

# **Biden-Harris Administration Announces Over \$140 Million for Water Conservation and Efficiency Projects in the West**

U.S. Bureau of Reclamation, 04/21/23

The Department of the Interior today announced a \$140 million investment for water conservation and efficiency projects as part of the President's Investing in America agenda to enhance the resilience of the West to drought and climate change. Funding for 84 projects in 15 western states, provided through the Bipartisan Infrastructure Law and annual appropriations, will go to irrigation and water districts, states, Tribes and other entities and are expected to conserve over 230,000 acre-feet of water when completed. This is equivalent to 77 billion gallons of water, enough water for more than 940,000 people.

"As we work to address record drought and changing climate conditions throughout the West, we are bringing every resource to bear to conserve local water supplies and support the long-term stability and sustainability of the Colorado River System," said Deputy Secretary of the Interior Tommy Beaudreau. "The projects we are funding today are locally led and will support increased water conservation through innovative efficiency measures."

"Delivering water more efficiently is key to helping Western communities become more resilient to drought," said Bureau of Reclamation Commissioner Camille Calimlim Touton. "For more than 120 years, Reclamation and its partners have developed sustainable water and power solutions for the West. With increased funding from the Bipartisan Infrastructure Law and Inflation Reduction Act, we're able to expand that work, extending collaboration and expanding conservation."

The leaders returned last week from visits across the West as part of the Administration's Investing in America tour to highlight the opportunities that the Bipartisan Infrastructure Law and Inflation Reduction Act are creating.

The Bipartisan Infrastructure Law includes \$8.3 billion for Reclamation water infrastructure projects over five years to advance drought resilience and expand access to clean water for families, farmers and wildlife. The investment will revitalize water delivery systems, advance water purification and reuse techniques, expand water storage capacities and complete rural water projects. The Inflation Reduction Act is investing another \$4.6 billion to address Western drought. Combined, these laws represent the largest investments in climate resilience in the nation's history and provide unprecedented resources to support the Administration's comprehensive, government-wide approach to make Western communities more resilient to drought and climate change.

In the Colorado River Basin, 12 projects will receive more than \$20 million in federal funding from today's announcement, resulting in more than \$44.7 million in infrastructure

investments. Once completed, the projects will result in a combined annual water savings of more than 29,000 acre-feet in the Colorado River System. Another 32 projects selected in California will receive \$46.7 million in federal funding. The projects will result in more than \$164.3 million in infrastructure investments in the state and a combined annual savings of more than 65,000 acre-feet once completed.

Today's announcement is part of the efforts underway by the Administration to increase water conservation, improve water efficiency, and prevent the Colorado River System's reservoirs from falling to critically low elevations that would threaten water deliveries and power production. The ongoing implementation and effectiveness of these essential efforts through new investments, as well as any voluntary system conservation agreements between Basin states, will help determine the degree to which revised operations will be implemented.

Selected projects include updating canal lining and piping to reduce seepage losses, installing advanced metering, automated gates and control systems, and programs in urban areas to install residential water meters and other water conservation activities.

One-third of the selected projects advance the Administration's Justice40 initiative, which aims to deliver 40 percent of the overall benefits of climate, clean energy and related investments to disadvantaged communities that are marginalized, overburdened and underserved.

This funding is part of Reclamation's WaterSMART Program, which focuses on collaborative efforts to plan and implement actions to increase water supply sustainability, including investments to modernize infrastructure. More information is available on Reclamation's WaterSMART program webpage.



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RECLAMATION

## 2023 WaterSMART Grants Water and Energy Efficiency Grants

### **Stockton East Water District, Upper Farmington Flow Measuring Flume**

**Reclamation Funding: \$363,500**

**Total Project Cost: \$727,000**

The Stockton East Water District, located near Sacramento, will construct a flow measurement flume at the outlet of the Upper Farmington Canal (Canal) to provide reliable and accurate flow measurements. The district will also pipe 777 feet of the currently earthen Canal between the outlet and the entrance of the flume. The district typically receives an allocation of 75,000 acrefeet from the New Melones Reservoir. However, due to extreme and ongoing drought conditions, the district did not receive an allocation in 2022. The project is expected to result in annual water savings of 10,865 acre-feet, which is lost to seepage, over-deliveries, and spills. Water conserved will be stored in the New Melones Reservoir to address shortages in drought years.

