

# JERSEY WATERWORKS CONFERENCE 2023

DECEMBER 13, 2023 | THE COLLEGE OF NEW JERSEY, EWING

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The Value Of Water | New Jersey  
Edition

[www.jerseywaterworks.org](http://www.jerseywaterworks.org) [info@jerseywaterworks.org](mailto:info@jerseywaterworks.org)



# JERSEY WATERWORKS CONFERENCE 2023

DECEMBER 13, 2023 | THE COLLEGE OF NEW JERSEY, EWING



NEW JERSEY  
AMERICAN WATER



# JERSEY WATERWORKS CONFERENCE 2023

DECEMBER 13, 2023 | THE COLLEGE OF NEW JERSEY, EWING

## Pathways to Funding Climate Resilient Projects



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1.5 AICP CM CREDITS

THE VALUE OF WATER | NEW JERSEY EDITION



# Climate Resilience in NJ

Nick Angarone

| NJ Chief Resilience Officer

*Office of Climate Resilience · Bureau of Climate Resilience Planning · Blue Acres*

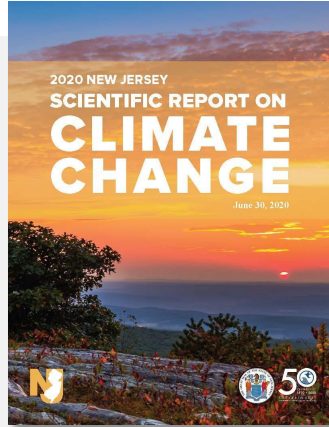
# SCIENTIFIC REPORT

on Climate Change

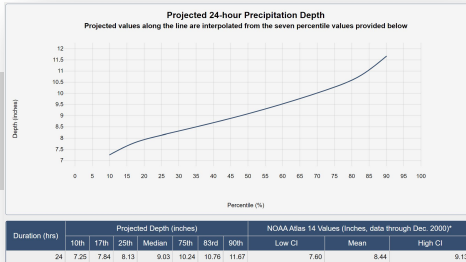
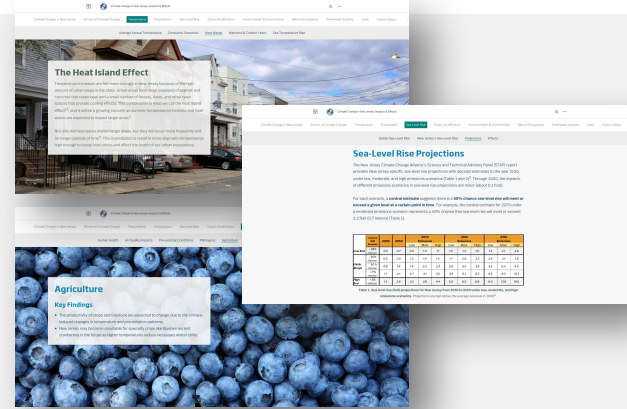
[nj.gov/dep/climatechange/data.html](http://nj.gov/dep/climatechange/data.html)

## Overview

- Comprehensive effort to synthesize the latest and most reliable scientific information on the current and predicted future impacts of climate change.
- The report is one component of the State's comprehensive strategy to both reduce emissions of climate pollutants that fuel global warming, and proactively plan and prepare for the climate impacts that New Jersey cannot avoid.



Released June 30, 2020



Nov. 2021: Updated Atlas 14 data; Extreme Event Precipitation Projections & Projection Tool



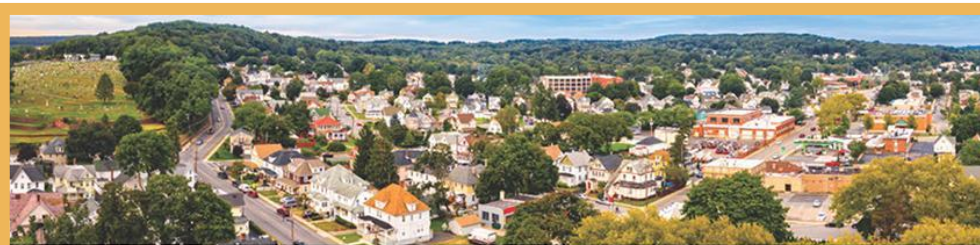
Sept. 2022: Climate Change Impacts on Human Health & Communities Addendum released



# CLIMATE RESILIENCE

defined

The ability of social and ecological systems to absorb and adapt to shocks and stresses resulting from a changing climate, while becoming better positioned to respond in the future.



STATE OF  
NEW JERSEY

## CLIMATE CHANGE RESILIENCE STRATEGY



# CLIMATE CHANGE RESILIENCE STRATEGY

TWO-YEAR ANNIVERSARY ACCOMPLISHMENTS



OCTOBER 2023

**Climate Change-Resilience for Drinking Water State Revolving Fund Projects**  
(NJ Department of Environmental Protection/NJ Infrastructure Bank)  
The New Jersey Department of Environmental Protection (DEP) has allocated \$20 million of American Rescue Plan Act (ARPA) funds in State Fiscal Year 2023 for New Jersey Water Bank projects that address climate change resilience in drinking water infrastructure. These projects include the rehabilitation of essential disinfection plants, or the relocation of critical infrastructure due to the potential flooding. Providing low-cost financing for drinking water projects that address climate change/resilience is key to strengthening New Jersey's environmental infrastructure. For State Fiscal Year 2024, the New Jersey Water Bank will award additional priority points when ranking projects that implement climate resilience measures, if the resilience components represent a significant amount of the overall project activities.

**Resilience Water Infrastructure Guidance** (NJ Department of Environmental Protection)  
In keeping with the state's commitment to resilience in New Jersey, the Water Bank has developed Building Resilient Water Infrastructure Climate Change Resilience Guidelines. This guidance serves as a robust framework to help applicants develop and justify selection of climate resilient projects for the State Revolving Fund program. It also provides users with the best available, New Jersey-specific climate science, details use of climate impact projections, with a focus on those anticipated to be the most disruptive to New Jersey's water infrastructure, and enables users to prepare the Resilience Assessment required by the Water Bank. For drinking water projects that meet the criteria, 150 additional priority points will be awarded. Similarly, for clean water projects that meet the criteria, 100 additional priority points will be awarded. The New Jersey Water Bank Priority System uses both ranking methodology for and prioritizes projects that are eligible for additional priority points through the Water Bank. As such, additional priority points will enhance the availability for projects implementing climate resilience to receive low-cost financing through the New Jersey Water Bank program. The Water Bank has a resilience project application pipeline totaling more than \$425 million in estimated costs.

