

NJTPA

Resilience Hubs

A COMMUNITY ROADMAP

MARCH 2026



NJTPA

NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

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executive summary

introduction

Current and future patterns of rising temperatures and increasing precipitation in the Northeastern United States may exacerbate extreme weather events, such as heat waves, fires, floods, hurricanes, and tropical storms. These events can lead to negative repercussions for air, water, and land quality over time. In response, communities—especially those historically under-resourced—need to be equipped to withstand these increasingly intense and threatening conditions.

A resilience hub is a multi-functional place crucial to providing community support and offering services and resources before, during, and after extreme weather events.

During the planning process for [Resilient NJ Northeastern New Jersey's Action Plan: A Roadmap to Resilience \(October 2022\)](#), communities “expressed the need for a single place to go for resources and information before, during, and after disasters.” Resilience hubs can provide a host of ongoing economic, social, and ecological benefits to the community. They can provide information on extreme weather preparedness and recovery. During extreme weather events, resilience hubs can provide shelter, blankets for cold weather, water bottles for hydration during heat waves, and chargers to keep electronic communication devices powered. Resilience hubs can also directly reduce the risk of flood damage and extreme heat impacts through stormwater management infrastructure and green space. With distributed power, resilience hubs can provide reliable electricity and heat when the rest of the power grid may be down. Additionally, resilience hubs can be leveraged to develop and enhance social services and programs, while also building connections and operational capacity to improve the overall welfare of communities year-round.

As mentioned in [Resilient NJ Northeastern New Jersey's Action Plan \(2022\)](#), “It is important for people to be familiar with and trust a resource before they urgently need it – it is difficult to use new resources while in crisis.” Building a resilience hub is not creating a new building from scratch; rather, it’s about enhancing an existing facility with additional resources related to extreme weather, and hardening the facility against storm events.

Resilience services and resource needs vary by community and are influenced by factors such as the built environment, geographic features, and the socio-economic makeup of its residents. For example, the Newark Ironbound Resilience Hub assessed the Ironbound Neighborhood, identified flood risks due to its close proximity to the Newark Bay, and used a Social Vulnerability Index to identify key environmental and social needs. Using this information, the Ironbound team applied strategies to increase resilience in these areas. Drawing on this example and others of successful resilience efforts in New Jersey and beyond, resilience hub locations should be informed by community engagement around what places are trusted community centers, and needs before, during, and after extreme weather events. This guide provides a menu of options for localities to select from when planning a resilience hub. Ultimately, this guide is intended to help municipalities that wish to increase their ability to withstand and bounce back from extreme weather events through the implementation of these community-serving centers.



Fig.1. Green infrastructure, Hoboken, NJ

how to use this guide

New Jersey communities can use this guide as a starting point for creating resilience hubs. This guide is organized into the following parts:

Roadmap: The Community Roadmap to Creating Resilience Hubs has six steps:

1. **Build** the Team
2. **Assess** Community Vulnerabilities and Needs
3. **Engage** Additional Team Members
4. **Select** the Site
5. **Reinforce** Structures and **Invest** in Capital Improvements
6. **Implement and Maintain** Operations

The Roadmap section of this guide describes considerations for each of these six steps to create a resilience hub.

Toolkit: Resilience hubs' operations may be split into **two main components: emergency services and ongoing services**. Emergency services are focused on the before, during, and after responses to extreme weather events, while ongoing services refer to the hub's day-to-day functionality and provision of resources to the community throughout the year. The Toolkit section includes a collection of resources for extreme weather event preparedness and response as well as ongoing services like job training. The Toolkit also profiles potential **resilient enhancements to existing facilities** like electric vehicle infrastructure and biophilic design. The Toolkit also has resources to aid in **finding funding sources** to support the financial sustainability of the hub.

Case Studies: Case studies profile resilience hubs in New Jersey, California, and Massachusetts.



Fig.2. Green infrastructure outside City Hall, Jersey City, NJ

roadmap

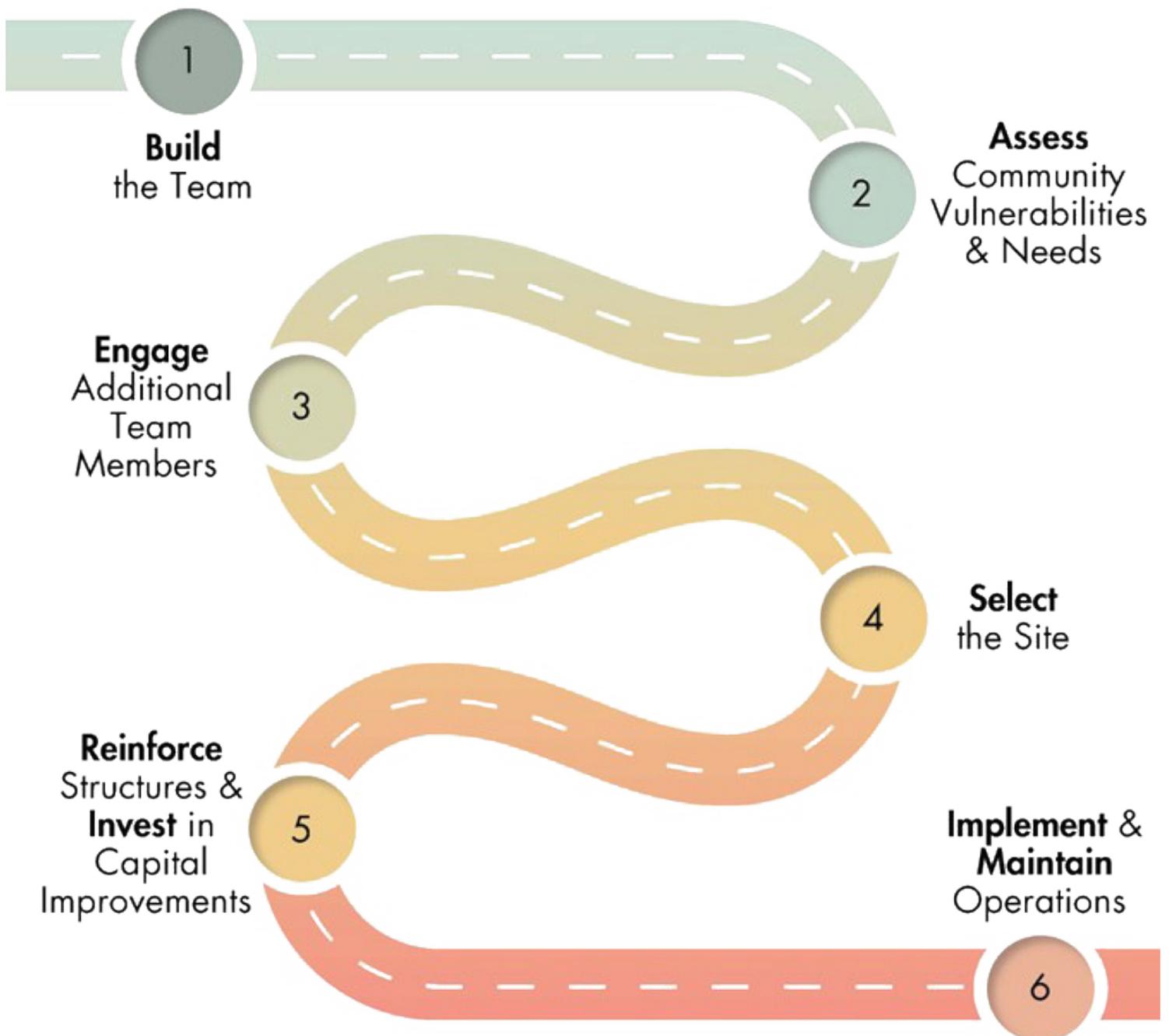


Fig.3. Community Roadmap to Creating Resilience Hubs

01.

Build the Team

For a resilience hub to be effective, it should be an existing “community gathering space,” where people already go for trusted information according to [Resilient NJ Northeastern New Jersey’s Action Plan \(2022\)](#). First, build a team to determine what facilities are trusted places and what community needs are before, during, and after extreme weather events. The team members should consist of community members, experts, representatives, residents, and community-based organizations. All team members should be:

- well-informed on the community’s needs and specific sub-groups, and
- work to build trust where necessary.

Team members should also have the skills to support municipal functions during and after an extreme weather event. The skills required may vary from place to place, and over time based on the community needs and particular organization of the resilience hub. To accommodate these potential changes, the team must be adaptable and resilient.

Building Capacity

It is critical for resilience hubs to have sufficient capacity to support and maintain operations. Its operational capacity is linked to staff numbers, skills, and interests. Each hub’s capacity can be expanded through an active network of participants: residents, small business owners, and community leaders. A **Community Advisory Board** comprised of these stakeholders should meet regularly. To begin, this Board should work to create community-informed goals for the resilience hub.

Assembling a Community Advisory Board that is representative of the community that the resilience hub serves can also enhance its success in delivering services equitably.

Power Mapping

Once the team’s goals have been established, smaller teams should assemble with a leader, manager, and other participants motivated to provide input, exchange ideas, and contribute to reaching a common goal. Other individuals and institutions may cooperate with these teams to support these goals. The teams may wish to determine priority engagement and involvement from stakeholders and other relevant parties that will guide the team to its goals. This approach is referred to as **power mapping**, which the National Education Association defines as “a way to identify who has power in the community, and to figure out what will move those individuals or institutions to do whatever it is that you want them to do” ([NEA 2023](#)).

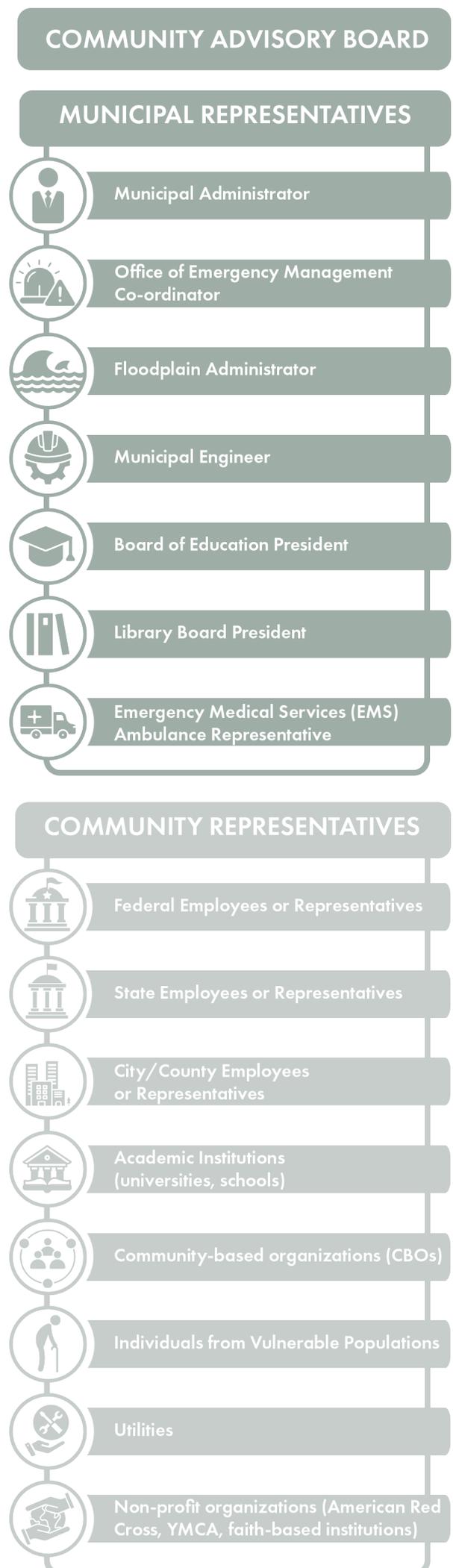


Fig.4. Composition of the Advisory Board

02.

