

# THE DYNAMICS OF STATE AND LOCAL GOVERNMENT BUDGETS:

## Increased Financial Risks From the Nexus of Climate, Utilities, Insurance and Changing Federal Policies



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Golden received his Ph.D. in sustainable engineering from Cambridge University (U.K.) and a master's degree in environmental engineering and sustainable development as part of a joint program of Cambridge University and Massachusetts Institute of Technology. He also holds a professional mastery of project management certificate from Stanford University, an M.L.E. professional certificate in higher education from Harvard, and a B.A. in management.

He was appointed to the Board of Scientific Counselors to the U.S. Environmental Protection Agency, where he served under two different presidential administrations and was elevated to the Executive Committee until 2024, when his terms expired. Golden consults corporations and governments on strategies and policies. He was named a faculty pioneer by the Aspen Institute for his research and teaching in corporate sustainability.

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## EXECUTIVE SUMMARY

State and local governments have had recent experience in facing rapid impacts to their revenues and expenditures, with the most notable being the COVID-19 pandemic. However, what makes those past challenges different from those arising today is that the U.S. federal government served as a backstop and provided significant funding to state and local governments to shore up budgetary gaps.

The issues and risks facing state and local governments today are in some ways a continuation of a longer-term discussion between federal and state officials regarding disaster relief. Some in the federal government have long made the argument that federal bailouts have incentivized inaction from states in high-risk areas, while state officials take the view that disaster relief and funding for resiliency should be a federal government priority.

Through its statements in the media, the current administration appears to have a strong view of requiring states to take on a greater share of disaster and resiliency leadership and funding, which includes necessary upgrades to public infrastructure including water, stormwater and wastewater systems across the country. All of this occurs at a time of significant financial stress for state budgets resulting from increased climate disasters, degrading civil infrastructure, and increasing withdrawals of private property insurance companies.

Each of these drivers separately has significant financial and operational implications for states. However, combined together, these trends can significantly affect the ability of state and local governments to mitigate and respond to climate-related and utility-related impacts to operational continuity, as well as to the health and safety of their communities.

Recognizing the need to support state and local government officials, The Pew Charitable Trusts engaged the author during 2025 to conduct an up-to-date documentation of these growing budgetary risks and provide insights on how organizations across the country are working to address these challenges and to minimize financial impacts.

## Six Key Findings of This Report

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1

States and local communities across the country face **INCREASING FINANCIAL AND OPERATIONAL IMPACTS** from climate change and extreme weather events.

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2

State and local governments face an unsettled financial future as the federal government proposes **CUTS TO DISASTER RELIEF AND RESILIENCY GRANTS**.

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3

Deferred maintenance backlogs and proposed cuts to the Environmental Protection Agency's (EPA) water revolving fund grant program place operational and financial risks **to WATER AND WASTEWATER UTILITIES** at a time of increased threats from climate change.

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4

Increasing **WILDFIRES CAUSED BY POWER UTILITIES** have significant financial impacts on state finances, driving recent policy developments to minimize budgetary risks.

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5

**PRIVATE INSURANCE COMPANIES ARE LEAVING STATES AND INCREASING PRESSURES ON STATE FAIR ACCESS TO INSURANCE REQUIREMENT (FAIR)PLANS** because of growing climate change impacts, tort actions and a lack of aggressive resiliency actions by state and local governments.

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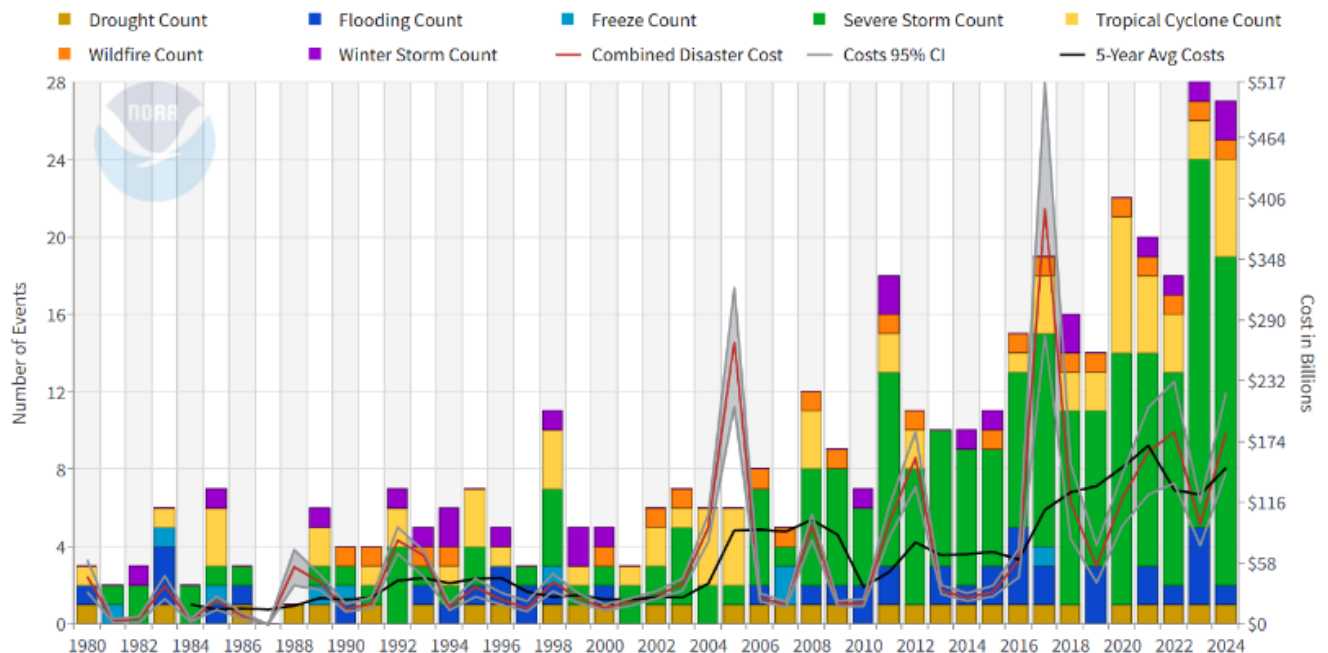
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**STATE AND LOCAL AGENCIES** can achieve enhanced fiscal management by researching, connecting and prioritizing the drivers detailed in this report, and incorporating them into a comprehensive resiliency plan.

## FINDING 1

State and local governments face increased financial risks from climate change.

State and local governments face increasing financial risks from unplanned and unbudgeted expenditures and revenue losses as a result of the growing number and intensity of extreme weather events and climate change, as represented by the number of billion-dollar events in the United States (see figure ES-1).



**Figure ES-1.** U.S. billion-dollar weather-related disaster events, 1980 to 2024 (CPI-adjusted). Source: National Oceanic and Atmospheric Administration (NOAA), 2025.

State and local governments need to recognize and quantify the impacts of extreme weather events (acute events) and climate change (chronic impacts) to both their budgets and continuation of essential operations, as presented in figure ES-2. As detailed in this report, we identify the potential financial risks to states throughout the country for various weather and climate events.

Risks to State Budgets			
TOPIC	CATEGORY	TYPES OF IMPACTS	EXAMPLES
Wildfires	Expenditures	Fire suppression, infrastructure repair, cleanup/remediation, temporary housing, grants and loans, increased debt and bonding impacts. Mudslides impact post-recovery from rain in areas with lost vegetation. Gaps in private insurance coverage.	Montana's 2025 fire suppression costs are expected to be between \$50 and \$70 million (News from the States, Nov. 21, 2025, "State on Hook for up to \$70 million in Fire Suppression Costs This Season").
	Revenue Losses	Property taxes, state taxes, agricultural losses, tourism losses, GDP losses	The 2025 Palisades (California) fire was estimated to lead to a 0.48 percent decline in Los Angeles County-level GDP for 2025, amounting to approximately \$4.6 billion and a budget surplus down \$97 per capita. Property tax in California is unique due to Proposition 13 that limits the reassessment of property values until the property is sold. And there are more housing and parcel transactions following wildfires (ULCA 2025, "Economic Impact of the Los Angeles Wildfires").
	Utility Nexus	Ignition (liabilities/litigation) from power sources, service interruptions. Wildfires alter watersheds and water quality	On July 9, 2025, the State of Hawai'i announced that it would contribute \$807.5 million to the larger \$4 billion multiparty global settlement for 2024 Maui wildfire victims (Hawaii Public Radio, July 9, 2025, "State Confirms Its \$800M to \$4B Maui Wildfire Settlement").
Storm Surge, Sea Level Rise & Flooding	Expenditures	Resiliency construction to shore up utility infrastructure, infrastructure repair, cleanup/remediation, temporary housing, grants and loans, increased debt and bonding impacts, gaps in FEMA and private insurance coverage	The town of Hillsborough, North Carolina, announced the pullback by FEMA of BRIC funding of over \$7 million for relocating and upsizing a sewer pump station as well as construction of a new pump station to reduce impacts from flooding (Town of Hillsborough, April 16, 2025, Town Board Meeting Summary).
	Revenue Losses	Property taxes, state taxes, agricultural losses, tourism losses	A Bureau of Labor Statistics (BLS) study of a 10-month period showed that the New Orleans tourism industry lost approximately 22,900 jobs. Over the 10 months following the hurricane, the loss in wages in the sector was about \$382.7 million in 2005 dollars (BLS, June 2007, "Monthly Labor Review"). Separately, over half of Florida's 410 municipalities will be affected by 6.6 feet of sea-level rise. Almost 30 percent of all local revenues currently generated by these 211 municipalities comes from buildings in areas that will become chronically flooded, potentially by the end of the century (Journal of the American Planning Association, 2023, "Can Florida's Coast Survive Its Reliance on Development?").
	Utility Nexus	Interruption of services, potential leakage of wastewater facilities	The Massachusetts Water Resources Authority determined that Boston's Deer Island Wastewater Treatment Plant was vulnerable to sea-level rise and decided to raise key portions of the plant by 1.9 feet. The redesign and construction covered a 10-year period (1989-1998) and was part of a \$3.8 billion upgrade to add secondary treatment and consolidate regional capacity by increasing Deer Island's capacity from 250 to 350 million gallons a day (EPA 2025, "Boston Raises Wastewater Facility to Avoid Inundation").
Hurricanes	Expenditures	Emergency responders, National Guard deployment, cleanup/remediation, temporary housing, grants and loans, increased debt and bonding impacts, gaps in FEMA and private insurance coverage	In 2017 over 70 Texas state agencies and institutions of higher learning responded to Hurricane Harvey by providing financial assistance, goods and services, including evacuation assistance, debris removal, shelter, food and clothing. The fiscal impact to the agencies reached an estimated \$3.3 billion in all funds, including \$377.5 million in general revenue funds, \$5.3 million in general dedicated revenue funds, \$246.9 million in other funds and \$2.7 billion in federal funds, as of 2019 (Texas Legislature Budget Board Report, April 2019, "Fiscal Impact of Hurricane Harvey on State Agencies").
	Revenue Losses	Property taxes, state taxes, agricultural losses, tourism losses	A Virginia Tech University study estimated Hurricane Helene's damage to Virginia's agriculture, forestry and related industries will fall between \$416 and \$630 million. Those numbers include previous estimates of direct losses and replacement costs on farms as well as projected future income losses for farms and communities impacted by the hurricane (Virginia Tech News, Nov. 11, 2024, "Long-term Impact of Hurricane Helene on Virginia Agriculture Could Reach \$630 Million, Analysis Shows").
	Utility Nexus	Interruption of services, damage and write-offs of infrastructure	Hurricane Sandy caused 11 billion gallons of untreated and partially treated sewage to flow into rivers, bays, canals and, in some places, city streets, largely as a result of recent storm-surge flooding that swamped the region's major sewage treatment facilities. To put that in perspective, 11 billion gallons is equal to Central Park being stacked 41 feet high with sewage. The vast majority of that sewage flowed into the waters of New York City and northern New Jersey in the days and weeks during and after the storm (Climate Central, 2013, "Sewage Overflows From Hurricane Sandy").
Droughts	Expenditures	Water conservation projects, livestock and crop assistance, hazardous dry vegetation removal, gaps in private insurance coverage	Arizona Gov. Katie Hobbs announced a \$60.3 million investment in Arizona's water supply, focusing on conservation, advanced technology, infrastructure improvements and water sustainability to address critical water challenges across the state (Office of the Governor, June 28, 2025, "Governor Hobbs Announces Over \$60 Million Investment to Protect Arizona's Water").
	Revenue Losses	Agricultural losses, tourism decline, increased wildfires that impact property and sales taxes	In 2023 farmers in Kansas had over \$3.04 billion in incurred losses, mainly from drought conditions as well as hail storms. Kansas wheat losses totaled over \$1 billion, followed by \$780 million in soybean losses. National drought, excessive heat and wildfires alone accounted for over \$16.59 billion in total crop losses (American Farm Bureau Federation, 2024, "Market Intel: Major Disasters and Severe Weather Caused Over \$21 Billion in Crop Losses in 2023").
	Utility Nexus	Interruption of thermoelectric power plants and water systems, impacts to hydroelectric power, nitrate impacts to groundwater	In 2021 the Edward Hyatt Power Plant—a major California hydroelectric power plant—was forced to shut down because of low water levels for the first time since it opened in 1967. Hyatt is the fourth largest hydroelectric energy producer statewide (644 megawatts), according to the California Energy Commission, with the ability to power up to 800,000 homes when operating at full capacity (CNN, Aug. 6, 2021, "California Hydropower Plant Forced to Shut Down as Water Levels Fall at Lake Oroville").
Extreme Heat	Expenditures	Increased cooling of state buildings, cooling shelters, repairs to infrastructure, morbidity, ER responses, medical expenses	A recent study indicates that the Maricopa County, Arizona, roadways will likely need up to \$8 million in additional maintenance and rehabilitation work per year due to excessive heat impacts (Nature Conservancy and AECOM 2021, "Economic Assessment of Heat in the Phoenix Metro Area").
	Revenue Losses	Loss of productivity	An Atlantic Council study estimates the total economic loss from heat in the United States to be at least \$100 billion annually—a figure that will double by 2030 and quintuple by 2050 (Atlantic Council, 2021, "Heat Is Killing Us, and the Economy Too").
	Utility Nexus	Power outage impacts, longer-term impacts for water for thermoelectric power and to drinking water supplies	According to data from the North American Electric Reliability Corp., between 2024 and 2028, an alarming 300 million people across the United States could face power outages. Texas, California, the Southwest, New England and much of the Midwest are among the states and regions most at risk of energy emergencies during extreme conditions (Federation of American Scientists, 2025, "Economic Impacts of Extreme Heat: Energy").

Figure ES-2. Overview of the nexus of climate-utility risks to state budgets.

Additionally, within this report there are various case studies that offer strategies for state and local governments to address and minimize the financial risks from climate and climate-utility impacts (see section 4).

## FINDING 2

State and local governments face unsettled financial future as the federal government proposes cuts to disaster relief and resiliency grants for infrastructure.

Historically, state and local governments have been the beneficiaries of the federal government for the direct deployment of resources, funding and manpower for extreme weather events. Additionally, the federal government has been the largest source of financial support through competitive grants that support state and local governments to construct new or update infrastructure to make that infrastructure, especially water and wastewater facilities, more resilient to climate change and extreme weather events.

In fact, over the past four years, the Federal Emergency Management Agency (FEMA) has provided more than \$12 billion to individuals and \$133 billion primarily to state and local governments.

Top 12 States in Modeled With Largest Percentage of Funding Lost				
State	Total Funding (millions)	Total funding lost (millions)	Share of funding lost	Funding lost per capita
Pennsylvania	\$333	\$333	100%	\$26
Ohio	\$298	\$298	100%	\$25
Maine	\$155	\$155	100%	\$112
Michigan	\$93	\$93	100%	\$9
Nevada	\$39	\$39	100%	\$12
Arizona	\$33	\$33	100%	\$5
Virginia	\$605	\$534	88%	\$62
Idaho	\$91	\$80	88%	\$42
New Hampshire	\$173	\$151	87%	\$109
Wisconsin	\$182	\$134	74%	\$23
Massachusetts	\$699	\$509	73%	\$73
Washington	\$500	\$366	73%	\$47
Top 12 States in Modeled Total Funding Lost in Millions US				
State	Total Funding (millions)	Total funding lost (millions)	Share of funding lost	Funding lost per capita
Washington	\$500	\$366	73%	\$47
North Carolina	\$2,219	\$354	16%	\$33
Pennsylvania	\$333	\$333	100%	\$26
Minnesota	\$545	\$314	58%	\$55
Kentucky	\$1,675	\$310	19%	\$69
Louisiana	\$10,713	\$304	3%	\$66
Ohio	\$298	\$298	100%	\$25
Alabama	\$1,028	\$279	27%	\$55
Georgia	\$1,114	\$214	19%	\$20
Hawaii	\$898	\$209	23%	\$145
New Mexico	\$515	\$193	37%	\$91
Kansas	\$712	\$191	27%	\$65

Table ES-1. Retrospective implications to states based on proposed quadrupling of the per capita impact indicator (PCI), 2008 to 2024, as calculated by the Urban Institute. Source: Urban Institute, 2025 (lxvii).

However, as detailed, there have been several reports and statements including those from the current administration that there are potentially significant changes to federal disaster relief funding, including the possibility of quadrupling the per capita impact indicator. This means states would have to sustain four times as much damage as they currently do before federal aid become available, and independent findings show that 71 percent of disaster events from 2008 to 2024 would not have qualified for federal disaster relief funding based on proposed changes to the per capita impact indicator.

FEMA not only is facing potentially significant changes to disaster relief funding, but the agency is also a prime source of **funding to state and local governments** for **resiliency-enhancing projects**.

On April 30, 2025, **FEMA announced the cancellation of the Building Resilient Infrastructure and Communities (BRIC) grant program**.<sup>1</sup> Launched in 2020, the BRIC program provided federal funding for hazard mitigation projects aimed at reducing the long-term risks and costs of natural disasters, **funding projects such as flood control systems and stormwater management upgrades**. The program typically covered up to 75 percent of project costs and has awarded over \$5 billion since 2020.

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<sup>1</sup> On August 5, 2025, a federal judge temporarily blocked the attempt to halt BRIC funding.

### FINDING 3

Deferred maintenance backlogs for water and wastewater utilities coupled with climate change will pose increased financial risks to state and local government budgets.

State and local governments provide about 80 percent of the U.S. public infrastructure spending. As presented in chapter 2, in 2023 the EPA provided an extensive report to the U.S. Congress on drinking water infrastructure needs of 3,629 public water systems in all 50 states and territories indicating a **20-year capital improvement need of \$625 billion**; \$620.4 billion is for state and local governments.

Similarly for wastewater infrastructure, the EPA's Clean Watersheds Needs Survey (CWNS) in 2022 undertook an assessment of existing clean water infrastructure and the need for future investment to address the water quality objectives of the Clean Water Act over the next 20 years. The EPA found the need to be **\$630.1 billion to support secondary and advanced wastewater treatment**, as well as conveyance systems, stormwater management and nonpoint source control. Thus, **the needs for water and wastewater as detailed by the federal government exceed \$1.25 trillion.**

D+

ASCE's grade for American wastewater infrastructure

The American Society of Civil Engineers' (ASCE) annual "2025 Report Card for America's Infrastructure" issued the nation a "C-" for drinking water infrastructure, a "D" for stormwater and a "D+" for wastewater.<sup>2</sup> In part this is driven by the increasing backlog of deferred maintenance and the associated costs, including labor and equipment. In the administration's fiscal 2026 "skinny bill," it recommends a **90 percent reduction in funding for the EPA's Clean Water and Drinking Water State Revolving Funds (SRF)**. These cuts—**totaling close to \$2.5 billion**—would have a major impact on the state programs this year and, moving forward, could

<sup>2</sup> ASCE, 2025, "A Comprehensive Assessment of America's Infrastructure: 2025 Report Card for America's Infrastructure," <https://infrastructurereportcard.org/wp-content/uploads/2025/03/Executive-Summary-2025-Natl-IRC-WEB.pdf>.

devastate the ability of the state programs to serve as key financing sources for public clean water agencies.<sup>3</sup>

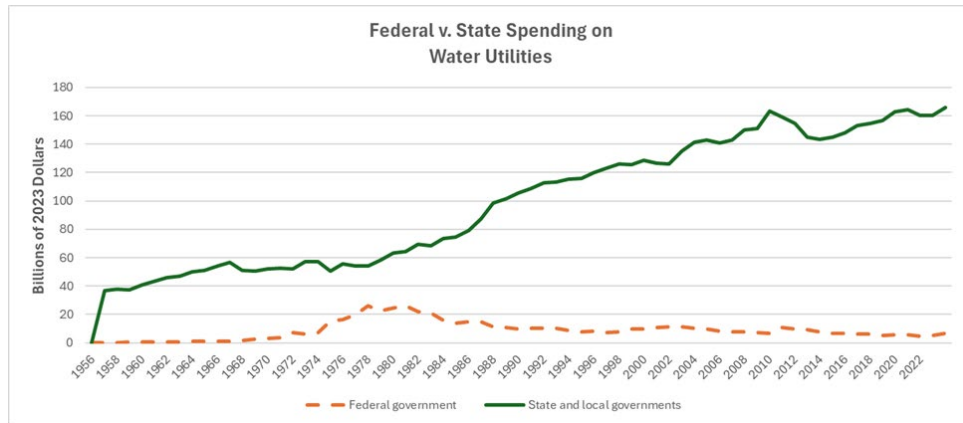


Figure ES-3. Public spending on water utilities by level of government in 2023 billion dollars, 1956 to 2023. Source: Congressional Budget Office (CBO), 2025 (xxvi).

### Government Oversight of Water Utilities Best Management Practices

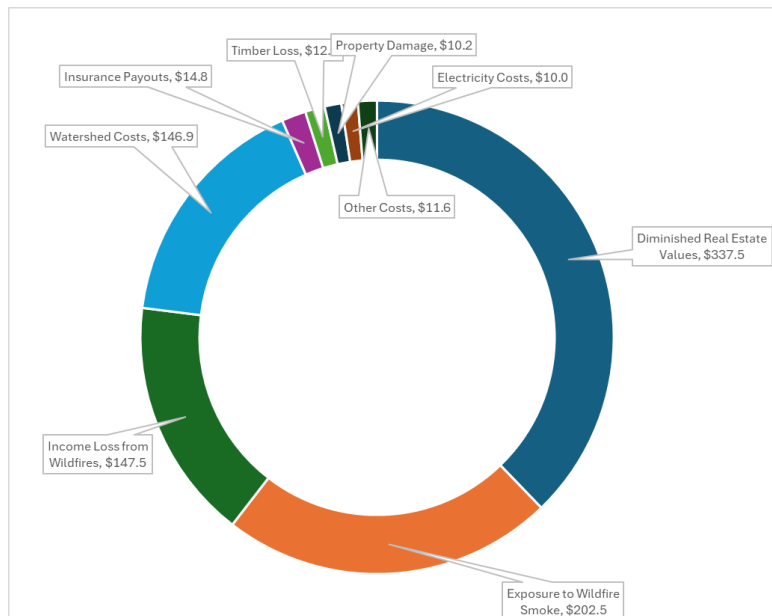
Beyond considerations of financing strategies, states and local/regional governments also have a critical role to play in understanding the condition of their water utility assets. This includes **state governments requiring and/or supporting local utilities in creating better asset inventories and incentivizing climate vulnerability (i.e., resiliency assessments) to identify, catalog and prioritize climate risks and to use these analyses to prioritize investments.**

<sup>3</sup> National Association of Clean Water Agencies, May 27, 2025, “Spring 2025 Legislative Update,” <https://www.nacwa.org/news-publications/news-detail/2025/05/27/spring-2025-legislative-update>.

## FINDING 4

Increasing wildfires caused by power utilities have significant financial impacts on state finances, driving recent policy developments to minimize budgetary risks.

NASA reported in 2025 that “extreme wildfires have become more frequent, more intense and larger.”<sup>4</sup> The largest increase in extreme fire behavior was in the temperate conifer forests of the Western U.S.” The National Interagency Fire Center’s (NIFC) data indicate that “over the past 20 years, the amount of land area burned each year has increased as wildfires have grown larger, while the number of fires each year has remained fairly constant.” The center has also recorded 8 years exceeding 5 million acres burned, and three of those exceeding 10 million acres burned (2015, 2017, 2024). In the United States more wildfires occur in eastern states than in the western states. However, eastern fires are typically smaller than those in the west.<sup>5</sup>



**Figure ES-4.** Top-end annual total costs and losses in \$US billions. Source: U.S. Congress Joint Economic Committee Democratic Staff [xii]. Note: Chart shows the higher end of the estimated range. “Other Costs” include evacuation costs, wildfire suppression, direct death and injuries, insurance premium increases, learning loss, tourism loss and psychological costs.

<sup>4</sup> NASA, 2025, “Wildfires and Climate Change,” <https://science.nasa.gov/earth/explore/wildfires-and-climate-change/#:~:text=Wildfires%20in%20the%20U.S.%20have,includes%20data%20from%20NASA%20satellites>.

<sup>5</sup> See section 1.1 of this report for greater data and references.

One of the key drivers for an increase in both the financial harm and extent of damage from wildfires in the United States is the growing number of residential structures that are in areas in close proximity to wildland vegetation. Over the past two decades, the number of residential homes in the wildland-urban interface has grown by about 350,000 homes per year, and as of 2020, roughly 44 million homes (32 percent of U.S. homes) were in these areas as detailed in by the CoreLogic (2024)<sup>ii</sup> and U.S. Census (2025).<sup>iii</sup> While not every home in the interface is at high risk of wildfire, CoreLogic developed a deterministic evaluation model that quantifies wildfire hazard at each individual parcel in the United States based on factors such as slope, aspect, fuel, surface composition, drought and winds.

Their analysis shows that there are over 2.6 million homes at moderate or greater risk with a combined reconstruction cost value of \$1.2 trillion in the western United States. Approximately 1.2 million homes, nearly half of the homes with elevated wildfire risk (e.g., moderate and above) have very high wildfire risk. If every single home with very high wildfire risk was destroyed, it would cost over half a trillion dollars to rebuild completely. The scores in their analysis reflect the risk landscape as of June 2024. Table ES-2 presents the top 14 states with residential structures at risk for extreme wildfires in 2024.

Rank	State	Census Total Housing Units 2024	Number of Housing Units at Wildfire Risk	Total Housing Units/Housing at Wildfire Risk	Estimated Reconstruction Costs
1	California	145,359,015.00	1,258,748.00	0.87%	\$769.4B
2	Colorado	2,676,415.00	321,294.00	12.00%	\$140.9B
3	Texas	12,390,851.00	244,617.00	1.97%	\$88.4B
4	Oregon	1,896,933.00	129,567.00	6.83%	\$45.3B
5	Arizona	3,299,651.00	124,603.00	3.78%	\$36.2B
6	New Mexico	974,986.00	120,093.00	12.32%	\$34.7B
7	Idaho	832,675.00	104,782.00	12.58%	\$34.3B
8	Montana	539,670.00	88,102.00	16.33%	\$31.3B
9	Utah	123,337.00	67,023.00	54.34%	\$20.9B
10	Washington	3,400,917.00	59,563.00	1.75%	\$14.7B
11	South Dakota	423,789.00	26,697.00	6.30%	\$8.4B
12	Nevada	1,365,961.00	22,768.00	1.67%	\$8.4B
13	Wyoming	281,823.00	16,215.00	5.75%	\$5.7B
14	Oklahoma	1,800,410.00	1,624.00	0.09%	\$0.4B

**Table ES-2.** Homes at risk for extreme wildfires by state, 2024. Sources: CoreLogic (2024) and U.S. Census (2025). Note: Table and data do not separate risk by ranking (e.g., moderate to very high risk) for each of the housing units.

## FINDING 5

Private insurance companies are leaving states and increasing pressures on state FAIR plans because of growing climate change impacts and a lack of aggressive resiliency actions by state and local governments.

Gallagher Re, one of the largest reinsurance brokers in the world, put in context the financial pressures the insurance market is facing in its recent “Natural Catastrophe and Climate Report: 2024.”<sup>6</sup> The report finds that climate change and weather-related catastrophes were responsible for \$417 billion in direct economic losses in 2024, with private insurance markets and public insurance entities covering \$154 billion. **This means that the portion of event costs not covered by insurance—the “protection gap”—stood at 63 percent or \$263 billion.** The direct economic impact from natural catastrophes of \$417 billion was a 15 percent increase above the prior decade’s average, and insurance payouts surpassed the recent 10-year average by 27 percent and 44 percent higher than the previous 20-year average of \$107 billion.

Importantly, Gallagher’s report found that **63 percent of total losses were left uncovered.** Currently, 1 in 17 (13.6 percent) or **11.3 million owner-occupied homes do not have property insurance.** And for those who can afford property insurance, their **premiums have shot up by an average of 33 percent** from 2020 to 2023.

According to this report, insurance impacts are expected to grow because of an increase in the number of climate- and weather-related events, including wildfires, as well as damage caused by utilities.

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<sup>6</sup> Gallagher Re, January 2025, “Natural Catastrophe and Climate Report,” <https://www.ajg.com/gallagherre/-/media/files/gallagher/gallagherre/news-and-insights/2025/natural-catastrophe-and-climate-report-2025.pdf>.

**39**  
The number of unique residual insurance plans by states

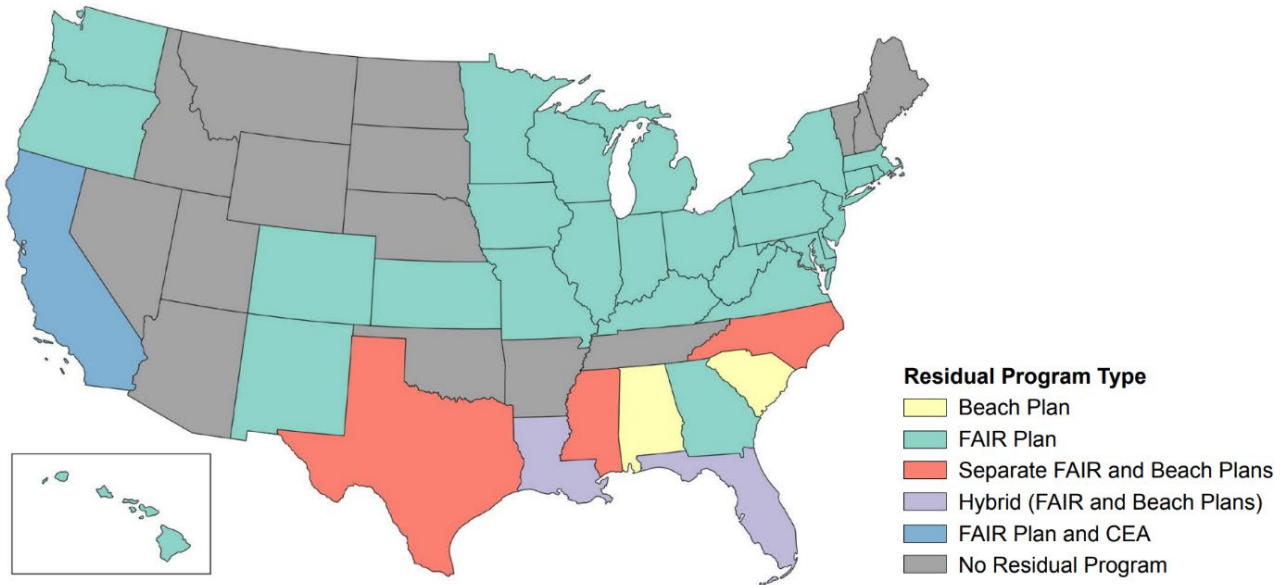
CALIFORNIA	FLORIDA
Allstate	Farmers
American National	Southern Fidelity
AmGUARD	Weston Property & Casualty
Chubb	United Insurance Holdings
Falls Lake Insurance	FedNat
Farmers Insurance Group	Bankers
Nationwide	Lighthouse Property Insurance
State Farm	Avatar Property & Casualty
The Hartford	Lexington
Tokio Marine Insurance	St. Johns
Trans Pacific Insurance	
Travelers	

**Table ES-3.** Insurance companies that have either stopped writing policies, exited or significantly altered coverage as reported in 2025. Sources: Fox 26, 2025, and Insurance.com, 2025.

As a result, several insurance companies have either stopped writing policies, exited or significantly altered coverage as presented in table ES-3. Therefore, **states are put in the position to serve as the insurer of last resort** (see figure ES-5). This often takes the form of Fair Access to Insurance Requirements (FAIR) plans, which provide insurance coverage that is usually more expensive than what private insurance firms cost as they take on property or corporate insurance for properties that sit in areas of high risk from climate change and/or extreme weather events. Some states offer a similar program called a Beach plan that is limited to costal properties.

**STATE FAIR PLAN FACTS**

1. Primarily funded from the premiums **policyholders pay for coverage.**
2. FAIR plans are generally **more expensive** than private insurance options.
3. When claims **exceed the plan's reserves, an assessment is levied** on the private insurance companies in the state. The amount each company pays is based on its market share of insurance premiums within that state.
4. **State governments can provide a financial backstop.** California had to backstop its FAIR plan after the 2024 wildfires, initially by imposing a **\$1 billion assessment on insurance companies operating in the state.**
5. **In limited cases FAIR plans are not operated by State agencies** such as the North Carolina Joint Underwriting Association, a nonprofit organization of private insurance companies.



**Figure ES-5.** Map of residual insurance program availability and type. Source and by courtesy of Environmental Defense Fund and Cornell University (2025).

To aid in evaluating various high-level risks for organizations, we provide table ES-4 on the following page that can be used by professionals as a risks and resiliency checklist.

## FINDING 6

To achieve enhanced fiscal management, states and local governments need to research, connect and prioritize the emerging and interconnected drivers detailed in this report.

Prior studies undertaken by The Pew Charitable Trusts have explored the impact natural disasters have on state finances, including the needs for mitigation investments. Their findings showed that data drawn from state budgets for disaster planning, response and mitigation actions are lacking and importantly, what data are evident indicate that states are insufficiently funding these needs.<sup>7</sup>

This report builds on the prior studies by Pew and expands on the budgetary implications of weather-related natural disasters with the interdependent issues of evolving federal policies, impacts of private insurance market shifts, and the challenges faced by power and water utilities. The report also builds upon prior studies by Pew and others that indicate that both state and local governments have not kept up with the science to properly budget for both the near-term and longer-term existential financial needs and risks.

State and local governments, when undertaking climate-resiliency planning and plans (see recommendation section), need to develop better data on water and utility assets at the state level, including creating and updating detailed inventories, and leverage these data to conduct ongoing statewide vulnerability assessments that help quantify fiscal exposure.

Further, changing federal policies can have implications for credit ratings for both state and local agencies. As reported by S&P in 2025, “Reports raising eligibility thresholds and devolving a higher share of disaster recovery and mitigation costs could have both near- and long-term effects on state and local government credit, including on financial performance, reserves and liquidity, economic growth and debt and liabilities.”<sup>xlv</sup>

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<sup>7</sup> Pew Charitable Trusts, May 1, 2025, “How States Can Build Disaster-Ready Budgets,” <https://www.pew.org/en/research-and-analysis/issue-briefs/2025/04/how-states-can-build-disaster-ready-budgets>.

# RECOMMENDATIONS

## Recommendation 1 Identify, Connect and Prioritize Risks for Fiscal Purposes.

As presented in this report, both state and local governments are facing unprecedented financial and operational risks from the nexus of climate, utilities and insurance, as well as changing federal policies that were used to support resiliency planning, resiliency projects and disaster relief.

If state and local governments fail to identify and plan, they risk the potential for both financial and operational impacts in the near-term and the long-term. To address these risks, it is recommended that government officials evaluate the following approaches to protect their communities, businesses and residents.

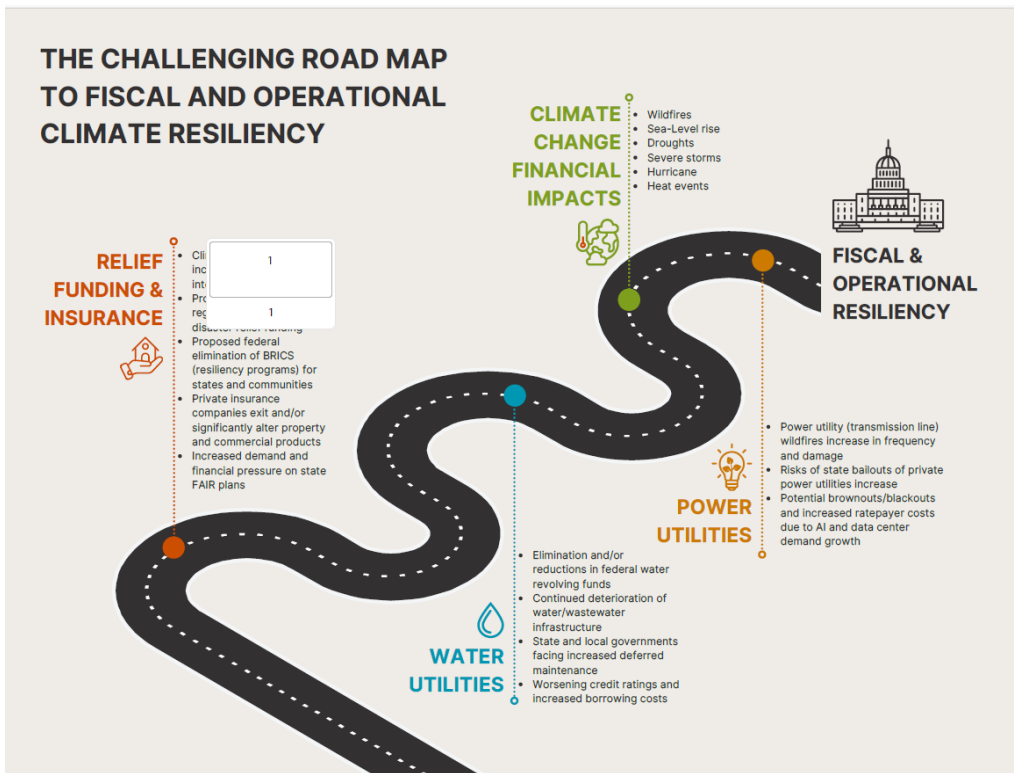


Figure ES-6. Road map to fiscal and operational resiliency.