**Stormwater & Flood Resilience Grants Program**  
(NJ Department of Environmental Protection)

DEP has developed various grants to ensure communities have the support they need to implement stormwater reduction projects, including:

- **Stormwater Assistance Grant Program** - \$7 million in grants awarded for projects across the state that implement local stormwater management practices and infrastructure in the face of increasing climate change.
- A total of \$10 million in grants is available to assist municipalities with the transition to new smart permitting system requirements designed to better protect New Jersey's watersheds from pollutants.
- The **Stormwater Quality Feasibility Study Technical Assistance Program** - A total of \$2 million has been made available to assist and facilitate the exploration of critical stormwater management initiatives for all entities of a municipal entity (MCE), such as municipal governments, county governments, county or municipal authorities, or county improvement authorities.
- More than \$3 million in grants to fund government agencies in the Hudson-Raritan Estuary for sea level reduction and water quality enhancement projects.



**Sustainable Building Design** (NJ Department of Military and Veterans Affairs)

The NJ Department of Military and Veterans Affairs (DMVA) Construction & Facilities Management Office (CFMO) follows U.S. Department of Energy directives for sustainable growth by designing its newest buildings to meet LEED Leadership in Energy and Environmental Design (LEED) certification level. The design for new buildings, such as the Virtual Vehicle Maintenance Shop, will have increased building envelope insulation, greater HVAC efficiencies, reduced energy and water consuming equipment, solar panels and green stormwater infrastructure. Recent efforts to meet sustainable include replacing fuel oil with low polluting natural gas used to run building heating boilers, starting at the Fort Monmouth Army Center. In the upcoming building modernization projects at the Woodstown and Atlantic City armories, geothermal heating and cooling systems, and solar panels with battery back-up are being evaluated and included in designs, where practicable. These efforts also follow the state's classification initiative by reducing fossil-fuel usage and increasing building resilience during emergencies.

**NJ Establishes Flood Resilience Law** (multi-agency)  
In July, Gov. Phil Murphy signed bill S110/A735, which requires owners of property and landlords to make certain modifications regarding flooding. Under the law, sellers of real property and landlords must disclose knowledge of a property's history of flooding, flood risk and location in a flood zone or area. Additionally, the law requires landlords to notify tenants of the availability of insurance for renters through the National Flood Insurance program.

**Port Authority Climate 2.0**

The Port Authority of New York & New Jersey (PANYNJ) has released its Climate 2.0 plan, which includes a comprehensive report on the impacts of climate change on human health and communities by adding a human health addendum (2023). The Scientific Report and Human Health Addendum also have been translated into a one-friendly Climate Change in New Jersey web strategy that can be easily viewed in new science and data become available. DEP's climate communications extend into the real world, too. In September 2023, DEP launched Climate Change Learning Stations in several state parks, allowing visitors to gain low climate change is causing the shoreline to shift through a completion of stories submitted online.

**The NJ State Hazard Mitigation Plan 2024**

The NJ State Hazard Mitigation Plan 2024 serves as an instrumental tool for local jurisdictions and counties, equipping them with vital information on potential climate risks, mitigation techniques, and strategies for addressing repetitive losses.

**3 PRIORITY 3: PROMOTE COORDINATED GOVERNANCE**

**Integrate Public Health Planning and Activities**  
For the first time, the State has incorporated climate health improvement efforts with multiple partners and the Healthy New Jersey (H) improving the health of a has been, and continues a initiative, in 2020, resilience center being designed from a public health perspective of an individual or to and recover from emergency adverse experiences partnering with the DEP intended to improve civil health risks of air and a zoonotic disease.

**NJ Resilience Accelerator** (multi-agency)  
Led by FEMA and NJ state partners (DOE, DEP, OHA, DCA), this technical assistance program helped 10 NJ municipalities identify and communicate their resilience goals, develop strategies and critical projects, and pathways for leading and integrate resilience into daily operations.

**"The New Jersey Emergency Council is working collaboratively to craft the Extreme Heat Resilience Action Plan."**

**4 PRIORITY 4: INVEST IN INFORMATION AND INCREASE PUBLIC UNDERSTANDING**

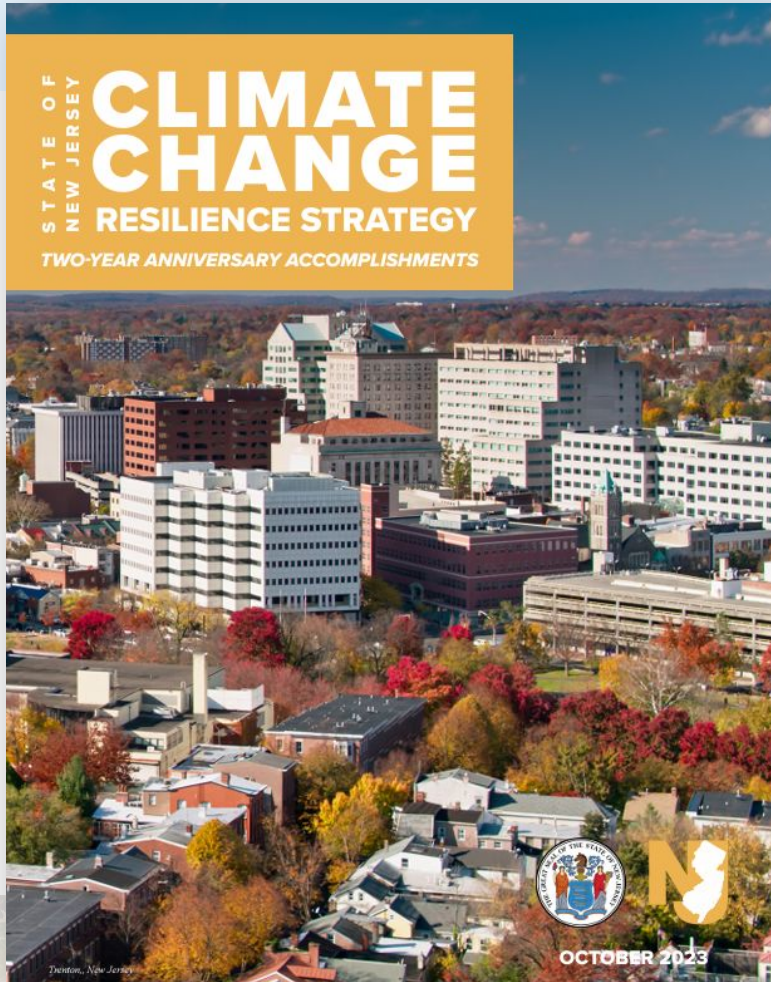
**Science & Data Accessibility** (NJ Department of Environmental Protection)  
To create the Climate Change Resilience Strategy, the Council relied on the best available science published in the 2020 New Jersey Scientific Report on Climate Change. State files, DEP has worked closely with the Department of Health to produce a comprehensive report on the impacts of climate change on human health and communities by adding a human health addendum (2023). The Scientific Report and Human Health Addendum also have been translated into a one-friendly Climate Change in New Jersey web strategy that can be easily viewed in new science and data become available. DEP's climate communications extend into the real world, too. In September 2023, DEP launched Climate Change Learning Stations in several state parks, allowing visitors to gain low climate change is causing the shoreline to shift through a completion of stories submitted online.

