RESILIENT NJ
NORTHEASTERN NEW JERSEY

DRAFT ACTION PLAN

A ROADMAP TO RESILIENCE IN NORTHEASTERN NJ

SEPTEMBER 2022

VERSION 2022.0

RESILIENT
NORTHEASTERN
NEW JERSEY

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SHARE YOUR FEEDBACK

FEEDBACK FORM

WE'RE LOOKING FOR YOUR FEEDBACK ON THIS DRAFT ACTION PLAN!

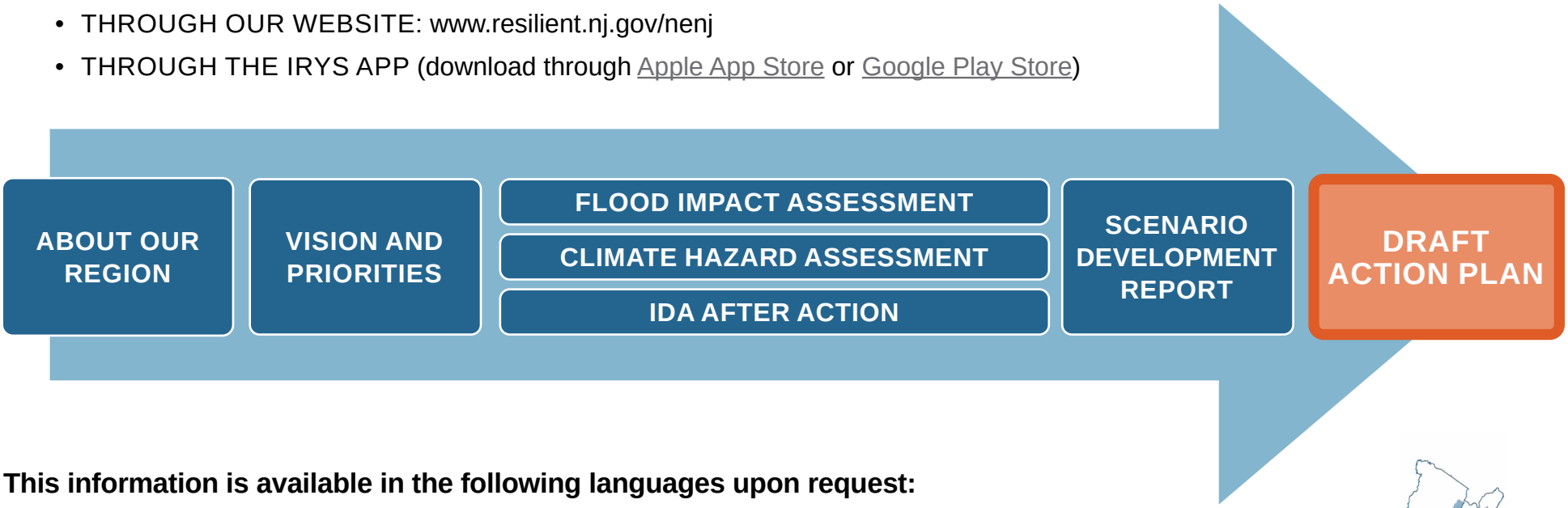
We will integrate comments received during the 30-day comment period into the Action Plan. Your feedback is critical to ensure that the plan is reflective of everyone's goals and priorities.

Share your thoughts using this form: https://tinyurl.com/NENJ-action-plan-feedback

Please visit our website at www.resilient.nj.gov/nenj to learn more about the project and what we've done so far.

We also welcome you to share your thoughts on the broader project:

- BY EMAIL: ResilientNENJ@dep.nj.gov
- BY HOTLINE VOICEMAIL: 201-275-0861
- BY SOCIAL MEDIA: Twitter & Facebook: @ResilientNENJ, Instagram: @Resilient_NENJ
- THROUGH OUR WEBSITE: www.resilient.nj.gov/nenj
- THROUGH THE IRYS APP (download through Apple App Store or Google Play Store)



This information is available in the following languages upon request:

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RESILIENT NORTHEASTERN NEW JERSEY

TRANSLATION SERVICES

☐ English

Language translation assistance for limited or non- English speakers is available in eleven (11) languages. If you need to communicate in one of those languages, mark the box next to the language on this form and send the form along with your name, recovery program, and application number to Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625.

You may also email or fax this form. Email to: neda.hartman@dca.nj.gov Fax to: 1-609-292-3726. Telephone assistance is available by calling 1-609-292-3750. When the agent answers the line, inform them of the appropriate language. The agent will either be able to immediately connect you with a translator or arrange for a translator to return your call at your convenience.

Name: _____

Program and application number: _____

☐ Arabic

نقدم المساعدة اللغوية من خلال توفير خدمات الترجمة بإحدى عشر(11) لغة للأشخاص الذين لا يتكلمون اللغة الإنجليزية أو لغتهم الإنجليزية محدودة. إذا احتجت إلى التواصل بإحدى هذه اللغات، فـيُرجى التأشير في المربع بجانب اللغة في هذا النموذج وإرسال النموذج مع اسمك وبرنامج التعافي من الكوارث ورقم الطلب إلى Neda Hartman, 101 S. Broad St., . P.O. Box 823 Trenton, NJ 08625.
ويمكنك أيضًا إرسال النموذج بواسطة البريد الإلكتروني أو الفاكس. لإرساله عن طريق

البريد الالكتروني استخدم العنوان neda.hartman@dca.nj.gov. لإرساله بواسطة الفاكس استخدم الرقم 1-609-292-3726 . تتوفر المساعدة التليفونية عن طريق الاتصال بالرقم 609-292-3750. عندما يرد الوكيل على مكالمتك، أبلغه باللغة التي تناسبك. وسيقوم الوكيل بتوصيلك بمترجم على الفور أو ترتيب اتصال أحد المترجمين بك في موعد يناسبك.

الاسم:_____

البرنامج ورقم الطلب:_____

☐ Tagalog

Ang tulong sa pagsasalin ng wika para sa mga nakakapagsalita ng kaunting Ingles o hindi nakakapagsalita ng Ingles ay makukuha sa labing-isang (11) wika. Kung kailangan ninyong makipag-ugnayan gamit ang isa sa mga wikang iyon, markahan ang kahon sa tabi ng wikang nasa form na ito at ipadala ang form kasama ang inyong pangalan, programa para sa panunumbalik, at numero ng aplikasyon sa Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625.

Maaari din ninyong i-email o i-fax ang form na ito. Mag-email sa: neda.hartman@dca.nj.gov. Mag-fax sa: 1-609-292-3726. Makakakuha ng tulong sa telepono sa pamamagitan ng pagtawag sa 1-609-292-3750. Kapag sinagot ng kinatawan ang telepono, ipaalam sa kanya ang naaangkop na wika. Maaari kayong maikonekta kaagad ng kinatawan sa isang tagapagsalin sa ibang wika o kaya naman ay maghahanap siya ng tagapagsalin sa ibang wika na siya namang tatawag sa inyo sa oras na gusto ninyo.

Pangalan: _____

Programa at numero ng aplikasyon: _____

☐ Vietnamese

Có sẵn dịch vụ hỗ trợ phiên dịch cho những người nói tiếng Anh có giới hạn hoặc không nói tiếng Anh trong mười một (11) ngôn ngữ khác nhau. Nếu cần truyền đạt bằng một trong các ngôn ngữ này, xin đánh dấu vào trong ô vuông kế bên ngôn ngữ trên mẫu này và gửi mẫu cùng với tên, chương trình phục hồi và số ghi danh của quý vị đến Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625.

Quý vị cũng có thể gửi mẫu này qua điện thư (email) hoặc điện sao (fax). Gở=ửi điện thư đến: neda.hartman@dca.nj.gov. Gửi điện sao đến: 1-609-292-3726. Quý vị có thể gọi số 609-292-3750 để được hỗ trợ qua điện thoại. Khi đại diện trả lời điện thoại, xin cho người này biết ngôn ngữ thích hợp. Đại diện có thể kết nối với một thông dịch viên ngay cho quý vị, hoặc sắp xếp cho người thông dịch viên gọi quý vị vào giờ giấc tiện lợi cho quý vị.

Tên:_____

Chương trình và số ghi danh: _____

☐ Portuguese

O serviço de interpretação para quem fala pouco ou nada de inglês está disponível em onze (11) idiomas. Se precisar de comunicar em algum destes idiomas, assinale a caixa ao lado do idioma neste formulário e envie o formulário, juntamente com o seu nome, programa de recuperação e número de requisição, para Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625

Também é possível enviar o formulário por e-mail ou fax. Por e-mail, envie para: neda.hartman@dca.nj.gov. Por fax para: 1-609-292-3726. O serviço por telefone está disponível, ligando para 609-292-3750. Quando o agente atender a chamada, indique o idioma pretendido. O agente estabelecerá imediatamente o contacto com um intérprete ou marcará com o intérprete para retomar a sua ligação num horário conveniente para si.

Nome: _____

Programa e número de requisição: _____

☐ Spanish

Está disponible el servicio de traducción en once (11) idiomas para las personas que no hablan inglés o que tienen dominio limitado de ese idioma. Si usted necesita comunicarse en uno de los idiomas enlistados en este formulario, marque la casilla del idioma de su preferencia y envíe el formulario, junto con los datos de su nombre, programa de recuperación y número de solicitud, a Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625.

Usted puede también enviar el formulario por correo electrónico a neda.hartman@dca.nj.gov o, por fax, al 1-609-292-3726. Se brinda asistencia telefónica llamando al 1-609-292-3750. Cuando el representante responda a su llamada, infórmele sobre el idioma que necesita ayuda. El representante le pondrá en contacto con un traductor o cuando mejor le convenga a usted.

