



Dam Safety: Federal Programs and Authorities

In recent years, several incidents have highlighted the public safety risks posed by the failure of dams and related facilities. In 2017, the near failure of the Oroville Dam spillway in California resulted in a precautionary evacuation of approximately 200,000 people and cost more than \$1.1 billion in emergency response and repair. The 2019 failure of Spencer Dam in Nebraska resulted in the first dam-failure fatality in the nation since 2006; the 2020 failure of two hydropower dams in Michigan resulted in an estimated \$175 million in damages.

The 117th Congress has increased funding to support dam safety principally through Division J of the Infrastructure Investment and Jobs Act (IIJA; P.L. 117-58). Congress may consider additional oversight of agency implementation of dam safety activities and additional legislation to improve dam safety. This In Focus summarizes the U.S. dam inventory, dam rehabilitation and repair estimates, and federal dam safety activities and funding. For more detailed information and analysis, see CRS Report R45981, *Dam Safety Overview and the Federal Role*.

National Inventory of Dams

The National Inventory of Dams (NID)—maintained by the U.S. Army Corps of Engineers (USACE)—catalogs information from 50 states, Puerto Rico, and federal agencies on most of the nation’s dams. The NID, updated in November 2021 with 2020 data, lists more than 90,000 dams. The majority of NID-listed dams are owned by private entities, state and local governments, and public utilities. Federal government agencies (e.g., USACE, U.S. Forest Service) report owning approximately 3% (2,758) of dams in the NID, including some of the largest dams in the United States. Although states have regulatory authority for more than 73% of NID-listed dams, which includes overseeing dam safety, the federal government may play a role in dam safety for both federal and nonfederal dams.

Of the dams in the NID, about 16% (15,080) are classified as *high hazard potential* (i.e., the loss of at least one life is likely if the dam fails). The overall number of dams classified as high hazard potential has increased in the past decade, mostly due to development around existing dams. *Significant hazard potential* dams in the NID could cause economic loss or environmental damage, and *low hazard potential* dams in the NID could pose limited risk and must meet a dam height or reservoir size threshold for inclusion. The 2020 NID includes flood inundation maps for failure scenarios at USACE dams, based on new USACE policy.

Dam Rehabilitation and Repair Needs

Dams were built to engineering and construction standards and regulations corresponding to the time of their construction. Over half of the dams with information on their age reported in the NID were built more than fifty

years ago. Some dams, including older dams, may not meet current dam safety standards and may require rehabilitation to do so. Other dams may be in need of repair.

The Association of State Dam Safety Officials estimated that the total cost to rehabilitate dams in the NID would exceed \$70 billion. Of this estimate, the cost to rehabilitate high hazard potential dams would be \$3 billion for federal dams and \$20 billion for nonfederal dams.

What Is the Federal Role?

The federal role in dam safety encompasses: (1) support for state dam safety; (2) support for federal dam safety; (3) regulation of certain nonfederal dams; and (4) rehabilitation and repair of certain nonfederal dams.

Support for State Dam Safety

Every state (except Alabama) has established a regulatory program for dam safety, as has Puerto Rico. State dam safety programs typically include safety evaluations of existing dams, review of plans and specifications for dam construction and major repair work, periodic inspections of construction work on new and existing dams, reviews and approval of emergency action plans, and emergency preparedness activities with local officials and dam owners. The dam owners generally are responsible for the safety, rehabilitation, and repair of their dams; selected states provide a limited amount of assistance for these activities.

The main source of federal support for state dam safety programs is the National Dam Safety Program (NDSP), operated by the Federal Emergency Management Agency (FEMA). Authorized in 1996 by the National Dam Safety Program Act, as amended (33 U.S.C. §§467f et seq.), NDSP activities include providing dam safety information and training, facilitating information exchange, and supporting state dam safety programs with grant assistance. In FY2021, Congress funded the NDSP at \$9 million. FEMA distributed around \$6 million of this funding as dam safety program grants to 49 states and Puerto Rico to support their dam safety activities. The IIJA provided \$148 million for state dam safety program grant assistance and \$61 million for other NDSP activities.

Support for Federal Dam Safety

The federal government has statutory responsibilities for the monitoring, upkeep, rehabilitation, and repair of federally owned dams. The major federal water resource management agencies—USACE and the Bureau of Reclamation (Reclamation)—own 42% (1,170) of federal dams, including many large dams:

- USACE operates more than 700 dams, many with a primary purpose of flood risk reduction. USACE implements a dam safety program consisting of

inspections and risk analyses for all USACE dams. In FY2021, USACE funded \$311 million in work on 5 dam safety construction projects and funded dam safety studies and construction design for 14 additional projects. In 2017, USACE estimated a backlog of \$18 billion for dam safety rehabilitation and repair. USACE may allocate construction funding provided by the IJA to fund dam safety modification at its authorized projects.