## Recommendation 2

### Engage Thought Leaders and the Community.



A recent example is a year-long project undertaken in New York by the New York State Energy Research and Development Authority. Working with academic researchers, the authority undertook multi-stakeholder workshops in very different communities from New York City to the western part of the state in Buffalo.

Each workshop had a different set of foci that covered 1) established and emerging approaches by the architecture, engineering and planning fields; 2) public policies; 3) finance and insurance; 4) utilities and critical infrastructure; 5) community engagement; and 6) climate and energy systems.

## Recommendation 3

### Leverage Artificial Intelligence and Machine Learning.

The emergence of artificial intelligence (AI) and machine learning (ML) provide state and local governments with new and novel insights that previously were either not available or were very time-consuming and expensive.

1. ML models analyze data from inspections and embedded sensors to predict wear and tear and prioritize maintenance efforts.
2. Kansas City, Missouri, has installed many of its public works vehicles with cameras integrated with AI to identify and prioritize road infrastructure needs.
3. Utilities in California, including Pacific Gas and Electric Co. (PG&E), use AI to analyze satellite images and identify trees most likely to topple onto power lines and spark wildfires in lieu of the approximate \$3 million-plus per mile cost to bury transmission lines

underground. Power shutoff systems prevent about 80 percent of potential fire starts, while AI-targeted tree trimming in identified problem areas could mitigate remaining risks.<sup>8</sup>

4. The Northeast Florida Regional Council is a regional planning agency comprising 7 counties and 25 municipalities, covering over 4,000 square miles and 1.5 million residents. It has partnered with an AI provider to scan the streets and collect video, laser and elevation data. Then, using AI, it can generate photorealistic flood and sea-level rise visualizations with precision to document and prioritize resiliency efforts for sea-level rise and coastal flooding events.<sup>9</sup>
5. Various researchers are developing approaches for state and local governments to use AI within the budgeting and longer-term economic planning processes, including analyzing and forecasting budget strengths and challenges. A University of Nebraska approach uses 15 years' worth of a jurisdiction's financial reports and examines tax revenue, debt and budget obligations, then uses AI to analyze and develop reports to supplement the work of government professionals.<sup>10</sup>

#### Recommendation 4

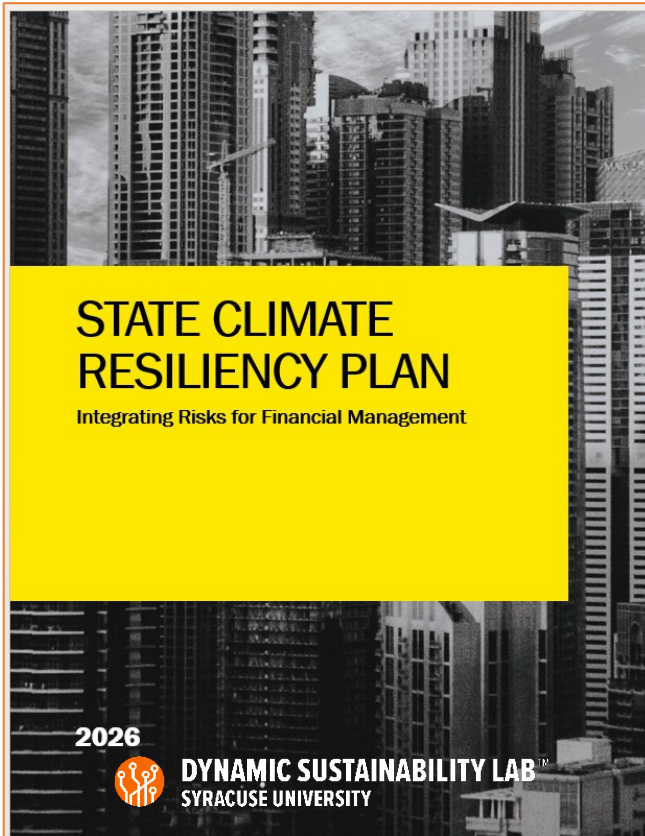
#### Develop a Comprehensive Resiliency Plan.

Develop a state or local government climate resiliency plan for financial management. During the process of this report, it became clear that many state and local governments have not undertaken the necessary long-term due diligence to identify, connect and prioritize climate related risks, which will have serious implications for state finances.

<sup>8</sup> Los Angeles Times, Dec. 1, 2025, "California Utilities Try AI to Combat Costly Wildfires," <https://www.latimes.com/business/story/2025-12-01/california-utilities-try-ai-to-combat-costly-wildfire-liabilities>.

<sup>9</sup> Climate Central, "Resilient Communities Start Here," <https://www.climatecentral.org/floodvision>.

<sup>10</sup> National Conference of State Legislatures, Jan. 21, 2025, "Smart Ways to Use AI for State Budgeting," <https://www.ncsl.org/state-legislatures-news/details/smart-ways-to-use-ai-for-state-budgeting>.



This report details various drivers that require agencies to identify implications for their jurisdictions. Many times, these different topics such as climate change impacts are not integrated into a more robust systems analysis that incorporates resiliency investments, addressing deferred maintenance, and allocating investments based on structured priorities and needs that address operational and economic impacts.

We recommend that governments engage thought leaders who can help guide the process that incorporates the various agencies spanning planning, finance, engineering, public works, public safety, utilities,

community engagement and senior leadership, along with important stakeholders. As presented in Figure ES-7 we present the components of a government resiliency plan.

## COMPONENTS OF A STATE OR LOCAL GOVERNMENT CLIMATE RESILIENCY FISCAL PLAN

1. Climate change risks over time and geographies within your jurisdiction.
2. Inventory of state-owned facilities at greatest risk from different forms of climate risks.
3. Examine operational and financial impacts when state-owned facilities are impacted by climate risks.
  - a. Model direct and indirect financial implications for state finances under different scenarios.
  - b. Develop plans for resiliency investments and strategies to reduce risks.
4. Take an Inventory of and routinely update statewide water and electric infrastructure utilities in conjunction with statewide vulnerability assessments to prioritize investments and quantify financial exposure.
  - a. Model potential direct and indirect financial implications for state finances.
  - b. Develop plans for resiliency investments and strategies to reduce risks.
5. Update and prioritize deferred maintenance needs for state-owned facilities and infrastructure.
6. Examine potential impacts to credit ratings resulting from climate risks and deferred maintenance.
7. Identify communities with low rates of property insurance to prioritize resiliency investments or FAIR plan approaches.
8. Evaluate mitigation strategies and resiliency strategies through planning and zoning programs and update.
9. Explore incentives for property developers and owners to integrate resiliency designs. Ensure that incentives also address renters.
10. Establish a resiliency working and advisory council.

Figure ES-7. Components of a government resiliency plan.

Table ES-4. Risks and Resiliency Checklist

 <b>DYNAMIC SUSTAINABILITY LAB™</b> AT SYRACUSE UNIVERSITY		DESCRIPTION	(-) REVENUE IMPACTS				(+) EXPENDITURES								OTHER		NOTES + MITIGATION STRATEGIES
			Property Tax	Sales Tax	Other User Fees Such as Fuel Tax	Federal Funding Cuts	Emergency Response	Remediation	Private Insurance Exiting State	Increased Strain on State FAIR Plans	Higher Cost of Finance/Credit Ratings	Increased/Deferred Maintenance	Physical Resiliency Construction	Essential Services Interrupted	Resident / Businesses Outward Migration	Reputational	
NATURE BASED	Wildfires	Nature or non-utility intentional	HIGH	HIGH	LOW	UNK	HIGH	HIGH	HIGH	HIGH	HIGH	MED	MED	HIGH	HIGH	MED	Urban wildland planning, zoning, building codes etc.
	Sea Level Rise	Impacts to Marine, Airport, Energy and Highway Infrastructures	Long Term	Long Term	Long Term	MED	LOW	LOW	MED	LOW	MED	HIGH	HIGH	LOW	MED	HIGH	Rollback of BRICS program has near-term impact as do increased property insurance costs.
	Droughts	Impacts to Power & Water Utilities, Agriculture etc.	Long Term	MED	Long Term	LOW	LOW	LOW	LOW	LOW	MED	MED	HIGH	MED	MED	MED	Continued droughts require capitol investments to acquire water for essential services such as San Diego Desalination Plant.
	Severe Storms	Increasing Frequency and Severity of Flooding and Wind Damage	HIGH	HIGH	LOW	UNK	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	Dependent on serverity. Also on location as it can impact utilities and essential service continuity and short-term + longer-term outward migration.
	Hurricanes	Increasing Frequency and Severity	HIGH	HIGH	LOW	UNK	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	
	Heat Events	More Sustained Urban Heat Islands + Anomalous Extreme Heat Events	LOW	LOW	LOW	LOW	MED	LOW	LOW	LOW	LOW	MED	HIGH	MED	LOW	LOW	Costs for higher morbidity and mortality. Strain on electrical systems, increased water demand and increased strain / impacts on infrastructure. City of Phoenix, AZ offers good remediation / planning practices.
UTILITIES	Utility caused wildfires	Falling transmission lines	HIGH	HIGH	MED	UNK	HIGH	HIGH	HIGH	HIGH	HIGH	MED	MED	HIGH	HIGH	HIGH	State fire funds to offset costs assessed to power utilities. Also reduces risks of utilities filing bankruptcy.
	Reduction in Federal Programs	Includes FEMA BRICS Program and EPA Revolving Funds	LOW	LOW	LOW	HIGH	HIGH	HIGH	LOW	LOW	MED	HIGH	HIGH	MED	LOW	MED	Great uncertainty but strong signals that the federal government is eliminating and/or cutting back on federal disaster assistance and preventive programs/grants.
	Government Takeovers of Investor-owned Utilities	Increased pressures for ratepayers or governments to take over Investor owned utilities.	MED	LOW	LOW	UNK	LOW	LOW	LOW	LOW	LOW	HIGH	HIGH	LOW	LOW	LOW	Uncertainty on the financial impacts to utility rate payers.
	Deferred Maintenance	Increasing costs and increased impacts from Climate	LOW	LOW	LOW	UNK	MED	MED	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MED	HIGH	Climate change is driving increases and timelines for addressing deferred maintenance. Tarrifs are near term impacting supply chain supplies and costs.
	Utility Bankruptcies	Emerging threat from power utility wildfires	MED	LOW	LOW	LOW	LOW	LOW	LOW	LOW	MED	MED	LOW	MED	LOW	HIGH	Can impact states through bail-outs.
INSURANCE	Exiting of Private Carriers	Private Firms Exit due to Increased Climate Risks	HIGH	HIGH	MED	LOW	LOW	MED	HIGH	HIGH	HIGH	LOW	MED	LOW	MED	HIGH	Strains on FAIR plans, inability to obtain home mortgages, increased costs of insurance, migration of residents and businesses. State of Florida has implemented Tort reform to address.
	Increased Dependence on State FAIR Plans	Increased Dependence on State FAIR Plans	HIGH	HIGH	MED	LOW	LOW	MED	HIGH	HIGH	HIGH	LOW	MED	LOW	MED		

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Cover Image courtesy of <https://lacity.gov/highlights/controller-calls-dwp-cut-risk-power-line-induced-wildfires>

Marcin Jozwiak on Unsplash <https://unsplash.com/s/photos/wastewater-plant?license=free>

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## GLOSSARY OF TERMS

**The Clean Water State Revolving Fund (CWSRF)** also known as the **State Revolving Fund (SRF)** is a low-interest source of financing for wastewater infrastructure and water quality projects

**Community water system (CWS):** A public water system that supplies water to the same population year-round.

**Disaster Relief Fund (DRF):** A fund managed by FEMA through a single federal spending account under the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

**FAIR plan:** Fair Access to Insurance Requirements, also referred to as an insurer of last resort, is a program that allows high-risk homeowners to purchase a home insurance policy. People who get insurance through a FAIR plan through the state are typically not eligible for coverage through the standard home insurance market because their home is located in an area that is high-risk or lacks private insurance companies.

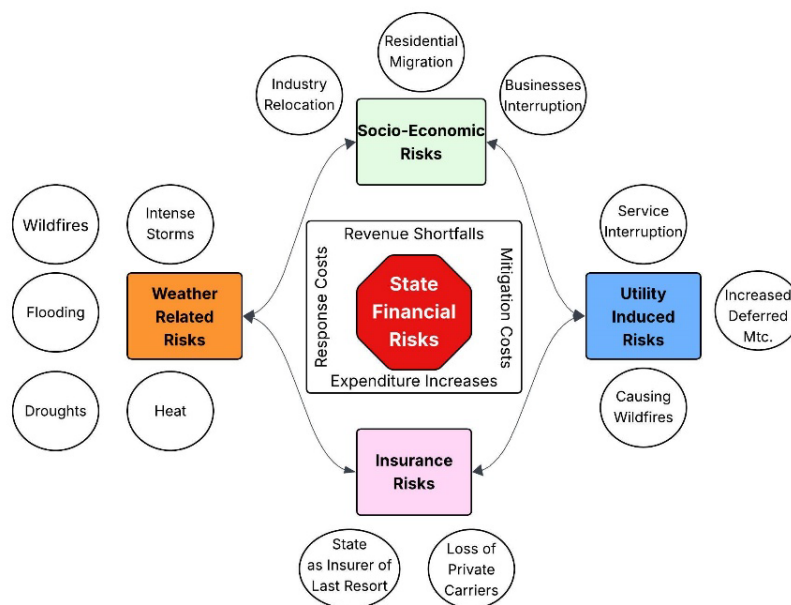
**Drinking Water State Revolving Fund (DWSRF):** A fund created with the 1996 amendments to the Safe Drinking Water Act. It is administered by the EPA and provides loans to states for source, treatment, storage or transmission and distribution systems.

# SECTION 1 INTRODUCTION



## 1.0 INTRODUCTION

There is a growing confluence of natural, structural and financial risks that if not addressed will have significant budgetary implications for both state and local governments. Specifically, states across the country are witnessing more frequent and more severe weather events, including wildfires, strong storms, droughts, hurricanes, heat events and sea-level rise.<sup>i</sup> These climate-related events and the increasingly resulting financial impacts are being used as a reason that regulated private insurance companies are exiting markets and states are forced to act as insurers of last resort at a time of increasing financial claims.<sup>ii</sup>

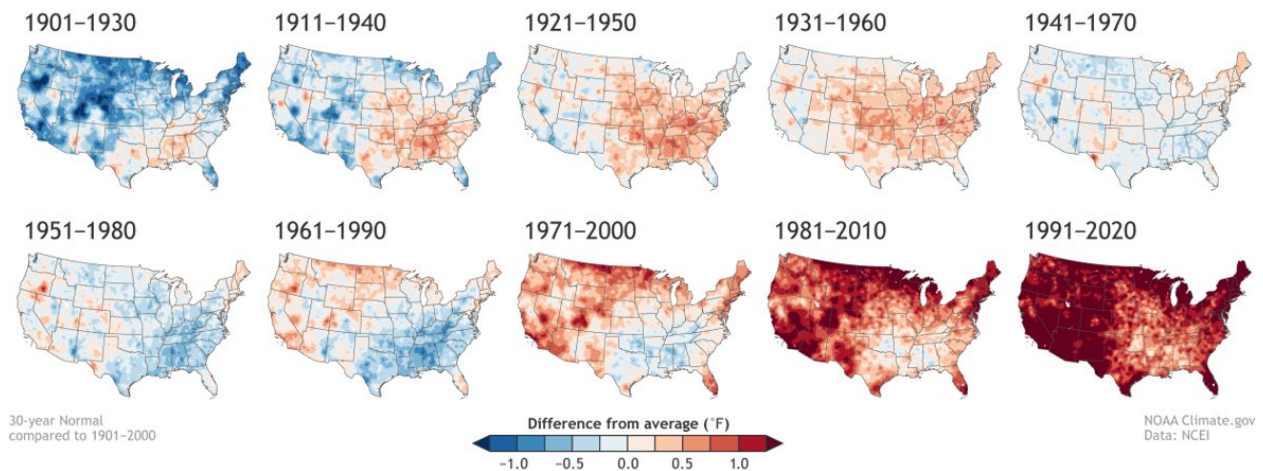


**Figure 1.1.** Interconnected risks to state finances from the climate-utility nexus.

At the same time, America's energy and water utilities are increasingly stressed, rapidly deteriorating and more frequently interrupted in providing essential services to the businesses and communities they serve. Service interruptions are a result of growing demand, inattention to deferred maintenance needs, and pressures from climate change including droughts, high winds, severe storm events, increasing temperatures and temperature extremes. As discussed further in this report, some jurisdictions are witnessing both short-term and longer-term outward migration by both residents and businesses due to climate. thus impacting state revenues. All of this, as presented in figure 1.1, has important implications for state finances that

can see increased expenditures to the response and mitigation of risks, insurance payments as an insurer of last resort, financial backing of distressed utilities, and loss of revenue streams due to declines in sales, business, income and property taxes.

Climate change is becoming more pronounced and its impacts are greater. The U.S. National Oceanic and Atmospheric Administration (NOAA) calculates the U.S. Climate Normals, which are 30-year averages by calculating climate observations collected at weather stations across the nation and corrected for poor or missing data. As presented in figure 1.2, the country continues to face increasingly warmer temperatures



**Figure 1.2.** Annual U.S. temperature compared with the 20th-century average for each U.S. Climate Normals period, 1901 to 2020. Source: National Centers for Environmental Information - NOAA, 2021.<sup>iii</sup>

Those impacted by the financial risks from climate-induced property damage include the property owners, mortgage lenders and insurance providers, as well as local, state and federal governments. As presented in figures 1.3 and 1.4, the number of billion-dollar climate-related disasters since 1980 continues to increase in frequency and costs. In NOAA’s most recent reporting (2025),<sup>iv</sup> the agency documented that there were 27 confirmed climate disasters with losses exceeding \$1 billion each. The 1980–2024 annual average is 9.0 events (CPI-adjusted); the annual average for the most recent 5 years (2020–2024) is 23.0 events (CPI-adjusted).

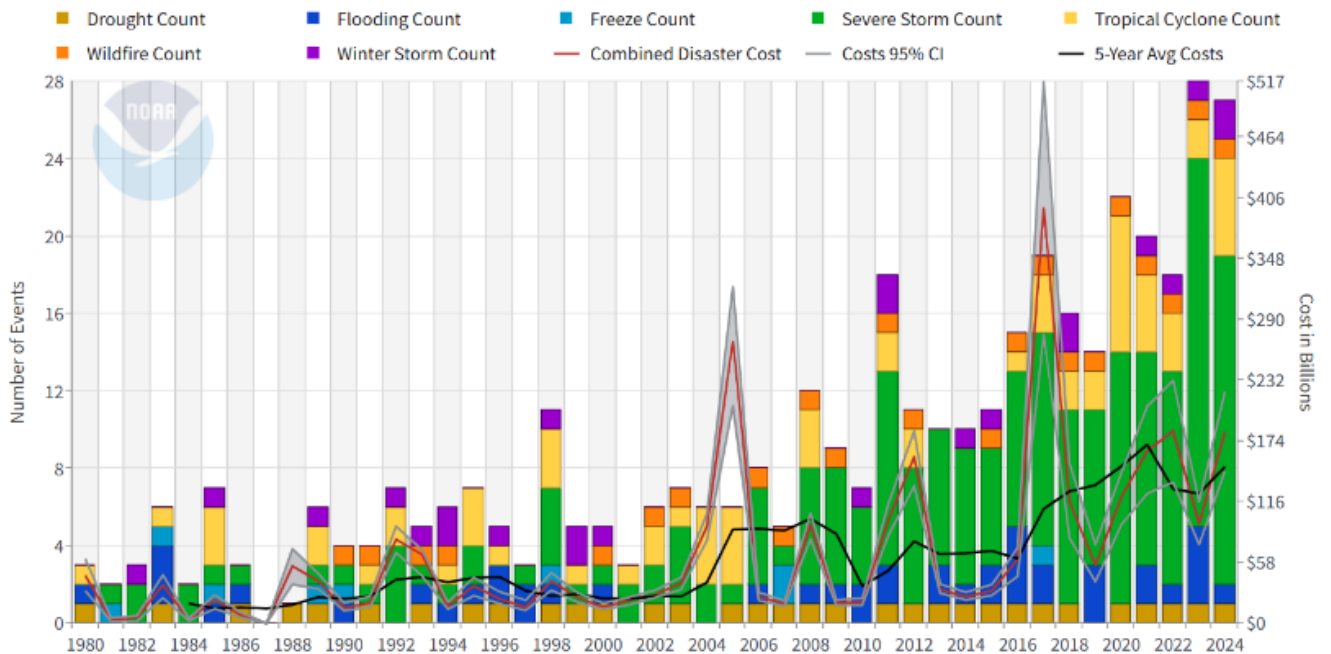


Figure 1.3. U.S. billion-dollar disaster events, 1980 to 2024 (CPI-adjusted). Source: NOAA, 2025.<sup>v</sup>

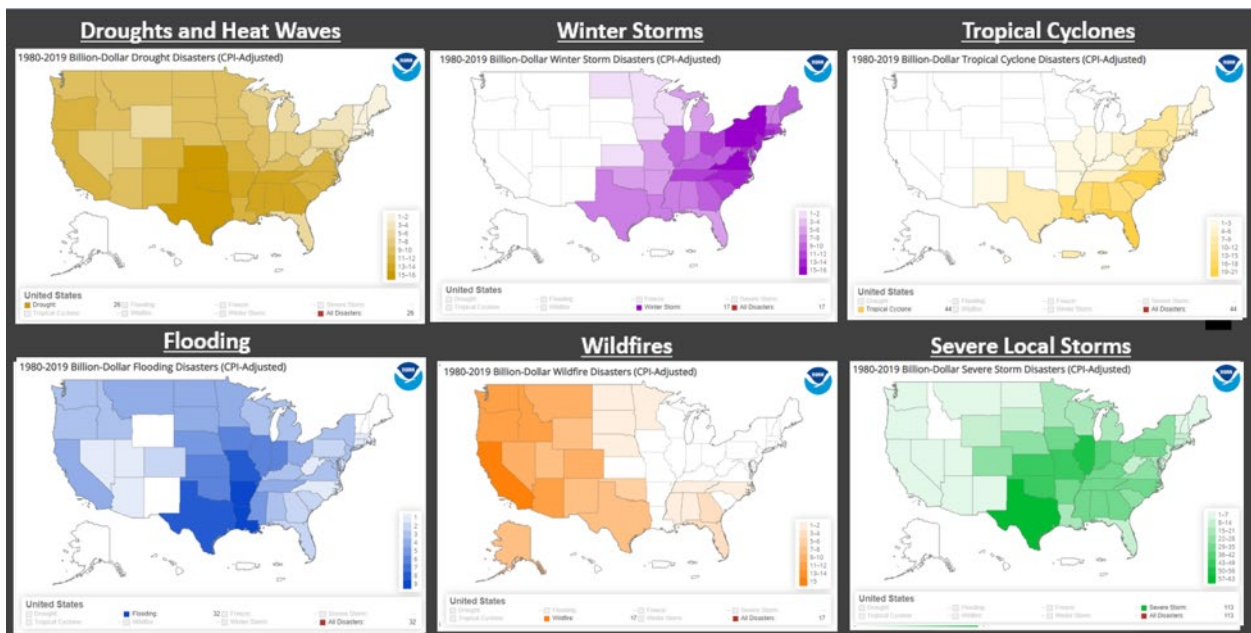


Figure 1.4. Spatial distribution of \$1 billion or higher climate disaster frequency mapping, 1980 to 2019. Note: The map reflects a summation of billion-dollar events for each state affected and does not mean that each state shown suffered at least a \$1 billion loss for each event. Source: NOAA, 2020.<sup>vi</sup>

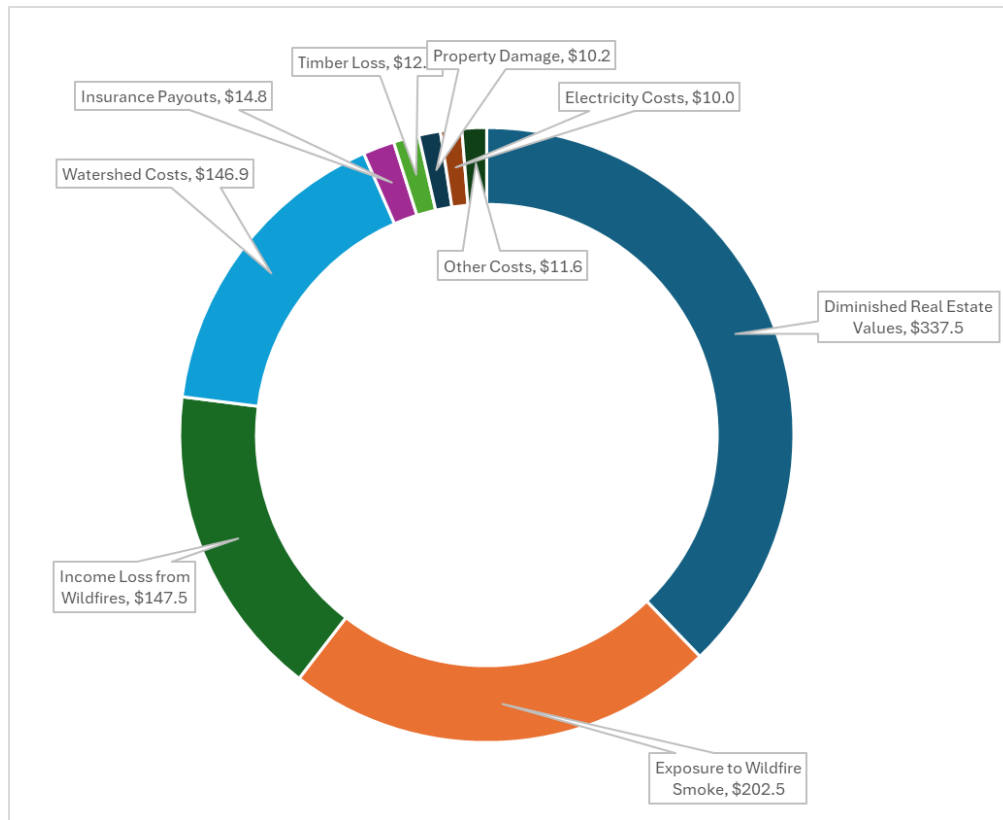
## 1.1 CLIMATE CHANGE FINANCIAL IMPLICATIONS BY CATEGORY

### 1.1.1 Wildfires

While the number of wildfires per year in the United States has remained fairly constant since 1983, NASA satellites (Terra and Aqua) have been deployed to detect wildfires twice a day for the past 21 years. Their findings confirm that “extreme wildfires have become more frequent, more intense and larger. The largest increase in extreme fire behavior was in the temperate conifer forests of the Western U.S.”<sup>vii</sup> The NIFC’s data indicate that the area burned each year since 1983 has increased. While only one year between 1983 and 1995 recorded that the total acreage burned was greater than 5 million acres, between 2015 and 2024 the center recorded 8 years exceeding 5 million acres and three of those exceeded 10 million acres (2015, 2017 and 2024).<sup>viii</sup>

In the United States more wildfires occur in eastern states than in the western states. However, eastern fires are typically smaller than those in the west. As an example, in 2022 there were 48,000 wildfires in the east that burned approximately 1.8 million acres, yet in the west there were just over 20,000 wildfires that burned approximately 5.8 million acres.<sup>viii</sup> A complete listing of wildfires by state by the number of wildfires and acreage burned for 2023 is in appendix A.

The U.S. Congress Joint Economic Committee (JEC) 2023 report on the economic implications of wildfires in the United States estimated an annual impact from \$394 billion to \$893 billion, calculated by combining estimates from the existing research on the specific costs related to property damage, direct and indirect deaths and injuries, health impacts from wildfire smoke, income loss, watershed pollution and a range of other factors;<sup>ix</sup> this is presented in figure 1. 5.

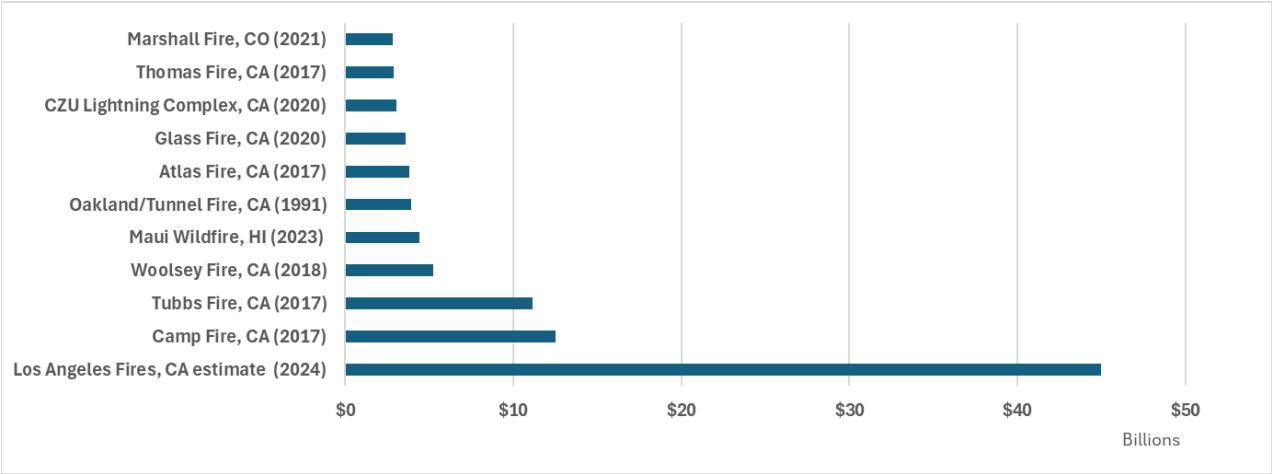


**Figure 1.5.** Top-end annual total costs and losses in \$US billions. Source: U.S. Congress JEC.<sup>ix</sup> Note: Chart shows the higher end of the estimated range. Other costs include evacuation costs, wildfire suppression, direct death and injuries, insurance premium increases, learning loss, tourism loss and psychological costs.

One of the key drivers for an increase in both the financial and extent of wildfires in the United States is the growing number of residential structures that are in areas in close proximity to wildland vegetation. Over the past two decades, the number of residential homes in the wildland-urban interface has grown by about 350,000 homes per year, and as of 2020, roughly 44 million homes (32 percent of U.S. homes) were in these areas.<sup>x</sup> Table 1.1 presents the top 14 states with residential structures at risk for extreme wildfires in 2024, and figure 1.6 presents the largest U.S. fires by insured financial losses from 1990 to 2024.

Rank	State	Census Total Housing Units 2024	Number of Housing Units at Wildfire Risk	Total Housing Units/Housing at Wildfire Risk	Estimated Reconstruction Costs
1	California	145,359,015.00	1,258,748.00	0.87%	\$769.4B
2	Colorado	2,676,415.00	321,294.00	12.00%	\$140.9B
3	Texas	12,390,851.00	244,617.00	1.97%	\$88.4B
4	Oregon	1,896,933.00	129,567.00	6.83%	\$45.3B
5	Arizona	3,299,651.00	124,603.00	3.78%	\$36.2B
6	New Mexico	974,986.00	120,093.00	12.32%	\$34.7B
7	Idaho	832,675.00	104,782.00	12.58%	\$34.3B
8	Montana	539,670.00	88,102.00	16.33%	\$31.3B
9	Utah	123,337.00	67,023.00	54.34%	\$20.9B
10	Washington	3,400,917.00	59,563.00	1.75%	\$14.7B
11	South Dakota	423,789.00	26,697.00	6.30%	\$8.4B
12	Nevada	1,365,961.00	22,768.00	1.67%	\$8.4B
13	Wyoming	281,823.00	16,215.00	5.75%	\$5.7B
14	Oklahoma	1,800,410.00	1,624.00	0.09%	\$04B

**Table 1.1.** Homes at risk for extreme wildfires by state, 2024. Sources: CoreLogic, 2024, 25F,<sup>xi</sup> and U.S. Census, May 2025.<sup>xii</sup> Note: Table and data do not separate risk by ranking (i.e., moderate to very high risk) for each of the housing units.



**Figure 1.6.** Largest U.S. fires by insured financial losses, 1990 to 2024 (adjusted for 2024 dollars). Sources: Resources for the Future, 2025, and Insurance Information Institute 2025.<sup>xiii</sup>, <sup>xiv</sup>

### 1.1.2 Hurricanes

A hurricane is a type of storm known as a tropical cyclone, which forms over tropical or subtropical waters. When a storm’s maximum sustained winds reach 74 mph, it is called a hurricane. These are categorized by strength through the Saffir-Simpson Hurricane Wind Scale of 1 to 5 rating or category, based on a hurricane’s maximum sustained winds. The higher the category, the greater the hurricane’s potential for property damage.<sup>xv</sup>

According to NOAA, of the \$403 billion weather disasters since 1980 to December 31, 2024, hurricanes have caused the most damage: over \$1.5 trillion total, with an average cost of \$23 billion per event.<sup>xvi</sup> The Atlantic hurricane season runs from June 1 to November 30, with the majority of hurricanes making landfall in the United States in August or September. Florida has been hit most by hurricanes over time, as presented in table 1.2. The state has been affected by about 40 percent of the hurricanes in U.S. history. Roughly a fifth of the hurricanes that make landfall in Florida have been classified as Category 3, which is a very severe level of the storm. The costliest hurricanes in the United States are listed in table 1.3.

Florida	120
Texas	64
Louisiana	63
North Carolina	58
South Carolina	32
Alabama	23
Georgia	21
New York	15
Mississippi	14
Virginia	13
Massachusetts	12
Connecticut	11
Rhode Island	10
New Jersey	4
Maine	3
Delaware	2
Maryland	2
New Hampshire	1
Pennsylvania	1

**Table 1.2.** Total hurricanes to hit coastlines, 1851 to 2022. Source: World Population Review, 2025.<sup>xvii</sup>

Estimated Insured Loss				
Rank	Year	Hurricane	Primary State	In 2024 Dollars
1	2005	Hurricane Katrina	Louisiana	\$104,471
2	2022	Hurricane Ian	South Carolina	57,231
3	2021	Hurricane Ida	Louisiana	41,540
4	2012	Hurricane Sandy	New Jersey	40,939
5	2017	Hurricane Harvey	Texas	38,571
6	2017	Hurricane Irma	Florida	38,432
7	2017	Hurricane Maria	Puerto Rico	37,743
8	1992	Hurricane Andrew	Florida	35,845
9	2008	Hurricane Ike	Texas	26,259
10	2024	Hurricane Milton	Florida	20,000

**Table 1.3.** Top 10 costliest hurricanes in the United States (\$ millions). Source: Insurance Information Institute, 2025.<sup>xviii</sup>

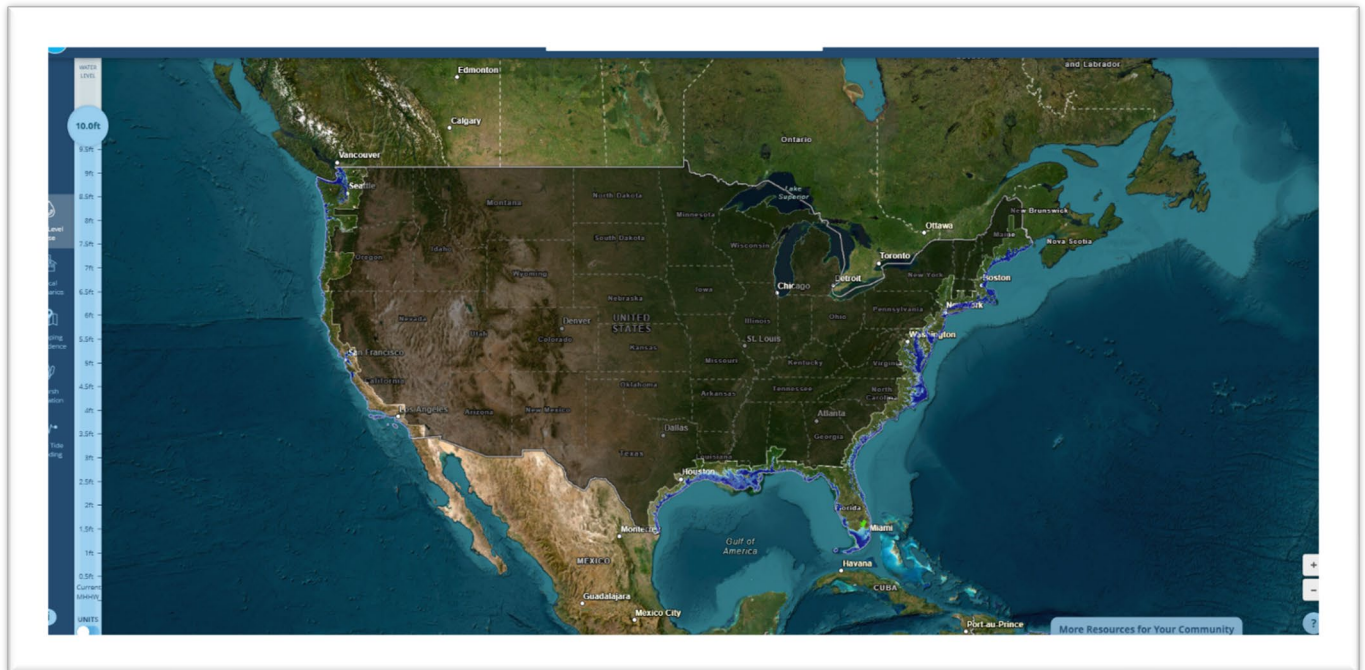
### 1.1.3 Sea-Level Rise and High Tide Flooding

Sea-level change is measured in two different ways. Relative sea-level change refers to how the height of the ocean rises or falls relative to the land at a particular location, while absolute sea-level change refers to the height of the ocean surface above the center of the Earth, without regard to whether nearby land is rising or falling. According to researchers, there is evidence that the sea level along the U.S. coastline will rise 10 to 12 inches by 2050—as much as the rise measured from 1920 to 2020.<sup>xix</sup> The 10 to 12 inches are an average: differences in both land and ocean height mean the rise will vary regionally along U.S. coasts.

