

**BAY AREA WATER SUPPLY AND CONSERVATION AGENCY
BOARD OF DIRECTORS MEETING**

April 8, 2022

Correspondence and media coverage of interest between February 15, 2022 and April 4, 2022

Media Coverage

Water Supply Conditions:

Date: April 2, 2022
Source: California Department of Water Resources
Release: Survey Finds Little Snow as Statewide Snowpack Drops to 38 Percent Following Record Dry Months

Date: April 1, 2022
Source: LA Times
Article: Californians urged to save water as state faces dismal snowpack in Sierra Nevada

Date: April 1, 2022
Source: Pacific Institute
Article: Snowpack Report Underscores Need for Transformative Changes to Address Record-Setting California Drought

Drought:

Date: April 1, 2022
Source: MIT Technology Update
Article: Droughts are cutting into California's hydropower. Here's what that means for clean energy.

Date: March 30, 2022
Source: Mercury News
Editorial: Newsom fails (again) to show drought leadership

Date: March 28, 2022
Source: Sacramento Bee
Article: Newsom broadens drought order – but again stops short of mandatory urban water cutbacks

Date: March 28, 2022
Source: Office of Governor Gavin Newsom
Article: As Western Drought Worsens, Governor Newsom Moves to Bolster Regional Conservation Efforts

Date: March 25, 2022
Source: New York Times
Article: Why Californians Have Been Saving Less Water in 2022

Water Policy:

Date: April 4, 2022
Source: Phys.org
Article: As drought saps water supply, California signs \$2.6 billion ecological pact

Date: April 1, 2022
Source: Los Angeles Times
Article: California says \$2.6-billion pact can protect delta amid drought. Critics disagree

Water Policy, cont'd.:

Date: March 31, 2022
Source: Modesto Bee
Article: Newsom announces 'historic' treaty on river flows. Why MID and TID aren't celebrating

Date: March 29, 2022
Source: Maven Breaking News
Article: State, Federal Agencies Announce Agreement With Local Water Suppliers To Improve The Health Of Rivers and Landscapes

Date: March 29, 2022
Source: CalEPA
Release: State, Federal Agencies and Sacramento River Settlement Contractors Agree on Approach For 2022 Water Operation on the Sacramento River

Date: March 29, 2022
Source: Sacramento Bee
Article: Gov. Newsom outlines a peace agreement on California water. Will the fighting finally end?

Water Supply Management:

Date: April 4, 2022
Source: Public Policy Institute of California
Article: Water Trading Can Help California's Struggling Freshwater Ecosystems

Date: April 3, 2022
Source: Bakersfield.com
Article: Newsom's drought order aims to slow ag well drilling

Date: March 31, 2022
Source: Modern Farmer
Article: California Wants to Pay Farmers to Not Farm This Year

Date: March 30, 2022
Source: Associated Press
Article: California plan would pay farmers to grow less to save water

Water Infrastructure:

Date: March 25, 2022
Source: International Water Association
Article: Bringing reuse water to the mainstream

Climate Change:

Date: March 25, 2022
Source: Discover
Article: Climate Change Is Intensifying the Global Water Cycle

Date: February 15, 2022
Source: San Francisco Chronicle
Article: California slips into its worst mega-drought in 1,200 years - it's partly our fault



CALIFORNIA DEPARTMENT OF WATER RESOURCES

News Releases
April 2, 2022

Contact:
Jason Ince, Information Officer, Public
Affairs, Department of Water Resources
(916) 820-8138 | media@water.ca.gov

Survey Finds Little Snow as Statewide Snowpack Drops to 38 Percent Following Record Dry Months

SACRAMENTO, Calif. – The Department of Water Resources (DWR) today conducted the fourth snow survey of the season at Phillips Station. Following three straight months of record dry conditions, the manual survey recorded just 2.5 inches of snow depth and a snow water equivalent of one inch, which is four percent of average for this location for April 1. Statewide, the snowpack is just 38 percent of average for this date.

The snowpack at Phillips Station has plummeted since the beginning of the year. On December 30, the snowpack stood at 202 percent of normal for that date. In a normal season, the snowpack depth would be about five feet deep at this time of year.



DWR Director Karla Nemeth and CNRA Secretary Wade Crowfoot look on as DWR staff conduct the April 1 snow survey at Philips Station.

The snow water equivalent measured at the snow survey shows the amount of water contained in the snowpack and is a key component of DWR's water supply forecast, including anticipated runoff into the state's reservoirs.

April 1 is typically when the snowpack is at its highest, however the statewide snowpack likely peaked in early-March this year and the Northern Sierra snowpack peaked in mid-January.

"The conditions we are seeing today speak to how severe our drought remains. DWR has been planning for the reality of a third dry year since the start of the water year on October 1," said DWR Director Karla Nemeth. "While DWR has made significant investments in forecasting technology and other tools to ensure we make the most out of the snowmelt we do receive, water conservation will remain our best tool in the face of this ongoing drought and the statewide impacts of a warming climate. All Californians must focus on conserving water now."

Dry conditions are impacting every region of the state, as the Northern, Central, and Southern Sierra snowpacks are all standing just above 28 percent to 43 percent of average for this date.

“With the exceptionally dry conditions during the past three months, our latest statewide snowmelt forecasts are only 44 percent of average,” said Sean de Guzman, Manager of DWR’s Snow Surveys and Water Supply Forecasting Unit. “While today usually marks the typical peak of the state’s snowpack, this year’s snowpack likely peaked in mid-January in the Northern Sierra. Most of the snow accumulation this year came from just two storms in December that were followed by the driest January and February on record in the Sierra, and unfortunately March only brought a few weak systems.”

“Today’s snow survey reinforces what we’ve all observed – California just experienced the driest three months on record, and drought is worsening throughout the West,” California Secretary for Natural Resources Wade Crowfoot said. “Climate-driven water extremes are part of our reality now, and we must all adapt and do our part to save water every day.”

While the state continues to take necessary actions to help extend the state’s existing water supply, all Californians are also encouraged to do their part now to conserve as much water as possible to make it last. Governor Newsom has called on all Californians to voluntarily reduce their water use by 15 percent with simple measures to protect water reserves. Earlier this week, the Governor called on local water suppliers to move to Level 2 of their Water Shortage Contingency Plans, which require locally-appropriate actions that will conserve water across all sectors, and directed the State Water Resources Control Board to consider a ban on the watering of decorative grass at businesses and institutions. Individuals looking for information about reducing water consumption at home can visit SaveOurWater.com for water-wise tips.

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Californians urged to save water as state faces dismal snowpack in Sierra Nevada

LA Times | April 1, 2022 | Ian James



Crossing a dry meadow, Karla Nemeth, director of the state Department of Water Resources, left, and Natural Resources Secretary Wade Crowfoot, second from left, accompany Sean de Guzman, manager of snow surveys, right, as he conducts the fourth snow survey of the season on Friday at Phillips Station near Echo Summit, Calif. (Rich Pedroncelli / Associated Press)

California is going into spring with a minuscule amount of snow in the Sierra Nevada, leaving the state in a third year of extreme drought and with depleted reservoirs to draw on during what's likely to be another hot, parched summer.

The mountain snowpack, as measured by snow sensors across the Sierras, now stands at just 38% of the long-term average.

State officials stood on bare ground at a snow survey site in the mountains on Friday, saying the paltry snowpack reflects the state's accelerating water challenges with climate change.

"We are calling on all Californians to use water wisely, to conserve as much as you can," said Karla Nemeth, director of the state Department of Water Resources.

Snow typically makes up nearly a third of California's water supply and feeds reservoirs across Northern California as it melts in the spring and summer.

The levels of most of California's biggest reservoirs, from Shasta Lake to San Luis Reservoir, measure far below average.

"Climate change is here and it's changing our state. It's changing our region," said Wade Crowfoot, the state's natural resources secretary.

Gov. Gavin Newsom this week issued an order for urban water suppliers to implement more aggressive conservation measures, requiring them to activate "Level 2" of their local drought contingency plans to prepare for shortages.

Water deliveries have also been cut back for many farming areas in the state this year. Nemeth said those cutbacks are expected to lead to more farmland being left dry and unplanted.

Warmer temperatures brought on by climate change have been making droughts more intense in California and across the West. Scientists have found that the extreme dryness since 2000 in the West, from Montana to northern Mexico, now ranks as the driest 22-year period in at least 1,200 years and has been worsened by the heating of the planet.

The past three years have been among California's driest on record.

Last year, the Sierra Nevada snowpack peaked at 72% of average in April but then rapidly melted during the hottest spring on record.

California ended 2021 with major storms that blanketed the Sierra Nevada with above-average snow. But that bounty swiftly dwindled during the driest January through March on record.

State officials spoke at the Phillips Station snow survey site, where they've been measuring the snowpack since 1941. The snow at the site was 2½ inches deep, just 4% of average, said Sean de Guzman, water supply forecasting manager for the Department of Water Resources.

Crowfoot noted that seven years ago, during the last severe drought, Gov. Jerry Brown had stood at the same spot on bare, dry ground. Since then, Crowfoot said, five of the last seven winters have been dry. And warmer temperatures have meant that more of the snow and rain that falls is absorbed into dry soils or evaporates before the water can reach streams and reservoirs.

"The question is, what are we going to do about it?" he said. "We are not bystanders to the climate crisis. We are protagonists."

He pointed out that the Colorado River, which supplies water to parts of California and six other states and Mexico, has also shrunk dramatically during two decades of dryness intensified by unprecedented warmth, and is facing "alarming water conditions" as its reservoirs continue to decline.

While working to reduce carbon pollution, Crowfoot said, the state needs to adjust to the warmer, drier climate.

“Communities across our state need to eliminate water waste, continue to become more efficient with the water that’s used,” Crowfoot said. Echoing an appeal made by Brown during the last drought, he said everyone needs to “make conservation a way of life.”

California’s water management officials use April 1 as a benchmark date for estimating how much water will come from snow because it’s traditionally when the snowpack reaches its peak. But this year, the snowpack in the northern Sierra Nevada peaked around mid-January and has been shrinking.

Reservoir levels statewide are now at less than half their full capacity, about 70% of the long-term average.

Nemeth said that in December, at the same site south of Lake Tahoe, the snow had been 6½ feet deep. On Friday, the surveyors measured the depth of a patch of snow in the dry meadow.

“What we see here today is actually very evocative of 2015, with growing evidence that suggests that perhaps this drought is actually a continuation of that very dry period we experienced several years ago,” Nemeth said. “You need no more evidence than standing here on this very dry landscape to understand some of the challenges we’re facing here in California, and all Californians need to do their part.”

She said the many ways people can conserve at home include watering less outdoors, watering at night or letting lawns go brown.

In July, Newsom called for Californians to voluntarily reduce water use 15%. But statewide water savings in cities and towns through the end of January stood at less than half that goal.

Crowfoot said state officials learned from the last drought that instead of a “a one-size-fits-all solution out of Sacramento,” communities need to take different steps based on their local circumstances. He said the Newsom administration is working with regulators at the State Water Resources Control Board, asking them to “consider requiring each urban water agency to trigger specific actions.”

“We are confident that these specific actions, combined with the work already underway to build awareness of water conservation, will help us navigate through the drought,” Crowfoot said.

Nemeth said she expects that in parts of the state, mandatory water restrictions could be in place by summertime.

Dialing down outdoor watering, which accounts for about half of urban water use, can make a big difference, Nemeth said. She urged residents to take advantage of rebates that local water agencies offer for removing grass or switching to more efficient appliances.

“We need to do more, and we can do more. And there are increasing ways to do that, I think, that are convenient,” Nemeth said.

Some researchers have said the state should adopt mandatory conservation measures and accelerate efforts toward improving water efficiency and invest in projects to recycle wastewater and capture runoff when rains come.

“The snowpack survey confirms the historic severity of the drought and is extremely concerning. It underscores that climate change is water change,” said Amanda Bielawski, director of communications for the Pacific Institute, a think tank in Oakland. She said the situation “should spur water decision makers to push for innovative solutions that put water resilience at the center.”

Among other things, Newsom’s latest drought order directs state regulators to consider a ban on watering “non-functional” grass at businesses and other properties. The order seeks to combat chronic overpumping of groundwater in farming areas, which has left hundreds of homes with dry wells, by prohibiting local governments from granting permits for any new well-drilling that would be “inconsistent” with management plans.

The governor’s order also streamlines permitting for groundwater recharge projects, where stormwater runoff can be captured and percolate into the soil to boost aquifers.

Under California’s landmark 2014 groundwater law, the Sustainable Groundwater Management Act, local agencies in areas where aquifer levels have been dropping are required to implement plans to address their overdraft problems by 2040. Those plans have yet to take effect, and many local agencies have yet to limit groundwater pumping.

The meager snowpack, earlier snowmelt and warm conditions this year are “clear features of the onset of climate change,” said Angel Fernandez-Bou, a water researcher at UC Merced. “With less surface water for irrigation, farmers may need to pump more groundwater, which is being pumped at an unsustainable rate.”

Looking to the future, Fernandez-Bou said, potential solutions include establishing sites to recharge aquifers when water is available in wet years, and preparing to shift some farmlands to other purposes, such as solar farms and wildlife habitat areas.

According to state data, agriculture accounts for nearly 80% of the water that is diverted and pumped for human use in an average year.

California can still have a strong agricultural economy in the future, but it will look different as the state adapts to a more extreme climate, Nemeth said. And the acreage of cultivated farmland is set to shrink, she said, “in response to this real need to better manage our groundwater.”

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Snowpack Report Underscores Need for Transformative Changes to Address Record-Setting California Drought

Pacific Institute | April 1, 2022 | Heather Cooley, Dr. Peter Gleick, and Dr. Amanda Bielawski

Key Takeaways:

- The severe California drought is continuing for a third year, and there will be major consequences for ecosystems, agriculture, and urban and rural water users across California.
- Droughts are becoming more severe and persistent, creating extreme water management challenges for California.
- Emergency short-term measures are necessary but will not be enough. We must also make systemic, transformational changes to build longer-term water resilience.
- Available solutions should be rapidly scaled across the state. We must accelerate efforts to cut wasteful and inefficient water uses, increase investments in water reuse and stormwater capture, and prioritize efforts to provide safe water and sanitation to frontline communities.
- April 1st marks the end of the wet season in California. It's also the day the California Department of Water Resources announces key seasonal snowpack measurements and makes projections of water availability for the rest of the water year.