Assess Community Vulnerabilities & Needs

The next step in creating a resilience hub is to determine the vulnerabilities and needs of the community it will serve. This may include a vulnerability assessment that determines who is most susceptible, which community assets are most vulnerable, and the current approaches taken to respond to threatening conditions. This process will involve analyses that examine and evaluate present and projected climate conditions and extreme weather susceptibility and conditions, such as flooding and heat, across the area. The resilience hub will primarily aim to decrease risk exposure, reduce sensitivity to stressors, increase capacity to respond to changes, and increase services for those anticipated to be affected the first and the most by extreme weather events due to underlying vulnerability.

Additionally, a **community needs assessment** can be utilized to determine the type and quantity of resources and services needed for the specific community. A community needs assessment involves describing a community's demographics, relationships, and priorities to determine the necessary solutions to community challenges, and what is needed to build capacity. This will allow the team to understand:

- what capital improvements are necessary
- building capacity, services and resources offered
- operational capacity
- maintenance protocols
- funding required for improvements

The community needs assessment can then feed into creating a functional resilience hub that will offer preparedness, safety, and security for individuals and families living and working in these communities. For example, resilience hubs can also be a source of economic growth by providing job training programs and employment to residents. By promoting economic growth, resilience hubs can enhance a community's capacity to address the impacts of extreme weather events.

As previously mentioned, the geography of a location will impact the community's disaster-related needs, but other factors to consider include demographics, the state of local critical infrastructure, and municipal capabilities. Factors to consider when assessing community vulnerabilities & needs include, but are not limited to:

- Municipal revenue streams
- Population size
- Power sources and reliability
- Site vulnerabilities
- Utility agreements
- Food supply
- Health and medical supplies, and
- Insurance requirements

Planning documents that can inform community vulnerabilities and needs include the municipal Master Plan and the county's Hazard Mitigation Plan (available through the county's Office of Emergency Management).



Fig.5. Flooding in NJ

Hazard mitigation plans are available for every county in the NJTPA region and must be updated every five years by federal law. They include a community profile, risk assessment, capability assessment, and mitigation strategy for all natural hazards that may impact a community.

Identifying and supporting vulnerable populations

When conducting vulnerability assessments or community needs assessments, special attention should be paid to vulnerable and at-risk populations. The following populations are often excluded from planning processes and do not have access to adequate warning and evacuation systems:

- People and businesses in high-hazard exposure areas
- People with disabilities (apparent and non-apparent)
- Low-income
- Limited English Proficiency (LEP)
- Renters, new residents, communal/public housing
- LGBTQ+ individuals
- Unhoused people

It is critical for resilience hubs to play a role in improving outreach and emergency planning for these community members. These groups are more likely to lack information related to evacuation protocols or have reliable access to communication channels. Below are a few recommended solutions for providing inclusive service:

- Provide translated materials for those with LEP
- Distribute informational materials digitally and non-digitally
- Distribute materials through community-based organizations (CBOs), neighborhood organizations, libraries, schools, houses of worship, and via door knocking, handing out flyers, and event tabling
- Employ outreach ambassadors (local community members/leaders) to distribute informational materials and resources to vulnerable populations.

Adequate care for people with disabilities, seniors, and children may require unique training and materials. Trust between staff and community members must be built and maintained to serve all community members and provide quality assistance in times of need.

03.

Engage Additional Team Members



Based on the results of the community vulnerabilities and needs assessment, the team may need to expand to include new stakeholders that represent previously unidentified community-trusted institutions that may be good candidates for a resilience hub. Engaging stakeholders and the public is an initial step but should be ongoing throughout the resilience hub implementation process.

Fig.6. Bike rodeo outreach for the NJTPA Long-Range Transportation Plan, Piscataway, NJ

04.

Select the Site

The resilience hub's location should be informed by the community needs assessment conducted in Step 2. The resilience hub should be centrally located to allow for easy, equitable accessibility.

Some places to consider are publicly owned facilities such as schools, libraries, and recreational facilities; or houses of worship. Below are a few site considerations based on potential hazard exposure:

	POTENTIAL HAZARD	DETERMINING EXPOSURE
FLOODING	Buildings in coastal areas or next to bodies of water are at the greatest risk of flooding, but heavy rainfall can drastically damage buildings in any area. Retrofits can be technically and financially impractical for most properties. If selecting a site outside of the floodplain is not an option, the hub must be structurally reinforced and readily equipped to avoid water intrusion and damage.	<ul style="list-style-type: none"> To view indicators of potential flood risk on or near a potential resilience hub site, use the New Jersey Flood Indicator Tool. For properties not located within a flood zone, combined sewer-stormwater systems can cause flooding. You can find where combined sewer outfalls (CSO) are located by viewing the NJDEP CSO Outfall Map. Combined sewer maps are also available.
EXTREME TEMPERATURE, WINTER STORMS AND BLIZZARDS	Buildings with little natural ventilation and poor insulation provide less protection against heat waves and winter storms. Additionally, power grids and HVAC systems become overburdened during extreme temperatures. Urban heat island effect can also make heat waves worse.	<ul style="list-style-type: none"> The Federal Emergency Management Agency (FEMA), National Oceanic and Atmospheric Administration (NOAA), and the NJ Climate Change Resource Center provide tools to assess risks of long-range changes in weather and climate. You can use the NJ ADAPT suite of tools for easy access to information about long-range changes in climate for the municipality.
HURRICANES, TROPICAL STORMS, NOR'EASTERS, & EXTREME WINTER WEATHER	As heat increases and storms become increasingly severe, municipalities need to build capacity to withstand spikes in demand for gas and electricity (Rutgers 2020). Resilient utilities can prevent loss of power in residential and commercial areas. With the rise of electric vehicles, special attention must be paid to stable and abundant charging infrastructure for these automobiles, especially prior to and during hurricane evacuations.	<ul style="list-style-type: none"> Some energy utility companies provide information on the history of power outages for municipalities. This information can inform decisions on energy upgrades and retrofits. Power outages are discussed as a cascading impact in the 2024 State of New Jersey All-Hazard Mitigation Plan in Section 4.6 Extreme Temperature; Section 4.9 Hurricane, Nor'easter and Tropical Storm; Section 4.11 Severe Weather; and Section 4.11 Severe Winter Weather.

Fig.7. Adapted from Enterprise Community. (2022). Strategies for multifamily building resilience. <https://www.climatesafehousing.org/>

05.

Reinforce Structures & Invest in Capital Improvements

Design Standards

As mentioned before, building a resilience hub is not creating a new building from scratch; rather, it's about enhancing an existing facility and hardening the facility against extreme weather events. The material structure of the resilience hub must be reinforced and properly maintained to ensure physical resilience to the impacts of extreme weather events and ongoing stressors.

Actions to make the facility itself resilient can include:

- Using hazard-resistant materials for the structure's exterior
- Elevating structures
- Retrofitting structures
- Floodproofing structures
- Elevating or retrofitting utilities

To better understand flood damage resistant materials, floodproofing, and compliance with the National Flood Insurance Program, refer to FEMA's [National Flood Insurance Technical Bulletins](#).

In addition to compliance with federal regulations, resilience hub improvements must also comply with state regulations; note that on January 20, 2026, NJDEP adopted the REAL rule amendments that significantly amend the Coastal Zone Management rules, the Freshwater Wetlands Protection Act rules, the Flood Hazard Area Control Act rules, and the Stormwater Management rules. More information is available at dep.nj.gov/njreal/.

Resilient design guidelines and best practices documents can inform strategies that go beyond code requirements for enhanced, long-term resilience. The City of Hoboken's [Resilient Design Guidelines](#) describe standards and guidelines for foundation design, mechanical systems and utilities, flood resistant materials, floodproofing, streetscape and accessibility and parking.

The municipality and Community Advisory Board may set certain design standards that developers and other partnering architects and designers must meet when reinforcing the facility. Setting such standards is a way to enforce sustainability measures to ensure that the hub is proactively working to integrate nature-based solutions into the design. There may be a need to strike a balance between what is required and what is suggested, and this criterion may be negotiated between developers and municipal agencies through their public private partnerships as fit. Nevertheless, depending on the resources available, the resilience hub could serve as an exemplary model for sustainable design for the community.

Fig 8. Sustainable and Resilient Materials lists examples of sustainable and resilient materials. For more information on sustainable and resilient design elements, see Part II.

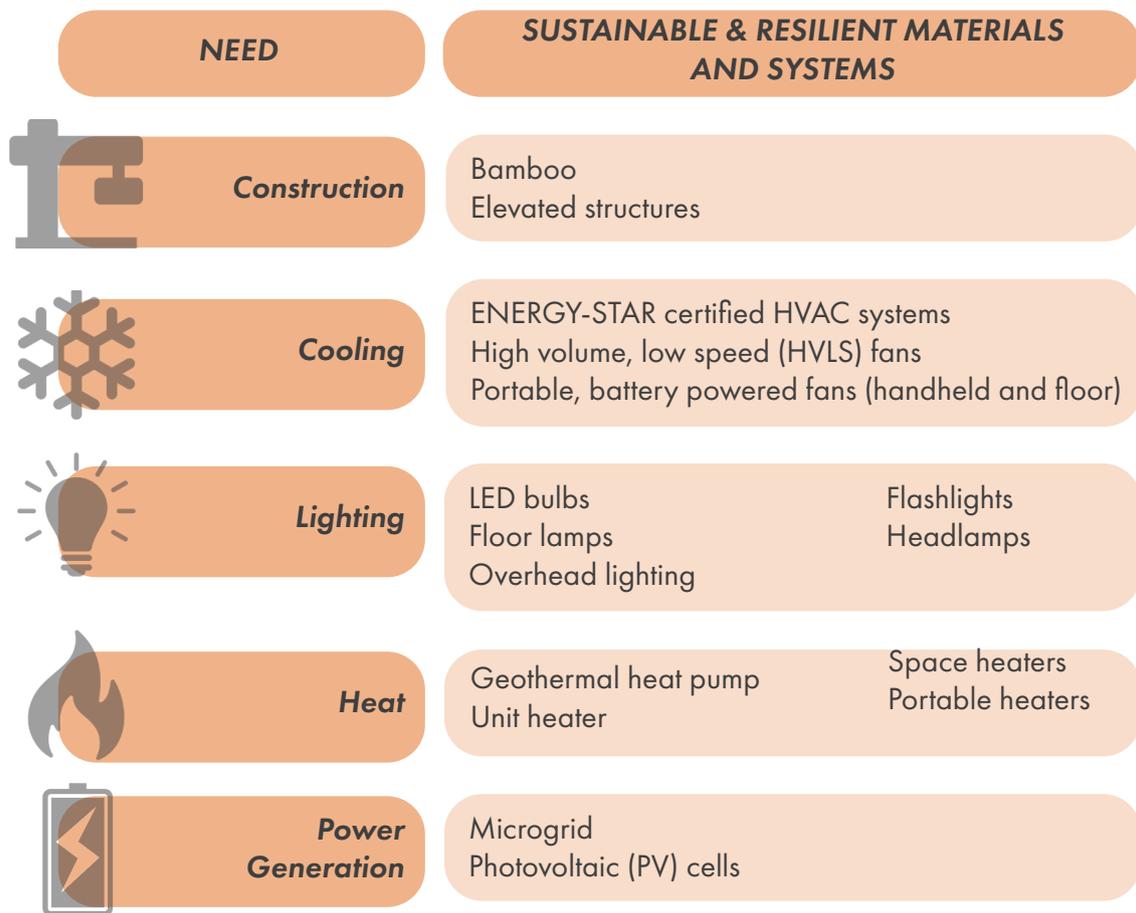


Fig.8. Sustainable and Resilient Materials



Fig.9. Solar panels on the roof



Fig.10. Green roof on the Javits Center, NYC

Stormwater Infrastructure

The [NJ Stormwater Best Management Practices Manual](#) provides guidance for meeting the stormwater management rules at N.J.A.C. 7:8, which are mandatory for new major development. This guidance profiles the design criteria, considerations, and maintenance of stormwater best management practices that can be integrated into structures and landscapes, like:

- [Green roofs](#)
- [Pervious paving systems](#)
- [Small-scale bioretention systems](#)

Additional resources for stormwater infrastructure guidance include NJDEP's [Stormwater Infrastructure Toolkit](#) and New Jersey Future and New Jersey Builder Association's [New Jersey Developers Green Infrastructure Guide 2.0](#).



