



Evaluating State Policies and Programs to Enable Local Flood Resilience in the Great Lakes

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States have a tremendous and urgent opportunity to support local planning for flood resilience

Over 80% of municipalities surveyed in the Great Lakes believe that future flooding is very important to their jurisdiction’s planning processes, yet only 27% have staff that are highly knowledgeable about this issue and only 11% reported having high capacity to respond to flooding.”³

Flood resilience planning is essential in the Great Lakes region: the amount of precipitation during heavy rain events has **increased by 35%** since 1951, stormwater infrastructure is aging, and flood risk is distributed unevenly across the population.^{1,2} A recent survey of 241 Great Lakes local governments found that they perceive flooding as very important to their planning processes but they lack the knowledge and capacity to effectively address flooding in their communities.³ While flood resilience policy and planning is highly local, state governments are able to **provide rules, guidance, and resources** that make flood resilience planning easier, more likely, and more equitable.⁴ They can also help ensure local governments include climate change in flood risk policy

and planning. Our work identifies four key ways states can support local flood resilience planning, and uses a new scoring system to assess state support in the eight Great Lakes states. Here, we summarize our findings and offer recommendations for states aiming to expand and improve their support for flood resilience planning by local governments.

How states can support local flood resilience planning

First, states serve as a source of important information by partnering with communities to conduct local vulnerability assessments, developing relevant in-state flood resilience case studies, and producing climate change-informed flood risk data and maps. States can offer **planning guidance**, including both resources for communities that directly facilitate local resilience planning (e.g., workshops, trainings), and statewide flood resilience planning initiatives that serve as a roadmap for local governments. Third, states can develop and implement **regulations and standards** that establish flood resilience requirements and facilitate local resilience-building. Finally, states can provide **funding and financing** – including leveraging federal funds – to support and incentivize local flood resilience-building projects.

Innovative Actions states have taken to advance local flood resilience

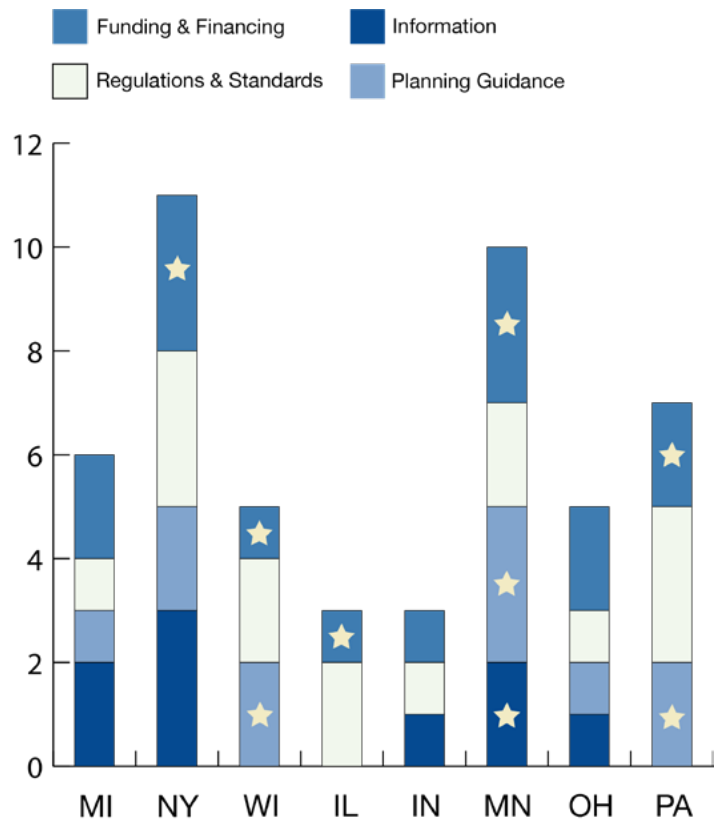
<p>Information</p> <ul style="list-style-type: none"> • Local vulnerability assessments • Adaptation case studies • Climate change-informed flood risk data & maps 	<p>Planning Guidance</p> <ul style="list-style-type: none"> • State adaptation plan • State resiliency office • Workshops to support local flood planning
<p>Regulations & Standards</p> <ul style="list-style-type: none"> • Resilience requirements for communities • Enabling local stormwater fees • Preference for green infrastructure under NPDES • Preference for green infrastructure under CWSRF 	<p>Funding & Financing</p> <ul style="list-style-type: none"> • Well-resourced community grant/loan programs • State-led local flood resilience projects • Securing large grant awards from BRIC/PDM or FMA • Further utilization of CWSRF resources