Nombre: _____

Programa y número de solicitud: _____

☐ Chinese (Traditional)

本公司以十一（11）種語言為英語能力有限或不諳英語的人士提供語言翻譯協助。倘若你需要使用以上其中一種語言溝通，請在此份表格中適當的方格做標記，標註所選語言，然後將表格連同你的姓名、計劃和申請編號郵寄至 Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625.

你也可以用電子郵件或傳真發送此表格。請將電子郵件發送至：neda.hartman@dca.nj.gov。請將傳真發送至：1-609-292-3726。欲需要電話協助，請撥打 609-292-3750 要求協助。當職員以電話回覆，請告知職員你希望選用的語言。職員有可能立即為你接通翻譯員，也可能安排翻譯員在你方便時致電回覆你。

姓名 _____

計劃和申請編號： _____

☐ French Creole

Gen asistans tradikisyon nan onz (11) lang ki disponib pou moun ki pa pale Anglè oswa ki limite nan Anglè. Si ou bezwen kominike nan youn nan lang sa yo, tchèke bwatt ki akote lang nan fòm sa epi voye fòm lan ansanm ak non ou, pwogram rekouvèt lan ak nimewo aplikasyon ou an bay Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625.

Epitou ou ka voye fòm lan pa imèl oswa pa faks. Pa imèl nan: neda.hartman@dca.nj.gov. Pa faks: 1-609-292-3726. Asistans pa telefòn disponib lè ou rele nan 609-292-3750. Lè ajan an reponn, di yo ki lang ou bezwen. Ajan an pral kapab swa konekte ou touswit ak yon entèprèt oubyen fè aranjman pou yon entèprèt retounen apèl ou a nan lè ki pi bon pou ou.

Non:

_____

Pwogram ak nimewo aplikasyon:

_____

☐ Gujarati

મર્યાદિત અથવા બિન-અંગ્રેજી બોલનારાઓ માટે અગિયાર (11) ભાષાઓમાં ભાષાંતર સહાય ઉપલબ્ધ છે. જો તમને આ ભાષાઓ પૈકી કોઈ એકમાં કોમ્યુનિકેશન કરવાની જરૂર હોય તો, આ ફોર્મ પર તે ભાષાની સામે આપેલા બોક્સમાં નિશાની કરો અને આ ફોર્મ તમારા નામ, રિકવરી પ્રોગ્રામ અને એપ્લિકેશન નંબર સાથે Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625 ને મોકલી આપો.

તમે ફોર્મને ઈમેલ અથવા ફેક્ષ પણ કરી શકો છો.ઈમેલ કરો: neda.hartman@dca.nj.gov. ફેક્ષ કરો:1-609-292-3726. ટેલિફોન સહાય 1-609-292-3750 પર કોલ કરવાથી ઉપલબ્ધ છે. જ્યારે એજંટ લાઈન પર જવાબ આપે, તો તેમને યોગ્ય ભાષા જણાવો.એજંટ કાં તો તરત જ તમને ભાષાંતરકાર સાથે જોડી આપશે અથવા વળતા કોલથી તમારી સગવડ પ્રમાણે ભાષાંતરકારની વ્યવસ્થા કરશે.

નામ: _____

પ્રોગ્રામ અને એપ્લિકેશન નંબર:_____

☐ Italian

Per coloro che parlano poco o niente inglese, è disponibile un servizio di interpretariato in undici (11) lingue. Se hai necessità di comunicare con il nostro ufficio in una di esse, segna su questo modulo la casella che corrisponde alla tua lingua e invialo corredato del tuo nome, programma di assistenza e numero di domanda a Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625.

Se preferisci, puoi spedire il modulo per fax o per posta elettronica. L'indirizzo di posta elettronica è il seguente: neda.hartman@dca.nj.gov. Il numero di fax è 1-609-292-3726. Puoi ricevere assistenza telefonica nella tua lingua chiamando il seguente numero: 1-609-292-3750 e dicendo all'impiegato che hai bisogno di assistenza per la lingua italiana. L'impiegato ti metterà subito in contatto con l'interprete o prenderà accordi perché l'interprete ti richiami a unorario per te più comodo.

Nome: _____

Programma di assistenza e n. di domanda: _____

☐ Korean

영어에 미숙한 분들을 위해 11 개국 언어 통역을 도와드립니다. 해당 언어 중 한 언어의 의사소통이 필요하신 분은 이 신청서에 해당 언어 박스에 표시를 하신 후, 이름, 복구 프로그램 및 신청번호와 함께 'Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625'로 우편으로 보내시기 바랍니다.

신청서를 이메일이나 팩스로 보내셔도 됩니다. 이메일의 경우'neda.hartman@dca.nj.gov', 팩스는 '1-609-292-3726', 전화로 도움을 받고 싶으신 분은'1-609-292-3750'으로 전화하십시오. 상담원과 연결 후에 도움을 받고 싶은 언어를 말씀하십시오. 상담원이 통역사와 즉시 연결해 드리거나 아니면 편리한 시간에 통역사가 전화를 드릴 것입니다.

이름: _____

프로그램과 신청 번호: _____

☐ Polish

Dla osób nieznających języka angielskiego lub dla osób znających go w ograniczonym stopniu dostępna jest pomoc tłumacza w jedenastu (11) językach. Jeżeli potrzebują Państwo porozumieć się w jednym z tych języków, prosimy zaznaczyć kratkę obok danego języka na formularzu, a następnie wysłać go wraz z imieniem, nazwiskiem, programem pomocy i numerem wniosku do Neda Hartman, 101 S. Broad St., PO Box 823 Trenton, NJ 08625.

Formularz można również wysłać emailem lub faksem. Adres email: neda.hartman@dca.nj.gov. Numer faksu: 1-609-292-3726 Pomoc telefoniczna jest dostępna pod numerem 609-292-3750. Kiedy agent odbierze telefon, prosimy podać język, w którym chcą się Państwo porozumiewać. Agent będzie mógł natychmiast połączyć Państwa z tłumaczem lub też tłumacz oddzwoni w dogodnym dla Państwa terminie.

Imię i nazwisko:_____

Program i numer wniosku: _____

REGION TEAM
Steering Committee Members

JERSEY CITY
City of Jersey City Office of Sustainability

NEWARK
Nathaly Agosto Filión, Robert Thomas, and Juba Dowdell

HOBOKEN
Caleb Stratton, Jennifer Gonzalez, Yasmine Pessar, and Ann Holtzman

BAYONNE
Suzanne Mack and Andrew Raichle

HUDSON COUNTY
Kevin Force and Francesca Giarratana

IRONBOUND COMMUNITY CORPORATION
Drew Curtis and Maria Lopez-Nuñez

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CONSULTANT TEAM

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ONE ARCHITECTURE & URBANISM

HGA

INGROUP

SAM SCHWARTZ ENGINEERING

SCAPE LANDSCAPE ARCHITECTURE

IRYS

Thank you to the many community-based organizations, community members, municipal leaders, agencies, and regional stakeholders that have contributed their time and expertise to the Resilient NENJ process to date.

RESILIENT NJ

NORTHEASTERN NEW JERSEY

DRAFT ACTION PLAN

SEPTEMBER 2022

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LETTER OF SUPPORT

By the NJ Department of Environmental Protection (NJDEP)

Climate change is a global challenge, although its impacts—including flooding from sea-level rise, coastal storms, and extreme precipitation events—are experienced locally. Further, each community's experience of these impacts is distinct and so requires a unique response consistent with, and driven by, the community members who are directly impacted. Integrating a proactive, climate-ready mindset into local and regional planning efforts is imperative to ensure that investments made today are designed to withstand the conditions of tomorrow.

To provide our communities with the assistance and resources to meet these challenges, the NJ Department of Environmental Protection (NJDEP) launched the Resilient NJ program, using funding from the U.S. Department of Housing and Urban Development's National Disaster Resilience Competition. Resilient NJ is the preeminent planning program in the state to support local and regional climate resilience planning and serves as a model for other community resilience planning projects in New Jersey. Using the best available science on precipitation, sea-level rise, and coastal flooding, combined with a whole-community planning approach, Resilient NJ helps communities plan for how the changing climate may affect residents, businesses, and the natural and built environments.

The Resilient Northeastern NJ region is a dense and extremely diverse urban environment. It is bounded by rivers and bays, and flooding impacts a huge number of people and assets of local, regional, state, and national importance. This Regional Resilience and Adaptation Action Plan (Action Plan) is the result of a nearly two-year, whole community planning process. It presents a suite of innovative and implementable solutions that align with the community vision to increase climate resilience in both the short- and long-term.

New Jersey's Statewide Climate Change Resilience Strategy defines "climate resilience" *as 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. Resilience is not an end-state, but a dynamic state-of-being that will grow more difficult to attain as the climate continues to change. Resilience is perseverance with grace, strength in the face of adversity and hardship, resourcefulness to leverage what is available, and faith in the road that lies ahead.* The four initial Resilient NJ regional projects have met those high principles and have established a high bar by which all other resilience initiatives will be measured.