Fig.11. Green infrastructure, Hoboken, NJ

Power Generation

More resilient utilities that can provide a sustainable source of power during severe weather events can help to mitigate economic losses induced by loss of service – especially on the coast. To increase the resilience of the facility itself, it will need to be equipped with reliable heating, cooling, and electricity. It is recommended that these systems are powered by **distributed energy**, which describes technologies that can generate electricity at or near where it's going to be used. Examples of distributed energy include solar panels, combined heat and power, and emergency backup generators ([U.S. Environmental Protection Agency 2025](#)). Distributed energy can power a single building, or it can be part of a **microgrid**. In a **microgrid**, distributed energy technologies and energy-using structures form an interconnected system that can operate independently of the main power grid ([FEMA 2025](#)). Distributed energy can provide a more reliable source of power during extreme weather events when the main power grid is impacted. Since constant, reliable power is critical to maintaining operations at resilience hubs, distributed energy in general and microgrids in particular should be considered during the design phase. Microgrids can be powered by a mixture of energy sources, and an analysis of the study area can reveal which sustainable technology is best suited to the location and community needs.

Resilience hubs can generate electricity through microgrids to power EV charging stations and/or portable electric vehicle (EV) chargers. EVs can also help power the microgrid. With EV ownership increasing yearly and the current high demand for EV charging infrastructure, there is an opportunity to double the benefits of microgrids. Communities can leverage programs such as the NJDEP's It Pays to Plug-in, Electrify America and other funding sources to build EV charging infrastructure and integrate EV stations into their microgrids.



Fig.12. Green infrastructure, Hoboken, NJ

Resilience hubs could also increase service coverage area with electric mobile hubs – i.e., an EV resilience hub truck or even a green fleet. These trucks could be equipped with the same essential materials that the resilience hub proper would be--blankets for cold weather, water bottles for hydration during heat waves, and chargers to keep electronic communication devices powered during extreme weather events. Like the brick-and-mortar resilience hub, the mobile ones would have a dependable food supply and basic health and medical supplies for emergencies.

To maintain open communication channels, the resilience hub will need to be equipped with reliable Wi-Fi, which may come from a satellite internet system with broadband internet.

06.

Implement & Maintain Operations

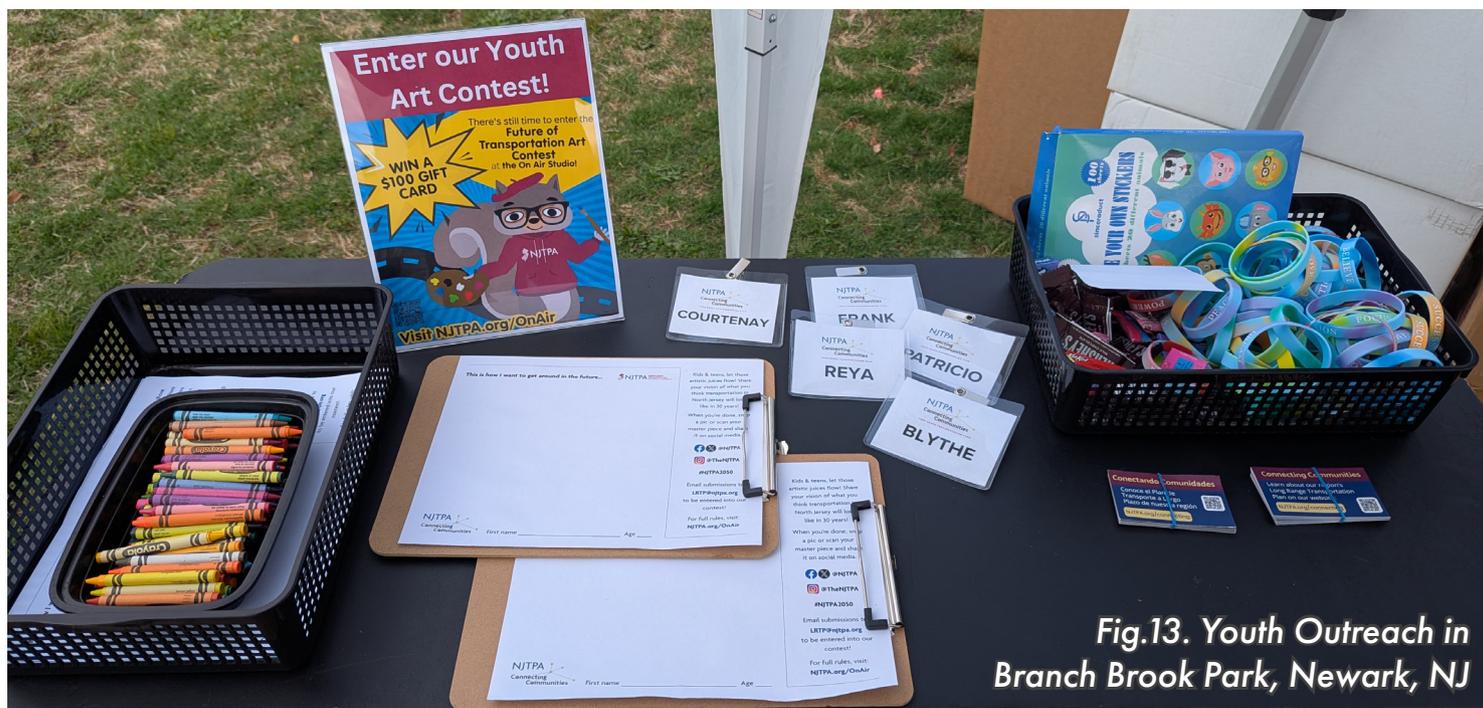


Fig.13. Youth Outreach in Branch Brook Park, Newark, NJ

Resilience hubs should be managed by an assortment of community members who make up the team and may also include volunteers. Resilience hub staff should reflect the characteristics of the community members that it serves. There should also be a process of gathering data and feedback from external community members through public participation and outreach. This may be done in the form of regular meetings, surveys, event tabling, handing out flyers, door knocking, etc.

The Operations & Maintenance for the resilience hub should be set by a plan that documents the standard policies and procedures related to the staffs' and volunteers' roles, emergency communication protocols, agreements with partners, and inventory of resources. This may include tabletop exercises and drills to test the

plan under realistic stress conditions (for example, a simulated 48-hour power outage). The results of these exercises/drills may then be used to refine the hub's policies and procedures. Additionally, procedures should always be formally shared across all participants to ensure that managers can trigger a coordinated emergency response by the resilience hub as quickly as possible.

Within these plans, there should also be an internal response assessment that measures outcomes against performance indicators such as community members reached, response time, hours volunteered, and equity of service distribution. These findings should feed into iterative updates of the operations and maintenance plan, volunteer training curriculum, and capital-replacement schedules.

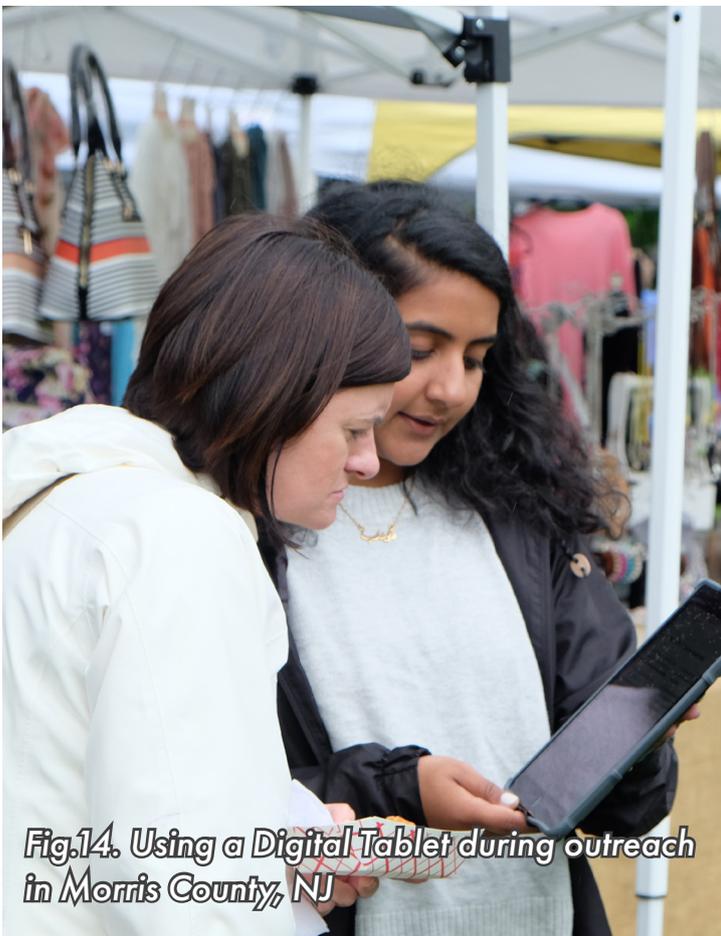


Fig.14. Using a Digital Tablet during outreach in Morris County, NJ

To keep the hub financially stable and resilient, revenue streams should be combined and diversified, sourced from federal and state grants, state incentives, municipal funds, and philanthropic donations. The proceeds may then be reinvested into maintaining the resilience hub's infrastructure and services. These feedback loops and funding mechanisms can help the resilience hub remain operational over time while adapting to the changing conditions and the community's evolving needs. Working together, the operational capacity of resilience hubs can be expanded, and through regular meetings and proactive engagement, the resilience hub's operations can adapt as needs change over time.



Fig.15. Outreach during a Lunar New Year Event

toolkit

Emergency Services

Emergency Readiness

Nature can be unpredictable, so it is imperative that a resilience hub demonstrates preparedness and readiness **before** any extreme weather event. The team should make sure that all necessary equipment is ready and functional, so that when disaster strikes, the community will be able to respond readily and mitigate damage and catastrophe.



Fig.16. Emergency communication equipment



Fig.17. Emergencies supplies

Inventory

Inventory should be taken on a regular basis, ensuring that supplies are stocked to the level necessary for the population served. There should also be backup provider networks in case supply chains are disrupted. Resilience hubs can partner with local organizations to ensure these needs are met. It is best practice to overestimate supplies rather than underestimating, ensuring the hub is always adequately equipped in times of emergency.