Because of changes in both land and ocean height, sea-level rise will vary regionally along U.S. coasts. The same joint U.S. agency report indicates that, on average, the rise in the next three decades is anticipated to be:<sup>xx</sup>

- East Coast: 10–14 inches
- West Coast: 4–8 inches
- Gulf Coast: 14–18 inches
- Caribbean: 8–10 inches
- Hawaiian Islands: 6–8 inches
- Northern Alaska: 8–10 inches

A visualization of sea-level rise in the continental United States from NOAA's Sea-Level Rise Viewer is presented in figure 1.7.



**Figure 1.7.** Sea-level rise visualization of 10-foot impacted areas. Source: NOAA. 2025.<sup>xxi</sup>

What are the financial implications of sea-level rise? In a recent report,<sup>xxii</sup> the U.S. Congressional Budget Office (CBO) estimates that 4 feet of sea-level rise, which would bring recurring flooding, would cause a \$930 billion loss of residential property.

Similarly, high tide flooding, which is the excess accumulation of water that covers typically dry coastal land during high tides can create short-term impacts. This includes road closures, overflowing storm drains and temporary business closures. It can also overwhelm public water utilities and impact electricity reliability. Over the long term, recurrent high tide flooding causes more severe impacts, like damage to below-ground infrastructure and degraded wetlands. NOAA's high tide flooding information can help users plan for and mitigate impacts. The agency's mapping of high tide flooding impact areas nationally is presented as figure 1.8.



Figure 1.8. High tide flooding visualization of impacted areas. Source: NOAA, 2025.

### 1.2 FEDERAL COSTS OF CLIMATE DISASTERS

In the United States, the federal government’s largest source of financial aid for households, state, local and tribal governments is through the Disaster Relief Fund (DRF), which is managed by FEMA through a single federal spending account under the Robert T. Stafford Disaster Relief and Emergency Assistance Act.<sup>xxiii</sup> Prior to the new administration,<sup>11</sup> the money has been used for the following activities:

- Repair, replace and improve the resiliency of damaged infrastructure;
- Clear debris;
- Provide critical services;

<sup>11</sup> As of the writing of this report, the administration has made various proposals to significantly alter the role, mission and funding of FEMA.

- Cover the costs of home repairs, property replacement and other needs for affected households; and
- Implement projects designed to mitigate the effects of future disasters.

Hurricanes constitute the largest category of DRF spending, accounting for about 44 percent of total spending over the 1992–2021 period. After hurricanes, other natural disasters that have led to substantial assistance through the DRF include flooding not related to hurricanes, severe storms, wildfires, tornadoes and earthquakes. Based on a CBO 2022 report, over the 1992–2004 period (before Hurricanes Katrina, Rita and Wilma), DRF spending averaged about \$5 billion annually. The report goes on to state that since 2005, spending has risen to an average of \$16.5 billion annually. Excluding pandemic-related spending, annual spending over the 2005–2021 period was \$12.5 billion, on average.<sup>xxii</sup>

### 1.3 PRIVATE INSURANCE IMPACTS

The private insurance industry is in turmoil. According to data compiled by the Congressional Joint Economic Committee of the Senate, insured losses in the United States from natural disasters have more than quintupled since 2009 through 2023 up from \$15.36 billion to a high of over \$100 billion in both 2021 and 2022.<sup>xxiv</sup>

A 2024 new analysis reveals that climate change accounts for approximately \$600 billion in insured weather-related losses between 2002 and 2022.<sup>xxv</sup> This finding is built upon research in Nature Communications in 2023 by Rebecca Newman and Ilan Noy,<sup>xxvi</sup> who analyzed the economic losses attributable to human-caused climate change. SEO Amsterdam Economics then applied their findings to loss figures reported by five major insurance companies—Aon, Gallagher Re, Munich Re, Swiss Re and Verisk—to generate the first estimate of global climate-attributed insured losses.<sup>xxvii</sup> SEOs Their work shows that the 5-year moving average, which smooths out annual variability, shows climate-attributed losses have risen from 31 percent to 38 percent of total weather-related insured losses in the past decade—with the climate-attributed

portion growing at a significantly faster rate than the total (6.5 percent compared with 4.9 percent respectively).<sup>xxviii</sup>

#### 1.4 STATE FINANCE IMPACTS OVERVIEW

One of the implications to state finances is that more insurers are pulling out of states with large climate-related risks (i.e., wildfires, hurricanes, sea-level rise), which leaves some homeowners uninsured while other homeowners and business owners are insured at rates incommensurate with the risks to help cover the gaps.

States have responded by serving as insurers of last resort (FAIR) plans for property insurance. Currently there are over 30 states that serve as insurers of last resort. As climate impacts continue to increase in frequency, intensity and dollar claims, states will be realizing increased financial stress. There is concern that residents and businesses in states may be forced to bail out state FAIR programs.<sup>xxix</sup>

Additionally, climate-related extreme acute events such as wildfires and hurricanes as well as chronic events such as sea-level rise can have immediate and longer lasting financial consequences for states. A 2023 study in the Journal of the American Planning Association states, “Sea-level rise in Florida could flood properties that have a combined assessed value of U.S. \$619 billion and currently generate \$2.36 billion in annual property taxes. Five million Floridians live in towns where at least 10 percent of local revenues come from properties at risk of chronic and permanent flooding. For 64 municipalities, 50 percent of their revenues come from these risk zones.”<sup>xxx</sup>

UCLA undertook a preliminary study of the recent Los Angeles wildfires of January 2025.<sup>xxxi</sup> An in-depth analysis implications to state finances is provided in Chapter 3: State Budget Implications. The key findings are:

1. Total property and capital losses could range between \$76 billion and \$131 billion, with insured losses estimated up to \$45 billion.

2. There was a 0.48 percent decline in county-level GDP for 2025, amounting to approximately \$4.6 billion.
3. There was a total wage loss of \$297 million for local businesses and employees in the affected areas.
4. Without substantial, effective wildfire mitigation efforts and investments, Californians will face increasingly higher insurance premiums and growing health risks from wildfire-related pollution.
5. L.A. housing markets, particularly rental units, will become increasingly unaffordable.

Additionally, the study estimate that total government expenditures are up 17.3 percent and public safety expenditures are up 18.5 percent. However, due to the structure of California's Proposition 13, property taxes cannot increase more than 2 percent unless there is a change in ownership or new construction.

With over 16,240 homes and commercial properties destroyed, most being rebuilt at higher costs and values, California will see a permanent property tax revenue increase.

A more detailed presentation and discussion of state budget implications is in Chapter 3.

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- <sup>i</sup> Meteorological Technology International, Jan. 1, 2025, “Extreme Weather events in the USA Are Growing More Frequent and Economically Impactful, AccuWeather Reports,” <https://www.meteorologicaltechnologyinternational.com/news/extreme-weather/extreme-weather-events-in-usa-are-growing-more-frequent-and-economically-impactful-accuweather-reports.html#:~:text=According%20to%20the%20latest%20AccuWeather,extreme%20weather%20and%20climate%20change.%E2%80%9D>.
- <sup>ii</sup> U.S. Senate Joint Economic Committee, December 2024, “Climate Risks Present a Significant Threat to the U.S. Insurance and Housing Markets,” [https://www.jec.senate.gov/public/\\_cache/files/3a2e4612-da0d-421e-9269-1db68af137e4/jec-report-on-climate-risks-to-the-insurance-and-housing-markets.pdf](https://www.jec.senate.gov/public/_cache/files/3a2e4612-da0d-421e-9269-1db68af137e4/jec-report-on-climate-risks-to-the-insurance-and-housing-markets.pdf).
- <sup>iii</sup> NOAA, May 4, 2021, “The New U.S. Climate Normals Are Here. What Do They Tell Us About Climate Change?” <https://www.noaa.gov/news/new-us-climate-normals-are-here-what-do-they-tell-us-about-climate-change>.
- <sup>iv</sup> NOAA National Centers for Environmental Information (NCEI), 2025, “U.S. Billion-Dollar Weather and Climate Disasters,” <https://www.ncei.noaa.gov/access/billions/>, DOI: 10.25921/stkw-7w73.
- <sup>v</sup> NOAA NCEI, 2025, “U.S. Billion-Dollar Weather and Climate Disasters,” <https://www.ncei.noaa.gov/access/billions/>, DOI: 10.25921/stkw-7w7.
- <sup>vi</sup> NOAA, 2020, “2010–2019: A Landmark Decade of U.S. Billion-Dollar Weather and Climate Disasters,” <https://www.climate.gov/news-features/blogs/beyond-data/2010-2019-landmark-decade-us-billion-dollar-weather-and-climate>.
- <sup>vii</sup> NASA, 2025, “Wildfires and Climate Change,” <https://science.nasa.gov/earth/explore/wildfires-and-climate-change/#:~:text=Extreme%20wildfire%20activity%20has%20more,fire%20activity%20to%20persist%20overnight.&ext=Rapid%20growth%20of%20wildfires%20over,displayed%20in%20NASA's%20FIRMS%20tool>.
- <sup>viii</sup> NIFC, 2025, “Wildfires and Acres,” <https://www.nifc.gov/fire-information/statistics/wildfires>.
- <sup>ix</sup> U.S. Congress Joint Economic Committee Democrats, October 2023, “Climate-Exacerbated Wildfires Cost the U.S. Between \$394 to \$893 Billion Each Year in Economic Costs and Damages,” <https://www.jec.senate.gov/public/index.cfm/democrats/2023/10/climate-exacerbated-wildfires-cost-the-u-s-between-394-to-893-billion-each-year-in-economic-costs-and-damages>.
- <sup>x</sup> Resources for the Future, March 21, 2025, “Wildfires in the United States 101: Context and Consequences,” [https://www.rff.org/publications/explainers/wildfires-in-the-united-states-101-context-and-consequences/?gad\\_source](https://www.rff.org/publications/explainers/wildfires-in-the-united-states-101-context-and-consequences/?gad_source).
- <sup>xi</sup> CoreLogic, 2024, “Wildfire Risk Report 2024,” <https://corelogic.foleon.com/catastrophe-risk/wildfire-2024/>.
- <sup>xii</sup> U.S. Census, May 2025, “National, State and County Housing Unit Totals: 2020–2024,” <https://www.census.gov/data/tables/time-series/demo/popest/2020s-total-housing-units.html>.
- <sup>xiii</sup> Resources for the Future, March 21, 2025, “Wildfires in the United States 101: Context and Consequences,” [https://www.rff.org/publications/explainers/wildfires-in-the-united-states-101-context-and-consequences/?gad\\_source](https://www.rff.org/publications/explainers/wildfires-in-the-united-states-101-context-and-consequences/?gad_source).
- <sup>xiv</sup> Insurance Information Institute, 2025, “Facts + Statistics: Wildfires,” <https://www.iii.org/fact-statistic/facts-statistics-wildfires>.
- <sup>xv</sup> NOAA, 2025, “What Is a Hurricane?,” <https://oceanservice.noaa.gov/facts/hurricane.html>.
- <sup>xvi</sup> NOAA, 2025, “Hurricane Costs,” <https://coast.noaa.gov/states/fast-facts/hurricane-costs.html#:~:text=Of%20the%20403%20billion%2Ddollar,of%20deaths:%207%2C211%20since%201980>.
- <sup>xvii</sup> World Population Review, 2025, “Hurricanes by State 2026,” <https://worldpopulationreview.com/state-rankings/hurricanes-by-state>.

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<sup>xviii</sup> Insurance Information Institute, 2025, “Facts + Statistics: Hurricanes,” <https://www.iii.org/fact-statistic/facts-statistics-hurricanes>.

<sup>xix</sup> NOAA, February 2022, “Global and Regional Sea-Level Rise Scenarios for the United States: Updated Mean Projections and Extreme Water Level Probabilities Along U.S. Coastlines,” <https://oceanservice.noaa.gov/hazards/sealevelrise/sealevelrise-tech-report.html>.

<sup>xx</sup> NOAA, 2022, “Global and Regional Sea-Level Rise Scenarios for the United States,” <https://oceanservice.noaa.gov/hazards/sealevelrise/sealevelrise-tech-report.html>.

<sup>xxi</sup> NOAA, 2025, “Sea-Level Rise Viewer,” [https://coast.noaa.gov/slr/#/layer/slr/0/-11263046.626113497/4865965.987922375/5.000/satellite/none/0.8/2050/interHigh/noAccretion/NOS\\_Minor](https://coast.noaa.gov/slr/#/layer/slr/0/-11263046.626113497/4865965.987922375/5.000/satellite/none/0.8/2050/interHigh/noAccretion/NOS_Minor).

<sup>xxii</sup> U.S. Congressional Budget Office, December 2024, “The Risks of Climate Change to the United States in the 21st Century,” <https://www.cbo.gov/system/files/2024-12/60845-climate-risk.pdf>.

<sup>xxiii</sup> U.S. Congressional Budget Office, November 2022, “FEMA’s Disaster Relief Fund: Budgetary History and Projections.”

<sup>xxiv</sup> U.S. Congress Joint Economic Committee Democrats, Dec. 16, 2024, “Climate Risks Present a Significant Threat to the U.S. Insurance and Housing Markets,” <https://www.jec.senate.gov/public/index.cfm/democrats/2024/12/climate-risks-present-a-significant-threat-to-the-u-s-insurance-and-housing-markets>.

<sup>xxv</sup> Green Central Banking, Dec. 10, 2024, “Increasing Climate Losses Threaten the Insurance Industry and Financial Stability.”

<sup>xxvi</sup> Nature Communications, Sept. 29, 2023, “The Global Costs of Extreme Weather That Are Attributable to Climate Change,” <https://doi.org/10.1038/s41467-023-41888-1>.

<sup>xxvii</sup> SEO Amsterdam Economics, 2024, “Insured Losses Attributable to Climate Change: Determining the Direct Costs of Climate Change for Insurers.” Available on request.

<sup>xxviii</sup> Insure Our Future, December 2024, “Within Our Power. Cut Emissions Today to Insure Tomorrow,” <https://insure-our-future.com/wp-content/uploads/2024/12/loF-Scorecard-2024.pdf>.

<sup>xxix</sup> E&E News by Politico, March 18, 2024, “California’s Insurer of Last Resort Is a Ticking Time Bomb,” <https://www.eenews.net/articles/californias-insurer-of-last-resort-is-a-ticking-time-bomb/>.

<sup>xxx</sup> Journal of American Planning Association, 2023, “Can Florida’s Coast Survive Its Reliance on Development?”

<sup>xxxi</sup> UCLA Anderson School of Management, 2025, “Economic Impact of the Los Angeles Wildfires,” <https://www.anderson.ucla.edu/about/centers/ucla-anderson-forecast/economic-impact-los-angeles-wildfires>.

# SECTION 2 POWER & WATER UTILITIES



## 2.0 POWER AND WATER UTILITIES

As presented in chapter 1, climate change has manifested into increased risks (figure 2.1) and more frequent and severe impacts such as wildfires, hurricanes and sea-level rise, as well as increased temperatures and droughts in some regions and heavier rains in other regions.



**Figure 2.1.** Acute and chronic implications to water and power utilities.

While this has broad implications for the general populace, there are specific and unique implications for both electric and water utilities spanning both finances and operations. As will be presented in this section, some of these issues have potentially important consequences for state finances specifically if the state is required to step in to financially backstop/bail out utilities. These risks include increasing deferred maintenance costs, overwhelming utility financials, impacts from climate change such as droughts that impact water availability for both water systems and thermoelectric power plants, rising sea levels that affect stormwater and wastewater facilities, and finally electric utilities being sued for starting extensive wildfires from transmission line failures.

## 2.1 POWER UTILITIES

Most state electricity markets are vertically integrated so the utility may own the generation, transmission and delivery of electricity to customers. In the past 20-plus years, some states have begun to restructure their electricity markets to increase competition in the generation of electricity. States that restructured required electric utilities to sell their generation assets while the transmission and distribution systems remained under their ownership.

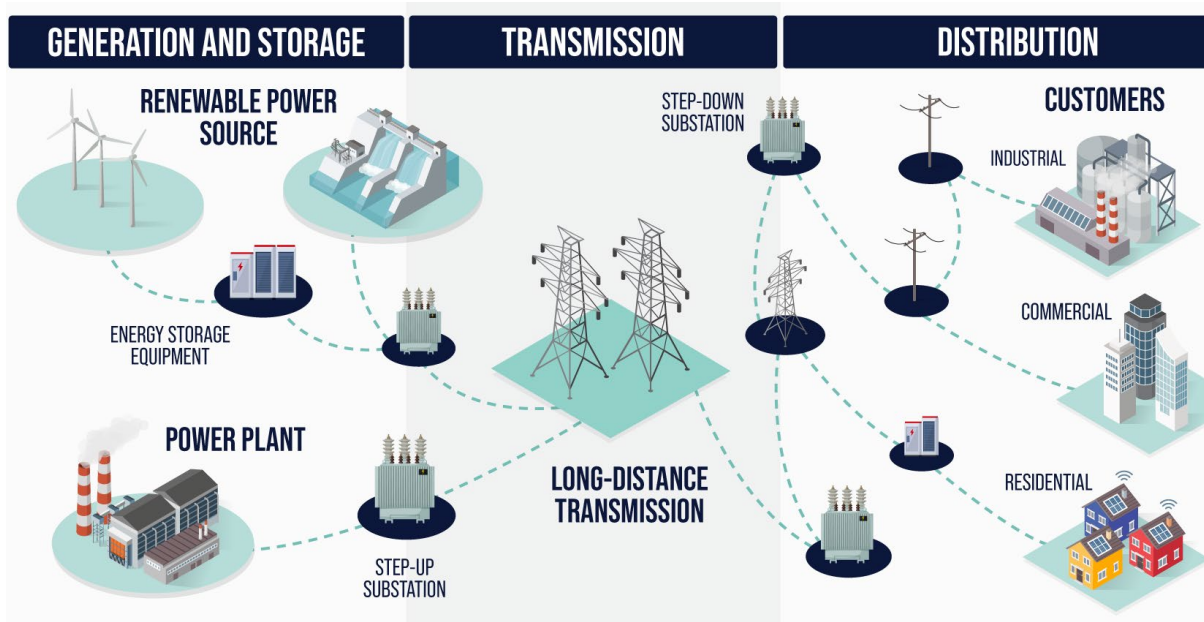


Figure 2.2. An overview of the electric grid. Source: U.S. Senate Republican Policy Committee, (2021).<sup>xxxiii</sup>

Thirteen states, including New York, Pennsylvania, Texas, Illinois, Ohio, New Jersey and Maine, have fully restructured their retail electricity markets and in some instances allow consumers to decide whom to purchase electricity from, called “retail choice.” Six states suspended restructuring, whereas eight others are exploring retail choice options. Some states, like California, have partially restructured markets and only permit certain consumers to engage in retail choice.<sup>xxxiv</sup> The differences between vertically integrated and restructured electricity markets are listed as follows.<sup>xxxv</sup>

### Vertically Integrated States

- Utilities are responsible for the generation, distribution and transmission of power to customers. Utilities typically own all or some of the generation assets and distribution

lines, as well as some of the transmission lines needed to serve customers. In addition to generating electricity, they also purchase some power through contracts from independent energy suppliers.

- Consumers purchase electricity from the utility that serves their area, which has an obligation to serve all customers in that area.
- Utilities must seek approval for energy investments from state commissions (i.e., energy, utility or corporation), which also oversee the rate of return on utility investments and determines the rates that customers pay, as well as requirements for renewables and demand-side management programs.

### **Restructured States**

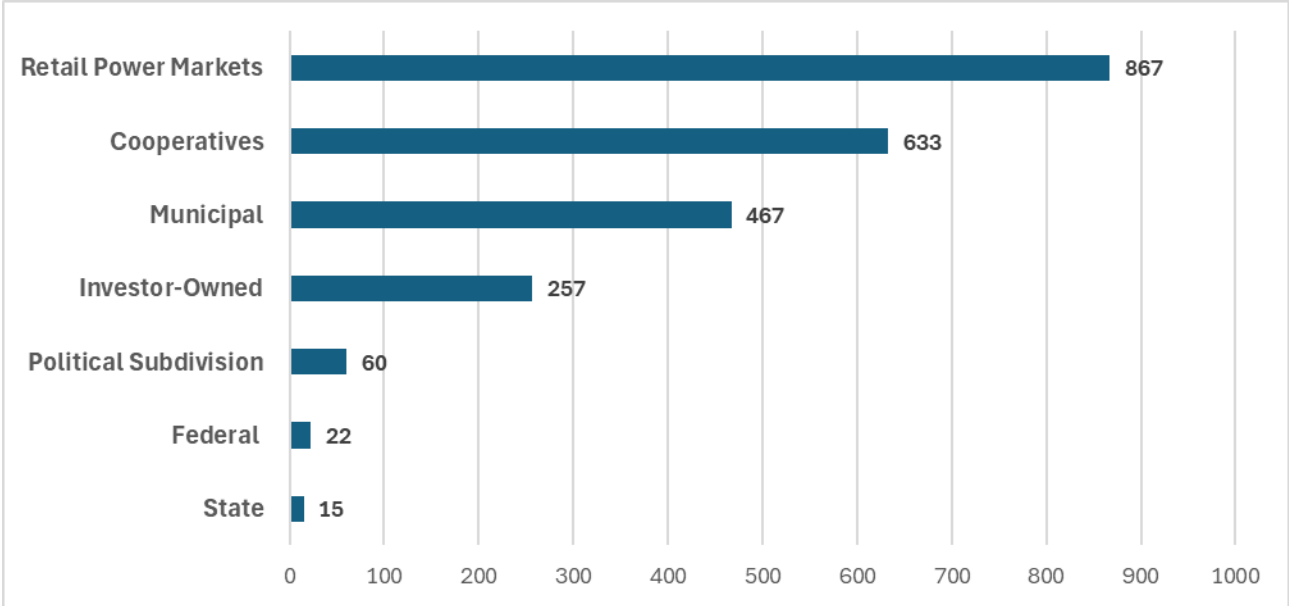
- Wholesale energy prices are set by the independent system operators (ISO) and regional transmission organizations (RTO) markets with some federal oversight of these markets. Importantly, state commissions still determine the rates that retail customers pay and still provide oversight of the distribution utility that delivers power to customers.
- In most states, customers are offered the ability to choose the supplier of their electricity.
- In most states, distribution utilities own and operate the distribution system and some portion of the transmission system. They must still serve as the provider of last resort for customers who do not choose an alternate provider of electricity. However, these distribution utilities cannot own their generation assets and must either acquire power from the wholesale markets or independent energy suppliers under power purchase agreements.
- The RTOs and ISOs in restructured states manage wholesale electricity markets and oversee grid operations.

There are over 12,500 utility-scale electric power plants and over 640,000 miles of transmission lines. Electricity demands in the United States are expected to witness even greater demand in

the near term. In fact, data centers alone will demand 35 GW of electricity by 2030, growing 10 percent per year.<sup>xxxvi</sup>

### Public Versus Private Electric Utilities

In the United States there are different provider models for electric utilities, which in the broad context include generation and storage, transmission and distribution (figure 2.2). Power sellers include retail power markets, cooperatives, municipal utilities, retail power marketers and investor-owned. As presented in figure 2.3, there are more U.S. utilities operated by municipalities; however, large investor-owned utilities (IOU) serve a larger base of customers per company. IOUs are the main utility providers in dense and highly populated areas on both the East and West coasts. Southern California Edison and Florida Power were the utilities with the highest number of customers in the United States in 2023.<sup>xxxvii</sup>



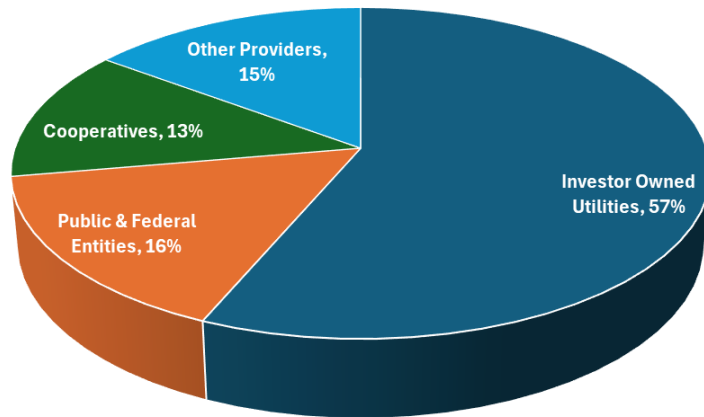
**Figure 2.3** Ownership classifications and numbers of electricity providers in the United States in 2023. Source: U.S. Energy Information Administration (EIA), 2024,<sup>xxxviii</sup>

Table 2.1 presents a listing of the top 20 public electric utilities in the United States by net generation in 2023. A full listing of the top 100 public electric utilities is provided in the appendices.

1	Salt River Project	AZ	32,706,437
2	New York Power Authority	NY	26,924,316
3	CPS Energy	TX	24,864,732
4	Santee Cooper (South Carolina Public Service Authority)	SC	19,929,658
5	Los Angeles Department of Water & Power	CA	18,177,234
6	Nebraska Public Power District	NE	16,069,825
7	Lower Colorado River Authority	TX	14,672,764
8	Puerto Rico Electric Power Authority	PR	12,077,654
9	MEAG Power	GA	11,125,819
10	JEA	FL	10,387,873
11	Energy Northwest	WA	8,690,584
12	American Municipal Power	OH	8,484,551
13	Florida Municipal Power Agency	FL	8,461,033
14	Omaha Public Power District	NE	7,959,596
15	Grant County, Public Utility District No. 2 of Grant County	WA	7,936,470
16	Chelan County Public Utility District No. 1	WA	7,341,242
17	Sacramento Municipal Utility District	CA	7,270,858
18	Austin Energy	TX	7,101,740
19	Southern California Public Power Authority	CA	6,956,580
20	North Carolina Municipal Power Agency No. 1	NC	6,874,677

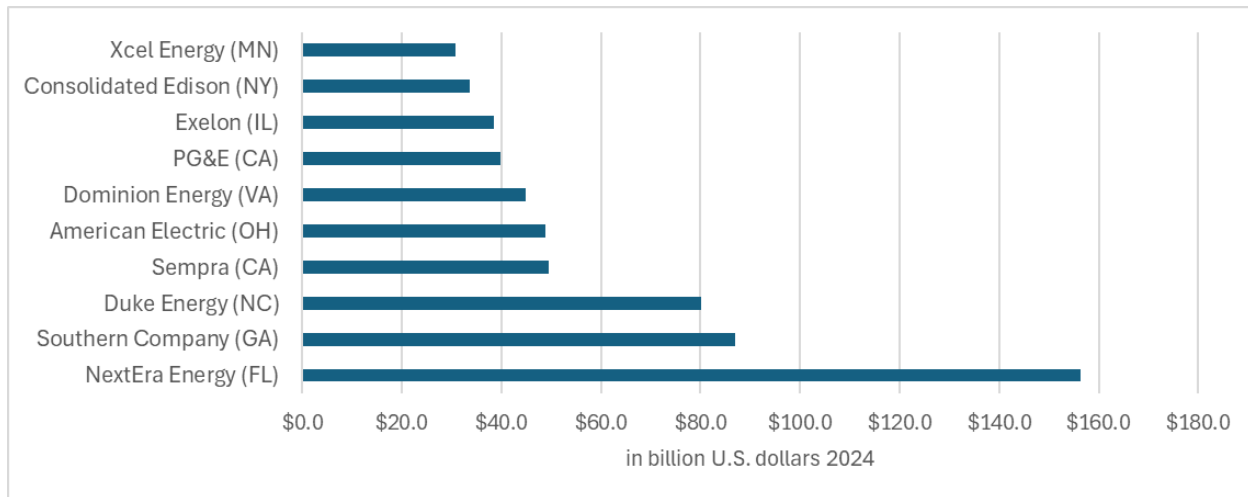
**Table 2.1** Top 20 public electric utility providers by net generation in megawatt hours in 2023. Source: American Public Power Association 2025.<sup>xxxix</sup>

While the majority of electric utilities are publicly owned across the country, **the percentage share of electricity sales in the United States is dominated by investor-owned (IO) electric utilities** (see figure 2.4.)



**Figure 2.4.** Percentage shares of electricity sales by type of provider in 2022. Source: EIA, 2024.<sup>xi</sup>

Xcel Energy Inc. is the nation’s largest regulated IO for-profit (private) electric utility. Based in Minneapolis, it serves more than 3.7 million customers in parts of eight states (Minnesota, North Dakota, South Dakota, Michigan, Wisconsin, Colorado, New Mexico and Texas), according to the company’s website.<sup>12</sup>



**Figure 2.5.** Largest electric utilities in the United States as of June 2024. Source: Statista, 2025.<sup>xli</sup>

<sup>12</sup> Xcel Energy, <https://co.my.xcelenergy.com/s/>.

### 2.1.1 Climate Change Impacts on Electric Utilities

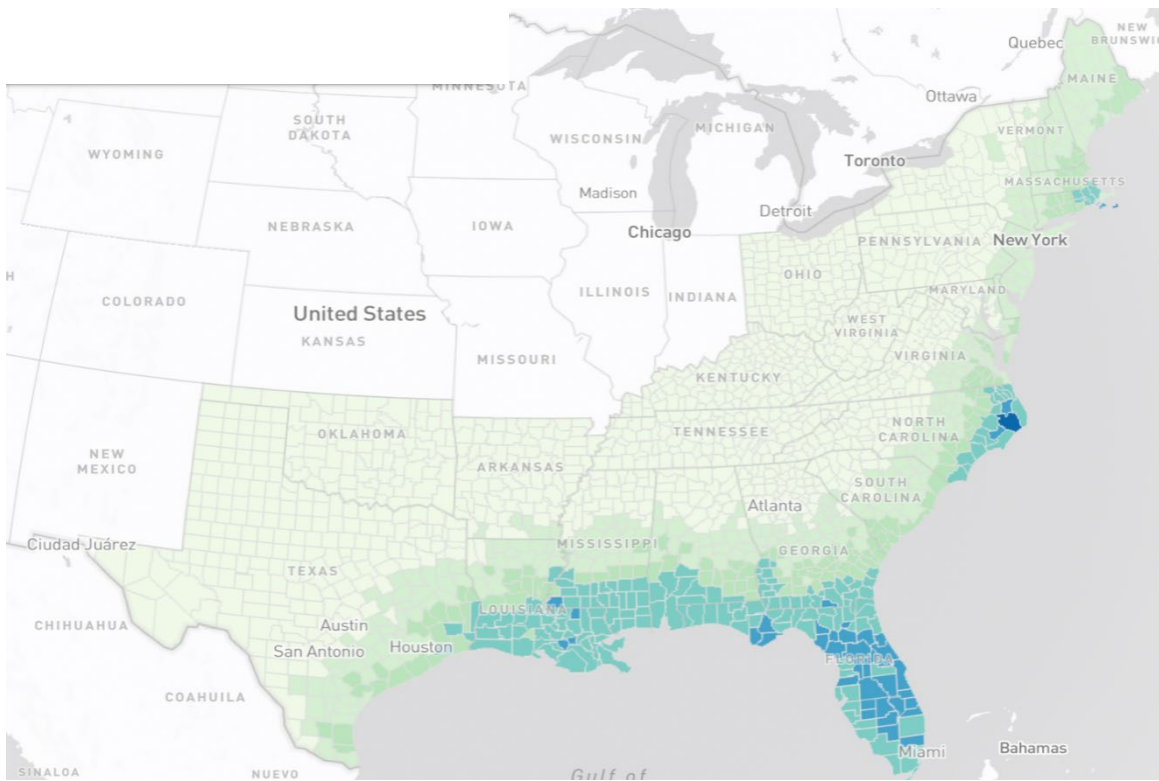
In a recent 2025 report issued by S&P Global Market Intelligence,<sup>xliii</sup> the utilities sector faces the “highest projected annual costs from climate physical risks” with the electric utilities sector the hardest hit and most at risk. The report further reveals that water stress is projected to have a significant financial impact (46 percent of the utilities sector’s costs), as will extreme heat (41 percent of the sector’s costs) in the 2050s. Reliable access to volumes of fresh water is essential for thermoelectric power generation, which requires water for steam-driven turbines. Power generation from hydroelectric dams can be disrupted by low water levels. Wildfires, extreme storm events and sea-level rise will also impact utilities—both water and electricity.

### 2.1.2 Interruption of Services

As climate change brings more severe and powerful storms, there are greater risks of electric power interruption from downed power lines, as well as transmission and distribution infrastructure being damaged. Recently, the Electric Power Research Institute (EPRI) and a team from the Pacific Northwest National Laboratory (PNNL) responsible for the development of the risk analysis framework for tropical cyclones (RAFT) jointly combined their physical models with statistics and ML to create synthetic tropical cyclones. The result of their work is a tool called Climate READi.<sup>13</sup> Coupling their models, they sought to predict power outages for each synthetic storm in both a current and future climate. This provides both researchers and policymakers a better understanding of future implications for power systems, including considerations of grid hardening, crew preparedness and proactive investment. Figure 2.6 provides a visualization of the future power outage implications from hurricanes in the United States.

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<sup>13</sup> EPRI, “Climate READi: Resiliencd and Adaptation Initiative,” <https://interactive.epri.com/readi-storymap/p/1>.



**Figure 2.6.** Severe outage counts: future climate events per decade from less than 0.1 in very light green to more than 3 in darker blue. Source: Climate READi, 2025. <sup>xliii</sup>

Additionally, the joint PNNL and EPRI models ran simulations to explore major power outages as a result of hurricanes. As presented in table 2.2, the greater Houston metropolitan area is expected to experience the greatest percent increase in projected power outage events per person per decade, while in the continental United States, the greater Miami metropolitan area will experience the greatest actual number in both current and future climate scenarios.

Metro Area	County	Current Climate	Future Climate	Percent Change
Houston, TX	Harris County	0.49	0.84	72%
New Orleans, LA	Orleans Parish	1.06	1.81	70%
Tampa, FL	Hillsborough County	1.05	1.98	89%
Miami, FL	Miami-Dade County	0.96	2.11	119%
Charleston, SC	Charleston County	0.92	1.29	40%
Norfolk, VA	Norfolk City	0.74	1.07	44%
Washington, DC	District of Columbia	0.29	0.35	21%
Philadelphia, PA	Philadelphia County	0.3	0.44	49%
Manhattan, NY	New York County	0.32	0.47	47%
Boston, MA	Suffolk County	0.85	1.49	76%
San Juan, PR	San Juan Region	2.16	3.49	62%

**Table 2.2.** Projected outage events per person per decade. Source: Climate READi, 2025.<sup>xli</sup>

Utilities and rate payers are impacted both directly and indirectly in a number of ways from climate change. First, if an electric utility believes that the utility may cause a wildfire (example of down wires). The NIFC maintains a statistics database by year, which includes annual reports.<sup>14</sup> The reports document numerous important data regarding wildfires per year in the United States. However, while they do differentiate human-caused by nature-based (lightning), they do not provide important granularity such as whether the human-caused is a result of downed power lines.

While there is no official government database, the growing impacts of power utilities causing wildfires are well-documented in the public domain.

### Lahaina, Hawaii, Fire – Hawaiian Electric

On Tuesday, Aug. 8, 2023, at 2:55 p.m., a fire ignites in **Lahaina on the Hawaiian island of Maui.**<sup>xliv</sup> All told, when the fires were eventually extinguished on Aug. 9, 2023, the had caused unprecedented impacts including:<sup>xlv</sup>

<sup>14</sup> NIFC, “Statistics,” <https://www.nifc.gov/fire-information/statistics>.

1. 115 people dead.
2. Over 2,000 homes destroyed.
3. Near-term impacts to over 800 businesses with about 7,000 employees.
4. The daily total business revenue loss of those establishments was estimated to be \$2.7 million a day.
5. Loss of tourism when 88 trans-Pacific flights were canceled in August, representing 23,083 air seats. The overall passenger count to Kahului Airport decreased by more than 70 percent from 7,000 a day to 2,000.<sup>15</sup>
6. The loss from business closures and visitor expenditures was estimated to be \$11 million a day on Maui since Aug. 9, 2023 through September 6, 2023.

Additionally, according to U.S. Census Bureau data, 50 percent of the Lahaina homes were renter-occupied and the average monthly rent is estimated to be \$1,700 a month. The rental income loss is about \$2 million a month. Initial unemployment claims jumped from an average of 130 cases per week before the wildfire to 865 cases in the first week after the fire, to 4,449 cases in the second week after the fire, and to 2,705 cases the third week after the fire.