In each of these four categories, we have identified Standard Actions and Innovative Actions. Standard Actions are those steps states are required to take or that are very common among state governments. Innovative Actions are those steps states have taken to more proactively enable local flood resilience planning and are summarized in the figure below. Within each of the four categories there are also opportunities for states to explicitly center equity and justice, and ensure that local flood resilience planning emphasizes the needs of vulnerable and marginalized communities.

Findings: Great Lakes states showcase different approaches to enabling local flood resilience

We reviewed comprehensively the policies, programs, and resources developed by Great Lakes states to better understand where innovation is taking place and the extent to which equity and justice are being prioritized. Each of the four categories is scored out of three points – with a three referring to the state completing that category’s Innovative Actions – so the highest possible score is twelve. The chart below shows the points each Great Lakes state received across the four categories. A star demonstrates that a state is taking action within a category to prioritize social equity, though in all cases there is considerable opportunity for states to further focus on equity. In our analysis, New York received the highest score of 11 points and one star for prioritizing equity in Funding & Financing. Minnesota received the second highest score of 10 points and received the highest number of stars of any state, three stars for prioritizing equity in Information, Planning Guidance, and Funding & Financing. Below we summarize our findings in each of the four categories.

Information: Michigan, New York, and Minnesota received high scores for their innovative approaches to providing information that supports local flood resilience planning but only Minnesota received a star for prioritizing equity. New York’s Department of Environmental Conservation (DEC) funds and conducts local vulnerability studies through [Resilient NY](#) and has also published [case studies](#) synthesizing takeaways from local vulnerability assessments.^{5,6} Additionally, the state legislature tasked DEC with creating [state sea-level rise projections](#) under the Community Risk and Resiliency Act.⁷ Minnesota is the only Great Lakes state that incorporates equity considerations into its information resources, such as the Department of Health’s [Health and Flood Vulnerability Assessment Tool](#) and the [Vulnerable Population Assessments](#) funded by Minnesota’s Pollution Control Agency.^{8,9}



Rating innovative actions for enabling local flood resilience in the Great Lakes; stars indicate evidence of prioritizing social equity within specific state policies and programs

Planning Guidance: Four Great Lakes states have created statewide adaptation plans, three of which emphasize equity, and those three states have also established supporting governance structures for adaptation, two of which emphasize equity. Minnesota leads with a draft [Climate Action Framework](#) and supporting governance structures ([Climate Change Subcabinet](#) and [Governor’s Advisory Council](#)) – all of which prioritize equitable policy solutions to reduce and manage flooding.^{10,11,12} Similarly, Wisconsin’s [Governor’s Task Force on Climate Change](#) reflects attention to equity in terms of task force representation; plus, the [Task Force’s recommendations](#) to date have analyzed state policy pathways from an equity lens.^{13,14} While [Michigan](#) and [Pennsylvania](#) convene local leaders for climate workshops and facilitations, the past sessions have focused more on climate change mitigation than on resilience and adaptation.^{15,16} No Great Lakes states are facilitating substantive educational opportunities for local leaders on flood resilience.