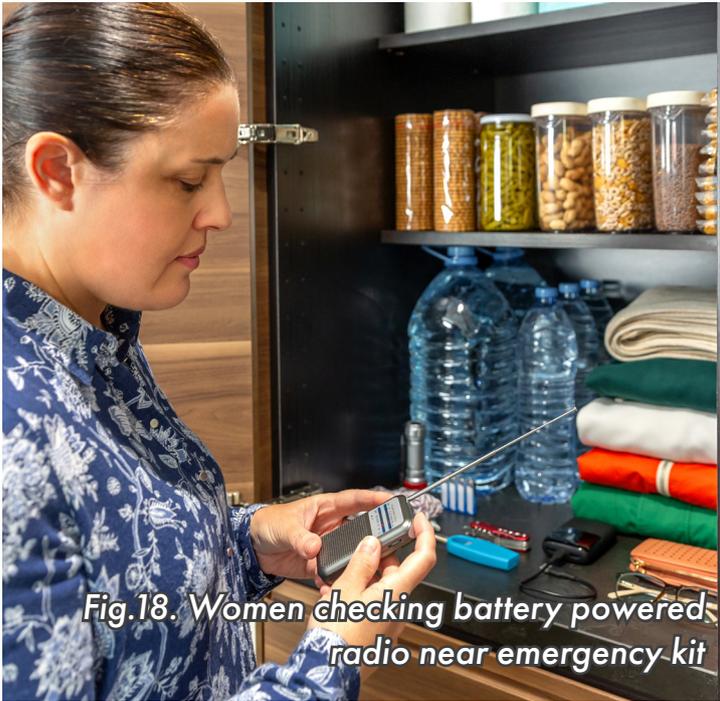


Fig.18. Women checking battery powered radio near emergency kit

Communication Channels

Communication channels and devices should also be checked and monitored so that information can be distributed across networks. Since intense storms often affect power systems, resilience hubs can help community members who may not be able to reach friends, family, and other emergency providers if the Wi-Fi is down or if personal communication devices cannot be charged at home. For this reason, it is important that resilience hubs have a reliable, internal power supply that can power communication devices. It is also a good idea for resilience hubs to have their own communication devices such as laptops, computers, walkie-talkies, and cell phones. News media outlets that require TVs, cable, and electricity are also recommended.

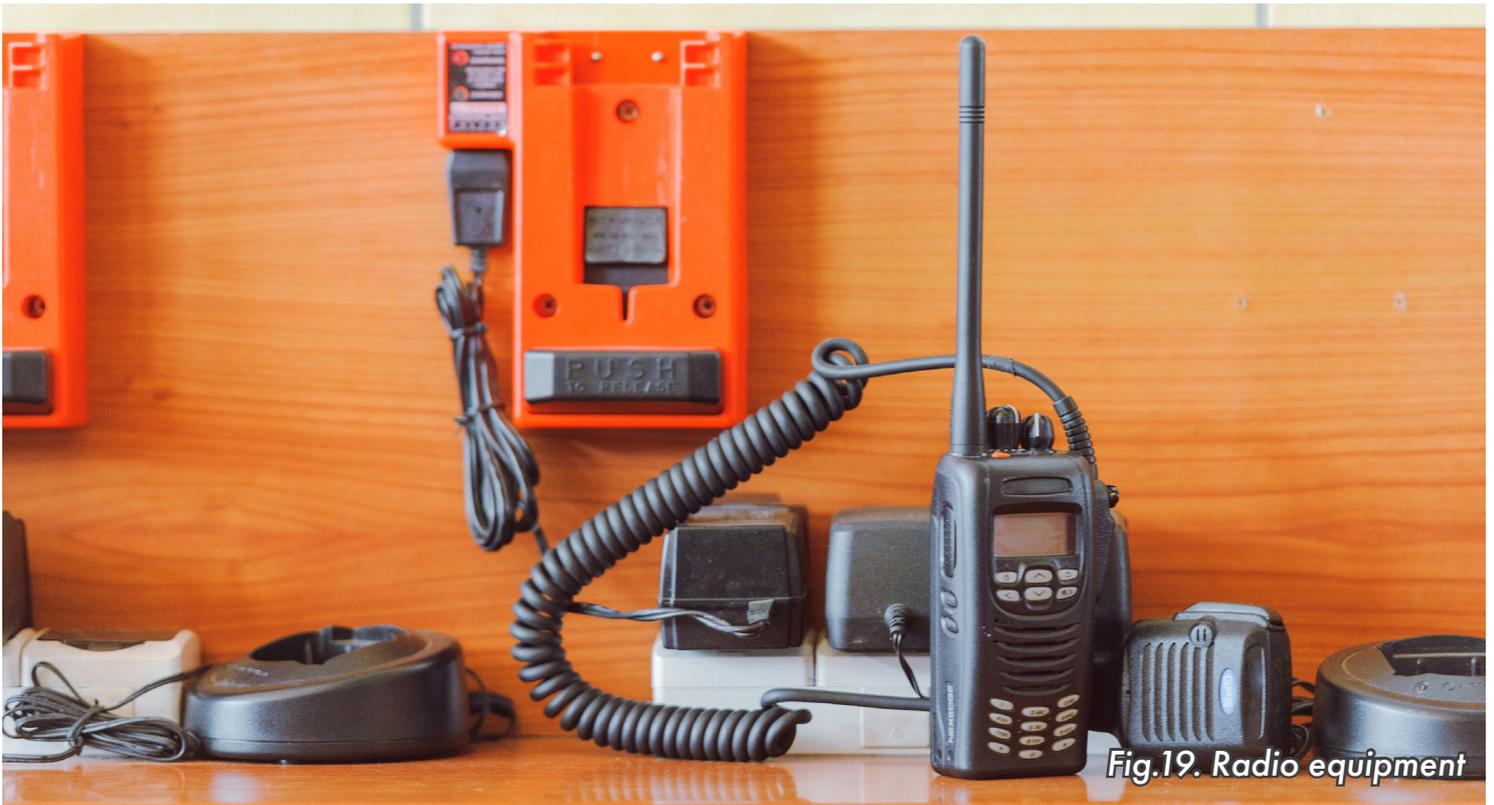


Fig.19. Radio equipment

Team Training

It is imperative that team members, whether staff or volunteers, be trained in emergency readiness prior to an extreme weather event. Team members should be trained to operate equipment and be able to perform readiness protocols. This may include taking stock of inventory, connecting and reaching out to the community, and carrying out maintenance procedures. Resilience hubs cannot be expected to provide all training necessary in-house, so hired or volunteer skilled professionals may close this gap.

There are several training programs that the resilience hub team may access to gain the skills required for proper emergency preparation. The [Urban Sustainability Directors Network \(USDN\)](#), [National Oceanic and Atmospheric Association \(NOAA\)](#), [MetEd](#), [VOAD](#), [CDC](#), [FEMA](#), and the [American Heart Association](#) are all organizations and agencies that offer relevant resources and training programs.

Types of training may include:

CPR and first aid: [American Heart Association](#)
Volunteer coordination: [National Voluntary Organizations Active in Disaster \(VOAD\)](#), [Centers for Disease Control and Prevention \(CDC\)](#), [Federal Emergency Management Agency \(FEMA\)](#)

Care for disabled persons: [MetEd](#)

Care in the case of trauma injury or response: [MetEd](#)

Operations continuity: [FEMA](#)

Natural disaster education: [National Disaster Preparedness Training Center at the University of Hawai'i \(UH-NDPTC\)](#)

Needs assessment: [CDC](#)



Fig.20. CPR/First Aid training class

Power and Backup Systems

Power and backup systems will become increasingly vital to resilience efforts. U.S. power systems are already showing signs of vulnerability due to age: most transmission and distribution lines were constructed approximately 60-70 years ago with a 50-year life expectancy ([USDN 2019](#)). As a result, utility customers will bear the brunt of more frequent and higher costs incurred during service interruptions. Communities will suffer from greater economic losses with businesses unable to operate during service disruptions. Resilience hubs can mitigate these losses by maintaining a continuous supply of power during extreme weather events that could provide power to community members who may rely on electricity for certain work-related tasks that can be accomplished remotely. Moreover, a resilience hub can supply power to meet personal, but vital energy needs such as communication, EV transportation, light, and hot water.

Consider the following technologies when assessing regular power and backup systems:

Microgrids:

Microgrids are small power grids that can operate independent of the utility power grid to provide an alternative source of power during utility service disruptions. They offer flexibility in terms of the source of power, which allows for resilience hubs to determine what source or sources are suitable to the capacity and needs of the hub. By connecting to battery energy storage systems (BESS), microgrids can provide the most sustainable and resilient power system to a resilience hub.

Solar panels:

To increase resilience, solar panels should be elevated (also known as canopy systems) to avoid flood damage-if there is a risk of this- and should be connected to batteries that can store the solar power generated to be used later. The size of the system depends on the energy demand



Microgrid 101

What is a microgrid?

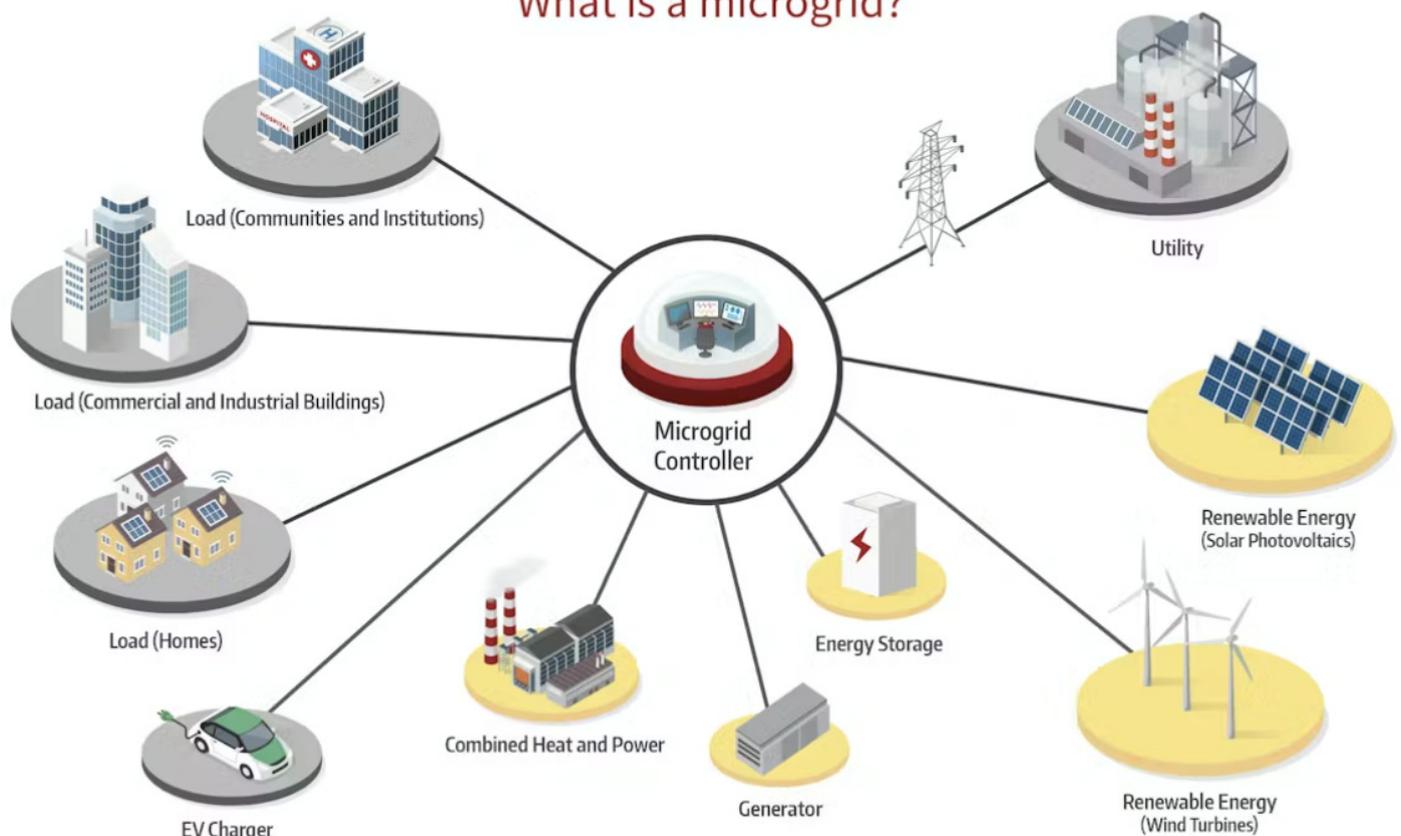


Fig.21. Diagram that shows the flexibility of microgrids. Reproduced from [Microgrid Knowledge](#)



Fig.22. Solar panels on a roof



Fig.23. Battery storage for renewable energy



Fig.24. Portable emergency power generator

and will vary on a case-by-case basis. Some programs offer rebates for solar systems that can be financially advantageous to the resilience hub. For an example of how solar power and battery storage may be integrated into resilience hub planning, read the Baltimore Office of Sustainability's profile on [The Baltimore City Community Resiliency Hub Program](#).

