

# Dam Safety

Performance Report for  
the State of Arizona

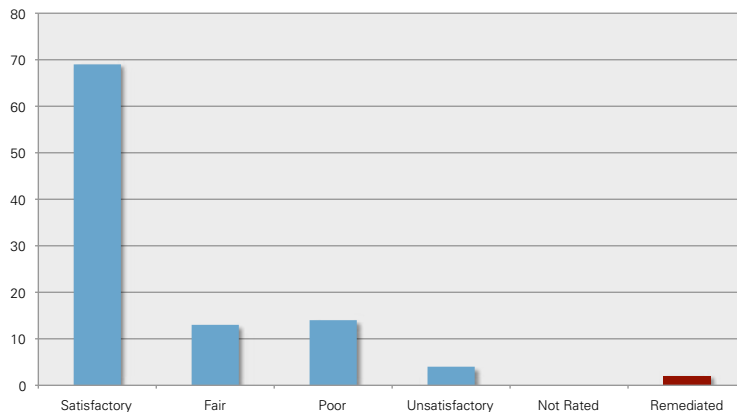


Dams are a critical part of our nation's infrastructure and all Americans enjoy the valuable benefits they provide, including flood protection, water supply, hydropower, irrigation and recreation. Our dams are aging and deteriorating, while downstream populations are increasing. Thousands of U.S. dams have the potential to fail with tragic consequences, and Americans need to 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 80% of the 84,000 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. Knowledgeable and dedicated officials lead these programs, yet are facing major challenges because of inadequate budgets, staffing and/or authority to ensure public safety. The Association of State Dam Safety Officials (ASDSO), led by these state officials, focuses on overcoming these challenges to improve dam safety nationwide.

## State Statistics

Condition of Dams – Last Rated in 2011  
Number of Dams Remediated – Last Compiled in 2011



### National Inventory of Dams Condition Ratings

(Since 2009, the NID has collected condition data on state-regulated high hazard potential dams. States voluntarily submit this data; those with large numbers of Not Rated conditions may lack sufficient resources to complete the ratings.)

**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.

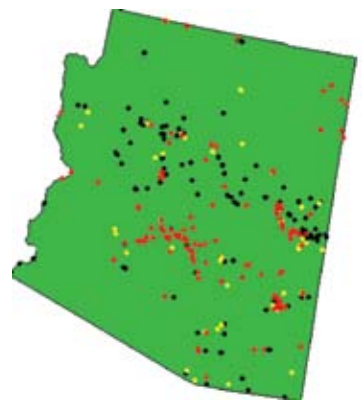
**Unsatisfactory** – A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.

**Not Rated** – The dam has not been inspected or has been inspected but, for whatever reason, has not been rated.

**Red Dots – “High-hazard potential dam”** is typically defined as a dam whose failure or mis-operation will cause loss of human life and significant property destruction.

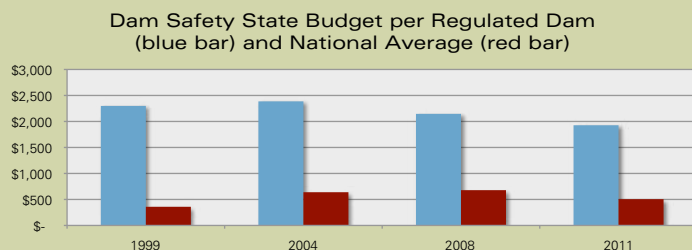
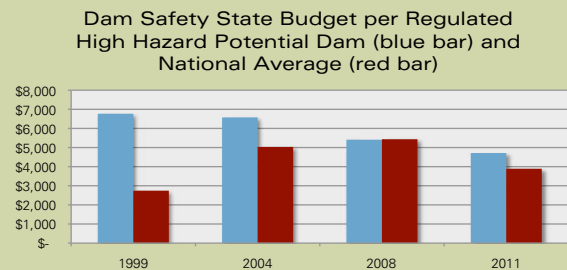
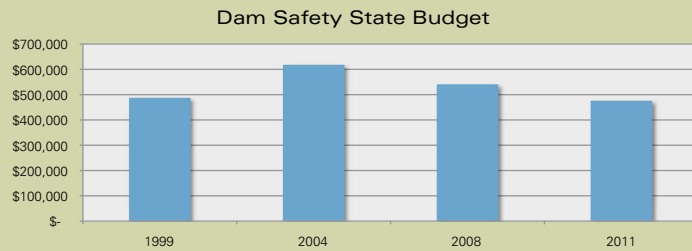
**Yellow Dots – “Significant-hazard potential dam”** is typically defined as a dam whose failure or mis-operation will cause significant property destruction.