- Reclamation owns more than 400 dams in the 17 states west of the Mississippi River. Reclamation's safety program inspects dams and authorizes rehabilitation and repairs to qualifying projects at Reclamation dams. In FY2021, Congress appropriated \$71 million to fund 18 dam safety projects. In April 2021, Reclamation estimated the needs for dam safety projects over a 30-year period (2021-2050) at \$2.1 billion. In the IJA, Congress appropriated \$500 million from FY2022 through FY2026 for Reclamation's dam safety program.

The remaining federal dams are owned by the Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, Department of Defense, Tennessee Valley Authority, Department of Energy, and International Boundary and Water Commission, among other agencies. In overseeing these dams, federal agencies follow FEMA's Federal Guidelines for Dam Safety.

The federal government is responsible for all dams on Indian lands, including 125 high or significant hazard dams listed in the NID, in accordance with the Indian Dams Safety Act of 1994, as amended (25 U.S.C. §§3801 et seq.). The IJA provided the Bureau of Indian Affairs (BIA) \$200 million for dam safety construction and for other facilities. In 2016, Congress established two Indian dam safety funds for BIA to address deferred maintenance needs at eligible dams; the authority remains unfunded.

Federal Regulation of Nonfederal Dams

Congress has enacted legislation to regulate selected nonfederal facilities and activities that may use dams for certain purposes. For example, the Federal Energy Regulatory Commission (FERC) has the authority to issue licenses for the construction and operation of nonfederally owned hydroelectric projects, which may include dams. FERC staff inspect regulated dams at regular intervals, and the owners of certain dams are required to conduct more thorough inspections. If a deficiency is found, FERC requires the project owner to remediate the deficiency and may require immediate risk-reduction measures. Other federal agencies regulating nonfederal dams include the Mine Safety and Health Administration, the Office of Surface Mining Reclamation and Enforcement, and the Nuclear Regulatory Commission.

Selected Assistance for Nonfederal Safety Projects

Congress has authorized and funded programs to provide assistance for certain nonfederal dam safety projects.

Congress appropriated \$12 million in FY2021 and \$585 million in the IJA for FEMA's High Hazard Dam Rehabilitation Grant Program (33 U.S.C. §467f-2).

Congress authorized the program in 2016 to provide grants for technical, planning, design, and construction assistance for repairing, removing, or rehabilitating eligible high hazard nonfederal dams. FEMA also may provide assistance to reduce the flood damage that a dam failure could cause with non-disaster grants (e.g., Preparedness Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program), or it may provide grants for these purposes after a presidentially declared disaster (e.g., Building Resilient Infrastructure and Communities, Hazard Mitigation Grant Program, Public Assistance, and Resilience Revolving Loan Fund).

In the Water Infrastructure Finance and Innovation Act of 2014 (WIFIA 2014, 33 U.S.C. §§3901-3914), Congress authorized USACE to provide credit assistance, in the form of secured or direct loans, for a range of water resource projects. For FY2021, Congress created a WIFIA account for USACE to initiate its WIFIA program—the Civil Works Infrastructure Financing Program (CWIFP)—and provided funding to implement the program (\$2.2 million) and for credit assistance (\$12 million). The IJA also provided \$75 million for the USACE WIFIA account: \$11 million for program administration and \$64 million for credit assistance. Congress specified that the FY2021 and IJA CWIFP financial assistance are only for nonfederal dam safety projects. For more details, see CRS Insight IN11577, *U.S. Army Corps of Engineers Civil Works Infrastructure Financing Program (CWIFP): Status and Issues*.

In Section 40333 of the IJA, Congress authorized the Secretary of Energy to make incentive payments to the owners or operators of certain hydroelectric facilities for capital improvements. These improvements must be directly related to eligible purposes, including dam safety. Incentive payments must not exceed 30% of the costs of the capital improvements and are limited to \$5 million and one payment per facility annually. The IJA appropriated \$276.8 million for FY2022 and \$276.8 million for FY2023 for these payments.

The U.S. Department of Agriculture (USDA) has authority under the Watershed Rehabilitation Program (P.L. 106-472, as amended) to provide financial and technical assistance for the planning, design, and implementation of dam rehabilitation projects. To be eligible for assistance, dams must have been built using selected USDA funds and must now pose a public health or safety concern. The program covers up to 65% of the total rehabilitation cost. Since the program was first authorized in 2000, Congress has appropriated more than \$800 million for these projects through FY2021 and provided \$118 million in the IJA.

Owners of nonfederal dams sometimes consider dam removal as a policy option to address dam safety, among other concerns. Congress has authorized and funded various programs that may assist nonfederal dam removal projects; the IJA provided funding for some of these programs. For more information and analysis, see CRS Report R46946, *Dam Removal and the Federal Role*.

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