Today, the news is extremely bad and is a call to action to do much more — and to do some things much differently.

After record-breaking drought conditions in 2020 and 2021, 2022 has been another bleak water year for California. The 2022 snowpack is far below normal — less than 40% of average following a drier than normal winter — for the third year in a row. Major reservoir levels are also far below normal. Shasta is at less than 40% of capacity and less than half of where it should be on April 1st; Oroville, the largest reservoir in the State Water Project, is at less than half of capacity and only two-thirds of where it normally is. These numbers are stark indications that the severe California drought of the past two years will continue for at least another year.

The broader water-climate connection

The fact that climate change is water change has never been clearer. A new study found the last 22 years in the southwestern US have been the driest since the year 800, with human-caused climate change accounting for more than 40% of the current 22-year megadrought.

The water-climate challenges facing California and the US West are similar to those now facing many other regions around the world. As temperatures continue to rise and storm patterns change, we are seeing changes in extremes of both floods and droughts, and unprecedented impacts on natural aquatic ecosystems. We've also learned in the last few years that the computer models our state and federal agencies use to allocate and distribute water do not adequately account for the climate changes we're already seeing on the ground. These changes include the rapid disappearance of even our limited snow and the rising temperatures in our rivers fatal to



Comprehensive conservation and efficiency measures will be required.

endangered and threatened fisheries. These models must be updated immediately.

More action needed to safeguard California's vulnerable water systems

California has made laudable progress in reducing water use during recent years. However, today's snowpack announcement should serve as a loud alarm bell, calling for California to do much more — and to do some things quite differently.

More than 400 of the state's water agencies were ordered earlier this week to implement Level 2 water shortage contingency plans, which vary by agency. But the state has not issued mandatory reductions in water use during this three-year drought as it did during the last drought. While voluntary reductions have helped some, the choice not to implement statewide aggressive conservation and efficiency measures in the hope this year would be wet has left less water in our reservoirs and groundwater aquifers, and for ecosystems than it would otherwise have been.

Given the realities of today's snowpack report and ongoing drought projections, comprehensive conservation and efficiency measures will be required to meet the basic needs of all Californians for safe and reliable water, to maintain even minimal protections for stressed ecosystems and fisheries, and to support key sectors of the economy.

Embracing innovation to build longer-term resilience

Emergency short-term measures are needed but will not be enough. Take shorter showers. Load dishwashers and washing machines full before running them. Let your lawns go brown. But we must also make systemic, transformational changes to our water systems; abandon the 20th century model overly reliant on unsustainable water withdrawals; and transition to a 21st century model using innovation to build long-term resilience. Replace inefficient appliances. Repair leaks. Get rid of non-functional grass and install low-water-using gardens. Invest in water reuse and stormwater capture everywhere.



We must shift our urban water infrastructure to a 21st century system.

The good news is that we know what to do. Many communities across California are already implementing innovative water strategies to support near-term drought relief and long-term improvement in reliability of local water supplies. Without these efforts, our water challenges would be much more severe. Rapidly scaled across the state, these strategies can set California up for a more drought resilient future.

- **Urban Water Systems:** A new Pacific Institute report to be released on April 12th provides updated estimates of the untapped potential to improve urban water-use efficiency and expand urban water reuse and stormwater capture. This potential is large, but requires new actions, investments, and policies. Just as we must decarbonize our old energy system to address climate change, we must shift our urban water system to a 21st century system of high efficiency, comprehensive water reuse and stormwater capture, ecosystem protection, and guaranteed access to safe water and sanitation to all.

- Learn more: Register to attend the April 12 Pacific Institute Briefing “The Untapped Potential of California’s Urban Water Supply” [here](#).
- Rural Water Systems: Governor Newsom’s Executive Order, released earlier this week, provides much-needed protection for those that rely on groundwater, including rural water systems. It requires local authorities to coordinate with Groundwater Sustainability Agencies before permitting new wells to ensure they do not compromise existing wells or infrastructure. We must also accelerate drought preparedness through the development of water shortage contingency plans for small systems. Learn more in this recent Pacific Institute report.
- Agriculture: California agriculture has made progress in improving crop productivity and revenue per unit of water used, but much more must be done. In particular, efforts to bring unsustainable groundwater overdraft back into balance, as required by the Sustainable Groundwater Management Act (SGMA), must be accelerated. Continued improvements in irrigation efficiency, soil moisture monitoring and management, and cropping patterns must also be accelerated.

Today’s snowpack report and drought projections must spur us all, from our state agencies to our water utilities to individuals, to take new and innovative actions. As we take steps to address drought and build more resilient water systems, we must do so in a way that prioritizes actions that ensure equitable access to clean, affordable, and reliable water supplies for all.

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More resources

To learn more about drought in California, visit californiadrought.org. This Pacific Institute website compiles information and resources on drought to help understand, plan for, and implement sustainable solutions. Further information about drought, climate change, and resilience-based solutions is available in a range of Pacific Institute reports.

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Droughts are cutting into California's hydropower. Here's what that means for clean energy.

Greenhouse-gas emissions increase when natural gas replaces hydropower during water shortages.

MIT Technology Update | April 1, 2022 | Casey Crownhart



An aerial view of the Oroville Main Spillway and the Lake Oroville Emergency Spillway in Butte County, California. Lake Oroville reached record lows in 2021, shutting down its hydroelectric plant for the first time in history. ANDREW INNERARITY/ CALIFORNIA DEPARTMENT OF WATER RESOURCES

The droughts that swept across the western US in 2021 sparked wildfires and damaged crops. But the historic lack of water also had an impact on one of California's key sources of renewable energy: hydropower.

Electricity generation from California hydropower plants was down 48% from the 10-year average, according to new data from the Energy Information Agency. And 2022 is looking even worse.

Hydropower is the world's leading source of renewable energy, making up about 17% of electricity generation in 2020, but droughts in various regions are making it harder to rely on. As a low-carbon source of power, it's essential in limiting emissions of carbon dioxide, especially because when a hydropower plant goes down, fossil fuels are usually used to make up the shortfall.

Hydropower plants made up about 19% of electricity generation in California in 2019. Most are located in the northern part of the state, where reservoirs are fed by melting snowpack from the mountains. But droughts over the last two years have caused reservoirs to dry up. The second-largest one in the state, Lake Oroville, saw water levels drop so low in 2021 that the hydropower plant there was shut down for the first time in its history.

The lost power can't easily be replaced with renewable sources that fluctuate during the day, like wind and solar. When California's hydropower capacity dropped from 2019 to 2020, much of the difference was replaced by natural-gas generation and electricity imports from other states, according to data from the California Energy Commission.

Hydropower often comes under fire for its environmental impact, because dams disrupt ecosystems. In fact, California currently doesn't count large hydropower plants in its renewable-power targets. But regardless of how it's categorized, hydropower is a lower-emissions alternative to fossil fuels.

During high-stress times on the grid, the reduced reliability of hydropower is already causing problems, says Brian Tarroja, an energy researcher at the University of California, Irvine.

Last year, the Bootleg fire in neighboring Oregon affected several transmission lines in California at a time when soaring temperatures had increased electricity demand. Running hydropower plants at their drought-reduced capacity while ramping up natural-gas plants was barely enough to keep the power on.

These difficulties are likely to continue, Tarroja says. Climate change is altering rainfall patterns and causing higher temperatures, even if overall precipitation stays constant. The effects are likely to challenge hydropower in the coming decades.

Places with high levels of hydropower may need to start planning for the effects of climate change on power generation. That's not just California: droughts in Brazil and China have also threatened hydropower capacity in recent years.

There will be some natural variation from year to year, but reprieve isn't likely to come soon. Compared with last year, reservoir levels right now are "considerably worse," said Aleecia Gutierrez, deputy director of the California Energy Commission's Energy Assessments Division, in an email.

Other renewable energy sources could eventually provide more reliable power to the grid, bolstered by technologies like grid-scale battery installations. But for now, losses in hydropower will likely mean more electricity generation from fossil fuels, and more emissions.

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Editorial: Newsom fails (again) to show drought leadership

Decision not to impose mandatory restrictions threatens California's water supply

Mercury News | March 30, 2022 | Editorial Boards



In this Feb. 26 photo, Stevens Creek Reservoir shows the impact of the drought conditions on California. The latest report shows 93% of the state is in "severe drought." (Shae Hammond/Bay Area News Group)

As California's devastating drought worsens, Gov. Gavin Newsom's leadership has run dry.

The U.S. Drought Monitor reports that 93% of the state is in a severe drought. Levels at California's major reservoirs have dropped to frightening levels. As of Monday, the state's largest reservoir, Shasta, was only 38% full. The next largest, Oroville, was 47% full.

Yet, with no signs that this historic drought is relenting, Newsom on Monday again refused to impose mandatory water restrictions on urban users.

Instead, our spineless governor ordered the state's 420 water agencies, which serve 90% of California residents, to tighten their water conservation rules, allowing each provider to set its own plan.

No statewide water reduction goal. No set of simple rules for Californians to follow. No equal sacrifice for the benefit of all. No leadership from the top.

Talk about passing the buck. Now the responsibility for setting water-use rules falls largely to the water districts, which are disincentivized to crack down on consumption because that would cost them millions of dollars in lost revenue. Their only alternative is increasing user rates to offset the shortfall.

And the burden of communicating what restrictions Californians must follow now falls to those individual water districts, which don't have the governor's bully pulpit. Prepare for a confusing jumble of rules and rates as each district is forced to go it alone.

But, in an election year, the governor can now claim that he's not to blame for any of the pain from conservation or higher water rates. What a copout.

Contrast Newsom's leadership to that shown by Gov. Jerry Brown. In April 2015, following three years of drought in which Californians failed to meet voluntary conservation targets, Brown issued an order requiring 25% mandatory urban water use reductions with targets and fines for agencies that failed to comply.

"The historic drought demands unprecedented action," Brown said. Brown's restrictions worked. During the 11 months the rules were in effect, Californians cut their water use by 24.5%. And then a series of major storms ended the drought in 2017.

It was real leadership, something Newsom could have shown weeks ago when a historically dry January followed the big storms of October and December.

Instead, while the state runs dry, Newsom has fiddled. He imposed some rules in January that included restrictions on washing cars with hoses lacking shut-off nozzles, outdoor watering that results in excessive runoff into the street and sidewalks, and using water for landscaping and irrigation 48 hours after measurable rainfall. But in that same month, Californians responded by increasing their water use 2.6% compared with January 2020, according to the State Water Resources Control Board.

California is in no position to gamble that this fall will bring heavy rain and snow to the state. Mandatory restrictions are needed before the state's reservoirs run dry. Sadly, the governor isn't prepared to meet the moment.

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Newsom broadens drought order – but again stops short of mandatory urban water cutbacks

Sacramento Bee | March 28, 2022 | Dale Kasler

Gov. Gavin Newsom, acknowledging the severity of the drought, ordered California cities and other local water agencies Monday to reduce their water usage and tighten their conservation rules.

Newsom, however, continued to resist mandatory statewide cutbacks in urban water use, just as he did last year during the recall campaign. Instead, he ordered urban water agencies to implement the second stage of their water shortage contingency plans — protocols that are to take effect when water shortages approach 20%.

While those rules vary from one jurisdiction to the next, they usually include restrictions on outdoor watering, customer rebates for installing efficient plumbing fixtures and stepped-up public-relations efforts and “water waste” patrols.

As it is, the city of Sacramento and many other agencies in the Sacramento area, for instance, already have restrictions on the number of days a homeowner can water their lawn.

City residents can already be fined as much as \$1,000 for repeat violations. Under stage 2, fines can be doubled and watering of parks and cemeteries will be reduced. The city will also increase water patrols and leak inspections.

Newsom administration officials defended the decision not to impose a statewide mandate. “Each of those own districts have their own plan, we’re not telling them what to do,” Jared Blumenfeld, secretary of the state Environmental Protection Agency, told reporters.

While Newsom’s predecessor ordered statewide cutbacks, Blumenfeld said it’s clear that “it’s really important to listen to locals One size fits all doesn’t work in California.”

It remains to be seen how effective Newsom’s latest move will be. Last year he urged Californians to voluntarily reduce water use by 15% — a plea that has largely been ignored. Last September, for instance, consumption fell by just 4%. In January the conservation rate was just under 6%.

“Today I am calling on local water agencies to implement more aggressive water conservation measures,” Newsom said in a prepared statement.

Newsom’s directive came, ironically, as rain and snow fell across much of Northern California. But the precipitation was expected to be moderate — and surely wouldn’t be enough to prevent a third straight year of drought.

On average, water levels are 31% below normal for late March in California’s major reservoirs, according to the Department of Water Resources. Shasta Lake, the largest reservoir in the state, is just half as full as it should be. The Sierra Nevada snowpack — so bountiful after record snowfall in December — has largely evaporated and sits 61% below normal for this time of year.

Newsom’s predecessor Jerry Brown imposed a 25% mandatory cut in urban use during the drought in 2015. The move had some Californians putting buckets in their showers and tearing up their landscaping. Outdoor use for lawns and ornamental landscaping accounts for most urban water use in the state.

While some conservative communities protested Brown's orders, most local governments offered rebates for turf removal and other incentives to encourage water reductions. Many levied fines on water wasters, triggering a wave of people tattling on their neighbors for hosing down sidewalks or letting their sprinklers run into the gutters.

The cutbacks were loosened as conditions improved the following year and then lifted altogether when record precipitation led Brown to declare an official end to the drought in 2017.

Newsom also told the State Water Resources Control Board to consider banning irrigation of "non-functional" grass, including decorative grass next to large commercial and industrial buildings. The ban wouldn't extend to parks, ball fields and school grounds. The Department of Water Resources said this ban would save several hundred thousand acre-feet. An acre-foot is 326,000 gallons.

The governor also said he was cutting red tape so drought-stricken communities in the Central Valley and elsewhere can quickly get bottled water or other emergency supplies. He also said he would expedite state agency approvals needed "to protect fish and wildlife where drought actions threaten their health and survival."

The reductions in urban use come as farmers, who use more water than California's cities do, also are facing substantial cutbacks.

According to the Public Policy Institute of California, about 9 million acres of farmland in California are irrigated, representing about 80 percent of the water used by people.

