

Policy Agenda to Build Flood Resilience Across North Carolina

Three years after Hurricane Florence, North Carolina continues to experience devastating flood events from hurricanes, tropical storms and — more commonly and more frequently — incidents of heavy rain and powerful afternoon thunderstorms. These flood events extend well beyond the state’s coastal communities, with 92% of hurricane damage to North Carolina businesses actually occurring in inland counties.¹

North Carolina is accustomed to the threat of hurricanes: Fran, Floyd, Matthew, Florence, Dorian — just to name a few. What’s becoming more common, though, is the threat brought on by summer thunderstorms or days of steady rainfall.² These weather events, while not noted in NOAA record books, impact residents, businesses and farms much more frequently and without the federal support to assist with recovery. It must be an immediate priority to make our communities and landscapes more resilient to these impacts.

In June 2019, for example, an unexpected afternoon thunderstorm washed out several sections of Highway 401 in Louisburg. In November the following year, the Governor declared a state of emergency after days of heavy rainfall flooded the Neuse, Tar, Cape Fear and Haw Rivers — simultaneously. At least six North Carolinians were killed, roads were flooded, homes and businesses were destroyed.³ And these flood events are disproportionately impacting disenfranchised communities and communities of color, such as [Raleigh’s Walnut Creek Watershed](#) and [Princeville’s historic black population](#), who are facing the realities of elevated flood risk resulting from a long history of redlining and discriminatory housing practices in the 100-year floodplain.

Rural North Carolinians are bearing the brunt of some of the worst effects of climate change. Flood events take both personal and economic tolls on our state, and those areas hit the hardest are often communities without the capacity or resources to implement preventive measures or buoy recovery efforts. In contrast, the state has resources and capacity to address these challenges as North Carolina seeks to rebuild better and stronger after extreme weather events.

Making our communities and landscapes more resilient must be an immediate priority. It’s time for North Carolina to lead on climate mitigation and resilience to protect the state’s residents, economy and ecosystems. This report outlines four resilient policy proposals.



Street flooding in Princeville, North Carolina.

¹ Rising Costs of Extreme Weather: <https://www.edf.org/sites/default/files/u76/CostExtremeWeatherOnePager-NorthCarolina.pdf>

² NC Resilience Plan: <https://deq.nc.gov/energy-climate/climate-change/nc-climate-change-interagency-council/climate-change-clean-energy-17>

³ <https://www.wect.com/2020/11/13/cooper-declares-state-emergency-after-floodwaters-ravage-north-carolina/>

North Carolina Resilience Policy Goals

By combining science, modeling and planning North Carolina can identify and justify expanded investments in natural infrastructure and other flood mitigation measures that protect communities. These critically needed local resilience projects will create local jobs, while also providing improved water quality and wildlife habitat.

Other states, including Louisiana and Iowa, have implemented planning efforts and demonstration programs that have allowed them to “punch above their weight” in attracting federal appropriations. Our neighbors in Virginia and South Carolina are also moving forward with the development of flood resilience plans and demonstration projects.

“I think everybody in the rural communities are very aware that the hurricanes are getting worse, and that we have to change the way we think and what we do. Rural people live and die by the weather, and that makes a difference.”

-Homeowner, Nash County, NC*

Focusing on resilience policy and programs will achieve two important goals:

1. Position state and local governments to leverage more federal resilience dollars including pre-hazard mitigation funding, such as FEMA’s Building Resilient Infrastructure and Communities (BRIC) funding, as well as anticipated stimulus, infrastructure and/or future disaster appropriations; and
2. Provide sorely needed additional capacity for local communities to develop and implement resilience projects.

North Carolina Resilience Policy Priorities

Communities in Eastern North Carolina are facing compounding natural, economic and public health disasters. In order to compete for federal funds and better assist local communities, North Carolina needs new resilience policies in the following areas.

