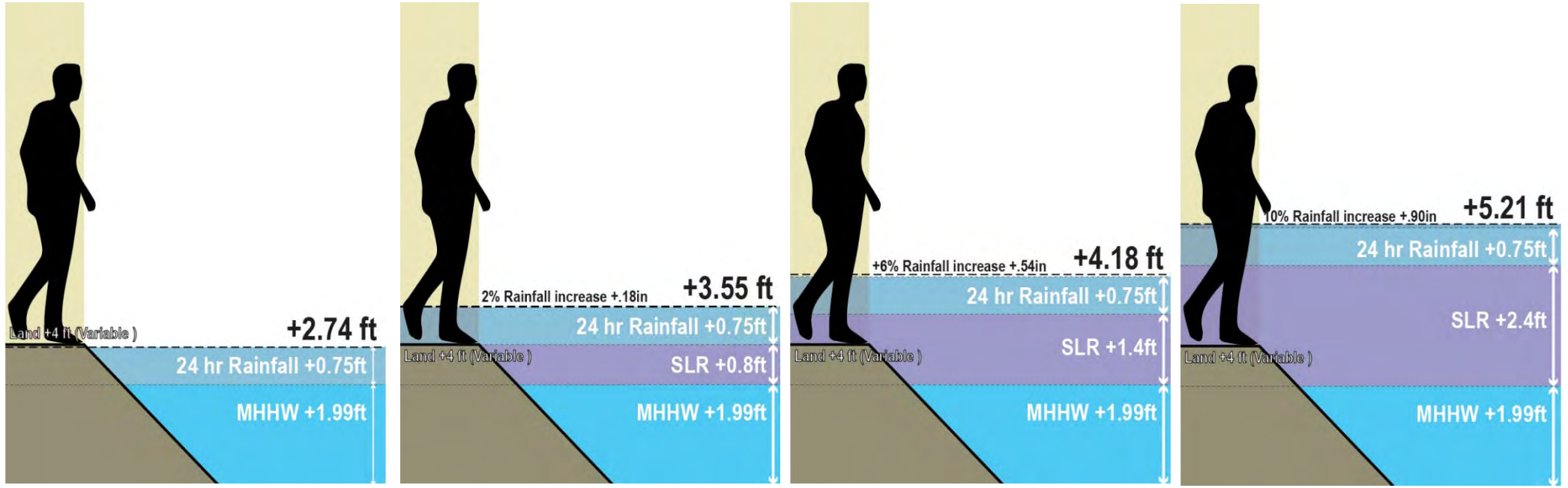
Meadowview Nursing Home

Charles P. Jefferey at Atlantic City

PROTECT

WHAT ARE WE TRYING TO PROTECT OUR REGION FROM?

What are we preparing for?

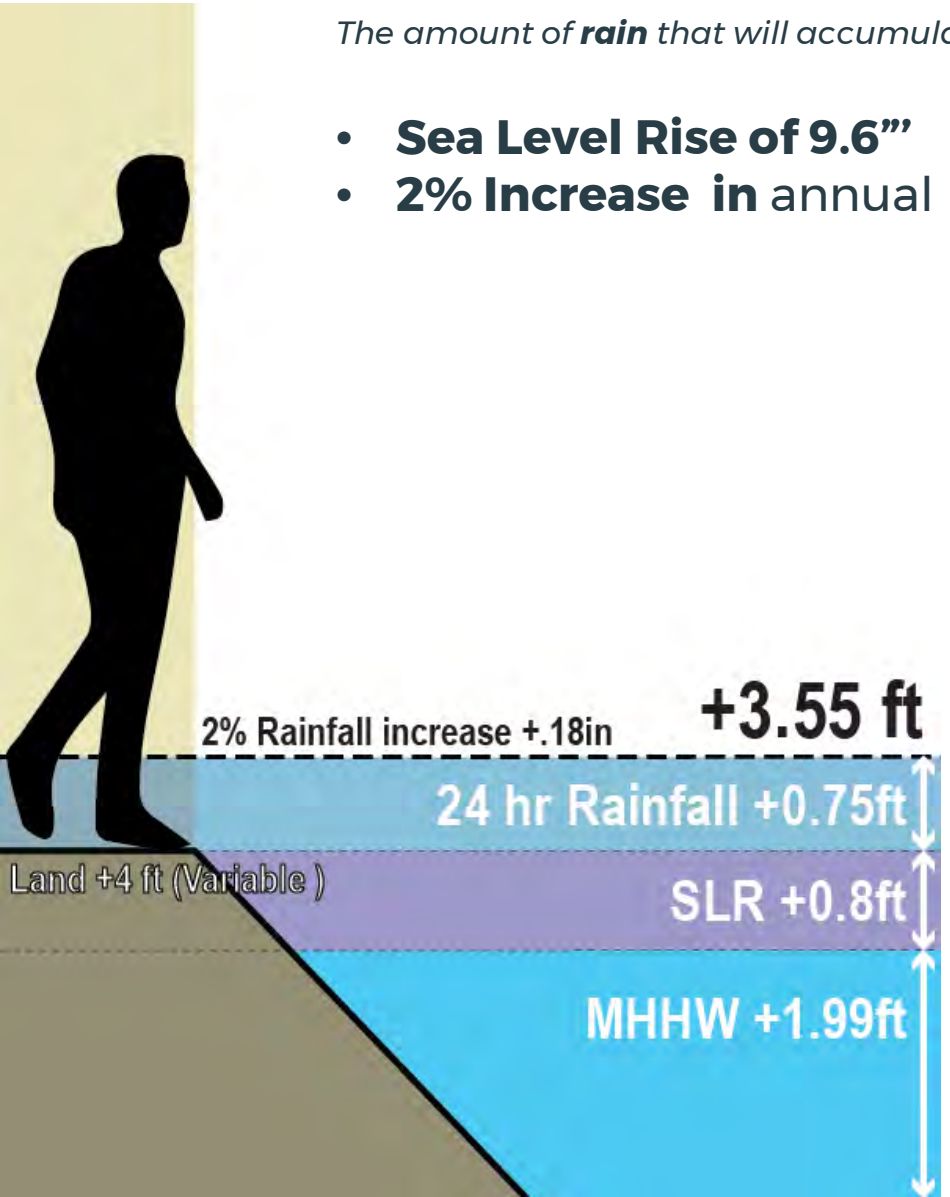


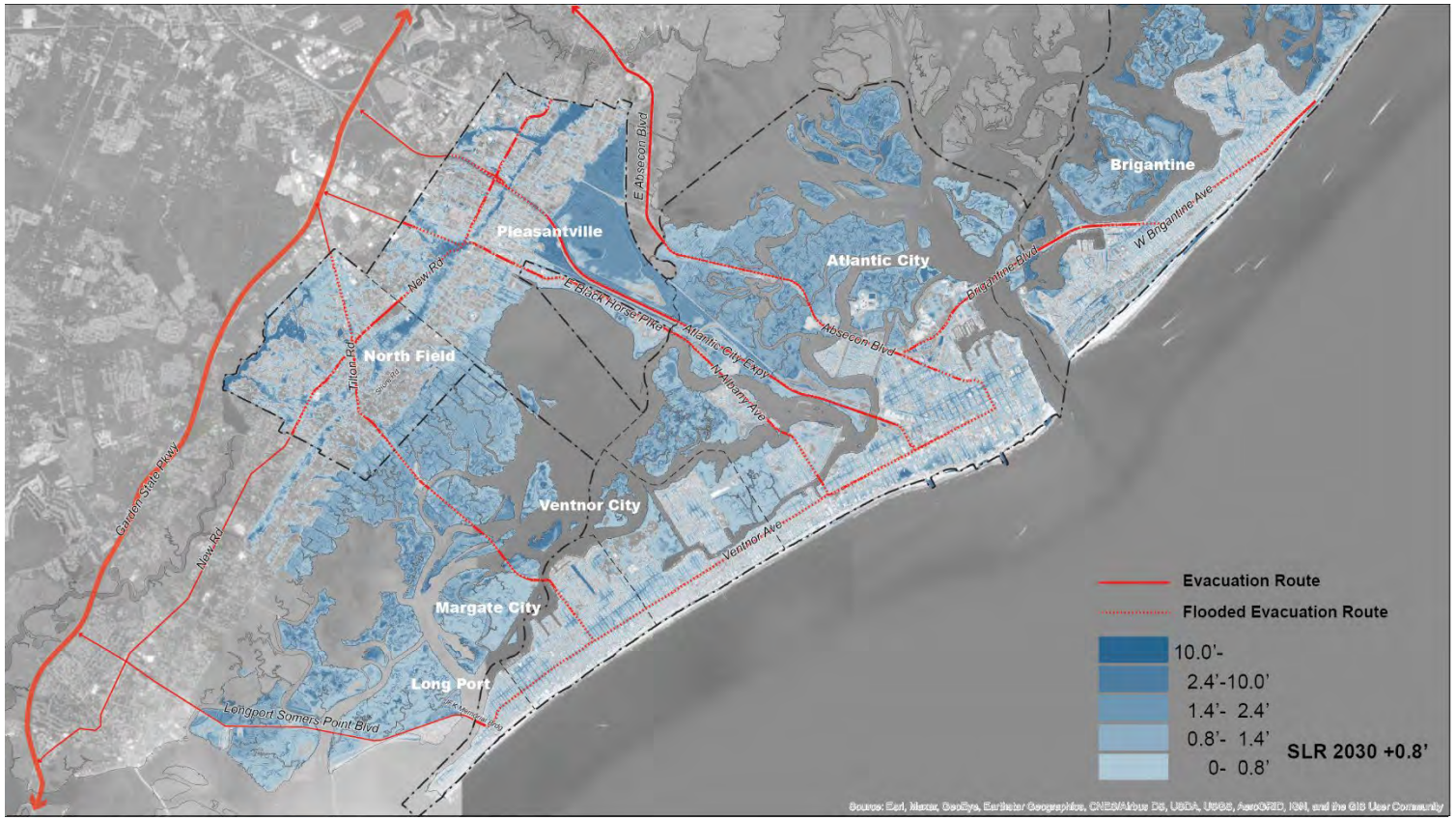
	Present Day	2030	2050	2070
Sea Level Rise	0	0.8’	1.4’	2.4’
Precipitation Event	1% 24hr	1% 24hr	1% 24hr	1% 24hr
Precipitation Increase	0	2%	6%	10%

1% / 24-HOUR RAINSTORM: **2030**

*The amount of **rain** that will accumulate in a **24-hour** period for a **storm** with a **1**-in-100 (or **1**%) chance of occurring in 2030*