**DEP's Climate Change Web Resource**

**The Scientific Report and Human Health Addendum have recently translated into a user-friendly Climate Change in New Jersey web resource.**



Highlights over 40 actions State agencies have taken over the last two years to adapt and respond to climate change.



# State Funding & Resources for Local Resilience

## *Public Infrastructure Projects*

- DCA Resilient Communities Grant Program
- NJ Water Bank low-cost financing
- DEP Stormwater Assistance Grant Program

## *Housing & Buildings*

- HMFA Passive House incentives
- DCA Smart Move Program
- DEP Blue Acres
- EDA Garden State C-PACE Program

## *Resilience Planning*

- DEP Resilient NJ technical assistance



# NEW JERSEY EXTREME HEAT RESILIENCE ACTION PLAN




## SPRING 2024

A statewide plan developed through the *Interagency Council on Climate Resilience* detailing actions the State will take to incorporate heat resilience into our policies, programs, and decision-making.

*Interim Report:  
State Agency Actions to  
Increase Resilience  
to Extreme Heat  
Due to Climate Change*

[dep.nj.gov/climatechange/resilience/resilience-action-plans](https://dep.nj.gov/climatechange/resilience/resilience-action-plans)



**Interagency Council on Climate Resilience**

Jersey state agencies and departments will implement the vision laid out in the Resilience Strategy. Actions under consideration may include changes to existing laws, policies, procedures, programs, activities, regulations, permitting requirements, funding criteria, capital programs and projects, data and research initiatives, and regulations.

**Building Resilience to Extreme Heat**

**Increase Understanding of How Extreme Heat Impacts New Jerseyans**

**Launch Heat Hub** | Department of Environmental Protection (DEP) | Ongoing  
DEP will lead a multi-agency effort to increase the public's general knowledge and promote available resources about extreme heat and its health risks, particularly to the most vulnerable populations and communities to assess their understanding how to assess and track heat thresholds, and improve their resilience to extreme heat events. Heat Hub will also be a "one-stop shop" at a state level, providing information and resources across state agencies related to heat and heat actions, including heat loss funds from the NJ Department of Health (NJDOH), NJ 211 Urban Heat Island Mapping and Heat Vulnerability Assessment mechanisms from DEP, Heat Risk to a "one-stop" resource with regular updates and the ability to provide future heat-related actions, as well as gathering input from the public on heat-related initiatives.

**Launch Extreme Heat: Cool Communications Outreach Campaign** | NJC | Short-term  
The Interagency Council will coordinate implementation of a comprehensive Statewide Extreme Heat Outreach Campaign with relevant state agencies and local officials, and include various communication effectiveness, with a focus on targeted populations.

**Promote Heat-Resistant Worker Safety Guidelines** | NJDOH | Ongoing  
Public Safety Services Division (PSSD) and the NJDOH promote heat stress prevention resources produced by the U.S. Occupational Safety and Health Administration (OSHA). These resources include guidelines for both indoor and outdoor workers.

**Ensure Coordinated Emergency Response and Extreme Heat Preparedness**

**Get the 411 on New Jersey Cooling Centers** | NJDOH | Ongoing  
DEP, State Police, courts/CDEM and NJ 211 are coordinating the development of a coordinated, accessible, map-based identification of available cooling centers. The one-stop statewide cooling center tracker will be hosted on Heat Hub. NJ State agencies will continue outreach to the public to provide additional information for the public.

**Expand and Support Hazard Mitigation Planning** | NJDOH | Ongoing  
Integrate climate change into multi-jurisdictional, multi-sector mitigation planning, and increase education and awareness about mitigation impacts in New Jersey, including extreme heat. New Jersey is already planning for extreme heat and other hazards with an ongoing system of the State Hazard Mitigation Plan and local hazard mitigation plans. The State will continue to support this planning by increasing public awareness of hazard threats and their impacts, and working to improve state and local hazard mitigation plans, including the economic September 2023




Photo: Jersey City, NJ



# RESILIENT

## RESILIENCE PLANNING PROGRAM

Goal: Produce community-led resilience & adaptation action plans

Ongoing initiatives:

- Regional Planning Program in four regions (+ more planned for 2024)
- Municipal Assistance Program in five municipalities (+ over 15 more planned for 2024)
- Online toolkit for municipalities to conduct resilience planning on their own



*Providing Science  
and Data*



*Supporting  
Engagement*



*Assessing  
Vulnerability*



*Identifying  
Solutions*



*Photo: Bay Head, NJ*

# RESILIENT

## REGIONAL ACTION PLANS

Action Plans recommend policy, projects, and programs that:

- Reduce the risk of flooding
- Achieve regional resilience for the future

Action types:

- Physical
  - Stormwater management projects
  - Capital improvement projects
  - Brownfield remediation
- Policy
  - Permitting requirements
  - Resilience standards for redevelopment
  - Zoning & land use changes
- Social
  - Risk communications campaign
  - Resilience “hub” for accessible information & resources



# RESILIENT

## PLAN IMPLEMENTATION

The planning work conducted through Resilient NJ has led to major federal funding awards for communities.