Battery storage:

Batteries are necessary components to any resilient power system. They offer a continuous supply of power to keep devices and systems running and function similarly to a generator. For additional considerations related to battery storage, see "[Supporting the Development of Resilience Hubs](#)" from Georgetown Law.

Electric generator:

Electric generators convert mechanical energy into electrical energy and can be used to increase resilience by supplying a reliable source of power during outages. Electric generators can be connected to batteries so that the power generated is stored and used at a later time, similar to solar panels.

Additionally, consider the utility ownership structure:

Utility: Municipal utilities have the most reliable energy systems but are not invincible. A report from 2016 found that municipal utilities have the least and shortest power outages across the U.S. when compared to investor-owned and co-op models.

Investor-owned: Investor-owned utilities are privately operated and can provide power to communities with a relatively high degree of reliability.

Co-op: Community-owned energy systems tend to be more costly and less reliable than alternatives, especially in the case of extreme weather events. To improve resilience for these energy systems, operational capacity needs to increase through smart financing mechanisms, but doing so can be tricky.

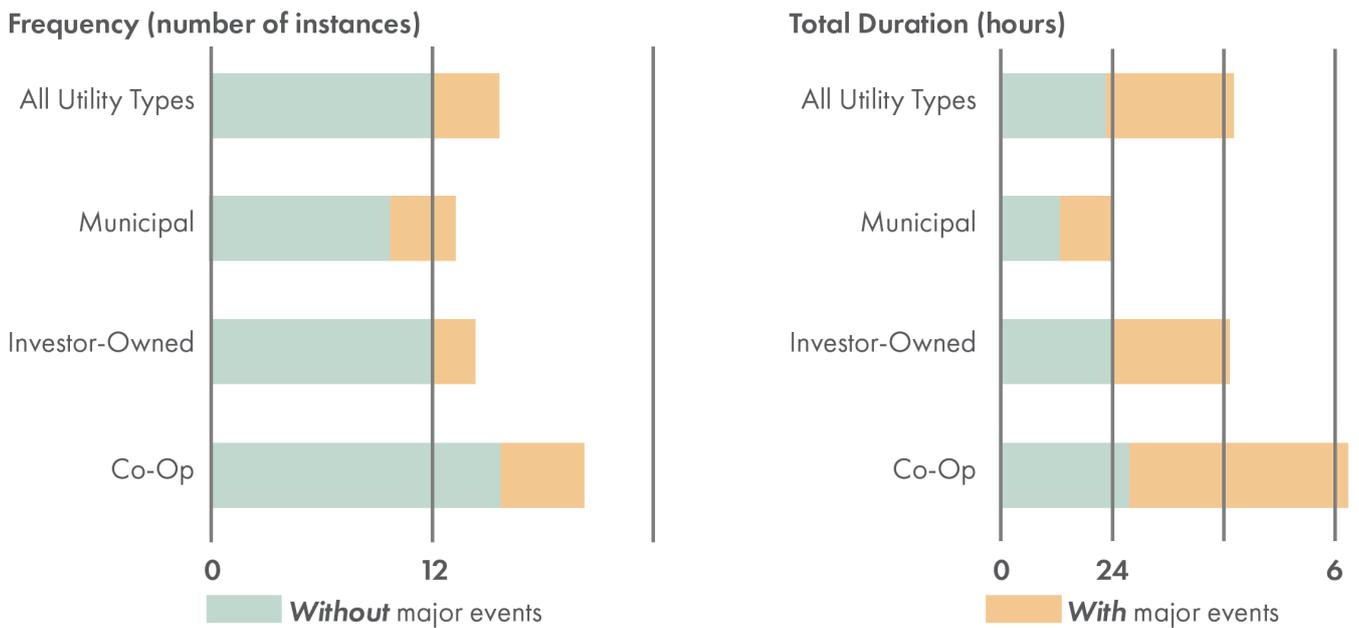


Fig.25. Frequency and Duration of Power Outages of Utility Types across the U.S., 2016.
 Reproduced from the [Urban Sustainability Directors Network](#).

Emergency Response

When an extreme weather event occurs, the resilience hub team should dispatch teams and distribute emergency services and resources to the community. There may be specific teams that carry out specific responsibilities to facilitate appropriate responses. For example, there may be a medical team that provides basic medical care, first aid, and CPR; a communications team that distributes information across channels and performs community outreach; and a management team that coordinates emergency responses across the various teams and with partnering entities. A core team is necessary to initiate the emergency response, and the initial procedure may go something like:

1. Alert systems activated
2. Response teams mobilized
3. Resources distributed
4. Services provided
5. Coordinated efforts amongst all participating actors/agencies

For these efforts to be successful, the resilience hub must prioritize reliable power infrastructure and communication channels. Through the communication channels, the team will need to distribute information as quickly and accurately as possible to keep community members informed and safe.

In times of disaster, people of all ages may suffer from different types of traumatic responses, such as panic attacks, flashbacks, and heightened arousal and reactivity. To appropriately respond to these circumstances, team members must obtain trauma-informed training so that they can provide help with clarity, calm, and right action so as to avoid further injury.

Emergency Recuperation

The aftermath of extreme weather events may vary in severity but often have devastating impacts on communities. Storms may damage infrastructure and property from things like fallen trees, overflowing sewer systems, power outages, road collapse, and personal injury. These circumstances require attention to bring stability and safety back to a community. The resilience hub team can help by providing resources to help the community to stabilize, recover, and rebuild homes, businesses, and critical infrastructure. Moreover, the resilience hub can close the gap in some of these areas during the rebuilding phase. In some cases, these efforts may be facilitated by skilled staff and volunteers with a boots-on-the-ground approach. In others, the resilience hub team may act as a node to connect community members to other organizations and programs for recuperation.



Fig.26. Flooded electric station, Hoboken, NJ

Ongoing Services

A community resource, a resilience hub should also be programmed to meet the community needs in whatever way possible, capacity allowing. When selecting a location to become a resilience hub, consider the resources that may already be available at certain locations. Emergency medical services and offices of emergency management may be able to share training and written materials with the potential resilience hub. Public libraries, community centers, and houses of worship may already hold training and events and provide services that would be beneficial to a resilience hub. This section includes some potential useful resources and examples from New Jersey communities.



Fig.27. Green infrastructure, Hoboken, NJ

Trained Team

When providing on-going services to community members, team members need to not only be trained in providing emergency care for extreme weather events, but also in meeting the needs of community members throughout the year.

Mobile Resilience Hub

There is also an opportunity for resilience hubs to mobilize with a green fleet. While the resilience hub will be centrally located, the team may also consider the benefits to the community of using electric trucks or vans to provide mobile services to a larger area. The mobile resilience hubs could be equipped with charging for mobile devices, TV screens to broadcast news reports, and emergency supplies such as coats and blankets for freezing temperatures, water and electrolytes during heat waves, food, basic medical supplies, and mobile EV chargers (see how Newark is using mobile EV chargers [here](#)). An in-house charging station could also be used to power the mobile hubs, helping to reduce the operation's carbon output.

Extreme weather events notoriously bring challenges to communication channels, which makes it more difficult for individuals to stay up to date on emergency evacuation protocols, the status of environmental threats, and location of family and friends. Mobile resilience hubs can increase emergency response efficiency with the ability to identify immediate community member needs and activate a response with reliable communication channels.

Informational Materials

Resilience hubs can supply communities with informative materials (pamphlets, guides, toolkits) in a variety of formats to enhance community resilience and individual empowerment. Any information provided should be available in translated versions to bridge any language barriers that exist in LEP populations. For people with disabilities like blindness, difficulty of hearing, or low vision, informational resources should be properly adjusted to accommodate.

Any informational materials provided should

also be available in a variety of formats. Printed materials can be easily distributed from the resilience hub, while digital materials can make sharing amongst networks more viable. There may be more flexibility with digital formats, allowing for interactivity, video, audio, or a combination of audio and visual. In most cases, both print and digital formats are useful.

Informational materials can cover topics like:

- Information about current and projected hazards
- How to prepare for extreme weather events
- CPR training
- First aid training
- Where to go for help during emergencies
- How to access resources after emergencies
- Flood and fire insurance
- Navigating flood maps, heat maps, etc.

Informational materials can also be more extensive educational resources on actions that residents can take on their own to become more resilient. For example, the [City of Hoboken's Resilient Building Design Guidelines Addendum \(Addendum to the 2015 Guidelines\) \(2022\)](#) communicates Hoboken's flood risk to residents, provides flood risk reduction measures that property owners can take on their own property, and the associated permitting and approval needed for implementation.

Tool Lending Library and Makerspaces

Designating accessible makerspaces can help people adapt and strengthen connections with each other. Programs that promote sustainable practices such as environmental ecosystem services can be especially useful in managing stable socio-economic systems. There are a vast number of issues that can be addressed using makerspaces, including reducing industrial waste, monitoring nearby ecosystems, and humanitarian crises. The table below lists tools that may be provided through makerspaces either on-site or for lending.

TYPE	TOOLS
GARDENING SUPPLIES	Shovels, trowels, seeds, irrigation
HAND TOOLS	Drills, saws, sanders, general woodworking tools; craft materials (paint, adhesives, measuring guides)
DIGITAL FABRICATION TOOLS	3D printers, laser cutters, CNC routers
ELECTRONICS	Soldering irons, microcontrollers, robotic systems
OPEN SOURCE TECHNOLOGY	Platforms (Raspberry Pi, Arduino); FreeCAD, 3D printers, design software (Inkscape, Blender)

Fig.28. Examples of Items in a Tool Lending Library or Makerspace

When designing climate-resilient makerspaces, the most important aspects to consider are the utilization of community expertise, repurposing local assets when possible, and innovating with long-term success in mind.

North Jersey communities may already have “Library of Things” as part of their free public library. At these “Library of Things,” residents can rent out a variety of resources, including electronics and tools that can be useful during both blue skies and grey. For example, the [Princeton Library](#) has an Emergency Preparedness section of their Library of Things that includes a CO2 monitor, emergency weather radio, mobile hotspot, mobile internet kit, and portable power station. If the community decides the public library makes sense as a potential resilience hub, consider supplementing the existing Library of Things with emergency preparedness equipment.

Community Classes

Resilience hubs may offer community classes that educate individuals and families and provide opportunities for ongoing learning. The types of classes that a resilience hub offers depend on the needs of the community. The types of classes to consider are those that prime and

inform individuals of community programs related to personal flood and heat mitigation actions and citizen engagement. Classes could educate community members on water saving techniques to use during drought, safety measures to take during extreme temperatures, and flood mitigation techniques for property owners ([FEMA 2013](#)). Public courses on emergency health and safety measures may also be useful. For example, the [Montclair Ambulance Unit](#) offers public classes on first aid, CPR/AED, Emergency Oxygen Administration and Stop the Bleed (R) (bleeding control for the injured), which would be useful at any resilience hub.