On Aug. 27, 2023, Hawaiian Electric issued a press release,<sup>xlvi</sup> “in response to the lawsuit filed on Thursday by the County of Maui.” It stated that “several important facts are clear about the events on Aug. 8.” This includes “A fire at 6:30 a.m. (the “Morning Fire”) **appears to have been caused by power lines that fell in high winds.**”

A report from a joint investigation of the County of Maui Department of Fire and Public Safety and the U. S. Bureau of Alcohol, Tobacco, Firearms and Explosives that was released on Oct. 3, 2024, found that the initial fire originated off Lahainaluna Road in vegetation near power pole 25 as a result of molten metallic material (sparks) ejected from the re-energization of broken power lines above.<sup>xlvii, xlviii</sup> On Aug. 2, 2024, Hawaiian Electric agreed to a settlement of \$1.99 billion—

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<sup>15</sup> This is reported for the first 30 days. Additional tallies were not available.

almost half of the \$4 billion individual and collective tort claims. This occurred after four months of mediation.<sup>xlix</sup>

### **Smokehouse Creek Fire – Xcel Energy**

Earlier in 2024, , the **Smokehouse Creek Fire** occurred in the Texas Panhandle and Oklahoma from Feb. 26 through March 16, 2024. The fire burned approximately 1,058,482 acres (1,654 square miles). It was the largest wildfire in Texas history. The fire started at 2:20 p.m. and was later determined to be caused by a downed power line due to a broken utility pole at a time of extreme windy conditions (40 to 50 mph) and unusually warm temperatures (more than 20 degrees Fahrenheit above normal). Three lives were lost, including a fire chief, as well as more than 15,000 head of cattle and 138 homes were lost. The State of Texas reports that the economic impact “may ultimately exceed \$1 billion from agricultural-ag related losses.”<sup>l</sup>

The utility at the focus of the fires was Xcel Energy, which was named in 15 lawsuits. On an earnings call, the company CEO estimated that liabilities from the fire would run \$215 million, but could increase as more information about the extent of the damage became available. According to reports, Xcel Energy established a policy for the first time to proactively de-energize (i.e., shut off) the grid during severe weather that could fuel wildfires. Company leadership is also exploring potential state- and federal-level policy solutions to limit utilities’ liability for wildfires.<sup>li</sup>

### **Camp Fire – PG&E**

Perhaps one of the most impactful utility-caused wildfire is the **Camp Fire** in northern California in November 2018. The fire that started on Nov. 8 in Butte County became the most destructive and deadly fire in California before the 2025 Paradise Fires in Los Angeles. The Camp Fire destroyed over 18,000 structures and resulted in 85 fatalities.<sup>lii</sup> On June 16, 2020, **PG&E pleaded guilty on 84 separate counts of involuntary manslaughter** and agreed to a fine of \$3.5 million (maximum allowable under law) and **\$25.5 billion in settlements**.<sup>liii</sup> Fire investigators for Cal Fire and Butte County investigated and found that the fire was started by the failure of a suspension

hook holding up an insulator string that held up a highly energized line. The investigators found the broken iron hook, also known as a “C hook,” and it appeared to have not just broken, but was worn through after a great deal of time hanging in the windy environs of the Feather River Canyon.<sup>liv</sup>

On Jan. 29, 2019, PG&E—one of the nation’s largest utilities—filed for Chapter 11 bankruptcy protection in large part because of potential liabilities in excess of \$30 billion from wildfires in 2017 and 2018 linked to its equipment.<sup>lv</sup> In 2019, as is detailed in the next chapter, the utility asked the state to help bail it out (Assembly Bill AB 1054). In July 2020 PG&E emerged from bankruptcy.

Many electric power-caused wildfires need not have occurred as a utility may proactively shut off power in areas where that risk exists due to high heat, low humidity and strong winds. This is called a public safety power shutoff (PSPS). While this will minimize the risk of fires caused by damaged or downed power lines, it may also cause outages. As an example, Xcel Energy in March 2025 instituted a PSPS that impacted ratepayers in both Texas and New Mexico.<sup>lvi</sup> While there currently is no federal listing of all PSPS events in the United States, some information can be gleaned. As presented in the appendix, the California Public Utilities Commission maintains a dashboard of all PSPS events since 2018.<sup>16</sup>

## 2.2 WATER UTILITIES

In the United States there are approximately 152,000 public drinking water systems, including 50,000 community water systems, and half of these systems serve communities with fewer than 500 people.<sup>lvii</sup> Drinking water systems comprise more than 2 million miles of underground pipes and more than 16,000 wastewater treatment systems. A 2024 U.S. Geological Survey analysis indicated that total public supply water withdrawals grew by more than 7.5 percent between 2000 and 2020, at a conservative amount of 39 billion gallons of water per day withdrawn from either surface or groundwater. Water system utility plants fall into five major categories: source

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<sup>16</sup> California Public Utilities Commission, “Public Safety Power Shutoffs (PSPS),” <https://www.cpuc.ca.gov/psps/>.

of water supply, pumping, purification, distribution and general (water infrastructure). The water utility segment includes municipal systems, which are owned and operated by local governments, and publicly traded/IO systems. Government-owned systems make up the vast majority of both the U.S. water and wastewater utility segment, accounting for approximately 84 percent of all community water systems and approximately 98 percent of all community wastewater systems. The national drinking water infrastructure comprises more than 2 million miles of underground pipes and is operated by over 150,000 public water systems serving 90 percent of the population.

There are a few large water utilities (table 2.3).

ORGANIZATION	REVENUE IN US \$B	PUBLIC v INVESTOR	ABOUT
American Water Works Company, Inc.	\$4,234	Investor	Water and wastewater serves 24 states
New York City Municipal Water Finance Authority*	\$4,203	Public	purpose is to finance the capital needs of the water and sewer system of the City of New York
Veolia Water Americas, LLC	\$2,130	Investor	Operates in multiple states
Veolia Water North America Operating Services, LLC	\$2,114	Investor	
Essential Utilities, Inc.	\$2,054	Investor	The company provides drinking water and wastewater treatment infrastructure and natural gas in multiple states.
Orlando Utilities Commission (inc)	\$1,072	Public	A statutory commission created by Special Act of the Florida Legislature in 1923 to manage the municipal water and electric service to the City of Orlando and adjoining portions of Orange County.
Los Angeles Department of Water and Power	\$1,061	Public	
Knoxville Utilities Board	\$973	Public	
Metropolitan Water Reclamation District of Greater Chicago	\$967	Public	
Washington Suburban Sanitary Commission (inc)	\$951	Public	wastewater
Imperial Irrigation District	\$890	Public	Established by California state water code.
District of Columbia Water & Sewer Authority	\$832	Public	
California Water Service Group	\$795	Investor	Serves 5 states
American States Water Company	\$596	Investor	Serves multi-jurisdictions in CA
Suez North America Inc.	\$497	Investor	Merged with Veolia
Pennsylvania - American Water Company	\$465	Investor	
New Jersey-American Water Company, Inc.	\$360	Investor	Subsidiary of American Water Works

**Table 2.3** Leading water and sewer utilities by revenue in the United States, 2023. Source: Statista, 2025.

lviii

The business model for the majority of water utilities is based on user rates. Due to increasing demands, labor and inflation costs, aging infrastructure, and implications from climate change, household water bills across the country rose around 64 percent between 2012 and 2023. As presented in figure 2.6, federal financial support for water utilities dramatically decreased since the 1970s. Both a 2020 California State Water Resources Control Board report and a 2015 CBO

report found that the federal government supported up to 35 percent of total spending on water utility infrastructure through the 1970s.<sup>lix, lx</sup> **By 2014, federal funding accounted for approximately 4 percent.**

### Drinking Water

States are able to support water utilities with low-interest loans and grants through the federal **Drinking Water State Revolving Fund (DWSRF)** program.<sup>17</sup> The program administered by the EPA provides great flexibility to states but does require them to provide a 20 percent match of the federal funds; they may also set aside 31 percent of their capitalization grants for non-infrastructure projects. Until 2018, the Safe Drinking Water Act required that communities repay DWSRF loans within 20 years of project completion. America's Water Infrastructure Act of 2018 (AWIA, Public Law 115-270) amended the act to extend the loan repayment period to 30 years.<sup>lxi</sup> Since fiscal year (FY) 2022, the program has been appropriated at **more than \$1 billion below authorized funding levels**. Between FY 2022 and FY 2023, more than \$1 billion was taken from the DWSRF program for earmarks, resulting in a **nearly 45 percent reduction in grants**.<sup>lxii</sup> The U.S. Department of Agriculture's (USDA) Rural Development office also has revolving funds for water and wastewater systems in rural areas.<sup>18</sup>

### Wastewater and Stormwater

The **Clean Water State Revolving Fund (CWSRF)** is a federal-state program that provides funding and financing to wastewater and stormwater systems for a wide range of infrastructure projects. The projects that can be funded include construction of publicly owned treatment works, nonpoint source projects, septic systems, stormwater projects (gray and green), water conservation, energy conservation, water reuse and planning and technical assistance. Under the Bipartisan Infrastructure Law, between FY 2022 to FY 2026, over \$12 billion was made available for the CWSRF general supplemental and CWSRF emerging contaminants programs. **States have**

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<sup>17</sup> Codified at 42 U.S.C. 300j-12.

<sup>18</sup> USDA, "Revolving Funds for Financing Water and Wastewater Projects," <https://www.rd.usda.gov/programs-services/water-environmental-programs/revolving-funds-financing-water-and-wastewater-projects>.

the authority to waive repayment on some of the funding such as forgiving some or all of the loan's principal or provide grants.<sup>lxiii</sup>

### Long-Term Loans for Drinking Water, Stormwater and Wastewater

The Water Infrastructure Finance and Innovation Act (WIFIA) program was designed to aid large projects that cost \$20 million or more. **WIFIA loans can provide up to 49 percent of the financing and the SRF loans could finance some or all of the remaining eligible project costs.** Repayment can be deferred for up to five years following substantial completion of the project. The program has received funding at authorized levels, including \$77 million in FY 2024.<sup>lxiv</sup>

## 2.3 STORMWATER OVERVIEW

Stormwater utilities manage rain and snowmelt from the communities they serve to nearby water bodies. There is no national database for stormwater infrastructure, but a 2021 estimate indicates that there are over 3.5 million miles of storm sewers, 270 million storm drains and 2.5 million stormwater treatment assets across the country.<sup>lxv, lxvi, lxvii</sup>

The EPA developed a classification of stormwater systems called Municipal Separate Storm Sewer Systems (MS4) to address stormwater discharge from large urban or suburban areas. MS4s are publicly owned, discharge into U.S. waters, and are regulated by the EPA under the National Pollution Discharge Elimination System (NPDES) program. According to the EPA, there are 855 Phase I MS4s (typically medium or large cities and certain counties) and 6,695 Phase II MS4s (typically smaller systems and nontraditional systems) across numerous cities and counties subject to MS4 discharge regulations.<sup>lxviii</sup>

## 2.4 AGING INFRASTRUCTURE AND DEFERRED MAINTENANCE

The ASCE prepares a comprehensive report card for America's infrastructure each year. In the 2025 report, it issued the following grades:

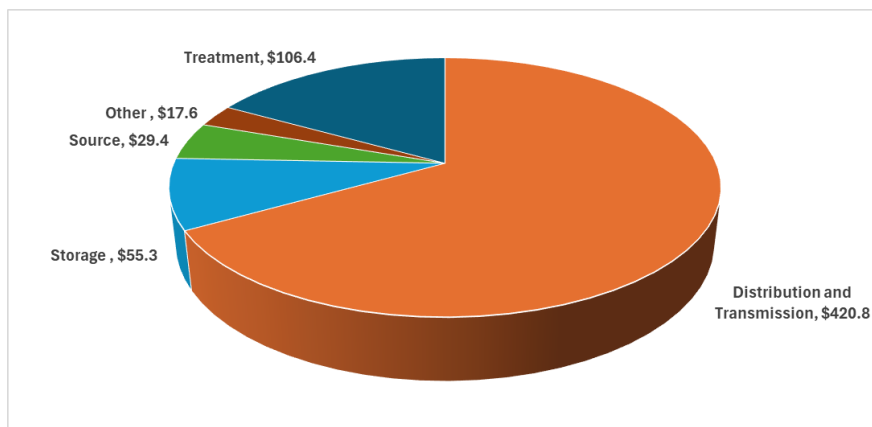
- Drinking water infrastructure - "C-"

- Stormwater infrastructure - “D”
- Wastewater infrastructure - “D+”

Additionally, in 2023 the EPA said the nation’s drinking water infrastructure needs at least \$625 billion over 20 years. Similarly for wastewater infrastructure, the EPA’s CWNS in 2022 undertook an assessment of existing clean water infrastructure and the need for future investment to address the water quality objectives of the Clean Water Act over the next 20 years. The EPA found that \$630.1 billion was needed to support secondary and advanced wastewater treatment, as well as conveyance systems, stormwater management and nonpoint source control.<sup>lxix</sup>

## Water

The ASCE in 2025 graded drinking water systems “C-.” In part, this grade and national concern are driven by the fact that over half of the nation’s public water systems have identified rehabilitation and replacement of their aging infrastructure as their most critical challenge since almost 126 billion cubic meters of water (about 33.3 trillion gallons) is lost annually at a loss of at least \$187 billion.



**Figure 2.7.** Total 20-year state need for water infrastructure projects by category in billions, as of January 2021. Source: EPA, 2024.<sup>lxiii</sup>

Annually, there are 240,000 water main breaks reported in the United States, costing about \$2.6 billion in repair costs annually. In figure 2.7, the EPA 2024 national needs assessment report indicates the total amount of funds states need for five categories of infrastructure projects over the next 20 years (in January 2021 dollars).<sup>lxx</sup>

### 2.4.1 Examples of Deferred Maintenance Impacts on Water Utilities

A December 2023 analysis by Utah State University analyzed data from 399,812 miles of water mains in both Canada and the United States (17.1 percent of estimated total length).<sup>lxxi</sup> The findings indicate that about 260,000 water main breaks occur annually, representing \$2.6 billion per year in maintenance/repair costs. Distribution pipes (12 inches and smaller) account for about 86 percent of all water main failures—five times more often than transmission lines at a rate of 13.3 breaks/100 miles a year. The average age of failing water mains is 54 years, which is significant as 33 percent (770,000 miles) of water mains are over 50 years old. In fact, about 20 percent (about 452,000 miles) of water mains are beyond their useful lives—a \$452 billion gap in funding.

#### Back River, Baltimore (2022)

Back River Wastewater Treatment Plant is one of the largest wastewater treatment plants in the mid-Atlantic, serving residents of Baltimore City and County—approximately 1.3 million people. The facility processes around 180 million gallons of wastewater per day although it is designed to handle up to 240 million. However, in early 2022 it was the focus of attention as a result of reported untreated wastewater discharging into the Back River due to mechanical failures.<sup>lxxii</sup>

The Maryland Department of Environment, in partnership with Blue Water Baltimore, filed a lawsuit against Baltimore City in January 2022, asking it to get the Back River and affiliated Patapsco River plants back into compliance with pollution permits or face daily fines.

A settlement was finalized on Nov. 2, 2023,<sup>19</sup> that included a civil penalty of \$4.75 million. To address maintenance issues, around \$575 million was spent on the Back River plant.<sup>lxxiii</sup>

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<sup>19</sup> Inside Climate News, Nov. 7, 2023, “Baltimore City, Maryland Department of the Environment Settle Lawsuits Over City-Operated Sewage Treatment Plants,” <https://insideclimatenews.org/news/07112023/baltimore-settlement-wastewater-plants/>.

### **Penns Creek, Pennsylvania (2024)**

As reported by northcentral PA.com<sup>20</sup> and others, at approximately 6 a.m., on Sunday, Sept. 22, 2024, an alarm at the Eastern Snyder County Regional Authority sewage treatment plant went off, alerting personnel of low levels of sewage entering the plant. The alarm caused facility staff to investigate. Officials discovered that a 20-inch force main had ruptured before entering the plant near the Isle of Que and entered Penns Creek, which flows into Middle Creek and the Susquehanna River. Approximately 800,000 to 900,000 gallons of wastewater per day flowed through the pipe. The cause of the leak was determined to be that the ductile iron pipe was in very poor condition due to age (between 47 and 48 years old).<sup>lxxiv, lxxv</sup>

### **Hilo, Hawaii (2024)**

On March 20, 2024, the mayor for Hawai'i County signed an administrative order on consent issued by the EPA for violations of section 309 of the Clean Water Act.<sup>21</sup> Among the complaints in the consent order was the fact that the Papa 'ikou wastewater treatment plant discharged wastewater into the Pacific Ocean along with additional issues at the Hilo and Kulaimano plants. The EPA was concerned about catastrophic failures of the Hilo plant. In an interview, the county director of environmental management stated the issues stemmed from deferred maintenance, lack of training, and other issues.<sup>lxxvi</sup>

Subsequent to the consent order, at 8:15 a.m. on June 21, 2024, the Hilo wastewater treatment plant located on Maui discharged approximately 607,000 gallons of untreated wastewater into Hilo Bay due to a failure in the chlorination process used to disinfect the wastewater.<sup>lxxvii</sup> In February 2025 Hawai'i County awarded a \$337 million contract for just the Hilo plant as a direct measure to address inattention to deferred maintenance issues and to rehabilitate the facility.

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<sup>20</sup> See: ([https://www.northcentralpa.com/life/dep-update-on-sewage-release-impacting-susquehanna-river-near-selinsgrove/article\\_b05df600-8002-11ef-b1d3-33c866e378f7.html#:~:text=How%20the%20leak%20was%20discovered,the%20entire%20section%20of%20line.](https://www.northcentralpa.com/life/dep-update-on-sewage-release-impacting-susquehanna-river-near-selinsgrove/article_b05df600-8002-11ef-b1d3-33c866e378f7.html#:~:text=How%20the%20leak%20was%20discovered,the%20entire%20section%20of%20line.))

<sup>21</sup> DOCKET NO. CWA-309(a)-24-003.

## 2.4.2 Water Utility Climate-Induced Service Interruptions

### Spruce Pine, North Carolina (2024)

The town's wastewater treatment plant serves both its residents and those of surrounding areas and discharges the clean, treated water into the North Toe River. To meet immediate needs after Hurricane Helene struck western North Carolina in 2024, the town leased two mobile wastewater treatment units, known as BlueBoxes, from a Texas-based engineering firm. The six-week lease cost Spruce Pine \$1.2 million, according to officials. This limited the plant to processing 400,000 to 600,000 gallons per day treating about half of what the plant was treating before the hurricane.

### Highland Park, Michigan (2023)

In Highland Park, annual water and sewer bills of \$7 million and growing are almost as much as the city's total property tax collections of \$9 million a year. In May 2023 the Michigan Senate passed the budget proposal for the state's Department of Health and Human Services that includes \$20.3 million to help the city with its water debt. Gov. Gretchen Whitmer also announced budget recommendations that called for funding for long-term infrastructure needs across the state, like removing and replacing lead service lines, and ensuring the quality and safety of drinking water.

### Pittsburgh, Pennsylvania (2018)

In 2018 the state of Pennsylvania bailed out the Pittsburgh Water and Sewer Authority with \$50 million from the Pennsylvania Infrastructure Investment Authority.

### Fairfield, Maine (2025)

In April 2025 the state of Maine was exploring a \$10 million proposal to extend water service to Fairfield, which has some of the highest PFAS levels in Maine. The \$10 million would only partially cover the \$50 million needed.

## 2.5 BOND RATINGS, CLIMATE AND UTILITIES

Utilities are increasingly being impacted by lowering bond ratings and increasing financing costs. In 2013, there were 58 utilities upgraded and 6 downgraded; by 2021, the trend had reversed with 43 downgrades and 20 upgrades. In fact, through 2023, the industry experienced four

consecutive year downgrades by 3-to-1.<sup>lxxix</sup> For electric utilities, one important factor is the increasing number and size of wildfires.

In the S&P global ratings' 2024 industry credit outlook of North America, regulated utilities laid out their assumptions of the utility sector. They included:<sup>lxxx</sup>

- 1. **High capital spending** for North America's IO regulated electric, gas and water utilities.
- 2. **Robust dividends** at about \$45 billion, reflecting a dividend payout ratio of about 60 percent.
- 3. **Consistent access to the capital markets** is necessary for industry to fund its debt maturities and cash flow deficits.

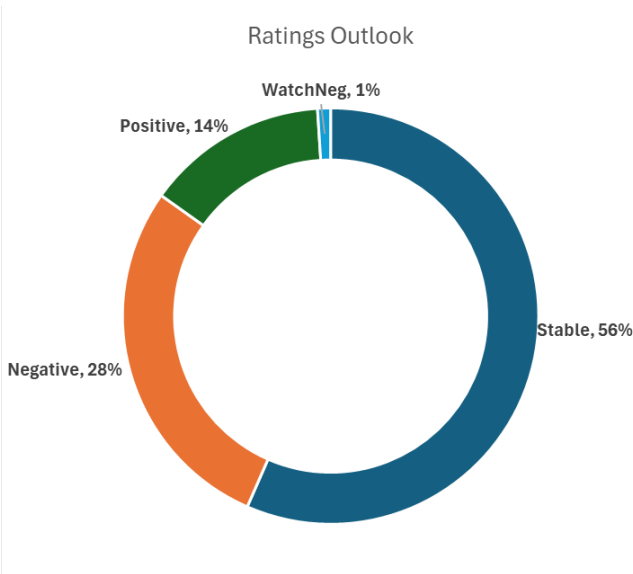


Figure 2.8. Ratings outlook for North American regulated utilities. Source: S&P, 2024.<sup>lxxiii</sup>

**Key risks around the baseline**

- 1. **Timely recovery** of prudently spent capital and operation and maintenance costs is necessary for the industry to maintain credit quality.
- 2. **Minimal financial cushion.** About 35 percent of the industry is operating with limited ability to absorb unexpected events beyond their base case.

3. **Inflation.** S&P Global's economists expect the CPI to decrease to below 3 percent by the end of 2024.

#### **Main assumptions of 2024 and beyond**

1. **Climate change** is increasing the frequency of extreme and devastating hurricanes, storms and wildfires, which is heightening credit risks for North America's IOUs.
2. **Record capital spending.** While the industry's robust capital spending is necessary for prudent investments in safety, reliability and energy transition, it is directly leading to high cash flow deficits. If these deficits are not funded with debt and equity in a balanced manner, credit quality will likely weaken.
3. **Management of regulatory risk.** Given the significant capital spending, effective management of regulatory risk is important for the industry's credit quality. This includes constructive rate case orders, minimizing regulatory lag, earning its authorized return on equity and managing the customer bill impact.

In the following chapter we discuss the implications of physical and financial risks to utilities and climate change to state budgets.

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- <sup>xxxii</sup> U.S. Department of Transportation, 2023, “Number of U.S. Aircraft, Vehicles, Vessels and Other Conveyances,” <https://www.bts.gov/content/number-us-aircraft-vehicles-vessels-and-other-conveyances>.
- <sup>xxxiii</sup> U.S. Senate Republican Policy Committee, 2021, “Infrastructure Cybersecurity: The U.S. Electric Grid,” <https://www.rpc.senate.gov/policy-papers/infrastructure-cybersecurity-the-us-electric-grid>.
- <sup>xxxiv</sup> National Governors Association, 2025, “Electricity Markets–101,” <https://www.nga.org/electricity-markets/>.
- <sup>xxxv</sup> National Governors Association, 2025, “Electricity Markets–101,” <https://www.nga.org/electricity-markets/>.
- <sup>xxxvi</sup> ASCE, 2025, “A Comprehensive Assessment of America’s Infrastructure: 2025 Report Card,” <https://infrastructurereportcard.org/>.
- <sup>xxxvii</sup> Statista, 2024, “Number of Electricity Providers in the United States in 2023, by Ownership Type,” <https://www.statista.com/statistics/245631/us-electricity-providers-by-type/>.
- <sup>xxxviii</sup> EIA, 2024, “Annual Electric Power Industry Report, Form EIA-861 Detailed Data Files,” <https://www.eia.gov/electricity/data/eia861/>.
- <sup>xxxix</sup> American Public Power Association, 2025, “The 2025 Public Power Statistical Report.”
- <sup>xl</sup> EIA, 2024, “Data Source: U.S. Energy Information Administration, United States Electricity Profile, Table 9, November 2023.”
- <sup>xli</sup> Statista, June 6, 2024, “Largest Electric Utilities Based on Market Value in the United States as of June 2024 (in Billion U.S. Dollars).”
- <sup>xlii</sup> S&P Global Market Intelligence, 2025, “For the World’s Largest Companies, Climate Physical Risks Have a \$1.2 Trillion Annual Price Tag by the 2050s,” <https://pages.marketintelligence.spglobal.com/rs/565-BDO-100/images/Climate%20physical%20risks%20have%20a%20122%20trillion%20price%20tag.pdf?version=3>.
- <sup>xliii</sup> Climate READi, 2025, “Projected Changes in Hurricane-Induced Power Outages in a Future Climate,” <https://interactive.epri.com/readi-storymap/p/1>.
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# SECTION 3

# STATE BUDGET IMPLICATIONS



### 3.0 EMERGING TRENDS AND IMPLICATIONS TO STATE BUDGETS

As presented in the two prior chapters, both natural and human-caused disasters have the potential to significantly impact state budgets. In this chapter, we delve deeper by exploring trends in how state budgets are impacted at the nexus of climate change and power/water utilities and the trends and potential changing landscape of both private and public finances used to mitigate costs to states in response to disasters as depicted in table 3.1. For a breakdown nationally of various disaster risks, see the appendix that presents overall risks and risks by category as analyzed by the FEMA National Risk Index.<sup>22</sup>

Nexus of Utility-Climate Risks to State Budgets		
Wildfires	Expenditures	Fire Suppression, Infrastructure Repair, Clean Up/Remediation, Temporary Housing, Grants & Loans, Increased debt & bonding impacts. Mudslides and impacts post recovery from rain in areas with lost vegetation. Gaps in private insurance coverage.
	Revenue Losses	Property Taxes, Sales Taxes, Agriculture Losses, Tourism Losses
	Utility Nexus	Ignition (liabilities/litigation) from power sources, service interruptions. Wildfires alter watersheds and water quality.
Storm Surge & Flooding	Expenditures	Resiliency construction to shore up utility infrastructure, Infrastructure Repair, Clean Up/Remediation, Temporary Housing, Grants & Loans, Increased debt & bonding impacts. Gaps in FEMA and private insurance coverage.
	Revenue Losses	Property Taxes, Sales Taxes, Agriculture Losses, Tourism Losses
	Utility Nexus	Interruption of services, potential leakage of wastewater facilities
Hurricanes	Expenditures	Emergency responders, National guard deployment, Clean Up/Remediation, Temporary Housing, Grants & Loans, Increased debt & bonding impacts. Gaps in FEMA and private insurance coverage.
	Revenue Losses	Property Taxes, Sales Taxes, Agriculture Losses, Tourism Losses
	Utility Nexus	Interruption of services. Damage & write-offs of infrastructure.
Droughts	Expenditures	Water conservation projects, livestock & crop assistance, hazardous dry vegetation removal, gaps in private insurance coverage.
	Revenue Losses	Agriculture losses, tourism declines, increased wildfires which impact property & sales tax etc.
	Utility Nexus	Interruption of thermo-electric power plants, impacts to hydro electric power, interruptions for water systems. Nitrate impacts to groundwater.
Extreme Heat	Expenditures	Increased cooling of state buildings, cooling sheltering, repairs to infrastructure ie. rutting/shoving highways, morbidity ER responses and medicade expenses.
	Revenue Losses	Loss of productivity.
	Utility Nexus	Power outages impacts, longer-term impacts to water for thermo-electric power, longer-term impacts to drinking water supplies

**Table 3.1.** Overview of the nexus of utility-climate risks to state budgets.

<sup>22</sup> FEMA, “Resilience Analysis and Planning Tool (RAFT),” <https://hazards.fema.gov/nri/data-resources>.

First, we will explore **historic financial impacts to states from climate, weather and nature-based impacts**. The timing of this review is highly significant as the presidential administration and Congress are undertaking potentially significant changes to one of the most important financial backstops to state and local governments through funding appropriations to FEMA. This will include **current trends** in regard to states being financially impacted as a result of independently operated electric utilities (such as wildfires) and from publicly owned water and wastewater utilities. These financial impacts includes both revenue and expenditure impacts from a wide range of utility-related issues such as wildfires caused by electric utilities, increasing costs and impacts of deferred maintenance and issues of capital and operating costs to build in resiliency approaches to protect utility continuity as a result of climate change.

Finally, we will provide **emerging trends** at the nexus of utilities and state budgets, including the role of states as insurers of last resort and the increasing costs of borrowing money as a result of bond downgrades for utilities and increasing pressures from community members to have government takeovers of IOUs.

### 3.1 STATE FUNDING FOR EMERGENCY MANAGEMENT

The first area we will explore is the baseline costs to states for managing emergency response organizations and programs in their state, including the role of the federal government in mitigating some of the ongoing operating costs to states. The National Emergency Management Association (NEMA), which was established in 1974, is a nonprofit that serves as the professional association for emergency management directors from all U.S. states, territories and the District of Columbia. The group's 2024 biennial report provides an in-depth analysis of state emergency management programs and analyzes the operating budgets for each state and territory emergency management agency budget. The percentage of **federal funding as part of the annual state FEMA budget ranges from 0 percent to 99.4 percent**.

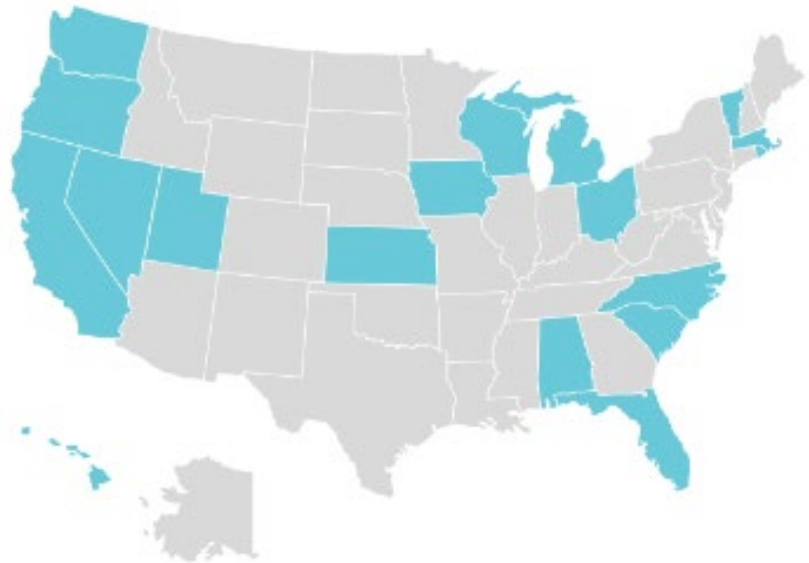
According to NEMA stats, FY 2023 saw 23,910 events requiring significant commitments of state resources but not reaching the level of a major declaration, which was a **74 percent increase** from FY 2021.

To respond to disasters caused by both nature and humans, states have a structured process spanning from dedicated funds that receive appropriations by the governor and legislature to ensure an adequate amount is available at a moment's notice, or a trust or other mechanism is in place for when a specific incident occurs. And in some cases, states have multiple mechanisms in place for their disaster funds as presented in figure 3.1.

### General Emergency Funding Mechanisms Used in Each State

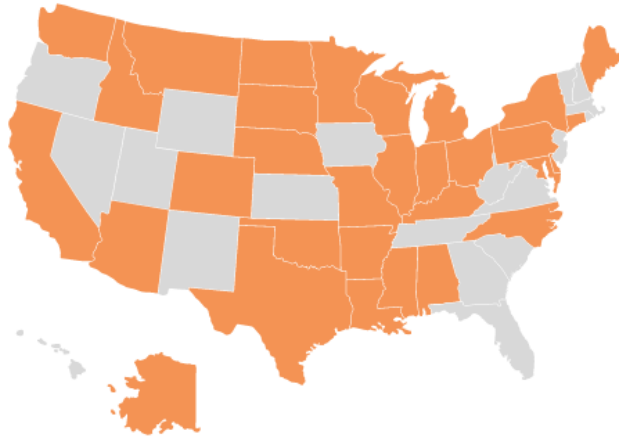
*Funds are appropriated by the legislature for specific incidents after each major disaster occurs:*

*Alabama, California, Florida, Hawaii, Iowa, Kansas, Massachusetts, Michigan, Nevada, North Carolina, Ohio, Oregon, Rhode Island, South Carolina, Utah, Vermont, Washington, Wisconsin*



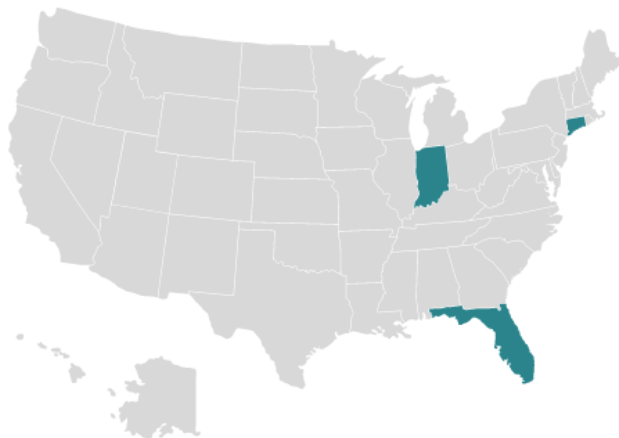
**A separate disaster fund(s) exists, funds are appropriated as needed to always keep an adequate amount of funds available:**

Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Louisiana, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Washington, Wisconsin



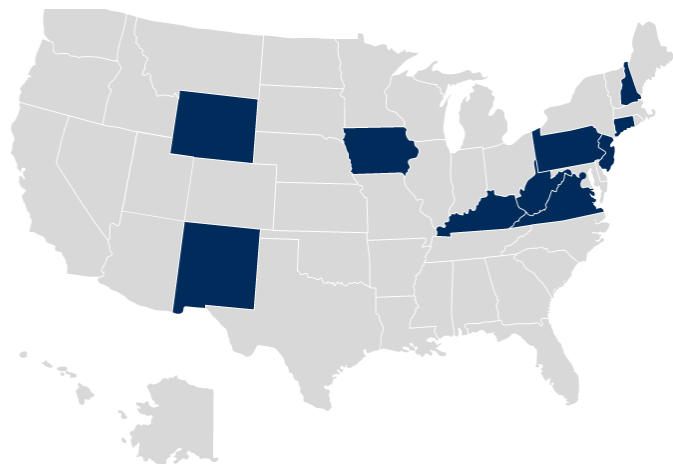
**A disaster trust exists, in which revenues from specified sources (such as a tax or fee) are deposited and used as needed for a specified purpose:**

Connecticut, Florida, Indiana



**Other funding mechanisms exist, for example, the governor's allocation of funding or the legislature funds a disaster contingency fund at their discretion:**

Connecticut, District of Columbia, Iowa, Kentucky, New Hampshire, New Jersey, New Mexico, Pennsylvania, Virginia, West Virginia, Wyoming



**Figure 3.1.** General emergency funding mechanisms used in each state. Source and by courtesy of NEMA, 2024. <sup>lxxxi</sup>

### 3.1.1 Disaster Response and the FEMA Backstop

The new administration has proposed significant changes to FEMA. The agency was created by President Jimmy Carter in 1979, and it operates about a dozen preparedness grant programs. FEMA's main focus is on recovery, assessing the damage to communities and distributing funding to help them rebuild. **Over the past four years, FEMA has provided more than \$12 billion to individuals and \$133 billion primarily to state and local governments.** Since 2015, residents in Florida, Louisiana and Texas have received the highest amounts of individual assistance payments from FEMA, exceeding \$2 billion in each state (see figure 3.2 for an expanded analysis since 2003). FEMA also provides much of the nation's flood insurance coverage, as the private market has largely pulled back from flood policies.

#### How FEMA Assistance Works

According to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 USC 5121-5207), when a major disaster strikes and FEMA assistance is required, a state governor or Indian tribal leader must make an official request for an emergency declaration at which time the state and the FEMA regional office will conduct a joint federal/state preliminary damage assessment. Ultimately the president must approve the declaration, which can come in one of two components:<sup>lxxxii</sup>

1. **Emergency Declaration** Used to supplement state and local or Indian tribal government efforts in providing emergency services, such as the protection of lives, property, public health and safety, or to lessen or avert the threat of a catastrophe in any part of the United States. The total amount of assistance provided in a single emergency may not exceed \$5 million.
2. **Major Disaster Declarations**: The president can declare a major disaster for any natural event, including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm or drought, or, regardless of cause, fire, flood or explosion, that the president determines has caused damage of such severity that it is beyond the combined capabilities of state and local

governments to respond to. A major disaster declaration provides a wide range of federal assistance programs for individuals and public infrastructure, including funds for both emergency and permanent work.

FEMA provides funding in two different buckets. The first is the **Individuals and Households Program (IHP)**, which provides support to individuals and households, and the second is the **Public Assistance Program (PAP)**, which provides funding to states and local governments.

The IHP provides several types of financial and direct assistance to eligible individuals and families, including both homeowners and renters. FEMA Individual Assistance is a grant and does not need to be repaid and is not considered taxable income. **FEMA IHP assistance includes:**

1. Housing and other needs assistance;
2. Rental assistance to rent alternate housing while the resident is displaced from their disaster-damaged property;
3. Lodging expense reimbursement for hotels, motels or other short-term lodging while the resident is displaced from their disaster-damaged property;
4. Home repair assistance to help restore the disaster-damaged primary residence to safe, sanitary and livable conditions;
5. Financial assistance to uninsured or underinsured disaster-caused personal property losses, medical and dental expenses and other serious expenses;
6. Financial assistance for childcare, moving and storage costs, transportation and more; and
7. Cleaning and sanitization assistance.

