

Colorado



D A M S A F E T Y P E R F O R M A N C E R E P O R T - 2 0 2 3



High-Hazard Potential = Typically defined as a dam whose failure or mis-operation will cause loss of human life and significant property destruction.

Significant-Hazard Potential = Typically defined as a dam whose failure or mis-operation will cause significant property destruction.

Low-Hazard Potential = Typically defined as a dam whose failure or mis-operation will cause minimal property destruction.

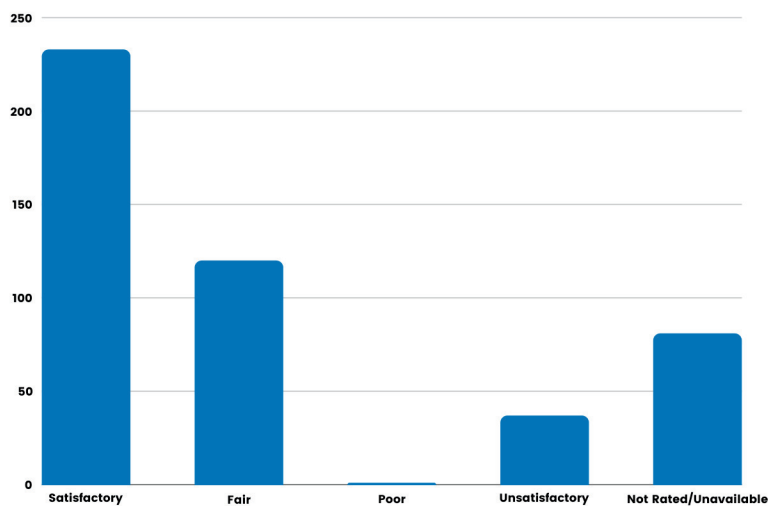
CO Dams in the NID

Total NID Dams	1,985
NID High-Hazard Potential Dams	472
Total State Regulated Dams	2,525
State Regulated High-Hazard Potential Dams	405

Dams are a critical part of the U.S. infrastructure, and all Americans enjoy the valuable benefits they provide, including flood protection, water supply, hydropower, irrigation and recreation. Our dams are aging and deteriorating, while downstream populations are increasing. Thousands of U.S. dams have the potential to fail with tragic consequences, therefore Americans must understand the risks associated with potential incidents and failures. This demands greater attention to and investment in measures that reduce risks to public safety and economic assets.

State dam safety programs regulate 71% of the 92,000 plus dams listed in the National Inventory of Dams (NID). State dam safety programs inspect existing dams, oversee remediation of deficient dams, and work with local officials and dam owners on emergency preparedness. State dam safety officials are experts dedicated to ensuring the safety and security of our nation's dams. However, many state programs lack adequate budgets, staff and authority to ensure public safety.

CO Condition Ratings-State Regulated High-Hazard Dams



What Are Condition Ratings?

The NID collects condition data on state-regulated high-hazard potential dams. For the 2022 NID update, 90% of state-regulated high-hazard potential dams were rated across the U.S. This system is voluntary but the majority of state programs participate and the number of 'not rated' dams continues to decrease. State agencies determine the ratings.

Ratings Defined:

Satisfactory - No existing or potential dam safety deficiencies are recognized.

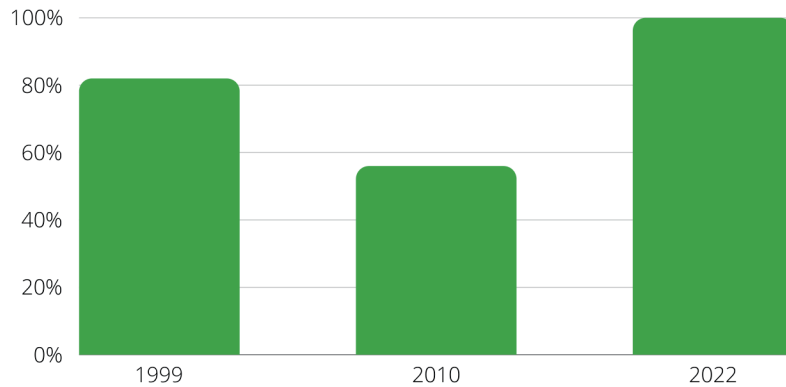
Fair - No existing dam safety deficiencies are recognized for normal loading conditions. Rare or extreme hydrologic and/or seismic events may result in a dam safety deficiency.