- **Sea Level Rise of 9.6”’**
- **2% Increase in** annual precipitation

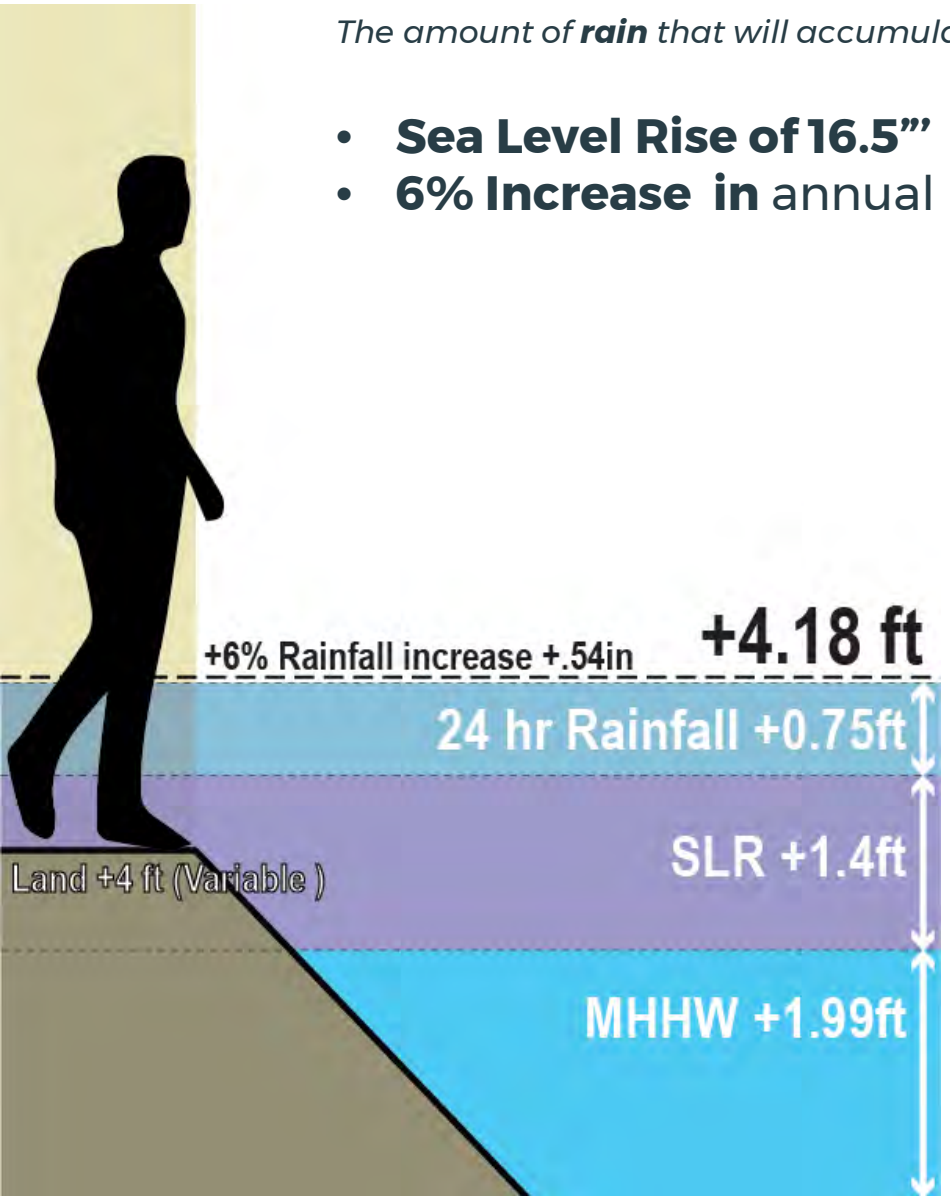


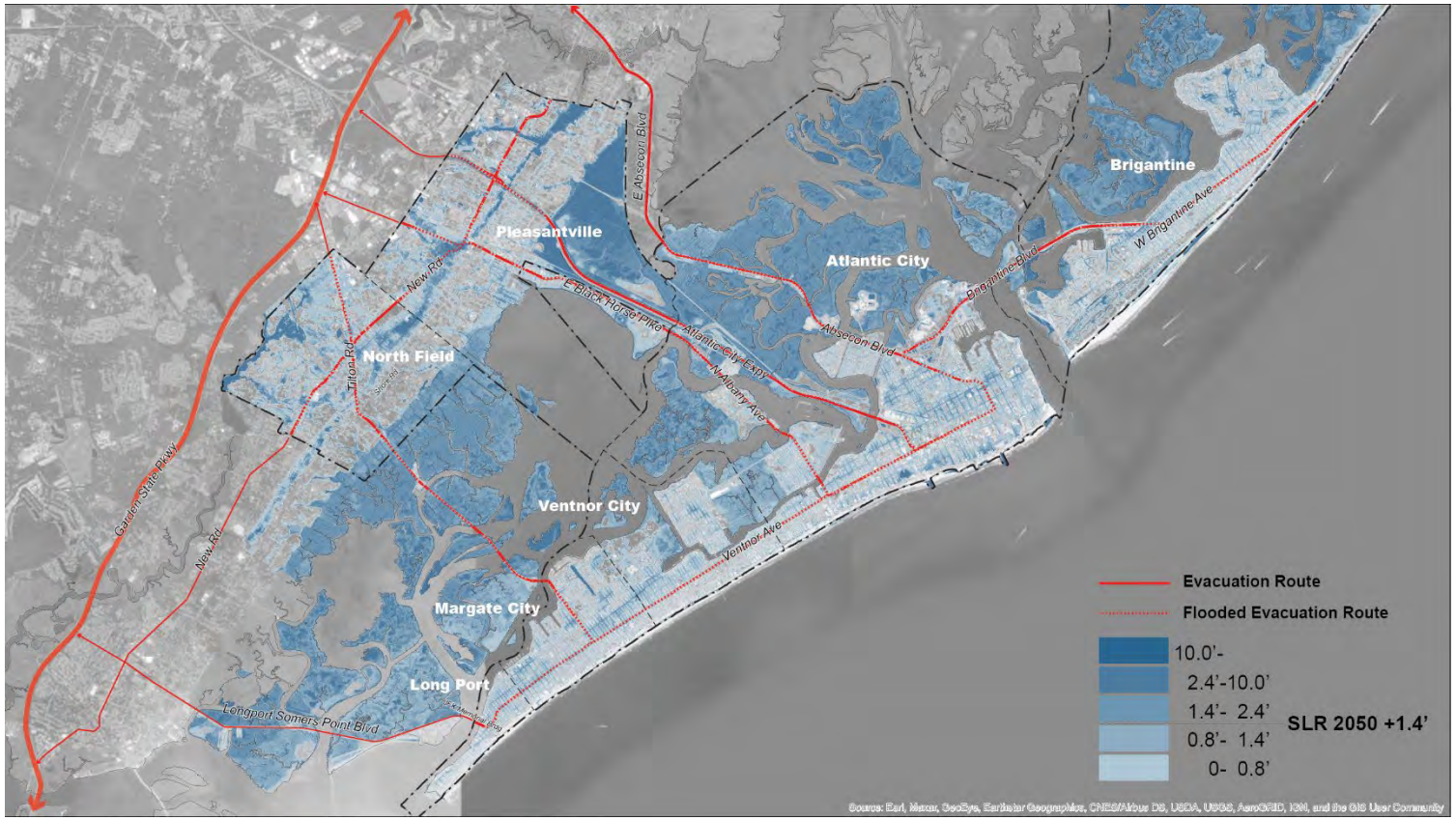


1% / 24-HOUR RAINSTORM: **2050**

*The amount of **rain** that will accumulate in a **24-hour** period for a **storm** with a **1**-in-100 (or **1**%) chance of occurring in 2050*

- **Sea Level Rise of 16.5”’**
- **6% Increase in** annual precipitation

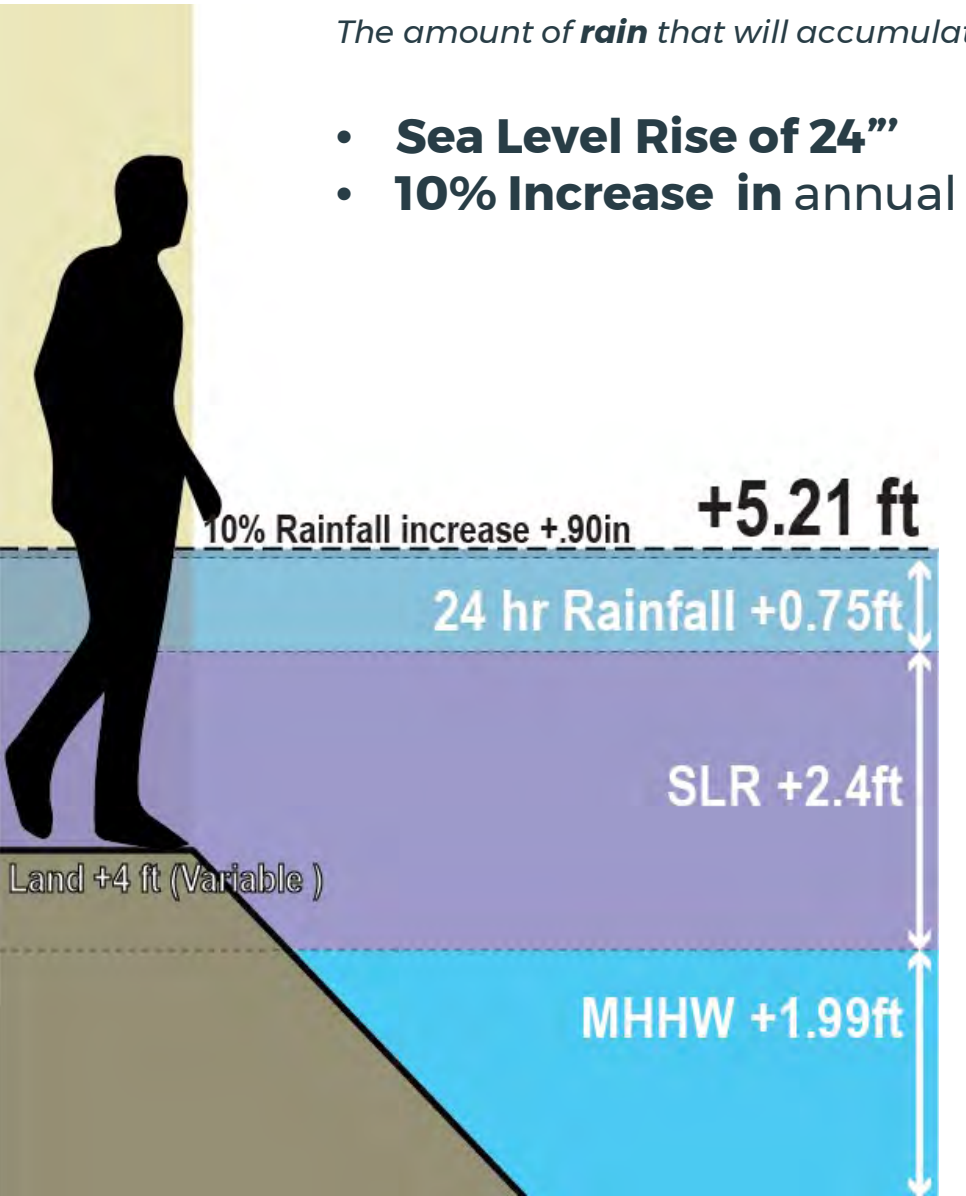


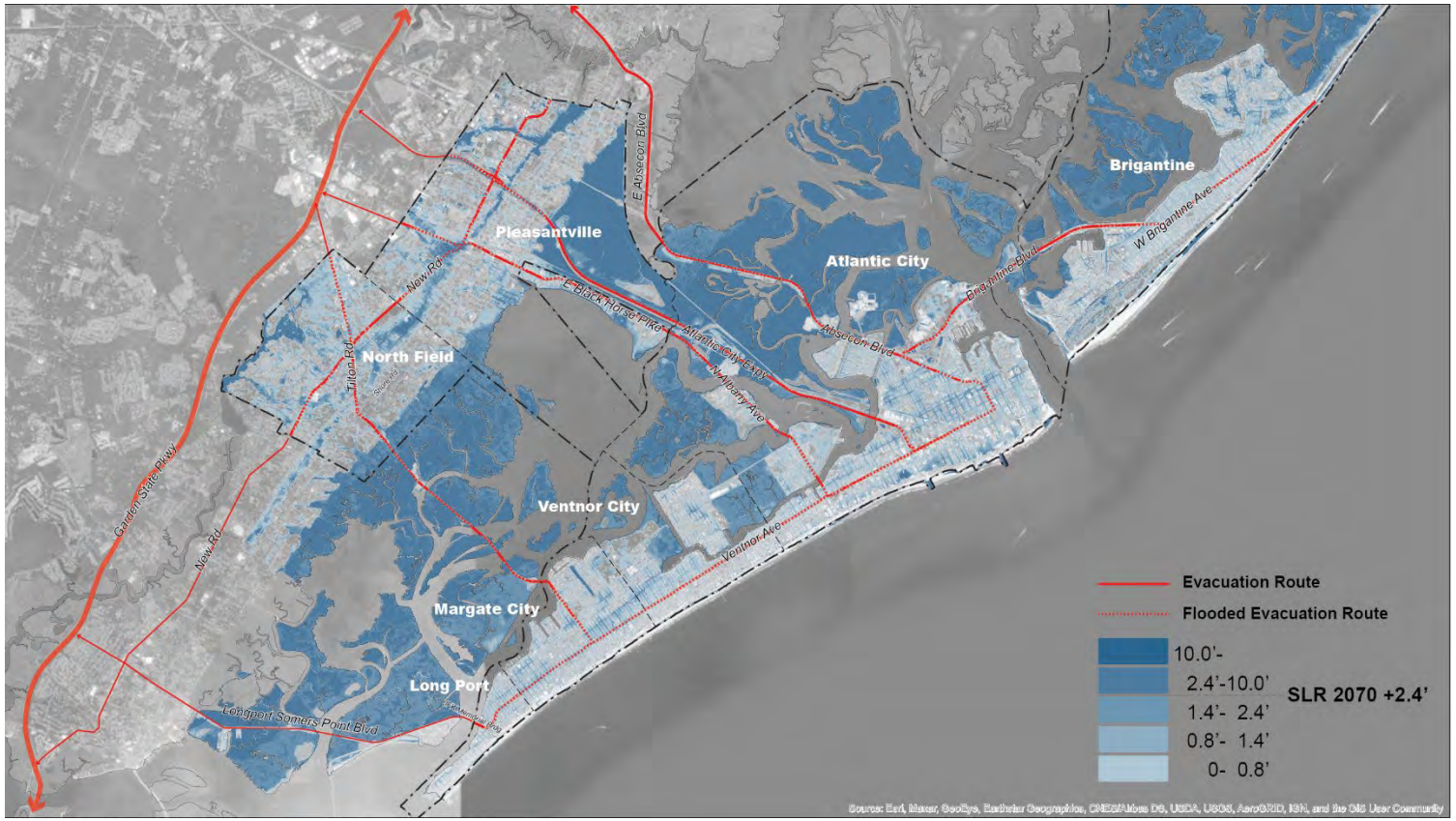


1% / 24-HOUR RAINSTORM: **2070**

*The amount of **rain** that will accumulate in a **24-hour** period for a **storm** with a **1**-in-100 (or **1**%) chance of occurring in 2070*

