

# Flood Resilience and West Virginia

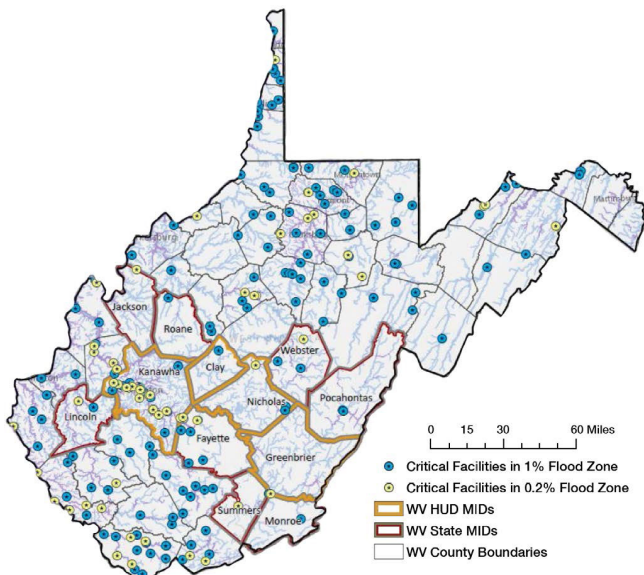
April 2024

The Environmental Protection Agency defines [resilience](#) as the “capability to anticipate, prepare for, respond to, and recover [from disasters] with minimum damage to social well-being, the economy, and the environment.” This Science and Technology Note discusses existing efforts and policy options for enhancing flood resilience in West Virginia.

## Flood Damage and Mitigation in West Virginia

Flooding is the [most common natural disaster](#) in West Virginia and [affects every county](#) in the state. From 1960 to 1996, West Virginia recorded 252 flood-related deaths (resulting floods or flash floods); this is more than in any other state besides Texas and California. Floods create economic harm through damage to property and infrastructure and [disproportionately affect](#) low-income West Virginia communities. West Virginia’s mountainous terrain causes [severe flash flooding](#) and landslide risks. Flood mitigation activities seek to reduce these harms by investing in West Virginia and [putting West Virginians to work](#) implementing mitigation measures.

### West Virginia Critical Facilities in Flood Zones



## Research Highlights

- Flooding presents a particular challenge for West Virginia, which experienced [over 1,600 floods](#) from 2010 to 2021. The problem is expected to [continue to get worse](#).
- Actions to reduce the impact of flooding will save lives and generate economic value for West Virginia. It is estimated that \$1 invested in flood mitigation saves \$6 or more.
- Flood resilience funding could enable agencies like the State Resiliency Office to improve West Virginia’s ability to weather future storms, with associated social and economic benefits.

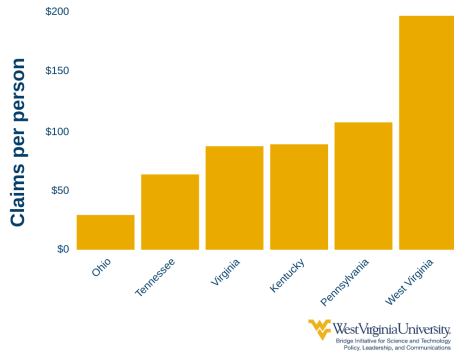
The [June 2016 flood](#) was the deadliest flash flood in the United States since 2010, with [23 deaths](#) and an [overall cost of approximately \\$1.2 billion dollars](#). West Virginia leads neighboring states in the number of National Flood Insurance Program payment amounts per person over the length of the program. Flood risks in West Virginia could rise 18% by 2050.

Flood mitigation activities include proactive measures taken to decrease the impact of flooding, [like beyond-code requirement building](#), home acquisition, improved stormwater management, and wetland preservation and construction. [Enhanced data collection](#) allows for targeting effective mitigation measures. [Research has found](#) every \$1 invested in flood mitigation can save \$6 in disaster recovery, and that in [riverine areas savings can be \\$7 to \\$1](#). While flooding will always occur, [man-made problems such as old dams and poorly maintained culverts or bridges](#) can exacerbate flooding; these represent an opportunity to improve West Virginia’s flood resilience through infrastructure improvements.