To view additional Project Descriptions, visit: <https://www.usbr.gov/watersmart/weeg/docs/2023/2023-WEEG-Project-Descriptions.pdf>

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# DWR Conducts May 1 Snow Survey to Continue to Collect Data on Spring Runoff

California Department of Water Resources, 05/01/23

The Department of Water Resources (DWR) today conducted the fifth snow survey of the season at Phillips Station. The manual survey recorded 59 inches of snow depth and a snow water equivalent of 30 inches, which is 241 percent of average for this location on May 1. The snow water equivalent measures the amount of water still contained in the snowpack and is a key component of DWR's water supply run-off forecast. DWR's electronic readings from 130 snow sensors placed throughout the state indicate the statewide snowpack's snow water equivalent is 49.2 inches, or 254 percent of average for this date.

Despite a brief increase in temperatures in late April, the statewide snowpack overall melted at a slower pace than average over the month of April due to below average temperatures early in the month and increased cloud cover. An average of 12 inches of the snowpack's snow water equivalent has melted in the past month and it now contains an average of 49.2 inches.

Snow surveys like the one at Phillips Station are critical to planning for impacts of the coming snowmelt runoff on communities. DWR uses the most updated technology to gather data from snow surveys, a network of 130 remote snow sensors, and airborne snow observatory data to gather information on current real-world conditions to create the most accurate snowmelt runoff forecasts possible. These runoff forecasts, published through DWR's Bulletin 120, allow reservoir operators to plan for anticipated inflows and water managers downstream of reservoirs to plan and prepare for flood risks.

"While providing a significant boost to California's water supplies, this year's massive snowpack is posing continued flood risks in the San Joaquin Valley," said DWR Director Karla Nemeth. "The snowpack will not disappear in one week or one month but will lead to sustained high flows across the San Joaquin and Tulare Basins over the next several months and this data will help us inform water managers and ultimately help protect communities in these regions."

The last time there was measurable snow at the Phillips snow course on May 1 was 2020, when only 1.5 inches of snow and .5 inches of snow water equivalent was measured.

"No matter how you look at the data, only a handful of years in the historical record compared to this year's results," said Sean de Guzman, manager of DWR's Snow Surveys and Water Supply Forecasting Unit. "Survey results from our partners in the California Cooperative Snow Surveys Program and other data, including data from Airborne Snow Observatory flights, allow us to incorporate these data into our models to provide the most accurate snowmelt runoff forecasts possible right now to inform water supply, flood control, and planning."

According to historical records, only the April 1 measurements from the years 1952, 1969, 1983 and this year were above 200 percent, although it is difficult to directly compare individual years across the decades due to changes in the number of snow courses measured over time.

Due to the impact of climate change on California's snowpack, since 2021, snowpack averages have been calculated using a timeframe of 1991 through 2020 so that results better reflect the current climate conditions.

DWR is maximizing the amount of water that can be stored and diverted from this record snowpack.

In April, DWR announced a 100 percent allocation of requested supplies from the State Water Project (SWP), which delivers water to 29 public water agencies that serve 27 million Californians and 750,000 acres of farmland. The last time the SWP allocated 100 percent was in 2006. DWR is also maximizing the amount of water that can be diverted towards recharging groundwater basins so more water is stored for future use in underground reservoirs.

Last week, Governor Newsom visited the Tulare Basin to tour flood impacts first hand, met with community leaders and emphasized the state's commitment to supporting and providing appropriate assistance to counties impacted by recent and anticipated flooding this spring and summer.