Poor - A dam safety deficiency is recognized for loading conditions which may realistically occur. Remedial action is necessary. Poor may also be used when uncertainties exist as to critical analysis parameters which identify a potential dam safety deficiency. Further investigations and studies are necessary.

Unsatisfactory - A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.

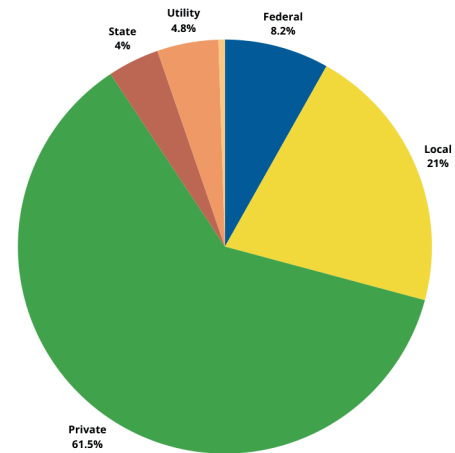
Not rated - The dam has not been inspected or has been inspected but, for unknown reasons, has not been rated.

Percentage of State Regulated High-Hazard Potential Dam Inspections Completed



* Inspection percentages may vary above and below 100% for any given year based on a state's inspection frequency and scheduling.

CO Ownership



Unlike most components of U.S. infrastructure, the majority of dams listed in the National Inventory of Dams are privately owned. (Dam Ownership percentages are based on the most recent NID dataset for the state for total NID-sized dams.)

COLORADO HIGH HAZARD POTENTIAL DAMS REMEDIATED – IN CALENDAR YEAR 2022, 8 STATE-REGULATED HIGH HAZARD POTENTIAL DAMS WERE REMEDIATED (THAT IS CONSTRUCTION WAS COMPLETED) IN THE CALENDAR YEAR BECAUSE OF HYDRAULIC/STRUCTURAL DEFICIENCIES.

Are States Comparing Well to National Benchmarks?

The National Dam Safety Program, in cooperation with ASDSO, developed a benchmark called the Model State Dam Safety Program to assist state officials in initiating or improving their state programs. The model outlines the key components of an effective dam safety program and provides guidance on the development of more effective and sustainable state programs to reduce the risks created by unsafe dams. Topics include Legislative Authorities, Permitting, Inspection, Enforcement, Emergency Action Planning and Response, Education and Training, and Public Communications.

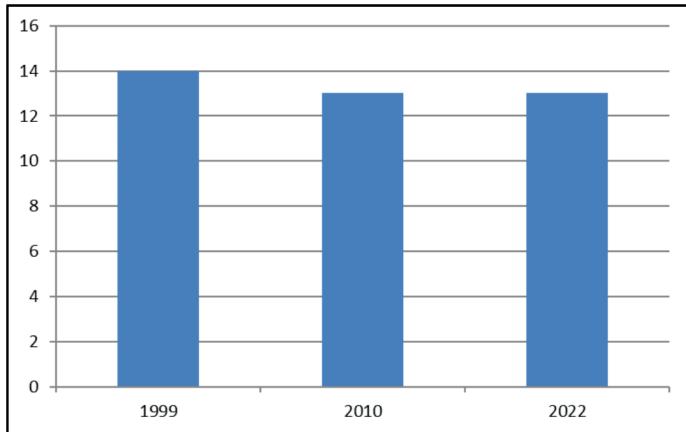
The tables here present the state's response to a series of yes/no questions on the authorities for each chapter and an overall weighted percentage for the program. The tables also show how the state's weighted averages compare to the national averages over time. Higher percentages indicate greater alignment of the state program with the model and lower percentages can be indicative of needed improvement in authority. The areas are weighted by importance for the overall percentage. Areas of concern where additional state authorities may be needed are highlighted.