- **Sea Level Rise of 24”’**
- **10% Increase in** annual precipitation





SCENARIOS

RESILIENCY CRITERIA

"Mix of Actors but Public Sector Leads on key projects"

"Mix of Actors but looks to State, County and Municipalities to partner on needed resiliency improvements "

"Mix of Actors but looks to leverage private investment to help finance needed resiliency improvements"

Year	Scenario 1	Scenario 2	Scenario 3
Implementation Approach	• Centralized • Oriented toward Grey Infrastructure solutions	• Mix of Blue and Green solutions	• Decentralized • Oriented toward nature-based solutions
Leadership	• Relies on Federal State and Local partnerships	• Relies on State and Local partnerships	• Relies on State, Local, Non-Profit and Private Sector Partnerships
Shoreline Protection	• US Army Corps Back Bay Plan featuring floodwalls and floodgates	• Raised bayside and • Continued Beach Nourishment	• Private investment • Offshore breakwaters
Stormwater Management	• Raised Streets and Pump Stations	• Blue Streets & pump stations	• Living Streets
Power and utilities	• Expand current microgrid Atlantic City plan • New Microgrids centered on community facilities	• Community Microgrids based on new solar generation at community facilities	• Decentralized Solar and battery power plan
Vulnerable Populations	• Translate all emergency preparedness material to the region's eight languages • Adaptation Action Plan for all Atlantic City Housing Authority Communities and Senior Communities		
Economic Development			Encourage Blue economy uses at Gardners Basin
Capacity Building	Absecon Bay Keepers		
Access	• Raise approaches to all bridges to secure • Raise Black Horse Pike		
Natural Resources	• Absecon Bay Living Bay Master Plan • Blue way		

REGION-WIDE ACTIONS FOR *ALL SCENARIOS*

NATURAL RESOURCES

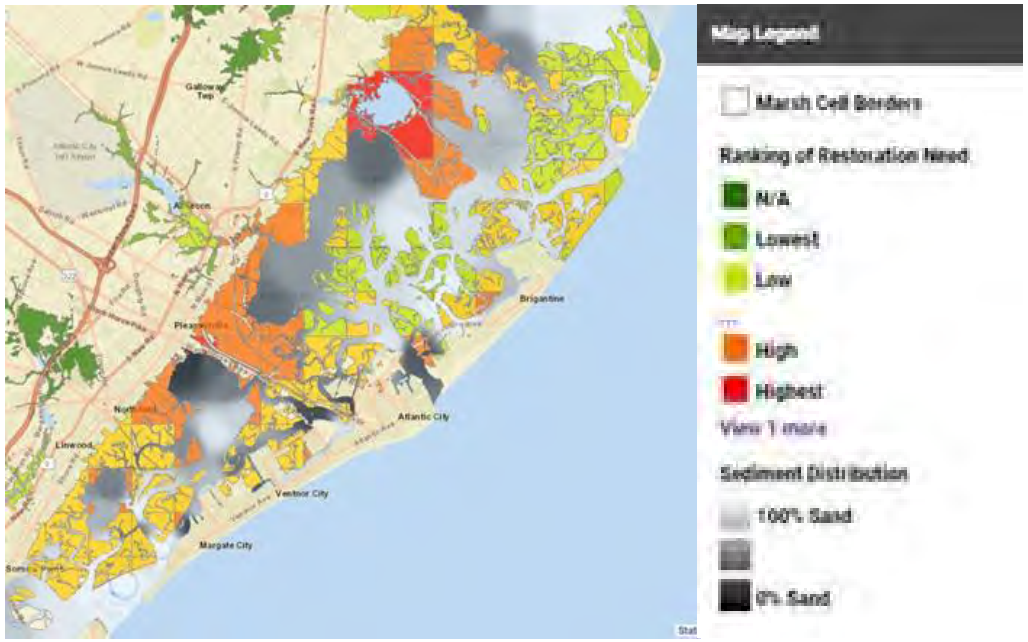
Absecon Bay **Living Bay Master Plan**

Challenges

- Prolonged inundation, erosion and loss due to sea level rise in Back Bay Marches will weaken protection of the surrounding communities and infrastructure from damage due to storm surge.
- Long term maintenance of the back bay tidal marshes requires ***coordinated and securely funded intervention***.
- Implementing coastal resiliency ***projects within the region will likely face delays due to a backlog*** of applications

Goals

- Provide a framework to establish condition monitoring,
- Prioritize actions to restore habitats through thin-layer sand deposition in targeted locations and living shoreline improvements and coordinated use of resources (dredge sand) and funding.
- Create a means to streamline permit reviews resiliency projects, establish broader or more flexible limits for General Permits and expand use of In-Lieu-Fee mitigation option.
- Public Education to recognize the importance and value of back bay tidal wetlands in protecting the region from storm surge.



Establish a new non-profit organization, the Absecon Bay Keepers

Absecon Bay Keepers will be a non-profit organization focused on stewardship of Absecon Bay, and working on behalf of the people and wildlife that depend on Bay through environmental action, advocacy, education.

- **Carry out the mission through a combination of:**
  - formal and nonformal environmental education programs designed to raise awareness of the residents and visitors to the region.
  - Work to protect, preserve and restore the various fish and wildlife habitats that exist within the watershed.

- **Act as steward for Absecon Bay by:**
  - Promoting responsible, sustainable development.
  - Working with local, county and state planners to ensure that land-use planning decisions reflect up-to-date science.
  - Provide a resource to assist local, state and federal agencies to identify threats to the resiliency of the Bay and the abutting communities;
  - Promoting comprehensive planning to guide the future of Absecon Bay

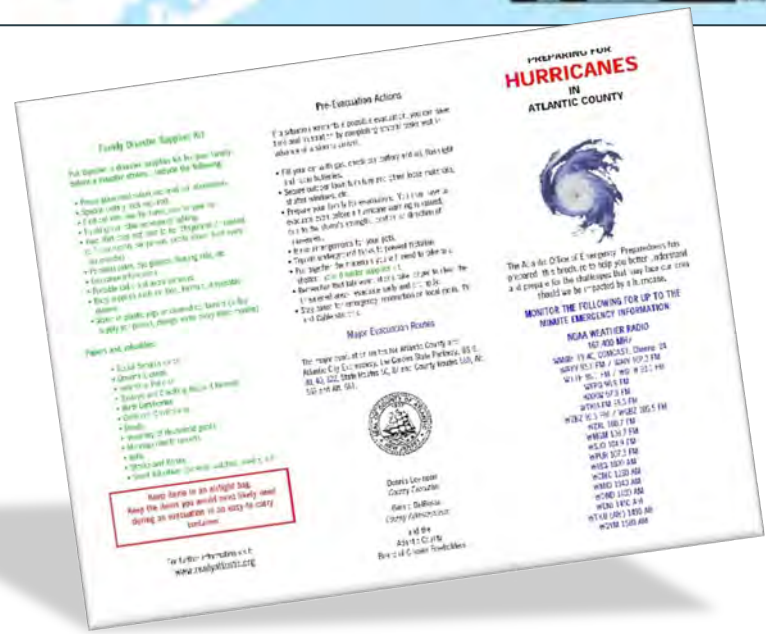
REGION-WIDE ACTIONS FOR *ALL SCENARIOS*

VULNERABLE POPULATIONS

Languages other than English spoken at home, by census track:

Data Source: 2010 ACS, Janet Lau, Cartographer

Translate all Emergency Preparedness Materials into the multiple languages to reach all of the region's communities.



ACTIONS FOR *ALL SCENARIOS*

VULNERABLE POPULATIONS

Adaption Action Plan for Atlantic City & Pleasantville Housing Authority Communities and the Region's Senior Centers

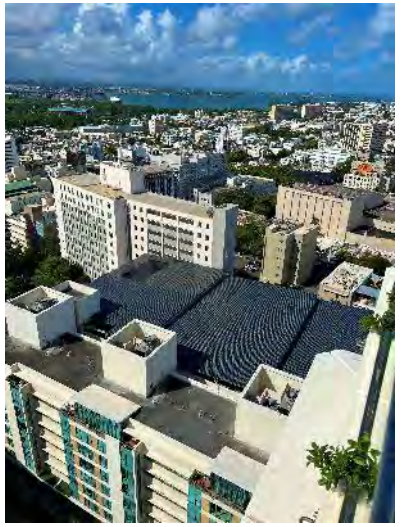
Continuity of Service

- Elevate Electrical and Mechanical Equipment
- Solar Trellises on all surface parking lots
- Solar Panels on all rooftops
- Battery to provide off-grid capacity at night
- Porous paving and green infrastructure planting to aid in stormwater management

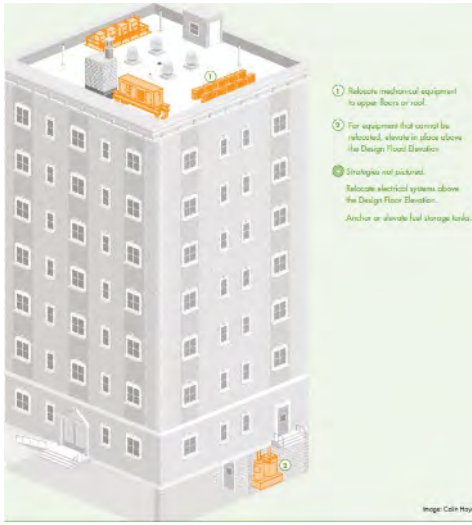
Flood Mitigation

- Reprogram Ground Level

Rooftop Solar



Solar Trellises



Relocated Mechanical Equipment

Altman Towers

Whittington Senior Living

Walter Buzby

Stanley Village

Charles P Jefferies

SCENARIO ONE

SCENARIO 1

SHORELINE PROTECTION | STORMWATER MANAGEMENT | ACCESS & TRANSPORTATION | POWER & COMMUNICATIONS | EQUITABLE ECONOMIC DEVELOPMENT | PUBLIC FACILITIES | VULNERABLE POPULATIONS | NATURAL RESOURCES | CAPACITY BUILDING

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SCENARIO 1

BAYSIDE SHORELINE PROTECTION

1. Rely on the plan proposed in the **USACE Back Bay Plan, Great Egg Harbor Inlet SSB** to protect bayside from storm surge events
2. Install sheet pile dune core
3. Extend board-walk / levee
4. New bulkhead

SCENARIO 1

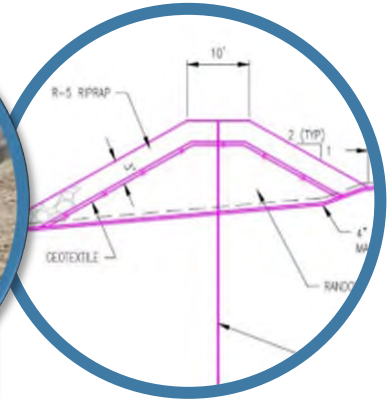
OCEANSIDE SHORELINE PROTECTION

1. Rely on the plan proposed in the **USACE Back Bay Plan, Great Egg Harbor Inlet SSB** to protect bayside from storm surge events
2. Install sheet pile dune core
3. Extend board-walk / levee
4. New bulkhead