Snowmelt runoff forecasts are an instrumental part of the assistance provided by DWR's State-Federal Flood Operations Center (FOC), which is supporting emergency response in the Tulare Lake Basin and Lower San Joaquin River by providing technical and materials assistance to support ongoing flood response activities.

Storms this year have caused impacts across the state including flooding in the community of Pajaro and communities in Sacramento, Tulare, and Merced counties. The FOC has helped Californians by providing more than 1.4 million sandbags, 1 million square feet of plastic sheeting, and 9,000 feet of reinforcing muscle wall, across the state since January.

## Putting Flood Waters to Work: State Expedites Efforts to Maximize Groundwater Recharge

California Department of Water Resources, 05/09/23

The Department of Water Resources (DWR) is implementing an emergency program to divert high river flows away from flood-prone Central Valley communities and into groundwater recharge basins. DWR is working with local agencies and equipment vendors to provide funding and secure much-needed temporary diversion equipment, including pumps and siphons, and will support their deployment by local agencies.

The first set of temporary pumps and siphons were deployed by Fresno Irrigation District on April 25, as seen in this video. The district is reducing downstream flood impacts in the Tulare Lake Region and expanding groundwater recharge efforts by diverting water from Kings River reaches to existing recharge facilities or working agricultural lands.

Here's more information on how much water these pumps will divert:

- The pumps being deployed are equipped with flow meters and range in diversion capacity from 5 to 50 cubic-feet per second (cfs) of water from high-flow rivers. One cfs is equivalent to a basketball-sized quantity of water passing every second. A single pump operating at 5 cfs for 24 hours moves approximately 10 acre-feet of water per day.
- One acre-foot is about 326,000 gallons of water or the size of a football field with one foot of standing water. Most crops require roughly three acre-feet of water per year for every acre, and one acre-foot can supply nearly three households for an entire year.
- There are 15 temporary pumps currently in the planning and deployment phase in and around the Central Valley.
- Operating these pumps to divert water for the next four months could capture upwards of 55,000 acre-feet in spring runoff, alleviating flood impacts to communities and bolstering the amount of water stored underground.

“In times of emergency, it’s critically important that state and local agencies roll up our sleeves to coordinate and communicate what is needed,” said Paul Gosselin, DWR Deputy Director of Groundwater Management. “Based on feedback from local agencies, DWR acted quickly to secure this needed equipment so agencies could expand their capacity to divert high river flows and increase groundwater recharge.”

The state is maximizing opportunities to capture and divert water from this year’s record snowpack, providing multiple benefits – diverting high flows from rivers that would otherwise drain to the flood-prone Tulare Lake Basin, using recently fallowed or open and

working lands, and pumping and spreading water to recharge historically depleted groundwater basins.

Expediting groundwater recharge is a key water resilience strategy of the Newsom Administration's Water Supply Strategy: Adapting to a Hotter, Drier Future and is helping local agencies bring historically depleted aquifers into balance. The Governor's Executive Orders (EO) N-4-23 and N-6-23 are streamlining flood diversions from these intense storms and spring runoff this year, while upholding habitat and wildlife protections. Many local agencies have been able to use the EO and so far, more than 90,000 acre-feet of waters have been diverted under the EO.

DWR's Temporary Flood Diversion Equipment and Groundwater Recharge program and the actions by the Newsom Administration to support groundwater recharge are providing significant benefits towards protecting communities impacted by possible flooding and mitigating groundwater depletion over the past decades.

These kinds of state-local partnerships are key to developing innovative solutions to the challenges of a changing climate and building resiliency to protect the state's water supplies and communities.



# Cracks, hacks, attacks: California's vulnerable water system faces many threats

Los Angeles Times, 05/08/23

On a February morning in 2021, a water treatment plant operator in Oldsmar, Fla., noticed something unusual: An unidentified user had remotely accessed the plant's computer system and was moving the mouse around the screen.

The operator watched as the intruder clicked into various software programs before landing on a function that controls the amount of sodium hydroxide, or lye, in the plant's water system. The hacker then increased the amount of lye — a potentially dangerous substance used to control acidity — from 100 parts per million to 11,100 parts per million.