CO Weighted Percentage Detail	
LEGISLATION	97%
INSPECTION	87%
ENFORCEMENT	100%
EAP & RESPONSE	89%
PERMITTING	81%
EDUCATION/ TRAINING	89%
PUBLIC RELATIONS	42%
WEIGHTED %	89%

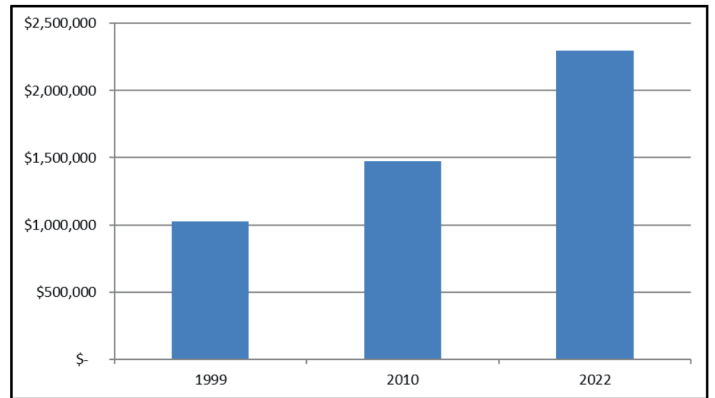
Overall Weighted Percentage				
	1989	1998	2010	2022
National Average	59%	66%	77%	80%
Colorado	58%	83%	76%	89%

Colorado Dam Safety Program Metrics

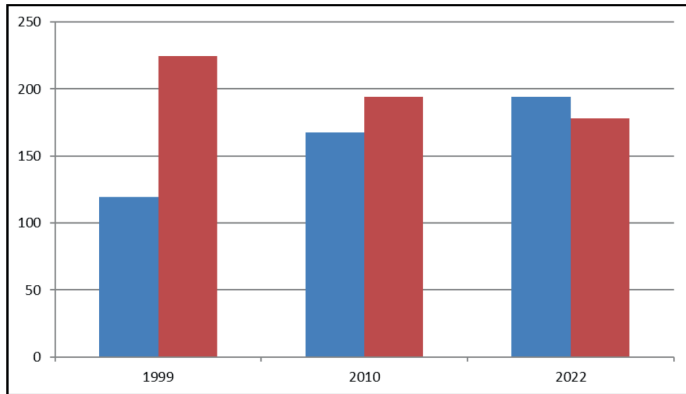
State Staffing for Dam Safety: Total Staff FTEs



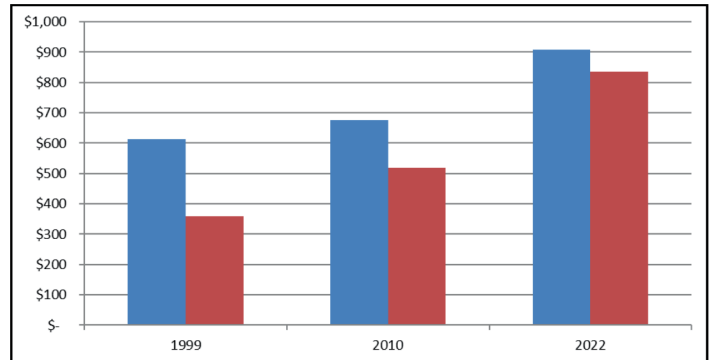
State Budgeting for Dam Safety: Overall State Budget



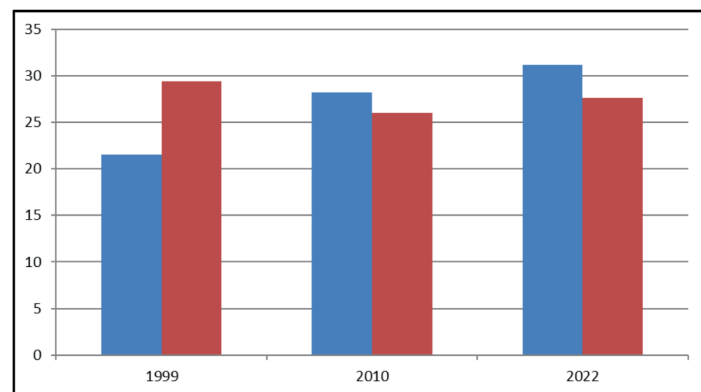
State Staffing for Dam Safety: State Regulated Dams per FTE (blue) and National Average (red)



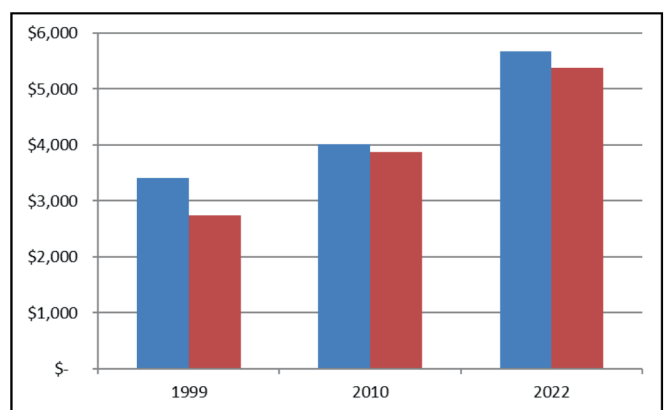
State Budgeting for Dam Safety: State Budget per Regulated Dam (blue) and National Average (red)