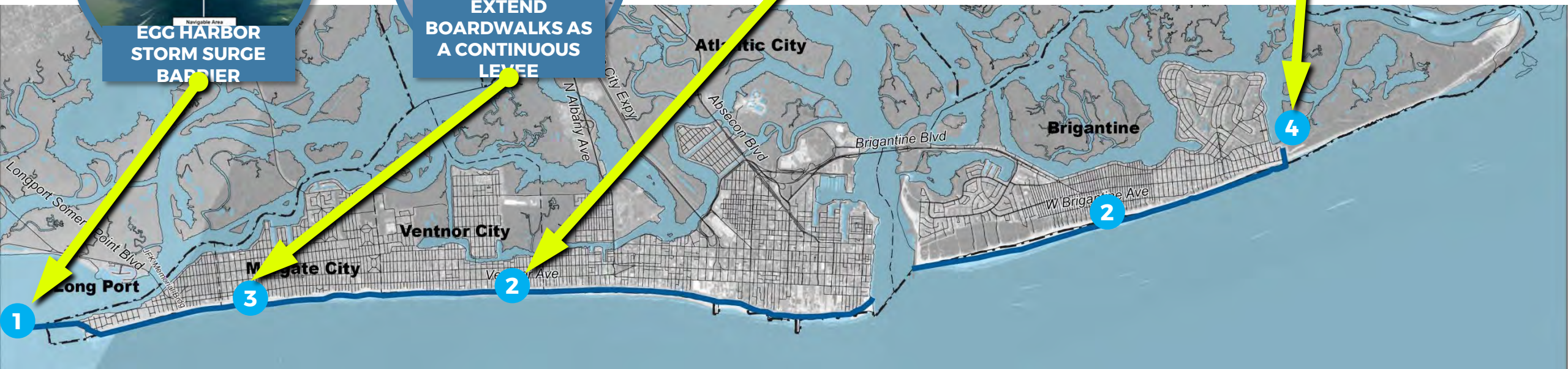
EGG HARBOR STORM SURGE BARRIER

EXTEND BOARDWALKS AS A CONTINUOUS LEVEE

INSTALL SHEET PILE DUNE CORE



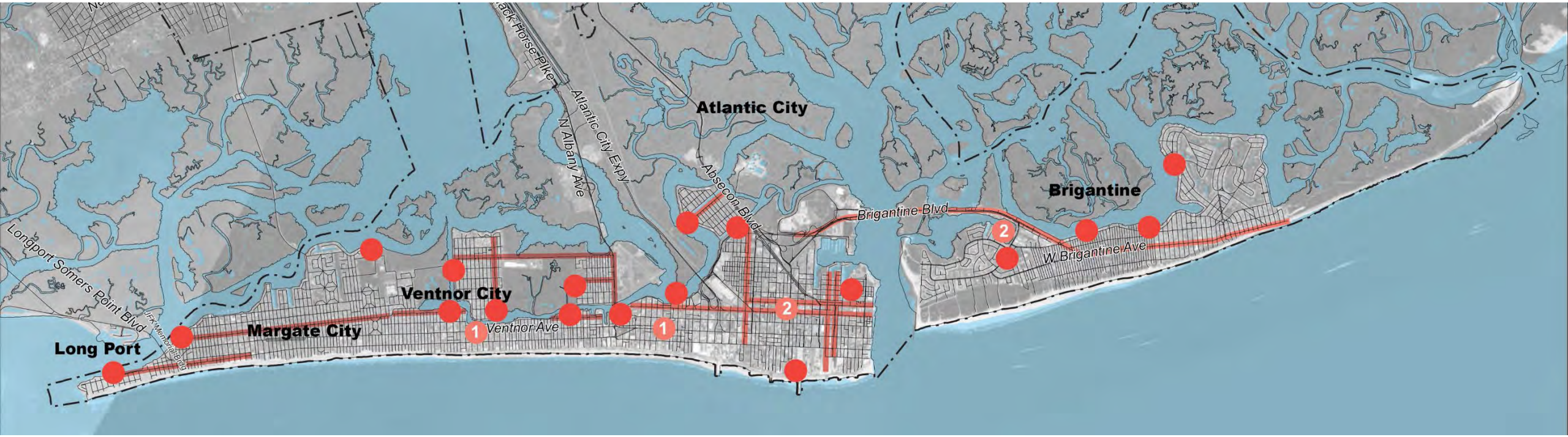
NEW BULKHEAD TO PROTECT THE NORTH END OF BRIGANTINE



SCENARIO 1

STORMWATER MANAGEMENT

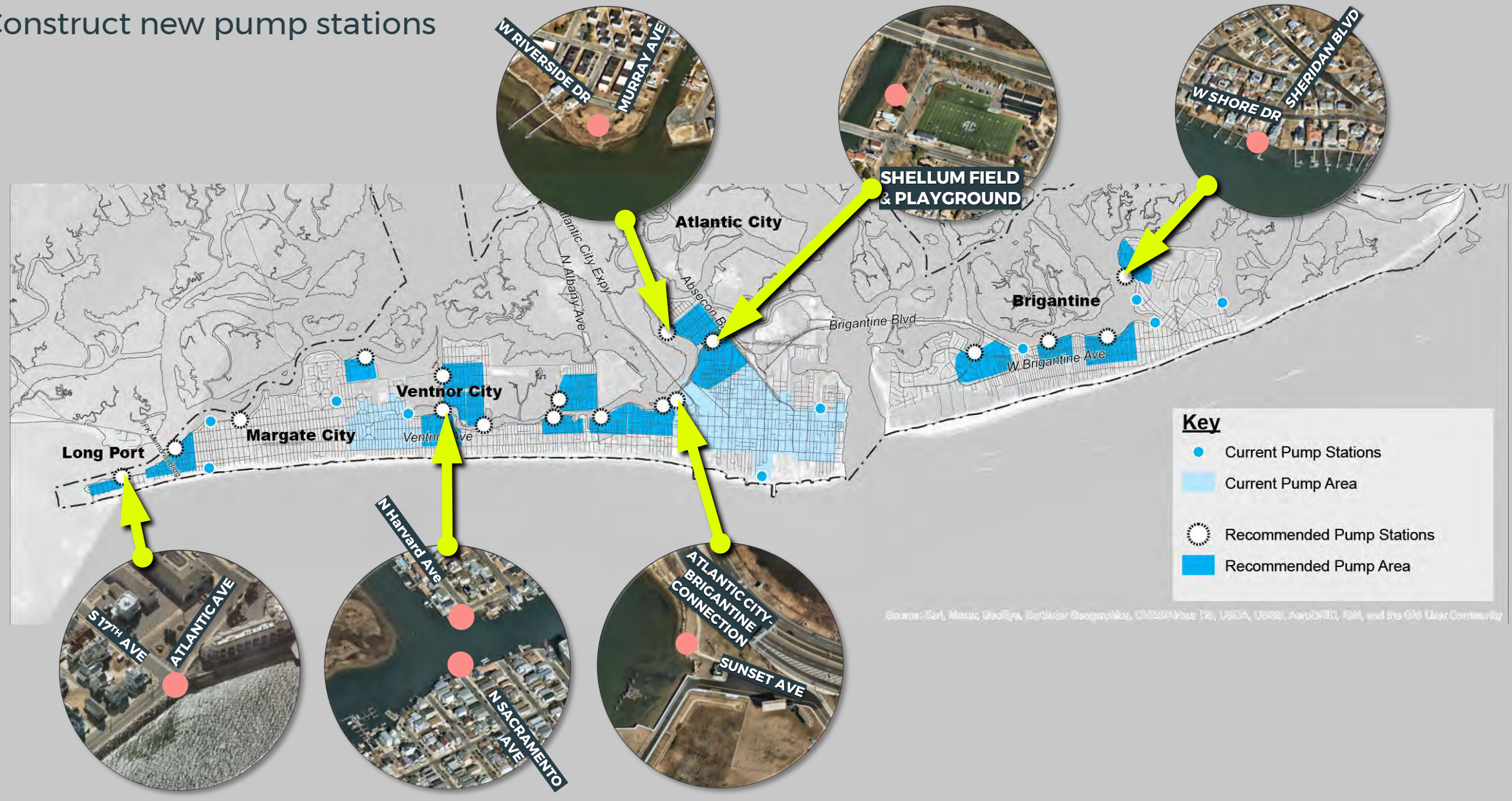
1. **Raise Roads to +12 Navd 88 & Pump Stations to Manage stormwater**
   (assumptions - 24 Hour Storm Event)
2. **New Pump Stations**



SCENARIO 1

STORMWATER MANAGEMENT

1 Construct new pump stations



SCENARIO 1

ACCESS & TRANSPORTATION

❶ Elevate Evacuation Routes

Challenge

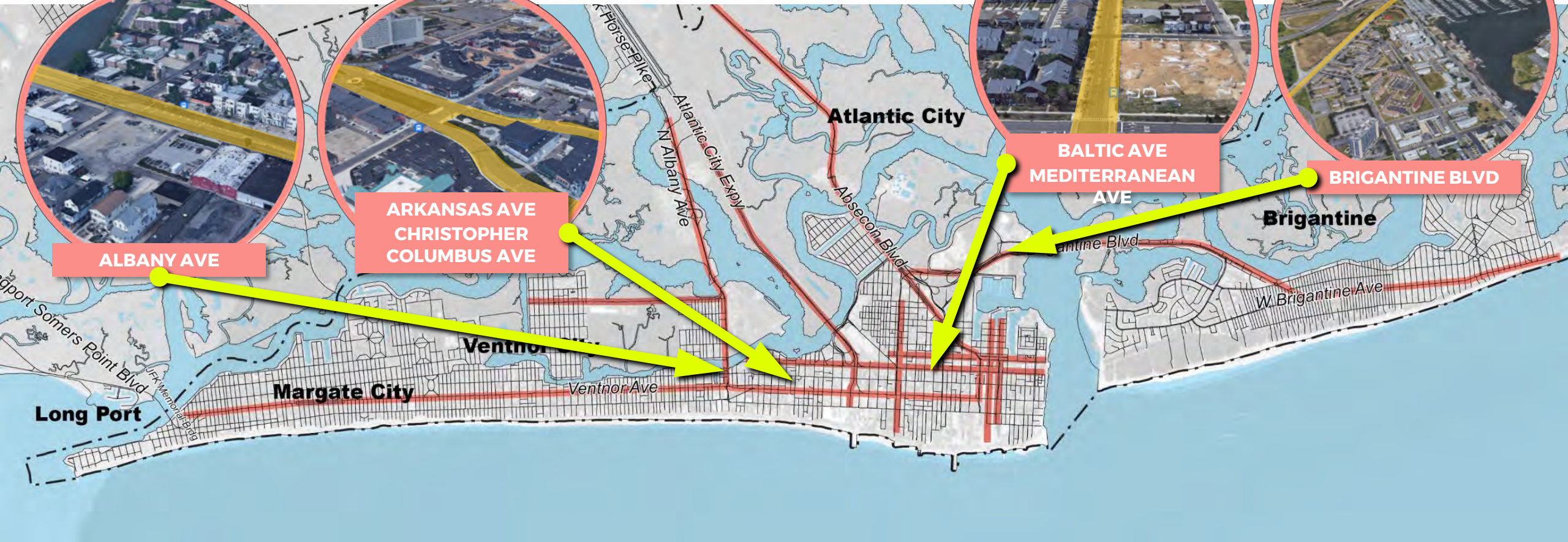
- Increase access to evacuation routes from roadways that are the most impacted by design storm.
- Increase access to evacuation routes by Elevating wider roads with industrial/commercial uses not as impacted by flood projections (roads that can be raised by 1 or 2 feet, instead of by 3 or 4 feet, to meet the design requirements).

ALBANY AVE

ARKANSAS AVE
CHRISTOPHER
COLUMBUS AVE

BALTIC AVE
MEDITERRANEAN
AVE

BRIGANTINE BLVD



SCENARIO 1

POWER AND COMMUNICATIONS

1. Harden all above grade utility poles, and bury utilities where possible
2. Install New microgrid/emergency generator at public buildings (many used for emergency shelters).
3. Install 10 new generators at firehouses and other public buildings

SCENARIO 1

POWER AND COMMUNICATIONS

2 Install New microgrid/emergency generator at public buildings (many used for emergency shelters)

- **Atlantic City Hall** to operate the city's 911 system

***Challenge*:**

• After a disaster/major event causing power outage, communities need power to restart/rebuild.

Action:

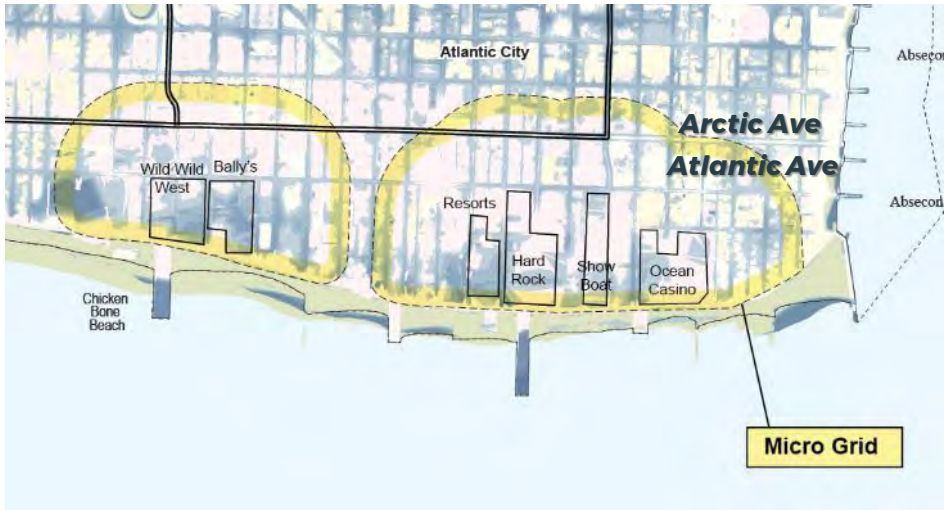
• Program to install microgrids built on solar, V2G, or other renewables provide distributed energy and can be targeted/subsidized.

SCENARIO 1

POWER AND COMMUNICATIONS

2 Install New microgrid/emergency generator at public buildings (many used for emergency shelters)

Expand Midtown **Microgrid to nearby local merchants**



Coordinate with developer to expand microgrid to local merchants on **Atlantic Ave** that are critical after emergency events/outages.