**Black Dots – “Low-hazard potential dam”** is typically defined as a dam whose failure or mis-operation will cause minimal property destruction.



Total NID Dams	346
Total NID High Hazard Dams	142
Total State Regulated Dams	247
Total State Regulated High Hazard Dams	101

## State Budgeting for Dam Safety



## Are States Comparing Well to the National Benchmark?

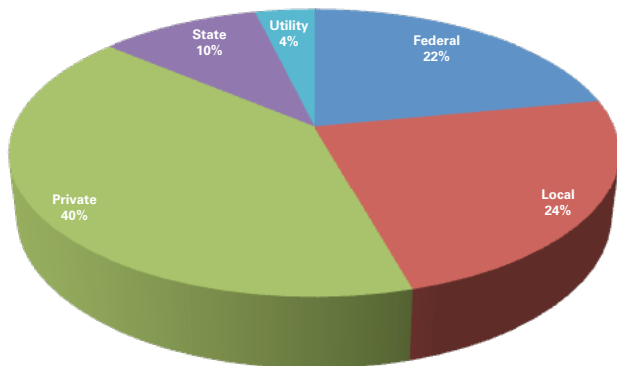
The National Dam Safety Program, in cooperation with ASDSO, developed a benchmark called the Model State Dam Safety Program to assist state officials in initiating or improving their state programs. The model outlines the key components of an effective dam safety program and provides guidance on the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

The table below presents your state's response over time to a series of yes/no questions on the authorities for each chapter and an overall weighted percentage for the program along with the national averages for 2011. 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 (listed in order with weightings indicated in parentheses) for the overall percentage. Areas of concern where additional state authorities may be needed are highlighted.

***Good planning and improved dam safety programs at all levels of government have reduced the loss of life resulting from dam failures dramatically in recent years.***

State Authorities	State Compliance			2011 National Average
	1989	1998	2011	
Legislation (5)	60.5%	88.6%	100.0%	86%
Inspection (4)	76.9%	92.9%	83.3%	75%
Enforcement (4)	82.5%	88.9%	83.3%	91%
EAP and Response (4)	72.0%	92.3%	100.0%	74%
Permitting (3)	82.4%	85.1%	92.3%	76%
Education and Training (3)		42.9%	50.0%	73%
Public Relations (1)		0.0%	8.3%	30%
Weighted Percentage	73.8%	80.1%	83.4%	78%

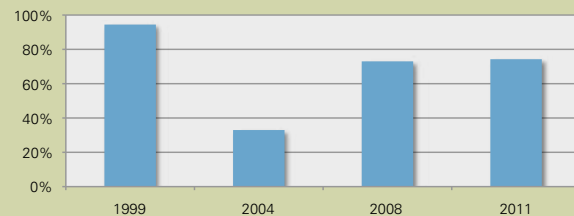
## Dam Ownership



Unlike most components of US infrastructure, the majority of dams listed in the National Inventory of Dams are privately owned. (Dam Ownership percentages are based on the 2010 NID dataset for total NID-sized dams.)

## Inspection of High Hazard Potential Sate Regulated Dams\*

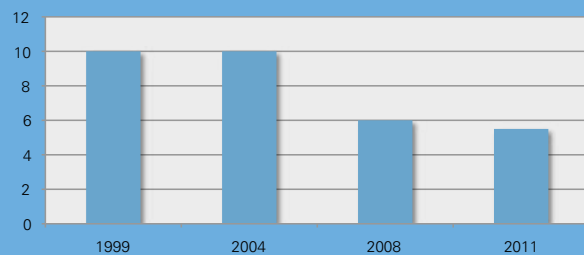
Percentage of High Hazard Potential Inspections Completed



