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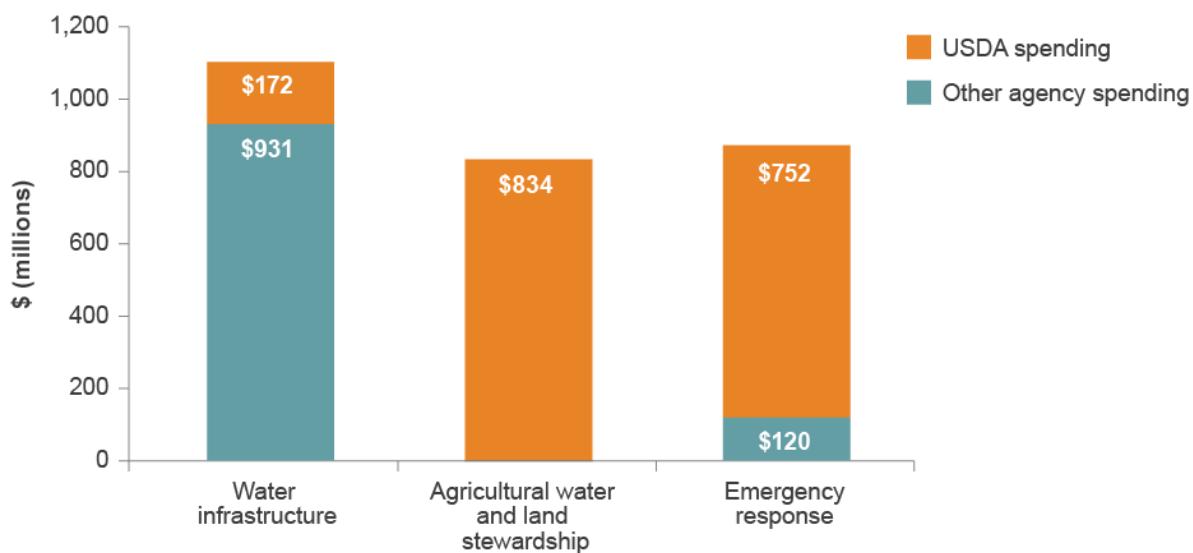
Policy Recommendations to Improve the Federal Government's Response to Western Drought

Coping with drought is a major challenge for the American West. The federal government plays a key role in western water and drought management through more than two dozen agencies and departments. It is the West's largest landowner, irrigation water supplier, hydropower generator, water information provider, and environmental regulator. It is also an important source of funding: in 2014, it provided more than \$2.8 billion to western states for water and drought response (Figure 1). To manage drought more effectively today and in a warmer, possibly drier future, the federal government must strengthen its partnership with western states.

This report proposes five pragmatic, near-term reforms that can help western states better manage drought. They are based on a review of existing information and extensive interviews with experts from federal, state, and local agencies and stakeholder groups.

FIGURE 1

Federal funding for water and drought management in western states, FY 2014



SOURCE: Author calculations using agency budgets. (See Table 2 in main report, *Improving the Federal Response to Western Drought*, PPIC 2016.)

1. Leverage federal authority

Making water use trade-offs during times of scarcity is one of the great challenges in building western drought resilience. Too often parties fail to negotiate solutions and resort to litigation. This dynamic creates political and social logjams that make it difficult for water managers to implement drought strategies.

Suggested reform: Use federal influence to resolve water conflicts

The federal government can use its multiple authorities to address western water issues resistant to resolution. It can provide financial and technical support for innovation, convene agencies and stakeholders to frame and resolve disputes, and use the threat of federal intervention if parties fail to come to a resolution. This "carrot and stick" approach could

reduce regional tensions, litigation, and costs. Some issues needing federal help to achieve resolution include managing long-term shortages in the Colorado River Basin, balancing water supply and ecosystem goals in California's Sacramento–San Joaquin Delta, and implementing negotiated agreements in the Klamath Basin.

2. Coordinate federal actions more effectively

Coordinating the federal response to drought involves two fundamental obstacles: institutional complexity and lack of clarity on how to meet both economic and environmental goals. These challenges make federal water management rigid, fragmented, and at times contradictory.