1. **Creating a Plan:** NC Flood Resilience Blueprint
2. **Building a Foundation:** Resilient Communities Program
3. **Investing in Projects:** DMS’ Natural Infrastructure Flood Mitigation Program
4. **Enhancing Coordination and Collaboration:** Reauthorize and elevate North Carolina’s Resilience Office and Chief Resilience Officer

1. Creating a Plan: North Carolina Resilience Blueprint

With these disasters becoming more frequent and more expensive,⁴ we can expect that there will be increased competition for limited federal and state recovery resources over time. A Flood Resilience Blueprint would chart a path that better prepares North Carolina to invest state dollars in the most effective solutions, leverage a larger share of federal resilience dollars and provide increased support for local communities seeking to implement resilience projects.

Flooding is a watershed-scale problem. Across the state, inland flooding is expected to increase as a result of more frequent and extreme precipitation events. The 2020 NC Climate Risk Assessment and Resilience Plan projected increased extreme weather is very likely in the Coastal Plain.⁵ As flooding

* In the summer of 2019, EDF conducted 22 interviews with rural landowners and homeowners in the Coastal Plain to understand what impact, if any, Hurricanes Matthew and Florence were having on people’s attitudes towards flooding, climate change, and resilience. Additional information on the methodology and findings can be found [here](#) and [here](#).

⁴ <https://www.nytimes.com/2021/01/07/climate/2020-disaster-costs.html>

⁵ NC Resilience Plan

increases, it doesn't confine itself to property boundaries or city or county lines. To effectively address flooding, solutions must be addressed at the watershed scale.

Holistic solutions are needed. One-off projects are unlikely to fully address future flooding threats. Actions taken by upstream landowners or communities can impact (positively or negatively) downstream communities. As the local needs are defined, a comprehensive set of flood mitigation approaches should be evaluated, including determining the costs and effectiveness of each approach. This evaluation requires data, modeling and planning.

Other states are taking action. Development of a Flood Resilience Blueprint would build on the approach taken by the Iowa Flood Center. Such an approach incorporates local knowledge, community goals and hydrologic modeling to create a decision support tool to address flooding at various watershed scales, from local watersheds to whole river basins. The decision support tool informs effective project design and efficient investment levels that would maximize benefits.

Federal funding is critical to our success. By focusing on watershed-scale approaches, the Blueprint rewards collaboration among communities and positions North Carolina to leverage additional federal dollars, as has been seen in Louisiana and Iowa.⁶

POLICY REQUEST: In 2021, the Legislature should authorize the development of a statewide Flood Resilience Blueprint beginning with Coastal Plain river basins to pilot the statewide approach. Scaling overtime, these could begin with recently impacted river basins such as the Cape Fear and/or the Neuse. The Flood Resilience Blueprint can be funded from state appropriations or recently awarded Community Development Block Grant (CDBG) funds.

"We need to look a little more closely and to make decisions based on scientific research and not on outdated policy."
-Landowner, Pender County, NC



Flooding in the aftermath of Hurricane Florence.

⁶ <https://www.hud.gov/sites/documents/NDRCCGRANTPROFILES.PDF>

2. Building a Foundation: North Carolina Resilient Communities Program

No program or project will be fully effective without engaging and equipping frontline communities. The North Carolinians who are directly impacted by flooding and other impacts of climate change must be part of the process to identify and design local solutions. Yet, too often these communities don't have access to the capacity, funding or technical expertise needed to develop resilience projects.

A robust NC Resilient Communities Program will provide technical assistance and support for local communities to develop shovel-ready projects and allow the state to compete more effectively for federal resilience dollars. North Carolina has two existing community programs to build from. The Division of Coastal Management (DCM) and the North Carolina Rural Center with NCORR have developed resilient community programs that could be expanded and funded to provide state-wide application.