- **FEMA BRIC - \$21M+**

- Ironbound Resilience Hub – Newark
- 63<sup>rd</sup> Street Pump Station Generator Project – Bayonne
- City of Bayonne Cottage Street Flood Mitigation Project – Bayonne
- McGovern Park Resilience Project – Jersey City

- **NFWF National Coastal Resilience Fund - \$2.6M+**

- Assessing Resiliency Enhancement for City of Ventnor
- Developing Final Designs for Bay Island Restoration in Long Beach Township
- Building Community Capacity for Restoration
- Designing Coastal Habitat Enhancements for Community and Habitat Resilience



# RESILIENT



## RESILIENCE PLANNING PROGRAM

### WHAT'S NEXT:

- \$4.8 million re-allocated from Sandy CDBG to fund implementation of priority actions across the original four regions
- \$760k through NJCMP for CCRHVA development and resilience planning across a multi-municipal region in Burlington County
- \$1 million from NJ Corporate Business Tax revenue for resilience planning in Ida-impacted municipalities and regions
- \$7 million in CDBG-DR/ARP funds for another round of regional planning projects – *opportunity to be posted in early 2024*



## RESILIENT NJ: LOCAL PLANNING FOR CLIMATE CHANGE TOOLKIT



*Photo: Hightstown, NJ*



## 1995 - 2022

Focus: Disaster recovery

Planning: Buyouts driven primarily by clusters of willing sellers



**BLUE ACRES**

## 2022 - present

Focus: Disaster recovery *and* preparedness

Planning: Clusters are no longer a requirement.

- Relies on ranking criteria that incorporates federal grant requirements, social vulnerability, and future risk
- Every federal grant application includes alternate properties to ensure maximum funding.

Strong equity & engagement focus:

- Emphasis on layered community engagement
- Online buyout application, available in English and Spanish
- More robust, public-facing communications

# *Save the Date*

2024 New Jersey Coastal & Climate Resilience Conference  
*Adapting to Change – Creating Resilient Communities*

**March 12-14, 2024 | Monmouth University**



*Call for abstracts closes December 15!*

Visit [nj-crc.org](https://nj-crc.org) for more information

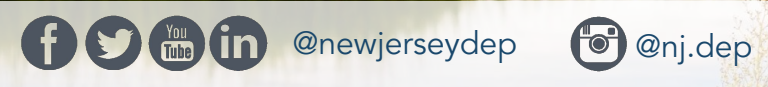


NEW JERSEY  
DEPARTMENT OF  
ENVIRONMENTAL  
PROTECTION



COASTAL  
RESILIENCE  
COLLABORATIVE






# Contact

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A scenic view of a wetland with a city skyline in the background. The foreground is filled with tall, green grasses and reeds. In the middle ground, a calm body of water reflects the sky and the distant city. The background shows a city skyline with several prominent buildings, including a tall, white skyscraper and a blue, curved building. The sky is a pale blue with some light clouds.

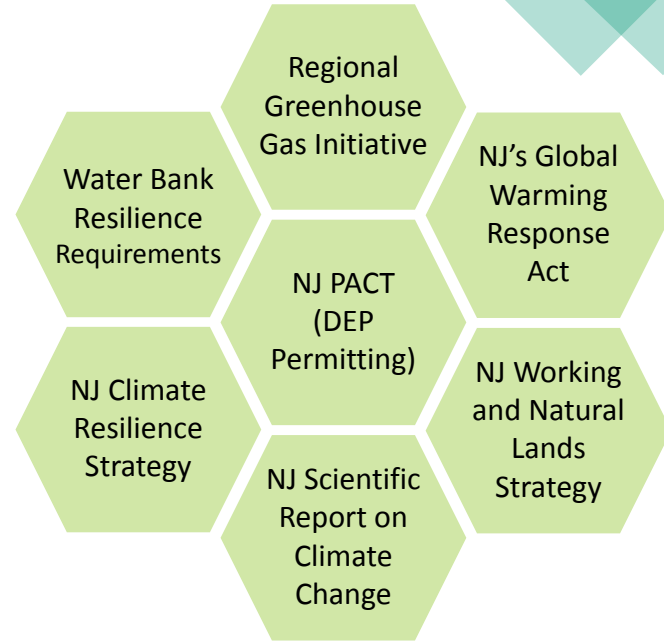
# Financing Pathways for Resilience New Jersey Water Bank

Charles Jenkins and Samantha Thomas  
Department of Environmental Protection

## FEDERAL AND STATE INITIATIVE

**Federal EO 11988 & EO 13690:** amends the floodplain to be more climate forward, directly affecting SRF programs

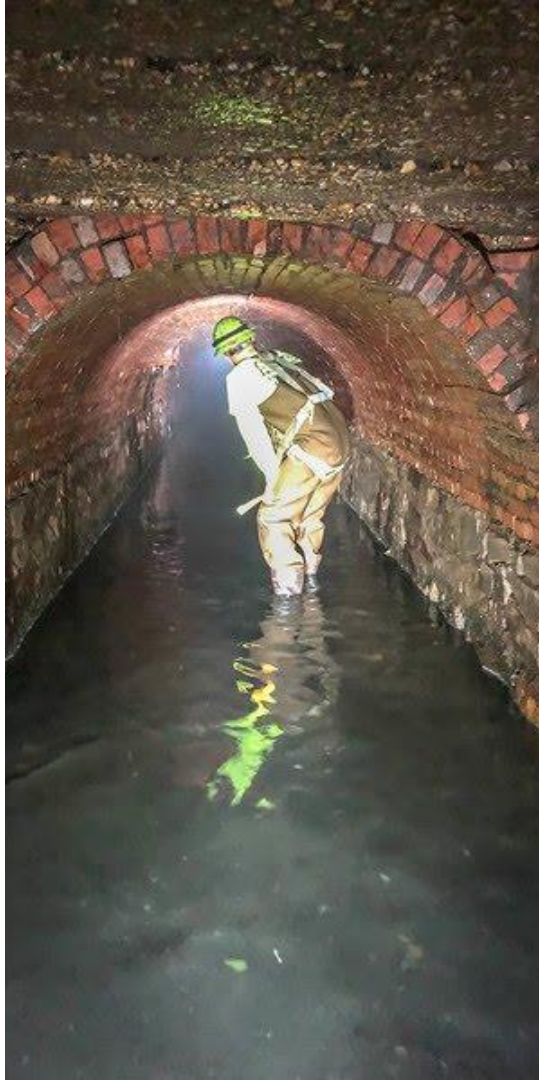
**NJ Climate Change Resilience Strategy:** 125 recommended actions across six priority areas, including to promote climate-informed investments