Sincerely,

Nicholas J. Angarone, PP/AICP
New Jersey Chief Climate Resilience Officer

FOREWORD

By the NENJ Steering Commitee

Resilient Northeastern NJ (Resilient NENJ) seeks to build climate resilience while improving quality of life for the 700,000 people who live in Jersey City, Newark, Hoboken, and Bayonne, as well as those who work and play in the region. The program launched in the Spring of 2021 to develop a regional Resilience and Adaptation Action Plan (Action Plan) for addressing current and future flooding. Through community feedback, Resilient NENJ expanded to consider other climate-related hazards like heat, poor air quality, and drought. These hazards interact with vulnerability to impact our people, infrastructure, and environment. Our communities have already experienced these impacts from recent storms such as the remnants of Hurricane Ida in September 2021, less recent storms such as Hurricane Sandy which catalyzed attention to resilience across much of the northeast, and the prevalence of health disparities due to polluted air and heat waves.

The science to understand the complex role that climate change plays in the future of our region is constantly evolving through studies led by federal agencies, the New Jersey Department of Environmental Protection (NJDEP), and other academic and scientific entities. Nonetheless, sea level rise, higher intensity precipitation, declining air quality, increasing temperatures, invasive species, and other hazards will continue to affect quality of life in this region unless urgent action is taken. The flood impact assessment completed for this project estimates that losses from severe rainfall and coastal storm surge events could be in the billions and tens of billions of dollars, respectively. These hazards compound other challenges faced by this region, including a history of discriminatory housing practices, insufficient affordable housing stock, contamination, the consequences of the region's past and current industrial centers, and aging infrastructure.

The need for action is urgent. The time to act is now. Resilient NENJ will continue to lead, collaborate, and innovate on these issues. The Action Plan outlines clear measures such as policy changes, programs, and capital projects that can ease the financial and resource burdens of unmitigated climate-related risk, protect people and places from hazards, and foster connectivity and the capacity to adapt. The actions aim to advance efforts already ongoing in the region and to work alongside the **New Jersey Statewide Climate Change Resilience Strategy** and other statewide and local initiatives.

We can all play a role in increasing resilience, and the Action Plan provides calls to action for anyone who could be affected. Involvement from everyone in our region, especially those who could face the most significant impacts from climate change, will continue to be critical for successful implementation of the Action Plan's recommendations. By taking the next steps as charted in the Action Plan and working iteratively to improve and complete its recommendations, we can collectively build thriving communities in the region.

ACRONYMS

BAPC – Bergen Arches Preservation Coalition

BCRP – Bureau of Climate Resilience Planning

BRIC – Building Resilient Infrastructure and Communities, a FEMA program

BRIT – New Jersey's Brownfield Redevelopment Interagency Team

CAC – Community Advisory Council

CBO – community-based organization

CBP3 – community-based public private partnerships

CCATF – New York City Climate Change Adaptation Task Force

CCI – Community Collaborative Initiative, a NJDEP and NJEDA program

CCRUN – Consortium for Climate Risk in the Urban Northeast

CDBG – Community Development Block Grant

CDBG-DR – Community Development Block Grant Disaster Recovery program

CDBG-Mit – Community Development Block Grant Mitigation program

CDC – Centers for Disease Control and Prevention

CEA – Classification Exception Area

CERT – Community Emergency Response Teams

COG – Metropolitan Council of Governments

C-PACE – Garden State Commercial Property Assessed Clean Energy

CRS – Community Rating System, a FEMA program

CSO – combined sewer overflow

CSS – combined sewer system

DEWS – drought early warning system

DRBC – Delaware River Basin Commission

EJ – environmental justice

EJScreen – USEPA Environmental Justice Screening and Mapping Tool

EM – emergency management

EMPG – Emergency Management Performance Grant, a FEMA grant program

EO – executive order

EPA – United States Environmental Protection Agency

EPC – Embankment Preservation Coalition

FEMA – Federal Emergency Management Agency

FIRM – Flood Insurance Rate Map, a part of FEMA's NFIP

FMA – Flood Mitigation Assistance, a FEMA program

FTA – Federal Transit Administration

GI – Green Infrastructure

HATS – New York & New Jersey Harbor and Tributaries Study, a USACE study

HDSRF – Hazardous Discharge Site Remediation Fund

HEP – New York & New Jersey Harbor & Estuary Program

HMGP – Hazard Mitigation Grant Program, a FEMA program

HUC – Hydrologic Unit Code

HUD – United States Department of Housing and Urban Development

HVAC – heating, ventilation, and air conditioning

IAWG – New Jersey's Brownfields Interagency Working Group

I-Bank – New Jersey Infrastructure Bank

ICMA – International Capital Markets Association

IECC – International Energy Conservation Code

IIJA – Infrastructure and Investment Jobs Act

IPCC – International Panel on Climate Change

ISRA – Industrial Site Recovery Act

JC – Jersey City

JCMUA – Jersey City Municipal Utilities Authority

LESO – Law Enforcement Support Organization

LIHEAP – New Jersey's Low-Income Home Energy Assistance Program

LPR UWFP – Lower Passaic River Urban Waters Federal Partnership

LTCP – Long-Term Control Plans

LWI – Louisiana Watershed Initiative

MAP – Metropolitan Area Planning Forum

MBTA – Massachusetts Bay Transportation Authority

MOTBY – Military Ocean Terminal at Bayonne

MOU – memorandum of understanding

MPO – metropolitan planning organization

MS4 – municipal separate storm sewer system

NDRC - National Disaster Resilience Competition

NENJ – Northeastern New Jersey

NFIP – National Flood Insurance Program, a FEMA program

NFWF – National Fish and Wildlife Foundation

NHSA – North Hudson Sewerage Authority

NJAC – New Jersey Administrative Codes

NJBPU – New Jersey Board of Public Utilities

NJDCA – New Jersey Department of Community Affairs

NJDEP – New Jersey Department of Environmental Protection

NJDOT – New Jersey Department of Transportation

NJEDA – New Jersey Economic Development Authority

NJIT – New Jersey Institute of Technology

NJOEM – New Jersey Office of Emergency Management

NJPACT – New Jersey Protecting Against Climate Threats

NJSEA – New Jersey Sports Exposition Authority

NJTA – New Jersey Turnpike Authority

NJTPA – North Jersey Transportation Planning Authority

NOAA – National Oceanic and Atmospheric Administration

NPCC – Northeast Power Coordinating Council

NWS – National Weather Service

OEM – Office of Emergency Management (used at various scales)

OSHA – Occupational Safety and Health Administration

P3 – public private partnership

PA – Public Assistance, a FEMA program

PANYNJ – Port Authority of New York and New Jersey

PE&D – Por

PI – parallel interceptor

PM2.5 – fine particulate matter, equal to or smaller than two and a half microns in width

PSE&G – Public Service Electric and Gas

PVSC – Passaic Valley Sewerage Commission

RBD – Rebuild by Design, a HUD competition program

REAL – Resilient Environments and Landscapes, part of NJ PACT

RICC – Regional Infrastructure Coordination Council

RNJ – Resilient New Jersey

ROSI – Recreation and Open Space Inventory

RPA – Regional Plan Association

SFHA – Special Flood Hazard Area

STAP – Science and Technical Advisory Panel

SVI – Social Vulnerability Index

TAB – the NJIT Technical Assistance to Brownfield Communities program

TFN – The Funders Network

UHI – urban heat island

USACE – United States Army Corps. of Engineers

USDOE – United States Department of Energy

WWTP – wastewater treatment plant

DEFINITIONS

Adaptation – The process of modifying behaviors, policy, or the built and natural environment to adjust to risk.

After Action – A document intended to capture observations of an event or exercise and make recommendations based on the outcomes of the event or exercise.

Alignment – Another word for the location along a linear stretch of land. This term can be used to refer to siting for solutions such as barriers or pipes.

All Hazards Actions – Actions that address other climate-related vulnerabilities and environmental justice needs, beyond flooding.

Allocation – Funding distributed by an entity (e.g., the state or federal government) for a particular purpose.

Areal Floods – Floods that occur when flooding develops more gradually and comes from sustained rainfall over a longer period. The NJDEP models use around 8 to 9 inches over 24 hours, which is similar to Ida or Irene, depending on the area.

Authority – A group with decision-making and enforcement power.

Base flood elevation – The flood height that must be considered and used in new developments and major improvements to existing properties in FEMA-defined special flood hazard areas.

Brownfields – Defined by the State (in the Brownfield and Contaminated Site Remediation Act) as "former or current commercial or industrial sites, currently vacant or underutilized, and on which there has been, or there is suspected to have been, a discharge of a contaminant."The distinguishing features of brownfields are that they are specifically commercial and industrial sites, and that there only needs to be a perception of contamination for a site to be considered a brownfield.

Coastal Actions – In this Action Plan, actions that address coastal and tidal flooding

Coastal Storm Surge – Flooding that occurs when tropical storms, hurricanes, and nor'easters temporarily raise water levels along the coast.

Community Emergency Response Teams – These teams are volunteer "train the trainer" organizations that educate residents in disaster preparedness and response so that they can support other neighbors during emergencies.

Community Resilience – The capacity and capability of communities to respond, adapt, and transform in response to natural hazards and climate change.

Contaminated Sites – Properties where there is a known presence of hazardous substances.

Coordinating Body – A voluntarily established group without formal decision-making power.

Critical Asset – Places that are essential for a community to thrive. Examples are utilities and transportation infrastructure. Assets can include places where people gather, build relationships, and enjoy themselves.

Cut-sheet – In this Action Plan, a short section for each recommended action that provides information about issues the action will address, key considerations for implementation, evaluation criteria, and expected outcomes or changes, along with communtiy feedback that contributed to the recommendations.

Design elevation – The elevation at which buildings must be constructed or floodproofed, equal to the base flood elevation plus a certain amount of freeboard (additional height as a safety factor).

