

Mitigation Matters: Policy Solutions to Reduce Local Flood Risk

This brief is one of 13 that examine state and local policies that have resulted in actions to mitigate flooding.



Floodwaters from the Raccoon River inundate the Des Moines Water Works, center left above, and other areas near downtown Des Moines, Iowa, in July 1993.

Iowa Mitigation Program Leads to \$1.4 Billion in Flood Prevention Projects

How the state leveraged federal funding to develop mitigation program

Overview

In 2008, devastating floods across the Midwest left Iowa with an estimated \$10 billion in damage. In Cedar Rapids alone, 5,200 homes were damaged or destroyed after two weeks of historic rainfall.¹ As the state recovered, policymakers used some of the federal disaster assistance it received to create authorities tasked with reducing flood risk across watersheds—as opposed to a more localized, project-specific approach. The predominantly agricultural state later established a long-term funding source for communities seeking to mitigate damage from future floods.

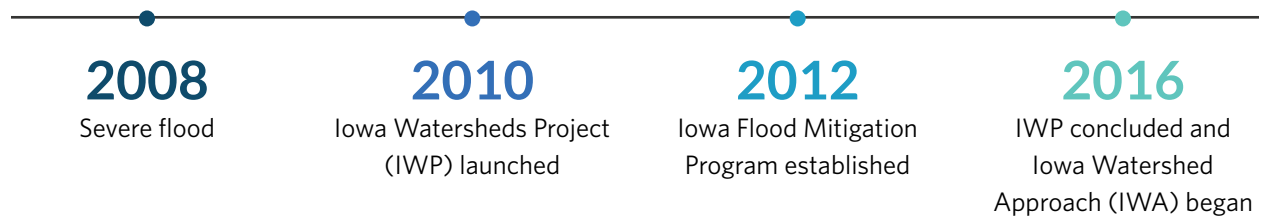
After years of flooding, state officials use federal aid to launch flood mitigation projects

The 2008 flooding was not an isolated incident. Fifteen years earlier, Iowa and eight other states endured one of the 10 costliest disasters in U.S. history when the Mississippi and Missouri rivers and their tributaries spilled over their banks.² The state has continued to experience frequent floods in the years since. From 2009 to 2018, Iowa was tied with Kentucky and West Virginia as the states with the most flood-related disaster declarations in the country.³

In the two years after the 2008 flood, Iowa received several rounds of disaster recovery funds from Congress. In addition to using some of this money to help affected residents and businesses, the state allocated \$10.5 million in November 2010 from the U.S. Department of Housing and Urban Development (HUD) to create the Iowa Watersheds Project (IWP),⁴ a pilot program to reduce the impact of future floods.

The program created five Watershed Management Authorities (WMAs) and tasked each with assessing hydrologic conditions and developing a plan to minimize flood risk and improve water quality within its watershed—potentially benefiting farmland and urban areas.⁵ The authorities encompassed multiple jurisdictions so that the watersheds could be evaluated comprehensively. The WMAs used the plans they developed to carry out more than 150 projects before IWP wound down in 2016.⁶

That year, the state created a longer-term program—the Iowa Watershed Approach (IWA)—that expanded the WMAs to nine watersheds.⁷ HUD awarded Iowa nearly \$97 million through the National Disaster Resilience Competition to fund the program.⁸



Sources: Iowa Department of Homeland Security and Emergency Management, “Iowa Flood Mitigation Board Annual Report” (2017), https://www.homelandsecurity.iowa.gov/documents/misc/FLOOD_AnnualReport_2017.pdf; Iowa Watershed Approach, “Community Development Block Grant—Natural Disaster Resilience Grant Competition, Exhibit C: Capacity” (2015), http://iowawatershedapproach.iowa.gov/docs/APP_HUD2015_Phase2_ExhibitC.pdf

As with the pilot, IWA aims to reduce flooding and incorporate nature-based solutions. Since its creation, IWA has worked with federal, state, and local partners to pool resources, examine the effectiveness of its measures, and improve its water modeling and data collection systems. WMA representatives frequently meet to learn from one another's experiences with selecting and carrying out projects. Projects have included restoring wetlands, building water detention basins, stabilizing riverbanks, and creating vegetated buffers.

Iowa Flood Center

After the 2008 floods, the state Legislature created the Iowa Flood Center, based at the University of Iowa, to promote science-based decisions on mitigating flood risk. With an annual budget of about \$1.2 million,⁹ the center set up a network of hydrologic stations, stream sensors, and rain gauges that researchers have used to better understand Iowa's watersheds and to monitor flooding in real time.