Suggested reform: *Seek consistency at the proper scale*

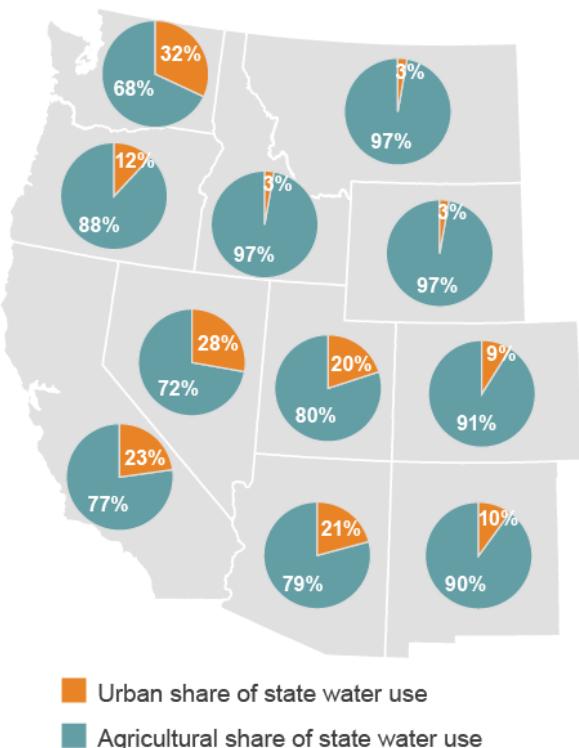
To manage and respond to drought effectively, federal agencies need to improve how they coordinate actions among themselves and with state and local partners. This coordination will work best when multi-agency efforts are aligned at the scale of large river basins and the watersheds within those basins. Federal drought response also needs to shift to a more distributed authority, using interagency teams with basin-level expertise to address priority actions.

Suggested reform: *Develop drought biodiversity plans*

Federal and state agencies are poorly prepared for environmental drought emergencies, including the potential for multiple extinctions of native species. This lack of preparation has exacerbated conflicts over competing uses of scarce water resources. Federal fish and wildlife agencies should partner with other federal and state agencies to develop action plans that improve drought resilience and sustain native biodiversity during drought. A drought plan for West Coast salmon is an urgent priority—they have been hit especially hard by the latest drought's warm, dry conditions.

FIGURE 2

Water use in western states (2010)



SOURCE: US Geological Survey (see Figure 2a in main report).

3. Change agricultural support programs

The federal government is deeply involved in supporting western farmers. US Department of Agriculture (USDA) payments to farmers and ranchers account for most federal water-related funding (Figure 1). On average, 85 percent of all western residential and business water use is for agriculture—so even minor changes in agricultural practices can have broad impacts (Figure 2). The water and land stewardship programs of the Natural Resources Conservation Service (NRCS) and the Farm Services Agency (FSA) are especially important because they can help improve drought resilience in ways that meet multiple objectives, at the scale of basins or watersheds.

Suggested reform: *Build agricultural drought resilience at the basin scale*

Agricultural stewardship programs currently emphasize individual on-farm efficiency and resource conservation measures. Although valuable, these efforts do not always translate to better water management at the basin scale; in some cases they actually lead to increased net water use. The NRCS and FSA should shift priorities toward partnering with water districts and producer associations to achieve basin-scale goals. Efforts such as the Regional Conservation Partnership Program (RCPP) and the Conservation Reserve Enhancement Program (CREP) should be expanded to

coordinate activities of farmers and ranchers. “Easement” payments to maintain land in farming—or to replace acreage with a cover crop—should also become more flexible to support basin-level goals. This strategy might include supporting easements to keep farms in field crops (which can be fallowed more easily than tree crops during droughts) and rotational fallowing (where farmers take turns keeping some land out of production to reduce water use).

Suggested reform: *Improve instream flows and wetlands*

The NRCS and FSA programs should explicitly prioritize working with states, local water districts, and other federal agencies to help farmers return flows to wetlands and rivers for multiple benefits. This effort should expand beyond the current wetland easement program—which permanently retires farmland—to include on-farm efficiency and temporary easement programs to create strategic flows for wetland and instream habitat needs.

Suggested reform: *Promote a culture of innovation*

NRCS should encourage piloting new approaches and technologies more actively, such as recharging groundwater by spreading water on fields that have been equipped with more efficient drip irrigation systems.

4. Improve headwaters management

The federal government owns and manages more than half of western lands, including most of the forested headwater areas that provide surface water runoff (Figure 3). Historic fire suppression policies, coupled with the extreme conditions of the latest drought, have led to widespread tree death and made forests vulnerable to extreme wildfires. The consensus among forest managers is to move away from fire suppression, and toward fire prevention and improving forest health. The most urgent priority is to reduce forest density.