Dig once – An intentional effort to facilitate the simultaneous construction of different projects at the same site, limiting repeated disruption.

Flash Floods – Floods that occur when there is a significant amount of rainfall over a short period of time. The NJDEP models use around 3.5 inches over two hours, which is a little worse than Floyd (1999), Irene (2011), and Henri (2021) in most places and not nearly as heavy as the worst of Ida in 2021.

Hazard Mitigation – Action to reduce long-term risk to life and property from hazard events.

Infrastructure – The system of structures and resources (systematic, natural, and human-built) that provide services to communities. Infrastructure can fall into five categories: physical, social, institutional/ governance, economic, and environmental.

Level of Protection – The magnitude of flooding a coastal solution can manage.

Level of Service – The magnitude of rainfall a stormwater solution can manage.

Mean Higher High Water – High tides happen twice a day and one is usually higher than the other. Mean higher high water is the average height of the daily highest tide.

Outreach – The provision of services, communications, and engagement to the community at large including historically excluded groups.

Preparedness – The continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action to ensure effective coordination during response.

Rainfall Flooding – Flooding as a result of excessive rainfall, including stormwater flooding, areal flooding, and flash flooding.

Recovery – The phase following a disaster focused on restoring infrastructure that was affected.

Resilience Hub – A multi-functional place for people to access information and go before, during, and after climate events, such as to shelter from flooding or extreme heat. Depending on the site, resilience hubs can also directly reduce hazards by providing stormwater storage or increasing green infrastructure and green space.

Resilience infrastructure – Infrastructure that increases the resilience of other entities, infrastructure, or communities.

Resilient infrastructure – Infrastructure than can withstand shocks and stresses that might otherwise disrupt an asset's ability to meet its mission.

Response – As defined by FEMA, the ability to, "respond quickly to save lives, protect property and the environment, and meet basic human needs in the aftermath of a catastrophic incident."

Scenario – In this Action Plan, "Scenario" refers to a suite or package of solutions to increase resilience. In other climate contexts, the term may refer to different projects for climate conditions depending on various factors.

Scenario 0 – An inventory of existing planning initiatives/completed actions that are already workign to increase resilience in the region, this is a baseline scenario that imagines what risk would look like with completion of all in-progress projects.

Single source of truth – A centralized resource of aggregated data to facilitate the development consistent understandings and actions across locales and entities.

Sinking Fund – A common method to fund infrastructure improvements made necessary through development over time. The model could apply to redevelopment areas or areas of private ownership and shared risk, in particular.

Social Vulnerability – The degree to which a community's people are challenged when faced with significant disruptions, such as natural disasters or disease. Social vulnearbility is often used as a metric in planning processes to ensure that actions benefit those people who might need additional support.

Special flood hazard area – Shown on a FEMA Flood Hazard Boundary Map, this is "an area having special flood, mudflow, or flood-related erosion hazards" that put it at greater risk. In general, these areas have a 1% chance of being inundated in any given year under current conditions.

Stormwater Actions – Actions that address stormwater flooding

Stormwater Flooding – Flooding that occurs when rainfall overwhelms drainage systems.

Tidal Flooding – The inundation of low-lying areas with high tides, which occurs independently from storm surge events.

Urban Heat Island effect – Increased temperatures in urban areas compared to nearby rural areas as a result of human structures (i.e. buildings and roads) and activities.

Vertical Evacuation – Temporarily moving residents upward and away from hazards (e.g., flooding), such as within a tall resilient structure.

EXECUTIVE SUMMARY

WHO CREATED THIS PLAN AND FOR WHOM?

WHAT IS RESILIENT NJ?

Resilient NJ is a planning program, administered by the New Jersey Department of Environmental Protection (NJDEP) Bureau of Climate Resilience Planning (BCRP), that supports local and regional climate resilience planning. Resilient NJ brings together resilience experts, local leaders, community organizations, residents, and regional infrastructure entities to address flood and climate-related hazards at a regional scale, while ensuring local community input in developing recommendations, particularly from underserved and socially vulnerable populations.

Resilient NJ received initial funding through the U.S. Department of Housing and Urban Development (HUD) National Disaster Resilience Competition (NDRC). This funding supported pilot planning projects to develop Regional Resilience and Adaptation Action Plans (Action Plans) in four regions in New Jersey, including Northeastern NJ (NENJ).

WHAT IS RESILIENT NENJ?

Resilient Northeastern NJ (Resilient NENJ) is one of four pilot projects and focuses on developing solutions to reduce risk and build resilience in Jersey City, Newark, Hoboken, and Bayonne. These four municipalities, Hudson County, and two community-based organizations, Ironbound Community Corporation and HOPES CAP, Inc., comprise the Resilient NENJ Region Team. Representatives from each of these entities sit on a Steering Committee that leads the project.

RESILIENT NENJ
MISSION STATEMENT

Resilient NENJ will provide a clear vision and roadmap for reducing flood risk and impacts from climate-related hazards through collaboration between local and state governments and community-based organizations along with valuable input from the public and other stakeholders. The Action Plan will support regional investment, information, and resource sharing to help our people and places thrive in the decades to come. The Action Plan will be driven by best available data, technical evaluation, and inclusive and equitable engagement. It will leverage best practices to create social, environmental, and economic benefits and bring value to those who live in the region now and for future generations.

The Resilient NENJ Team on a site visit in Jersey CIty.

Image Source: *Resilient NENJ*

Resilient Northeastern NJ Region
BELLEVILLE
SECAUCUS
WEST NEW YORK
NORTH
UNION CITY
WEEHAWKEN
HOBOKEN
KEARNY
HARRISON
NEWARK
JERSEY CITY
IRVINGTON
UNION
ELIZABETH
BAYONNE
HACKENSACK RIVER
PASSAIC RIVER
HUDSON RIVER
NEWARK BAY
UPPER NEW YORK BAY
JOHN'S COVE
KILL VAN KUL
ARTHUR KILL
NEWARK LIBERTY AIRPORT
BLOOMFIELD AVE
SPRINGFIELD AVE
PULASKI SWY
NJ TPK/I-78
NJ TPK/I-95
I-280
I-78
U.S. HWY 1-9
NJ 21
NJ 7
NJ 139
NJ 440
RT 510
RT 22
RT 1-9
LEGEND
Municipalities
Counties
0 0.5 1 mile
N

A PLAN CREATED WITH COMMUNITY MEMBERS

Implementation of this Action Plan will change the built and natural environment and the way that people work together to build resilience. As such, it is critical that the Action Plan reflects the perspectives and needs of those who could be affected, and especially the most vulnerable and historically underrepresented. The planning process has centered community members and community feedback from the start. Other stakeholders, such as elected officials, emergency managers, and infrastructure and utility entities, also participate to help guide the process and to share input related to specific processes and assets.

This timeline shows key dates of meetings and other direct engagement where feedback supported Action Plan development. **Appendix I** includes additional detail on the engagement planning process, engagement materials, promotion methods, and other engagement with municipal and state agencies.

The 12-member Community Advisory Council (CAC), made up of a diverse group of residents from each of the four municipalities, has met roughly quarterly throughout the process to provide feedback on materials, plan engagement, and ensure inclusion of historically underrepresented people.

Resilient NENJ gathered feedback iteratively in waves to correlate with key project milestones: visioning, risks and tools, solution scenarios (optional pathways to resilience), and draft recommendations. Each wave coincided with a regional community meeting to report out on progress and gather feedback, with additional city-specific community meetings in March and April of 2022.

Resilient NENJ also engaged “partner organizations,” or groups such as community-based organizations, neighborhood and block associations, and environmental groups who already have strong connections and working relationships with community members. Gathering feedback from and conducting outreach through these partner organization multiplied engagement while strengthening existing relationships and empowering local leaders to take ownership.

Engagement materials included a range of paper and digital approaches, and Resilient NENJ also gathered “anytime” feedback through the website, social media, email, a voicemail hotline in five languages, and the Irys engagement app.

KEY ENGAGEMENT STRATEGIES

WAVES OF ENGAGEMENT

- Each major milestone included its own engagement process with different investigations partnered with questions to the community and stakeholders
- Continuous integration of feedback