\*MIDs refers to “Most Impacted and Distressed” counties as determined by the State and the Department of Housing and Urban Development  
\*\*100-year flood plain: 1% chance of being inundated by a flooding event in any given year. 500-year flood plain: 0.2% chance of being inundated by a flooding event in any given year “

Source: [Statewide Flood Plan, West Virginia Conservation Agency](#)

## National Flood Insurance Claims Paid per Person, 1980-2022



Source: WVU Bridge Initiative, based on data from [National Flood Insurance Program, 2020 Census](#)

## Current Flood Resilience Policies in West Virginia

In 2017, the West Virginia legislature established the [State Resiliency Office \(SRO\)](#) to help coordinate and implement “disaster resilient strategies” across the state and [the Joint Legislative Committee on Flooding \(HB 2935\)](#). In 2021, [SB 389](#) clarified that the SRO is responsible for emergency and disaster response planning. In 2023, [SB 677](#) created the [West Virginia Flood Resiliency Trust Fund](#) to be administered by the SRO and required the SRO to create a new “Flood Resiliency Plan” by June 2024, to be updated every two years thereafter. This bill [also allowed](#) up to 6% of the Community Development Block Grant’s disaster recovery funds to be directed to flood resilience planning and implementation. In 2024, Governor Justice [requested](#) that \$50 million be allocated to the West Virginia Flood Resiliency Trust Fund but had not allocated any money to the fund in the [approved FY 2025 budget](#) as of March 2024.

## Benefits of Flood Resilience for West Virginia

Like other natural disasters, flooding causes economic harms beyond the property damage cost ([\\$464.1 million from 2003-2023](#)). Businesses may close and employees may need to take time off work or leave their jobs entirely, and access to essential services can be limited. The town of Clendenin’s lone grocery store, which was damaged in the 2016 flood, had [not been rebuilt](#) as of 2022. Road closures and infrastructure damage further depress economic activity, and fear of future flooding can discourage investment or reinvestment.

Flood mitigation activities thus will have benefits beyond decreasing the consequences when flooding inevitably occurs. It could spur greater investment, economic activity, and workforce participation. In addition, [mitigation benefits](#) such as preservation of family heirlooms and community culture can be difficult to quantify, indicating that the 6:1 benefit to cost ratio (BCR) estimate [may understate](#) the true economic and social value of mitigation activities.

## Flood Mitigation Efforts in Other States

Other states have a variety of approaches to flood mitigation. Kentucky has a [Flood Control Local Match Program](#), which uses state bond funds to help cities and counties unlock federal disaster funds with matching requirements. North Carolina has an [Office of Recovery and Resiliency](#) and provides funds to the [Golden LEAF foundation](#) to award local governments grants for flood mitigation activities. Since 1976, Maryland has had a [Comprehensive Flood Management Grant Program](#).

In 2020 Virginia established the [Community Flood Preparedness Fund](#), which has [awarded \\$151.6 million](#) to resilience studies and projects so far, prioritizing “community scale hazard mitigation activities that use nature-based solutions to reduce flood risk.” The fund is supported by the sale of carbon allowances through the state’s (former) participation in the [Regional Greenhouse Gas Initiative](#).

## West Virginia Flood Resilience Policy Options

Policy options include allocating the [\\$50 million requested by Governor Justice](#) to the [West Virginia Flood Resiliency Trust Fund](#) administered by SRO. Legislators could [modify disbursement requirements](#) on this fund, which [currently requires](#) that a minimum of 50% of funds be directed to low-income geographic areas, 50% towards “nature-based” solutions, and 25% towards the acquisition of single-family homes in flood prone areas. While Virginia has a 25% low-income disbursement requirement, to date [over two-thirds of funds](#) have been disbursed to low-income areas. A [local matching program](#) could help local governments access federal resilience funds with matching requirements. These programs could be pursued with the Resiliency Fund at the SRO’s discretion.