A Resilient Communities Program would also address gaps, including:

1. **Local capacity.** Many communities in rural North Carolina know their risks and vulnerabilities, but lack the capacity, including local resources and expertise, to design effective resilience projects.
2. **Federal funding.** By prioritizing robust community engagement, other states like Louisiana and Iowa have been able to attract more federal resilience dollars.⁷ A similar approach would better equip North Carolina to compete for FEMA programs like BRIC, future federal stimulus dollars, and National Fish and Wildlife Foundation (NFWF) funding.
3. **Project design assistance.** Through the Resilient Communities Program communities can receive project design grants to complete needed planning and engage engineers or others to develop project designs to address known threats. Without shovel-ready designs, these communities are not prepared to compete for federal or private funding programs.

POLICY REQUEST: In 2021, the Legislature should fund a Resilient Communities Program to provide technical assistance and project design with local city or county governments to develop shovel-ready resilience projects. Through funding to the NC Resilience Office, the program will support a position at targeted Council of Governments build the capacity of low-capacity and historically disenfranchised communities to engage in resilience planning. With an increased appropriation, the program could include a revolving loan fund component to fund project plans and designs with grants that are repaid with funding by BRIC or other programs that allow for design costs to be recovered.

"It [recovery resources] trickles down to some folks, but not the poor communities. I don't think it reaches them, unfortunately. They can't afford to move anywhere else."

- Business Owner, Wayne County, NC

3. Investing in Projects: DMS' Natural Infrastructure Flood Mitigation Program

Twenty years ago, North Carolina created an innovative mitigation program to address a backlog of required environmental restoration projects by awarding competitive contracts to private businesses. The establishment of that program through the Division of Mitigation Services (DMS) has allowed the private sector to deliver compensatory mitigation and ecological restoration projects in an efficient way.

Last summer, the Legislature expanded DMS' authority to allow the program to use its existing RFP and contracting mechanisms to implement voluntary flood mitigation projects. DMS has the existing staff expertise and delivery mechanisms to address watershed flooding and, after the passage of legislation in 2020, is now able to accept state appropriations, federal disaster dollars and other competitive grant allocations for flood reduction projects.

⁷ <https://www.hud.gov/sites/documents/NDRGRANTPROFILES.PDF>

The new Natural Infrastructure Flood Mitigation program within DMS will use watershed studies to determine the flood reduction needed to address local threats — for example, a critical bridge or an often-flooded business community. With existing contracting authority, DMS will then select and fund local projects within small watersheds.

DMS can efficiently contract with private restoration companies to more quickly and effectively construct flood reduction projects. It's a program that can, if funded, put boots on the ground in short order and creates much needed jobs.

For instance, research on Stoney Creek in Wayne County by NC State University researchers using an Army Corps model found that installation of several hundred acres of natural flood mitigation projects in the 20,000-acre watershed would reduce flooding in Goldsboro, including the access road to Wayne Memorial Hospital. With this research, DMS can contract private sector restoration providers to implement flood mitigation projects on Stony Creek as a demonstration watershed for other communities.

DMS was recently awarded \$350,000 from CDBG funds to develop more watershed studies. These studies will provide baseline data for future project funding. Being able to showcase examples of successful pilot projects like Stoney Creek, executed with the assistance of an experienced team of local, technical experts, will better position North Carolina to compete for additional federal resources.

POLICY REQUEST: Fund the Natural Infrastructure Flood Mitigation program within the Division of Mitigation Services to deliver flood reduction demonstration projects. Beginning with a demonstration in the Stoney Creek watershed in Wayne County, the program can rapidly install flood mitigation solutions. With additional appropriations, the program will be able to expand natural infrastructure flood mitigation to implement the watershed studies undertaken with the CDBG funding described above.

4. Enhance Coordination and Collaboration: Reauthorize and Elevate the North Carolina Resilience Office

The NC Office of Recovery and Resiliency (NCORR) was authorized and established by legislation in October 2018. As the state was recovering from two 500-year hurricanes, every agency within North Carolina state government was working on recovery and resilience activities as directed by the Governor, but no one entity was coordinating the work.