Atlantic City Microgrid Customer Descriptions and Map

SCENARIO 1

EQUITABLE ECONOMIC DEVELOPMENT

Protect commercial centers

SCENARIO 1

EQUITABLE ECONOMIC DEVELOPMENT

- University District Overlay

University District Overlay (Proposed)

- Reserve 15 acres of Bader Field for future educational use
- Remainder of the Bader Field site is planned as a Tech Park (potentially for private sector climate- and resilience-focused companies, e.g., engineering, research and development, architecture, planning).
- Bader Field's location and low-laying elevation, any proposed development would require a mix of flood-proofing and resilience measures such as incorporating living shoreline to ensure the site's ability to withstand the coastal environment.

Next steps:
1) Incubator: Begin 40-month effort to fully develop and buildout the Coastal Resiliency Institute.

SCENARIO TWO

SCENARIO 2

SHORELINE PROTECTION | STORMWATER MANAGEMENT | ACCESS & TRANSPORTATION | POWER & COMMUNICATIONS | EQUITABLE ECONOMIC DEVELOPMENT | PUBLIC FACILITIES | VULNERABLE POPULATIONS | NATURAL RESOURCES | CAPACITY BUILDING

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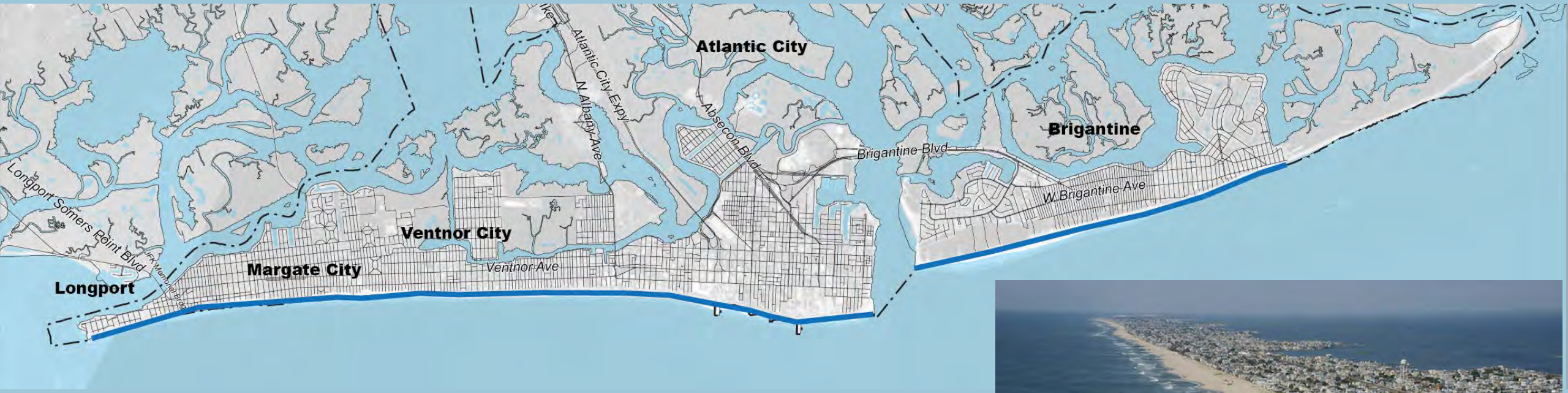
SCENARIO 2

OCEANSIDE SHORELINE PROTECTION

- **Continue beach nourishment program, with gradual elevation increase to address increased height of surge over time**




Beach Nourishment

SCENARIO 2

BAYSIDE SHORELINE PROTECTION

1 Raise sections of streets along the bayside to form a continuous bayside flood protection system: Winchester Ave, Sunset Ave, North Annapolis Ave, Chelsea Court, North Harrisburg Ave

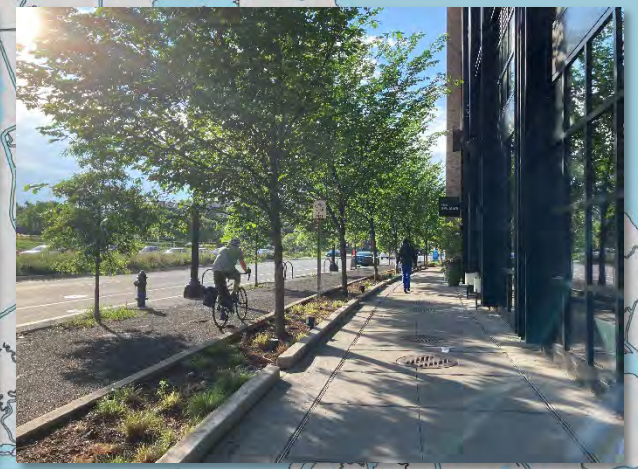
Resilient NJ

SCENARIO 2

SHORELINE PROTECTION | EQUITABLE ECONOMIC DEVELOPMENT | NATURAL RESOURCES | CAPACITY BUILDING

Absecon Bay Blue/Green Way

Network of interconnected kayak/canoe trail (Blue way) connecting the Atlantic County bays developed in conjunction with new recreational trail (Green way) along the Blackhorse Pike and roads paralleling the shoreline.

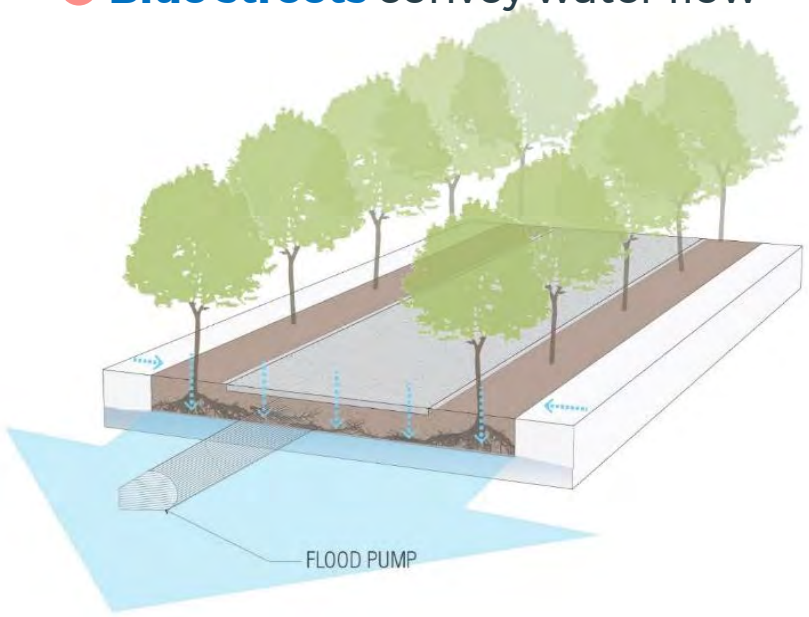


Resilient NJ

SCENARIO 2

STORMWATER MANAGEMENT

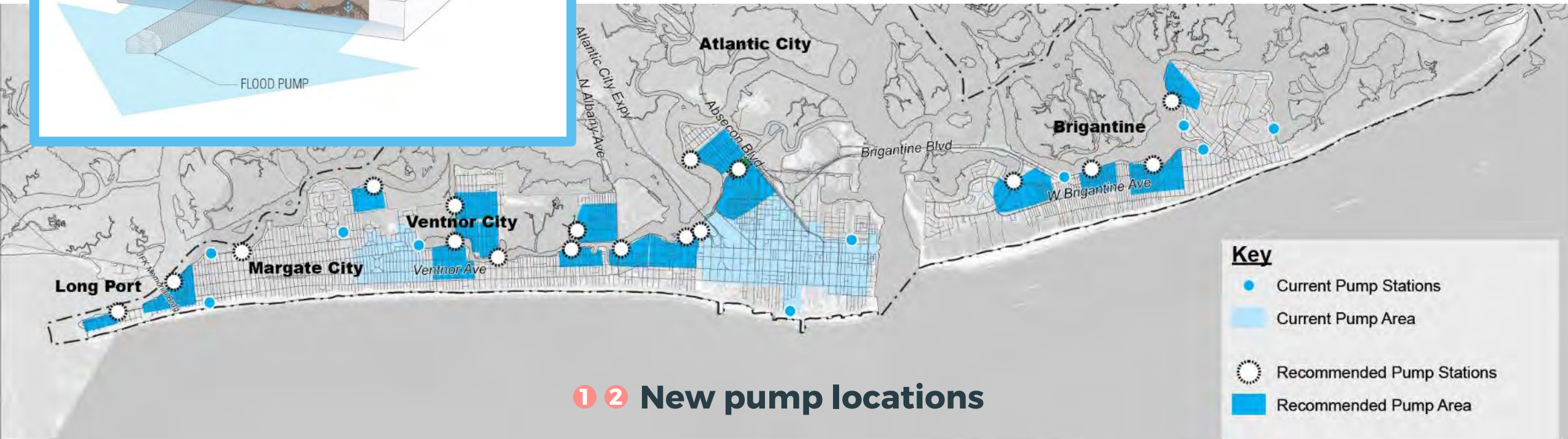
❶ **Blue streets** convey water flow



❶ **Blue Street & Pump Stations (assume: Manage 2 Hour Storm Event)**

❷ **Install sensors at key locations for 'smart management' linking sensors to pump station array and meteorological forecasts, to increase ground water storage**

❸ **New bulkhead, stormwater pump, and piping to control runoff at Massachusetts Avenue and the Bay.**



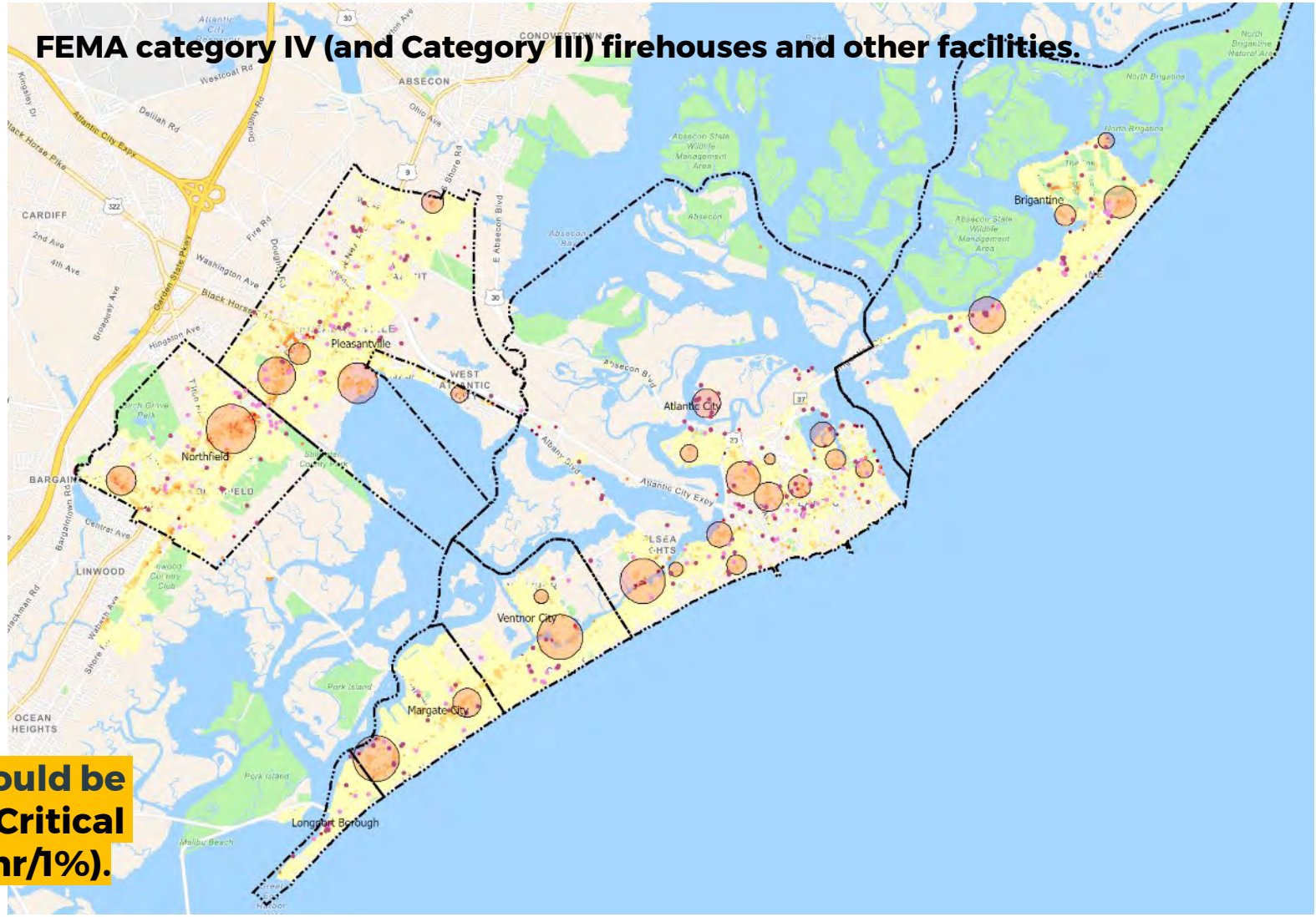
❶ ❷ **New pump locations**

SCENARIO 2

POWER AND COMMUNICATIONS

1 Community Microgrid Systems Study

- **Microgrids *can be centered around casinos /hotels or other major sites* that can provide emergency services / support.**
- **Coordinate with Atlantic City Electric (ACE) for access/logistics.**
- **Extend to essential small businesses in immediate vicinity.**