## WATER INFRASTRUCTURE NEEDS AND CHALLENGES

*New Jersey's water infrastructure faces significant challenges due to climate change impacts, exposing water systems and communities to risks, such as disruption in level of service, environmental contamination, and localized flooding.*





**The New Jersey Water Bank is a critical resource for addressing these needs, funding a variety of projects related to resilience.**

- CSO Infrastructure (Grey and Green)
- Stormwater Management
- Climate Resilience for Treatment Works
- Land Preservation
- Energy and Water Efficiency
- Climate Resilience for Drinking Water Infrastructure
- Asset Management Plans
- Planning and Design Loans

# FUNDING PACKAGE BENEFITS

**PRINCIPAL FORGIVENESS**

**LOW INTEREST LOANS**

**AFFORDABILITY CRITERIA**

The New Jersey Water Bank is a critical resource for addressing these needs, funding a variety of projects related to resilience.

- CSO Infrastructure (Grey and Green)
- Stormwater Management
- Climate Resilience for Treatment Works
- Land Preservation
- Energy and Water Efficiency
- Climate Resilience for Drinking Water Infrastructure
- Asset Management Plans
- Planning and Design Loans

# INCORPORATING RESILIENCE INTO THE NEW JERSEY WATER BANK

## PROJECT RANKING

Projects implementing climate resilience measures will receive additional priority points if the resilience components represent a significant amount of the overall project activities.

100 for Clean Water  
150 for Drinking Water



# INCORPORATING RESILIENCE INTO THE NEW JERSEY WATER BANK

## PROJECT RANKING

## AFFORDABILITY CRITERIA

### **Who qualifies for Affordability Criteria?**

Project Affordability Score of 80 or less

The project is eligible to receive 80  
Environmental Justice Economic Overburdened  
Community Criteria ranking points.



# INCORPORATING RESILIENCE INTO THE NEW JERSEY WATER BANK

## PROJECT RANKING

## AFFORDABILITY CRITERIA

Lead service line replacement, small systems, and rural communities qualify for Technical Assistance for Drinking Water projects.

Sponsors meeting the Affordability Criteria are eligible for Technical Assistance for Clean Water projects.

NJWB is developing the program to offer affordability sponsors PF for Planning and Design and guaranteed funds if they participate in the TA Program

## TECHNICAL ASSISTANCE



# INCORPORATING RESILIENCE INTO THE NEW JERSEY WATER BANK

**PROJECT RANKING**

**AFFORDABILITY  
CRITERIA**

NJWB is working on updating and developing enhanced educational materials to help applicants navigate the program, including additional information to be housed on the Water Infrastructure Investment Plan (WIIP) website and a comprehensive SRF Applicant Guidance.

<https://dep.nj.gov/wiip/>

**TECHNICAL  
ASSISTANCE**

**ENHANCED  
EDUCATIONAL  
MATERIALS**



# INCORPORATING RESILIENCE INTO THE NEW JERSEY WATER BANK

**PROJECT RANKING**

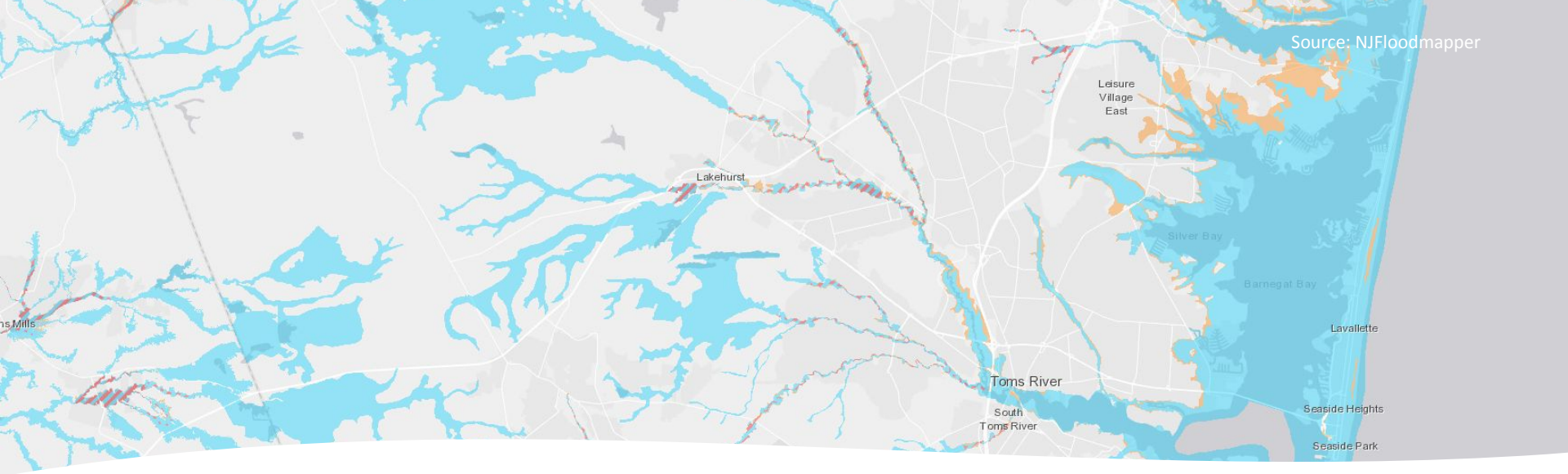
**AFFORDABILITY  
CRITERIA**

**BUILDING RESILIENT WATER  
INFRASTRUCTURE CLIMATE CHANGE  
RESILIENCE GUIDANCE**

**TECHNICAL  
ASSISTANCE**

**ENHANCED  
EDUCATIONAL  
MATERIALS**





## PURPOSE OF THE GUIDANCE

*To incorporate resilience considerations into the planning and design process where projects are exposed and vulnerable to climate change impacts, to ensure that water systems can maintain level of service during weather events, constitute sound public investment, and reduce risks of environmental contamination and localized flooding*



### Coastal Flood

0.2% Annual Chance  
Flood+ SLR or FHA  
regulatory flood  
elevation

### Fluvial Flood

.2% Annual Chance  
Flood+1 Foot or FHA  
regulatory flood  
elevation

### Storm Surge

SLOSH Cat. 1  
Hurricanes

### Extreme Precipitation

ARI increase by  
county (no mapping)



# VULNERABILITY



*Project scope*



*Type of  
Infrastructure*



*Sensitivity of  
Assets*



*Adaptive  
Capacity of  
Assets*

## ALTERNATIVES ANALYSIS AND JUSTIFICATION

- Use the analysis to explore how each alternative might avoid, minimize, or mitigate identified climate impacts. Balance these considerations with the project's cost effectiveness, environmental impact, and feasibility to select your proposed alternative.
- New construction and substantial alterations need to consider planning horizons to 2100. These projects are held to a higher level of scrutiny during review.
- Summarize resilience considerations under the Proposed Project within the Alternatives Analysis.