To address that gap, a Chief Resilience Officer and two Deputy Chief Resilience Officers were hired to create the Resilience Office within NCORR. The office has become the clearinghouse for the [State Resilience Plan](#) and began coordinating with other state agencies as they implemented the Resilience Plan. The Resilience Office has also built partnerships with stakeholders and communities, including securing \$1M in funding for the North Carolina Rural Center and Councils of Government to implement a community engagement process (as described in #2 above). The Resilience Office has been critical to the success of the state's resilience work, ensuring that there is an entity with an eye toward aggregating, aligning and advancing state agencies' efforts.

"It's nice to have the help the day after the storm, but what about the weeks, and the month, and the years after. Kind of disappears, and everyone goes home."
-Farmer, Sampson County, NC

Without reauthorization, these positions will expire, and the coordinating function will be lost. The Resilience Office does not have a defined legislative mandate or set of objectives. Other states, including [South Carolina](#) in September 2020, have legislatively established Resilience Offices with clear mandates and an elevated stature within state government. North Carolina has a strong foundation with its

Resilience Office and, through reauthorizing legislation, the office can be further strengthened and elevated to meet the goals of the state and local communities.

POLICY REQUEST: The Legislature should permanently authorize and fund the NC Resilience Office with the following structure and mandate:

1. The office shall be led by a Chief Resilience Officer and support staff.
2. The office shall develop, implement, and maintain the Statewide Resilience Plan and shall coordinate statewide resilience efforts, including coordination with federal, state and local government agencies, stakeholders and nongovernmental entities.
3. The office shall work with local governments to identify and address needs to make their communities more resilient and equitable.
4. The office shall coordinate, develop and maintain resilience and risk reduction plans including a Flood Resilience Blueprint to guide state investments in flood mitigation projects to protect communities, infrastructure, productive lands and ecosystem benefits.

Positioning North Carolina for Success and Resilience

North Carolina can build on best practices from other states that have demonstrated the many benefits and increased funding the flows from planning, engaging and coordinating across all levels of government.

In Louisiana, a program called LA SAFE, the Louisiana Strategic Adaptations for Future Environments program, was established to deal with the increasing flood risks their state is experiencing. Through LA SAFE, public and private partnerships across sectors were developed, all working collaboratively with frontline communities to plan and execute on resilience plans for impacted areas. Their intentional, integrated approach to bringing planning expertise, science, and community members to develop a shared understanding of community flood risks has positioned them to successfully compete for tens of millions of dollars in federal funding for critical natural infrastructure projects that were specifically targeted in Environmental Justice (EJ) communities. Most notably, in 2016, LA SAFE was awarded more than \$92 million through a highly competitive US Department of Housing and Urban Development (HUD) grant for communities that were impacted by major disasters between 2011 and 2013.

Iowa was awarded more than \$96 million through the same competitive HUD grant process to support a program known as the Iowa Watershed Approach. Various stakeholders from North Carolina have traveled to and engaged with the Iowa team, learning about their priorities and programmatic design. Their holistic, watershed-scale program is focused on solutions that protect the state's agriculture industry and the residents of vulnerable, flood-risk communities — focus areas that align with North Carolina's needs.

In both cases, the cross-functional, coordinated, regional partnerships based on science and modeling (a “blueprint”) helped position those states for success in the competition for federal funding. In fact, in the 2016 national funding competition, both Iowa and Louisiana were each awarded more funding than California and New York combined. By working hand-in-hand with frontline communities, leveraging extensive, vital networks and expertise, they made an effective case for funding and advancing resilience programs that will sustainably protect people and property in their states.

North Carolina has the expertise and available resources to build a comprehensive resilience program that would join the ranks of Louisiana, Iowa and other states as a model for how to make our vulnerable communities more resilient to the effects of climate change. In doing so, North Carolina can also “punch above its weight” in competing for federal funding. With focus and funding, North Carolina can advance and achieve our resilience objectives.

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