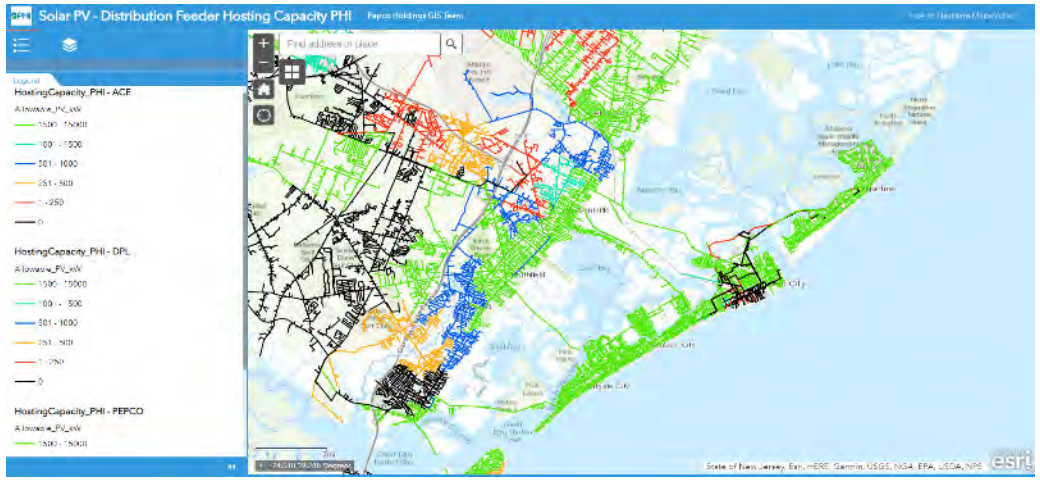
The microgrid clusters would be associated with facilities that are "Critical Assets at Risk of Flooding" (24hr/1%).

SCENARIO 2

POWER AND COMMUNICATIONS

1 Encourage Renewable/Solar on Rooftops and Surface Parking Lots

Focus on opportunities to provide renewable / solar sources for microgrids on roofs, parking, vacant lots.



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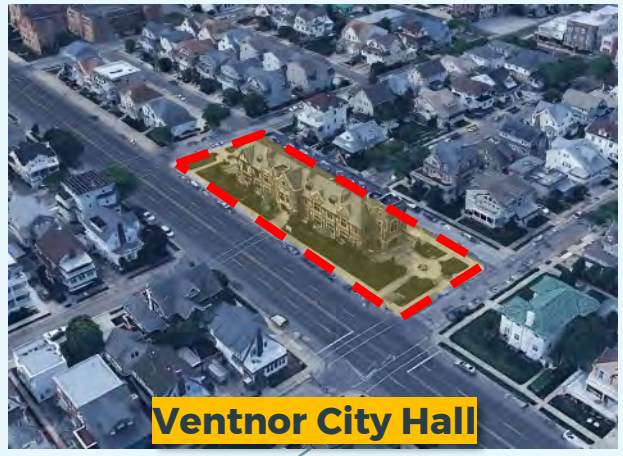
SCENARIO 2

POWER AND COMMUNICATIONS

1 Community Microgrid Study:

The new microgrids will have an equity component in leveraging existing facilities to provide continuous power to adjacent vulnerable population

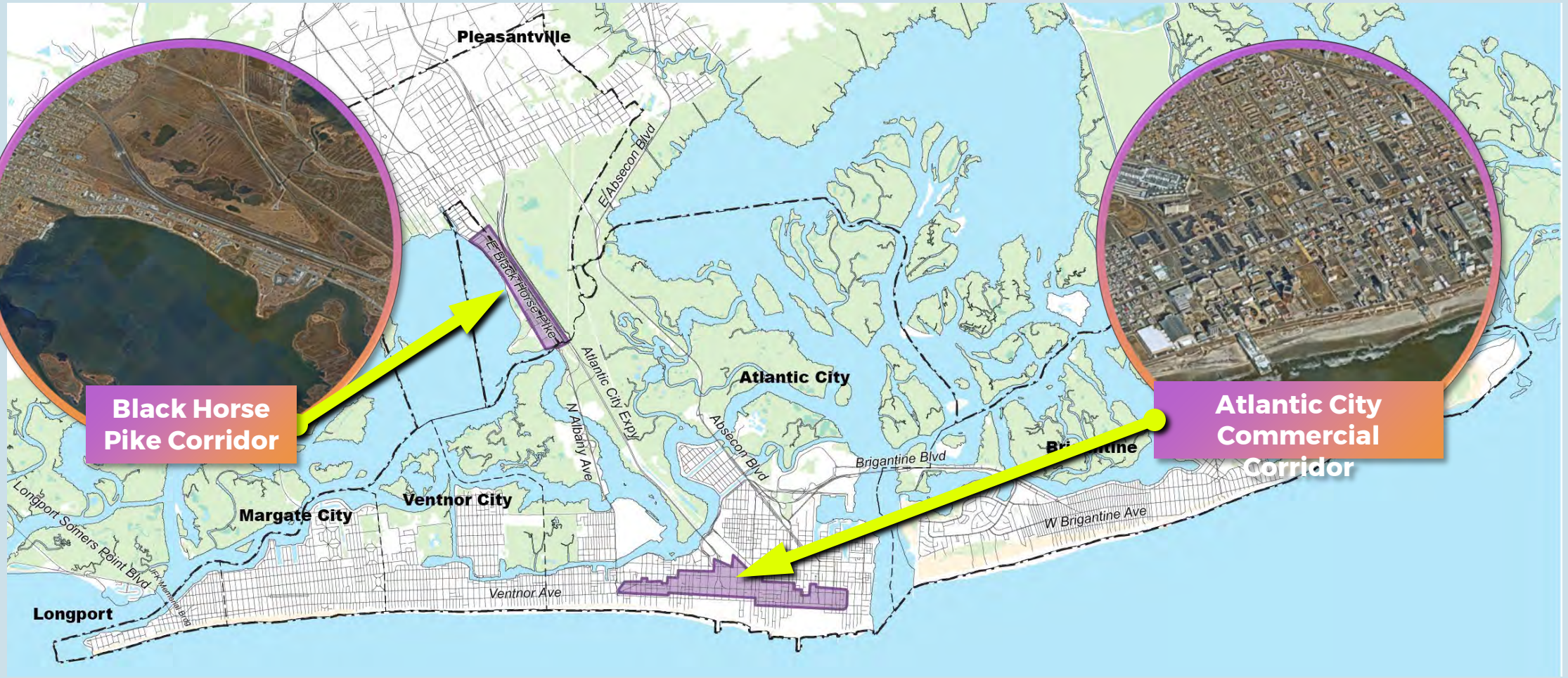


SCENARIO

EQUITABLE ECONOMIC DEVELOPMENT

VULNERABLE POPULATIONS

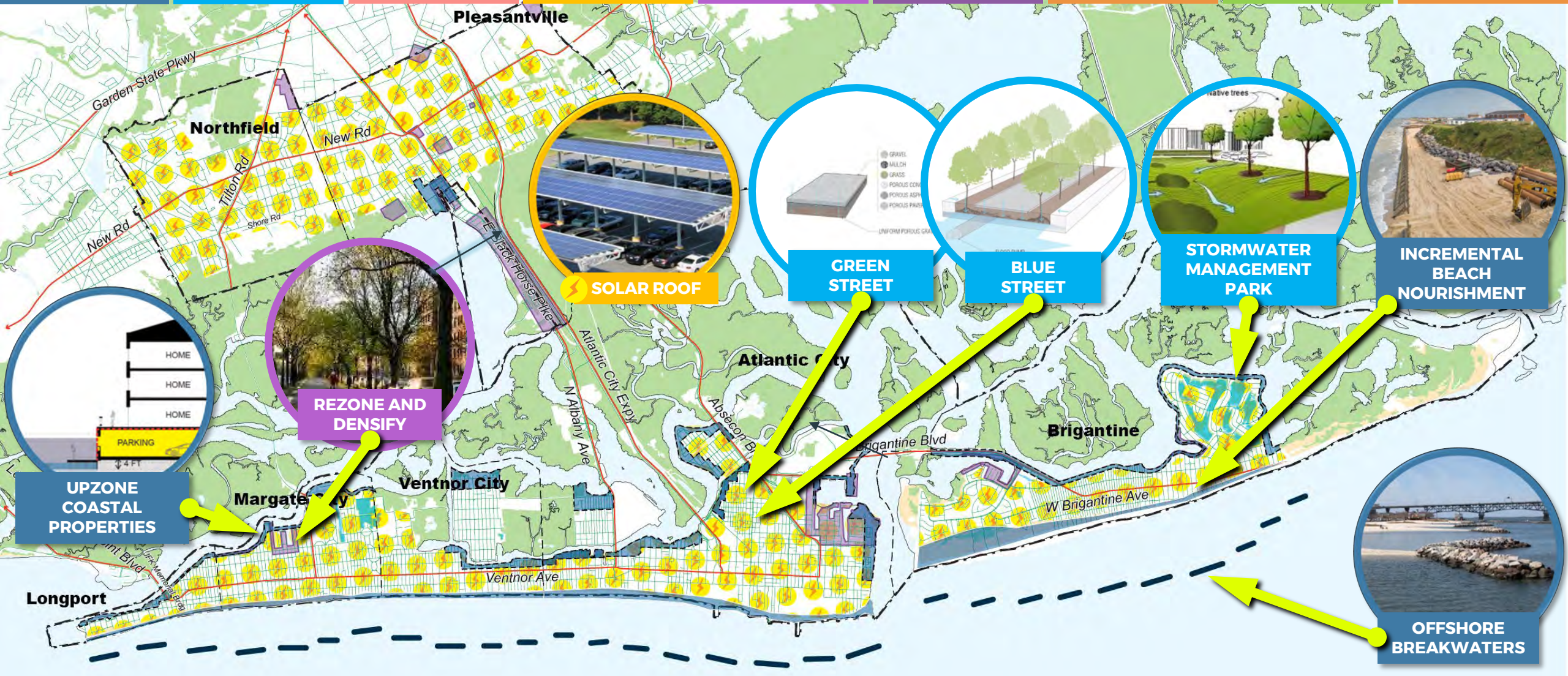
1. **Up zone areas in less vulnerable areas to incentivize affordable housing**
2. **Invest in / Incentivize Increased density + Affordable Housing in High and Dry Areas <u>within each Municipality</u> – Walking Distance from Transit and Jobs**



SCENARIO THREE

SCENARIO 3

SHORELINE PROTECTION | STORMWATER MANAGEMENT | ACCESS & TRANSPORTATION | POWER & COMMUNICATIONS | EQUITABLE ECONOMIC DEVELOPMENT | PUBLIC FACILITIES | VULNERABLE POPULATIONS | NATURAL RESOURCES | CAPACITY BUILDING



Resilient NJ

SCENARIO 3

SHORELINE PROTECTION

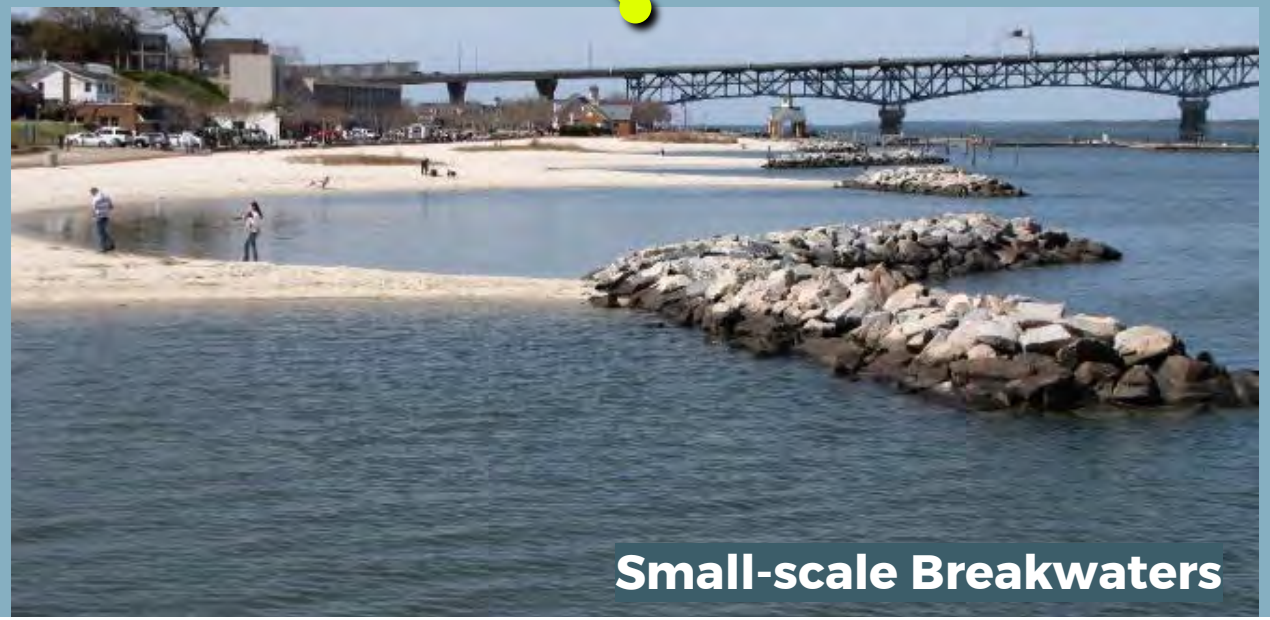
1. **Up zone all properties with bayside frontage for multiparcel assemblages with requirements for enhanced shoreline protection measures.**
2. **Construct Offshore Breakwaters + incremental dune elevation through three-year re-nourishment cycles**

SCENARIO 3

OCEANSIDE SHORELINE PROTECTION

2 Construct Offshore Breakwaters + incremental dune elevation through three-year nourishment cycles

Brigantine Beach



Small-scale Breakwaters

SCENARIO 3

BAYSIDE SHORELINE PROTECTION

1 Upzone all properties with bayside frontage for multiparcel assemblages with requirements for enhanced shoreline protection measures.