The Central Valley Project has announced a zero allocation for most of its customers, which include many of the largest farm-irrigation districts in the state.

CALIFORNIA WARNS AGAINST PULLING WATER FROM RIVERS

Last week, state water regulators also sent warning letters to approximately 20,000 water right holders — farmers and cities with historical legal claims to river water. The letter says they should expect to stop pulling water in the coming weeks — and even earlier than last year.

Separately, the Newsom administration announced it would be cutting water deliveries from the State Water Project, the elaborate network of reservoirs and canals that distributes water all over California.

The SWP's largest customer is the Metropolitan Water District of Southern California, which serves 19 million urban residents, including those in Los Angeles and San Diego.

The project, after a promising start to winter, had originally declared that allocations would hit 15%. Now Metropolitan and other agencies can expect only 5% allocations this year from the state project.

Taken together, the moves reflect not only California's abysmal drought conditions and fears of communities running out of water, but also the governments' efforts to try to keep more water in the rivers to protect species of cold-water fish that scientists have been warning for years are perilously close to extinction.

Californians shouldn't expect new dams or water storage projects to come online any time soon either.

In 2014, during California's last drought, voters approved Proposition 1, a \$7.1 billion water bond whose backers promised would be used to build "new facilities we need to store, deliver and treat water."

Eight years later, none of the major water storage projects being funded by Proposition 1 are completed.

They're all still in the pre-construction phase: reviewing environmental impacts, designing dams and nailing down financing to pay for the costs the state won't handle.

Of the seven big water storage projects receiving Proposition 1 funding, the earliest that anything will be completed is late 2024, when a groundwater-banking project south of Sacramento is scheduled to begin operations.

The largest project, Sites Reservoir, a storage facility north of Sacramento that would hold more water than Folsom Lake, is likely years away from becoming reality. However, the federal Environmental Protection Agency recently signaled that the project could be eligible for a \$2.2 billion government loan, a development that could jump-start construction.

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As Western Drought Worsens, Governor Newsom Moves to Bolster Regional Conservation Efforts

Office of Governor Gavin Newsom | March 28, 2022

Executive order calls on local water suppliers to activate drought contingency plans

Governor orders Water Board to consider ban on watering of decorative grass around commercial, industrial and institutional buildings

SACRAMENTO – Following the driest first three months of a year in the state’s recorded history, Governor Gavin Newsom today took steps to drive water conservation at the local level, calling on local water suppliers to move to Level 2 of their Water Shortage Contingency Plans, which require locally-appropriate actions that will conserve water across all sectors, and directing the State Water Resources Control Board to consider a ban on the watering of decorative grass at businesses and institutions.

In an executive order signed today, the Governor ordered the State Water Resources Control Board (SWRCB) to evaluate the adoption of regulations banning irrigation of “non-functional” turf (or grass), such as decorative grass adjacent to large industrial and commercial buildings. The ban would not include residential lawns or grass used for recreation, such as school fields, sports fields and parks. The Department of Water Resources estimates this ban alone will result in potential water savings of several hundred thousand acre-feet. An acre-foot of water serves the needs of approximately three households for a year.

“While we have made historic investments to protect our communities, economy and ecosystems from the worsening drought across the West, it is clear we need to do more,” said Governor Newsom. “Today, I am calling on local water agencies to implement more aggressive water conservation measures, including having the Water Board evaluate a ban on watering ornamental grass on commercial properties, which will drive water use savings at this critical time. Amid climate-driven extremes in weather, we must all continue to do our part and make water conservation a way of life.”

[A copy of the executive order can be found here.](#)

As the drought persists into a third year and conditions worsen amidst dry, hot weather, today’s order called on the SWRCB to consider requiring urban water suppliers to activate, at a minimum, Level 2 of their customized Water Shortage Contingency Plans. These plans, required by state law, are developed by local water agencies to navigate drought and each plan is customized based on an agency’s unique infrastructure and management. Triggering Level 2 of these plans involves implementing water conservation actions to prepare for a water shortage level of up to 20 percent. For example, in many communities, this would mean reducing the number of days that residents can water outdoors, among other measures.

To further conserve water and strengthen drought resiliency in this critically dry year, the Governor is encouraging suppliers, where appropriate, to consider going above and beyond the Level 2 of their water shortage contingency plans, activating more ambitious measures. The Governor has also ordered state agencies to submit funding proposals to support the state’s

short- and long-term drought response, including emergency assistance to communities and households facing drought-related water shortages, facilitating groundwater recharge and wastewater recycling, improvements in water use efficiency, protecting fish and wildlife, and minimizing drought-related economic disruption.

Today's executive order includes several other provisions that will protect all water users:

- **Ensuring Vulnerable Communities Have Drinking Water**
 - Cuts red tape so communities that need access to emergency hauled or bottled water can get it immediately
- **Safeguarding Groundwater Supplies**
 - Requires local permitting authorities to coordinate with Groundwater Sustainability Agencies to ensure new proposed wells do not compromise existing wells or infrastructure, as 85 percent of public water systems rely heavily on groundwater during drought
 - Streamlines permitting for groundwater recharge projects that help to refill aquifers when rains come
- **Protecting Vulnerable Fish And Wildlife**
 - Expedites state agency approvals for necessary actions to protect fish and wildlife where drought conditions threaten their health and survival
- **Preventing Illegal Water Diversions**
 - Directs the Water Board to expand site inspections in order to determine whether illegal diversions are occurring

The Governor's California Comeback Plan invests \$5.2 billion over three years to support the immediate drought response and build water resilience, including funding to secure and expand water supplies; bolster drought contingency planning and multi-benefit land repurposing projects; support drinking water and wastewater infrastructure, with a focus on small and disadvantaged communities; advance Sustainable Groundwater Management Act implementation to improve water supply security and quality; and support wildlife and habitat restoration efforts, among other nature-based solutions.

Earlier this month, Governor Newsom advanced an additional \$22.5 million to bolster the state's drought response. Of this funding, \$8.25 million will be used to increase educational and outreach efforts, including through the Save Our Water campaign, which is providing Californians with water-saving tips via social media and other digital advertising. The Governor's California Blueprint proposal includes \$750 million in additional drought funding, \$250 million of which was set aside as a drought reserve to be allocated in the spring, based on conditions and need.

More information on the state's response to the drought and informational resources available to the public are available at <https://drought.ca.gov/>.

###

Why Californians Have Been Saving Less Water in 2022

After meeting Gov. Gavin Newsom's drought conservation target in December, Californians fell far short in January.

New York Times | March 25, 2022 | Soumya Karlamangla



Lawn watering in Sacramento. Credit...Max Whittaker for The New York Times

The latest figures on California's water conservation are in, and they're pretty dismal.

Despite calls to reduce consumption during our punishing drought, Californians used 2.6 percent more water in January compared with the same month in 2020, according to state data. The figures for February and March are unlikely to be much better.

These disappointing numbers represent a marked change from late 2021. In December, Californians reduced residential water usage by more than 15 percent, exceeding Gov. Gavin Newsom's conservation target. October and November saw significant savings as well.

So why the backslide?

Well, California is in the midst of a brutal drought that has depleted our reservoirs and snowpacks. Newsom has asked people and businesses to voluntarily cut how much water they use by 15 percent.

You might think that means taking shorter showers or turning off the faucet while brushing your teeth. Those strategies don't hurt, but a far more efficient one is to water our yards less.

As much as 80 percent of residential water usage goes to the outdoors in California. Our dry climate requires far more water to keep lawns alive than, say, on the East Coast, where it rains in the summer.

So, when California was slammed with an atmospheric storm in late October and another in December, Californians' water savings jumped — because people turned off their sprinklers.

But then we entered 2022. January and February, typically the heart of our rainy season, were the driest two-month start to the year in California history, state officials say.

Accordingly, Californians needed more water for their yards. The state instated \$500 fines in January for people who water their lawns after rainfall or allow runoff into the street, but they didn't significantly curb usage.

In warmer, more inland parts of the state, water usage increased by nearly 30 percent in January compared with the same month in 2020. That brought the state's cumulative savings since July, when Newsom called for the 15 percent reduction, to a mere 6.4 percent.

"We've suffered quite the climate and weather whiplash here," Joaquin Esquivel, chair of the State Water Resources Control Board, said during a recent meeting in which the data was released. "Outdoor irrigation is such a huge component of water use that it really reflects here some real challenges we're going to have given these dry conditions."

Given these dire straits, state officials announced last week that California's urban water users and farmers will get just 5 percent of what they've requested from state water supplies.

That's down from the 15 percent allocation state officials announced earlier in the year, after our wet December had fueled hopes of an improving drought.

#

As drought saps water supply, California signs \$2.6 billion ecological pact

Phys.org | April 4, 2022 | Ian James

It's a major source of California's water supply and a vital habitat for fish, migratory birds and other species.

But the Sacramento-San Joaquin River Delta watershed is also a fragile ecosystem in decline, with human demands for water taking a harsh toll on the environment.

With a third year of severe drought straining water resources and pushing endangered salmon and other fish closer to extinction, California officials have announced a controversial \$2.6 billion deal with the federal government and major water suppliers that they say will bolster the ecosystem.

The new pact, called a memorandum of understanding, reflects a realization that with climate change, "the system is collapsing quicker than the laws and regulations that exist can manage or heal that system," said Jared Blumenfeld, California's environmental protection secretary.

The proposed agreement lays out plans over the next eight years whereby agencies that supply cities and farms would give up water or secure additional supplies to help threatened species, while state, federal and local agencies would fund projects to improve habitat in the watershed.

State officials called the deal an important milestone in their efforts to balance the delta's ecological needs with the water needs of Californians, and a key step toward larger "voluntary agreements" that can help ensure substantial flows for the health of the estuary.

Gov. Gavin Newsom declared the plan a historic rejection of "old binaries" in favor of new solutions, while Blumenfeld said it would "move us away from 'water wars' of yesteryear."

Those claims drew strong criticism, however.

Immediately after the plan's announcement this week, environmental advocates and salmon conservationists condemned it as a set of backroom deals negotiated out of the public eye that wouldn't provide nearly enough water for threatened fish or the overall health of the watershed.

"Nothing has been achieved through backroom negotiations with water districts," said Jon Rosenfield, senior scientist with the group San Francisco Baykeeper. "The state's latest scheme promises only a tiny fraction of the relief our rivers, fisheries and delta communities need, according to a wealth of research—and it leaves all the hard questions unanswered."

The San Francisco Bay Delta is the largest estuary on the West Coast. Formed by the convergence of California's two largest rivers, the Sacramento-San Joaquin Delta lies at the heart of the state's water system.

Two huge government-run pumping plants draw water from the delta's southern edge and send it flowing through the canals of the State Water Project and the Central Valley Project, supplying vast farmlands and cities to the south.

The delta's ecosystem has been ailing for decades, and the export of large quantities of freshwater has been a major reason. Climate change has added to the stresses on the ecosystem by intensifying droughts.

Fish have suffered. The delta smelt is now on the brink of extinction. And endangered winter-run Chinook salmon have struggled to reproduce in the Sacramento River when the water flowing from Shasta Dam has warmed up so much that many eggs fail to hatch.

State officials said the agreement aims to meet water-quality objectives in the Delta through additional flows for the environment, projects that restore and improve thousands of acres of aquatic habitat, and funding to purchase water and carry out habitat projects. They said these projects would include creating more spawning habitat for salmon and smelt, restoring floodplains and side channels, and removing barriers that hinder fish, among other things.

Wade Crowfoot, California's natural resources secretary, said the steps toward voluntary agreements among water agencies "hold promise to improve environmental conditions more quickly and holistically than regulatory requirements."

But the plan still needs to be endorsed by the State Water Resources Control Board, which is required to update its water-quality plan for the delta. Heavy criticism of the announcement also suggests Newsom and his administration will face opposition as they continue pushing for voluntary water deals.

The agreement's signatories included more than a dozen water agencies, among them the Metropolitan Water District of Southern California and Westlands Water District, some of the nation's largest water suppliers. Water agencies have agreed to provide varying flows, depending on whether conditions are wet, above average, below average, dry or critically dry.

Amounts of water contributed annually by the signatories could range between 150,000 acre-feet to 825,000 acre-feet. The largest amount of water, if spread out across the city of Los Angeles, would cover the area more than 2 feet deep.

Baykeeper's Rosenfield pointed out that would be much less than the average of approximately 1.5 million to 1.6 million acre-feet that the state water board had contemplated in a 2018 document, and far less than what the board had indicated would be needed to protect imperiled fish in the delta watershed as well as the state's commercial and recreational fisheries.

Rosenfield and other critics noted that the agreement uses a water baseline laid down in 2019 by the Trump administration, so much of the additional water made available under the proposal

would simply restore the flows that had been called for under federal biological opinions a decade earlier.

Rosenfield also criticized provisions of the deal that involve purchasing water for environmental purposes, essentially using taxpayer money to "subsidize" the water districts' obligations.

"We don't need to pay water districts for water that belongs to the people of California," Rosenfield said.

However, state officials stressed that the agreement would send a significant amount of water flowing through the delta that otherwise wouldn't be helping the ecosystem. And they said the collaborative approach, worked out through years of meetings and negotiations, can avoid protracted fights.

"You can get a lot more done at a bigger scale when you're trying to do it collaboratively, because you step around what tends to be decades' worth of litigation, when people don't want to voluntarily talk about leaving water in the rivers," said Chuck Bonham, director of the California Department of Fish and Wildlife.

"Instead of fighting about what to do, we now have a commitment for one of the largest habitat restoration efforts conceivable," Bonham said.

He said large-scale habitat restoration efforts in the watershed can make a big difference in recovering fish and other species that are at risk.

The state's traditional approach has been to adopt regulations and then deal with lawsuits, and the proposed agreement aims to circumvent that approach to reduce uncertainty, said Jeffrey Mount, a senior fellow with the Public Policy Institute of California.

"For the water user community, it meets one of their great needs, and that is regulatory certainty," Mount said. "It's so that there is not an annual, difficult regulatory battle."

Mount said he supports the approach generally and has been calling for something like this for years as a more effective strategy.

"But it would have been better if they could have actually brought in the environmental community and had them as part of these negotiations," Mount said.

What will ultimately come out of the plan is uncertain, he said, because some agencies haven't signed on to the terms and the deal will need to undergo a lengthy review.