An effective way to draw in attendees is for the resilience hub to post informational graphics/flyers on social media and in commonly visited spaces such as busy sidewalks and cafés. The resilience hub team may also conduct community outreach to gain insights into what types of classes the community may want that are more specific to individual needs.

Job Opportunity Services

Local employment drives economic growth that is mutually beneficial and helps to maintain the workforce base while reducing recruitment costs.



Fig.29. Resilience hubs should be accessible to all populations

The resilience hub can use connections with non-profit, private, and public employers to connect community members to local job opportunities. The resilience hub may advocate for community benefit agreements that increase equity and reduce inequalities. Businesses that provide fair wages to residents can lead to less turnover, shorter commuting times, and greater productivity. This, in turn, may also produce an opportunity for residents to obtain stable housing, which generates stronger community investment and enforces social ties. Investing in local employment can also drive education opportunities, mitigate transience, and increase social welfare to create a more stable and unified community.

Job Training Programs

Based on the local industries, resilience hubs can provide job training programs for residents. Hosting community-wide career fairs has proven to be a useful tool for community members to not only connect with employers but also seek out resources relating to workforce development. Additionally, educational programs could be included to provide resources for career readiness, career counseling, and networking programs. Workshops are an especially beneficial way of equipping communities with the skills necessary to expand their career searches

as well as developing small businesses. For those who wish to work in the healthcare field, opportunities could be provided to help pursue health-related skill building as well as clinical and technical certification programs.

Housing

Resilience hubs can play an integral role in creating affordable housing for communities that are also developed with climate resilience efforts in mind. Specific design elements could also accommodate the specific demographics of communities. For instance, flood-resistant infrastructure and stormwater management systems should be implemented in areas that are prone to flooding or are limited in combating extreme weather, such as within low-income communities. It is also integral to consider the proximity of the developed housing units in relation to health and wellness facilities, businesses, and public transportation. By creating convenient methods for people to travel back and forth between their homes and community spaces, they will also be able to acquire the necessary mental and financial support needed to maintain stable lifestyles. Resilience hubs could additionally look to leverage funding from federal programs.



Resilient Enhancements to Existing Facilities

Electric Vehicle (EV) Infrastructure

There are a few key conditions to prepare for with respect to electric vehicle safety and operation during extreme weather events. Hotter temperatures put stress on EV batteries and cooling systems. In extreme cases, this can lead to overheating, explosions, and fire (Garbe 2025). In the case of a hurricane or flooding, there may be a risk of saltwater intrusion, short circuiting, and fire hazard (EV Support 2025). Lithium-ion batteries that power EVs lose efficiency in colder temperatures. It is estimated that these batteries may lose up to 70% of their typical power resulting in a reduction in driving range in below freezing temperatures (Picchi 2024). EVs also take longer time to charge, and this slowness presents a fire hazard due to a phenomenon called plating (ions build up, causing the battery to short-circuit). This increases the demand for charging stations to sustain normal living and working conditions by providing residents and workers with the means to travel by personal vehicle.

Fig.30. EV Charging Station, Newark, NJ

Another aspect to consider is that most EV owners rely on at-home charging. This proves to be a major vulnerability since the main power grid may be more susceptible to outages during extreme weather conditions, affecting EV owners' ability to charge their vehicles. Therein lies an opportunity for resilience hubs to provide a critical need through the provision of safe and reliable charging stations.

For this reason, resilience hubs must be equipped to operate independently of the main power grid however possible. Municipalities could invest in solar to power the charging stations, use bidirectional EV batteries, or incorporate a microgrid if utility-sourced power is less reliable. A microgrid can use a mix of energy sources (wind, solar, natural gas, etc.) and store this power in batteries. Batteries can then be used to power EV charging stations, providing a reliable source of power during grid outages. In addition to being a backup power source, microgrids can also increase sustainability by mitigating environmental pollution from conventional vehicles. For more information on EVs in North Jersey, visit <https://ev-resources-njtpa.hub.arcgis.com/>

Biophilic Design

Biophilic design refers to a design strategy that intentionally incorporates natural elements such as trees, waterways, and sunlight. This aims to reduce a sense of artificiality and reinforces the role of nature in healthy living through the built environment.

Biophilic design emphasizes a human-oriented enhancement of natural features to improve physical and mental wellbeing by providing direct connection to nature primarily through sunlight and greenery (Gillis and Gatersleben 2015). However, biophilic design can go the extra mile to provide ecosystem services to promote and improve the health of the environment, natural habitats, and organic processes by strategically and intelligently supporting nature's complex systems. This nuance highlights the importance of not merely having a plant just to green an area, but to work at a broader systems scale.



Fig.32. EV charging, Denville, NJ



Fig.31. Seed Library

Community Gardens and Urban Forestry

Community gardens are one avenue by which ecosystem services can be incorporated into resilience hubs for heat mitigation and flood mitigation in a more systematic way. Well-designed community gardens can also transform inefficient land use into a productive space for enhancing biodiversity, increasing food security, restoring the water cycle, facilitating socialization, and improving individual and communal mental health and well-being.

A site's past land use history should be considered when selecting a garden site. Places with a manufacturing or industrial land use history might have higher concentrations of soil pollutants such as lead and arsenic. A well-designed community garden should employ techniques such as soil analysis to ensure the site is not contaminated. ([USDA 2024](#)). To explore New Jersey's known contaminated sites, visit NJDEP Contaminated Site Remediation & Redevelopment (CSRR)'s [Contaminated Sites Explorer](#). If you suspect your site may be contaminated, NJDEP CSRR may be able to assist you. For guidance on establishing a

community garden on a potentially contaminated site, refer to the U.S. EPA's [Brownfields and Urban Agriculture: Interim Guidelines for Safe Gardening Practices](#).

The resilience hub team can provide resources such as a list of native plants and seeds that are best suited for the natural ecosystem and provide sustenance for the community. For example, the Montclair Public Library in Montclair, NJ has a [Seed Library](#) that houses native plants, pollinators, and edible plants that are available and free to anyone in the community.

Additionally, consider the benefits of adding additional tree canopy to a community impacted by extreme heat. Strategies like syntropic forestry, which mimics natural ecosystems, and planting microforests are potential ways to add shade. Microforests like the one created by [Groundwork Elizabeth in Elizabeth, NJ](#) may be replicable in dense New Jersey communities.



Fig.33. Garden at Duke Farms, Hillsborough, NJ

Greywater Reuse

Greywater consists of wastewater derived from household applications such as washing machines, dishwashers, sinks, and showers. Its large quantity and cost-efficiency as a resource has made it a key subject of interest regarding sustainable water usage. In rapidly growing cities, implementing greywater reuse techniques would help mitigate the frequency of costly efforts of water transportation via piped networks. By repurposing greywater for common applications such as toilet flushing and landscaping irrigation, households can save up to 40% ([Van de Walle et al. 2023](#)).

The water saving capacity of greywater is largely dependent on the type of storage that is available to the community. Larger basins help to reduce water overflow and should be considered when available. There are also some risks that come with integrating greywater, such as increased odor, potential pipe blockage, corrosion, and sedimentation within sewer networks.

Net Zero Carbon

Greywater consists of wastewater derived from the construction sector is currently responsible for approximately 40 percent of global CO₂ emissions. Communities seeking to lower their carbon emissions could consider using net-zero practices. Otherwise known as carbon neutrality, net-zero practices aim to negate carbon emissions by using alternate methods of absorbing carbon dioxide. Buildings that run on net-zero energy can help offset the amount of CO₂ required during construction, using methods such as providing renewable energy on site, optimizing energy efficiency, and prioritizing onsite production with energy efficient equipment (i.e., solar panels, etc.). Material selection is also integral to achieving net zero practices. Selecting materials that have low carbon footprints and reduced chemical off-gassing can help create cleaner and safer interiors and exteriors. They should also be able to accommodate passive design elements, ranging from absorbing heat to the reuse of existing materials.



Finding Funding Sources



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and other resources to support hazard mitigation

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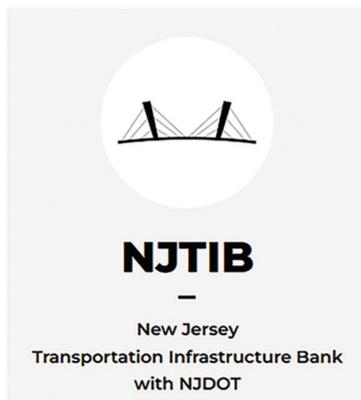
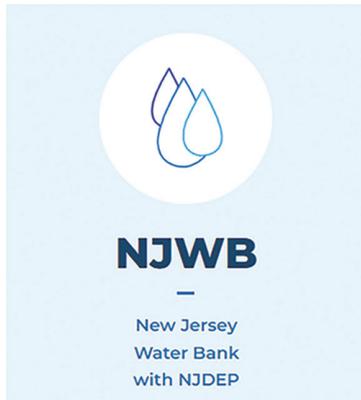
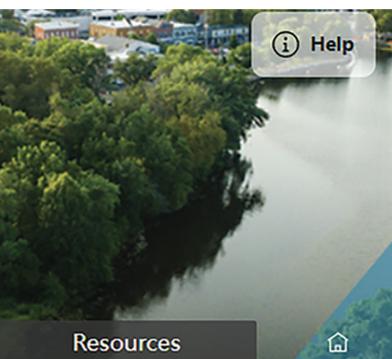
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NEW JERSEY'S FUNDING SHOP



Funding for site acquisition, construction, reinforcement, capital, maintenance, and operations support may be available through federal, state, and local programs, and non-profit grants. The resilience hub team can submit applications to these programs to receive funding that may support stormwater infrastructure, energy, and technology upgrades. Hiring volunteers skilled in grant writing can contribute to the long-term sustainability of resilience hubs. The resources below have compiled funding sources that may be used to fund the investments needed for resilience hubs:

- [New Jersey Mitigation Funding Resource Guide \(July 2020\)](#): profiles potential federal, state, and nonprofit funding sources for hazard mitigation that were available in 2020 and may be available today.
- [Resilient NJ Climate Resilience Funding Directory](#): profiles resilience funding opportunities and can be filtered by applicant type, activity phase, and cost share.
- [New Jersey's Funding One Stop Shop](#): profiles federal, state, and utility funding programs for energy generation and efficiency.