The plant operator reversed the change almost immediately, and officials said there was never any threat to public safety. But the incident has highlighted the threats facing major drinking water systems across the country.

"Water systems, like other public utility systems, are part of the nation's critical infrastructure and can be vulnerable targets when someone desires to adversely affect public safety," Sheriff Bob Gualtieri of Pinellas County, Fla., said at the time.

In California, where epic Sierra Nevada snowpack and "the big melt" have substantially increased the stakes for reservoir managers, officials say they're taking steps to protect the state's water systems from hackers, terrorist attacks and natural disasters, such as the flooding that temporarily severed the Los Angeles Aqueduct — the city's water lifeline that connects to the Owens Valley.

But experts say the challenges are numerous. Many of the systems in California and nationwide are still operating with outdated software, poor passwords, aging infrastructure and other weaknesses that could leave them at risk.

"We've seen a steady rise in both the prevalence and the impact of cyberintrusions, as well as an extraordinary increase in ransomware attacks, which have become more destructive and more expensive," said Joe Oregon, chief of cybersecurity for Region 9 of the federal Cybersecurity & Infrastructure Security Agency, or CISA.

Andrew Reddie, an assistant professor of practice in cybersecurity at UC Berkeley's School of Information, said much of the problem is "driven by the fact that the infrastructure is really, really old, and ultimately predates the era that we find ourselves in now, where we actually bake cybersecurity into these ... systems by design."

"You can point to any number of critical infrastructure, including things like dams and water treatment plants, that are not terribly well-protected in terms of passwords," he said.

A lot of older infrastructure is not “air gapped” from the internet, he said, referring to a separation between operational technology and internet technology. That could enable a bad actor to do things such as change chemical levels or open sluices to manipulate flows in water channels or dams.

Compounding the problem is a lack of central regulation or uniform protocols. Multiple agencies — including the Environmental Protection Agency, the National Institute of Standards and Technology, the American Water Works Assn. and the Department of Homeland Security and CISA — provide some degree of risk management oversight, or offer frameworks and recommendations. But many of the day-to-day decisions are left up to individual operators.

“A lot of the responsibility does certainly fall on the stakeholders’ shoulders to manage their own information systems effectively to prevent any type of cyber compromise or cyber incidents,” said Oregon, of CISA.

The agency estimates that about 63% of the nation’s 91,000 dams are privately owned. Federal, state and local governments and utilities own 35%, and the remaining 2% have “undetermined ownership.”

Despite the risks, experts said it’s important for water systems to be networked in order to expedite maintenance and monitoring. In California, reservoirs are often intentionally spread far apart to maximize rainwater capture and other benefits, so sending physical crews to respond to every potential problem would be time-consuming and expensive, said Ethan Schmertzler, chief executive of Dispel, a cyberdefense firm.

“It all depends upon how water systems are connected, and most water systems in the United States are not — it’s not one national water system,” he said. “The good news is each community is divided into their own command and control systems. The downside is, they’re all divided into their own command and control systems.”

Though most standards are not mandatory, cybersecurity recommendations — and spending — have vastly improved in recent years, he said. Recent legislation through the National Defense Authorization Act will soon compel utilities to report cybersecurity threats to CISA, which will help the federal agency better spot trends, share information and render a response.

John Rizzardo, security coordinator with the State Water Project at the California Department of Water Resources, said the agency operates with an ethos of “layers upon layers of security,” for both physical and cyber threats. Because the agency is also an energy provider in the state, “we probably employ more security features than a lot of just the water industry,” he said.

That doesn’t mean it is immune, however. CISA pointed to the Oroville dam crisis of 2017 as an example of the nation’s need for “comprehensive oversight and guidance over dam resilience.” During that incident, hillside erosion on the dam’s emergency spillway threatened a major flood event and prompted the evacuation of about 200,000 people, though disaster was ultimately averted.