LEADERSHIP BY THE COMMUNITY

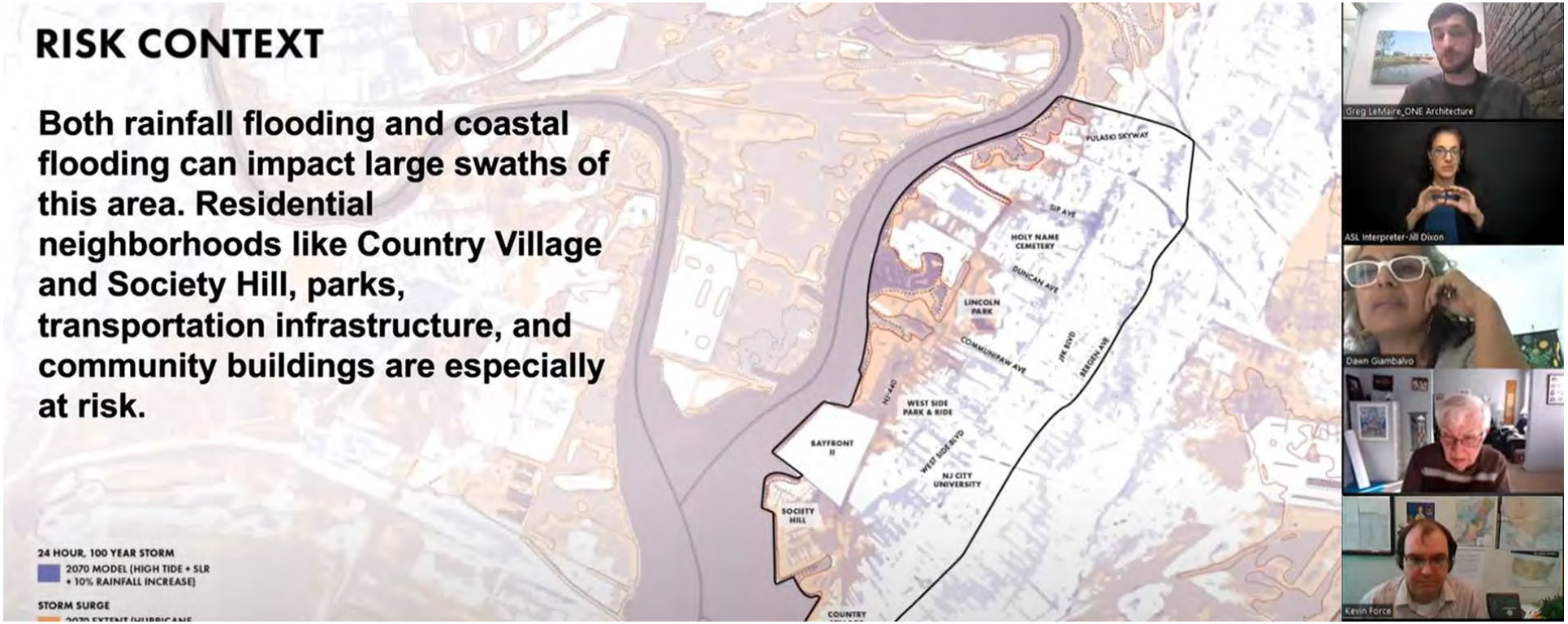
- 12 person Community Advisory Council guides the engagement process and provides early feedback
- Steering committee includes community based organizations

MULTIPLYING ENGAGEMENT

- Working with partner organizations who are already working in communities to help spread the word and share their perspectives

A VARIETY OF ENGAGEMENT CHANNELS

- Anytime engagement opportunities (eg social media)
- Project hotline in multiple languages
- In person events
- Paper and digital surveys
- Irys App
- And more...



(top) Discussion session at a NENJ virtual community meeting. Source: Resilient NENJ

(bottom) left - Residents gathered for the STEAM URBAN Earth Week Event at Kaboom Playground in Newark; right - Resilient NENJ speaking with a Newark community member as he discusses the height of the floodwaters during inundation from Hurricane Ida. Source: Resilient NENJ

ENGAGEMENT TIMELINE

TIMELINE LEGEND

- Community Meeting
- CAC Meeting
- Stakeholder Meetings & Engagement
- Outreach & Education
- Report Release
- Site Visits

5/11 &13 ENGAGEMENT PARTNER MEETINGS
Project overview, breakouts by city with community-based organizations

5/17 CROSS-REGION STAKEHOLDER MEETING
What are priority flood resilience projects for your agency / area? What have been barriers to implementation?

7/21 CAC MEETING
Feedback on community meeting #2 structure and outreach planning

7/28 COMMUNITY MEETING #2
Gaps and opportunities in ongoing projects, solution selection exercise in exploration areas

10/7 NEWARK SITE VISIT / COMMUNITY FORU
How were you impacte resources were most h additional resources we

HOBOKEN HIG
Provided g design cha to floo

4/1

PROJECT PLANNING | PROJECT LAUNCH | SPRING | SUMMER | FALL

2021

3/31 CAC MEETING
Introductions for the 12-member Community Advisory Council (CAC) of community members, project overview, where do you see flooding? What is your community vision? What would success look like for this project? What are the best ways to engage your community?

6/9 CAC MEETING
Project updates, feedback on community meeting #1 structure, community meeting outreach planning

6/10 PARTNER OPEN SESSION

5/4 JERSEY CITY & BAYONNE SITE VISIT
Visits to key areas to learn more about them, challenges they face, and visions for the areas.

7/13 NEWARK GAME OF FLOODS ACTIVITY
Organized and participated in exercise with youth to practice decision-making for flood resilience

7/13 HOBOKEN SITE VISIT
Resilient NENJ met with the Community Church of Hoboken to learn about their green infrastructure installations

6/23 COMMUNITY MEETING #1
Vision, priorities, flood impacts, community assets, evaluation criteria, draft toolkit

MEETINGS WITH INFRASTRUCTURE / CROSS-REGION STAKEHOLDERS (MULTIPLE)
What would beneficial inter-agency coordination look like? What are barriers to coordination?

11/17 COM
Intera expe and i

APR 2021

ABOUT OUR REGION

OCT 2021

VISION & PRIORITIES

T & POST-IDA
M
d by Ida? What
elpful, and what
ere needed?

H SCHOOL ENGAGEMENT
guidance to students on
allenge projects related
oding and resilience

2/2 CAC MEETING
Feedback on Community Meeting #4 structure and draft solutions

2/9 COMMUNITY MEETING #4
Overview of physical and non-physical solutions being evaluated and how they could shape the region

EARTH WEEK EVENTS
Tabling at various local community events, including STEAM URBAN Earth Week activities

FACES OF RESILIENCE CAMPAIGN
Spotlights of community organizers and local leaders who are working to increase resilience

EDUCATIONAL VIDEO SERIES
Videos on risk, resilience, and how to get involved (early stages of a Resilience 101 campaign)

HIGH TECH HIGH SCHOOL WORKSHOPS
Resilience planning workshops with juniors and seniors

WINTER | SPRING | SUMMER | GOING FORWARD

2022

COORDINATION FOR FUNDING APPLICATIONS
Coordination with municipal departments and utilities on FEMA BRIC funding applications

MMUNITY MEETING #3
active presentations from technical rts on flood preparedness, recovery, ndividual mitigation actions

CITY-SPECIFIC COMMUNITY MEETINGS
Solutions being considered in each city and how they fit with the community and risk contexts

4/24 IVY HILL SITE VISIT
Site visit and meeting with residents in the flood-prone Ivy Hill neighborhood

6/8 COMMUNITY MEETING #5
Overview of draft recommendations that will change our built environment and how we work together

6/1 CAC MEETING
Feedback on Community Meeting #5 structure, public art project, ad campaign, and Faces of Resilience

IN-PERSON EVENTS

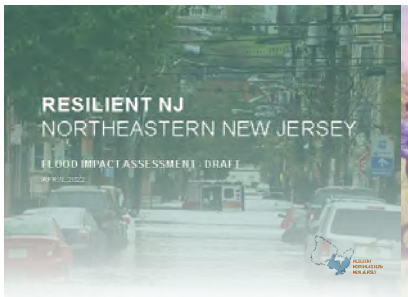
MUNICIPAL ENGAGEMENT

ADVERTISING CAMPAIGN

ENGAGEMENT PARTNER MEETINGS

CAC MEETINGS

PUBLIC ART PROJECTS



FLOOD IMPACT ASSESSMENT

CLIMATE HAZARDS

JUN 2022

SCENARIO DEVELOPMENT

SEP 2022

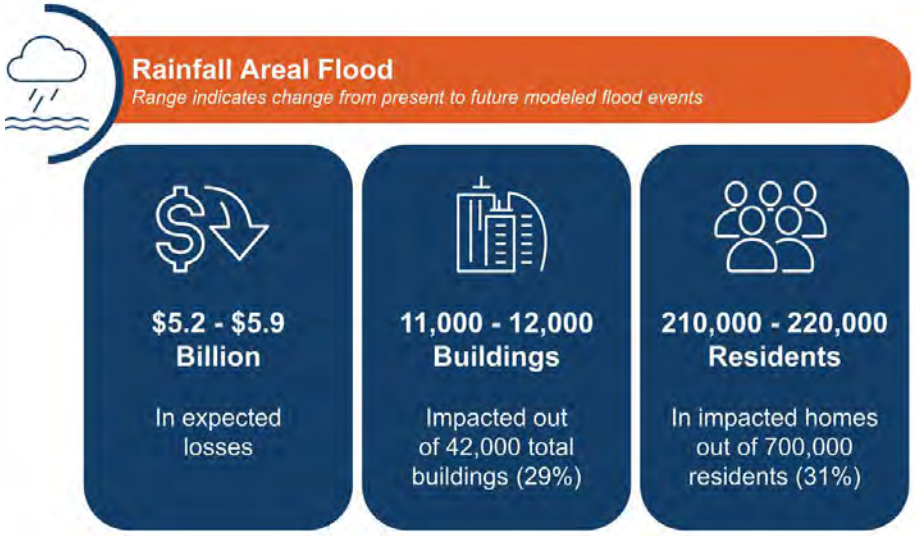
IDA AFTER ACTION

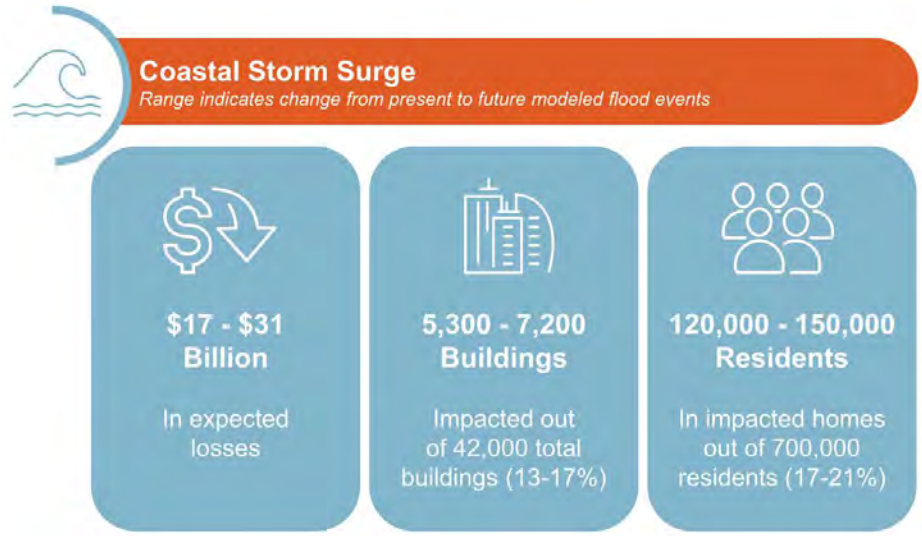
WHY IS THIS ACTION PLAN IMPORTANT?