The PAP provides supplemental grants directly **primarily to states and local governments** so they can quickly respond to and recover from major disasters and emergencies. Federal funding is available to eligible entities such as state governments, local governments and certain private nonprofit organizations, such as schools, hospitals, houses of worship and public utility districts.

Under PAP, FEMA provides two main types of assistance:

1. **Grant funding for emergency protective measures** and debris removal (emergency work); and
2. **Grant funding for permanent restoration** of damaged facilities such as roads, culverts, bridges, water control facilities, utilities, public buildings and parks in designated areas, including cost-effective hazard mitigation to protect the facilities from future damage (permanent work).

Public assistance dollars pay to clean up disaster-related debris, repair roads and bridges, put utilities and water systems back in order, restore buildings and equipment such as schools, hospitals and places that provide community services.

Type of Incidents	Number of Incidents	IHP Total	PATotal
Freezing	1	\$0	\$1,602,599
Straight Line Winds	1	\$0	\$2,206,494
Coastal Storm	6	\$0	\$26,189,160
Other	2	\$0	\$32,524,843
Tsunami	3	\$0	\$50,176,448
Dam / Levee Break	2	\$30,598,662	\$51,492,781
Mudslide	9	\$2,168,436	\$110,915,987
Winter Storm	11	\$2,065,723	\$116,209,449
Volcanic Eruption	2	\$13,188,507	\$136,029,868
Typhoon	12	\$118,558,635	\$382,748,199
Tornado	29	\$84,432,565	\$596,385,935
Tropical Storm	15	\$581,072,493	\$731,605,540
Snowstorm	38	\$0	\$775,364,096
Earthquake	11	\$97,674,222	\$1,419,885,679
Severe Ice Storm	34	\$214,584,346	\$1,664,437,612
Fire	45	\$517,504,667	\$6,666,943,502
Flood	211	\$3,436,083,480	\$7,544,965,023
Severe Storm	700	\$4,188,332,428	\$14,655,314,095
Hurricane	150	\$24,952,815,493	\$127,818,261,614

**Table 3.2.** Number of incidents with associated funding for IHP and PAP, 2003 to 2025. Source: Carnegie Endowment for International Peace Database, 2025.<sup>lxxviii</sup>

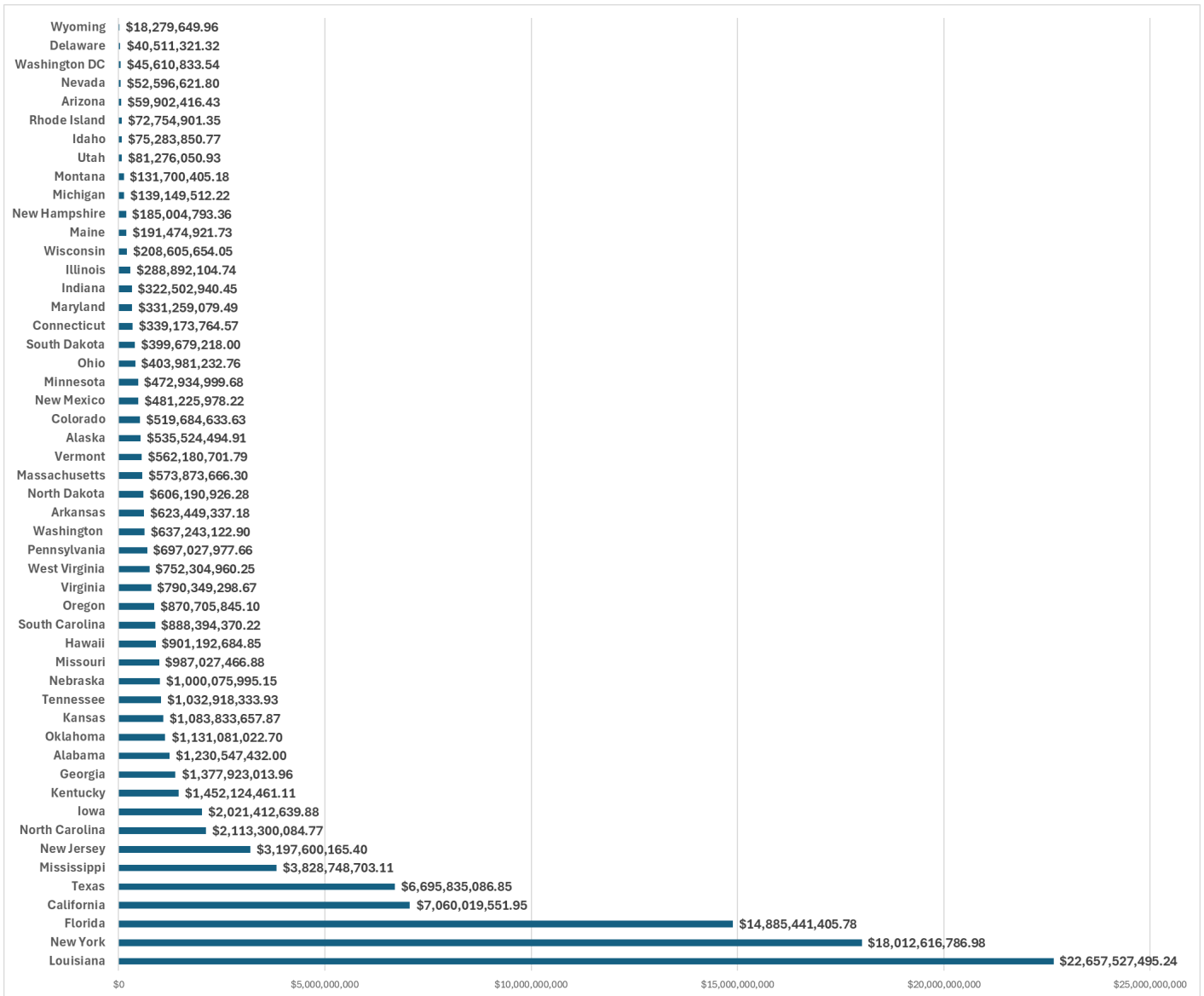


Figure 3.2. 2003 to 2025 (partial year) grant-based funding to communities through FEMA’s PAP. Source: Carnegie Endowment for International Peace Database, 2025. <sup>lxxxiii</sup>

Trend 1

## States Face a Potential Reduction in Federal Disaster Relief Funding

The new administration has proposed changes in how FEMA institutes the disaster declaration process by raising the damage threshold for a presidentially declared disaster, denying major disaster declarations for snowstorms, and limiting the federal cost share for public assistance funding after a disaster to 75 percent.<sup>lxxxix</sup> In a published report, the Urban Institute analyzed FEMA data of disasters from 2008 to 2024 and determined that the proposed changes would substantially reduce the number of declared disasters (71 percent of events from 2008 to 2024 would not have qualified) and shift significant costs to state and local governments—approximately \$41 billion in public assistance spending over the same 16-year period.<sup>lxxxiv</sup>

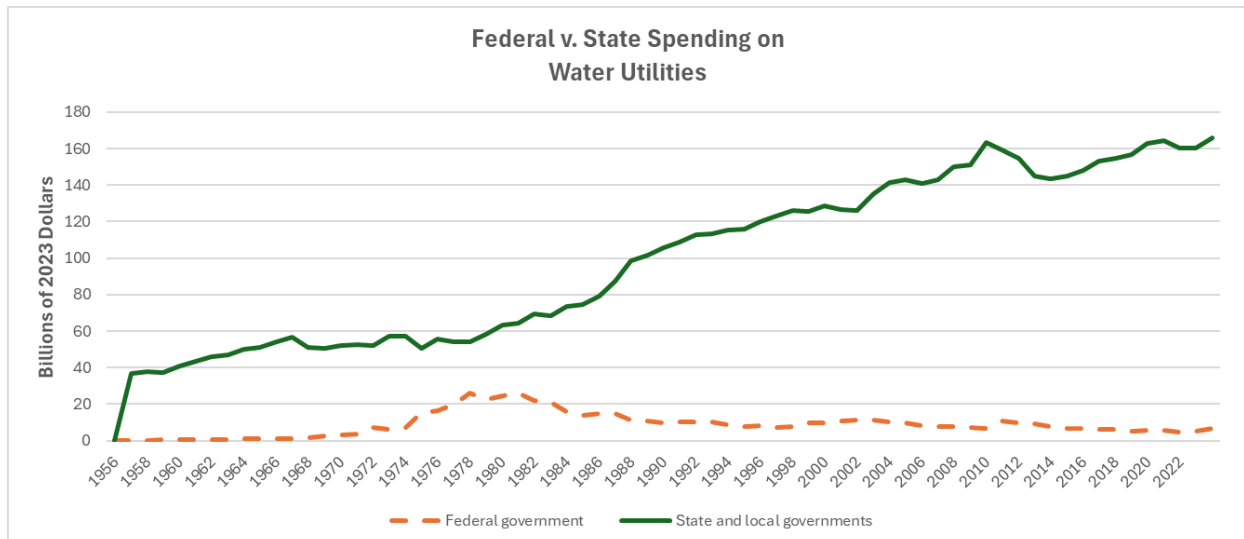
Top 12 States in Model With Largest Percentage of Funding Lost				
State	Total Funding (millions)	Total funding lost (millions)	Share of funding lost	Funding lost per capita
Pennsylvania	\$333	\$333	100%	\$26
Ohio	\$298	\$298	100%	\$25
Maine	\$155	\$155	100%	\$112
Michigan	\$93	\$93	100%	\$9
Nevada	\$39	\$39	100%	\$12
Arizona	\$33	\$33	100%	\$5
Virginia	\$605	\$534	88%	\$62
Idaho	\$91	\$80	88%	\$42
New Hampshire	\$173	\$151	87%	\$109
Wisconsin	\$182	\$134	74%	\$23
Massachusetts	\$699	\$509	73%	\$73
Washington	\$500	\$366	73%	\$47
Top 12 States in Model Total Funding Lost in Millions US				
State	Total Funding (millions)	Total funding lost (millions)	Share of funding lost	Funding lost per capita
Washington	\$500	\$366	73%	\$47
North Carolina	\$2,219	\$354	16%	\$33
Pennsylvania	\$333	\$333	100%	\$26
Minnesota	\$545	\$314	58%	\$55
Kentucky	\$1,675	\$310	19%	\$69
Louisiana	\$10,713	\$304	3%	\$66
Ohio	\$298	\$298	100%	\$25
Alabama	\$1,028	\$279	27%	\$55
Georgia	\$1,114	\$214	19%	\$20
Hawaii	\$898	\$209	23%	\$145
New Mexico	\$515	\$193	37%	\$91
Kansas	\$712	\$191	27%	\$65

**Table 3.3.** Retrospective implications to states based on proposed quadrupling of the PCI , 2008 to 2024. Source: Urban Institute, 2025.<sup>lxxxix</sup>

## Trend 2

### Financial Stress of Deferred Maintenance for Water Utilities Is Increasing

As presented in figure 3.3, states and local governments provide about 80 percent of the U.S. public infrastructure spending.<sup>lxxxv</sup> Many states undertake a process to generate a capital improvement plan. However, most plans are forward-looking and focused on revenue rather than focused on a needs-oriented lens, and, as discussed earlier, most water utility executives are not undertaking a comprehensive examination of climate-related risks. One pragmatic reason could be due to the number of small water utility systems that lack either the personnel or expertise to undertake such analyses. This could offer a **unique opportunity for state governments to take a leadership role** in undertaking these analyses for water utilities.



**Figure 3.3.** Public spending on water utilities by level of government, 1956 to 2023 (in billions 2023 dollars). Source: CBO, 2025.<sup>lxxxvi</sup>

Another issue is that few states report on infrastructure conditions and needs, especially deferred maintenance needs, in their budget documents.

In a 2025 study by the American Public Works Association (APWA),<sup>lxxxvii</sup> 3,346 water utility professionals in the United States were surveyed to rank the issues facing the water sector. The **top 6 of 18 issues** identified were:

1. **Financing** for capital improvements
2. **Infrastructure renewal and replacement**
3. Long-term **drinking water supply** availability
4. Public understanding of the **value of water sector systems** and services
5. Watershed/source **water protection**
6. **Financial sustainability**

It can be interpreted that climate change and increasingly more impactful severe storms, as well as more frequent and severe droughts, are at the forefront of many of the concerns listed. Given the need to address these concerns, water utility executives (n=659) in the same survey were asked about “anticipated investment needs” for their utilities. Meeting regulatory requirements was the area that is most currently funded at 70.7 percent, while climate “adaptation” was one of the lowest at 7.3 percent, and 50.6 percent of respondents responded as “don’t know/not applicable,” indicating a **gap in prioritization and planning** by the utilities, as well as some uncertainty and/or a lack of specifically designed research regarding the impacts of climate on water utilities by geography.

As presented in chapter 2, the EPA in 2023 provided an extensive report to Congress on drinking water infrastructure needs of 3,629 public water systems in all 50 states and territories, indicating a **20-year capital improvement need of \$625 billion, \$620.4 billion of which is for states.**<sup>lxxxviii</sup>

## Ability to Fund Water Utilities

Given these known and perceived water infrastructure needs, utility executives (n=653) surveyed were asked whether their utility was **able to meet the full costs** of providing water/wastewater services, including infrastructure rehabilitation, renewal and/or replacement needs, **through customer rates and fees**.

1. Fewer than half (40.6 percent) said they were fully able to cover costs through rates and fees.
2. Slightly over a quarter (28.8 percent) said they believe they are moderately able to implement full-cost pricing.
3. Over a quarter (30.6 percent) said they are currently struggling to implement full-cost pricing.
4. Almost half (48.5 percent) said they plan to raise rates in the next two years.

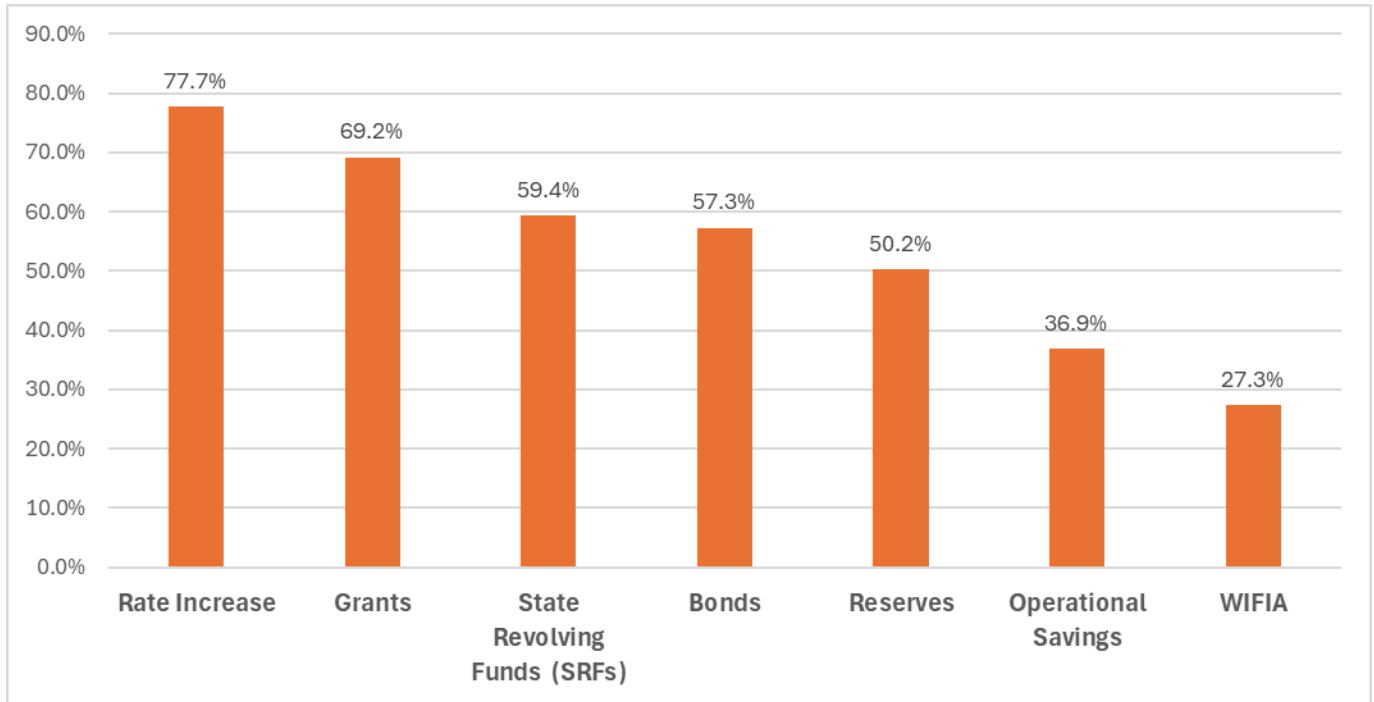
## Where Will the Gap in Funding Come From?

On May 2, 2025, the president released his FY 2026 budget request. The annual budget request typically reflects the president's priorities and serves as a blueprint for congressional appropriators as they begin to craft spending bills for the next fiscal year. However, the budget request is not binding and has no impact on its own. Congress will ultimately determine funding levels for federal agencies and programs.

The administration is requesting just \$150 million for DWSRF, \$155 million for CWSRF and \$8 million for the WIFIA program.

Collectively, the budget request seeks to cut these core water infrastructure programs by just under 90 percent.

As presented in chapter 2, the federal government provides multiple grants and guaranteed loan options for drinking water (DWSRF), stormwater and wastewater (CWSRF) primarily managed by each state. However, this is currently insufficient to meet the needs of both deferred maintenance and capital improvements to reduce the operational risks from climate change. The APWA 2024 survey asked water utility executives where they would raise capital funding and financing by sources. They selected all that applied; figure 3.4 presents the order of the percentage of the total mentions. **Of significance is the reliance on state grants and revolving funds in addition to ratepayer increases.**



**Figure 3.4.** Utility financing/funding mechanisms survey of water utility executive management and financial officers (percent mentions) (n=2,485). Source: American Water Works Association (AWWA), 2024.

### The Power-Water Risk Nexus

The American Water Works Association in 2025 said, “Every water and wastewater utility should set uninterrupted service as a high priority operating goal and include potential service interruptions in its risk assessment and resiliency plan in compliance with the American Water Infrastructure Act (AWIA).” Specifically, the AWWA calls attention to the fact that water and wastewater systems require an acceptable level of electric power reliability and thus are vulnerable to electric supply disruption and that an electric service outage can have significant consequences. The association said there is an **“escalating risk of failure of the national electrical infrastructure due to deferred maintenance, power supply shortages, natural disaster, physical or cyber-attacks.”**<sup>lxxxix</sup>

There are increasing risks to the stability of the grid in regions due to more frequent and severe droughts in the United States. The U.S. Energy Information Administration (EIA) in partnership with NOAA and the National Integrated Drought Information System, publishes the “U.S. Drought Monitor” on a weekly basis. Figure 3.5 presents the risks to power plants by geography

for the week of July 10, 2025. While the majority of utilities track this risk, state officials should also track and utilize these data to prepare for unintended loss of power for communities that can come from in- and out-of-state electric power plants.

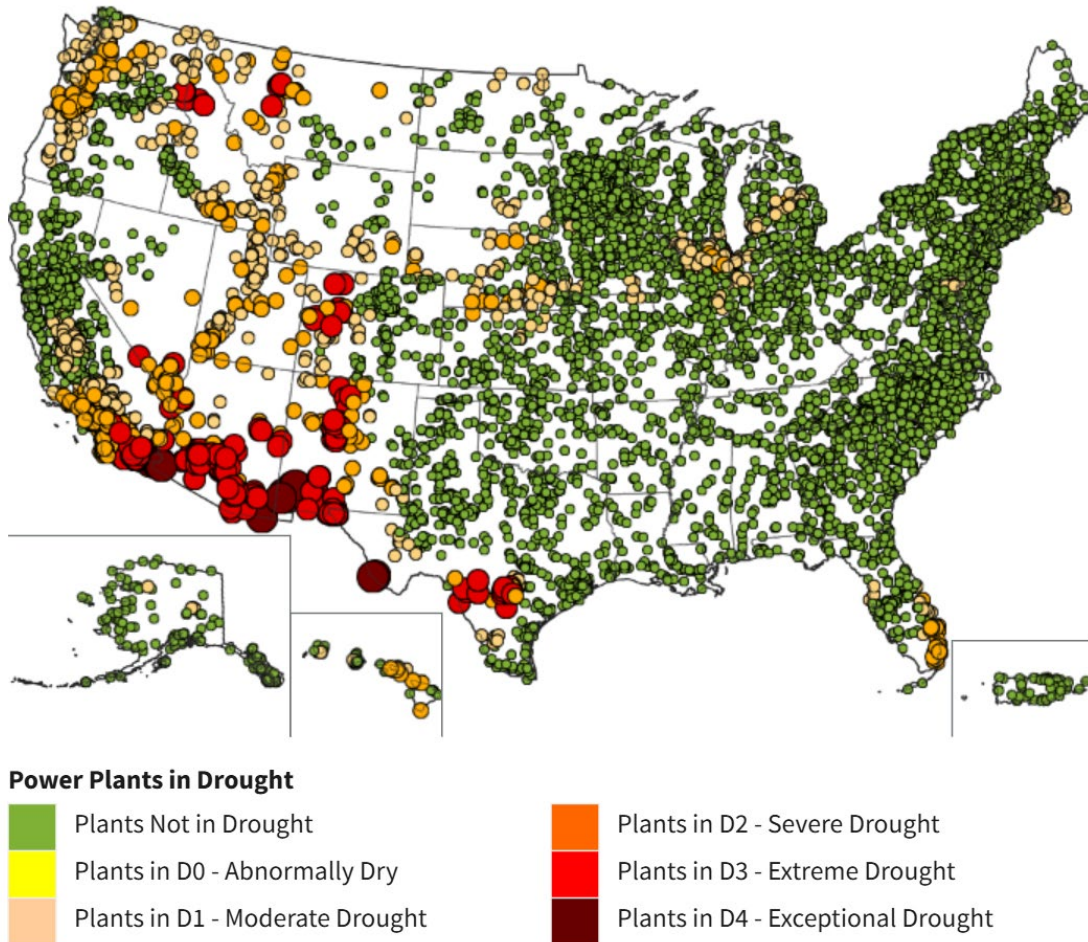


Figure 3.5. U.S. power plants in drought weekly update for July 10, 2025. Source: Drought.gov, 2025.<sup>xc</sup>

California’s Lake Oroville hydroelectric power plant had to be shut down in 2021 because of low water levels.<sup>xci</sup> Lake Mead in Nevada has a generating capacity of 2,080 megawatts; however, as reported in June 2025, the current capacity due to drought is 1,304 megawatts, and if the water level continues to decrease and older turbines are turned off because of the inability to operate at low water levels, the capacity will drop to 382 megawatts with significant impacts to users.<sup>xcii</sup> Drought does not just impact hydroelectric plants; it can also impact thermoelectric power plants such as nuclear, coal and natural gas because they rely on generating steam to drive turbines.

### Trend 3

## Climate Change Risks and Deferred Maintenance Downgrade Credit and Bond Ratings

As of 2024, there was nearly \$3.3 trillion in outstanding municipal bonds. Historically, nearly three-quarters of the core infrastructure investment in the United States has been financed by state and local government bonds. Tax-exempt bonds (aka municipal bonds) are a critical tool of municipalities, utility districts and other governmental entities (referred to as “issuers”) for financing capital improvements to utilities, such as electric, gas, water and wastewater systems. Issuers generally issue tax-exempt “governmental bonds” that are subject to restrictions on the ownership and use of the bond-financed improvements under Section 141 of the Internal Revenue Code.<sup>xciii</sup>

Municipal bonds are debt instruments issued for a year or longer, under which the bondholder typically receives annual or biannual interest payments (coupons) until the bond principal is repaid on a specified date of (maturity). These payments are exempt from federal income tax, just as interest on U.S. Treasury bonds is exempt from state and local taxes. An issuer can redeem (i.e., “call”) a bond before maturity but generally only after a certain period. For example, a 10-year call date is typical for a bond with a 30-year maturity.<sup>xciv</sup>

S&P Global Ratings noted that in 2024 alone, **downgrades among North America’s IO regulated utilities outpaced upgrades for the fifth consecutive year**, primarily due to rising wildfire risks and increased capital expenditures. These downgrades underscore the growing financial impact of wildfires on corporate creditworthiness, emphasizing the urgent need for robust risk mitigation strategies across the industry. A lower credit rating makes it more expensive for utilities to borrow money, further exacerbating financial stress. Notably an actual fire is not necessary for a downgrade to occur. Rating agencies are scrutinizing utilities’ relative wildfire risk, financial risk and the efforts underway to minimize those risks.

As discussed later in this chapter, there is growing concern regarding insurance for both utilities and property owners due to climate change risks. If insurance is unavailable or unaffordable, utilities may need to self-insure, setting aside reserves to cover potential losses. This approach can tie up capital that could otherwise be used for operational improvements (e.g., as resilience investments) or growth initiatives, leading to a decline in key credit metrics such as return on equity and debt coverage ratios

One recent example occurred in February 2025 when S&P Global **downgraded the credit rating of the Los Angeles Department of Water and Power (LADWP) utility** from AA- to A, which caused bond values to fall and some bondholders to sell at a loss.<sup>xcv</sup> Similarly, KBRA downgraded LADWP in 2025 to AA from AA+ in part because of contingency wildfire liability risks from the 2025 wildfires and future wildfires, as well as a \$7 billion waste system capital plan for upgrades that are legally enforceable.<sup>xcvi</sup>

**Shreveport, Louisiana**, had its **water and sewer bond rating downgraded** in 2023 by Moody's Investor Services from A3 to Baa2 because of a lack of revenue to keep up with deferred maintenance and infrastructure needs moving forward.<sup>xcvii</sup>

### Utilities Are Facing Insurance Headwinds

While exact data on rates and/or declinations in insurance coverage for power utilities are not currently available, there are anecdotal reports that indicate the role that climate change is having on power utilities to obtain insurance. A 2023 report by the Office of the Insurance Commissioner in Washington State<sup>xcviii</sup> found that utilities there reported “significant changes” in the past five years including:

- Liability insurance **costs increased dramatically**;
- **Wildfire exclusions** were added; and
- The number of companies willing to provide **coverage decreased**.

Similarly, **Xcel Energy**, the largest power utility in Colorado in 2025 reported a **300 percent increase in the cost of insurance from the prior year** primarily because of the Marshall Fire.<sup>xcix</sup>

## Trend 4

### As More Utilities Face Potential Bankruptcy, States Must Prepare

Over the past few years, a number of public (IO) and cooperative **utilities** have filed for **Chapter 11 bankruptcy protection**. Chapter 11 bankruptcies are meant to preserve the on-going concern of the business. This means the most valuable plan creates a business in which a return to bankruptcy is not in its foreseeable future. A list of some of these utility bankruptcy filings includes the following.<sup>c</sup>

1. Lincoln Power (Illinois) filed for bankruptcy protection in 2023 after facing \$38.9 million in penalties for failing to operate during Winter Storm Elliot in late December 2022.<sup>ci</sup>
2. Brazos Electric Power Cooperative (Texas) filed for Chapter 11 protection in 2021 after the February ice storm severely disrupted Texas' electricity infrastructure. The organization filed to protect itself from \$2.1 billion in invoices from the Electric Reliability Council of Texas.
3. Griddy Energy LLC (Texas) filed for bankruptcy protection in the Southern District of Texas in 2021. The wholesale electricity provider came under fire after many of its customers reported being hit with exorbitant bills during Winter Storm Uri. Texas Attorney General Ken Paxton filed a lawsuit against Griddy, accusing it of misleading customers and deceptive business practices. The attorney general's office said in court filings that it received more than 400 customer complaints against Griddy in less than two weeks.<sup>cii</sup>
4. PG&E (California) filed for Chapter 11 protection in 2019 after facing significant legal and financial repercussions from devastating wildfires in California, including the Camp Fire.
5. Volunteer Energy Services Inc. (Ohio) filed for Chapter 11 bankruptcy in 2022 after providing natural gas and electricity to over 200,000 customers. Volunteer defaulted on \$12.6 million in payments owed to wholesale energy providers.<sup>ciii, civ</sup>
6. Colorado Ute Electric Association filed for bankruptcy protection in 1990 and was accused of hiding money via transfers to a Texas bank. The court appointed a trustee and confirmed a plan to break up the association and sell it off to three external utilities.

7. Public Service Co. of New Hampshire filed for Chapter 11 protection in 1988, citing delays in licensing for its Seabrook nuclear power plant and state laws preventing cost recovery.
8. El Paso Electric Co. (Texas) filed for bankruptcy protection.<sup>cv</sup> Over \$200 million in letters of credit were withdrawn, and the company's debt became unmanageable.
9. Cajun Electric Power Cooperative Inc. (Louisiana) filed for bankruptcy protection in 1994. The electric generation and transmission cooperative owned two fossil fuel plants and a 30 percent interest in the River Bend nuclear power plant, and became financially unstable because of nuclear investments.
10. Lincoln Power (IL) filed for bankruptcy protection following Winter Storm Elliott's impact on the PJM grid.

Other electric utilities are also facing significant financial liabilities, although they may not be required to file for bankruptcy protection. One recent example is **Oregon-based PacifiCorp**, which is facing billions of dollars in damage claims (estimated at \$11 billion) as a result of the 2020 Labor Day fires.<sup>cvi, cvii</sup> Because PacifiCorp is owned by Berkshire Hathaway Energy, there is a lower probability of a bankruptcy filing. However, as part of Berkshire Hathaway Energy, PacifiCorp isn't publicly traded but its bonds were significantly impacted as S&P Global downgraded PacifiCorp's issuer credit rating two notches, and its outlook for the utility and its parent company from stable to negative, which ultimately will increase the cost of borrowing.

### **Lobbying by IO Power Utilities and Responses by States**

There have been several actions by different states in response to bankruptcy filings of electric utilities. **In California**, after the wildfires caused by PG&E and its subsequent bankruptcy, California Assembly Bill (AB 1054) was signed into law by Gov. Gavin Newsome in July 2019. PG&E faced extensive liabilities, and the state and investors perceived an increase in climate-related wildfires and unprecedented liabilities and financial risks to the IO utilities. AB 1054 created a \$21 billion fund to aid in the financial protection of wildfire damages exceeding \$1 billion. PG&E was able to access the fund, which would ultimately aid the company in exiting

bankruptcy, but the governor was able to exert significant influence in the bankruptcy proceedings. PG&E was required by the law to create the Fire Victim Trust. AB 1054 also required PG&E to pay into the trust when going through bankruptcy. State law enforced this portion of PG&E's reorganization and pushed a policy agenda as just another part of the plan the company had to comply with. The state has significant power in bankruptcy with substantial opportunity to bring about significant change through the process.<sup>cviii</sup>, <sup>cix</sup>, <sup>cx</sup> However, **publicly owned electric utilities are not part** of California's wildfire insurance fund, which leaves them exposed.<sup>cxii</sup>

**Utah** in 2020 passed Utah Code 54-9-105,<sup>23</sup>,<sup>24</sup>, which limits the liability of public power entities and power utilities for acts or omissions related to the operation and maintenance of common facilities. This law, stemming from a 2020 act, protects utilities from negligence claims if they have a wildfire mitigation plan in place, and it also caps the damages victims can collect. The liability is limited to the utility's own actions and obligations, preventing joint or several liability for the actions of others.<sup>cxii</sup>

Similarly, **Arizona** passed HB 2201 in May 2025.<sup>cxiii</sup> The bill establishes that a utility following an approved plan is deemed to have met the standards of care for a prudent entity, unless there's clear and convincing evidence that the utility engaged in misconduct. **Idaho, Wyoming, Montana and North Dakota are** evaluating and potentially developing similar legislation as IOs continue to lobby.<sup>cxiv</sup>

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<sup>23</sup> Justia, "2006 Utah Code - Chapter 209 – Electric Power Facilities Act," [https://law.justia.com/codes/utah/2006/title54/54\\_0c.html](https://law.justia.com/codes/utah/2006/title54/54_0c.html).

<sup>24</sup> Utah Code, "54-9-105 - Limitations on Liability," [https://le.utah.gov/xcode/Title54/Chapter9/C54-9-S105\\_1800010118000101.pdf](https://le.utah.gov/xcode/Title54/Chapter9/C54-9-S105_1800010118000101.pdf).

## Water Utilities and Bankruptcies

As the majority of water utilities are publicly owned by local and/or special government entities, there are far fewer examples of Chapter 9 bankruptcy filings. Only 24 states authorize local governments to apply for Chapter 9 bankruptcy protection. Since Congress added Chapter 9 to the federal bankruptcy code in the 1930s, there have been approximately 700 filings under Chapter 9. Comparatively, the commercial Chapter 11 filings generally number more than 5,000 per year. In 2023 only one entity (a hospital district) filed for Chapter 9 protection.<sup>cxv</sup> The number of cities, towns or counties that have filed under Chapter 9 is primarily as a result of hospitals, utilities and special-purpose districts.

One notable and recent example is the case of **Jefferson County, Alabama**, which filed for Chapter 9 bankruptcy protection in November 2011. At the time it was the largest municipal bankruptcy filing in the history of the United States. The case revolved around a debt amount of \$4.3 billion, and a majority of this debt was incurred because of the need to expand and repair the sewer system after the EPA accused the county of dumping raw sewage into nearby rivers. The county exited bankruptcy seven years later in June 2018 at great expense.<sup>cxvi</sup>

## Government Oversight of Water Utilities' Best Management Practices

Beyond considerations of financing strategies, states and local/regional governments also have a critical role to play in understanding the condition of their water utility assets. This includes **state governments requiring and/or supporting local utilities in creating better asset inventories and incentivizing climate vulnerability (i.e., resiliency assessments) to identify, catalog and prioritize climate risks and to use these analyses to prioritize investments.**

## Trend 5

### Insurance Markets Play Increasing Role in State Finances and Credit Ratings

Climate change and utility-related disasters are having a significant impact on the for-profit private insurance industry.<sup>cxvii</sup> As presented earlier in this report, the financial impacts are increasing as climate impacts become more intense and more frequent. In 2024 the United States sustained 27 different billion-dollar weather and climate disasters, totaling \$183 billion in damage.<sup>cxviii</sup> Insurance companies seek to reduce exposure by undertaking risk diversification, which generally does not include traditional pooling of risks due to geography correlations.

CALIFORNIA	FLORIDA
Allstate	Farmers
American National	Southern Fidelity
AmGUARD	Weston Property & Casualty
Chubb	United Insurance Holdings
Falls Lake Insurance	FedNat
Farmers Insurance Group	Bankers
Nationwide	Lighthouse Property Insurance
State Farm	Avatar Property & Casualty
The Hartford	Lexington
Tokio Marine Insurance	St. Johns
Trans Pacific Insurance	
Travelers	

**Table 3.4** Insurance companies that have either stopped writing policies, exited or significantly altered coverage as reported in 2025. Sources: Fox 26, 2025,<sup>cxix</sup> and Insurance.com, 2025.<sup>cxx</sup>

In some cases the risks are mitigated by raising premiums and/or shifting the burden to re-insurers, which ultimately is passed back to policyholders. In fact, researchers have calculated households’ insurance expenditures from mortgage escrow information and found that **premiums shot up by an average of 33 percent from 2020 to 2023**<sup>cxxi</sup> This will only exacerbate a crisis in the United States where **1 in 7 (13.6 percent) or 11.3 million owner-occupied homes does not have property insurance.**<sup>cxii</sup> Further, a First Street 2023 study indicated that 39 million properties “are at high risk of flooding, wildfires and hurricane winds which have yet to be reflected in the insurance premiums they pay.”<sup>cxiii</sup>

Even more troublesome are findings that **reinsurance premiums** exacerbated by global climate change **have risen between 45 percent and 100 percent in 2023 alone** in the United States.<sup>cxxiv</sup> However, most alarming is that many private insurance companies have determined that no financial model works in specific geographies and have announced they **would stop writing new policies** in **California and Florida** (see table 3.4), as well as other states. A Senate Budget Committee investigation also found that in various parts of the country—including areas not generally thought of as being most vulnerable to the effects of climate change, such as southern New England—policy nonrenewal rates are increasing.<sup>cxxv</sup>

### **FAIR Plans – State Acting as Insurer of Last Resort**

Flood insurance (National Flood Insurance Program) and a few other specific insurance products (e.g., nuclear) have historically been offered through the federal government while states manage/regulate other insurance programs. However, as private insurers drop insurance coverage from states, policyholders either lose their coverage or in many states can turn to state-owned and -operated **insurers of last resort (i.e., residual insurance markets)**.