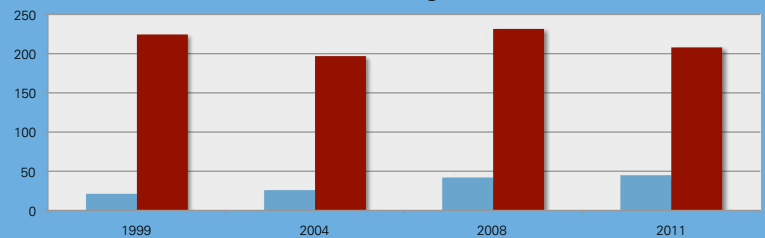
\* Inspection percentages may vary above and below 100% for any given year based on a state's inspection frequency and scheduling.

## State Staffing for Dam Safety

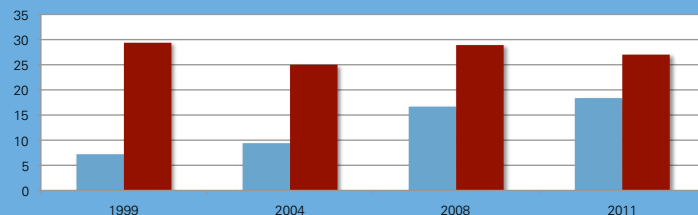
Total Staff (FTE)



State Regulated Dams per FTE (blue bar) and National Average (red bar)



State Regulated High Hazard Potential Dams per FTE (blue bar) and National Average (red bar)



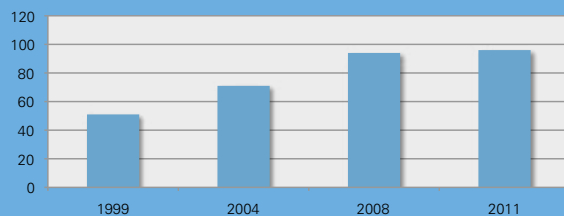
Adequate staffing is important to program performance. State numbers significantly above the Regulated Dams per FTE and Regulated High Hazard Dams per FTE national averages can be indicators of the need for additional staff resources.

***Everyone has a role to play in creating a future where all dams are safe.***

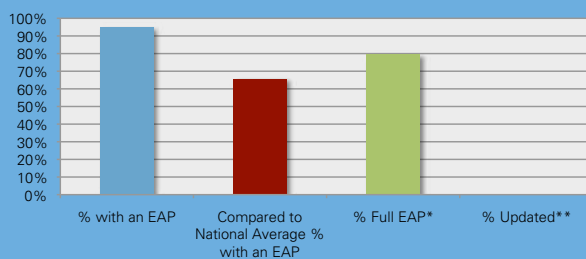
## Emergency Action Planning

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 High Hazard Potential Dams with an EAP



2011 EAP Data for Regulated High Hazard Potential Dams



\* The % Full EAP bar represents the number 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 % Updated bar indicates the percentage of high hazard potential dams with EAPs that were updated in 2011. After an EAP has been developed, continual reviews and updates must be performed so it does not become outdated and ineffective.

## Improving Security

The Dams Sector-Specific Plan supports the National Infrastructure Protection Plan (NIPP) by establishing a coordinated approach to national priorities, goals, and requirements for critical infrastructure protection.

ASDSO works with the Department of Homeland Security (DHS) and each state to collect data that will show state-specific and national progress toward reducing security risks within the Dam Sector. With DHS Dams Sector leadership and support, states are receiving tools and guidelines to improve their ability to reduce risks from man-made, intentional assaults on dams.

State Performance Metrics Highlights:

- Arizona does not coordinate with the State Homeland Security Office, DHS Protective Security Advisors and the DHS Dams Sector-Specific Agency in support of the National Critical Infrastructure Prioritization Program to identify dams of national significance.
- Arizona does not participate in the Homeland Security Information Network; a secure and reliable resource center and information sharing system administered by DHS.

## Arizona Congressional Districts

Estimated Breakdown of Dams per Congressional District

Arizona-01 – 177

Arizona-02 – 20

Arizona-03 – 22

Arizona-04 – 72

Arizona-05 – 2

Arizona-06 – 21

Arizona-07 – 1

Arizona-08 – 5

Arizona-09 – 2

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