The plan laid out in the agreement calls for environmental monitoring, and if key indicators aren't met through the voluntary agreement by the sixth year, Blumenfeld said, the state could

change course and instead work toward those goals through regulation. State regulators could determine if the voluntary agreements should be continued, modified or ended.

"So there's a backstop," Blumenfeld said. "There's a lot at stake to make it work. But if it doesn't, we get to implement the more traditional regulatory pathway."

Water districts that do not agree to the voluntary approach will be required to comply with requirements set by the state water board. The agencies that haven't signed on include those that draw water from the lower San Joaquin River and its tributaries, among them the Merced Irrigation District, Modesto Irrigation District, Friant Water Authority and San Francisco Public Utilities Commission.

State officials have told managers of these agencies that their proposals fall short of what's needed, and that the door is open for them to participate if they agree to enough additional water and support for habitat projects.

Mount said the state may be taking a "divide and conquer strategy," but it most certainly won't end the conflicts.

"The water wars will continue because we're talking about tradeoffs in use in a zero-sum game," Mount said.

The water agencies that have joined the deal have committed to restoring or creating 20,000 acres of floodplain habitat, and nearly 3,300 acres of additional habitat where fish can spawn.

A breakdown of the implementation costs under the agreement lists \$858 million for habitat restoration and construction in the watershed, plus additional amounts for scientific monitoring, water purchases and payments for some growers to leave farmlands dry and fallow.

Managers of water districts that signed the agreement this week have committed to taking the terms to their boards for endorsement.

Adel Hagekhalil, general manager of the Metropolitan Water District, said the agreement represents a milestone first step in a joint effort to develop a watershed-wide approach to address the challenges in the delta.

"We need to work collaboratively with all of our state, federal, environmental and water agency partners to ensure we have a comprehensive action plan that improves water reliability and delivers real results for the environment," Hagekhalil said in a statement.

The Newsom administration is pushing for the voluntary deals while also pursuing a controversial plan for rerouting the state's water system by building a huge water tunnel beneath the delta.

Environmental advocates said they're concerned about the estimated \$2.6 billion that would be spent on implementation, with funds coming from water suppliers and the state and federal governments. They also said that there is no enforcement mechanism if the expected funding doesn't come through, and that the document outlining the deal counts water supplies that have yet to be secured.

"Of course, we support floodplain restoration," said Regina Chichizola, executive director of the group Save California Salmon. But she said research has shown that the health of the delta ecosystem demands much more water than this agreement would provide.

"This to me doesn't seem like it's dealing with drought or climate change or what the actual needs of [the] delta are. So I'm disappointed," Chichizola said.

She said it's also concerning that instead of having an open, democratic process guided by science, "it's just the most elite water users" that were in the room to negotiate.

John McManus, president of the Golden State Salmon Assn., said that nobody from the salmon fishing industry was invited to participate in the talks.

"I think many in California will wonder why taxpayers have to pay to gain basic environmental protections for our fish and wildlife," McManus said. "Don't we already have regulations that should ensure the protection of our fish and wildlife?"

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California says \$2.6-billion pact can protect delta amid drought. Critics disagree

Los Angeles Times | April 1, 2022 | Ian James



The Sacramento-San Joaquin River Delta near the town of Rio Vista.(Luis Sinco / Los Angeles Times)

It's a major source of California's water supply and a vital habitat for fish, migratory birds and other species.

But the Sacramento-San Joaquin River Delta watershed is also a fragile ecosystem in decline, with human demands for water taking a harsh toll on the environment.

With a third year of severe drought straining water resources and pushing endangered salmon and other fish closer to extinction, California officials have announced a controversial \$2.6-billion deal with the federal government and major water suppliers that they say will bolster the ecosystem.

The new pact, called a memorandum of understanding, reflects a realization that with climate change, "the system is collapsing quicker than the laws and regulations that exist can manage or heal that system," said Jared Blumenfeld, California's environmental protection secretary.

The proposed agreement lays out plans over the next eight years whereby agencies that supply cities and farms would give up water or secure additional supplies to help threatened species, while state, federal and local agencies would fund projects to improve habitat in the watershed.

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Gov. Gavin Newsom declared the plan a historic rejection of "old binaries" in favor of new solutions, while Blumenfeld said it would "move us away from 'water wars' of yesteryear."

Those claims drew strong criticism, however.

Immediately after the plan's announcement on Tuesday, environmental advocates and salmon conservationists condemned it as a set of backroom deals negotiated out of the public eye that wouldn't provide nearly enough water for threatened fish or the overall health of the watershed.

"Nothing has been achieved through backroom negotiations with water districts," said Jon Rosenfield, senior scientist with the group San Francisco Baykeeper. "The state's latest scheme promises only a tiny fraction of the relief our rivers, fisheries and delta communities need, according to a wealth of research — and it leaves all the hard questions unanswered."

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The delta's ecosystem has been ailing for decades, and the export of large quantities of freshwater has been a major reason. Climate change has added to the stresses on the ecosystem by intensifying droughts.

Fish have suffered. The delta smelt is now on the brink of extinction. And endangered winter-run Chinook salmon have struggled to reproduce in the Sacramento River when the water flowing from Shasta Dam has warmed up so much that many eggs fail to hatch.

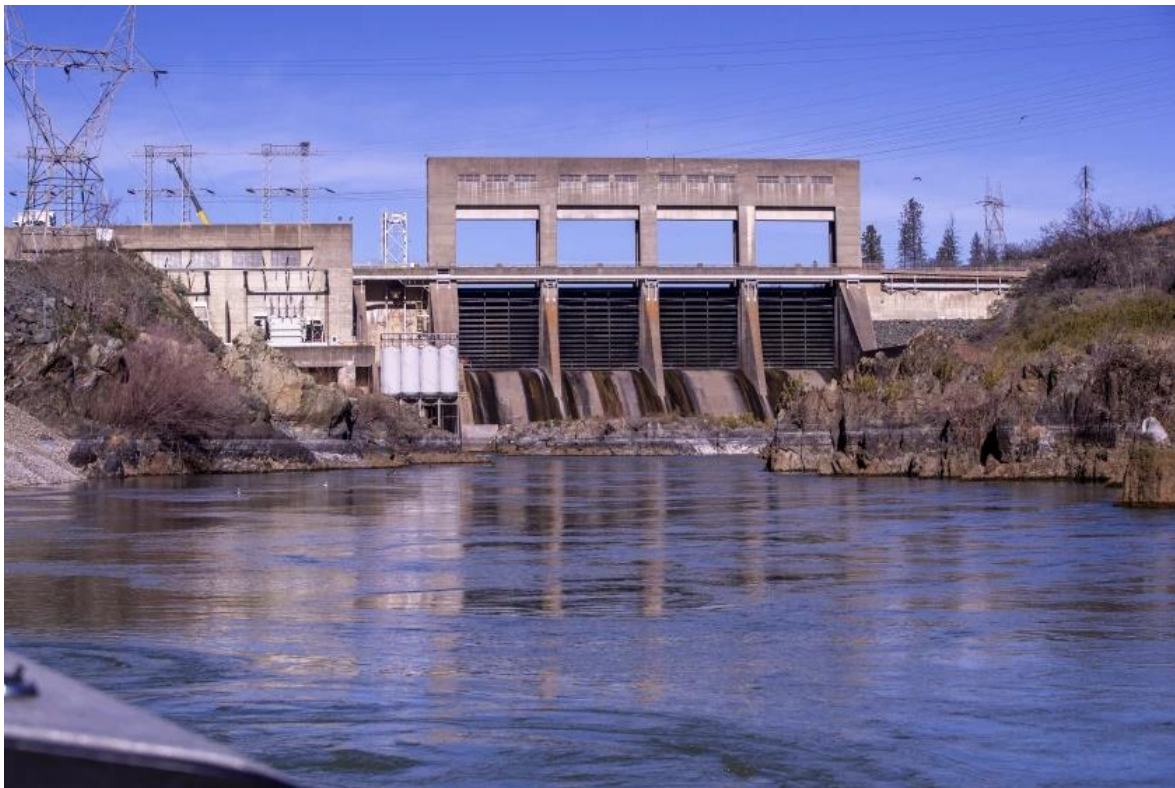
State officials said the agreement aims to meet water-quality objectives in the Delta through additional flows for the environment, projects that restore and improve thousands of acres of aquatic habitat, and funding to purchase water and carry out habitat projects. They said these projects would include creating more spawning habitat for salmon and smelt, restoring floodplains and side channels, and removing barriers that hinder fish, among other things.

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A dam looms over a river. Keswick Dam blocks salmon from swimming upstream in the Sacramento River near Redding.(Allen J. Schaben / Los Angeles Times)

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#

Newsom announces ‘historic’ treaty on river flows. Why MID and TID aren’t celebrating

Modesto Bee | March 31, 2022 | John Holland

Gov. Gavin Newsom announced a “historic” agreement on Central Valley river flows Tuesday, but key irrigation districts in Stanislaus County were not parties to it.

The agreement spells out \$2.6 billion in spending over eight years on efforts to protect salmon and other fish. Cities and irrigation districts would sacrifice some of their supplies in the Sacramento and San Joaquin rivers and their tributaries.

“I am thankful to our partners on this historic agreement and look forward to continued collaboration as we adapt for the future,” Newsom said in a news release.

The Modesto and Turlock irrigation districts, which divert the Tuolumne River, said in a joint email that they were not involved in the negotiations. And they said they would not have consented to the pact in any case because it would take too much water from current uses.

“Despite the harrowing challenges of a third year of drought, an additional 186,688 acre-feet would have been released from the Tuolumne River over the last two years if the (agreement) was in place, accounting for a 71% increase over current regulatory conditions,” the districts said.

MID and TID have pushed for several years for a Tuolumne agreement that would modestly increase releases from Don Pedro Reservoir for lower-river fish. They said Tuesday that they remain open to discussions with the state. The districts propose nonflow measures for fish, such as restoring spawning gravel.

The Oakdale Irrigation District has done the same on the Stanislaus River. General Manager Steve Knell said by email that he was not aware of the Valleywide negotiations until very recently.

Part of the Tuolumne goes to a San Francisco-owned system serving much of the Bay Area. That city’s Public Utilities Commission remains in talks with the state, spokesman John Coté said.

LESS WATER FOR RICE AND L.A.

The 34-page memorandum of understanding includes the agencies supplying water for Sacramento Valley’s rice farmers, the city of Sacramento and its suburbs, most of urban Southern California and the Westlands Water District, the largest farm-water agency in the San Joaquin Valley.

“We actually have a critical mass of players — water users, federal agencies, state agencies — that are going to move forward,” said Wade Crowfoot, Newsom’s natural resources secretary. “We’re not waiting any longer.”

Last fall, the administration sent a warning to MID, TID and other holdouts: Without their cooperation, the State Water Resources Control Board would go ahead with a plan that would seize considerably more of their water than what’s called for in the voluntary agreement.

“We anticipate that,” said Jared Blumenfeld, secretary of environmental protection. “It’s really important that we have a regime to make them provide (river) flows, because otherwise, if we

didn't, it would put an undue burden, an unfair burden on the folks signing the (voluntary agreements)."

'FAR LESS THAN HALF OF WHAT'S NEEDED'

Environmentalists have been objecting to the voluntary program for years, saying Newsom's compromise doesn't go nearly far enough to protect the fish. Instead, they've been calling on the state board to simply order farms and cities to leave more water in the rivers.

The added water for the environment "is far less than half of what's needed," said Doug Obegi, a lawyer with the Natural Resources Defense Council. He scoffed at the idea that the voluntary plan would solve California's litigious water climate, saying, "How do you bring peace to a process when you exclude from the room" environmentalists and other key players?

The document that state officials unveiled Tuesday isn't a legally binding settlement, but officials said it spells out the parameters of an enforceable plan.

Under the plan, farmers and cities would leave up to 824,000 acre-feet of additional water in the rivers that flow into the Sacramento-San Joaquin Delta during certain months of the year.

The state and federal governments would pay for the bulk of the plan, though local water agencies would contribute more than \$660 million. The funds will go to restore nearly 30,000 acres of habitat. Some of the funds will reimburse Sacramento Valley rice farmers to leave their fields unplanted so more water stays in the Sacramento River.

State officials said the proposal won't be implemented for at least two years as it winds its way through the regulatory process. But they insist it's still faster than if the water board had unilaterally acted on its own. That inevitably would have triggered an avalanche of lawsuits requiring close to a decade to resolve.

ALMOST ALL WETLANDS ARE GONE

The dams that ring the Valley cut migratory fish off from their spawning grounds, more than 90% of the state's wetlands have been plowed or paved over, and at various times of year more than half of the river flow is diverted for human uses.

Chuck Bonham, the director of the Department of Fish and Wildlife, said Tuesday the settlement proposal is the best way to save what little habitat is left.

"We need to have done this stuff a decade ago," he said. "California has more imperiled species than any other state in the union. I don't want to fight about this stuff anymore. It's going burn out the clock."

#

THIS JUST IN ... STATE, FEDERAL AGENCIES ANNOUNCE AGREEMENT WITH LOCAL WATER SUPPLIERS TO IMPROVE THE HEALTH OF RIVERS AND LANDSCAPES

MOU a Key Step in Years-Long Effort to Help Recover Salmon While Protecting Water Reliability

Maven Breaking News | March 29, 2022 | California Natural Resources Agency

State, federal and local water leaders announced broad agreement today on measures to provide additional water flows and new habitat to help improve conditions in the Sacramento-San Joaquin River Delta watershed.

The [memorandum of understanding](#) (MOU) signed today outlines terms for a transformational eight-year program that would provide substantial new flows for the environment to help recover salmon and other native fish, create new and restored habitat for fish and wildlife, and provide significant funding for environmental improvements and water purchases. It also outlines a governance and habitat monitoring framework with clear metrics and goals to allow state, federal and local partners to analyze progress, manage adaptively and decide whether the program should be continued, modified or ended after eight years.

“Since my first days in office, I have sought to reject old binaries and find new solutions to problems – we don’t have to choose between healthy ecosystems or a healthy economy, we can choose a path that provides for both,” Governor Gavin Newsom said. “This is a meaningful, hard-earned step in the right direction. I am thankful to our partners on this historic agreement and look forward to continued collaboration as we adapt for the future.”