Residual insurance markets originated from federal legislation establishing **FAIR plans**, as part of the Urban Property Insurance Protection and Reinsurance Act of 1968. Over time, residual market plans morphed to also take on homeowners or corporate insurance for property that sit in precarious, high-risk areas such as in a frequent hurricane, wildfire or tornado pathway. FAIR plans provide insurance coverage that is generally more expensive than rates charged by private insurers and provide less coverage or only coverage against certain hazards such as hurricane/wind damages in states like North Carolina and Texas.<sup>cxxvi</sup>

**Beach and windstorm plans** are also state-sponsored insurance pools similar to FAIR plans to provide insurance as a last resort to property owners. These are typically limited in geography to coastal communities (excluding Florida and Louisiana) that are offered statewide.<sup>cxxvii</sup> Today, 39 **unique residual insurance programs** operate in 34 states plus the District of Columbia. Three—Mississippi, North Carolina and Texas—have a FAIR plan and a separate beach plan; Alabama and



develop and implement risk mitigation designs and maintenance such as those for wildfire reductions. This risk will play out with increases in claims and settlements.<sup>cxxx</sup>

3. If a FAIR plan cannot afford to pay out, it can resort to assessments that are charges imposed by the plans on insurance companies and individual non-FAIR plan policyholders. In **California**, for instance, the FAIR plan announced in February 2025 that it **did not have enough money to cover the recent Los Angeles wildfires**. To address this gap, California imposed an assessment of \$1 billion on the state's private insurers that will cause even more financial pressures on those private insurers remaining in the state.<sup>cxxx</sup>

### State Bails Out Insolvent Private Insurers

In the aftermath of 2021's Hurricane Ida, Louisiana's state-chartered bailout fund (the **Louisiana Insurance Guarantee Association**) had to sell bonds in order to borrow \$600 million after initially seven insurers in that state failed, creating a backlog of over 26,000 homeowner claims pending. The number of failed insurance firms was upgraded to 12.<sup>cxxxii</sup>

**State credit ratings are also potentially impacted by climate-related risks and the role of insurers of last resort**, especially when there are a number of other drivers such as pension obligations and a potentially changing landscape in federal funding for disaster relief and water utility funding. As presented by Persefoni in 2024,<sup>cxxxiii</sup> the variables at play include **the following**:

1. **Fiscal health**: The need to maintain large financial reserves for insurance claims limits the availability of funds for other state expenditures. Budgetary imbalances, especially if recurrent, are red flags for credit rating agencies.
2. **Economic strength**: In the absence of reliable insurance, property values typically decline, businesses relocate, and unemployment rises. These economic setbacks would reduce tax revenue, further eroding fiscal health and making the state less appealing to investors.

3. **Governance:** Political decisions to enter the insurance market could be scrutinized as increasing the state's exposure to high-risk, unpredictable expenditures. Poor governance decisions regarding insurance can amplify risks and uncertainties, thereby affecting credit ratings.

## Trend 6 Ratepayers Are Seeking Government Takeovers of IO Utilities

There has been recent increased movement by ratepayers for governments to take over IOUs. The reasons for these efforts include a wide range of factors, such as frustration with high rates and poor service.

Recent examples include the following:

1. **City of San Diego**, where petition efforts are in place for a municipal takeover of San Diego Gas & Electric.
2. **State of Arkansas**, where, as detailed in the next chapter, in 2025 the governor signed into law a number of bills addressing water resources, including allowing more private entities to convert to public water authorities.
3. **Hudson Valley, New York, where** in 2024 state lawmakers introduced a bill to allow a public takeover of the electric and gas utility (Central Hudson Gas & Electric) and replace it with a new power authority.<sup>cxxxiv</sup> The effort is still in progress.
4. **Pueblo, Colorado**, where the city council voted 4-to-2 to approve a resolution to have voters replace Black Hills Energy with options that could include a regional acquisition of Black Hills' assets and the formation of a multi-jurisdictional cooperative or utility.<sup>cxxxv</sup> The initiative did not receive enough votes.
5. **Maine**, where in 2023 voters rejected a public power ballot initiative to have the state form a nonprofit consumer-owned utility called Pine Tree Power to purchase the assets of Maine's two largest power utilities (Central Maine Power and Versant Power). It was estimated to cost \$13.5 billion.<sup>cxxxvi</sup>

## Potential Benefits

First, public utilities have access to tax-exempt municipal bond markets for addressing deferred maintenance and new capital projects.

Second, a public-owned utility would not be expected to pay dividends; so it does not have to add this cost to the utility's billing rates to deliver a profit to shareholders. Nor is it driven by quarterly financial results as an IO company is.

Third, a private company must pay taxes on profits even when its rates are regulated. Municipal systems are exempt from income and property taxation, and they typically operate at-cost, with allowance for normal depreciation as part of their rate structure.

Fourth, conversion of a private utility—especially water utilities—can allow access to state funding and grants.

Finally, as Girard Miller pointed out in 2024, “Private owners will seek to maximize profits by constraining supply, whereas a nonprofit public utility will operate and price at average cost, which is more likely to be lower and with more product supplied to the market and thus more consumer benefits.”<sup>cxxxvii</sup>

## Potential Drawbacks

First, a publicly owned utility as discussed above will likely use bonds to raise financing, and if the utility cannot meet its debt obligations with revenues, it may be required to raise taxes to fill the gap.

Second, the public purchaser would have to assume the outstanding debt of the private utility as well. These costs could total billions of dollars. For a market-traded company, the fair market value of equity is pretty settled at the share price.<sup>cxxxviii</sup>

Third, there could be conflicts of interest that need to be addressed in regard to government self-regulation.

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<sup>lxxxix</sup> NEMA, 2024, "Biennial Report 2024," [https://nemaweb.org/wp-content/uploads/2024/05/BR2024-proof-3\\_5.10.2024.pdf](https://nemaweb.org/wp-content/uploads/2024/05/BR2024-proof-3_5.10.2024.pdf).

<sup>lxxxix</sup> FEMA, 2024, "How a Disaster Gets Declared," <https://www.fema.gov/disaster/how-declared#:~:text=If%20it%20is%20apparent%20that,assistance%20that%20may%20be%20needed>.

<sup>lxxxix</sup> Carnegie Endowment for International Peace, 2025, "Tracking U.S. Federal Disaster Spending: The Disaster Dollar Database," <https://carnegieendowment.org/features/disaster-dollar-database?lang=en>.

<sup>lxxxix</sup> Urban Institute, May 2, 2025, "Proposed Cuts to Federal Disaster Assistance Will Hit States Just as Hurricane Season Ramps Up," <https://www.urban.org/urban-wire/proposed-cuts-federal-disaster-assistance-will-hit-states-just-hurricane-season-ramps>.

<sup>lxxxix</sup> Volcker Alliance, November 2019, "America's Trillion-Dollar Repair Bill. Capital Budgeting and the Disclosure of State Infrastructure Needs."

<sup>lxxxix</sup> CBO, February 2025, "Public Spending on Transportation and Water Infrastructure, 1956 to 2023," [www.cbo.gov/publication/60874](http://www.cbo.gov/publication/60874).

<sup>lxxxix</sup> APWA, 2025, "State of the Water Industry 2025."

<sup>lxxxix</sup> EPA, September 2023, "Drinking Water Infrastructure Needs Survey and Assessment, 7th Report to Congress."

<sup>lxxxix</sup> AWWA, 2025, "AWWA Policy Statement: Electric Power Reliability for Public Water Supply and Wastewater Utilities."

<sup>xc</sup> Drought.gov, 2025, "Energy Sector: National Integrated Drought Information System," <https://www.drought.gov/sectors/energy>.

<sup>xc</sup> CNBC, Aug. 6, 2021, "California Shuts Down Major Hydroelectric Plant Amid Record Low Water Levels at Lake Oroville," <https://www.cnbc.com/2021/08/06/california-shuts-down-major-hydroelectric-plant-amid-severe-drought.html>.

<sup>xc</sup> University of Colorado Boulder, July 1, 2025, "Once a Showcase of American Optimism and Engineering, Hoover Dam Faces New Power Generation Declines," <https://waterdesk.org/2025/07/once-a-showcase-of-american-optimism-and-engineering-hoover-dam-faces-new-power-generation-declines/>.

<sup>xc</sup> Pacifica Law Group, 2019, "Tax Exempt Bonds: An Introduction to Private Business Use of Bond-financed Utility Facilities."

<sup>xc</sup> APPA, 2025, "Municipal Bonds and Public Power."

<sup>xc</sup> E&E News by Politico, Feb. 25, 2025, "4T Municipal Bond Market Wakes Up to Climate Risk (With Help From Trump)."

<sup>xc</sup> KBRA, 2025, "KBRA Downgrades LADWP Water System Revenue Bonds to AA; Outlook Stable," <https://www.kbra.com/publications/tgcRsKmF/kbra-downgrades-ladwp-water-system-revenue-bonds-to-aa-outlook-stable>.

<sup>xc</sup> KSLA-TV, March 21, 2023, "Shreveport's Water and Sewer Bond Rating Downgrade, Which Could Mean Higher Rates for Customers," <https://www.ksla.com/2023/03/21/shreveports-water-sewer-bond-rating-downgraded-which-could-mean-higher-rates-customers/>.

<sup>xc</sup> Office of the Insurance Commissioner, Washington State, Jan. 19, 2023, "New Report on Utilities' Liability Market Reveals Increased Costs, Coverage Exclusions," <https://www.insurance.wa.gov/about-us/news/2023/new-report-utilities-liability-market-reveals-increased-costs-coverage-exclusions>.

<sup>xc</sup> CPR News, Feb. 6, 2025, "Xcel Energy's Insurance Costs Are Skyrocketing. Customers May Soon Have to Pay for It," <https://www.cpr.org/2025/02/06/xcel-energys-insurance-costs-rise-customer-impact/>.

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<sup>c</sup> Schulte Roth & Zabel, 2021, “A Look at Four Recent Electric Cooperatives in Bankruptcy. Context to Brazos Electric,” <https://www.mwe.com/insights/a-look-at-four-recent-electrical-cooperatives-in-bankruptcy/>.

<sup>ci</sup> Utility Dive, April 3, 2023, “Lincoln Power Files for Bankruptcy After \$38.9 M PJM Charge for Failing to Run During Winter Storm Elliot,” <https://www.utilitydive.com/news/lincoln-power-nautilus-power-ferc-pjm-penalties-elliott-complaint/646615/>.

<sup>cii</sup> ABC News, March 16, 2021, “Griddy Files for Chapter 11 Bankruptcy in the Wake of Texas Power Crisis,” <https://abcnews.go.com/Business/griddy-files-chapter-11-bankruptcy-wake-texas-power/story?id=76486926#:~:text=Log%20In-Griddy%20files%20for%20Chapter%2011%20bankruptcy%20in%20the%20wake%20of,of%20sky%20Dhigh%20energy%20bills.&text=Griddy%20files%20for%20Chapter%2011%20bankruptcyGriddy%20Energy%20has%20filed,power%20for%20millions%20of%20Texans>.

<sup>ciii</sup> Columbus Dispatch, April 1, 2022, “Ohio Energy Supplier Files for Bankruptcy, but Customer Service Won’t Be Disrupted.”

<sup>civ</sup> Public Utilities Commission of Ohio, 2022, “Volunteer Energy Files Bankruptcy,” <https://puco.ohio.gov/news/volunteer-chapter11>.

<sup>cv</sup> UPI, 1992, “El Paso Electric Files for Chapter 11 Bankruptcy,” <https://www.upi.com/Archives/1992/01/08/El-Paso-Electric-files-for-Chapter-11-bankruptcy/7801694846800/#:~:text=EL%20PASO%2C%20Texas%20%2D%2D%20El,few%20alternatives%2C%20Wigs%20said>.

<sup>cvi</sup> Oregonian, 2023, “Wildfires Bankrupted California’s Largest Utility. What Will Happen to Oregon’s PacifiCorp?,” <https://www.oregonlive.com/business/2023/06/wildfires-bankrupted-californias-largest-utility-what-will-happen-to-oregons-pacificorp.html#:~:text=PacifiCorp%20appears%20to%20have%20several,to%20mention%20the%20reputational%20damage>.

<sup>cvi</sup> Insurance Journal, July 19, 2023, “Utility Investors Wary of Exposures After Buffet’s PacificCorp Held Liable for Wildfires,” <https://www.insurancejournal.com/news/national/2023/07/19/731224.htm>.

<sup>cvi</sup> Emory Bankruptcy Developments Journal, 2025, “Emory Law: Climate Adaptation and Bankruptcy: Preparing Utilities for What Is to Come.”

<sup>cix</sup> Singleton Schreiber, Jan. 4, 2022, “How Does AB-1054 Work?” <https://www.singletonschreiber.com/theblog/how-does-ab-1054-work-blog#:~:text=Gov.,caused%20by%20the%20utilities%20equipment>.

<sup>cx</sup> CapRadio, Jan. 26, 2022, “PG&E Could Be the First Utility to Access California’s Wildfire Liability Fund After Starting Dixie Fire,” <https://www.caprдио.org/articles/2022/01/06/pge-could-be-the-first-utility-to-access-californias-wildfire-liability-fund-after-starting-dixie-fire/#:~:text=Gov.,wildfires%20started%20by%20their%20equipment>.

<sup>cx</sup> Claims Journal, June 24, 2024, “Wildfire Threats Make Utilities Uninsurable in the U.S. West.”

<sup>cxii</sup> Justia, 2024, “2024 Utah Code Title 54 Public Utilities Chapter 9 Electric Power Facilities Act-Section 105 Limitations on Liability.”

<sup>cxiii</sup> LegiScan, 2025, “Bill Text. HB2201-2025 Fifty-Seventh Legislature Arizona House Bill 2201,” <https://legiscan.com/AZ/text/HB2201/id/3239734>.

<sup>cxiv</sup> Stateline, April 22, 2025, “As Wildfires Intensify, Utilities Want Liability Protections. But Then Who Pays?” <https://stateline.org/2025/04/22/as-wildfires-intensify-utilities-want-liability-protections-but-then-who-pays/#:~:text=Utah%20became%20the%20first%20state,are%20frequent%20targets%20of%20litigation>.

<sup>cxv</sup> Nuveen, 2024, “Municipal Bankruptcy: a Primer on Chapter 9,” <https://www.nuveen.com/en-us/insights/municipal-bond-investing/municipal-bankruptcy-a-primer-on-chapter-9>.

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- <sup>cxixi</sup> National Bureau of Economic Research, 2024, “Property Insurance and Disaster Risk: New Evidence from Mortgage Escrow Data,” <https://www.nber.org/papers/w32579>.
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- <sup>cxixiii</sup> First Street, 2023, “39 Million Properties Are Significantly Overvalued Due to Artificially Suppressed Home Insurance Costs,” [https://assets.firststreet.org/uploads/2023/09/PR\\_Insurance-2.pdf](https://assets.firststreet.org/uploads/2023/09/PR_Insurance-2.pdf).
- <sup>cxixiv</sup> Reinsurance premiums have also risen sharply as extreme weather, exacerbated by global climate change, has expanded the scale and correlation of property losses worldwide. By some estimates, property reinsurance rates in the United States rose between 45 percent and 100 percent in 2023 alone.
- <sup>cxixv</sup> U.S. Senate Committee on the Budget, 2024, “Next to Fall: The Climate-Driven Insurance Crisis Is Here – and Getting Worse,” [https://www.budget.senate.gov/imo/media/doc/next\\_to\\_fall\\_the\\_climate-driven\\_insurance\\_crisis\\_is\\_here\\_\\_and\\_getting\\_worse.pdf](https://www.budget.senate.gov/imo/media/doc/next_to_fall_the_climate-driven_insurance_crisis_is_here__and_getting_worse.pdf).
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<sup>cxxxvi</sup> Utility Dive, Nov. 8, 2023, “Maine Voters Reject Public Takeover of CMP, Versant Utilities,”  
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<sup>cxxxvii</sup> Governing, Oct. 22, 2024, “Municipal Utilities and the Persistent Push to Privatize.”

<sup>cxxxviii</sup> Utility Dive, May 12, 2022, “Even Studying Public Power Makes Little Sense,”  
<https://www.utilitydive.com/news/even-studying-public-power-makes-little-sense/623289/>.

# SECTION 4 CASE STUDIES



## 4.1 STATES FACE NEW FEMA FUNDING REALITY



### NORTH CAROLINA TACKLES FEMA'S BRIC PROGRAM FUNDING CUTS

The Case Study of FEMA BRIC Funding and  
Hillsborough, NC, and Tropical Storm Chantal



During the late afternoon and evening of Sunday, July 6, 2025, Tropical Storm Chantal—then classified as a tropical depression—moved into central North Carolina, including Orange County, the home of Chapel Hill and the county seat of Hillsborough. The Eno River runs through the west side of Hillsborough.

Earlier that day, the U.S. Geological Survey used a stream sensor and measured the Eno at 1.8 feet, which is the average height. Within 12 hours, the river had risen to 24.79 feet, exceeding what NOAA categorizes as “**major flooding**” conditions. According the published reports, the last time the river reached that record was during Hurricane Fran in 1996 (23.6 feet). Water flow in the Eno River averages about 0.03 to 0.07 kilo cubic feet per second (KCFS). On July 7, 2025, the river peaked at roughly 15.4 KCFS, about 500 times more water flow than normal.<sup>cxxxix, cxli</sup>

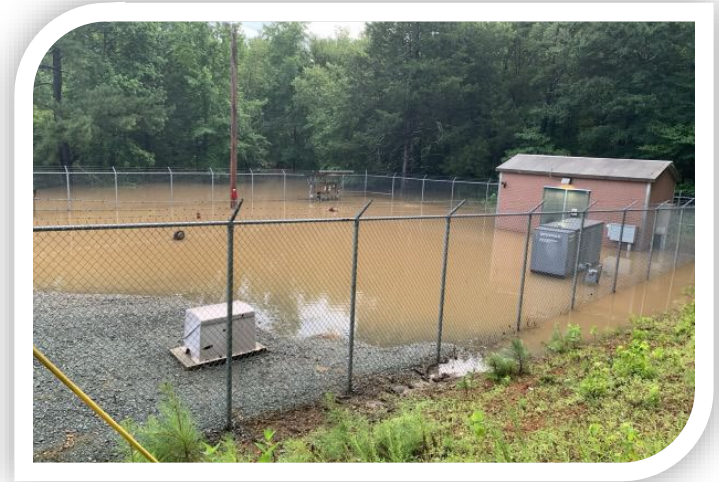
The Hillsborough wastewater treatment plant operates 24/7 and can treat up to 3 million gallons of wastewater per day, but it typically processes 1.4 million gallons per day.<sup>cxli</sup> About 75 percent of the water goes through the River Pumping Station. At approximately 3 a.m. on July 7, 2025, the utilities department for the town was notified of “**sanitary sewer overflows**” from the Elizabeth Brady Pump Station and the River Pump Station. Pump stations play a critical role in wastewater as they lift the wastewater from a lower elevation to a higher one so gravity can take the wastewater downhill. Most stations are built downhill because it prevents wastewater from flowing back to homes if the pump fails. However, many researchers are rethinking this as climate change brings more frequent and intense storms. There is now a movement to relocate

pump stations to higher ground, which reduces the benefits of gravity and requires more energy (electricity) to pump the water, as well as associated costs for land acquisition and rerouting pipes.<sup>cxlii</sup>

### FEMA Funding Pulled

Over three years ago Hillsborough applied to FEMA for a BRIC grant, which was intended to allow states and communities to be more proactive than reactive. The grant was for the town to be able to redesign and relocate wastewater infrastructure. After a year and half, FEMA approved a grant of \$6.8 million and the town was preparing to request bids.<sup>cxliii</sup> On April 4, 2025, FEMA issued a press release titled, “FEMA Ends Wasteful, Politized Grant program, Returning Agency to Core Mission of Helping Americans Recover From Natural Disasters.”<sup>cxliiv</sup> The press release noted that the program funded from the Infrastructure Investment and Jobs Act will be returned to the U.S. Treasury or reappropriated by Congress in the next fiscal year. The 2021 law made \$1 billion available for BRIC over five years. Then the program saw a significant increase in funding to \$2.3 billion in FY 2022, boosted by the Infrastructure Investment and Jobs Act, before returning to \$1 billion in FY 2023. In total, the program has allocated over \$5 billion for mitigation projects, \$133 million of which had been provided for about 450 applications.

For the Hillsborough case study, at the time of the writing of this report, **the costs** for remediation and repairs, as well as improvements to mitigate a reoccurrence, **are expected to far exceed the costs of the FEMA grant that was pulled.**



**Figure 4.1** The Elizabeth Brady Pump Station after Chantel. Source: Town of Hillsborough, NC, 2025, <https://www.hillsboroughnc.gov/Home/Components/News/News/708/14>.

To address this unexpected government pullback, on July 16, 2025, **North Carolina joined 19 other states suing FEMA for canceling the BRIC program.**<sup>cxlv</sup> The states suing FEMA/DHS are Arizona, California, Colorado, Connecticut, Delaware, Illinois, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Vermont, Washington and Wisconsin.<sup>cxlvi</sup>

While the North Carolina case is highlighted, most states will be impacted by the decision of FEMA to end the BRIC program. Table 4.1 presents some examples of other states impacted.

STATE	\$ AMOUNT BRIC GRANTS	TYPES OF PROJECTS	REFERENCES
Arizona	\$9,800,000	25 projects including \$4.6M for floodwater diversion in Buckeye.	<a href="https://www.fox10phoenix.com/news/arizona-other-states-sue-trump-administration-over-termination-fema-infrastructure-program-funding">https://www.fox10phoenix.com/news/arizona-other-states-sue-trump-administration-over-termination-fema-infrastructure-program-funding</a>
Maryland	\$36,000,000	Flood Mitigation for low-lying Crisfield, MD.	Maryland Matters, (2025). <a href="https://marylandmatters.org/2025/07/17/maryland-19-other-states-sue-to-block-trump-from-dismantling-disaster-preparation-program/">https://marylandmatters.org/2025/07/17/maryland-19-other-states-sue-to-block-trump-from-dismantling-disaster-preparation-program/</a>
Pennsylvania	No Data Listed	Projects in York and Allegheny counties, including stormwater pump stations and flood protection upgrades.	<a href="https://www.ksbw.com/article/the-impact-of-the-shutdown-has-been-devastating-20-states-sue-over-fema-cuts/65440890">https://www.ksbw.com/article/the-impact-of-the-shutdown-has-been-devastating-20-states-sue-over-fema-cuts/65440890</a>
Vermont		Lost planning funds for two projects: \$127,760 for floodplain restoration in Brattleboro and \$71,250 for infrastructure upgrades in Wolcott.	
Georgia	\$30,000,000	Lost planning funds for two projects: \$127,760 for floodplain restoration in Brattleboro and \$71,250 for infrastructure upgrades in Wolcott.	
Florida	\$148,000,000	Flood mitigation for South Florida Water Management District.	
California	\$50,000,000	Funding was pulled from projects in Sacramento and Rancho Palos Verdes, including landslide stabilization and levee improvements.	
Massachusetts	\$90,000,000	Impacts 18 communities.	
Michigan	\$29,000,000	24 open projects for flood and stormwater projects.	<a href="https://www.michigan.gov/ag/news/press-releases/2025/07/16/attorney-general-nessel-sues-trump-administration">https://www.michigan.gov/ag/news/press-releases/2025/07/16/attorney-general-nessel-sues-trump-administration</a>

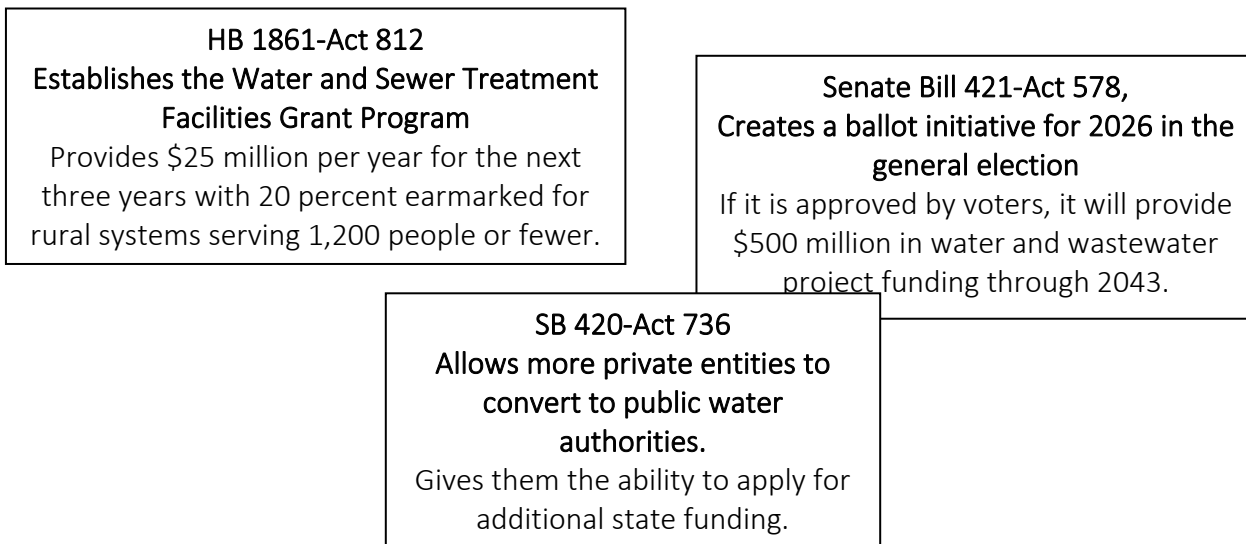
**Table 4.1.** Examples of some of the FEMA BRIC grants stopped or pulled after the announcement of the ending of the program in April 2025.

## 4.2 PRIVATE UTILITIES CONVERTING TO PUBLIC UTILITIES

**ARKANSAS OPENS PATHWAY FOR PRIVATE WATER UTILITIES TO GO PUBLIC**  
Approach Allows Utilities to Access Additional State Funding to Ensure Reliable Water and Wastewater



On April 23, 2025, Gov. Sarah Huckabee Sanders signed three different bills into law addressing water and wastewater in Arkansas. The state is seeking to improve water management in order to support local economies more effectively and ensure sustainable development.



SB 420 simplifies the conversion process and allows more private entities to convert to public water authorities. Under the law, a “qualified corporation” that provides water to the public, commercial and industrial users "may form or convert its entity status to be a water authority.” By simplifying the conversion process, the bill may encourage more municipalities to establish water authorities, potentially leading to better resource allocation and infrastructure improvement such as Acts 812 and 578.<sup>26, cxlvii</sup>

<sup>26</sup> Arkansas State Senate, 2025, “Senate Bill 420,” <https://arkleg.state.ar.us/Home/FTPDocument?path=%2FACTS%2F2025R%2FPublic%2FACT736.pdf>.

**NEW YORK STATE AND POWER UTILITIES**  
Recent Legislation Would Replace Central Hudson Gas &  
Electric With a Publicly Owned Hudson Valley Power  
Authority



Senate Bill S9534 was introduced in the New York State 2023–2024 legislative session with the purpose of creating a new state power authority called the Hudson Valley Power Authority (HVPA).<sup>27</sup> The HVPA would be “authorized to acquire Central Hudson and run it as a publicly owned and democratically governed energy utility whose primary goal is to be in the service of its ratepayers by providing low rates, reliable service, correct and easy-to-understand bills, clean energy, community benefits and environmental justice.”

The state of New York was forced to step in after Canadian-owned Central Hudson Gas & Electric Corp. had experienced billing issues since 2021,<sup>28</sup> which so upset ratepayers that state regulators had to appoint an independent monitor. The company also is in the midst of undertaking major rate hikes of 17 percent on electric bills and 22 percent on gas. Because of this, Central Hudson faced a collective \$127 million in unpaid bills, and it recently announced it would resume shutting off power to customers for unpaid bills, stating that the billing issues have been resolved.<sup>cxlviii</sup>

If the initiative goes through the legislature and signed by the governor, the HVPA would be overseen by a nine-member board appointed by the governor and the legislature; the board would also include the business manager of the International Brotherhood of Electrical Workers Local 320, the union representing about 700 Central Hudson employees.<sup>cxlix</sup>

<sup>27</sup> New York State Senate, 2023–2024, “Senate Bill S9534,” <https://www.nysenate.gov/legislation/bills/2023/S9534>.

<sup>28</sup> See: <https://www.thedailycatch.org/articles/big-guilty-energy-central-hudson-is-scolded-by-new-york-state/>

### 4.3 STATE PLANS FOR UTILITY WILDFIRE LIABILITY



UTAH PASSES WILDFIRE-RELATED  
LIABILITIES BILL  
Senate Bill 224 Creates the Utah Fire Fund



In this case study, the “large-scale utility” referenced in the bill is Rocky Mountain Power, the largest electric utility in Utah serving approximately 800,000 customers. The utility is a subsidiary of Portland, Oregon-based PacificCorp, which was held liable in multiple wildfire lawsuits.<sup>cl</sup> PacificCorp subsequently has been documented lobbying other states across the country<sup>cli, clii</sup> in an effort to pass similar liability limitations for utilities, which if passed have the potential of impacting state finances to cover wildfire-related impacts.

Utah State Sen. Scott Sandall (R) and House sponsor Rep. Carol Albrecht (R) cosponsored SB 224<sup>29</sup> in the 2024 general session. The bill, called the Energy Independence Amendments, modifies provisions related to planning and cost recovery for certain energy resource decisions and allows a large-scale electric utility to establish a Utah fire fund.

Pursuant to the legislation:

“A large-scale electric utility may create a Utah fire fund by filing notice with the commission.

(b) The creation of a Utah fire fund under this section does not:

- (i) establish an exclusive fund for payment of eligible claims; or
- (ii) prohibit a large-scale electric utility from proposing, or the commission from approving, other mechanisms for third-party liability coverage that are in the public interest.

<sup>29</sup> Utah State Legislature, 2024, “S.B. 224, Energy Independence Amendments,” <https://le.utah.gov/~2024/bills/static/SB0224.html>.

(3) A Utah fire fund shall consist of:

- (a) a reasonable and prudent fire surcharge that a large-scale electric utility may charge to the large-scale electric utility customers, as approved by the commission in a rate case, to be collected over a 10-year period from the date of the commission's approval of the Utah fire fund;
- (b) investment income from money in the fund; and
- (c) other amounts deposited into the fund as otherwise required by law.

(4) The commission shall approve a large-scale electric utility's request to create a Utah fire fund for a large-scale electric utility if the large-scale electric utility demonstrates to the commission's satisfaction:

- (a) that the fund:
  - (i) is in the public interest;
  - (ii) supports the financial health of the large-scale electric utility; and
  - (iii) maintains or improves the large-scale electric utility's ability to deliver safe and reliable services;
- (b) that the fire surcharge does not result in an increase over current rates:
  - (i) for all customers, more than 4.95 percent; and
  - (ii) for an average residential customer more than \$3.70 a month.

(5) Notwithstanding any other provision of law, a Utah fire fund created under this part may not be used for payments related to any fire or property damage claim originating or occurring outside of the state."

One of the requirements of the legislation (2a) stipulates that for "all fire claims arising out of fire events that occurred in a calendar year, a **large-scale electric utility may not receive disbursement of funds from a Utah fire fund** until the large-scale electric utility has first paid \$10,000,000 towards eligible payments from the large-scale electric utility's own funds, not included in its regulated revenue requirement."

## OTHER STATES ADDRESSING UTILITY WILDFIRE LIABILITY

**Idaho**-recently enacted [Senate Bill 1183](#), known as the "Wildfire Standard of Care Act," which establishes a standard of care for electric utilities regarding wildfire mitigation plans. This legislation, effective July 1, 2025, protects utilities from wildfire-related damages if they have followed their approved mitigation plans.

**Wyoming**-passed and signed into law [HB0192](#) in 2025 limiting liability for electric utilities that have wildfire mitigation plans.

**Montana**-in April 2025 passed [HB 490](#) that requires electric utilities to create an approved wildfire mitigation plan and protects them from being held legally responsible for fires where they were not negligent.

**Arizona**-in May 2025 passed [HB2201](#), which was "watered down" as claimed by with strong push back by trial attorneys and the Sierra Club. The bill establishes that a utility following an approved plan is deemed to have met the standards of care for a prudent entity, unless there's clear and convincing evidence the utility engaged in misconduct.

**Oregon**-is debating [SB 926](#) that holds that companies would not be able to recoup costs tied to court judgments, legal fees, settlements or repairs by increasing consumers' electricity rates. HB 3197 proposes a "catastrophic wildfire fund" with limitation on liability and is being debated.

**Washington**-passed [HB 1522](#) in 2025 requiring utilities to have their wildfire mitigation plans approved by the state's Utility and Transportation Commission.

**Alaska**-HB227 was is working its way through the House but did not make it out of committee. It would have prevented utilities from being held liable for wildfires where the vegetation causing the contact is outside the utility's right-of-way. The legislation faced opposition from the National Association of Mutual Insurance Companies.

### Other requirements include:

1. A fire claim shall be brought within two years from the date of the ignition of the fire.
2. Limitations of liability include if the electrical corporation did not have a wildland fire protection plan
3. The bill's language would give the company 10 years to raise an amount equal to half the company's annual revenue from Utah. That would be approximately \$1 billion.
4. An amendment would cap the monthly charge for the average household customer at \$3.70 a month.
5. The company could use the fund only to pay Utah fire claims, not those from other states.<sup>cliii</sup>

## 4.4 STATE PLANS TO ADDRESS INSURANCE OF LAST RESORT PROGRAMS

### FLORIDA STRENGTHENS FAIR PLANS 2023 Tort Reform Initiatives Stabilize the Market



No two states exemplify the insurance crisis like California and Florida. As presented earlier in this report, each state has significant climate-related risks (i.e., hurricanes in Florida and wildfires in California). Both states have had to expand their FAIR plans, aka insurers of last resort insurance products. In fact, the California FAIR Plan’s policies in force nearly doubled between September 2023 and June 2025, increasing from 330,000 policies to 610,000 policies,<sup>cliv</sup> with a total exposure in June 2025 of \$650 billion—a 289 percent increase since September 2021.<sup>clv</sup>

While California has been witnessing rapid increases and exposures, Florida has been unique in reducing both policies and exposures. Citizens Property Insurance Corp. was created in 2002 as a not-for-profit, tax-exempt government entity to serve as Florida’s FAIR Plan.<sup>30</sup> Like California, the state was facing greater exposures. However, at the end of 2024, Citizens reported that policy counts had witnessed a 19.5 percent decrease from January 2024 and reduced exposures to Citizens by nearly \$200 billion.

What actions did the Florida take that contributed to the different pathway than other states? In research, it appears that there were two major factors with the second dependent on the first.

### Action 1: Tort Reform

In March 2023 Florida Gov. Ron DeSantis signed into law HB 837 and SB 238, which brought about significant tort reform measures that targeted attorney fees, medical reimbursements and liability in negligence cases. A significant piece of this legislation was the from of “one-way” attorney fees that had required insurance companies to pay the attorney fees of policyholders if they successfully sue over a claim. Under the new law, this was rescinded, and even if a plaintiff

<sup>30</sup> [Home - Public - Citizens Property Insurance Corporation](#)

is successful and awarded compensation, they now must pay their own legal fees, which can generally range from 20 percent to 40 percent. Additional components include limits on bad faith claims with insurance companies, allowing them to pay the claim or the lesser end of policy limits if paid within 90 days. Additionally, Florida’s statutes on comparative fault in negligence cases was modified under the new statute. Now a plaintiff will not receive compensation if they are more than 50 percent responsible. The statute of limitations also is reduced from four years to two.<sup>clvi, clvii</sup> Some of the initial findings indicate the following:<sup>clviii</sup>

- A 30 percent drop in property insurance litigation in the state since the new legislation;<sup>clix</sup> and
- New insurance carriers entering/reentering the state since 2023.

**Action 2: Depopulation Program**

The term “depopulation” refers to the process of Citizens’ home insurance policyholders being moved from the state FAIR plan to private companies. “As required by Florida law, Citizens’ Depopulation Program matches Citizens policyholders with insurance companies interested in providing private-market coverage for their policies. “All companies assuming policies from Citizens have been approved by the Office of Insurance Regulation.”<sup>clx</sup> Citizens offers depopulation programs for both personal and commercial lines. As presented in Table 4.2, Citizens has been able to move more property policies to private insurance companies, some of which remained/reentered the market in part because of tort reform.

Year	Total Participating Companies	Total Policies Assumed	Citizens Inforce Policies	Assumed Policies as % of Prior Year's Total Policy Count	Total Insured Value (TIV) Assumed (in Millions)	Citizens Inforce Total Insured Value (in Millions)	Assumed TIV as % of Prior Year's Total TIV
2021	1	2,814	759,305	0.5%	\$1,027	\$232,502	0.7%
2022	4	16,408	1,145,811	2.2%	\$7,174	\$422,953	3.1%
2023	11	275,324	1,228,718	24.0%	\$113,375	\$552,760	26.8%
2024	16	477,821	1,036,913	38.9%	\$214,527	\$432,214	38.8%
Q2 2025	10	200,099	779,552	19.3%	\$83,483	\$295,140	19.3%

**Table 4.2** Depopulation study of Citizens (Florida FAIR Plan) policies taken out relative to Citizens policies in force. Source: Citizens, 2025.<sup>clxi</sup>

## 4.5 ADDRESSING FUNDING CRITICAL WATER INFRASTRUCTURE



### DIFFERENT STATE AND LOCAL APPROACHES Addressing Resiliency and Deferred Maintenance



While there remains great uncertainty regarding future available funding and grants from the federal government, many state and local governments are developing different proactive approaches to address both the resiliency and maintenance of critical water infrastructure.

### COMMONWEALTH OF MASSACHUSETTS

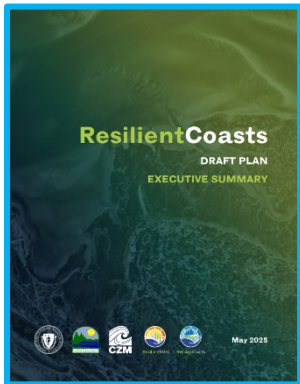
On June 24, 2025, Gov. Maura Healey introduced the **Mass Ready Act**,<sup>31</sup> aka the **Environmental Bond Bill, An Act to Build Resilience for Massachusetts Communities**. It proposes \$2.9 billion in bond authorizations over five years, a 20.8 percent increase over the prior 2018 environmental bond bill. The bonds would address and strengthen a swath of civil infrastructure in the state.<sup>clxi</sup> Four of the most impactful elements are focused on water system resiliency as presented in table 4.3.