Scope the  
Alternatives

Consider Future  
Climate Scenarios

Justify Planning  
Horizons

Evaluate and Choose  
the Alternative

Justify the Selected  
Alternative

## GUIDANCE DOCUMENTS

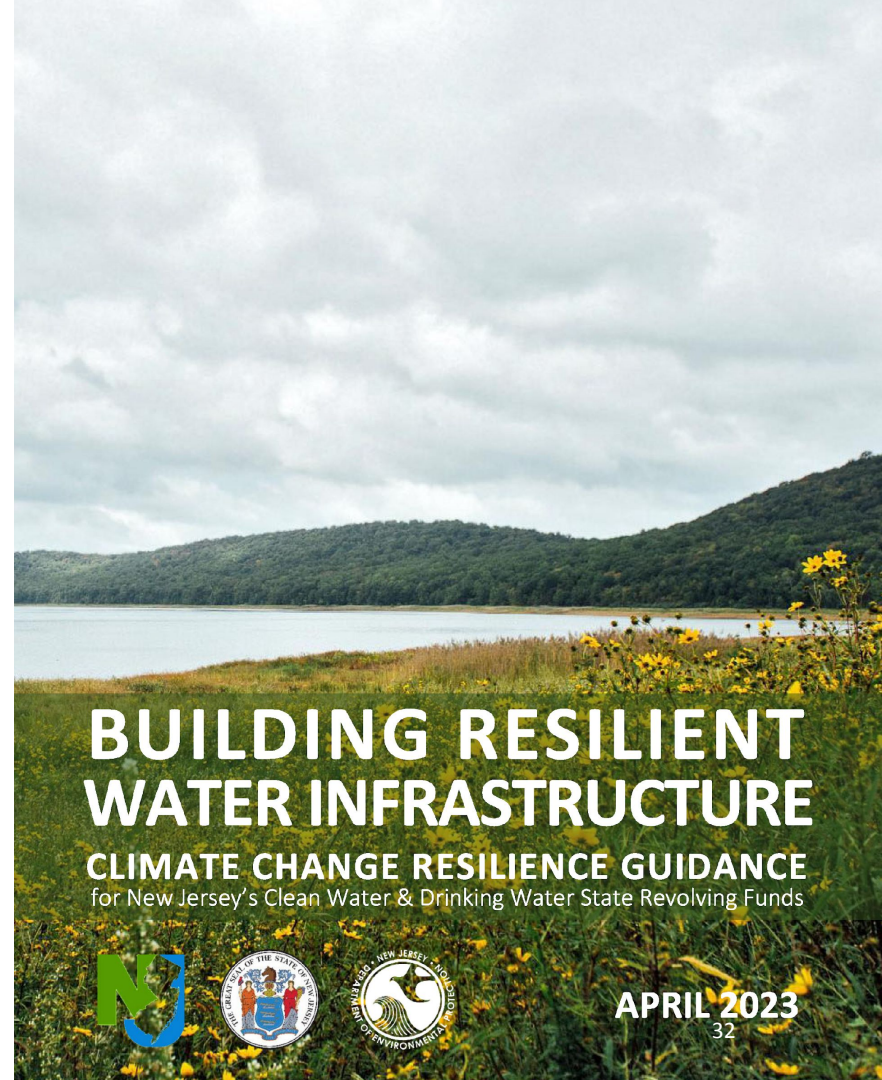
1

Building Resilient Water  
Infrastructure: Climate Change  
Resilience Guidance

2

Resilience Requirements  
Supplemental Guide and Checklist

To learn more, visit the <https://dep.nj.gov/WIIP>



# BUILDING RESILIENT WATER INFRASTRUCTURE

**CLIMATE CHANGE RESILIENCE GUIDANCE**  
for New Jersey's Clean Water & Drinking Water State Revolving Funds