The state has been actively working with local water agencies since 2016 to develop enforceable agreements to provide additional river flows and new habitat to help change the trajectory of declining native fish species. Following the release of a framework document in February 2020, state agencies have continued to work with local water agencies to refine elements of agreements that would enable adaptive, holistic management and deliver environmental improvements more quickly than a regulatory proceeding that would likely be contentious.

“Today’s MOU is an important milestone, but there is much work ahead,” California Secretary for Natural Resources Wade Crowfoot said. “We’re committed to advancing these critical agreements because they hold promise to improve environmental conditions more quickly and holistically than regulatory requirements, while providing more certainty to communities, farms and businesses. The severity of this drought shows us how quickly we need to move and how much we can get done with a mutual commitment to increase flows, accelerate habitat restoration, and learn together what works best so that we can do more of it.”

“Extreme weather caused by climate change is wreaking havoc with California’s water supplies. By adaptively managing this complex system, the Voluntary Agreements speed up the delivery of additional water and critical habitat,” California Secretary for Environmental Protection Jared Blumenfeld said. “This agreement will move us away from ‘water wars’ of yesteryear, ushering in a new era of collaboration in the battle to fight climate change.”

“Today marks a key milestone in California water – a step that symbolizes the importance of working together to address the challenges that come with a changing climate,” said Reclamation Regional Director Ernest Conant. “Reclamation welcomes this partnership opportunity to move towards a more comprehensive approach to improving the health of the environment and water supply reliability for the cities, farms, and refuges we serve.”

The State Water Resources Control Board is required to update its Bay-Delta Water Quality Control Plan to protect native fish, wildlife and other “beneficial uses” of water, including municipal, domestic and agricultural water supplies.

The MOU signed today seeks to meet those objectives through an integrated program that includes habitat creation, new flows for the environment above existing regulatory requirements, funding for environmental improvements and water purchases, and a new, collaborative science program for monitoring and adaptive management.

Habitat creation would range from targeted improvements in tributaries to large landscape-level restoration in the Sacramento Valley. Improvements include creation of spawning and rearing habitat for salmon and smelt, completion of high-priority fish screen projects, restoration and reactivation of flood plains, projects to address predation, and fish passage improvements.

“Today’s action is a major step in significantly improving how we manage our water supplies to support our environment and all Californians,” said Jennifer Pierre, general manager of the State Water Contractors. “Our only path forward is together and the VAs create an appropriately sourced governance approach that will allow resource agencies, public water agencies and conservation groups to work together to better balance the environmental and economic needs of our State. We look forward to working with our partners and state leaders to move the VAs forward to achieve reliable water supplies for Californians and our ecosystems.”

“The program advanced today represents a fundamental change in how state agencies, federal agencies, public water agencies, and other interested groups approach efforts to protect the environment and provide water for cities, industries, and farms,” said Thomas Birmingham, general manager of Westlands Water District. “This program will take a comprehensive approach to restoring healthy rivers and ecosystems, improving the viability of native fish populations, and providing water supply reliability to communities and farms in nearly every region of the state. This is vitally important to California agriculture, which provides more than two-thirds of the nation’s fruits and nuts and more than one-third of the nation’s vegetables.”

“This is a critical milestone in our joint effort to develop a balanced and holistic watershed-wide approach to address the environmental and water reliability challenges we face in the Sacramento-San Joaquin Delta,” Metropolitan General Manager Adel Hagekhalil said. “But this is just the first step. We need to work collaboratively with all of our state, federal, environmental and water agency partners to ensure we have a comprehensive action plan that improves water reliability and delivers real results for the environment.”

“We look forward to the new collaborative governance and trust building that will occur through decision-making processes in the agreement, and appreciate the framework to balance

beneficial water needs for fish, farms, communities and the environment,” said Thad Bettner, general manager of Glenn-Colusa Irrigation District.

Local water agency managers signing the MOU have committed to bring the terms of the MOU to their boards of directors for their endorsement and to work to settle litigation over endangered species protections in the Delta.

Signatories to the agreement also committed to finalize the following elements:

- Up to 824,000 acre-feet of additional flow to and through the Delta in the ecologically important window of January through June. Target flow volumes vary depending upon how wet or dry a year is, and flows made available under the agreement will be above current regulatory conditions.
- 20,000 acres of additional floodplain habitat
- 20,000 acres of rice cropland inundated in ways to improve generation of microscopic plants and animals that provide fish food
- Over 5,000 acres of additional tidal wetlands and associated floodplain
- Nearly 3,300 acres of additional spawning, and instream and floodplain juvenile rearing habitat
- A new state multi-disciplinary restoration unit to accelerate permitting and implementation of habitat projects
- Annual reports informing adaptive management and describing status and trend of native fish populations and whether commitments by voluntary agreement parties are being met
- Triennial reports and public workshops in years three and six of the agreement to analyze progress
- A “red,” “yellow,” or “green” decision by state water quality regulators in year eight to determine if the voluntary agreements are achieving ecological objectives and should be continued, modified, or ended.

Water agencies in the Bay-Delta watershed that do not sign onto the approach outlined in the MOU would need to comply with regulatory requirements established by the State Water Board.

Implementation of the agreements outlined in the MOU is estimated to cost \$2.6 billion, to be shared by water users and the state and federal governments. Water agencies will self-assess fees to support implementation of the voluntary agreements. Water users and the state will make flows available through a combination of reduced diversions, year-by-year purchases of water, long-term or permanent purchase of water, and voluntary fallowing of agricultural or pasture lands.

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Media Contact:

Erin Curtis, CalEPA Deputy Secretary for Communications and External Affairs
916-634-8428 | erin.curtis@calepa.ca.gov

State, Federal Agencies and Sacramento River Settlement Contractors Agree on Approach for 2022 Water Operations on the Sacramento River

SACRAMENTO, Calif. — Federal and state agencies along with Sacramento River Settlement Contractors (SRSCs) agreed this week on an approach to addressing Central Valley Project operations on the Sacramento River this year (mid-April through November). As a result of extreme weather brought on by climate change, California is experiencing one of the driest years within the driest decade on record. The Sacramento River watershed has been especially impacted with the current storage in Lake Shasta at 1.7 million acre-feet, compared with the average 3.5 million acre-feet for this time of year. The unprecedented conditions will result in significant environmental impacts to native fish, birds, and other wildlife, along with critically low water supply to agriculture, resulting in substantial fallowing of crop lands in the Sacramento Valley.

In order to respond to the dire circumstances and ensure the system can continue to serve multiple beneficial purposes that include water for cities and rural communities, farms, and fish and wildlife and their habitats in the Sacramento Valley, the agencies and SRSCs developed an approach to a proposed temperature management plan to be submitted by the Bureau of Reclamation to the State Water Resources Control Board for approval. This approach seeks to maintain winter-run Chinook salmon habitat for the longest period possible and creates a target for an average water release schedule of 4,500 cubic feet per second from Keswick Dam below Lake Shasta and a target for Wilkins Slough on the Sacramento River of more than 3,000 cubic feet per second. Given this, Shasta would have a projected end of September storage greater than a million acre-feet.

The agencies and SRSCs will coordinate weekly to adaptively manage the available water supplies, knowing dry years are challenging and unforeseen circumstances may arise this summer. As a part of this collaboration, the group will identify approaches to mitigating impacts to drought-related economic disruption and fish and wildlife impacts. In addition to the near-term actions, the agencies will continue to work together to support healthy rivers, farms and landscapes in the Sacramento Valley.

Agencies involved in this effort include the U.S. Bureau of Reclamation, which supplies the SRSC with water from the federal Central Valley Project, the California Environmental Protection Agency, the California Department of Water Resources, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the California Department of Fish and Wildlife.

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Gov. Newsom outlines a peace agreement on California water. Will the fighting finally end?

Sacramento Bee | March 29, 2022 | Ryan Sabalow and Dale Kasler

Gov. Gavin Newsom's administration unveiled a \$2.6 billion environmental peace treaty on the Central Valley's overtaxed rivers Tuesday. The deal calls for farms and cities to surrender billions of gallons of water while contributing funds to help restore troubled fish habitats.

Newsom's top aides called the 34-page memorandum of understanding a compromise measure that will leave more water in the rivers — but not as much as many environmentalists believe is needed to prop up ailing populations of salmon, steelhead and other fish. And some key water users, such as the city of San Francisco, haven't yet signed onto the plan.

"We don't have to choose between healthy ecosystems or a healthy economy," Newsom said in a written statement. "We can choose a path that provides for both. This is a meaningful, hard-earned step in the right direction."

This latest attempt to create a grand bargain among competing factions in California's water world comes as the state faces a third straight year of drought. Many farmers have already been told to expect minimal water supplies this year, and on Monday Newsom ordered urban water agencies to step up their conservation efforts.

In a separate move Tuesday that underscores the severity of the drought, federal and state officials outlined a plan for releasing minimal amounts of water this year from Shasta Lake — the state's largest reservoir that's supposed to feed the Sacramento River with enough cold water to keep endangered winter-run Chinook salmon alive. Less than 3% of the population survived last year, when water releases from Shasta were more generous.

"The system is in incredibly bad shape," said Jared Blumenfeld, secretary of the state Environmental Protection Agency. "No pretense here that this is a decision that will produce great outcomes."

Against that dismal backdrop, state officials say a peace plan on the rivers is essential.

"We have to end these water wars," Blumenfeld said.

The so-called voluntary agreement released Tuesday is signed by some of California's biggest water users that pull water from the Central Valley's rivers. They include the agencies supplying water for Sacramento Valley's rice farmers, the city of Sacramento and its suburbs, most of urban Southern California and Westlands Water District, the largest farm-water agency in the San Joaquin Valley.

"We actually have a critical mass of players — water users, federal agencies, state agencies — that are going to move forward," said Wade Crowfoot, Newsom's Natural Resources Secretary. "We're not waiting any longer."

KEY WATER USERS HAVEN'T SIGNED ON

That said, several key players that pull water from the San Joaquin River and its tributaries are notably absent from the list of signatories released Tuesday. They include the city of San Francisco and water districts serving Turlock and Modesto and their surrounding farms. These

water users have long objected to giving up water under Newsom's compromise plan, which originated in the final months of the governorship of his predecessor, Jerry Brown.

Last fall, Newsom's administration sent these holdouts a warning: Without their cooperation, the State Water Resources Control Board would go ahead with a plan that would seize considerably more of their water than what's called for in the voluntary agreement.

On Tuesday, top administration officials repeated that warning, saying the state water board would crack down on groups that refuse to leave more water in the rivers for fish.

"We anticipate that," Blumenfeld said. "It's really important that we have a regime to make them provide (river) flows, because otherwise, if we didn't, it would put an undue burden, an unfair burden on the folks signing the (voluntary agreements)."

He added that the terms outlined in the proposal "are not seen as negotiable."

Two of the holdout agencies, the Modesto and Turlock irrigation districts, said they were disappointed that state officials left them out of the negotiations that produced Tuesday's agreement. Despite Blumenfeld's statement, they declared themselves open to negotiating.

"We will keep pursuing every avenue to reach an agreement that benefits all — the Tuolumne River, our communities and our customers," they said in a joint statement.

The San Francisco Public Utilities Commission remains in talks with the state, said spokesman John Coté.

Environmentalists have been objecting to the voluntary program for years, saying Newsom's compromise doesn't go nearly far enough to protect the fish. Instead, they've been calling on the state water board to simply order farms and cities to leave more water in the state's rivers.

The added water for the environment "is far less than half of what's needed," said Doug Obegi, a lawyer with the Natural Resources Defense Council. He scoffed at the idea that the voluntary plan would solve California's litigious water climate, saying, "How do you bring peace to a process when you exclude from the room" environmentalists and other key players?

The document that state officials unveiled Tuesday isn't a legally binding settlement, but officials said it spells out the parameters of an enforceable plan.

Tuesday's document details how the \$2.6 billion would be spent and how much water would be left in the rivers that flow into the Sacramento-San Joaquin Delta, California's massive and environmentally troubled estuary south of Sacramento that serves as the hub of the state's water delivery network.

Under the plan, farmers and cities would leave up to 824,000 acre-feet of additional water in the rivers that flow into the Delta during certain months of the year. For comparison, Folsom Lake east of Sacramento holds 976,000 acre-feet when it's full. An acre-foot is 326,000 gallons.

The state and federal governments would pay for the bulk of the plan, although farm-irrigation districts and local water agencies would contribute more than \$660 million. The funds will go to restore nearly 30,000 acres of habitat. Some of the funds will reimburse Sacramento Valley rice farmers to leave their fields unplanted so more water stays in the Sacramento River.

SOME SACRAMENTO VALLEY RICE FIELDS WILL GO IDLE

The plan would lead to 35,000 acres of Sacramento Valley rice fields being left fallow, said Karla Nemeth, the director of the Department of Water Resources. That's about 6% of the Sacramento Valley's 550,000 acres of rice.

Thad Bettner, general manager of Glenn-Colusa Irrigation District, which delivers water to one of the state's largest rice-farming areas, said the plan balances "beneficial water needs for fish, farms, communities and the environment." He is among those who signed the memorandum.

State officials said the proposal won't be implemented for at least another two years as it winds its way through the regulatory process. But they insist it's still faster than what would happen if the water board had unilaterally acted on its own, a move that would inevitably trigger an avalanche of lawsuits that would take close to a decade to resolve in court.

The talks come at a critical time for the state's drought-plagued ecosystems, which Californians have dramatically altered for water storage and flood control.

The dams that ring the Central Valley cut migratory fish off from their spawning grounds, more than 90 percent of the state's wetlands have been plowed or paved over, and at various times of year more than half of the Central Valley rivers' flow is diverted for human uses. In dry years, so much water is pulled from the Tuolumne River, which supplies San Francisco, that only 11 percent of its flows make it to the Pacific Ocean.

Independent scientists warn that the critically endangered Delta smelt is perilously close to extinction, and other native fish species such as salmon and steelhead aren't far behind.

Chuck Bonham, the director of the Department of Fish and Wildlife, said Tuesday the settlement proposal is the best way to save what little habitat is left.

"We need to have done this stuff a decade ago," Bonham said. "California has more imperiled species than any other state in the union. I don't want to fight about this stuff anymore. It's going burn out the clock."