WHAT MAKES THIS REGION UNIQUE AND IMPORTANT?

The Resilient NENJ project region includes the cities of Jersey City, Newark, Hoboken, and Bayonne, an area home to 700,000 people. This region is lively, densely populated, and heavily urbanized. It is interconnected through transportation and maritime networks, water bodies, cultures, commerce, and workers. The region is home to infrastructure and transportation systems that support the movement of goods and people to and from Newark-Liberty International Airport and the Port of New York and New Jersey, connect the region to New York City and the Northeast Corridor, and drive the economy of these areas and the country.

Many community members shared that they value the mobility these systems offer, as well as the strong sense of community and home in the region. Community members also identified the region's parks, festivals, cultural centers, places of worship, and diverse small businesses as important community places, among others (see more in the **Vision and Priorities** report).





See Resilient NENJ's **Flood Impact Assessment** and **Climate Hazards Assessment** for more on climate-related risk.

Liberty State Park wetlands

Image Source: *Hudson County Division of Planning*

RESILIENT NENJ'S *FACES OF RESILIENCE* SERIES

NENJ is an extraordinary place with a lot to be treasured, celebrated, and preserved. It is a diverse region that many people are proud to call home. At the same time, NENJ communities face challenges and risk today that stem from historical and continued inequities. For example, effects of the region's history of racially discriminatory housing practices can still be felt today in economic and health disparities. These practices, such as redlining[1], led to the settling of marginalized and minority communities – especially Black and Brown communities – in areas with high industrial activity.

In addition to Black and Brown people—due to a long history of discriminatory practices—low-income, non-English speaking, elderly, children, homeless, or physically disabled people are also more likely to need support to prepare, respond to, or recover from a flood or other disastrous event, as they are more likely to have limited financial and physical resources.

Today, these same communities face high exposure to flooding and other hazards, such as high concentrations of contaminated sites, high rates of urban heat island, and poor air quality. Because of their experience and demonstrated resilience, Resilient NENJ community members have built-in expertise on how flooding and other hazards manifest across the region, and how a program like Resilient NENJ can help ease the burden. Resilient NENJ's most socially vulnerable continue to persevere through past challenges and daily inequities, and there are extraordinary leaders in these communities helping to drive change.

[1] *Redlining is a practice seen in the early- to mid-twentieth century that involved classification of areas that were predominantly Black and Brown as riskier areas for investment, making it more difficult for people in these areas to access financial services to support home ownership. Today, redlining is often used more broadly to refer to discriminatory housing practices.*

THE RISK: CLIMATE-RELATED HAZARDS AND HOW THEY IMPACT THE REGION

The NENJ region faces a complex array of challenges associated with hazards like flooding, heat, and contamination, and the impacts on the region's people, environment, and infrastructure will continue to worsen without significant investment. The climate is changing to increase the frequency and magnitude of climate hazard events. Meanwhile, changes to the built and natural environment over time have made NENJ communities more vulnerable.

The region has a storied and complex relationship with water as a source of both vitality and destruction. It is a coastal region and much of its land was formerly wetlands that supported the Lenape people. Through colonization and industrialization, the Lenape people were displaced and the wetlands were filled, which destroyed natural ecosystems and weakened people's relationship with water while making the region more vulnerable to flooding and heat at the same time. The waterfront today, for example, offers open space, economic opportunity, and sweeping views of the Manhattan skyline, while also presenting risks like those exposed during Hurricane Sandy in 2012, the remnants of Hurricane Ida in 2021, and the heat waves of 2022.

Resilient NENJ's detailed Flood Impact Assessment investigated current and future flooding conditions and estimated the potential financial losses that the region could face from various types of flooding. As described in the Flood Impact Assessment report, the region stands to lose an estimated $6 billion from future areal (extended rainfall) flooding. Now and in the future, NJDEP models show that flooding from an intense rainfall event will be widespread and most concentrated in areas like the Ironbound in Newark and southwest Hoboken. The region is densely populated with increasing amounts of impervious surfaces, such as concrete and asphalt. As NENJ continues to grow, combined sewer systems designed for past population and rainfall levels are undersized, further contributing to flooding from rainfall and water quality and public health concerns.

In the future, NJDEP models show that storm surge flooding will affect large areas along the Hudson River, New York Bay, Newark Bay, Passaic River, and Hackensack River, and estimate $31 billion dollars in losses from this flooding. Overall, the NJDEP models predict that 280,000 residents will have their homes exposed to either rainfall or coastal storm surge flooding, representing over 40 percent of the population in the region (2 out of every 5 residents). Of these residents, half live in areas of high social vulnerability, according to the Center for Disease Control's Social Vulnerability Index (SVI). The SVI looks at fifteen different factors, such as income, language, and age to identify people who are more likely to need support to prepare, respond to, or recover from a flood or other disastrous event.

Exposure to other hazards, such as heat and poor air quality, poses risks to the health of the region's people and environment. For example, the region ranks high in the State and nation for cancer risk from air toxics and proximity to hazardous waste. Groundwater often rises along with sea level rise, and risk of groundwater rise in contaminated sites must be better understood.

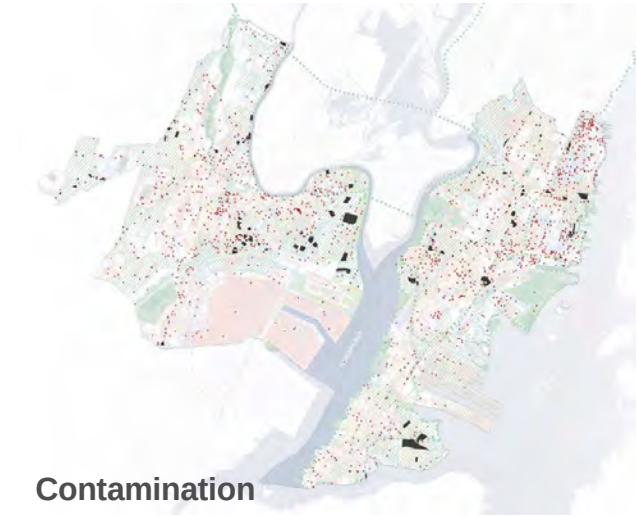
Climate-related hazards are not the only important issues for the region, which also grapples with challenges that span beyond its boundaries, such as the lingering COVID-19 pandemic, housing and affordability issues that are linked to broader economic challenges, and concerns over access and quality of education and healthcare. People in positions to address these issues must decide how to prioritize their time and resources. Fortunately, many actions that aim to increase climate resilience also address other issues.

THE SCIENCE BEHIND THE PLANNING

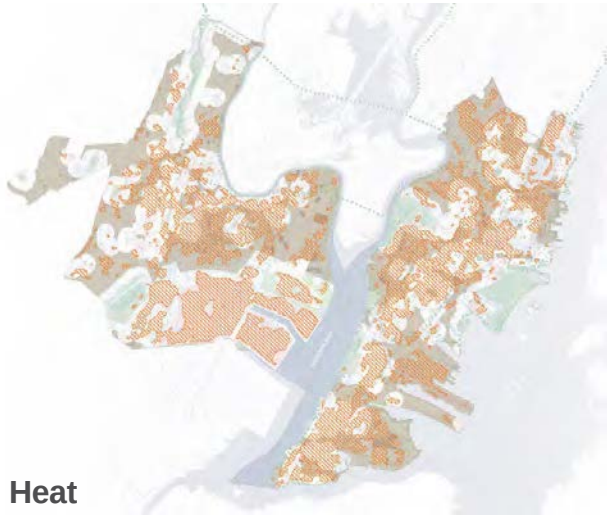
Resilient NENJ used best available scientific information about climate-related hazards and how they might change, including:

- New flood models that NJDEP developed for the Resilient NJ program.
  - These models incorporated sea level rise projections from the **2019 New Jersey's Rising Seas and Changing Coastal Storms Report by the Science and Technical Advisory Panel (STAP)**.
- Climate change projections from the **2020 New Jersey Scientific Report on Climate Change**
- Climate change projections and data available in reports from the **International Panel on Climate Change (IPCC)**
- Information on climate-related hazards and impacts through data available in the **NJfloodmapper.org** tool developed by Rutgers University (in collaboration with others)

As new data becomes available about our changing risk context, the Resilient NENJ team will need to integrate those data to ensure sound decision making over time. The **Flood Impact Assessment** and **Climate Hazards Assessment** also include recommendations for the State related to closing data gaps and for tools to address non-flooding climate hazards.