**APRIL 2023**







# Overview of Climate Resilience in Hoboken, NJ

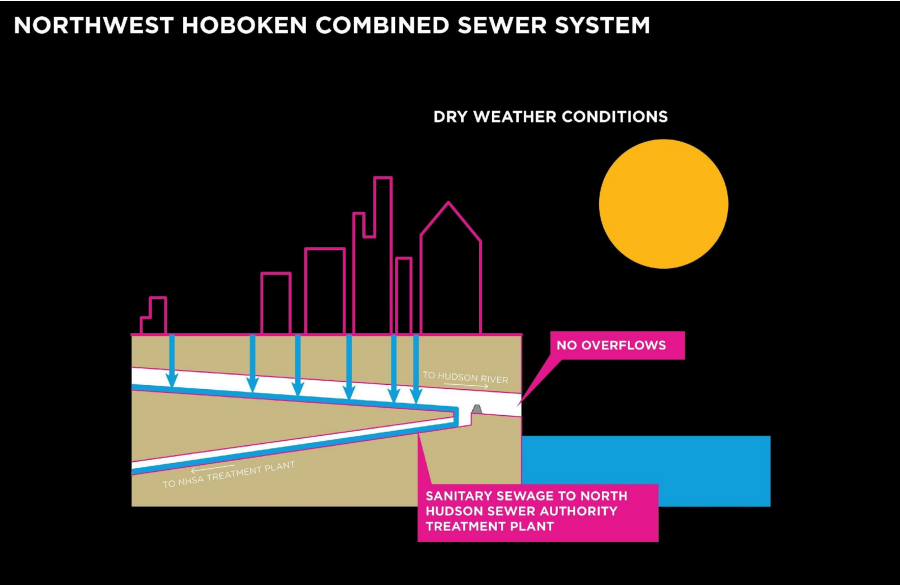


# About Hoboken

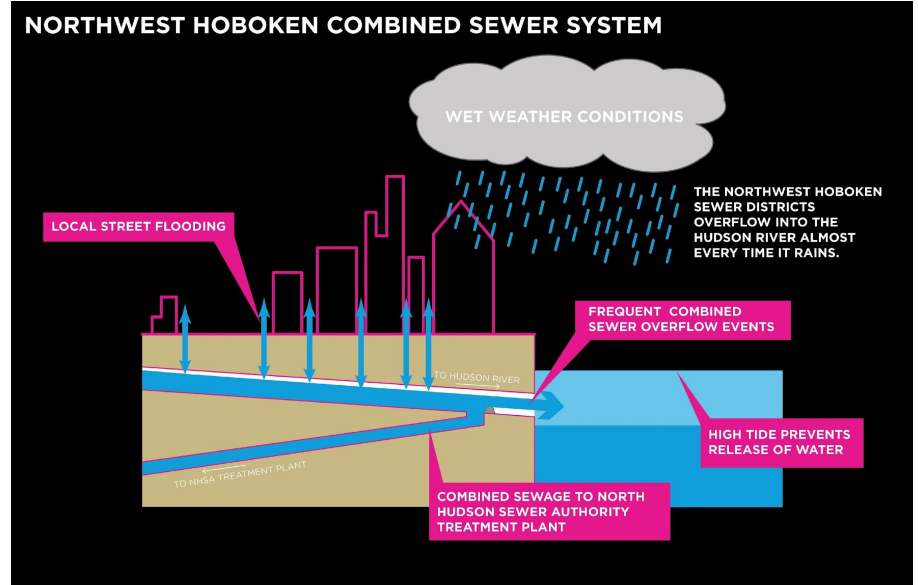
- 1.2 square mile
- 65,000 residents
- 27,000 households
- 77% in floodplain
- \$2.3 billion National Flood Insurance Policy (NFIP) liability
- 2.5 ft. sea level rise by 2075



# Combined Sewer System



Dry Conditions

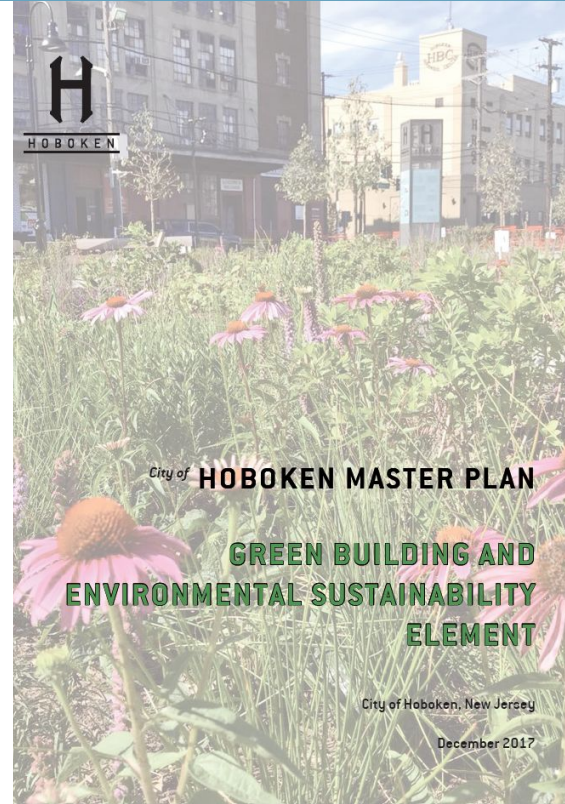
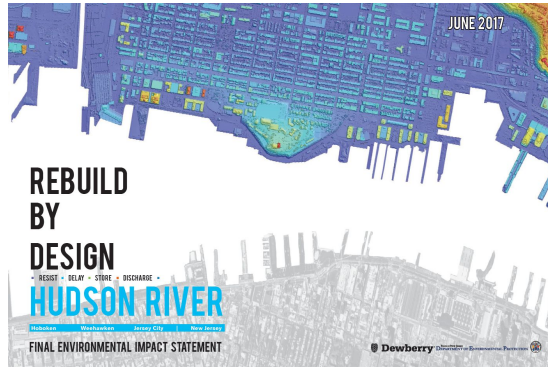