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Water Trading Can Help California's Struggling Freshwater Ecosystems

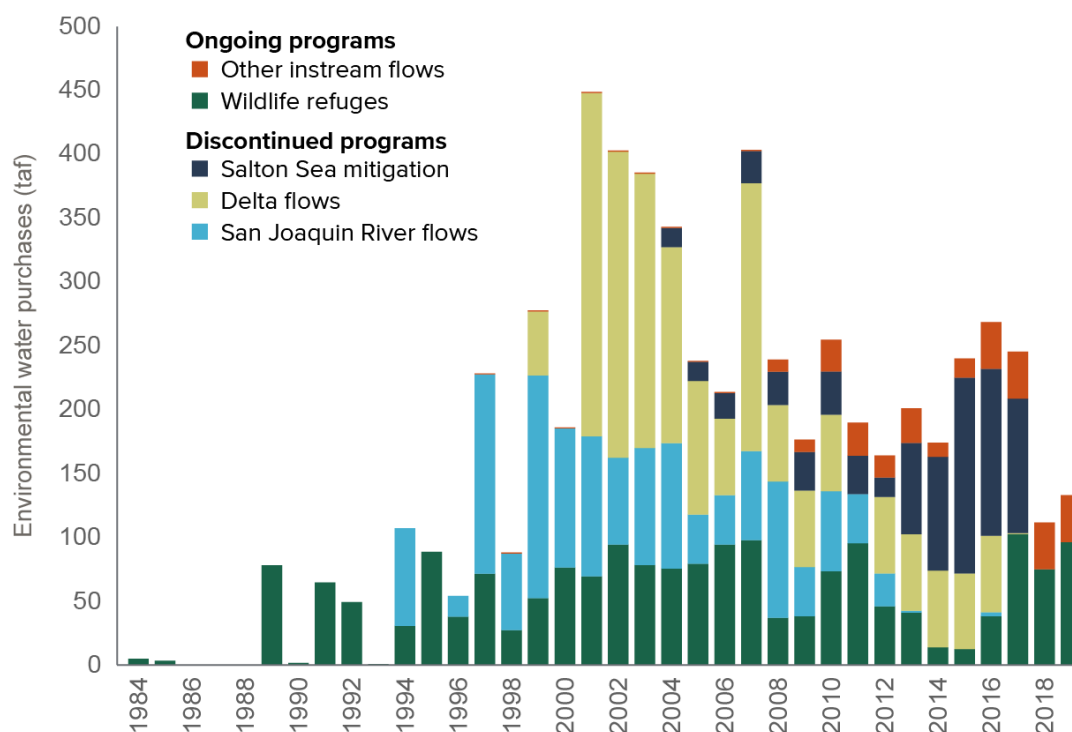
Public Policy Institute of California | April 4, 2022 | Ellen Hanak and Gokce Sencan

Adding more water to rivers, wetlands, and streams at key times can support California's struggling native fishes and birds. Regulation is one way to do this, by requiring water users to leave a certain amount of water instream. A complementary approach is water trading. Paying water users to make water available can enhance the environment while reducing conflict over the allocation of scarce supplies. Despite trading's promise, however, there are questions about the path forward.

What Do Environmental Water Purchases Buy—and Who Pays?

Purchasing water to improve ecosystems (e-water) started in the 1980s, and gained significant momentum in the 1990s (Figure 1). From 1984–2019, some 6 million acre-feet (maf) of e-water were acquired, about a quarter of all purchases on California's water market. In today's dollars, almost \$775 million went to this effort, with nearly half from state and federal taxes, and the remainder from surcharges on water use. But e-water purchases peaked in the 2000s, and by 2019 they were lower than any time since the late 1990s.

Figure 1: Annually traded environmental water volume over the years



SOURCE: Sencan and Hanak, *California's Water Market, By the Numbers: Update 2021* (PPIC, 2021).

NOTES: Taf is thousand acre-feet. See text for a description of the different programs.

FROM: PPIC Blog, April 2022.

The decline reflects the expiration of several large programs (and the associated funding):

- San Joaquin River flows (23% of all e-water purchases) ended in the early 2010s and was funded by water users, through the Central Valley Project Improvement Act (CVPIA) restoration fund.
- Delta flows (29% of purchases), known as the Environmental Water Account, acquired water for endangered salmon and smelt in the Delta watershed and expired in 2016. State and federal taxpayers provided funding.
- Salton Sea mitigation (13% of purchases) offset salinity increases in the Salton Sea caused by Imperial County farmers' water transfers to coastal urban cities. Funded by the trading parties, it expired in 2017 when the state took over responsibility for mitigation.

Relaunching these e-water purchases could support important goals. A newly-announced cooperative agreement for the Delta watershed proposes transfers to improve conditions for fishes. And though not currently on the table, transfers could help protect habitat and public health in the Imperial Valley.

The two ongoing e-water purchase programs are quite distinct in size and scope:

Wildlife refuges (30% of purchases) boosts supplies to Central Valley wildlife refuges—a key resource on the Pacific Flyway. After some initial state support, the CVPIA restoration fund has been the main funder.

Other instream flows (5% of purchases) permanently dedicates water rights to the environment with permits from the State Water Board under Section 1707 of the Water Code. Projects are small and local; philanthropic organizations and NGOs typically raise the funds.

A New Model for Enhancing E-Water?

Most past state funding for e-water came from water bonds, and it mainly went toward short-term (single-year) purchases. Designers of Proposition 1, a bond approved in 2014, tried something new by earmarking \$200 million for a Stream Flow Enhancement Program (SFEP) at the Wildlife Conservation Board (WCB).

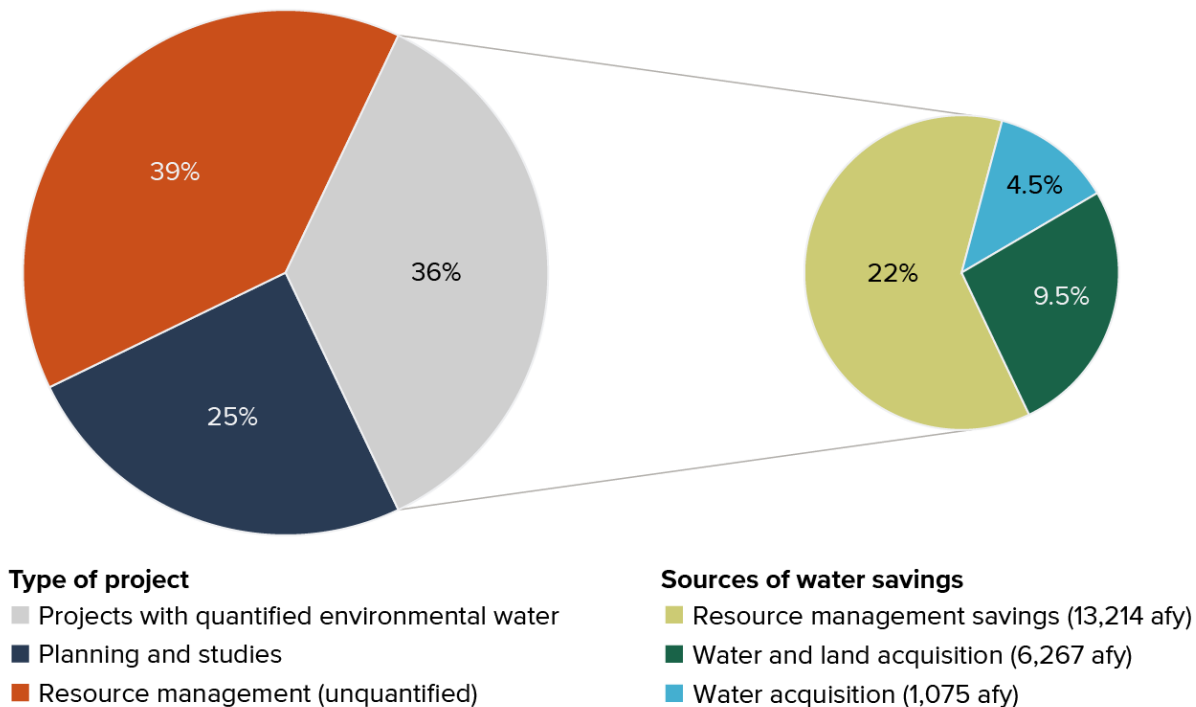
In spirit, the SFEP is in line with the broad-based instream flow approach (the orange bars in Figure 1); applicants seek grants to directly enhance flows, or to plan and study opportunities. The program focuses on long-term (20 years minimum) or permanent improvements.

With 128 projects and nearly \$135 million awarded to date, the data reveal some surprises (Figure 2). First, acquisition of e-water—either on its own, or in conjunction with land—makes up a relatively small share of awards (14% of funds). Instead, the lion's share (61%) supports resource management projects that enhance flows in other ways—such as storage that shifts flow timing, and urban conservation and restoration efforts that will save water (e.g., clearing arundo—a thirsty, invasive riparian plant). The remainder (25%) goes to planning and studies.

Figure 2: Projects funded under the Stream Flow Enhancement Program (SFEP)

SFEP-funded projects (\$134.3 million)

Quantified environmental water



SOURCE: California Department of Water Resources (DWR), California Wildlife Conservation Board (WCB), *PPIC Stream Flow Enhancement Program Analysis*.

NOTES: The pie charts show shares of WCB funding awarded to date by project category. The water volumes are estimated annual contribution to stream flows. Afy is acre-feet per year. For details, see *Dataset: PPIC Stream Flow Enhancement Program Analysis* (see link below).

FROM: PPIC Blog, April 2022.

Stakeholders told us that the pivot towards more flexible resource management solutions reflects challenges with outright e-water acquisitions under the SFEP. First, the Section 1707 permitting process to acquire an instream water right can be both costly and cumbersome—especially for small transfers. Second, many potential water sellers are just beginning to explore e-water transfers and aren't ready for permanent sales. Permanent transfers are generally rare in California's water market, so e-water marketing is no different.

Water savings from some efforts (e.g., arundo clearing) are hard to quantify. Where it could quantify savings, the WCB estimates that e-water enhancements, once completed, will total roughly 21,000 af per year (Figure 2). Since these projects last for at least 20 years, they come at a similar unit cost to the e-water purchases described above (Figure 1)—averaging \$115–\$130 per acre-foot per year.

Looking Ahead

Water acquisitions can help struggling ecosystems, and sustained funding from both water users and the state is key. Compared to past state funding for e-water, the SFEP represents a significant—and growing—opportunity: it received \$100 million from the General Fund last September, and another \$150 million is proposed this year. But the program should facilitate more acquisitions, because options for growing the water pie through resource management actions are often limited. Several changes could help, including flexibility to allow shorter-term purchases and a streamlined 1707 permitting process. Finally, to scale up impact, it will be important to encourage larger projects—and coordinated projects within watersheds. The legislature and the two key state agencies—the Wildlife Conservation Board and State Water Board—should lead this work.

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To see the full dataset on SFEP Proposition 1 funding, PPIC Stream Flow Enhancement Program Analysis, please [click here](#).

Newsom's drought order aims to slow ag well drilling

Bakersfield.com | April 3, 2022 | Jesse Vad



Water gushes into a standpipe from an agricultural well in Kings County in this 2021 photo. New ag wells will be more difficult to drill under Gov. Gavin Newsom's recent drought emergency order. Lois Henry / for SJV Water.

New wells for agriculture will be more difficult to drill in the San Joaquin Valley under Gov. Gavin Newsom's recent executive order in response to the ongoing drought.

Part of the order prohibits new wells from being drilled without approval from local groundwater sustainability agencies (GSA) first. The GSAs must determine that new wells or changes to existing wells won't hurt their groundwater sustainability goals, damage infrastructure or cause ground subsidence.

"It's a historic move that we're really proud to see happening," said Kyle Jones, policy and legal director for nonprofit Community Water Center.

Most emergency drought actions from governors in the past have focused on urban water conservation, said Jones.

Before this executive order, wells were permitted by county staff. Most counties only required some paperwork and easily approved wells, said Jones.

There is a “critical gap” in the way it’s been done at the county level, said Uriel Saldivar, senior policy advocate for Community Water Center at a press briefing on water in the San Joaquin Valley.

“They don’t take a look at consideration for drinking water impacts,” said Saldivar.

The executive order is meant to change that and accompanies the Sustainable Groundwater Management Act (SGMA), the state law that aims to bring aquifers back into balance by 2040, meaning generally that more water isn’t pumped out than goes back in.

Farmers have pumped water out of the ground in the valley without limits for generations. In drought years, they rely more heavily on groundwater. That has caused groundwater levels to plummet in recent years causing a range of problems such as sinking ground, dry domestic and community wells, contaminated drinking water and damaged infrastructure.

The new permitting process applies to all groundwater subbasins classified as medium or high priority. That includes the entire San Joaquin Valley.

There are about 2 million wells in California and anywhere from 7,000 to 15,000 new wells built every year, according to the state Department of Water Resources. Tens of thousands of residents in the valley rely on domestic wells for water. And 87 percent of the valley’s population is served by 50 water utilities that mostly pump groundwater.

Many GSA staff members don’t know exactly how the new permitting process will work yet.

“We were, I think all taken by surprise on this,” said Eric Osterling, general manager of the Greater Kaweah GSA in Tulare and Kings counties. “We have a lot of things that are burning on a short fuse and having to pivot in order to address one more thing is difficult, so it is concerning.”

Osterling said the new process may require new onboarding, software and staff training and could also bring new legal risks to the GSA. GSA staff is planning to meet with county staff to hammer out the details of how the process will work.

This all comes as valley GSAs are in the process of changes to their groundwater plan, most of which were deemed incomplete by the state Department of Water Resources back in January. That designation started the clock ticking, giving GSA staff six months, or until July, to make changes and resubmit plans for a second look.

Greater Kaweah GSA is also in the middle of a 90-day public comment period on its plan's rules and regulations. Staff is preparing to implement groundwater pumping limitations, said Osterling.

He said he and his staff haven't discussed the logistics of adhering to the well portion of the drought executive order with the governor's office.

He said Kaweah's sustainability objectives have never focused on the number of wells but rather how much wells are pumping and where.

While the executive order is temporary and lasts only as long as the drought, Assembly Bill 220 introduced by Assemblyman Steve Bennett, D-Ventura, seeks to make the permitting process permanent. The bill is set for its first hearing on April 26.