Contamination



Heat

Imperviousness

Mapped Resilience factors to be considered when siting Green Infrastructure, see **Section 3.2.3** *for more details on climate hazards.*

Data Sources: *NJGIN Open Data Known Contaminated Site List Layer - Heat severity dataset by TPL, accessed through ESRI - Parcels and MOD-IV Composite of NJ; Impervious Surface of NJ from Land Use/Land Cover (2012)*

WHAT DO OUR RECOMMENDATIONS FOR INCREASING RESILIENCE INCLUDE?

THE VISION

Through the community engagement process, Resilient NENJ asked people what they love about their communities and how they would like their communities to change in the future. This feedback helped establish a regional community vision, organized by pillars of resilience (environmental, economic, social, physical, and governance). Resilient NENJ developed the recommendations in this Action Plan with the goal of aligning with the community vision while addressing the region's unique challenges and risks.

REGIONAL COMMUNITY VISION FOR THE FUTURE

ENVIRONMENTAL

- More green space and trees
- Use of green infrastructure
- Less trash in the streets
- Cleaner water bodies

ECONOMIC

- New high-quality green jobs, and training for those jobs
- Economic diversity and preservation of small businesses

SOCIAL

- Preserve sense of home, community, and cultural diversity
- Improved cleanliness, health & safety, food access
- More affordable housing
- More parks and public spaces

PHYSICAL

- Improved access to transportation
- Improved pedestrian & biker experiences

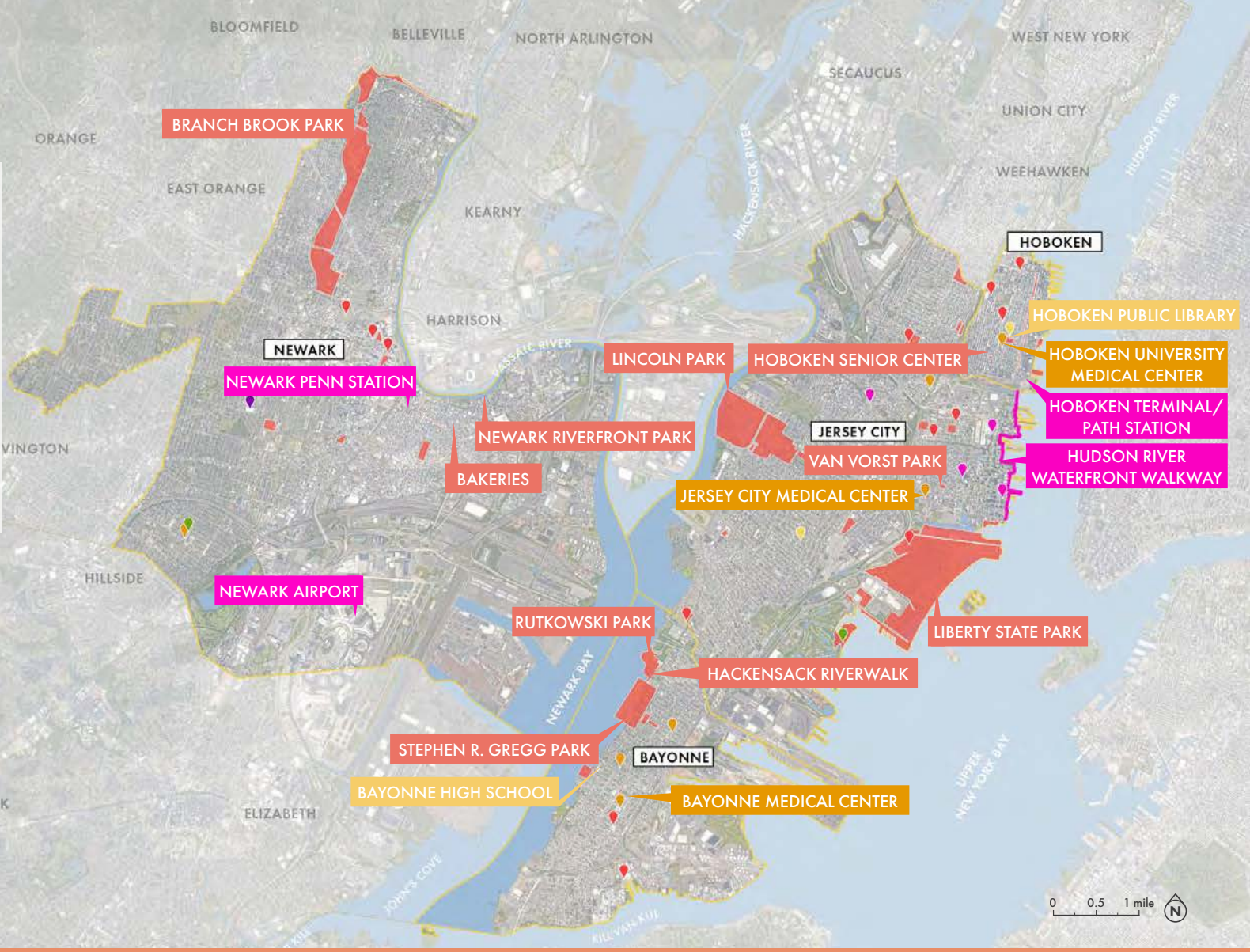
GOVERNANCE

- Greater transparency in government
- Greater public involvement and investment in relationship between government & community members

Community Identified Assets

- **Ecosystem and environmental health** (natural areas, critical habitats, etc.)
- **Health, safety, and emergency response** (hospitals, police, fire, etc.)
- **Industry and business** (industrial sites, private businesses, major employers, etc.)
- **Infrastructure** (public transit stations and routes, airports, utilities, etc.)
- **Public services and institutions** (schools, community centers, libraries, etc.)
- **Quality of life and culture** (parks, restaurants, festivals, etc.)

We heard about many places and services that are important to community members like parks, community centers, and transportation services. This map shows assets that were specifically called out to give us a general picture of the types of places that matter most.



We asked: **What do you value most about your community?**

"It's both a village and a city" **– Hoboken resident**

"I see faces like mine" **– Jersey City resident**

"Diversity of family-owned businesses! I love being able to shop local and support minority-owned businesses" **– Newark resident**

"Looking out for each other" **– Bayonne resident**

"Family-friendly feel and inclusivity" **– Jersey City resident**

THE ACTIONS

There is no silver bullet to adapt the region for climate change. The region needs different types of actions to address various sources of risk, at multiple scales, led by a range of stakeholders. Due to the sheer magnitude of risk, actions are needed on both public and private properties. The actions require a strategic array of funding sources and must be phased over time. Through extensive community and stakeholder collaboration, technical analyses, and with guidance from NJDEP, Resilient NENJ developed a multi-pronged strategy for increasing resilience.

This Action Plan proposes a range of types of actions that align with the community vision and address risk. The actions fall into one or more of five categories for solution types. Further, each action increases resilience through changes to the built environment or changes to the way that people work together. Actions can also be classified into capital projects (actions that will change the built or natural environment through construction of physical and nature-based solutions) and non-capital actions (actions that will change the way we work together through policy and governance; outreach, education, and capacity building; service and program development; and emergency preparedness or will change the built or natural

TOOLBOXES

Action Plan recommendations build off various toolboxes developed and evolved through engagement. The Flood Resilience Toolbox is available in the **Vision & Priorities** report and the Climate Hazard Resilience Toolbox is available in the **Climate Hazards Assessment** report.

ACTIONS THAT CHANGE OUR PHYSICAL ENVIRONMENT

Physical & Nature-Based Solutions

page 84

Recommended Changes to Policy & Governance

page 184

CAPITAL PROJECTS

environment through policies or programs). Within actions that change the built environment, actions may primarily address coastal flooding, stormwater flooding, or other climate-related hazards.

The recommended actions leverage, continue, expand, and multiply efforts already completed or underway within the region. Resilient NENJ documented projects, plans, and initiatives that exist separately from the program, and integrated recommendations related to these other efforts as relevant (see **Appendix A**).

The Action Plan's strategy revolves around themes of EASE, CONNECT, PROTECT, THRIVE, and REGENERATE, shown on the next page. The region's ability to THRIVE and REGENERATE should arise from pursuing the first three themes through actions that EASE, CONNECT, and PROTECT. As such, **Section 3.0** shows where actions align with the themes of EASE, CONNECT, and PROTECT.

ACTIONS THAT CHANGE THE WAY WE WORK TOGETHER

Outreach, Education, & Capacity Building

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Service & Program Development*

page 228

Emergency Response & Preparedness*

page 242

***includes some capital project aspects**

NON-PHYSICAL ACTIONS

THE STRATEGY

EASE

Recommendations seek to EASE the technical, financial, resource, and health burdens associated with climate hazards, and to “take the edge off” the highest risks and people while improving quality of life. For example, increasing green infrastructure, depending on the area and design, can help ease frequent flooding from rainfall, urban heat, and quality of water and air and can improve access to green space.

PROTECT

Recommendations lean mostly into the PROTECT strategy for flood hazard. This means keeping water out or removing it, rather than using an approach like retreat, due to the density of the region and the nature of the risk. Retreat would be a challenging strategy in this region due to the concentration of people and critical infrastructure systems, and an approach such as protect allows communities to stay intact in the near-term, while also providing ways to get people out of harm’s way during emergencies.

CONNECT

The recommendations focus on CONNECTivity – this includes walkability and access to the waterfront and green space, as well as improving collaboration, consistency, and access to information and resources.

THRIVE

By starting with our areas of most need and opportunity, by having multiple options in case a first line of defense fails, and by focusing on improvements that can connect our communities more effectively to themselves, we will position ourselves to build trust and momentum, adapt, and build capacity to THRIVE thrive in the coming century, in alignment with the identified community vision.