SCENARIO 3

BAYSIDE SHORELINE PROTECTION

1 Blue Acres program for homes north of Greenfield Ave and south of Bay Drive and east of Edgely Ave

Resilient NJ

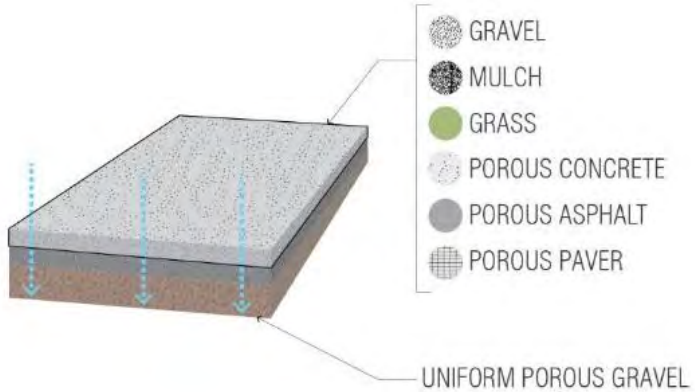
SCENARIO 3

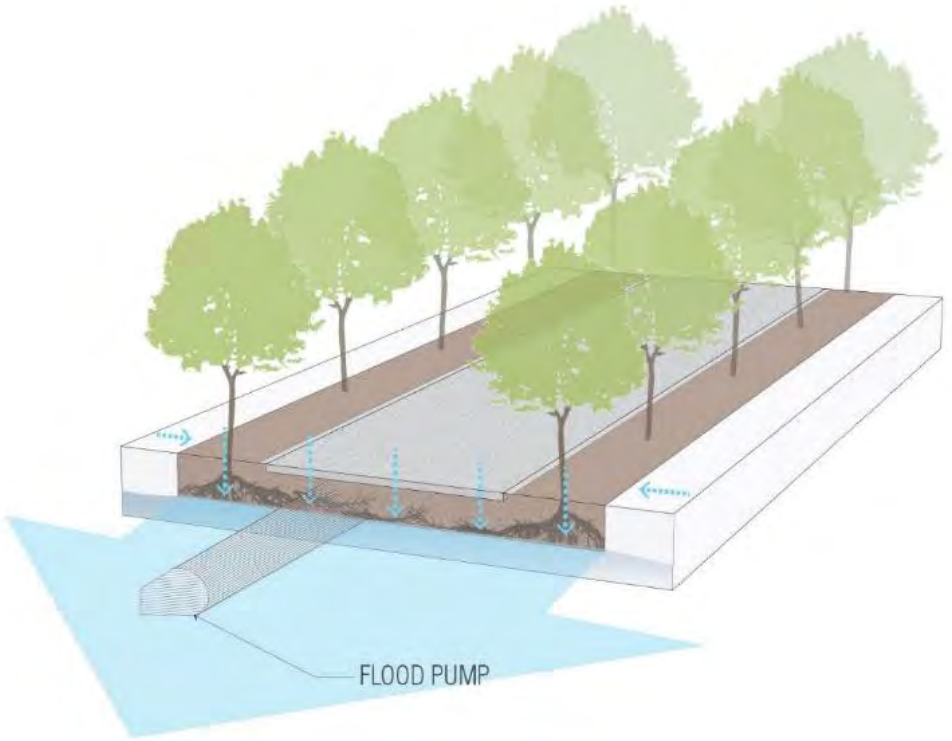
STORMWATER MANAGEMENT

- **Living Streets** Upgrade existing streets for subsurface conveyance without pipes. Networked Green Infrastructure offer groundwater reduction through evapotranspiration and structural soils.

- 3. Use the roadway infrastructure to function as a performative network to ***mitigate downstream flash flood risks and facilitate infiltration:***

Green streets allow infiltration.





Blue streets convey water flow

Resilient NJ

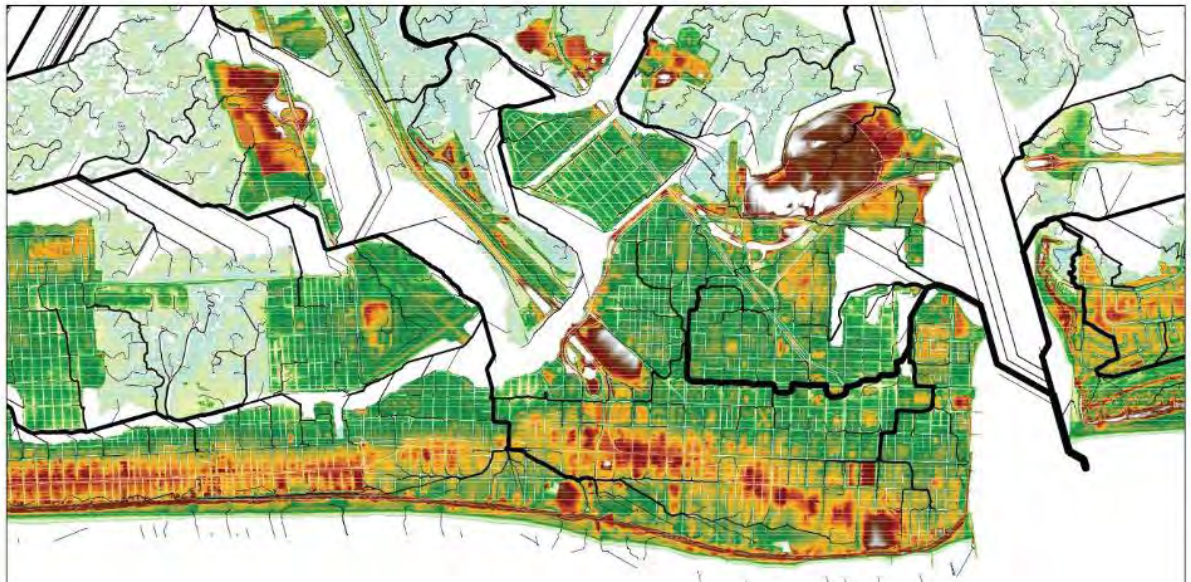
SCENARIO 3

STORMWATER MANAGEMENT

1 Living Streets

- Upgrade existing streets as for subsurface conveyance without pipes
- Networked Green Infrastructure for groundwater reduction through evapotranspiration and structural soils.

Green and Blue streets



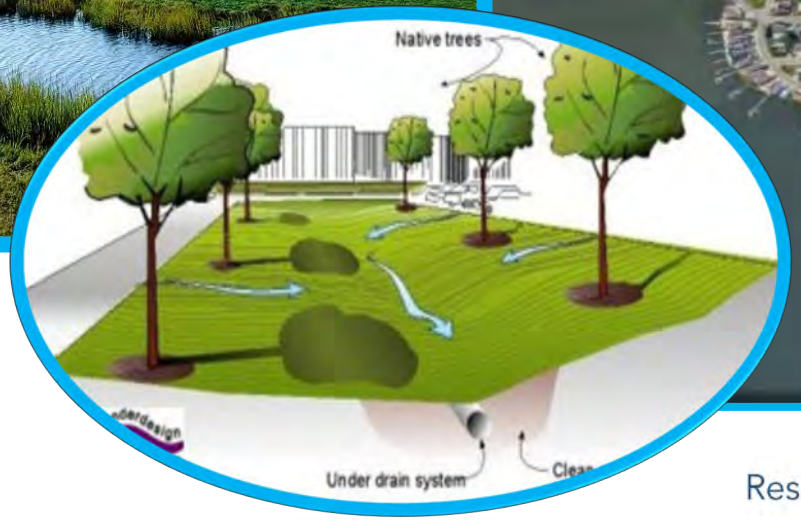
Hydrologic Analysis

1. Start with Hydrologic analysis of the existing topography informs the location for the implementation of street adaptations.
2. **Collect, store, and slow water** using the depth of the public right of way.

SCENARIO 3

STORMWATER MANAGEMENT

3 Adapt existing parks and the golf course to serve as stormwater management. Link pump stations' effluent to new wetland parks (rather than discharge to the bay)



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SCENARIO 3

STORMWATER MANAGEMENT

3 Create new 'storm water management parks' on city-controlled land. Link pump stations' effluent to new wetland parks

Canover's Creek

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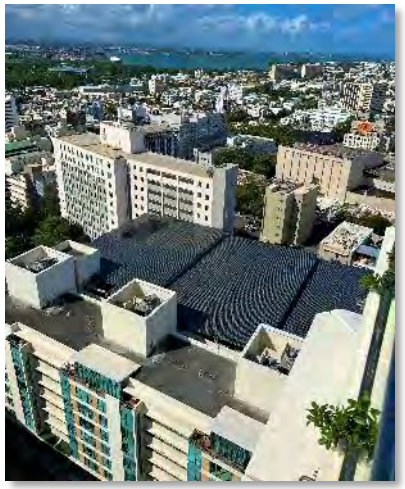
SCENARIO 3

POWER AND COMMUNICATIONS

Develop policies/incentives that promote energy resiliency at all residences / business during emergencies.

- Support weatherization of homes that can retain heat or cooling during a power outage
- Support solar with battery (nanogrid) at all buildings
- Encourage bi-directional charging for electric vehicles at all buildings



Rooftop Solar

Solar Trellises

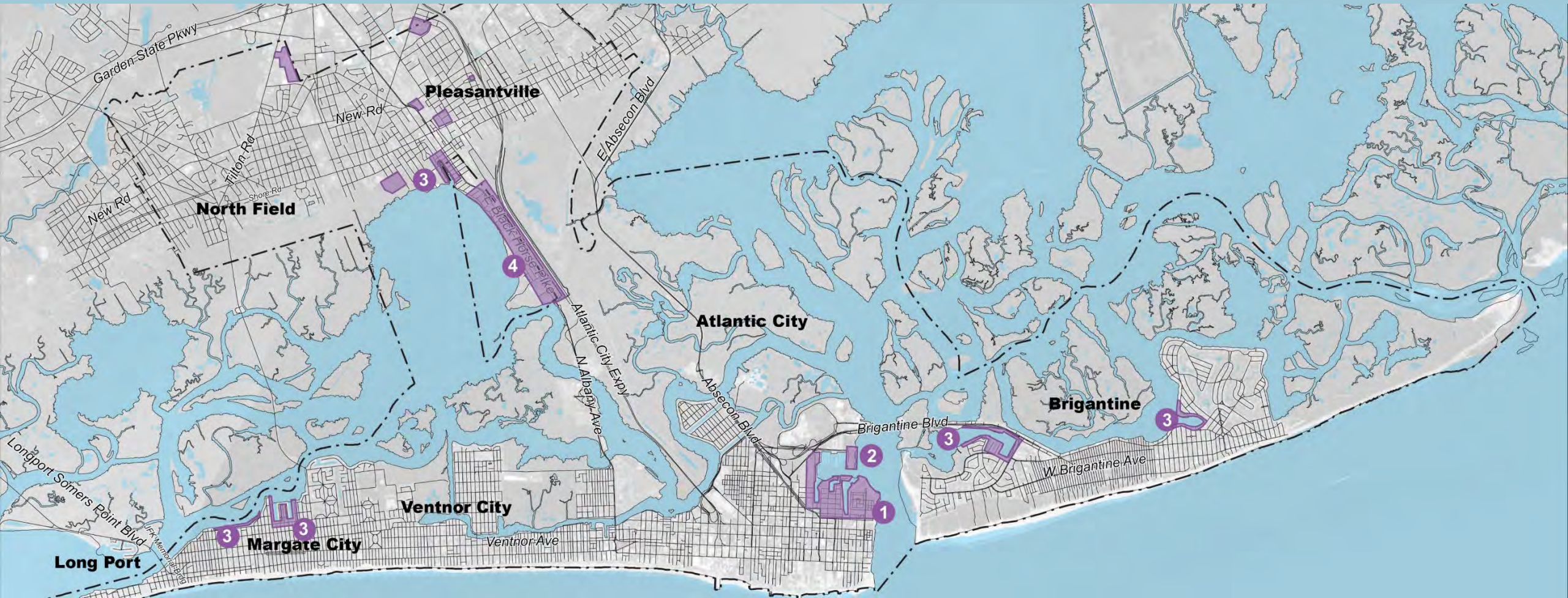
Single Housing - Rooftop Solar

Solar Trellises – Parking Garage & Large Rooftop

SCENARIO 3

EQUITABLE ECONOMIC DEVELOPMENT

1. Rezone all parcels adjacent to Basin and marina for Industrial / Blue Economy related land uses
2. Decommission U.S. Coast Guard Station Atlantic City and redevelop for Blue Economy land use
3. Waterfront Special District / Development Corridor
4. Leverage Black Horse Pike Road raising project to create new boulevard as corridor for economic development in Pleasantville