Some New Jersey state funding programs include the following:

- [New Jersey Infrastructure Bank](#): three programs (New Jersey Water Bank, New Jersey Transportation Infrastructure Bank, and New Jersey Resilience Infrastructure Bank) that issue bonds, low interest loans, and other financing tools to municipalities for the construction of specific infrastructure projects.
- [New Jersey's DriveGreen Program](#): A compilation of EV-related programs including charging infrastructure grants, sales ad tax use exemptions and infrastructure construction partnerships.
- [Sustainable Jersey](#): Grants and technical assistance programs related to sustainability
- New Jersey Board of Public Utilities (BPU) [Energy Efficiency Programs](#): includes programs for combined heat and power and fuel cells, existing building equipment upgrades and in-store discounts, and appliance rebates and recycling.

case studies

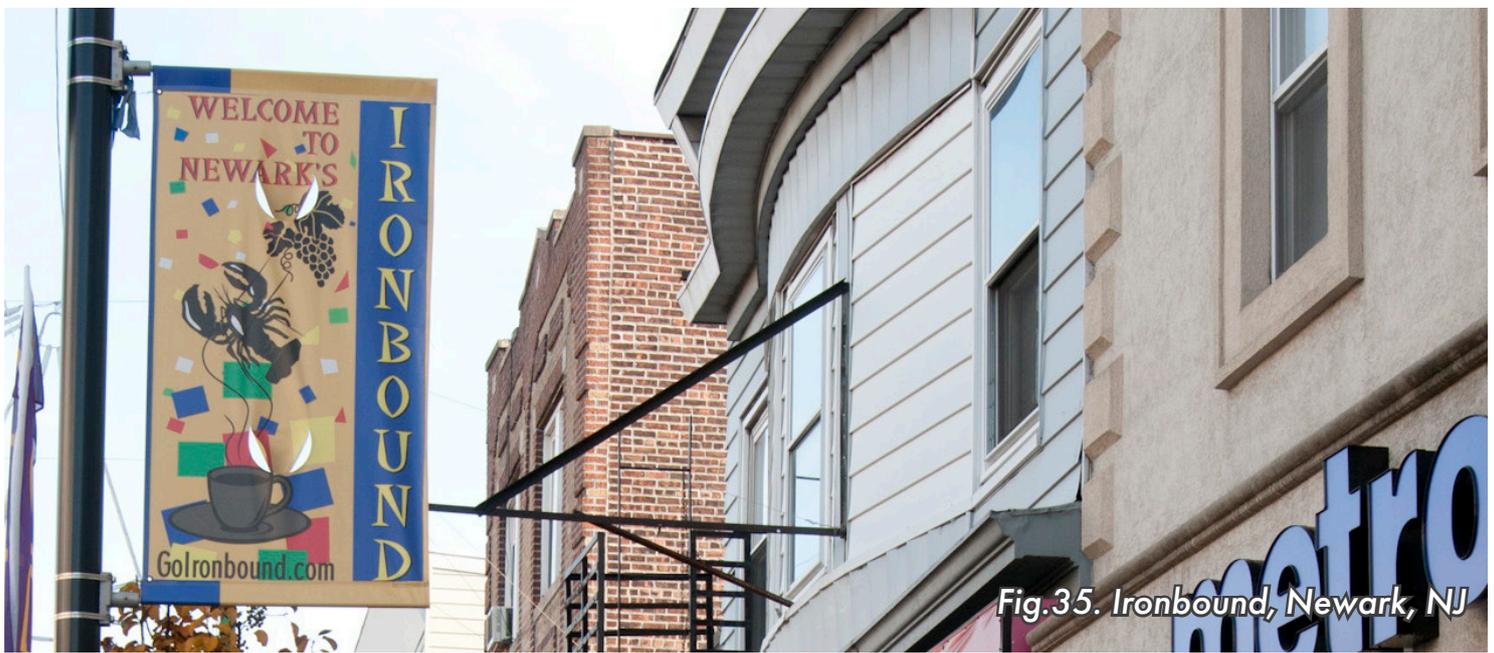


Fig.35. Ironbound, Newark, NJ

South Ironbound, Newark (New Jersey)

The Newark Ironbound Resilience Hub, located at Ann Street School, is a FEMA-BRIC-funded retrofit designed to give one of the city's most flood- and heat-exposed neighborhoods a reliable emergency resource. A combined flood/heat risk analysis, overlaid with CDC Social Vulnerability Index data and community member interviews, confirmed that the site selection was equitably located and could serve residents within a short walk.

Engineering measures were layered to address multiple hazards. A subsurface detention basin sized for roughly 450 thousand gallons was combined with permeable pavement and bioretention cells on surrounding streets to intercept and slowly release stormwater. This approach to stormwater management relieves hazardous street flooding, protecting properties from incurring water-related damage. Rooftop solar panels, on-site battery storage, and islanding controls form a microgrid that powers critical loads during grid outages, while a high-efficiency HVAC upgrade keeps the facility functional as both a dedicated Emergency Safe Room and a public cooling center.

The design is expected to cut repeat flooding for about sixty homes plus seventeen nearby businesses and schools, keep the hub operational for at least seventy-two hours off-grid, and deliver an estimated \$53 million in avoided flood losses against a \$15 million capital cost, yielding a benefit-cost ratio of roughly 3.5. Day-to-day operations remain with Newark Public Schools, green-infrastructure assets are maintained by the city's Department of Water and Sewer, and the Ironbound Community Corporation coordinates programs and outreach, while local utilities and the Office of Emergency Management manage microgrid protocols.

Sources: [Crafting a Competitive BRIC Project: Newark Ironbound Resilience Hub Case Study \(Arcadis 2023\)](#); [South Ironbound Resiliency Action Plan \(Newark\) \(Ironbound Community Corporation and American Planning Association New Jersey Chapter 2015\)](#); [Resilient NJ Northeastern New Jersey's Action Plan \(2022\)](#)

Boyle Heights Arts Conservatory, Los Angeles (California)

The Boyle Heights Arts Conservatory is an advocacy organization in the creative arts, media, and technology field in the downtown Los Angeles neighborhood of Boyle Heights. Its day-to-day ongoing programming includes job training in radio and broadcasting and youth arts programming ([Robinson and Maeda 2025](#)). Boyle Heights is a low-income neighborhood of mostly renters, surrounded by five freeways, and has little shade. On top of this, the neighborhood suffers from double the extreme heat days compared to the Los Angeles average. To combat these challenges, the Boyle Heights Arts Conservatory, Chief Resilience Office of Los Angeles, Los Angeles Department of Water and Power, the American Red Cross, and other partners collaborated to pilot a resilience hub at the arts conservatory since 2020 ([Boyle Heights Arts Conservatory, Climate Resolve, Resilient Cities Catalyst](#)).

To create a community-informed resilience hub, the partnership engaged in several community engagement strategies. Partners held asset mapping workshops with the community to identify existing neighborhood resources that the resilience hub could connect with and build off. By creating an asset map with existing institutions, the partners identified additional neighborhood institutions with which they could build trust and reach additional community members. Additionally, the Boyle Heights team conducted a 300-person community input survey in both English and Spanish to help identify community priorities ([Boyle Heights Arts Conservatory, Climate Resolve, Resilient Cities Catalyst](#)).

The hub strengthens the neighborhood's physical and social infrastructure. Physical infrastructure improvements include backup power generation and charging access (solar panel and a backup battery), and drought management (water

storage infrastructure). Communications are supported by a radio station and tower, and the hub has emergency supplies stored in case of disruption. Regarding social infrastructure, the hub supports resilience through emergency preparedness training, ongoing resilience needs surveys, and a community-designed resilience curriculum ([Boyle Heights Arts Conservatory, Climate Resolve, Resilient Cities Catalyst; Robinson and Maeda 2025](#)).



Fig.38. Reproduced from the [Resilience Hub Implementation Toolkit](#)



Fig.37. Reproduced from the [Resilience Hub Implementation Toolkit](#)

Resilient Medford Resilience Hubs (Massachusetts)

The Resilient Medford Resilience Hub project, funded in 2020 by the Massachusetts Executive Office of Energy and Environmental Affairs' Municipal Vulnerability Preparedness Program, aimed to address extreme weather preparedness through a community-centered, public health lens. In partnership with multiple city departments and community-based organizations, the project focused on three main tasks: site selection, community needs assessment, and the development of programming for a future Resilience Hub. The site selection process prioritized neighborhoods facing high extreme weather vulnerability and low adaptive capacity, especially lower-income, immigrant, and non-English-speaking communities. Through spatial mapping and vulnerability analysis, areas like Glenwood, South Medford, and Wellington emerged as strong candidates due to limited access to existing services and high sensitivity to extreme weather impacts.

The second phase involved gathering input from residents and service providers to assess community needs and adaptive capacity. The "R U OK?" program, initiated during the COVID-19 pandemic, revealed critical service gaps, especially in food access, medication, and communication. Residents primarily relied on family and friends for support and obtained information through informal networks like broadcast news and word of mouth. Language barriers, digital access limitations, and experiences of racism, particularly among Haitian residents, further impeded equitable access to services and resources. Community conversations emphasized a need for inclusive, culturally competent programming, including wellness activities, language services, and accessible emergency preparedness information.

Organizations echoed these concerns, advocating for resilience hubs to serve as multi-use community anchors that foster social cohesion, support regional collaboration, and center equity in emergency planning. Despite high interest, the report underscored the importance of trust-building and anti-racist outreach as prerequisites for successful implementation.

The project's foundation rests on the understanding that extreme weather disproportionately affects vulnerable populations. These vulnerable groups often live in areas more exposed to heat, flooding, and other hazards, and have fewer resources to prepare for or recover from such events. Medford's Climate Vulnerability Assessment was used to identify neighborhoods where physical and social vulnerabilities intersect. For instance, precincts like South Medford and Glenwood were selected as priority areas because they had both high sensitivity and limited access to community resources. The Resilience hubs are therefore envisioned not just as cooling centers or emergency shelters, but as proactive spaces that build long-term community capacity. This includes having backup power systems, food storage and distribution, communications infrastructure, and climate education programming. Ultimately, Medford's approach positions resilience alongside social inclusion ([City of Medford 2020](#)).

For more information on case studies, visit: [NorCal Resilience Hub Initiative](#), [Climate Resolve Resilience Hubs](#), [Georgetown Climate - Resilience Hubs](#), [Philly Resilience Hubs](#)



Fig. 39. A green wall, an example of biophilic design

conclusion

A **resilience hub** is a multi-functional place crucial to providing community support and offering services and resources before, during, and after extreme weather events. A resilience hub is a trusted community hub that serves as a one-stop-shop for resources related to extreme weather before, during, and after natural disasters. Before disaster, a resilience hub can provide emergency preparedness information materials, classes, and equipment. During disaster, stormwater infrastructure upgrades and hazard-resistant materials or floodproofing reduces the risk of flooding, and backup power through distributed energy keeps the electricity and communications infrastructure online. After disaster, a resilience hub can provide social services and programs that build connections, and operational capacity to improve the overall welfare of communities year-round.

Building a resilience hub is not creating a new building from scratch; rather, it's about enhancing an existing facility. Drawing on the example of successful resilience hubs in New Jersey and beyond, this toolkit provided a menu of options for localities to select from when planning a resilience hub.

With efficient management and maintenance, resilience hubs may reduce the burden on local response teams; increase efficacy of community-based organizations and faith-based groups; promote community cohesion; increase credit-worthiness; generate savings through investment; and serve as a centralized resource to bring partners together.

Once established, a community can scale a resilience hub across neighborhoods or municipalities, creating a network of hubs that can share lessons peer-to-peer and further build capacity over a larger region. For example, the City of San Leandro, CA oversees the San Leandro Resilience Hub Network. The network includes 12 resilience hubs across the city that tap into different demographic groups. Resilience hub locations in San Leandro, CA include Temple Beth Shalom, The San Leandro Church of Christ & Lewis Ave Neighbors, Bethel Community Church, Korean Community Center of East Bay, Davis Street Community Center, First United Methodist Church, Mulford Gardens Improvement Association, and The City of San Leandro's Manor Branch Library ([Robinson and Maeda 2025](#)).

If you have any questions or need help planning a resilience hub, please reach out to the NJTPA by contacting Carrie Martin at CMartin@njtpa.org.

appendices

Appendix A: Definitions

Assets: “People, resources, ecosystems, infrastructure, and the services they provide. Assets are the tangible and intangible things people or communities value” ([U.S. Climate Resilience Toolkit 2025](#))

Community Needs Assessment: involves describing the community’s demographics, relationships, and priorities to determine the necessary solutions to community challenges and what is needed to build capacity.

Distributed Energy: Describes technologies that can generate electricity at or near where it’s going to be used. Examples of distributed energy include solar panels, combined heat and power, and emergency backup generators ([U.S. EPA 2025](#))

Flood Zones: “Flood hazard areas identified on the Flood Insurance Rate Map are identified as a Special Flood Hazard Area (SFHA). SFHA [is] defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone AO, Zone AH... Zone V, Zone VE, and Zones V1-V30. Moderate flood hazard areas, labeled Zone B or Zone X (shaded) are ... the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded).” ([FEMA 2020](#))

Hazard: “An event or condition that may cause injury, illness, or death to people or damage to assets” ([U.S. Climate Resilience Toolkit 2025](#))

Impacts: “Effects on natural and human systems that result from hazards. Evaluating potential impacts is a critical step in assessing vulnerability” ([U.S. Climate Resilience Toolkit 2025](#))

Microgrid: Distributed energy technologies and energy-using structures form an interconnected system that can operate independently of the main power grid ([FEMA 2021](#))

Native Plants: Plants that naturally grow in an area or region – before human introduction

Power Mapping: “a way to identify who has power in the community, and to figure out what will move those individuals or institutions to do whatever it is that you want them to do” ([NEA 2023](#)).