It isn't clear how the new process will be enforced on the ground. But advocates say once the process is ironed out, it will help to reach sustainability.

"This will certainly be helpful. We're not seeing a slowdown in well drilling," said Jones. "This is sending the signal that we're not going to let folks continue to just shift to groundwater use in a way that's really going to prevent SGMA from being implemented."

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Jesse Vad reports for SJV Water, a nonprofit, independent online news publication dedicated to covering water issues in the San Joaquin Valley. Lois Henry, SJV Water's CEO and editor, can be reached at lois.henry@sjvwater.org. The website is sjvwater.org.

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California Wants to Pay Farmers to Not Farm This Year

Modern Farmer | March 31, 2022 | Shea Swenson

The state is taking extreme measures to conserve water.



A sign in Sebastopol, California. Photography by Pocket Canyon Photography, Shutterstock.

This year, California farmers have been given a financial incentive to not plant crops.

Much of the state is already experiencing extreme drought conditions. As part of a \$2.9-billion plan to try to keep water flowing in California rivers, the state will pay farms to keep thousands of acres vacant this growing season.

Both state and federal officials, as well as some major water companies in the region, signed the plan on Tuesday. Their hope is to keep upwards of 824,000 acre-feet of water every year in the Sacramento-San Joaquin River Delta. The Capital Press explains that one acre-foot of water adds up to around 325,000 gallons of water—or typically enough to supply water to two households for a year.

The most impacted sector will be the rice industry, as the plan would leave 35,000 acres of rice fields in the northern Central Valley—adding up to about six percent of the yearly crop—unused.

California produces virtually all of domestically grown sushi rice, and the Central Valley is responsible for a quarter of the nation's crops. The region is the second-most-pumped aquifer system in the US, with 20 percent of America's groundwater supplied from pumping Central Valley aquifers.

The new initiative keeps wildlife in mind, as officials are looking to restore 28,300 acres of additional habitat for animals and help revitalize populations of creatures such as salmon.

So where is the money coming from?

The plan was privately negotiated between Governor Gavin Newsom's administration and water companies, the latter of which agreed for the first time to tax themselves to help fund the plan. The remainder of the money will come from both the state and federal government.

While Newsom told the Capital Press that the move was "a meaningful, hard-earned step in the right direction," not everyone shares that opinion.

With the entirety of California in some level of drought and nearly 94 percent classified as suffering "severe drought" conditions, critics of the new plan say that the goal of saving 325,000 gallons of water is not enough. The water amount accounts for only about half of what state regulators said would be needed to fully protect the environment in a 2018 statement.

One critic of the deal, Doug Obegi, a senior attorney for the Natural Resources Defense Council, called the plan a "backroom deal," noting that the decision was made without allowing Indigenous communities, fishing groups or environmentalists to chime in, according to Bloomberg News.

Despite getting the signatures, including those from major water companies such as Metropolitan Water District of Southern California—which provides drinking water to 19 million people—and Westlands Water District—the largest agricultural water district in the country—the plan still needs to run through a regulatory review process before it is official.

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California plan would pay farmers to grow less to save water

California would pay farmers not to plant thousands of acres of land as part of a \$2.9 billion plan to let more water flow in the the state's rivers

Associated Press | March 30, 2022 | Adam Beam

SACRAMENTO — California would pay farmers not to plant thousands of acres as part of a \$2.9 billion plan announced Tuesday aimed at letting more water flow through the state's major rivers and streams to help restore the unique habitat in one of North America's largest estuaries.

The agreement, signed Tuesday between state and federal officials and some of California's biggest water agencies, would result in about 35,000 acres of rice fields left unused — or about 6% of the state's normal crop each year, according to the California Rice Commission.

The result, combined with other measures, would be up to an extra 824,000 acre-feet of water each year flowing through the Sacramento-San Joaquin River Delta. One acre-foot of water is more than 325,000 gallons, which is usually enough to supply two average households for one year.

The money will come from the state and federal governments and the water agencies themselves, which for the first time have agreed to tax themselves to help pay farmers — who often have more senior water rights — not to plant some crops.

“We don’t have to choose between healthy ecosystems or a healthy economy, we can choose a path that provides for both,” Gov. Gavin Newsom said. “This is a meaningful, hard-earned step in the right direction.”

Some environmental groups disagreed. The extra water announced Tuesday would be about half of what state regulators in 2018 said was needed to fully protect the environment, according to Doug Obegi, a senior attorney for the Natural Resources Defense Council.

In addition, the agreement was negotiated privately between the Newsom administration and some of the state's biggest water agencies. Environmental groups, Native American tribes and other communities were left out.



A rice field near Williams, Calif., is prepared for planting. A new state agreement would idle 35,000 acres of rice fields in an effort to save water.

"It's a fundamentally illegitimate and exclusionary process, and it's not surprising that the results are bad for fish and wildlife. The old adage, 'If you are not at the table, you are on the menu,' comes to mind," Obegi said.

Most of California's water comes from rain and snowmelt in the Sierra Nevada, the vast mountain range that spans the eastern edge of the state. That water once flowed unimpeded, creating vast wetlands that fostered a rich environment for birds, fish and large predatory mammals like bears and mountain lions that sustained Native American communities.

Today, all but about 5% of those wetlands are gone, consumed by a complex system of dams and canals that diverts much of the water into large reservoirs. Those reservoirs are then used for drinking water in the state's major cities and irrigation for Central Valley farmers who supply most of the nation's fruits, nuts and vegetables.

The agreement the state announced Tuesday seeks to build back some of that ecosystem by letting more water flow through the rivers to create an additional 28,300 acres of additional habitat for animals.

"We're never going to be able to build it back exactly like it was," said Chuck Bonham, director of the California Department of Fish and Wildlife. "But there's a strong discipline in science about reconciliation ecology, about recreating enough of that mosaic that we can get functioning ecosystems back. That's the optimism, that's what's in this voluntary agreement announcement today."

California's water is governed by a complex water rights system that is based on seniority. In the past, state and federal regulators would make the rules for how much water farmers and others could take out of the rivers. That prompted lots of lawsuits from water rights holders that would sometimes take decades to resolve.

This time, state officials are trying something different. Instead of making the rules themselves, they sought to negotiate voluntary agreements with water agencies. The goal was to get everyone to agree up front on what the rules would be to avoid lengthy, expensive lawsuits.

The negotiations have dragged on since 2016, but state officials say the agreement announced Tuesday is a breakthrough. The agreement still must go through a lengthy regulatory review process before it can become official. But it includes some of the state's biggest water agencies, including the Metropolitan Water District of Southern California that provides drinking water to 19 million people, and Westlands Water District, the largest agricultural water district in the country.

"The governor said kind of day one to us as a team, 'We need a different way of thinking about water in our state. We just we have to end these crazy management by litigation. We have to end the water wars,'" said Jared Blumenfeld, secretary of the California Environmental Protection Agency. "This is a really huge, big step in moving the system."

But it doesn't include everyone. State officials acknowledged on Tuesday they likely would not get everyone to sign on to the agreements. Those that don't sign on would have to go through the traditional regulatory process.

For Regina Chichizola, executive director of Save California Salmon, the agreement exemplifies "California's commitment to maintaining its archaic and undemocratic water rights laws."

"These laws were created during a time when people of color and women could not vote or own land, and California policy supported the genocide of native people," she said. "These agreements seem to also put the needs of large landowners and crop exporters above fish and cities despite our drying climate."

#

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Bringing reuse water to the mainstream

International Water Association | March 25, 2022 | Ralph Franco



Population growth, urbanization and persistent drought are straining water resources in various regions around the world, while pollution and contamination compound these challenges. As this situation intensifies, water technology companies like Xylem are working to advance the conversation on sustainable water supply strategies, including the use of recycled water – or reuse water – to tackle water shortages.

The reality is that water scarcity is an issue facing communities in every corner of the world, but solutions exist to address this challenge. Advanced treatment technologies have demonstrated that wastewater can be purified well beyond drinking water standards and reused safely for both potable and non-potable purposes.

Reusing water can also have numerous economic benefits, reused water is less expensive than generating water through other technologies such as desalination, which means savings for both public utilities and citizens.

Advanced treatment technologies play key role

Advanced technologies are a key part of the foundation to support the development of potable reuse projects. New developments in oxidation-enhanced, biologically active filtration and UV disinfection are helping utilities around the world achieve reuse water quality standards, while delivering optimal performance, reliable operations and substantial energy savings.

Xylem is engaged in initiatives to build support for water reuse throughout the world:

- In California, advanced treatment technologies are helping to combat water shortages due to drought. For example, the Santa Clara Valley Water District is using ultraviolet (UV) light to produce recycled water for use by commercial and industrial customers, and the city of Los Angeles is incorporating UV light and chlorine in a cutting-edge advanced oxidation process to augment dwindling groundwater supplies. Xylem's ozone and biologically active filtration processes are also being provided to produce high-quality water to supplement surface water supplies in San Diego.
- Using a multi-step disinfection process, Hampton Roads Sanitation District (HRSD) in Virginia Beach, Virginia, implemented an innovative water treatment program called SWIFT (Sustainable Water Initiative for Tomorrow). The program puts highly treated water through additional rounds of advanced water treatment to meet strict drinking water quality standards. SWIFT water is then added to the Potomac Aquifer to help slow and potentially reverse the shrinking of land due to withdrawal, help restore the health of the Chesapeake Bay and give the region a sustainable source of groundwater.
- In Saudi Arabia, a sewage treatment plant was expanded to help meet the country's ambitious target for water reuse. An integrated wastewater treatment system from Xylem helps generate over 52 million gallons per day of treated water per day.

Expanding water reuse practices and customizing water treatment options such as Ozone Oxidation, Biologically Active Filtration, UV Disinfection and Advanced Oxidation Processes are increasingly necessary for water utilities to develop resiliency against local water challenges that range from protecting the environment to securing long-term water supply independence.

Wide-scale adoption

As climate change and continued population growth put even more pressure on already overstretched water resources around the world, water reuse applications are becoming increasingly important.

Accelerating the adoption of reuse technologies requires a combination of smart water policies and public education. As support for public policies to promote the use of recycled water and advancing technologies become more affordable, the treatment and recycling of wastewater for potable and non-potable use will continue to grow. We must spread the word that water reuse is a viable, safe and sustainable solution that will be essential to help solving the world's future water needs. Ultimately it is the water's quality that counts, and not the water's history.

#

Climate Change Is Intensifying the Global Water Cycle

Changes in the salinity of our oceans suggest dry regions will get drier, and wet regions wetter.

Discover | March 25, 2022 | Theo Nicitopoulos



Ocean evaporation (Credit: donvictorio/Shutterstock)

Human-induced climate change is warming the planet and, in turn, enabling our atmosphere to hold more moisture. The magnitude and extent of this shift are challenging to see on a global scale, but its effects on local weather are much more noticeable: Greater evaporation in some regions and increased precipitation in others has already driven more frequent and intense droughts and rainfall — with the risk of more extreme weather events looming in the near future.

“In recent years, we have continued to experience unprecedented floods where huge amounts of water have flushed through the climate system,” says Paul Durack, a climate scientist at the Lawrence Livermore National Laboratory in California. “Such changed conditions are consistent with the warming atmosphere and a turbo-charged water cycle.”

But determining how much the global water cycle has intensified isn’t easy. Evaporation rates are difficult to measure and, barring covering the entire globe with rain gauges, the estimation of precipitation levels is just as challenging. To work around this, climate scientists turn to the oceans, where most of Earth’s evaporation and precipitation occurs.

“We are able to determine how much the water cycle has changed based on observations of ocean salinity,” says Taimoor Sohail, a climate scientist at the University of New South Wales in Sydney.

In a [new study](#), he and a team of researchers studied changes in the salt content of the world’s oceans, accounting for mixing and currents. They found that since 1970, water near Earth’s subtropical zones (for example, the southeastern U.S.) has become saltier due to increased evaporation; and water closer to the polar regions has turned less salty due to increased precipitation. “It’s like when you leave a bowl of salty water outside in the sun and the freshwater evaporates, leaving the salt behind,” explains Sohail.

The results suggest that the water cycle has intensified, with more evaporated water being transported from warm, dry regions to higher latitudes where it falls as rain or snow. “The salinity changes confirm that wet regions are becoming wetter,” says Durack. “This means fresh, oceanic regions are becoming fresher and drier parts are becoming drier, or saltier, in the already salty ocean.”

This result is consistent with the first study of ocean salinity and the water cycle, published back in 2003, and subsequent work — including 2012 research led by Durack that reported an 8 percent water cycle intensification based on ocean salinity changes between 1950 and 2009.

“Each study has taken a slightly different approach, but we are more or less getting a very consistent intensification — about a 7 percent increase per degree Celsius [of global warming],” says Durack. “This latest study is yet another confirming the growing consensus.”

The observed salinity changes from the past few decades also suggest a greater intensification of the water cycle than what is predicted by current climate models. “We are pushing an intensification up to double what climate models have estimated,” explains Sohail. “This should be seen as a motivator to hasten efforts towards climate change mitigation and adaptation, especially extreme rainfall and evaporation changes.”

#

California slips into its worst mega-drought in 1,200 years — it's partly our fault

San Francisco Chronicle | February 15, 2022 | Kurtis Alexander



A family walks over cracked mud last August near Lake Oroville's shore, as water levels remain low because of continuing drought conditions. Ethan Swope/Associated Press 2021

The repeated droughts that have ravaged California and other Western states this century have cemented the past 22 years as the driest in the West in at least 1,200 years, a new study shows.

What the researchers are now calling a mega-drought, the period from 2000 to the present is unusual not only because of low levels of precipitation but skyrocketing temperatures in the face of climate change, a primary reason for the new, bleak distinction, according to the study.