SCENARIO 3

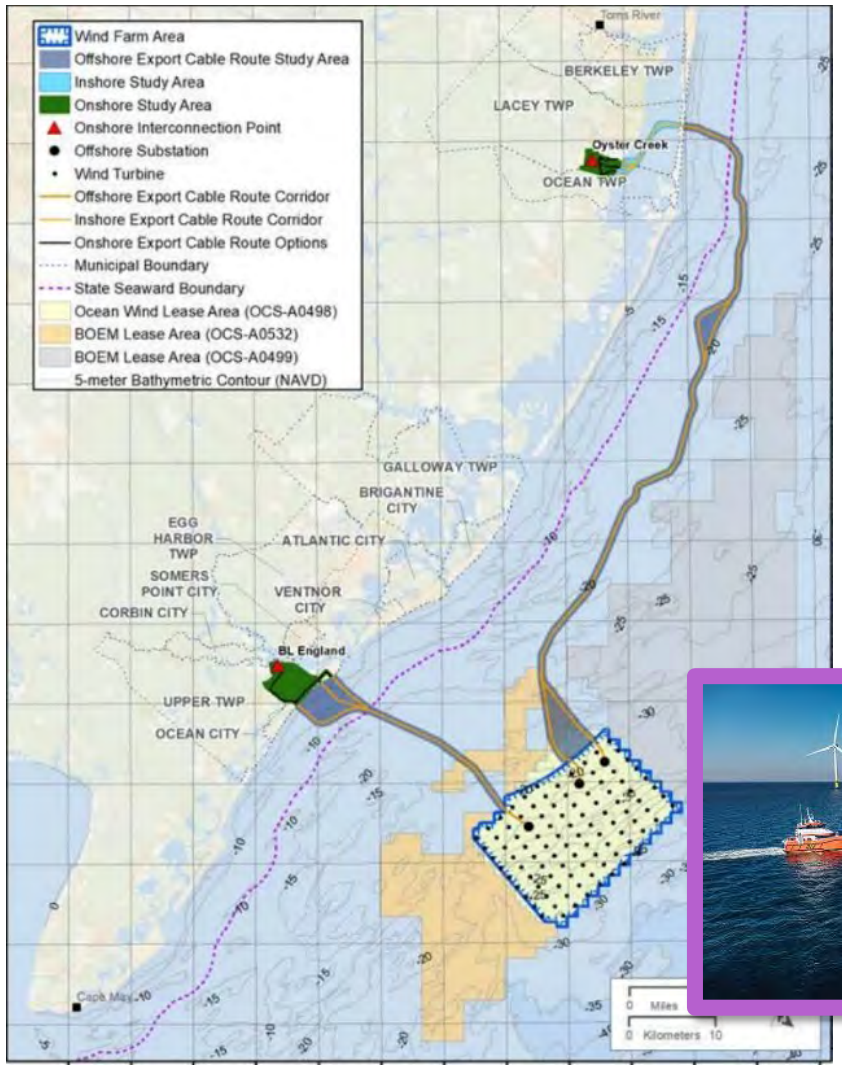
EQUITABLE ECONOMIC DEVELOPMENT

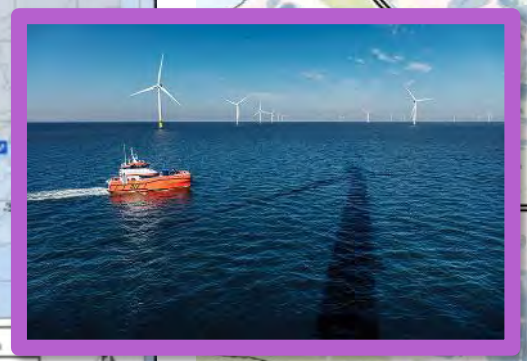
Rezone area around Gardners Basin and Delta Basin to allow for Industrial / Blue Economy related land uses

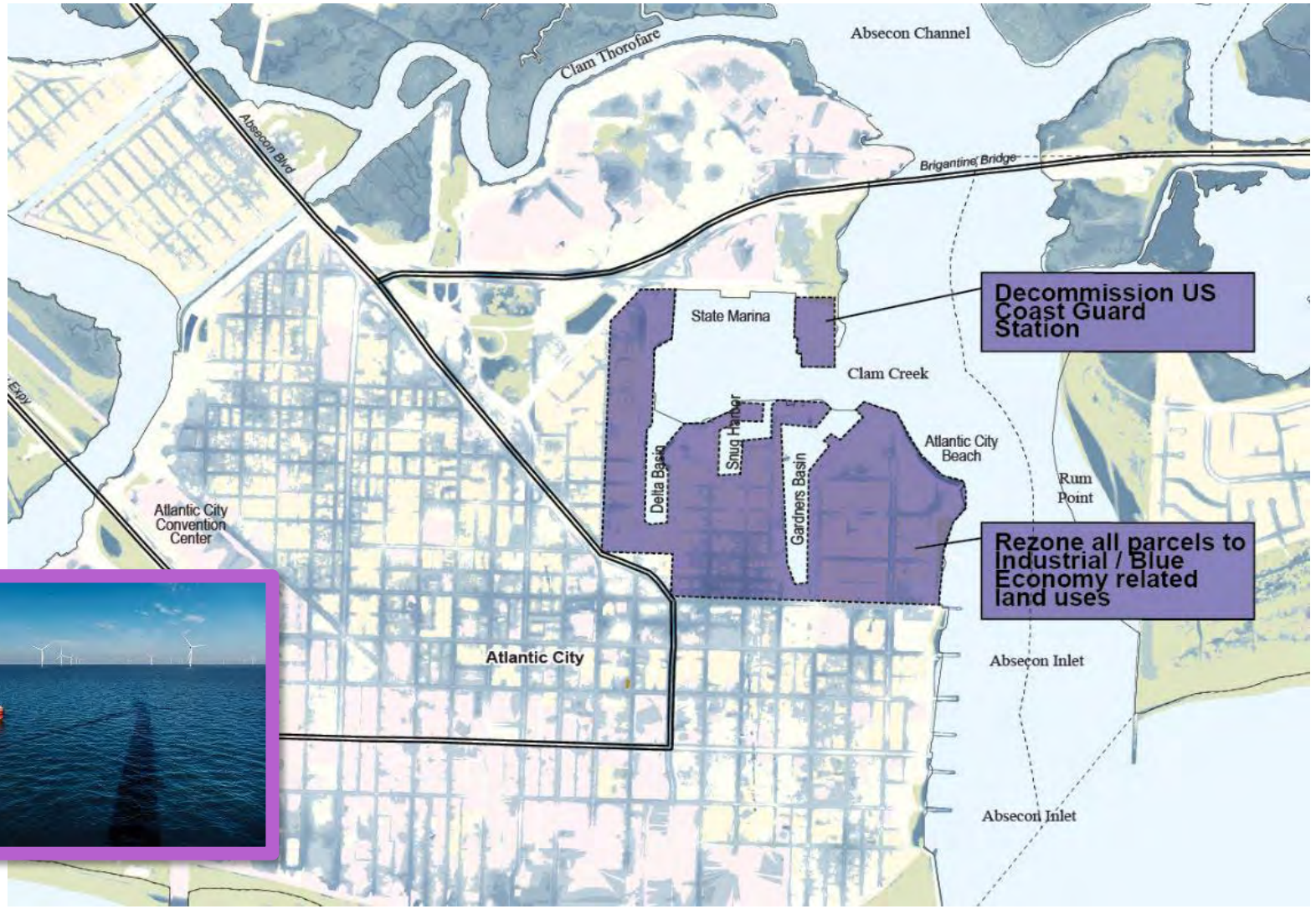
SCENARIO 3

SHORELINE PROTECTION | EQUITABLE ECONOMIC DEVELOPMENT

Rezone area around Gardners Basin and Delta Basin to allow for Industrial / Blue Economy related land uses





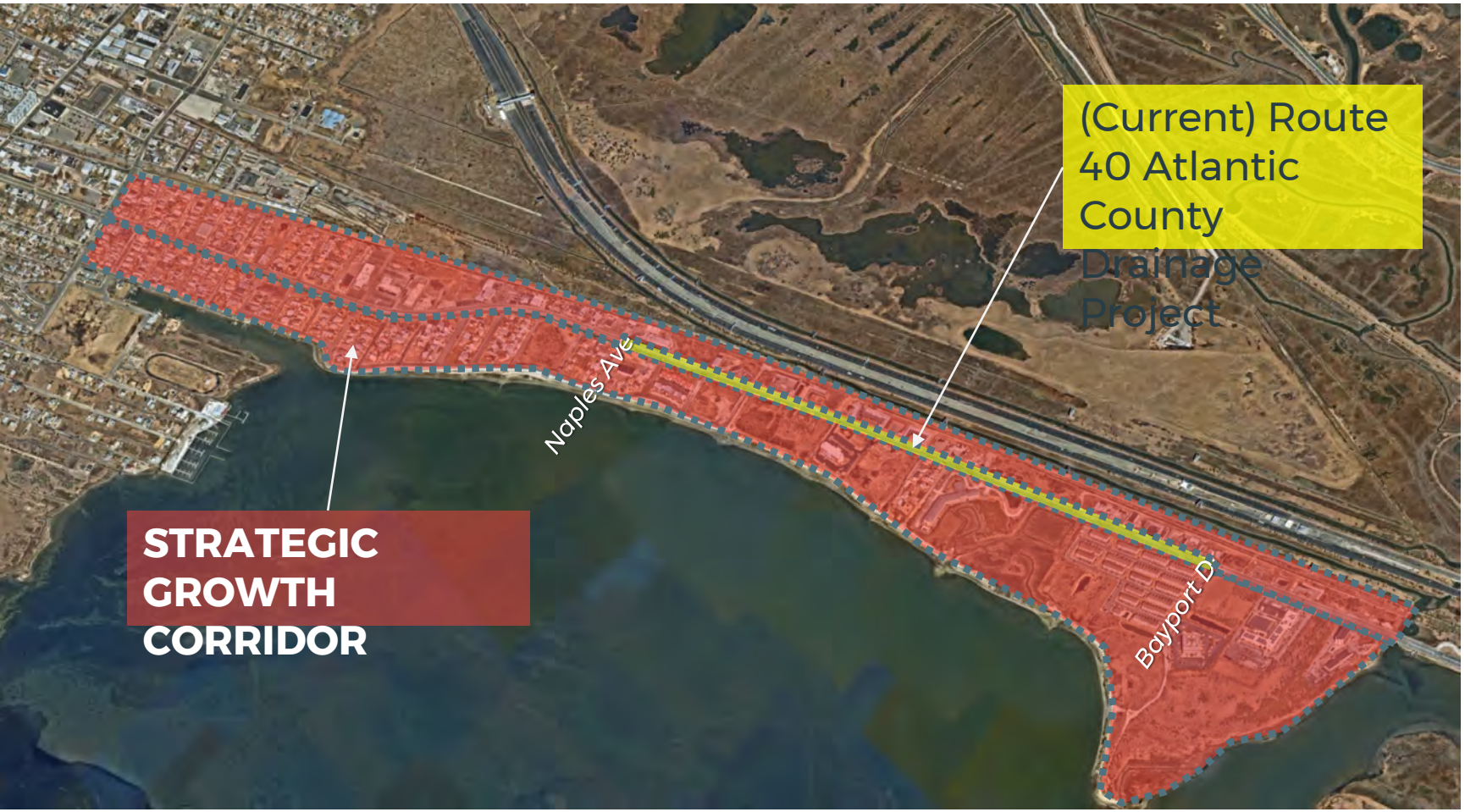


SCENARIO 3

SHORELINE PROTECTION | EQUITABLE ECONOMIC DEVELOPMENT

Black Horse Pike strategic growth corridor

- Leverage *Black Horse Pike Road raising project (*Route 40 Atlantic County Drainage Project*)* to create new boulevard as corridor for economic development in Pleasantville



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Thank you.