

Mitigation Matters: 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.



Severe floods from Tropical Storm Irene tear up the asphalt and damage a building at a gas station at the junction of routes 4 and 100 in Killington, Vermont, on Aug. 31, 2011.

Vermont's Fund Helps Communities To Become More Flood-Ready

Legislation passed after Tropical Storm Irene rewards mitigation efforts

Overview

When Tropical Storm Irene hit the East Coast in August 2011, flash flooding in central and southern Vermont badly damaged many homes as well as roads, bridges, and other infrastructure.¹ The degree of destruction led the state's legislature to update the Emergency Relief Assistance Fund (ERAF) the following year. The fund gives more assistance following disasters to cities and towns that take action to bolster their resilience to floods, and less to those that don't. State investment in the fund is paying off: Enticed by the promise of more aid, communities in Vermont are taking steps to lessen the impacts of future storms.

The wake-up call: Tropical Storm Irene

Vermont is no stranger to flood damage. In the past decade, the state has endured 13 flood-related disasters. The previous four decades averaged six.^{2 3}

But the scale of these recent storms doesn't compare to that of Irene. Floodwaters damaged or destroyed 800 homes and businesses, and inundated 2,400 roads, 300 bridges, and six railroad lines, cutting off assistance to a dozen communities.⁴ Erosion and flooding also damaged power transmission infrastructure, causing delays in restoring electricity to over 117,000 people. All told, recovery efforts cost public and private entities \$850 million.⁵

“ I had been through tornadoes, earthquakes ... but the flood was the worst.”⁶

Sue Esty, a resident whose mobile home was destroyed, along with most of her belongings

New criteria for post-disaster funding

In response to Irene, state lawmakers updated the Emergency Relief Assistance Fund to make Vermont more resilient to flooding.⁷ Officials developed criteria for giving communities financial assistance from the ERAF after a disaster to reward those that have taken risk-reduction measures.⁸

The ERAF criteria determine how Vermont financially supports municipalities after presidential disaster declarations. When the president issues such a declaration, assistance from the Federal Emergency Management Agency (FEMA) to the states covers at least 75 percent of recovery costs.⁹ States pay the remaining 25 percent, which in Vermont is split between the state—using money from its general fund—and the affected cities or counties.

After the criteria were adopted, communities became eligible to receive as much as 17.5 percent of the costs from the state if they have taken significant flood mitigation measures.¹⁰ The state share is reduced to 12.5 percent if a community has taken a smaller subset of actions, and down to 7.5 percent if communities have not acted on any of the eligible options for preparing. After the rule was adopted, local officials had 24 months to meet the new standards to qualify for assistance from the fund.

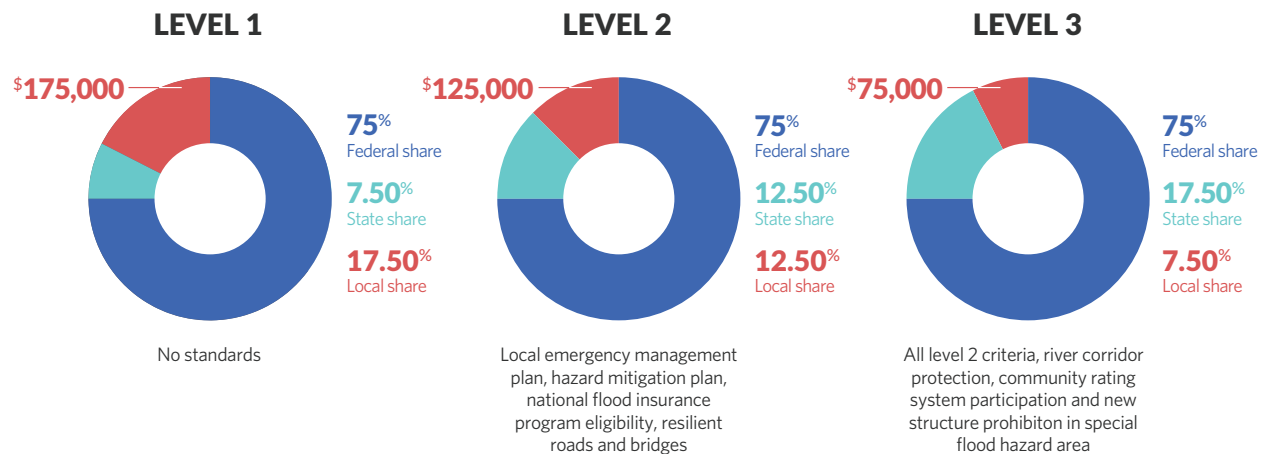
To receive a state match of 12.5 percent, municipalities must:

- Adopt a local emergency management plan to improve disaster response when flooding strikes.
- Coordinate local agencies' flood protection efforts through a hazard mitigation plan.
- Meet minimum criteria for participating in the federal government's flood insurance program,¹¹ such as adequate flood plain management.
- Adopt the Vermont Agency of Transportation's most recent standards for resilient roads and bridges.¹²

Figure 1

Disaster Funding Amounts Depend on What Mitigation Measures Communities Take

In the event of a \$1 million recovery project, the dollar value shown would be the town's responsibility



Source: State of Vermont Flood Training, "What You Need to Know," <https://floodtraining.vermont.gov/basic-concepts/need-to-know>, accessed March 28, 2019, <https://www.ncdc.noaa.gov/billions>

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Of the law's four basic criteria, the most challenging for small communities is developing a hazard mitigation plan. Many lack the staff and expertise to ensure compliance with FEMA.

Municipalities can qualify for a 17.5 percent match by taking one of these two additional measures:

- Pass a river corridor protection bylaw that meets or exceeds state regulations and guidelines, thus reducing the chance of erosion during a flood.
- Participate in FEMA's Community Rating System (CRS) and prohibit new structures in special flood hazard areas. CRS is a voluntary program that discounts flood insurance premiums for policyholders in communities that exceed the National Flood Insurance Program's (NFIP's) minimum standards for flood plain management, such as higher-standard building practices.¹³

Although Vermont's fund is aimed at encouraging communities to cut their flood risk before storms strike, the state gives communities 30 days after a federal disaster declaration to increase their score to qualify for more assistance from the ERAF. Because communities can be overwhelmed by the requirements, the Vermont Emergency Management Agency and the state's regional planning commissions can help them create and update emergency operation and hazard mitigation plans. Vermont also gives communities technical assistance before disasters, which eases post-disaster costs.

Ned Swanberg, a flood plain manager with the Vermont Department of Environmental Conservation, said the updated criteria have incentivized reducing flood risk. "It's in the statute now that state plans and municipal plans need to address flood resiliency and river corridor protection," he said.¹⁴

More communities preparing before floods

The ERAF has prompted more Vermont communities to take measures to reduce the impacts of flooding. From 2014 to 2017, the number of municipalities in the state with emergency operations plans nearly tripled, and those with hazard mitigation plans nearly doubled. Municipalities with improved standards for roads and bridges rose from 70 percent to 93 percent, and those that adopted or took steps toward adopting a flood hazard bylaw that meets NFIP requirements rose from 86 percent to 90 percent.¹⁵

As a result, 24 percent of communities qualified for the 17.5 percent state share and 40 percent qualified for the 12.5 percent match as of March 2019.¹⁶

For example, when faced with the cost of a blown culvert, the town of Danby earned a 17.5 percent match for future disasters after it adopted No Adverse Impact standards for its river corridor. Protecting river corridors helps to reduce erosion and keep flood plains functioning for public safety.¹⁷

Conclusion

In its 2018 State Hazard Mitigation Plan, Vermont said it will monitor the effectiveness of the ERAF to further improve the program.¹⁸ But it is already succeeding by this measure: More Vermont communities are being proactive about reducing the impacts of flooding. As Vermont flood plain manager Sacha Pealer observed, “There are signs of a shifting culture.”¹⁹

“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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