Equipped with this data, staff members at the center have worked with state agencies, other universities, and localities to assess the state's flood risk and provide technical assistance for IWA's flood mitigation projects, including evaluation of their effectiveness.

The U.S. Department of Homeland Security highlighted the center in 2018 as an example of a state using advanced technology to better understand flood risk, alert potential victims, and predict patterns of water spreading over land to inform land use decisions.¹⁰

In 2012, while the Iowa Watersheds Project was in its pilot stage, the state's General Assembly launched another effort—the Iowa Flood Mitigation Program—to support projects aimed at addressing gaps in communities' resilience to floods and breaking the costly cycle of damage and rebuilding.¹¹ The program operates out of the Iowa Department of Homeland Security and Emergency Management, and its board is composed of public representatives, state agency officials, and members of the General Assembly.¹²

The legislation that created the program established two possible funding sources for flood mitigation projects: appropriations by the General Assembly and local sales tax increases.¹³ All funding to date has come from the sales tax increases, which have paid for up to half of proposed projects. The remaining costs have been covered by federal sources or localities. As of Oct. 31, 2017, the most recent date for which data are available, the program's board had approved 10 local flood mitigation projects at a cost of \$1.4 billion, with \$596 million from sales tax revenue, \$425 million from federal funds, and \$360 million from local funds.¹⁴

Dubuque benefits from the state's multiple flood mitigation resources

Dubuque, in eastern Iowa on the state's border with Wisconsin and Illinois, had experienced six major floods since 1999 when the city applied for funding in 2013 from the Iowa Flood Mitigation Program. The floods had affected 3,190 residents and 72 businesses within the Bee Branch Watershed, with property damage, road closures, and disrupted utility services costing nearly \$70 million.¹⁵

The program awarded \$98.5 million—which the city matched dollar-for-dollar with a combination of federal and local resources—to build detention basins, replace floodgates, improve the sewer system, and restore creeks within the watershed.¹⁶ Dubuque also eliminated some impervious surfaces, such as asphalt, and increased its green spaces to allow the ground to better absorb rainfall and reduce runoff. Despite a cost of over \$200 million, the city estimates that the mitigation project should prevent \$582 million in future damage, almost triple the original investment.¹⁷

As Dubuque continued the work funded by the mitigation program, the IWA helped the city build on the progress in 2016 by improving its stormwater infrastructure and funding the flood-proofing of residential properties. The city aims to assist 300 homeowners by 2021.¹⁸

Completed projects have given some residents more peace of mind. Melvin Keys said the chronic flooding had strained his family's finances and caused emotional distress. "I was about ready to get out of here," Keys said. "I didn't want to leave, but I couldn't take the damage anymore." But after the program helped him renovate his home to make it more flood-resilient, he decided to stay. "Now I can actually enjoy my home," he said. "Before I couldn't do that, because I was always worried about getting the water out."¹⁹

Dubuque is an example of how the Iowa Flood Mitigation Program and the Iowa Watershed Approach can complement each other, but staff members say the two programs could better leverage funds and maximize assets if they collaborated more closely in other watersheds as well.²⁰

Conclusion

Because many IWA projects have not been completed, their effects may not yet be fully realized. But the combined revenue streams, cross-jurisdictional planning, and collaboration among federal, state, and local partners are helping to protect communities against floods—as are the mitigation efforts funded through the Iowa Flood Mitigation Program. And, as the 2019 floods in the Midwest show, the need in Iowa is as great as ever.

Both programs demonstrate the value of multifaceted approaches to flood mitigation as well as prioritizing community engagement and planning. By studying an entire watershed and incorporating many perspectives, state entities can gain a comprehensive understanding of a flooding problem—and potential solutions.

"Mitigation Matters: Policy Solutions to Reduce Local Flood Risk" examines policies in 13 locations: Arkansas; Brevard, North Carolina; Fort Collins, Colorado; Indiana; Iowa; Maryland; Milwaukee; Minnesota; Norfolk, Virginia; South Holland, Illinois; Vermont; Washington state; and Wisconsin.

To prepare the briefs, The Pew Charitable Trusts contracted with consulting engineering firm Dewberry, which identified a range of state and local policies across the U.S. that are helping to reduce flood risk. Local officials and disaster resilience experts provided input during the research process. Two external reviewers—Nate Woiwode, project manager of The Nature Conservancy's North American Risk Reduction and Resilience team, and Elizabeth Albright, assistant professor of the practice of environmental science and policy methods at Duke University's Nicholas School of the Environment—provided expert insight. Neither they nor their organizations necessarily endorse the conclusions.

Endnotes

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For further information, please visit:
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