Line Item	Description	2018 Environmental Bond Bill	MAPC's Request	Governor's Proposal
2000-7088	<b>Municipal Vulnerability Program</b> Nonprofits can now receive funding.	\$70 million	\$500 million	\$315 million
2000-7087	<b>Capitalizes the Transfer of Development Rights Program</b>	\$30.4 million	Increase over 2018	\$25 million
2200-7029	<b>Funding to Improve Water Infrastructure and Address PFAS</b>	\$0	\$60 million	\$120 million
0640-1008	<b>Funding for the Drinking Water Revolving Fund</b>	\$60.3 million	Increase over 2018	\$385 million

**Table 4.3.** Key elements of the Mass Ready Act. Note: MAPC is the Metropolitan Area Planning Council, which is a public agency that serves as the regional planning agency representing 101 cities and towns in Greater Boston. Source: MAPC, 2025.<sup>clxiii</sup>

<sup>31</sup> Mass.gov, 2025, "Mass Ready Act," <https://www.mass.gov/info-details/mass-ready-act>.

Other key elements include: \$308 million to address high-risk dams, inland flood control systems, and coastal and marine infrastructure; \$200 million to implement the state’s 2025



**Resilient Coasts Initiative** recommendations;<sup>32</sup> and \$315 million for EEA’s flagship grant program, the Municipal Vulnerability Preparedness Grant Program, which supports communities in identifying climate hazards, assessing vulnerabilities, and implementing action plans to improve resilience to extreme weather events.

The legislation (Section 10) also proposes creating a new **Resilience Revolving Fund** administered by the Mass Clean Water Trust, to provide loans to municipalities and public water and wastewater districts for climate resiliency infrastructure projects. It also allows the fund’s advisory board to issue bonds. Eligible recipients include municipalities, water and wastewater utilities, and tribal governments; eligible projects include stormwater management, floodplain protection and nature-based solutions. <sup>clxiv</sup>

## STATE OF RHODE ISLAND

The Rhode Island General Assembly in 1989 established the Clean Water Finance Agency. It was greatly expanded in 2015 with a broader mandate to include energy and brownfield remediation, and the agency became known as the **Rhode Island Infrastructure Bank**.<sup>33</sup> Shortly thereafter in 2018, Rhode Island launched **Resilient Rhody**,<sup>34</sup> the state’s first climate resiliency action strategy.

<sup>32</sup> Mass.gov, “Resilient Coasts Initiative,” <https://www.mass.gov/info-details/resilientcoasts-initiative>.

<sup>33</sup> Rhode Island Infrastructure Bank, “Rhode Island’s Infrastructure Solutions Provider,” <https://www.riib.org/>.

<sup>34</sup> State of Rhode Island, “Resilient Rhody,” <https://climatechange.ri.gov/resilient-rhody>.

As part of the program, the state’s **Municipal Resilience Program (MRP)** was developed. The MRP provides direct support to cities and towns to complete a municipal-driven workshop process called **Community Resilience Building** that brings together climate change information and local knowledge to identify top hazards, current challenges and community strengths.<sup>35</sup>

This process identifies priority projects and strategies to improve the municipality’s resilience to all natural and climate-related hazards.

Upon successful completion of the MRP workshop, municipalities are designated as “**Resilient Rhody Municipalities**,” which enables them to apply for dedicated MRP Action Grants to implement identified projects. All 39 Rhode Island municipalities have participated in the program, and the Infrastructure Bank has awarded \$24 million in Action Grants to 31 municipalities. Municipalities will be required to match grants with a 25 percent local project cost share.<sup>clxv, clxvi, clxvii</sup>

Fast-forward to 2025 when the Rhode Island Treasury and the Infrastructure Bank jointly sought to create a **Resilient Rhody Infrastructure Fund** through H 6252<sup>36</sup> and S1070.<sup>37</sup> On June 20, 2025, the bills were passed. They created a revolving source of loan finance for municipal resilience and stormwater abatement projects, similar to the state’s Drinking Water State Revolving Fund and Clean Water State Revolving Fund programs.

The legislation is enabling only, and seed funding for Resilient Rhody would come from existing Infrastructure Bank resources.



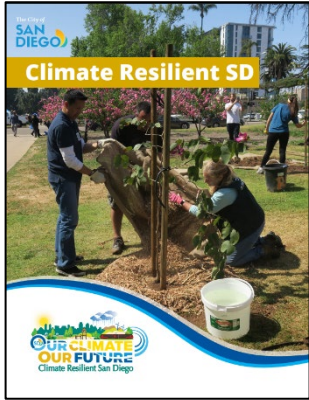
<sup>35</sup> Community Resilience Building, <https://www.communityresiliencebuilding.com/>.

<sup>36</sup> State of Rhode Island, “2025 – H 6252,” <https://webserver.rilegislature.gov/BillText25/HouseText25/H6252.pdf>.

<sup>37</sup> State of Rhode Island, “2025 – S 1070,” <https://webserver.rilegislature.gov/BillText/BillText25/SenateText25/S1070.pdf>.

## CITY OF SAN DIEGO

San Diego has been one of the leaders in planning for climate resiliency in the nation. The city and county of San Diego are unique in that they face a large number of climate-related risks including sea level changes, drought, strong storms, coastal flooding, coastal erosion,



earthquakes and wildfires. In November 2022 the city hired its first **chief resilience officer**,<sup>38</sup> and in 2024 it published “**Climate Resilient San Diego**,”<sup>39</sup> which includes an assessment and ranking of vulnerability to water and stormwater systems such as water and wastewater pipes, pump stations, distribution reservoirs, water treatment plants, wastewater plants, outfalls and levees.

This assessment also includes what climate factors are the drivers to impacting the resiliency of the systems (i.e., sea-level rise, storm surge, coastal erosion and wildfires).<sup>40</sup> Going beyond the report, the city also launched its “**Implementation Tracker**,”<sup>41</sup> which is an ongoing progress report of more than 20 different city departments participating. The tracker is a web-based portal accessible by all members of the community.

San Diego receives its potable water as part of the greater San Diego Water Authority, which includes 22 agencies throughout greater San Diego County. Recently, there has been much public discussion in the news by citizens, businesses and government officials within the city about continuing its relationship with the water authority.

San Diego has less rainfall (9.8 inches per year) than Tucson, Arizona, (10.6 inches per year),<sup>clxviii</sup> and **water purchases from the water authority represent the second-largest expense for the city.** In 2024 the costs were doubled from water authority projections at a time when the city was facing a \$258 million budget deficit. While water purchases are funded by water bills, not the city’s general fund, the city’s Public Utilities Department has warned the city council that

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<sup>38</sup> Ms. Julia Chase.

<sup>39</sup> City of San Diego, 2024, “Climate Resilient San Diego,” [https://www.sandiego.gov/sites/default/files/2024-08/climate-resilient-sd\\_3-22-24.pdf](https://www.sandiego.gov/sites/default/files/2024-08/climate-resilient-sd_3-22-24.pdf).

<sup>40</sup> See p. 35 of the report.

<sup>41</sup> City of San Diego, “Implementation Tracker,” <https://www.sandiego.gov/climate-resilient-sd/implementation-tracker>.

growing water authority prices threaten to consume much of the city's water budget. The result means delays on city water projects and maintenance on 3,000 miles of pipeline, and the potential of 275 staff cuts, including unfilled vacancies.<sup>clxix</sup>

Additionally, the city faces a **\$1.6 billion shortfall of stormwater infrastructure maintenance/deferred maintenance**. Rather than having a dedicated funding source for stormwater maintenance and repair needs, the city uses general funds and other nondedicated sources as they become available. San Diego has one of the lowest existing stormwater fees in the state. Current rates show property owners paying less than \$1 a month to cover San Diego's stormwater budget.<sup>clxx</sup>

In 2024 the city put on the ballot a sales tax measure (**Measure E**) that proposed a **1 percent increase to the sales tax rate** from 7.75 percent to 8.75 percent. It was projected to bring about \$360 to \$400 million a year to the city's general fund in part to help upgrade stormwater systems and other infrastructure. The measure only needed a simple majority to vote yes (more than 50 percent of ballots), instead of two-thirds. This was part of a number of initiatives voters faced, including a .05 percent sales tax increase county-wide (primarily for transportation infrastructure), as well as state bond initiatives.

**Measure E lost by a razor-thin majority**, with 50.3 percent of voters saying no and 49.7 percent voting yes. Out of more than 573,000 votes cast, Measure E fell just 3,500 votes short of passage. With the defeat of the measure, the city maintains the lowest sales tax rate of any city in San Diego County.<sup>clxxi</sup>

## AMERICAN RESCUE PLAN ACT FUNDING

The \$1.9 trillion American Rescue Plan Act (ARPA) signed on March 11, 2021, was part of the federal government’s COVID-19 recovery efforts. **State and local governments had until the end of 2024 to commit ARPA funds to specific projects.** At the end of May 2025, the U.S. Treasury Department indicated that **99 percent of the \$350 billion allocated had been obligated** by states and local governments.

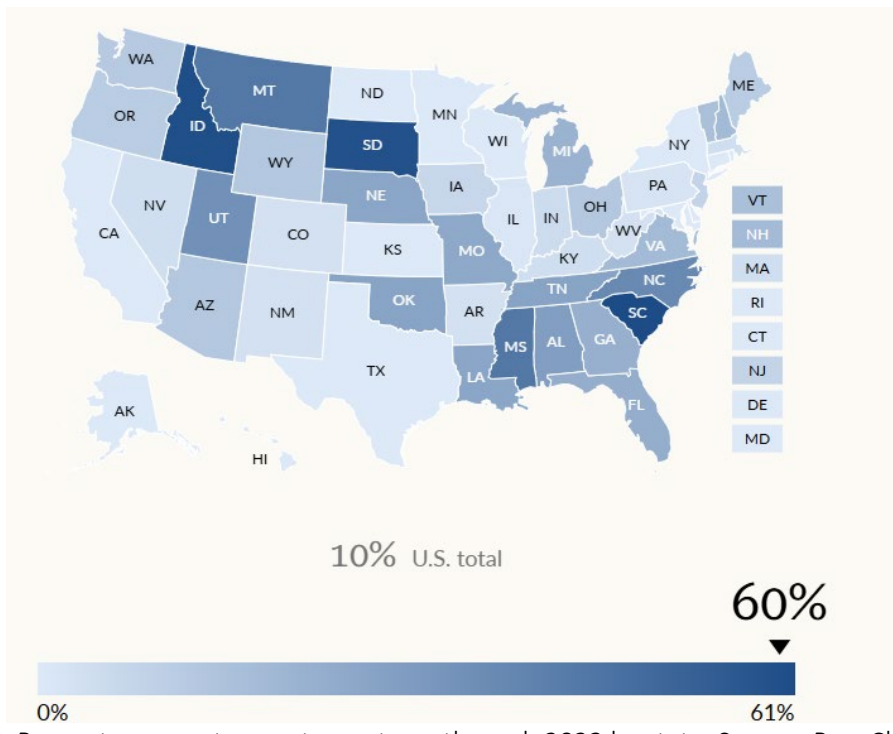
The data show that 49 states and the District of Columbia succeeded in fully obligating their fiscal recovery funds compared with September 30, 2024, when only 7 had obligated their funds. The overwhelming majority of the roughly 27,000 local governments receiving fiscal recovery funds also obligated 100 percent of their funds.<sup>clxxii</sup>

According to the most recent Treasury dashboard (August 2025) for the State and Local Fiscal Recovery Fund under ARPA,<sup>42</sup> state and local governments spent the greatest amount of money on infrastructure: over 3,800 governments pursued over 19,200 projects with a total budget of over \$35.1 billion, well ahead of next largest expenditure category of public health (\$10.7 billion).

A 2024 study by the Pew Charitable Trusts indicated that up to 2024 states were spending 10 percent of their recovery fund allocations on water-related projects; when including local governments, the number increases to more than \$25 billion.<sup>clxxiii</sup> The allocations through September 2023 varied by state, with Idaho allocating 60 percent of its funds for water infrastructure. See figure 4.2.

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<sup>42</sup> U.S. Department of the Treasury, “State and Local Fiscal Recovery Fund (SLFRF),” <https://app.high.powerbigov.us/view?r=eyJrIjoieMGI4YTEyNzYtZjg5Ny00M2QxLTg5NzAtYTRiZTA2MGEzMWU3IiwidCI6IjU4ZjFIM2ZhLTU4Y2ltNGNiNi04OGNjLWw5MWNhYzlwN2YxOCJ9>.



**Figure 4.2.** Percentage spent on water systems through 2023 by state. Source: Pew Charitable Trusts, 2024.<sup>clxxiv</sup>

## 4.6 EMERGENCE OF STATE CLIMATE CHANGE SUPERFUND ACTS



In 2024 both Vermont (Act 122)<sup>43</sup> and New York (S02129)<sup>44</sup> passed newly crafted Climate Change Superfund legislation. Key elements of the Vermont act include:<sup>clxxv</sup>

### The Fund

- Establishes Climate Superfund Cost Recovery Program to secure compensatory payments from responsible parties based on standing to provide a source of revenue for climate change adaptation projects within the state.

### Responsible Parties

- Fossil fuel refiners and extractors whose products and activities resulted in more than 1 billion metric tons of CO<sub>2</sub>-equivalent climate change emissions during covered period (1995–2024). Must have sufficient jurisdictional nexus to Vermont.

### Cost Recovery Demands

- The state will seek proportional cost recovery from responsible parties based on the total cost assessment completed by the treasurer.

<sup>43</sup> Vermont General Assembly, “S.259 (Act 122),” <https://legislature.vermont.gov/bill/status/2024/S.259>.

<sup>44</sup> New York State Assembly, “S02129 Summary,” [https://nyassembly.gov/leg/?default\\_fld=&leg\\_video=&bn=S02129&term=2023&Summary=Y&Actions=Y&Committee%26nbspVotes=Y&Floor%26nbspVotes=Y&Memo=Y&Text=Y&LFIN=Y&Chamber%26nbspVideo%2FTranscript=Y](https://nyassembly.gov/leg/?default_fld=&leg_video=&bn=S02129&term=2023&Summary=Y&Actions=Y&Committee%26nbspVotes=Y&Floor%26nbspVotes=Y&Memo=Y&Text=Y&LFIN=Y&Chamber%26nbspVideo%2FTranscript=Y).

## Appeal Rights

- Responsible parties aggrieved by notice of cost recovery demand shall exhaust administrative remedies by filing requests for reconsideration with the Secretary of the Agency of Natural Resources within 30 days of notice. If still aggrieved after final notice, the responsible parties may challenge notice in state superior court.

These funds would be targeted for use in climate adaptation efforts, including for various water, wastewater and energy infrastructure projects. Since the passing of these two acts, 10 other states have initiated efforts to create similar pieces of legislation. Many have specified the types of climate adaptation projects they can fund. These states are:

1. California
2. Oregon
3. Connecticut
4. New Jersey
5. Maryland
6. Hawaii
7. Virginia
8. Rhode Island
9. Massachusetts
10. Tennessee

Of note is that the **U.S. Department of Justice on May 1, 2025, filed complaints** against New York, Michigan, Hawaii and Vermont over state climate actions, including the development of “climate superfund” laws intended to impose strict liability for companies such as energy companies that refine fossil fuels. The New York law seeks \$75 billion from energy companies.<sup>45</sup>

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<sup>45</sup> U.S. Department of Justice, May 1, 2025, “Justice Department Files Complaints Against Hawaii, Michigan, New York and Vermont Over Unconstitutional State Climate Actions,” <https://www.justice.gov/opa/pr/justice-department-files-complaints-against-hawaii-michigan-new-york-and-vermont-over>.

## 4.7 NATURE-BASED SOLUTIONS TO WATER SECURITY



COLORADO FORESTRY  
Nature-Based Solutions



In a unique program, **Colorado** enacted the **From Forests to Faucets** initiative, which was designed to be a collaborative approach to keep forests and watersheds healthy. This forest management partnership between Denver Water and the Rocky Mountain Region of the U.S. Forest Service began in 2010. The partnership also includes the Colorado State Forest Service and the Natural Resources Conservation Service.

As of July 2023, the partners have invested nearly \$96 million on forest management projects, and more than **120,000 acres of forests have been treated in areas where Denver Water collects water**, nearly two-thirds of which is within the South Platte Basin. An additional 1.4 million new trees have been planted in areas ravaged by wildfires.<sup>clxxvi</sup>

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<sup>cxxxix</sup> NC Newline, July 16, 2025, “Before Tropical Depression Chantal Swamped Hillsborough, the Town Had Been Counting on FEMA,” <https://ncnewline.com/2025/07/16/before-tropical-depression-chantal-swamped-hillsborough-the-town-had-been-counting-on-fema/>.

<sup>cxl</sup> Indy Week, July 11, 2025, “A Wake-Up Call: Record Flooding Damages Eno River State Park,” <https://indyweek.com/news/durham/eno-river-chantal-damage/>.

<sup>cxli</sup> Hillsborough, North Carolina, 2025, “About Wastewater,” <https://www.hillsboroughnc.gov/about-us/departments/utilities/about-wastewater>.

<sup>cxlii</sup> News & Observer, July 17, 2025, “Millions of Gallons of Sewage Flowed Into the Eno River. Is It Harmful?” <https://www.newsobserver.com/news/local/counties/durham-county/article310329295.html>.

<sup>cxliii</sup> NC Newline, July 16, 2025, “Before Tropical Depression Chantal Swamped Hillsborough, the Town Had Been Counting on FEMA,” <https://ncnewline.com/2025/07/16/before-tropical-depression-chantal-swamped-hillsborough-the-town-had-been-counting-on-fema/>.

<sup>cxliv</sup> FEMA, April 4, 2025, “FEMA Ends Wasteful, Politicized Grant Program, Returning Agency to Core Mission of Helping Americans Recovering From Natural Disasters,” <https://web.archive.org/web/20250422231636/https://www.fema.gov/press-release/20250404/fema-ends-wasteful-politicized-grant-program-returning-agency-core-mission>.

<sup>cxlv</sup> WTVD-TV, July 16, 2025, “NC 1 of 20 States Suing FEMA for Cancelling Grant Program That Guards Against Natural Disasters,” <https://abc11.com/post/north-carolina-1-20-states-suing-fema-canceling-grant-program-guards-natural-disasters/17153551/>.

<sup>cxlvi</sup> New York Times, July 17, 2025, “20 States Sue Trump Administration Over Ending FEMA Funding for Disaster Mitigation.”

<sup>cxlvii</sup> Governor of Arkansas, April 23, 2025, “Governor Sanders Invests in Arkansas’ Water Resources,” [https://governor.arkansas.gov/news\\_post/governor-sanders-invests-in-arkansas-water-resources/](https://governor.arkansas.gov/news_post/governor-sanders-invests-in-arkansas-water-resources/).

<sup>cxlviii</sup> New York Focus, May 16, 2024, “Public Power Push Spreads to the Hudson Valley,” <https://nysfocus.com/2024/05/16/central-hudson-public-power-sarahana-shrestha>.

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<sup>clii</sup> Yahoo Finance, April 17, 2025, “Warren Buffett’s Berkshire Hathaway Lobbying to Protect Utility Companies That Accidentally Start Wildfires,” <https://finance.yahoo.com/news/warren-buffett-berkshire-hathaway-lobbying-101700821.html>.

<sup>cliii</sup> Salt Lake Tribune, Feb. 23, 2024, “This Bill Shifts Costs to Utahns for Wildfire Insurance Claims and Keeping Coal Plants Running,” <https://www.sltrib.com/news/politics/2024/02/23/this-bill-shifts-costs-utahns/>.

<sup>cliv</sup> TCD, Aug. 5, (2025, “Alarming New Data Reveals Record Number of Homeowners Dropped by Insurers: ‘The Private Insurance Industry Is Still Cherry-Picking,’” <https://www.thecooldown.com/green-business/california-property-insurance-market-fair/>.

<sup>clv</sup> California FAIR Plan, 2025, “Key Statistics and Data,” <https://www.cfpnet.com/key-statistics-data/>.

<sup>clvi</sup> Courthouse News Service, March 28, 2023, “Florida Passes Massive Overhaul of Litigation Rules,” <https://www.courthousenews.com/florida-passes-massive-overhaul-of-litigation-rules/>.

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# SECTION 5

## POLICY STRATEGIES



## 5.0 POLICY STRATEGIES

This section seeks to provide a high-level summary of policies and strategies that state and local governments can evaluate to address the budgetary issues laid out in the prior sections of this report that are a result of the climate-utility nexus. The tables presented are not meant to be comprehensive but rather to provide decision-makers with a starting point in developing an appropriate road map to identify and minimize potential financial impacts. **The strategy tables should be used as a companion to the more in-depth discussions and examples presented within the full report.**

### 5.1 AI – The Emerging Strategy

AI and ML are rapidly emerging as tools that state and local governments need to assess and begin to leverage in reducing the potential financial and operational impacts resulting from the nexus of climate change and utilities as outlined in this report.

For example, if deployed effectively, AI can help **manage deferred maintenance** by providing predictive maintenance insights by finding links among asset health, operational, cost and process data and then shifting from reactive strategies to proactive management approaches.

Similarly, **AI and ML learning algorithms** can be developed and deployed to pull a broad swatch of **climate, land-use and deployable government response assets to plan for extreme weather events and minimize financial and human health impacts**. Importantly, this can be done more accurately and at a faster speed with fewer personnel than current approaches. States can better develop land planning, prioritize resiliency projects, identify impacts to water and power utilities by type of event and location, and evaluate mitigation and response investments.

## 5.2 Wildfires Resulting From Power Utilities

Reference sections within this report:

- 1.1.1 Wildfires
- 2.1.2 Interruption of Services
- 3.0 See Trend 4 – As More Utilities Face Potential Bankruptcies, States Must Prepare
- 4.3 State Plans for Utility Wildfire Liability

RISK FACTORS	STRATEGIES	DESCRIPTION	NOTES / TRADE-OFFS	ADOPTERS
<b>STRATEGIES TO ADDRESS CRITICAL WATER INFRASTRUCTURE</b>  1. Interruption of Services to Community 2. Catastrophic Failures & Impacts 3. Increasing Costs - Further Deterioration 4. Potential Credit Rating Impacts 5. Potential Bailouts of Power Utilities 6. Potential Loss of Federal Grant Funding	<ul style="list-style-type: none"> <li>Implement Predictive Maintenance (PdM) programs</li> </ul>	<ul style="list-style-type: none"> <li>Conduct facility condition assessments.</li> <li>Develop performance standards.</li> <li>Create structured data requirements and data collection schedules.</li> <li>Budget for on-going repairs and maintenance with contingencies for emergency repairs.</li> </ul>	<ul style="list-style-type: none"> <li>AI is an emerging tool for these efforts.</li> <li>Smaller utilities or government agencies may lack the staffing or expertise.</li> </ul>	<ul style="list-style-type: none"> <li>Tennessee (TVA)</li> <li>Florida</li> <li>Washington</li> <li>Connecticut (Metropolitan District)</li> <li>Iowa (Des Moines)</li> </ul>
	<ul style="list-style-type: none"> <li>State Revolving Funds</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate emerging threats of pull back of EPA and other federal grant programs to states and local jurisdictions for water system repairs and capital projects.</li> <li>Explore alternative funding pathways and implications to credit ratings.</li> </ul>	<ul style="list-style-type: none"> <li>Potential pushback from ratepayers for a rate increases or taxpayers for bond measures.</li> </ul>	<ul style="list-style-type: none"> <li>Evolving due to changing federal funding strategies.</li> </ul>
	<ul style="list-style-type: none"> <li>Broader Access of State Funds to Water &amp; Wastewater Utilities</li> </ul>	<ul style="list-style-type: none"> <li>Provide state revolving funds to private utilities.</li> </ul>	<ul style="list-style-type: none"> <li>An approach to address the realities that in many states water utilities are very small private providers who face increasing stress from deferred maintenance and climate impacts.</li> </ul>	<ul style="list-style-type: none"> <li>State Arkansas</li> </ul>
	<ul style="list-style-type: none"> <li>Annual Budgeting</li> </ul>	<ul style="list-style-type: none"> <li>Prioritize addressing deferred maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>Annual budgeting.</li> <li>Incorporate into master planning processes.</li> </ul>	<ul style="list-style-type: none"> <li>Most States</li> </ul>
<b>CLIMATE RESILIENCY</b>  1. Property and Human Life Loss if not Addressed. 2. Operational Interruption of State, Local and Utility Services. 3. Increasing Costs of Property Insurance. 4. Private Insurance Companies Exiting States.	<ul style="list-style-type: none"> <li>Develop &amp; Maintain Resiliency Plans</li> </ul>	<ul style="list-style-type: none"> <li>State &amp; local level detailed assessment of risks from multiple climate-related risks.</li> <li>Identify mitigation strategies and on-going monitoring approaches with identification of responsible parties.</li> </ul>	<ul style="list-style-type: none"> <li>Growing number of local plans to use as a platform to build upon.</li> <li>Some jurisdictions may not have the personnel resources or expertise - can leverage consultants.</li> <li>Requires input and participation of various government agencies.</li> </ul>	<ul style="list-style-type: none"> <li>City of San Diego</li> <li>State of Michigan</li> <li>New York State</li> </ul>
	<ul style="list-style-type: none"> <li>Appoint a State Chief Resiliency Officer (Applicable to City Resiliency Officer)</li> </ul>	<ul style="list-style-type: none"> <li>Individual appointed and charged with developing a State or Local Resiliency Plan in partnership with state or local agencies and the broader community.</li> <li>In charge of developing cost-benefit analyses of resiliency programs including infrastructure as well as analyses of potential impacts to members of the community.</li> </ul>	<ul style="list-style-type: none"> <li>Added budgetary costs for the individual and staff for the office.</li> </ul>	<ul style="list-style-type: none"> <li>State of Rhode Island</li> <li>City of San Diego</li> <li>Virginia</li> <li>North Carolina</li> <li>Flint, Michigan</li> <li>Tulsa, Oklahoma</li> </ul>
	<ul style="list-style-type: none"> <li>Develop Auditing Protocols</li> </ul>	<ul style="list-style-type: none"> <li>State Auditors Offices take leadership in developing on-going audit protocols to track progress in implementing climate resiliency mitigation approaches.</li> </ul>	<ul style="list-style-type: none"> <li>Generally requires external assistance in developing protocols.</li> <li>Strong buy-in and participation by state agencies being audited.</li> <li>Needs to be a partnership and not punitive.</li> </ul>	<ul style="list-style-type: none"> <li>Commonwealth of Massachusetts in Progress.</li> </ul>

### 5.3 State FAIR Plans

Reference sections within this report:

- 1.3 Private Insurance Impacts
- 3.0 Emerging Trends
- 3.0 See Trend 5 – Insurance Markets Play Increasing Role in State Finances and Credit Ratings
- 4.4 State Plans to Address Insurance of Last Resort Programs

STATE FAIR PLANS	<p>1. Loss of property insurance availability to communities.</p> <p>2. High costs of property insurance</p> <p>3. Inability to secure mortgages without proof of property insurance.</p>	<ul style="list-style-type: none"> <li>• Tort Reform</li> </ul>	<ul style="list-style-type: none"> <li>• State level legislation that targets various civil actions.</li> <li>• Can include attorney fees, medical reimbursements and liabilities due to negligence.</li> </ul>	<ul style="list-style-type: none"> <li>• Strong push back by the legal community</li> <li>• Potentially does not drive down insurance premiums</li> <li>• Concerns on how tort reform may impact health</li> </ul>	<ul style="list-style-type: none"> <li>• Florida</li> <li>• Georgia</li> <li>• Indiana</li> </ul>
		<ul style="list-style-type: none"> <li>• Liability Pass Through</li> </ul>	<ul style="list-style-type: none"> <li>• If the State FAIR plan can't meet its obligations, it can bill the insurers for the shortfall in accordance with their respective market shares. In Calif. if the assessment is for \$1 billion or less, the insurers can pass on half the amount to policyholders; if the assessment is for more than \$1 billion in a calendar year, the insurers can pass on the entire amount to policyholders. Other states do not have the \$1 billion threshold.</li> </ul>	<ul style="list-style-type: none"> <li>• Deincentivizes resiliency mitigation strategies. Can perpetuate problems.</li> <li>• Increases costs of homeowner and business insurance policies</li> </ul>	<ul style="list-style-type: none"> <li>• California</li> <li>• Florida</li> <li>• Louisiana</li> </ul>
		<ul style="list-style-type: none"> <li>• Incentivize Risk Reduction</li> </ul>	<ul style="list-style-type: none"> <li>• Provide state direct incentives to homeowners to upgrade dwellings and reduce damage risks</li> <li>• Require private insurance firms to support resiliency projects by homeowners as cost of doing business in state similar to how state power utility companies must provide demand side management (DSM) programs for homeowners.</li> </ul>	<ul style="list-style-type: none"> <li>• Initial costs</li> <li>• Push back by private insurance firms</li> </ul>	<ul style="list-style-type: none"> <li>• In evaluation by states like CA</li> </ul>
		<ul style="list-style-type: none"> <li>• Depopulation Programs</li> </ul>	<ul style="list-style-type: none"> <li>• Mechanisms to move FAIR plan policy holders onto private sector insurance policies</li> </ul>	<ul style="list-style-type: none"> <li>• Requires policies or incentives for private insurers to stay or re-enter markets.</li> </ul>	<ul style="list-style-type: none"> <li>• Florida</li> <li>• Texas</li> </ul>

## 5.4 Water and Wastewater Deferred Maintenance

Reference sections within this report:

- 2.0 Power and Water Utilities
- 3.0 See Trend 2 – Financial Stress of Deferred Maintenance for Water Utilities Is Increasing
- 3.0 See Trend 3 - Climate Change Risks and Deferred Maintenance Downgrade Credit and Bond Ratings
- 3.0 See Trend 6 - Ratepayers Are Seeking Government Takeovers of IO Utilities
- 4.2 Private Utilities Converting to Public Utilities
- 4.5 Addressing Funding Critical Water Infrastructure

RISK FACTORS	STRATEGIES	DESCRIPTION	NOTES / TRADE-OFFS	ADOPTERS
STRATEGIES TO ADDRESS CRITICAL WATER INFRASTRUCTURE  1. Interruption of Services to Community 2. Catastrophic Failures & Impacts 3. Increasing Costs - Further Deterioration 4. Potential Credit Rating Impacts 5. Potential Bail-Outs of Power Utilities 6. Potential Loss of Federal Grant Funding	<ul style="list-style-type: none"> <li>Implement Predictive Maintenance (PdM) programs</li> </ul>	<ul style="list-style-type: none"> <li>Conduct facility condition assessments.</li> <li>Develop performance standards.</li> <li>Create structured data requirements and data collection schedules.</li> <li>Budget for on-going repairs and maintenance with contingencies for emergency repairs.</li> </ul>	<ul style="list-style-type: none"> <li>AI is an emerging tool for these efforts.</li> <li>Smaller utilities or government agencies may lack the staffing or expertise.</li> </ul>	<ul style="list-style-type: none"> <li>Tennessee (TVA)</li> <li>Florida</li> <li>Washington</li> <li>Connecticut (Metropolitan District)</li> <li>Iowa (Des Moines)</li> </ul>
	<ul style="list-style-type: none"> <li>State Revolving Funds</li> </ul>	<ul style="list-style-type: none"> <li>Evaluate emerging threats of pull back of EPA and other federal grant programs to states and local jurisdictions for water system repairs and capital projects.</li> <li>Explore alternative funding pathways and implications to credit ratings.</li> </ul>	<ul style="list-style-type: none"> <li>Potential pushback from ratepayers for a rate increases or taxpayers for bond measures.</li> </ul>	<ul style="list-style-type: none"> <li>Evolving due to changing federal funding strategies.</li> </ul>
	<ul style="list-style-type: none"> <li>Broader Access of State Funds to Water &amp; Wastewater Utilities</li> </ul>	<ul style="list-style-type: none"> <li>Provide state revolving funds to private utilities.</li> </ul>	<ul style="list-style-type: none"> <li>An approach to address the realities that in many states water utilities are very small private providers who face increasing stress from deferred maintenance and climate impacts.</li> </ul>	<ul style="list-style-type: none"> <li>State Arkansas</li> </ul>
	<ul style="list-style-type: none"> <li>Annual Budgeting</li> </ul>	<ul style="list-style-type: none"> <li>Prioritize addressing deferred maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Annual budgeting.</li> <li>Incorporate into master planning processes.</li> </ul>	<ul style="list-style-type: none"> <li>Most States</li> </ul>

## 5.5 Climate Resiliency

Reference sections within this report:

Each of the preceding chapters discusses the nexus of climate change impacts and utilities that in turn have significant potential financial impacts to state and local budgets. Resiliency planning and strategies are key to reducing those risks.