Rizzardo said the agency has since shored up the spillway and made significant security upgrades, and is working to implement the same standards across all State Water Project facilities. The Department of Homeland Security runs national security drills for the dam sector every two years, he said, which the agency also participates in.

But even with the best protocols in place, “there’s still going to be a risk of a cyber or physical attack,” Rizzardo said. “It could happen — we’re doing our best to prevent it — but if it does happen, we do practice our emergency action plans regularly so that we’re prepared if there is some kind of attack that we can try to mitigate, to reduce the consequences.”

Indeed, the Oldsmar incident was not a one-off. A few months later, a ransomware attack on the Colonial Pipeline — a vital U.S. oil conduit between the Gulf of Mexico and the East Coast — spurred fuel shortages, flight cancellations and a state of emergency declaration from President Biden.

Earlier this year, Biden unveiled a national strategy for cybersecurity that calls for a “more intentional, more coordinated and more well-resourced approach to cyberdefense.”

Similar attacks have threatened other water systems, including an Iranian attack on a New York dam in 2016, in which hackers tried but failed to take control of a sluice gate.

In January 2021, an unnamed water treatment plant in the San Francisco Bay Area also suffered a cyberattack, NBC News first reported. Hackers accessed the plant’s system through a remote access TeamViewer account and deleted programs used to treat drinking water. The programs were reinstalled the next day and no failures were reported. (The Northern California Regional Intelligence Center, which compiled a report on the incident, said it could not provide more details as an investigation is ongoing.)

One of the largest water providers in the country is the Metropolitan Water District of Southern California, a massive regional wholesaler that supplies 26 agencies serving 19 million people, including the Los Angeles Department of Water and Power.

General manager Adel Hagekhalil said in an email that America’s Water Infrastructure Act of 2018 served as a “catalyst for utilities to evaluate their resilience to risk and create emergency plans for responding to all hazards.”

“We are constantly taking steps to ensure the security of our water supplies against physical and cybersecurity threats,” Hagekhalil said. He noted that community water systems serving more than 3,300 people are required to actively update their risk and resilience assessment and emergency response plans every five years.

Additionally, the MWD employs cybersecurity experts and constantly monitors network and computer activity to “detect unusual events quickly so they can be addressed,” he said. Computer and network access is tightly controlled, and employees are also required to take annual cybersecurity training. The agency also conducts periodic emergency management exercises at different facilities to simulate responses to physical threats

such as earthquakes, floods, fires and terrorist attacks, which include first responders and law enforcement agencies, he said.

But the U.S. is home to more than 55,000 public water systems and 16,000 wastewater systems, said Jennifer Lyn Walker, director of infrastructure cyberdefense at the Water Information Sharing and Analysis Center. One of her primary concerns was that there is often a “lack of awareness” about the potential for cyberthreats and other such vulnerabilities.

“Physical threats are so much more top of mind, or more easily identified or more easily understood than the cyberthreat,” she said. “The concern is a lack of preparedness.”

However, most large systems in California “are doing what needs to be done” when it comes to cybersecurity, she said. Small and medium-size systems, which often have fewer resources than major providers, may need assistance, however, and could benefit from the guidance of larger operators.

“A smaller system that just barely services 5,000 people — that’s still 5,000 people’s lives that could be at risk if something should happen, and that’s from physical or cyber [threats],” she said.

Reddie, of Berkeley, said more auditing would provide a better understanding of which systems are networked, as well as which systems follow best practices. He also recommended educating workforces about proper cyberhygiene.

Even with such steps in place, however, vulnerabilities remain. Ongoing investigations into the Oldsmar incident indicate that it may not have been the work of an outside hacker at all, but might have been caused by an internal employee. Should that prove to be the case, it would highlight that insider threats can also be cause for concern, Reddie said.

“These individual firms need to be thinking about what’s their model for the type of threat actor that they’re likely to see,” he said. “Like, is this going to be a state actor? Is it going to be a disgruntled employee? Is it going to be, you know, a script kiddie in a basement?”