REGENERATE

Thriving requires that we continue to adapt, to work away at the risk, and REGENERATE our communities, as well as advance the living plan as more information becomes available.

Image Sources: *City of Jersey City; Waterfront Alliance; City of Hoboken; Newark Press Office*

THE PLAN

Due to the magnitude of risk, recommendations include significant investment in capital projects to address flooding. The recommendations restore natural functions of the environment where possible, such as through wetland restoration and areas for surface flow. The design processes can further explore opportunities to integrate nature-based solutions. Several other recommendations rely on grey infrastructure to achieve the volume of stormwater storage or height of protection needed, and lean into multiple lines of defense for a phased approach. Recommendations include opportunities to expand distributed green infrastructure wherever possible, due to the importance of increased green space, reduction in heat island effect, and other benefits associated with these projects.

Non-physical actions, not visualized on this page, are a critical piece of the Action Plan. Non-physical actions will build leadership and community capacity, increase awareness about resilience and availability of resources and information, involve community members in the solution, and keep people out of harm's way during disasters.

LEGEND
Coastal Actions
Road Raising
Flood Barrier
Bulkhead Barrier
Planned Land Raising
Areas for Adaptation
Green Street Corridor
Wetland/Living Shoreline
Greenways
Drainage Solutions
Deep Tunnel
New Parallel Interceptor
New Main
New Drainage Line
Sewer Separation
Ditch Drainage
Retention Sites
Detention Sites

HOW TO GET THIS DONE

Climate-related risk affects everyone in NENJ, directly or indirectly. Just as climate risk is ubiquitous, implementation requires coordinated action across many different types of actors at multiple scales and dedicated funding from a variety of different sources. Everyone has a part to play, but someone will always need to take the lead. The leader will vary depending upon the action.

Advancing the recommendations will involve reconfiguring existing capital and operational programs to focus on resilience elements. The region may need new funding sources, programs, and departments or entities dedicated to resilience measures.

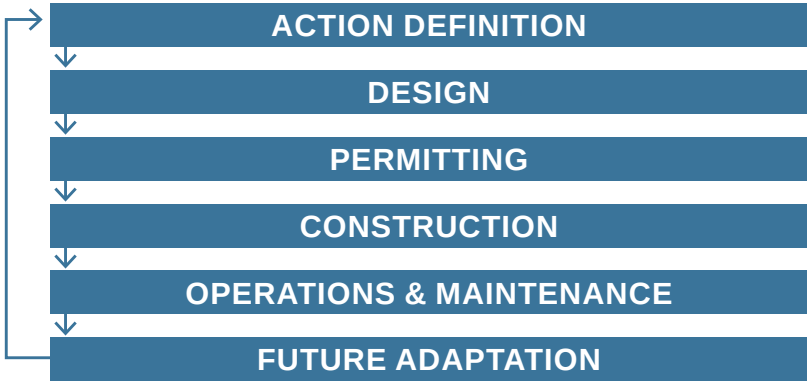
Implementation costs will vary significantly for each action. Some actions, such as providing additional information on websites, require little to no additional allocation of funds. Other actions, such as hiring additional staff dedicated to resilience, may not have high price tags but will require new allocations of funds. Costs for other actions, such as physical flood barriers, could vary significantly depending on the location and be upwards of hundreds of millions of dollars to design and build.

Feasibility studies will refine approach, design, costs, and schedule for major capital investments recommended in this Action Plan. Implementation of other projects, political will and public support, and funding availability will also affect factors such as cost and schedule. Further, Resilient NENJ exists in a dramatically changing risk context that scientists, planners, engineers, and others are all actively working to understand and anticipate. As new data and science emerge, and the people, places, and needs of the region evolve, new and different actions may be needed. As such, Resilient NENJ's Action Plan should be considered a living document.

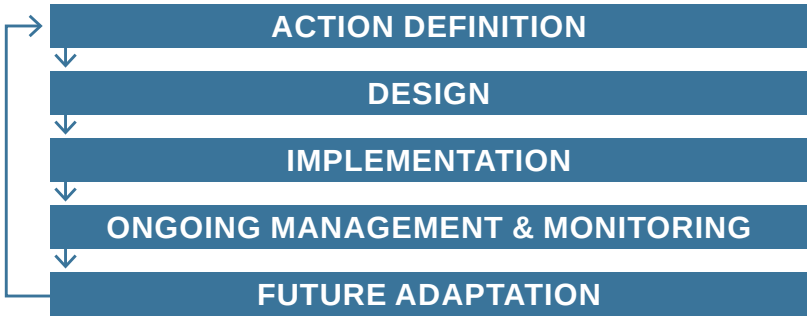
The Action Plan summarizes individual actions, providing high level cost estimates, roles by stakeholder, and information about key considerations and evaluation criteria for each (see Section 3.0). The roadmap outlines timelines for implementation and ideal sequences, identifies responsible parties and support needs, projects year-over-year cost needs, and ties actions to funding sources (see Section 5.0).

What are the stages of implementation for...

An action that will change the built or natural environment through construction?



An action that will change the way we work together or a policy or program that will affect the built and natural environment?



This Action Plan covers a large geographic area and a broad range of solutions. Physical and nature-based solutions that involve construction will need feasibility studies and conceptual and detailed design before progressing to construction. Next steps for non-physical solutions may include more detailed program development, writing of ordinances or codes, or planning and implementation of engagement.

THE RESILIENT NENJ REGION BY THE NUMBERS

4 municipalities

700,000 residents here today

46 square miles

65 miles of coastline

Over $81B in total economic output with 385,800 employees[2]

40% of existing land is fill

About 20% of the region's population lives below poverty level.[3] 2/3 of the population lives in the highest quartile of social vulnerability, and 1/3 lives in census tracts above the 90th percentile of social vulnerability, based on the Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI).[4]

>1,800 known contaminated sites

>$30B in expected losses from a future Hurricane Sandy[5]

>$5.2B - 5.9B in expected losses from a major rainstorm[6]

Approximately $13B in projected new investment regionwide needed over the next 20 years

Recommended reassessment every 5 years

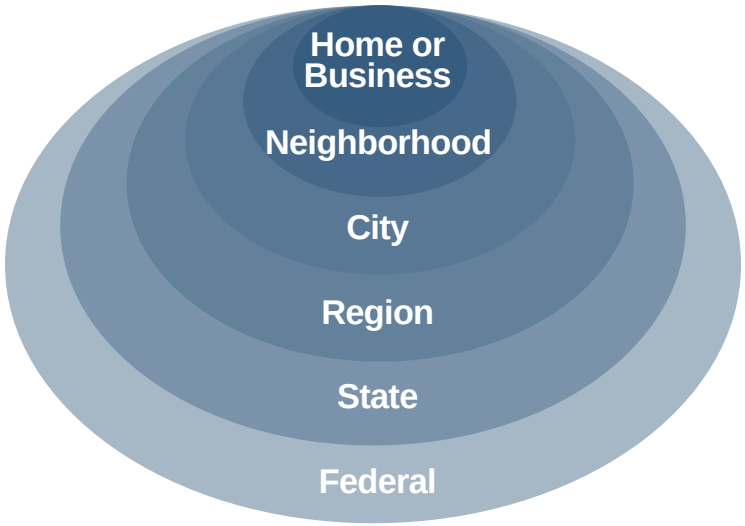
[2] *Based on 2019 IMPLAN data*
[3] *Based on 2021 US Census Bureau Population Estimates Program data*
[4] *2018 CDC Social Vulnerability Index*
[5] *Hurricane Sandy 2012 high water marks with 2.4 feet of sea level rise*
[6] *8.3 – 9.2 inches of rainfall over 24-hours*

IMPLEMENTATION OF THE RESILIENT NENJ ACTION PLAN WILL REQUIRE

LEADERSHIP COORDINATION FUNDING

FROM WHO?

AT WHAT SCALES?



BY WHAT MEANS?

- Continuation of Resilient NENJ as a coordinating and leadership body
- Local, regional, and state subgroups to provide focus and drive specific initiatives forward
- Direct funding allocations, grants, staff resource allocation, refinement and refocusing of existing planned investment, and possibly new revenue generation.

WHEN?

The time for action is now. Resilient NENJ proposes implementing these initial recommendations over the next 20 years, with significant activity around capacity building, funding, and initial next steps over the next three years. This is because most of the recommended actions are needed now based on current climate risk in the region. Resilient NENJ recommends reassessing and updating the plan every 5 years, with ongoing coordination toward implementation.

THE NEXT THREE YEARS

This Action Plan and the other efforts that are ongoing in the region are just the beginning of the process to create a more resilient NENJ. In the near term, priorities to continue advancement of this Action Plan include:

1. Creation of resilience committees at different levels of government and infrastructure agencies (including creation of an Infrastructure Coordination Council) and coordination between representatives of each and Resilient NENJ
2. Allocation of funding at the federal, state, regional, and local scales to support advancement of recommendations and increased staff capacity
3. Coordination on funding programs and approvals processes at the State level to facilitate advancement of multi-functional projects
4. Alongside #3, creation and advancement of a pipeline of parks, contaminated sites, vacant lots, or other sites to convert to green space and other uses with flood mitigation and climate resilience components
5. Program development and continuation of outreach initiatives as a collaboration between Resilient NENJ, the municipalities, community-based organizations, and academia
6. Advancement of the capital projects and strategies identified in **Section 3.0** and **Section 5.0** of the roadmap, while striving for a “dig-once” approach to construction

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

RESILIENT NORTHEASTERN NEW JERSEY