State Staffing for Dam Safety: State Regulated High-Hazard Potential Dams per FTE (blue) and National Average (red)



State Budgeting for Dam Safety: State Budget per High-Hazard Potential Dam (blue) and National Average (red)

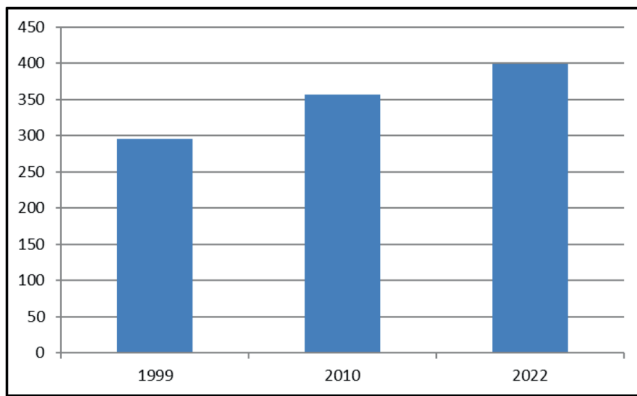


Adequate staffing is important to program performance. State numbers significantly above the Regulated Dams per FTE and Regulated High-Hazard Potential Dams per FTE national averages can be indicators of the need for additional staff resources.

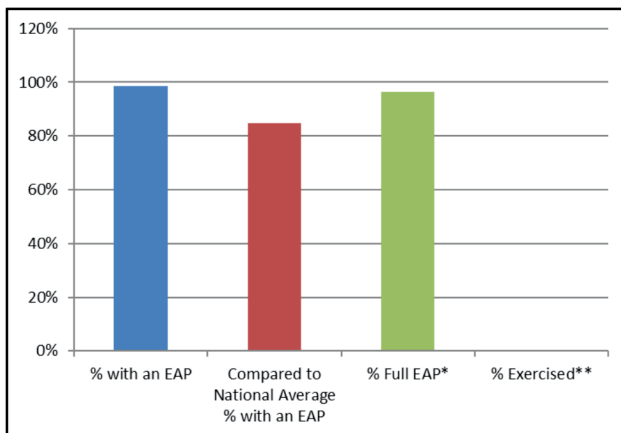
Emergency Action Planning

An Emergency Action Plan (EAP) identifies potential emergency conditions at a dam and specifies preplanned actions to be followed to help prevent loss of life and minimize property damage. Dam owners work with state and local officials to prepare and update EAPs to help mitigate losses resulting from dam failures. The EAP specifies actions the dam owner should take to moderate or alleviate the problems at the dam. It contains procedures and information such as failure inundation maps to assist emergency management officials with early-warning notification and evacuation plans.

Number of State Regulated High-Hazard Potential Dams with an EAP



2022 Emergency Action Plan Data for State Regulated High-Hazard Potential Dams



* The % Full EAP bar represents the percentage of high hazard potential dams with an EAP that contain all the elements from FEMA-64, Federal Guidelines for Dam Safety: Emergency Action Planning. The elements include a notification flowchart, inundation maps, and sections on emergency detection, responsibilities and preparedness.

** The % Exercised bar indicates the percentage of high hazard potential dams with EAPs that were exercised in the past five years. After an EAP has been developed, it must be exercised so it does not become outdated and ineffective.

Outreach to Dam Owners, Local Officials and the Public

Increasing the awareness of the risks related to dams, and effective methods for living safely with dams is an important goal of state dam safety programs, ASDSO and the National Dam Safety Program. Dam owners and operators need to be aware of their state's dam safety laws and regulations, the associated responsibilities and liabilities, and the proper operation, maintenance and inspection of their dams. In addition, local emergency management officials, first responders, and people who live and work in areas downstream of dams need to understand the risk and plans for response in an emergency situation. State programs respond to these needs through direct meetings and workshops with dam owners, workshops with local officials, and publications and outreach to the public.

CO Outreach Highlights

Colorado spends time with each dam owner during routine inspections and design/construction inspections educating and discussing best practices.



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