Resilience: “The capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from a disruption” ([U.S. Climate Resilience Toolkit 2025](#))

Soil Analysis: Testing done to determine the physical, chemical, and biological properties of soil and how it can best be used

Syntropic Forestry: Syntropic forestry is a planting technique that mimics natural ecosystems. It is often employed in permaculture practices, which offers a sustainable approach to food production and habitat reconstruction.

Vulnerability: “is a description of which assets, including structures, systems, populations and other assets as defined by the community, within locations identified to be hazard prone, are at risk from the effects of the identified hazard(s).” ([FEMA 2025](#))

Appendix B: Resilience Strategies by Hazard Type Matrix

HAZARD TYPE		STRATEGY / TOOL
ALL	Services	<ul style="list-style-type: none"> Communication channels (social media posts, hotline, news reports) Reliable, sustainable power supply EV charging Shelter Job training programs Employment
	Equipment	<ul style="list-style-type: none"> Beds (mattresses, blankets, sleeping bags, pillows) Showers Portable chargers Charging devices
	Partners	<ul style="list-style-type: none"> New Jersey Interagency Council on Climate Resilience Paramedics and first responders
	Education	<ul style="list-style-type: none"> Information distribution (flyers, posters, pamphlets, screen displays, social media posts, hotline) Translated materials First aid classes CPR classes Community Emergency Response Team
EXTREME HEAT	Services	<ul style="list-style-type: none"> Cooling center Medical aid
	Equipment	<ul style="list-style-type: none"> Fans (portable, standing, ceiling) Air conditioning Bottled water Microgrid
	Partners	<ul style="list-style-type: none"> Local fire department First responders
	Education	<ul style="list-style-type: none"> Opt for lower heat emitting devices (such as a microwave vs. oven) Install UV filters over windows Take a nap during peak temperatures to avoid heat stroke Dehydration symptoms Heat stroke symptoms Wear loose and light clothes Open windows at night Drink more water Cold showers Eat cooling foods Low-cost shading: trees, shade cloth, umbrellas, tarps, awnings

HAZARD TYPE	STRATEGY / TOOL	
FIRE	Services	First aid for burns
	Equipment	Masks Smoke detectors Fire hose Fire hydrant
	Partners	Local fire department FEMA First responders
	Education	How to respond to a fire (stop, drop and roll) Private Insurance Options Evacuation procedure
EXTREME COLD	Services	Warm shelter
	Equipment	Space heaters Blankets Clothes: coats, hats, gloves
	Partners	FEMA
	Education	Signs of hypothermia Drip faucets to prevent freezing pipes
FLOOD	Services	Flood alert system
	Equipment	Sump pump Catch basins Rain barrels Tree filter boxes
	Partners	National Flood Insurance Program FEMA New Jersey Sports and Exposition Authority
	Education	How to drive in a flood Qualifying for Subsidized Insurance through NFIP Private Insurance Options FEMA flood maps Use restrictions on properties in flood zones Flood-proofing designs Nature-based solutions (e.g. rain gardens, green roofs, bioswales) Stormwater reuse for irrigation Determining effective tree types and locations: www.arboday.org/trees/righttreeandplace

Appendix C: Resources

Introduction

- Resilient NJ Northeastern New Jersey. Action Plan: A Roadmap to Resilience. dep.nj.gov/wp-content/uploads/ocr/rnj_nenj_action-plan.pdf.

Step 1. Build the Team

- National Education Foundation. Power Mapping 101. nea.org/professional-excellence/student-engagement/tools-tips/power-mapping-101#:~:text=Power%20mapping%20is%20simply%20a,you%20want%20them%20to%20do.

Step 4. Selecting the Site

- New Jersey Department of Environmental Protection (NJDEP). New Jersey's Flood Indicator Tool. dep.nj.gov/climatechange/flood-tool/.
- NJDEP. NJ CSO Outfalls. njdep.maps.arcgis.com/apps/Viewer/index.
- NJDEP. CSOs in New Jersey. dep.nj.gov/dwq/combined-sewer-overflow/njcso/.
- Rutgers, the State University of New Jersey. NJ ADAPT. njclimateresourcecenter.rutgers.edu/nj-adapt/.
- New Jersey Office of Emergency Management. 2024 State of New Jersey All-Hazard Mitigation Plan. njsp.njoag.gov/njoem/programs/hazard-mitigation/hazard-mitigation-grant-program/hazard-mitigation-plans/2024-mitigation-plan/.

Step 5. Reinforce Structures & Invest in Capital Improvements

- Federal Emergency Management Agency (FEMA). National Flood Insurance Technical Bulletins. fema.gov/emergency-managers/risk-management/building-science/national-flood-insurance-technical-bulletins.
- City of Hoboken. Resilient Building Design Guidelines. betterwaterfront.org/wp-content/uploads/2016/05/Resilient-Buildings-Design-Guidelines.pdf.
- NJDEP. NJ Stormwater Best Management Practices Manual. dep.nj.gov/stormwater/

[bmp-manual/](#)

- NJDEP. Stormwater Infrastructure Toolkit. dep.nj.gov/floodresilience/toolkit/.
- New Jersey Future and New Jersey Builder's Association. New Jersey Developers Green Infrastructure Guide 2.0. developersguide.njfuture.org/wp-content/themes/njfuture-new/img/Developers-Green-Infrastructure-Guide-2.0-May-2020-spreads.pdf.
- Enterprise. Climate Safe Housing: Strategies for Multifamily Building Resilience. climatesafehousing.org/.
- Rutgers, the State University of New Jersey. Climate Change in New Jersey: Impacts and Responses. njclimateresourcecenter.rutgers.edu/climate_change_101/climate-change-in-new-jersey-impacts-and-responses/.
- FEMA. Hazard Mitigation Assistance Grant Funding for Microgrid Projects. fema.gov/fact-sheet/hazard-mitigation-assistance-grant-funding-microgrid-projects.
- United States Environmental Protection Agency (EPA). Distributed Generation of Electricity and its Environmental Impacts. epa.gov/energy/distributed-generation-electricity-and-its-environmental-impacts.

Toolkit: Team Training

- American Heart Association. CPR & First Aid: Emergency Cardiovascular Care. cpr.heart.org/.
- National Voluntary Organizations Active in Disaster. Disaster Agency Response Technology (DART). nvoad.org/.
- U.S. Centers for Disease Control and Prevention (CDC). Get Involved. <https://www.cdc.gov/prepare-your-health/create-community/get-involved.html>.
- FEMA. Voluntary and Community-Based Organizations. fema.gov/emergency-managers/individuals-communities/faith-volunteer/voluntary-organizations.
- Comet MetEd. Welcome to MetEd! meted.ucar.edu/.

- FEMA. Continuity Resource Toolkit. [fema.gov/emergency-managers/national-preparedness/continuity](https://www.fema.gov/emergency-managers/national-preparedness/continuity).
- National Disaster Preparedness Training Center at the University of Hawai'i. ndptc.hawaii.edu/.
- CDC. Community Planning for Health Assessment: Frameworks & Tools. [cdc.gov/public-health-gateway/php/public-health-strategy/public-health-strategies-for-community-health-assessment-models-frameworks-tools.html](https://www.cdc.gov/public-health-gateway/php/public-health-strategy/public-health-strategies-for-community-health-assessment-models-frameworks-tools.html).
- Urban Sustainability Directors Network (USDN). Climate Resilience Trainings. usdn.org/projects/climate-trainings.html.
- National Oceanic and Atmospheric Administration, Office of Response and Restoration. Training and Resources. response.restoration.noaa.gov/disaster-preparedness/training-and-resources.
- EPA. BROWNFIELDS AND URBAN AGRICULTURE: Interim Guidelines for Safe Gardening Practices. [epa.gov/system/files/documents/2024-11/bf_urban_ag.pdf](https://www.epa.gov/system/files/documents/2024-11/bf_urban_ag.pdf)
- Montclair Public Library. Seed Library. montclairlibrary.org/borrow/seeds/.
- Groundwork Elizabeth. MicroForests for MacroSolutions Project. groundworkelizabeth.org/project/building-microforests-for-macrosolutions/.

Toolkit: Ongoing Programming

- City of Hoboken. Resilient Building Design Guidelines Addendum: Addendum to the 2015 Guidelines. assets-global.website-files.com/58407e2ebca0e34c30a2d39c/62d180a35a1957b9fb4569a2_Resilient_Building_Design_Guidelines_Addendum_Final_071422.pdf.
- Princeton Library. Library of Things. princetonlibrary.org/services/library-of-things/#emergency.
- FEMA. Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards. www.loudoun.gov/DocumentCenter/View/120243/FEMA-Mitigation-Ideas.

Toolkit: Resilient Enhancements for Existing Facilities

- City of Baltimore. The Baltimore City Community Resiliency Hub Program. baltimoresustainability.org/baltimore-resiliency-hub-program/.
- Georgetown Climate Center. Equitable Adaptation Legal & Policy Toolkit. [georgetownclimate.org/adaptation/toolkits/equitable-adaptation-toolkit/supporting-the-development-of-resilience-hubs-a.html](https://www.georgetownclimate.org/adaptation/toolkits/equitable-adaptation-toolkit/supporting-the-development-of-resilience-hubs-a.html).
- USDN. POWERING COMMUNITY RESILIENCE: A Framework for Optimizing Resilience Hub Power Systems Project Report. resilience-hub.org/wp-content/uploads/2019/07/USDN_ResilienceHubTech_Final.pdf.
- NJTPA. Informational Resources about EVs. ev-resources-njtpa.hub.arcgis.com/.
- NJDEP Contaminated Site Remediation & Redevelopment (CSRR). Contaminated Site Explorer. dep.nj.gov/srp/.

Toolkit: Finding Funding Sources

- FEMA. New Jersey Mitigation Resource Guide. [fema.gov/sites/default/files/2020-09/fema_region-03_mitigation-funding-resource-guide_new-jersey_09-24-2020.pdf](https://www.fema.gov/sites/default/files/2020-09/fema_region-03_mitigation-funding-resource-guide_new-jersey_09-24-2020.pdf).
- Resilient NJ. Climate Resilience Funding Directory. experience.arcgis.com/experience/196a9c8077e847c3b4a815d7c814930c?views=View-24%2Cnews3_view.
- New Jersey Funding One Stop Shop. njonestopshop.org/?utm_medium=email&utm_source=govdelivery.
- New Jersey Infrastructure Bank. njib.gov/.
- NJDEP. Drive Green NJ. dep.nj.gov/drivegreen/.
- Sustainable Jersey. sustainablejersey.com/.
- New Jersey Board of Public Utilities. Energy Efficiency Programs. njcleanenergy.com/EEP.



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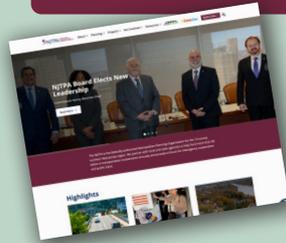
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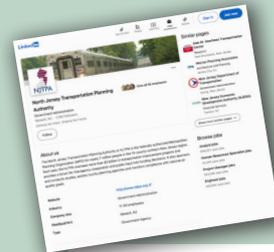


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