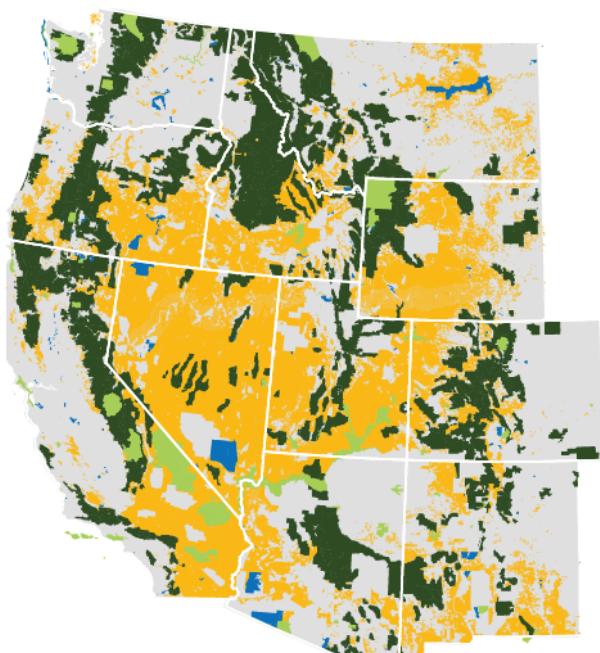
Suggested reform: *Restructure funding for wildfire suppression*

The Forest Service budget for fighting wildfires should be separated out from other activities, such as fire prevention and forest restoration. This can be accomplished by shifting responsibility for suppression of extreme wildfires to the Federal Emergency Management Agency’s emergency funding program. Because the largest fires now consume roughly 30 percent of the fire-fighting budget, this change would free up as much as \$320 million annually for forest health and fire prevention.

Suggested reform: *Initiate multiple large-scale collaborative projects to restore forest health*

Although there has been progress in restoring forested lands, most efforts have been small-scale demonstration projects. The Forest Service needs to incorporate large-scale projects into all forest management plans. These projects should explore incentives for financial investments from beneficiaries—such as water and hydropower users—to cover some costs.

FIGURE 3
Federal lands in the West



- Bureau of Land Management
- US Forest Service
- US Fish and Wildlife
- National Park Service

SOURCE: US Geological Survey (see Figure 2d in main report).

5. Improve water data and forecasting

Drought managers must make difficult decisions on how to allocate scarce water supplies. This requires timely and useful information on water consumption and availability as well as reliable forecasts. There has been a long-term decline in federal support for monitoring systems necessary for drought management. And the National Weather Service (NWS) has been slow to modernize its forecast models and products.

Suggested Reform: *Strengthen data collection systems*

Because of its variable geography and climate, the West requires dense monitoring networks to collect hydrological and meteorological information and distribute it quickly. Due to fiscal cutbacks, federal support for these land-based systems has lagged, degrading their usefulness. Congress should support a hydrologic upgrade program—led jointly by the Department of the Interior and the USDA—to improve land-based monitoring networks necessary for drought management.

Suggested reform: *Modernize the National Weather Service*

The NWS is the primary source of forecasts that are critical for water project operations and other management activities. Many NWS forecast models are decades old and in need of modernization. In addition, the NWS has been slow to adopt new technology to improve forecasting. Plans are in place to modernize the NWS (through the 2013 *Weather Ready Roadmap*) but have been slowed by budget restrictions and administration priorities. To improve drought resilience, the administration should examine how to revive these efforts.

Suggested reform: *Reevaluate funding mechanisms*

A comprehensive reevaluation of current funding across all federal water information programs—spread out over at least five different departments—could identify ways to provide more stable support for critical water information upgrades and modernization.

Suggested reform: *Improve water use monitoring*

Efficient water management at the basin scale requires knowing how much water is consumed by crops and lost to evaporation (net water use) and how much returns to the system as runoff from fields or through aquifer recharge. The federal government should support the development of user-friendly space-based imagery and tools for this purpose.

These policy recommendations are from the PPIC Water Policy Center report, *Improving the Federal Response to Western Drought: Five Areas for Reform* (February 2016), by Jeffrey Mount, Ellen Hanak, Caitrin Chappelle, Bonnie Colby, Richard Frank, Greg Gartrell, Brian Gray, Douglas Kenney, Jay Lund, Peter Moyle, Leon Szeptycki, with research support from Jelena Jezdimirovic.

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