Regulations & Standards: No Great Lakes state has set statewide regulations or standards that place equity at the fore. Only Pennsylvania and New York have created statewide flood resilience regulations to speak of. [Pennsylvania’s Act 167](#) requires each county to adopt

and use local ordinances in order to be in compliance with watershed-based stormwater management plans.¹⁷ [New York’s Community Risk and Resiliency Act](#) requires communities and state agencies to incorporate flood risks into their planning processes.¹⁸ However, several Great Lakes states are applying flood resilience standards in discrete channels such as charging for stormwater (five states), administering NPDES permits (three states), and distributing CWSRF resources (three states). Illinois shows leadership by advancing local flood resilience in two ways. First, within the [NPDES](#), Illinois named green infrastructure (GI) the highest preference best management practice and started requiring public education on GI.¹⁹ Second, [Illinois](#) passed legislation to authorize the use of the CWSRF for GI investments, sets GI goals in its Intended Use Plan, and prioritizes GI in project application scoring.²⁰

[Mitigation Program](#) and [2022 Environmental Bond Act](#), respectively.^{26,27} We found that half of the Great Lakes states were in the top ten US states for accessing federal resources for flood resilience (specifically Pre-Disaster Mitigation (PDM)/Building Resilient Infrastructure and Communities (BRIC) and/or Flood Mitigation Assistance (FMA) funding).²⁸ Michigan and New York lead in using CWSRF resources by [spending significantly on green infrastructure](#) and [expanding state-offered clean water grant assistance for local governments](#).^{29,30} Michigan further capitalizes its CWSRF by adding state funds beyond the required match, and [New York leverages its CWSRF](#).^{31,32} Wisconsin, Minnesota, and Pennsylvania demonstrated attention to social equity by disbursing over 25% of their CWSRF assistance to Economic Hardship Communities.³³

Funding & Financing: New York and Minnesota emerged as top point earners, followed by Michigan. Minnesota disburses more grant money to local governments (\$12/ person/year) than any other Great Lakes state through [Flood Hazard Mitigation Grant Assistance](#) and the [Clean Water Fund](#).^{21,22} New York incorporates equity measures into its [Green Innovation Grant Program](#) and [Local Waterfront Revitalization Program](#), and Illinois offers a higher percentage of project funding to disadvantaged communities through its [Green Infrastructure Grant Opportunities](#) program.^{23,24,25} Minnesota and New York are the only Great Lakes states that fund flood resilience projects at the state level. They do this through the [Flood](#)

States can and should apply crosscutting best practices to improve their resource provision across categories

Great Lakes states have an enormous role to play in facilitating and supporting local flood resilience. State leadership can help local governments learn from one another, reduce disparities in local planning capacities, and efficiently catalyze action across jurisdictional boundaries. This report highlights examples from states that have adopted innovative approaches to supporting local flood resilience planning and showcases opportunities to build on existing work.

Immediate opportunities for Great Lakes states to adopt more innovative approaches to supporting local resilience planning

<p>Center Equity</p> <ul style="list-style-type: none"> • Incorporate social vulnerability into flood risk assessments and maps provided for communities • Charge an individual or group (e.g., council, task force) with addressing resilience statewide and make reducing flood disparities a central goal • Give more favorable funding terms (e.g., fund a higher percentage of project costs) for projects in vulnerable or disadvantaged communities
<p>Create Momentum Across Communities</p> <ul style="list-style-type: none"> • Facilitate peer-to-peer learning through cohort-based resilience planning workshops for local leaders • Share case studies documenting local vulnerability assessments and flood resilience planning with municipalities across the state
<p>Incentivize and Support Desired Actions</p> <ul style="list-style-type: none"> • Subsidize green infrastructure projects under the CWSRF by offering lower interest rates, principal forgiveness, and grants instead of loans for these project types • Require evidence of flood resilience planning as criteria for state grant program funds and provide technical assistance toward the application process

For more information about this study, please contact Professor Sara Hughes, School for Environment and Sustainability, University of Michigan, hughessm@umich.edu or visit www.waterclimatepolicylab.org.

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³⁰ States were compared 2016-2020 in terms of the annual dollar amount spent within State Funded Clean Water Grant Programs as well as the percentage of State Funded Clean Water Programs administered as grants versus loans. States were recognized for disbursing 85% or more as grants and disbursing a total grant amount (2016-2020) greater than \$50 Million. Data: <https://www.epa.gov/cwsrf/clean-water-state-revolving-fund-cwsrf-national-information-management-system-reports>.

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