Wet Conditions

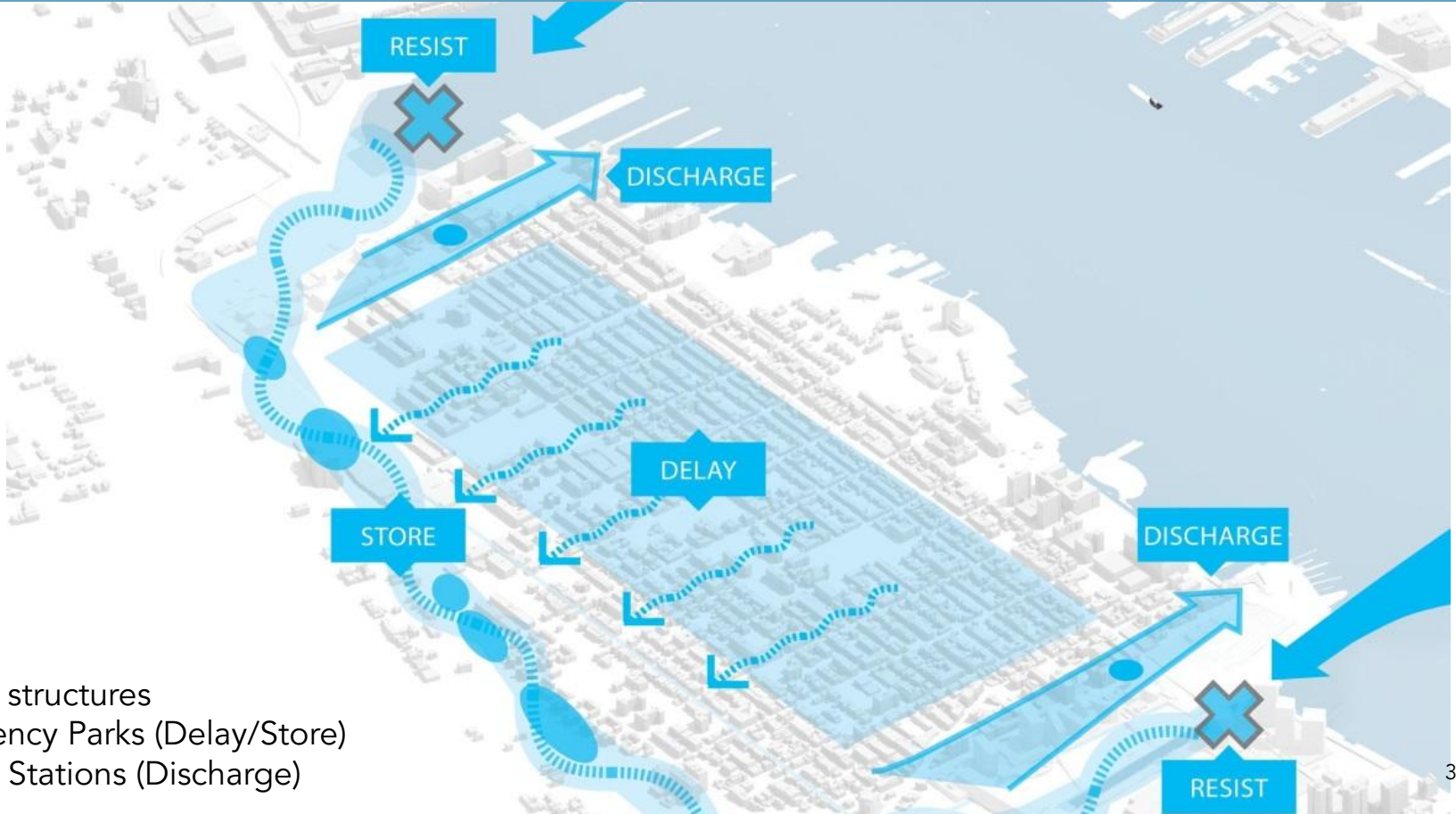
# Superstorm Sandy: October 2012



# Climate Leadership



# Rebuild by Design - Hoboken

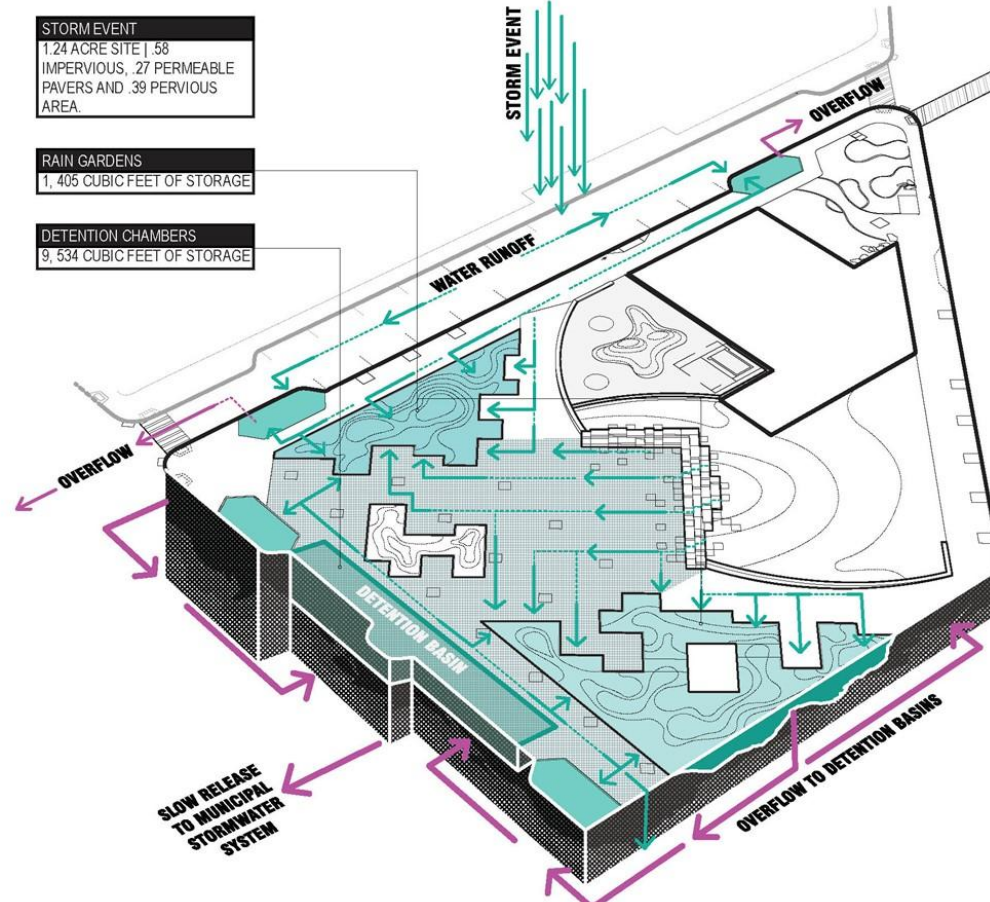


- 2 Resist structures
- 3 Resiliency Parks (Delay/Store)
- 3 Pump Stations (Discharge)

# Southwest Resiliency Park



# Southwest Resiliency Park





# Southwest Resiliency Park Expansion



# 7<sup>th</sup> and Jackson Resiliency Park



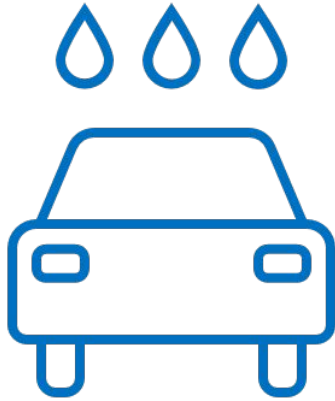
# ResilienCity Park



# ResilienCity Park



# Measuring Success of Resiliency Parks



Example: September 29, 2023 (3.5 inches of rain in 1 day)

- 5 cars towed out of 15,000 on-street parking spaces
- 2 out of 277 intersections flooded
- City dewatered (during low-tide) within 24 hours.

- Benefit Cost Analysis
  - Risk Reduction Metric used to measure **effectiveness** of resiliency practices.
  - \$1 spent on flood reduction = Reduction of flood risk by \$1.
- Resiliency parks and pumps reduce the **duration** and **extent** of flooding.

# Thank you!



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# JERSEY WATERWORKS CONFERENCE 2023

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## Thank You!

## Stay Involved!

Jersey Water Works



[www.jerseywaterworks.org](http://www.jerseywaterworks.org)