CLIMATE RESILIENCY	<ol style="list-style-type: none"> <li>1. Property and Human Life Loss if not Addressed.</li> <li>2. Operational Interruption of State, Local and Utility Services.</li> <li>3. Increasing Costs of Property Insurance.</li> <li>4. Private Insurance Companies Exiting States.</li> </ol>	<ul style="list-style-type: none"> <li>• Develop &amp; Maintain Resiliency Plans</li> </ul>	<ul style="list-style-type: none"> <li>• State &amp; local level detailed assessment of risks from multiple climate-related risks.</li> <li>• Identify mitigation strategies and on-going monitoring approaches with identification of responsible parties.</li> </ul>	<ul style="list-style-type: none"> <li>• Growing number of local plans to use as a platform to build upon.</li> <li>• Some jurisdictions may not have the personnel resources or expertise - can leverage consultants.</li> <li>• Requires input and participation of various government agencies.</li> </ul>	<ul style="list-style-type: none"> <li>• City of San Diego</li> <li>• State of Michigan</li> <li>• New York State</li> </ul>
		<ul style="list-style-type: none"> <li>• Appoint a State Chief Resiliency Officer (Applicable to City Resiliency Officer)</li> </ul>	<ul style="list-style-type: none"> <li>• Individual appointed and charged with developing a State or Local Resiliency Plan in partnership with state or local agencies and the broader community.</li> <li>• In charge of developing cost-benefit analyses of resiliency programs including infrastructure as well as analyses of potential impacts to members of the community.</li> </ul>	<ul style="list-style-type: none"> <li>• Added budgetary costs for the individual and staff for the office.</li> </ul>	<ul style="list-style-type: none"> <li>• State of Rhode Island</li> <li>• City of San Diego</li> <li>• Virginia</li> <li>• North Carolina</li> <li>• Flint, Michigan</li> <li>• Tulsa, Oklahoma</li> </ul>
		<ul style="list-style-type: none"> <li>• Develop Auditing Protocols</li> </ul>	<ul style="list-style-type: none"> <li>• State Auditors Offices take leadership in developing on-going audit protocols to track progress in implementing climate resiliency mitigation approaches.</li> </ul>	<ul style="list-style-type: none"> <li>• Generally requires external assistance in developing protocols.</li> <li>• Strong buy-in and participation by state agencies being audited.</li> <li>• Needs to be a partnership and not punitive.</li> </ul>	<ul style="list-style-type: none"> <li>• Commonwealth of Massachusetts in Progress.</li> </ul>

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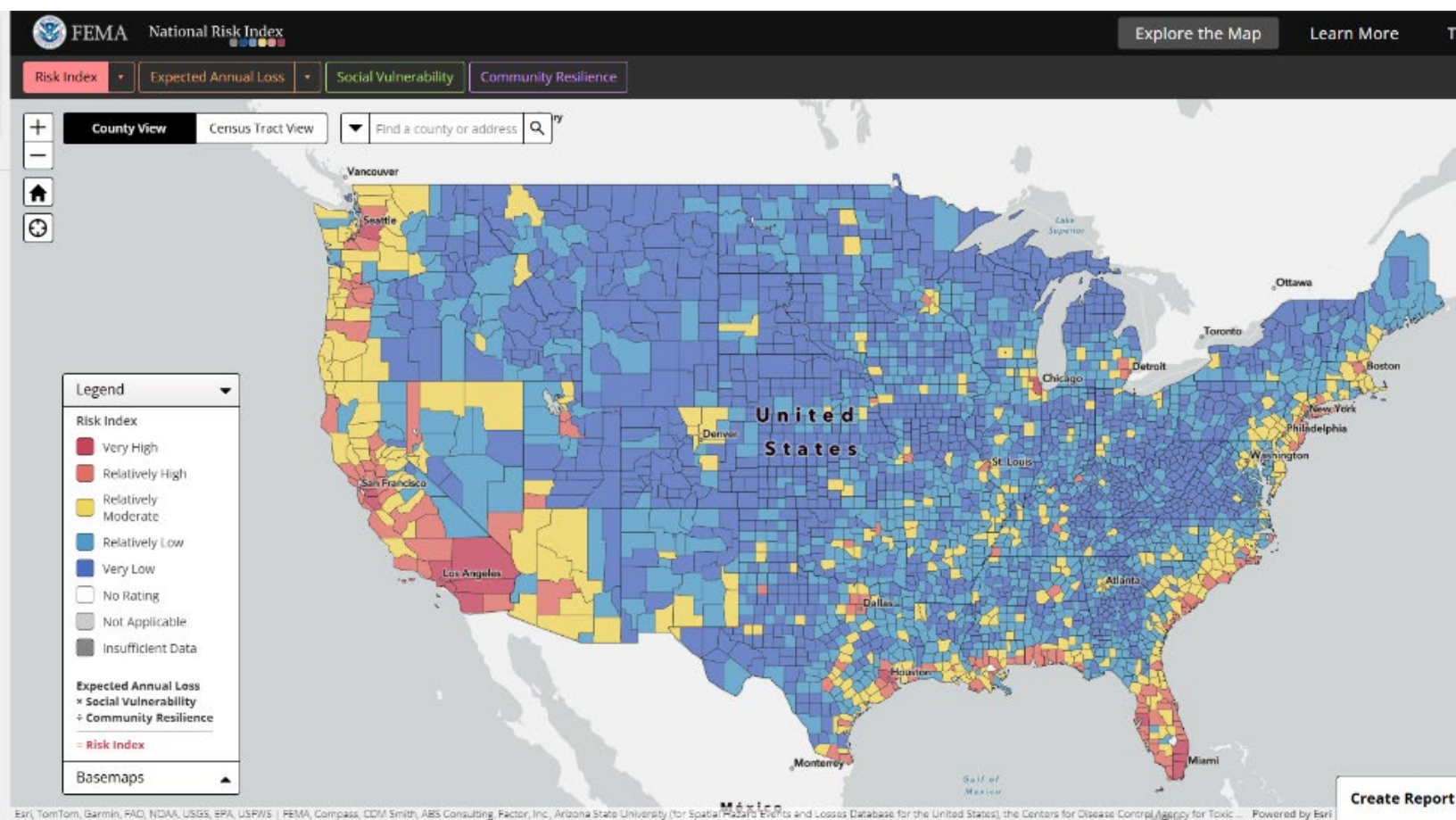
# SECTION 6 APPENDICES

**Appendix A:** Wildfires by state in 2023. Source: Insurance Information Institute, 2025, “Facts + Statistics: Wildfires,” <https://www.iii.org/fact-statistic/facts-statistics-wildfires>

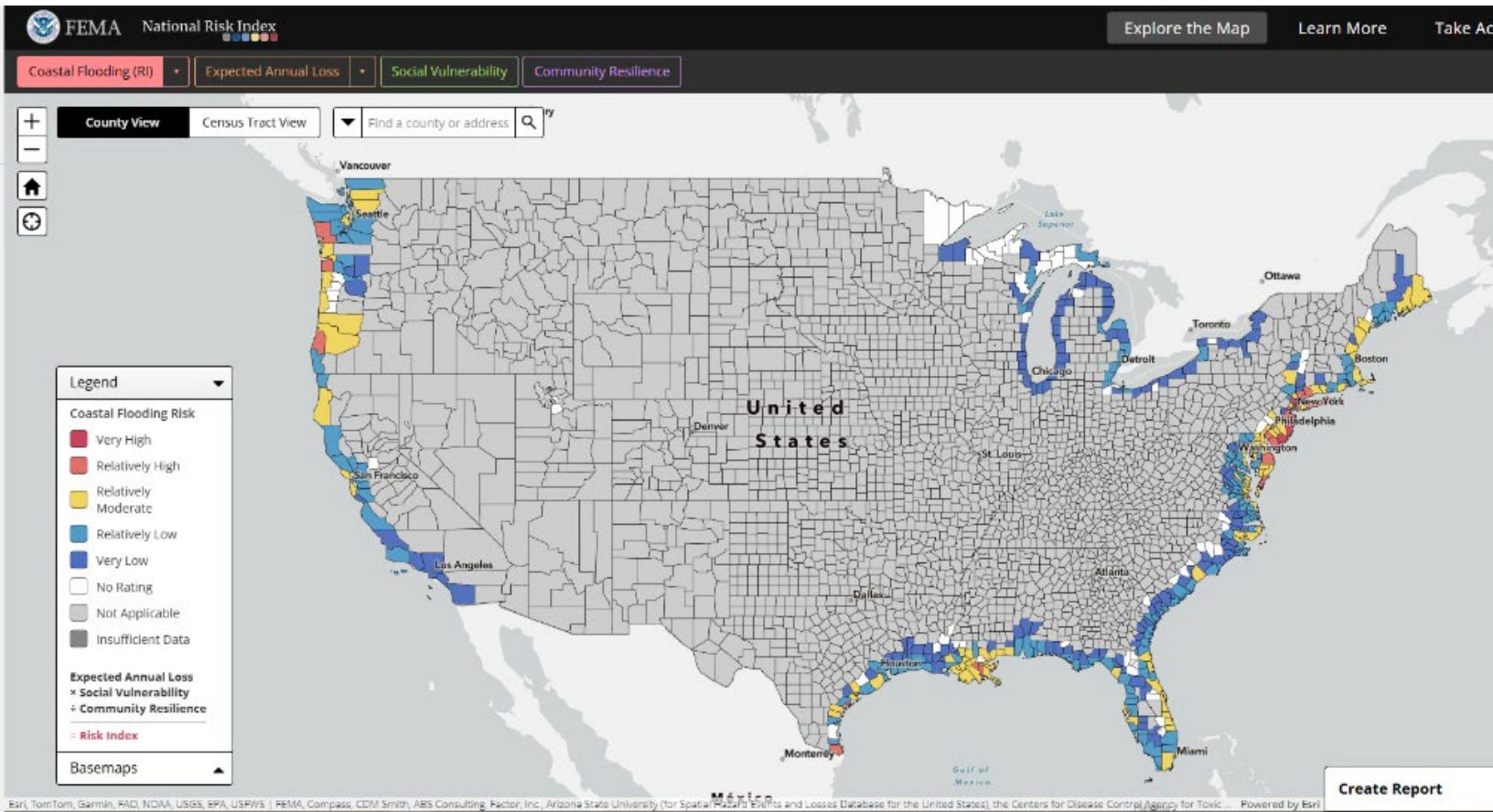
State	Number of Fires	Number of Acres Burned
Alabama	1,856	18,335
Alaska	346	314,276
Arizona	1,837	188,483
Arkansas	147	5,659
California	7,364	332,722
Colorado	861	41,917
Connecticut	499	297
Delaware	1	0
District of Columbia	0	0
Florida	2,730	99,642
Georgia	2,386	10,330
Hawaii	214	12,059
Idaho	892	87,801
Illinois	22	111
Indiana	47	521
Iowa	6	6
Kansas	49	17,963
Kentucky	9	70
Louisiana	1,467	22,103
Maine	493	325
Maryland	196	4,486
Massachusetts	1,079	1,468
Michigan	466	4,287
Minnesota	836	9,416
Mississippi	2,383	52,508

State	Number of Fires	Number of Acres Burned
Missouri	127	9,499
Montana	1,662	123,133
Nebraska	569	180,733
Nevada	375	1,300
New Hampshire	52	58
New Jersey	1,194	18,033
New Mexico	1,019	212,378
New York	150	1,383
North Carolina	5,214	73,953
North Dakota	471	4,183
Ohio	883	2,469
Oklahoma	1,580	162,489
Oregon	1,979	202,035
Pennsylvania	1,910	9,628
Puerto Rico	0	0
Rhode Island	78	582
South Carolina	22	591
South Dakota	177	945
Tennessee	772	15,394
Texas	7,102	210,264
Utah	782	18,109
Vermont	67	62
Virginia	43	12,085
Washington	1,707	151,316
West Virginia	1,124	45,679
Wisconsin	1,086	4,883
Wyoming	249	7,934
United States	56,580	2,693,910

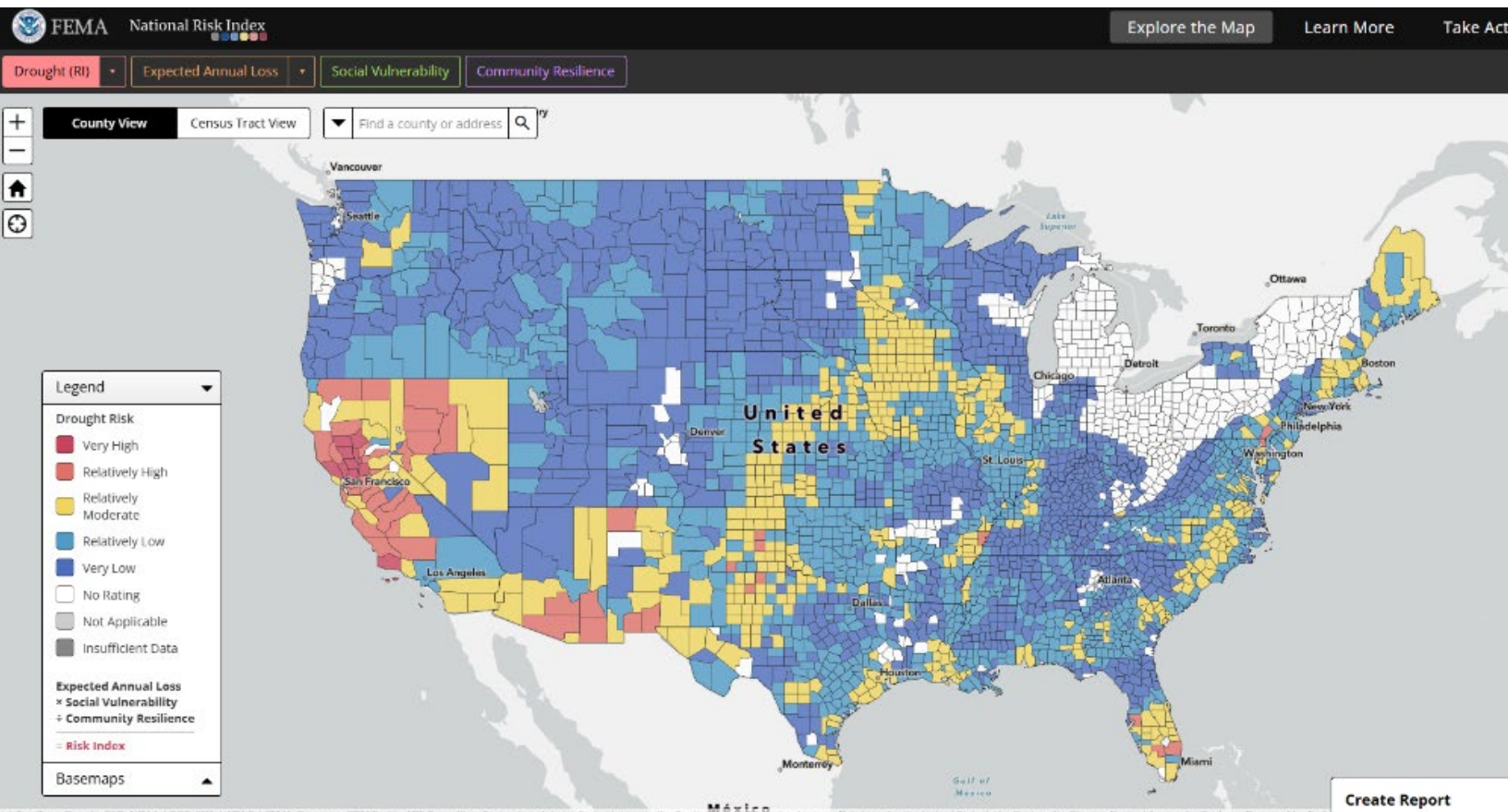
**Appendix B:** Listing of Public Safety Power Shutoffs (PSPS) in California, 2018 to June 2025. Source: California Public Utilities Commission.



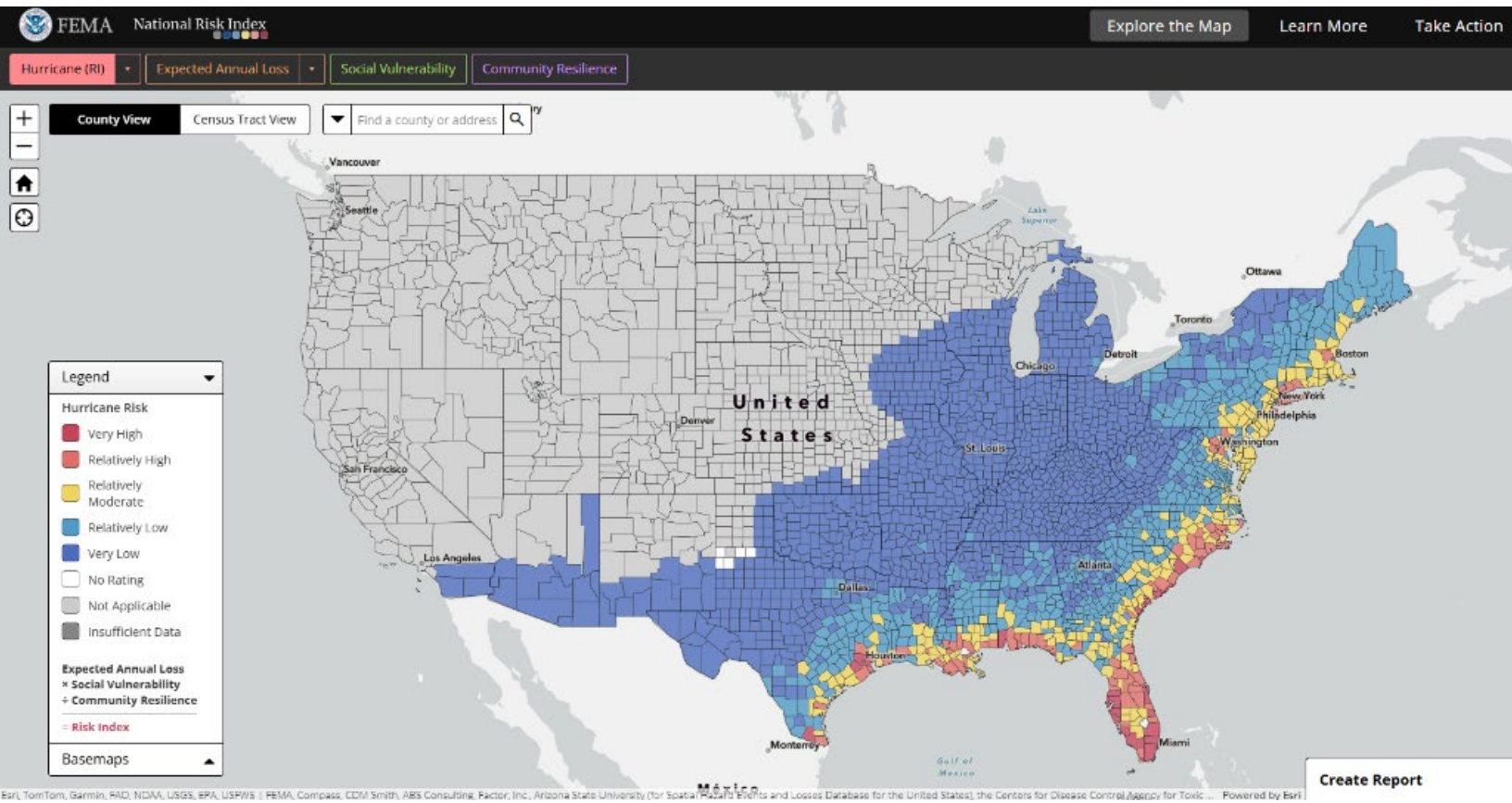
**Appendix C.** FEMA National Risk Index for all types of natural hazard risks (i.e., avalanche, coastal flooding, cold wave, drought, earthquake, hail, heat wave, hurricane, ice storm, landslide, riverine flooding, strong wind, tornado, tsunami, volcanic activity, wildfire and winter weather). Source: FEMA, 2025, <https://hazards.fema.gov/nri/data-resources>.



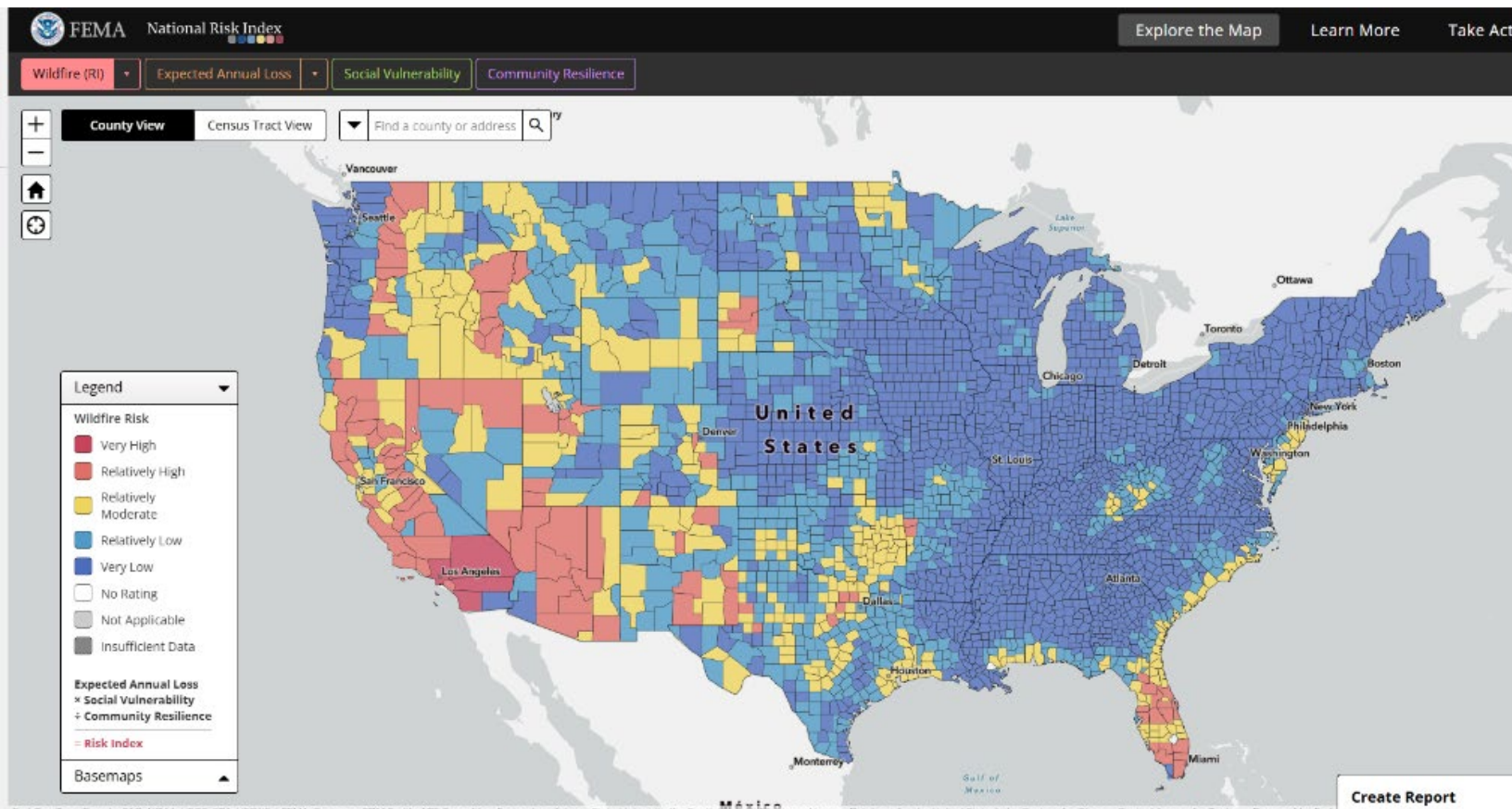
Appendix D. FEMA National Risk Index for coastal flooding. Source: FEMA, 2025, <https://hazards.fema.gov/nri/data-resources>.



Appendix E. FEMA National Risk Index for drought. Source: FEMA, 2025, <https://hazards.fema.gov/nri/data-resources>.



Appendix F. FEMA National Risk Index for hurricanes. Source: FEMA, 2025, <https://hazards.fema.gov/nri/data-resources>.



Appendix G. FEMA National Risk Index for wildfires. Source: FEMA, 2025, <https://hazards.fema.gov/nri/data-resources>.

State	Distribution & Transmission	Treatment	Storage	Source	Other	Total
Alabama	\$9,241.70	\$1,486.30	\$948.20	\$182.50	\$319.20	\$12,178.00
Alaska*	\$729.40	\$291.10	\$201.90	\$87.70	\$52.90	\$1,363.00
Arizona	\$7,455.60	\$2,175.30	\$1,161.40	\$699.00	\$557.40	\$12,048.70
Arkansas	\$5,626.80	\$956.40	\$695.60	\$152.30	\$252.70	\$7,683.80
California	\$55,742.30	\$13,549.90	\$9,238.60	\$3,571.10	\$1,413.30	\$83,515.20
Colorado	\$7,502.30	\$2,877.60	\$1,022.90	\$290.60	\$374.40	\$12,067.80
Connecticut	\$3,017.60	\$1,066.10	\$445.40	\$184.00	\$197.00	\$4,910.10
Delaware*	\$1,193.40	\$301.40	\$176.40	\$77.80	\$60.80	\$1,809.90
District of Columbia	\$3,316.40	n/a	\$45.50	n/a	\$0.00	\$3,361.90
Florida	\$17,615.20	\$5,135.60	\$1,778.10	\$1,454.80	\$765.90	\$26,749.60
Georgia	\$13,966.40	\$3,299.90	\$1,263.10	\$552.30	\$573.60	\$19,655.20
Hawaii*	\$1,442.80	\$454.80	\$252.20	\$109.10	\$54.50	\$2,313.40
Idaho*	\$1,905.80	\$552.50	\$313.00	\$188.40	\$114.10	\$3,073.80
Illinois	\$14,101.70	\$4,280.50	\$2,019.50	\$972.00	\$837.20	\$22,210.80
Indiana	\$8,161.40	\$1,691.00	\$872.50	\$601.20	\$457.70	\$11,783.80
Iowa	\$6,924.30	\$1,373.10	\$716.10	\$860.20	\$231.00	\$10,104.70
Kansas	\$4,607.90	\$1,495.00	\$503.20	\$280.00	\$149.10	\$7,035.10
Kentucky	\$6,020.70	\$974.10	\$651.00	\$90.30	\$106.70	\$7,842.90
Louisiana	\$6,130.80	\$1,513.20	\$694.70	\$307.80	\$364.60	\$9,011.10
Maine*	\$1,236.60	\$355.70	\$206.60	\$93.90	\$68.30	\$1,961.10
Maryland	\$12,780.40	\$1,041.50	\$480.90	\$271.00	\$71.10	\$14,644.90
Massachusetts	\$10,205.10	\$2,880.10	\$1,143.90	\$440.00	\$523.70	\$15,192.80
Michigan	\$11,696.10	\$2,246.20	\$1,110.90	\$751.70	\$452.90	\$16,257.70
Minnesota	\$6,017.20	\$2,122.20	\$1,043.40	\$593.70	\$401.00	\$10,177.50
Mississippi	\$4,925.50	\$1,962.40	\$650.00	\$366.10	\$215.00	\$8,118.90
Missouri	\$7,890.20	\$1,562.90	\$1,025.70	\$372.00	\$238.60	\$11,089.40
Montana*	\$1,342.60	\$490.30	\$264.60	\$137.80	\$90.60	\$2,326.00
Nebraska*	\$2,296.60	\$403.00	\$268.00	\$169.00	\$100.80	\$3,237.40
Nevada	\$3,926.20	\$997.30	\$1,220.30	\$208.20	\$63.00	\$6,414.90
New Hampshire*	\$1,452.60	\$481.70	\$279.70	\$149.90	\$96.20	\$2,460.20
New Jersey	\$8,261.50	\$2,230.60	\$1,087.50	\$361.20	\$312.00	\$12,252.80
New Mexico*	\$2,101.00	\$547.50	\$327.00	\$171.80	\$162.60	\$3,309.80
New York	\$24,472.10	\$5,415.40	\$3,237.90	\$1,101.60	\$920.60	\$35,147.70
North Carolina	\$14,028.70	\$3,215.00	\$1,372.10	\$826.00	\$563.20	\$20,004.90
North Dakota*	\$1,326.80	\$343.90	\$197.40	\$1,229.70	\$70.30	\$3,168.00
Ohio	\$10,819.60	\$2,767.80	\$1,308.80	\$652.90	\$522.70	\$16,071.80
Oklahoma	\$6,331.90	\$1,724.70	\$739.80	\$606.60	\$306.00	\$9,708.90
Oregon	\$5,678.30	\$2,170.70	\$1,349.70	\$509.40	\$402.30	\$10,110.50
Pennsylvania	\$15,844.10	\$4,710.00	\$2,197.10	\$691.20	\$858.80	\$24,301.10
Puerto Rico	\$2,197.30	\$822.90	\$425.20	\$120.60	\$103.80	\$3,669.80
Rhode Island*	\$1,264.60	\$347.20	\$126.70	\$47.40	\$40.60	\$1,826.50
South Carolina	\$5,531.30	\$1,246.30	\$644.40	\$415.30	\$262.00	\$8,099.40
South Dakota*	\$1,361.50	\$362.80	\$240.10	\$121.10	\$81.90	\$2,167.40
Tennessee	\$9,054.70	\$1,401.00	\$871.90	\$154.70	\$44.50	\$11,526.80
Texas	\$41,372.60	\$11,466.10	\$4,828.60	\$1,596.10	\$1,989.80	\$61,253.10
Utah*	\$3,286.30	\$1,146.20	\$460.90	\$192.80	\$149.60	\$5,235.70
Vermont*	\$1,096.70	\$325.40	\$197.00	\$93.90	\$66.30	\$1,779.30
Virginia	\$6,147.50	\$1,761.00	\$927.80	\$250.20	\$295.60	\$9,382.20
Washington	\$10,105.90	\$2,685.90	\$2,152.30	\$647.10	\$731.30	\$16,322.50
West Virginia*	\$3,008.70	\$804.50	\$455.80	\$158.30	\$138.00	\$4,565.30
Wisconsin	\$7,494.80	\$2,321.90	\$1,068.20	\$604.50	\$266.30	\$11,755.70
Wyoming*	\$987.70	\$291.50	\$169.10	\$76.10	\$56.40	\$1,580.80

**Appendix H.** State 20-year need reported by project category (in millions January 2021 dollars). Source: EPA, 2023. \*Partial participating states are those that are likely to only receive the 1 percent minimum DWSRF allotment, and, therefore, by choice, do not conduct the survey for medium water systems. Large and small water systems are surveyed in these states. Medium system needs in these states are estimated based on average medium system needs nationally, by stratum, derived from data from full participating states. The medium system and total needs of partial participating states are estimated but do not meet the data quality objectives for the survey.  
Note: Numbers may not total because of rounding.

1	Salt River Project	AZ	32,706,437	51	Sikeston Board of Municipal Utilities	MO	1,270,693
2	New York Power Authority	NY	26,924,316	52	Minnesota Municipal Power Agency	MN	1,202,145
3	CPS Energy	TX	24,864,732	53	Placer County Water Agency	CA	1,189,242
4	Santee Cooper (South Carolina Public Service Authority)	SC	19,929,658	54	WPPI Energy	WI	1,164,433
5	Los Angeles Department of Water & Power	CA	18,177,234	55	Utah Municipal Power Agency	UT	1,046,603
6	Nebraska Public Power District	NE	16,069,825	56	Holland Board of Public Works	MI	992,682
7	Lower Colorado River Authority	TX	14,672,764	57	Metropolitan Water District of Southern California	CA	979,775
8	Puerto Rico Electric Power Authority	PR	12,077,654	58	Michigan Public Power Agency	MI	958,582
9	MEAG Power	GA	11,125,819	59	Utah Associated Municipal Power Systems	UT	939,451
10	JEA	FL	10,387,873	60	Dalton Utilities	GA	825,468
11	Energy Northwest	WA	8,690,584	61	Kings River Conservation District	CA	781,710
12	American Municipal Power	OH	8,484,551	62	Northern Municipal Power Agency	MN	781,028
13	Florida Municipal Power Agency	FL	8,461,033	63	Kansas City Board of Public Utilities	KS	776,421
14	Omaha Public Power District	NE	7,959,596	64	Lafayette Public Power Authority	LA	739,812
15	Grant County, Public Utility District No. 2 of	WA	7,936,470	65	Jonesboro City Water & Light	AR	735,599
16	Chelan County Public Utility District No. 1	WA	7,341,242	66	Tri-Dam Project	CA	686,695
17	Sacramento Municipal Utility District	CA	7,270,858	67	Virgin Islands Water & Power Authority	VI	682,190
18	Austin Energy	TX	7,101,740	68	Springfield City Water, Light & Power	IL	680,922
19	Southern California Public Power Authority	CA	6,956,580	69	Brownsville Public Utilities Board	TX	670,035
20	North Carolina Municipal Power Agency No. 1	NC	6,874,677	70	NMPP Energy: Municipal Energy Agency of Nebraska	NE	659,031
21	Orlando Utilities Commission	FL	6,249,593	71	Muscatine Power & Water	IA	619,364
22	Grand River Dam Authority	OK	5,818,006	72	Fremont Department of Utilities	NE	565,100
23	Seattle City Light	WA	4,587,434	73	Modesto Irrigation District	CA	546,216
24	Intermountain Power Agency	UT	4,448,880	74	Farmington, City of	NM	542,529
25	Silicon Valley Power	CA	3,932,810	75	South Feather Water and Power Agency	CA	492,662
26	California Department of Water Resources	CA	3,769,906	76	Burbank Water and Power	CA	484,292
27	Douglas County, Public Utility District No. 1 of	WA	3,498,318	77	Hastings, City of	NE	483,339
28	Indiana Municipal Power Agency	IN	3,354,275	78	Louisiana Energy and Power Authority	LA	478,433
29	Colorado Springs Utilities	CO	3,347,830	79	West Memphis, City of	AR	395,271
30	Tallahassee Electric Utility, City of	FL	3,053,713	80	Redding, City of	CA	387,322
31	Illinois Municipal Electric Agency	IL	2,798,653	81	Pend Oreille County, Public Utility District No. 1 of	WA	385,322
32	Turlock Irrigation District	CA	2,651,582	82	Rochelle Municipal Utilities	IL	374,129
33	Oklahoma Municipal Power Authority	OK	2,413,024	83	Grand Island, City of	NE	363,350
34	Piedmont Municipal Power Agency	SC	2,398,145	84	Roseville Electric	CA	344,468
35	Springfield, City Utilities of	MO	2,173,453	85	Holyoke Gas & Electric	MA	337,307
36	Yuba County Water Agency	CA	2,020,787	86	Independence Power & Light	MO	334,227
37	Tacoma Public Utilities	WA	2,014,943	87	Vernon, City of	CA	332,387
38	Lakeland Electric	FL	1,972,725	88	Ames, City of	IA	328,637
39	Long Island Power Authority	NY	1,950,852	89	Merced Irrigation District	CA	309,817
40	Platte River Power Authority	CO	1,885,142	90	Denton Municipal Electric	TX	309,654
41	Gainesville Regional Utilities	FL	1,860,552	91	Snohomish County, Public Utility District No. 1 of	WA	301,349
42	Clark Public Utilities	WA	1,828,598	92	Eugene Water & Electric Board	OR	290,961
43	Guam Power Authority	GU	1,542,751	93	Nevada Irrigation District	CA	283,843
44	Massachusetts Municipal Wholesale Electric Co.	MA	1,520,744	94	Central Nebraska Public Power & Irrigation District	NE	228,038
45	Lansing Board of Water & Light	MI	1,448,001	95	Gillette, City of	WY	225,712
46	IID Energy	CA	1,378,932	96	Altus Municipal Authority	OK	216,794
47	San Francisco (Hetch Hetchy Water & Power), City of	CA	1,375,898	97	Toledo Bend Project	TX	212,312
48	Southern Minnesota Municipal Power Agency	MN	1,336,715	98	Lehi City	UT	202,774
49	Lincoln Electric System	NE	1,306,930	99	Farmington, City of	MO	197,948
50	Western Minnesota Municipal Power Agency	MN	1,297,611	100	Manitowoc Public Utilities	WI	196,844

Appendix I. 100 largest “public” power utilities by generation in 2023 in megawatt hours. Source<sup>clxxvii</sup>: American Public Power Association, 2025. Note: SRP (Salt River Project) is a quasi-public utility.

1.	Los Angeles Department of Water & Power	CA	\$4,617,077	51	Tallahassee Electric Utility, City of	FL	\$309,651
2	Salt River Project	AZ	\$3,954,094	52	Intermountain Power Agency	UT	\$300,260
3	Puerto Rico Electric Power Authority	PR	\$3,908,682	53	Illinois Municipal Electric Agency	IL	\$294,656
4	Long Island Power Authority	NY	\$3,713,716	54	Eugene Water & Electric Board	OR	\$290,300
5	CPS Energy	TX	\$3,061,508	55	Kansas City Board of Public Utilities	KS	\$281,726
6	Santee Cooper (South Carolina Public Service Authority)	SC	\$1,825,125	56	Platte River Power Authority	CO	\$279,401
7	Sacramento Municipal Utility District	CA	\$1,794,175	57	Massachusetts Municipal Wholesale Electric Co.	MA	\$268,207
8	New York Power Authority	NY	\$1,772,905	58	Michigan Public Power Agency	MI	\$262,702
9	Austin Energy	TX	\$1,567,440	59	Virgin Islands Water & Power Authority	VI	\$249,349
10	JEA	FL	\$1,447,096	60	Utah Associated Municipal Power Systems	UT	\$246,918
11	Nashville Electric Service	TN	\$1,415,903	61	Alabama Municipal Electric Authority	AL	\$239,258
12	Omaha Public Power District	NE	\$1,382,643	62	Glendale Water & Power	CA	\$238,623
13	Memphis Light, Gas and Water Division	TN	\$1,378,164	63	Piedmont Municipal Power Agency	SC	\$237,544
14	Seattle City Light	WA	\$1,179,730	64	Pasadena Water and Power Department	CA	\$235,978
15	American Municipal Power	OH	\$1,051,940	65	Southern Minnesota Municipal Power Agency	MN	\$233,465
16	Nebraska Public Power District	NE	\$1,046,429	66	Cowlitz County, Public Utility District No. 1 of	WA	\$232,091
17	Southern California Public Power Authority	CA	\$1,020,951	67	Lafayette Utilities System	LA	\$231,257
18	MEAG Power	GA	\$845,066	68	Kissimmee Utility Authority	FL	\$231,091
19	Orlando Utilities Commission	FL	\$818,773	69	Fayetteville Public Works Commission	NC	\$214,120
20	Snohomish County, Public Utility District No. 1 of	WA	\$740,851	70	BrightRidge	TN	\$210,658
21	Lower Colorado River Authority	TX	\$738,065	71	San Francisco (Hetch Hetchy Water & Power), City of	CA	\$208,125
22	IID Energy	CA	\$617,665	72	Bryan Texas Utilities	TX	\$207,301
23	Silicon Valley Power	CA	\$611,982	73	Burbank Water and Power	CA	\$205,741
24	Knoxville Utilities Board	TN	\$607,824	74	New Braunfels Utilities	TX	\$201,341
25	Grant County, Public Utility District No. 2 of	WA	\$604,432	75	Dalton Utilities	GA	\$201,135
26	Florida Municipal Power Agency	FL	\$592,689	76	Missouri River Energy Services	SD	\$199,430
27	EPB - Chattanooga Electric Power Board	TN	\$585,915	77	Vernon, City of	CA	\$198,303
28	Grand River Dam Authority	OK	\$579,919	78	Lenoir City Utilities Board	TN	\$196,897
29	Energy Northwest	WA	\$569,448	79	Denton Municipal Electric	TX	\$195,419
30	Huntsville Utilities	AL	\$555,120	80	Brownsville Public Utilities Board	TX	\$192,929
31	Guam Power Authority	GU	\$548,681	81	Cleveland Public Power	OH	\$192,685
32	North Carolina Eastern Municipal Power Agency	NC	\$528,431	82	CDE Lightband	TN	\$189,730
33	Tacoma Public Utilities	WA	\$496,126	83	Springfield City Water, Light & Power	IL	\$189,108
34	Colorado Springs Utilities	CO	\$491,899	84	Roseville Electric	CA	\$183,408
35	Chelan County Public Utility District No. 1	WA	\$476,777	85	Oklahoma Municipal Power Authority	OK	\$182,725
36	WPPI Energy	WI	\$472,380	86	Minnesota Municipal Power Agency	MN	\$178,855
37	Indiana Municipal Power Agency	IN	\$460,953	87	Sevier County Electric System	TN	\$174,917
38	North Carolina Municipal Power Agency No. 1	NC	\$440,755	88	Greenville Utilities Commission	NC	\$170,743
39	Clark Public Utilities	WA	\$427,365	89	Rochester Public Utilities	MN	\$169,429
40	Modesto Irrigation District	CA	\$416,322	90	Utah Municipal Power Agency	UT	\$160,817
41	Turlock Irrigation District	CA	\$413,850	91	Fort Collins Utilities	CO	\$155,139
42	Anaheim Public Utilities	CA	\$383,910	92	Palo Alto, City of	CA	\$154,777
43	Lakeland Electric	FL	\$371,895	93	Athens, City of	AL	\$153,734
44	Lubbock Power & Light	TX	\$344,904	94	Riviera Utilities	AL	\$153,396
45	Riverside Public Utilities, City of	CA	\$338,642	95	Vinton Public Power Authority	LA	\$152,935
46	Lansing Board of Water & Light	MI	\$331,816	96	Jackson Energy Authority	TN	\$150,907
47	Lincoln Electric System	NE	\$329,388	97	Independence Power & Light	MO	\$145,467
48	Springfield, City Utilities of	MO	\$326,492	98	Benton PUD	WA	\$144,758
49	Garland, City of	TX	\$318,575	99	Redding, City of	CA	\$140,478
50	Gainesville Regional Utilities	FL	\$316,823	100	Naperville Department of Public Utilities	IL	\$139,581

**Appendix J.** 100 largest “public” power utilities by electric revenues to ultimate customers and sales for resale (\$ thousands). Source: APPA, 2025.<sup>ixxxx</sup>

<sup>clxxvii</sup> American Public Power Association, 2025, “2025 Public Power Statistical Report.”