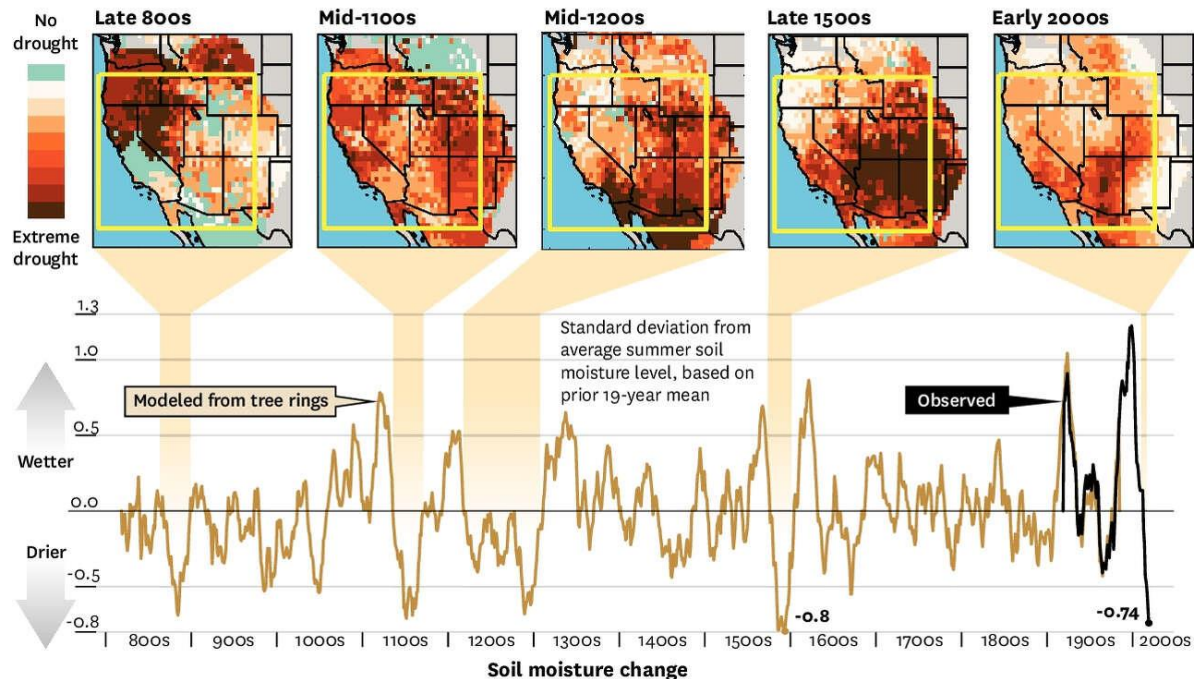
While there's no specific definition of mega-drought, the term refers to a prolonged stretch of dryness with crushing environmental and social ramifications. Previous mega-droughts are believed to have contributed to the fall of the Southwest's Anasazi people and the wholesale shift of North America's native civilizations.

The current mega-drought, which the researchers say likely will last at least another year and perhaps many more, has forged a punishing trail of water shortages, dried-up rivers and forests, and catastrophic wildfire across the West.

“These events have rarely been seen and were once considered a worst-case scenario in modern times,” said Park Williams, a climate scientist at UCLA and lead author of the new study. “The (current) drought has been so severe that it’s clearly a mega-drought event.”

Megadroughts

A new study finds that a megadrought, similar to only a few that have occurred over the last 1,200 years, began in the West in 2000 and will likely continue through 2022. The 22-year period since the start of the century is the driest 22-year period since at last 800 A.D.



Sources: Science, A. Park Williams et al., SCIENCE 368: 314 (17 Apr 2020). Reprinted with permission from AAAS.

John Blanchard / The Chronicle

The study, published Monday in the journal *Nature Climate Change*, is based on an analysis of tree rings, which helped the scientists track soil moisture over more than a millennium. It follows similar work the authors did two years ago that found this century to be the second driest time since A.D. 800, as far back as the reliable tree ring data goes.

With two more years of observation in hand, the scientists now say the current period is drier than a 22-year stretch in the late 1500s that had previously held the record.

Previous mega-droughts were largely driven by random ocean conditions, namely recurring La Niña weather events in the tropical Pacific, according to the study. While La Niñas likely have contributed to many of the dry years this century, the new research suggests that human-caused global warming is responsible for 42% of the severity of the current mega-drought.

The period from 2000 to 2021 was 1.6 degrees Fahrenheit warmer in the West, on average, than the period from 1950 to 1999.

With temperatures expected to continue to rise as people burn fossil fuels, such dry spells will be increasingly common, even if the frequency and intensity of La Niñas remain the same, the paper says.

“It’s just going to take a whole lot of good luck to get out of drought, and it’s not going to take that much bad luck to fall into another drought,” Williams said.

California and other parts of the West are now experiencing a third consecutive year of extreme drought conditions. While heavy rain and snow in California in December offered hope of relief, January and the first two weeks of February have been extraordinarily dry, and most of the state is again behind in precipitation as the end of the wet winter season approaches.

The current drought comes just four years after last decade’s 2012-2016 drought, which followed another severe drought in 2007 to 2009.

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Kurtis Alexander is a San Francisco Chronicle staff writer. Email: kalexander@sfchronicle.com
Twitter: [@kurtisalexander](https://twitter.com/kurtisalexander)

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April 13, 2022 – SUPPLEMENTAL CORRESPONDENCE PACKET

**BAY AREA WATER SUPPLY AND CONSERVATION AGENCY
BOARD OF DIRECTORS MEETING**

April 12, 2022

Correspondence and media coverage of interest between April 5, 2022 and April 12, 2022

Correspondence

From: Erin Franks, SFPUC Rates Administrator
To: Nicole Sandkulla, BAWSCA CEO/General Manager
Date: April 8, 2022
Subject: Fiscal Year 2022-23 Wholesale Water Rates Notice

Media Coverage

Infrastructure:

Date: April 7, 2022
Source: Phys.org
Article: Study examines financial risks of water resilience planning in California

Date: April 7, 2022
Source: Government Technology
Article: Water Systems: At Greatest Risk from the Russian Cyber Threat?

Climate Change:

Date: April 12, 2022
Source: Sierra Sun Times
Article: California Department of Water Resources on Challenges of Forecasting Water Supply in a Hotter Climate.

Date: April 8, 2022
Source: KUNR
Article: No return to normal: Low mountain snowpack reflects the West's grim climate outlook

Date: April 5, 2022
Source: CalMatters
Article: Report to California Legislature: Prepare for sweeping effects of climate change

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April 8, 2022

Ms. Nicole Sandkulla
CEO/General Manager
Bay Area Water Supply & Conservation Agency
155 Bovet Road, Suite 650
San Mateo, CA 94402

Re: Fiscal Year 2022-23 Wholesale Water Rates Notice

Dear Ms. Sandkulla,

The San Francisco Public Utilities Commission (SFPUC) has determined that the **Fiscal Year 2022-23 Wholesale Water Rates will be \$4.75 per CCF**, representing a \$0.65 per CCF or 15.9% increase from the current rate for treated wholesale water effective July 1, 2022. As required by WSA Section 6.03.A, the SFPUC has scheduled a public hearing to consider the adoption of the wholesale water rate, as follows:

May 10, 2022, 1:30 PM
San Francisco City Hall
1 Dr. Carlton B. Goodlett Place, Room 400
San Francisco, CA 94102

Over the past five years, there were no wholesale rate changes – as the SFPUC optimized for rate stability and the spending down of the balancing account. As of June 30, 2021, there is \$87 million in the balancing account that is owed to wholesale customers, of which SFPUC plans to fully repay the wholesale customers by the end of Fiscal Year 2022-23. To most accurately forecast the Fiscal Year 2021-22 year-end balancing account, the Fiscal Year 2022-23 rate was calculated based on actual Fiscal Year 2021-22 sales data through February of this year.

Since the Wholesale Customer Annual Meeting on February 17, 2022, several factors outside of our control have changed, presenting further financial challenges to the Water Enterprise. The rising interest rate environment has eliminated debt service savings that SFPUC planned to realize for Fiscal Year 2022-23 and beyond. Additionally, worsening drought conditions and further calls for conservation in the state are projected to lower revenues in the next two years as customers rise to the call for conservation. Finally, the SFPUC faces growing costs in this upcoming fiscal year, particularly debt service on previously issued bonds.

London N. Breed
Mayor

Anson Moran
President

Newsha Ajami
Vice President

Sophie Maxwell
Commissioner

Tim Paulson
Commissioner

Dennis J. Herrera
General Manager

Services of the San Francisco Public Utilities Commission

OUR MISSION: To provide our customers with high-quality, efficient and reliable water, power and sewer services in a manner that values environmental and community interests and sustains the resources entrusted to our care.



The SFPUC is required to generate sufficient revenues to pay operations and maintenance expenditures and debt service, and to meet SFPUC debt service coverage ratio policy minimums. While the financial picture has worsened for FY 2022-23, the SFPUC has maintained the projected wholesale rate increase of 15.9% presented at the Wholesale Customer Annual Meeting, and will continue to use various financial measures, including the spend down of the wholesale balancing account, to stabilize required rate increases.

Untreated Wholesale Water Rate Discount Factor

The Fiscal Year 2022-23 Untreated Wholesale Water Rate Discount will be \$0.43 per CCF, an increase of \$0.07 from the current rate, effective July 1, 2022. The discount factor is equal to the Harry Tracy Water Treatment Plant total projected cost. The discount is calculated by dividing the relevant cost by total wholesale water deliveries. The increase is primarily driven by lower wholesale volumes, which results in the excluded costs being divided by a lower number.

Fiscal Year 2022-23 Billing

As in prior years, the following charges, unrelated to the Wholesale Revenue Requirement, will be effective July 1, 2022:

- **BAWSCA Bond Surcharge:** The monthly bills include the February 2013 prepayment of the Pre-2009 Assets surcharge for the repayment of BAWSCA issued bonds. The amounts of the surcharge are proportionate to water consumption and have been adjusted accordingly. The SFPUC bills and collects the surcharge on behalf of BAWSCA and remits these amounts to the trustee.
- **Late Fees:** As part of the response to the current pandemic, the SFPUC waived late fees on past due balances through July 1, 2023. After this time, late payment penalties as specified in Schedule W-44 will once again be in effect. The SFPUC encourages Wholesale customers to sign up for electronic billing and payment services to make timely payments and to avoid late fees. Please sign up with our SFPUC BillPay service at myaccount-water.sfpuc.org to receive and pay your bills online. If you have any questions, please contact customer assistance at (415) 551-3000.

Enclosures

Per WSA Section 6.03.A, supporting documents are required if there is a rate increase. We are attaching the following:

- Attachment N-1: Balancing Account/Rate Setting Calculation: A table showing the change in the Wholesale Revenue Requirement and how the wholesale rate was calculated
- Attachment N-3: Schedule of Projected Water Sales, Wholesale Revenue Requirements and Wholesale Rates: A schedule showing

projected Wholesale Customer water sales and rates for the proposed rate year and the following four fiscal years

- FY 2022-23 Calculation of Untreated Water Discount Factor
- Schedule W-25: Wholesale Use with Long-Term Contract - Proposed Fiscal Year 2022-23 Wholesale Customer water rates
- Fiscal Year 2022-23 BAWSCA Bond Surcharge letter and schedule showing the bond surcharge for each member agency

If you have any questions, please contact me at 415-487-5227 or efranks@sfwater.org

Sincerely,



Erin Franks
Rates Administrator

Enclosures

cc: Dennis Herrera, SFPUC, General Manager
Ronald Flynn, SFPUC, Chief of Staff
Steve Ritchie, SFPUC, Water Enterprise Assistant General Manager
Charles Perl, SFPUC, Deputy CFO
Kristina Alagar Cordero, SFPUC, Director of Financial Planning
Alison Kastama, SFPUC, BAWSCA Liaison
Catherine Malina, SF City Attorney
Christina Tang, BAWSCA, Finance Manager

Balancing Account / Rate-Setting Calculation
Reference Section 6.03.A.3
Fiscal Year 2022-23

Schedule N-1

1. Actual Changes to Balancing Account for FY 2020-21

A. Balancing Account as of June 30, 2020 (unaudited)	\$ (63,393,776)
B. Interest on Balancing Account and Coverage Reserve	\$ (1,139,197)
C. Wholesale Revenues for Fiscal Year	\$ (275,113,885)
D. Wholesale Revenue Requirement for Fiscal Year	\$ 245,743,192
E. Net Change in Wholesale Revenue Coverage	\$ 2,431,211
F. Settlement Credits or Other Adjustments	\$ 4,382,469
G Balancing Account as of June 30, 2021 (unaudited)	\$ (87,089,986)

2. Projected Changes to Balancing Account for FY 2021-22

A. Balancing Account as of June 30, 2021	\$ (87,089,986)
B. Interest on Balancing Account and Coverage Reserve	\$ (617,562)
C. Wholesale Revenues for Fiscal Year	\$ (246,152,161)
D. Wholesale Revenue Requirement for Fiscal Year	\$ 286,998,565
E. Settlement Credits or Other Adjustments	\$ -
F. Balancing Account as of June 30, 2022	\$ (46,861,144)
G. Net Change in Wholesale Revenue Coverage	\$ 2,278,271
H. Total Revenue Deficiency or (Surplus)	\$ (44,582,873)

3. Projected Changes to Balancing Account for FY 2022-23

A. Balancing Account as of June 30, 2022	\$ (44,582,873)
B. Interest on Balancing Account and Coverage Reserve	\$ (446,246)
C. Wholesale Revenues for Fiscal Year	\$ (267,871,466)
D. Wholesale Revenue Requirement for Fiscal Year	\$ 302,588,214
E. Settlement Credits or Other Adjustments	\$ -
F. Balancing Account as of June 30, 2023	\$ (10,312,372)
G. Net Change in Wholesale Revenue Coverage	\$ 14,151,740
H. Total Revenue Deficiency or (Surplus)	\$ 3,839,368

Schedule of Projected Water Sales, Wholesale Revenue Requirements, and Wholesale Rates

Schedule N-3

Reference Section 6.03.A.3

Fiscal Year 2022-23

	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Water Enterprise						
Operations & Maintenance Expenses						
Source of Supply	\$ 17,789,221	\$ 18,273,114	\$ 18,593,691	\$ 19,432,883	\$ 21,101,621	\$ 21,712,498
Pumping	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Treatment	\$ 35,859,193	\$ 36,834,618	\$ 37,480,831	\$ 39,172,459	\$ 42,536,271	\$ 43,767,666
Transmission & Distribution	\$ 19,973,195	\$ 20,516,496	\$ 20,876,430	\$ 21,818,649	\$ 23,692,257	\$ 24,378,131
Customer Services	\$ 243,983	\$ 250,619	\$ 255,016	\$ 266,526	\$ 289,413	\$ 297,791
Total Operations & Maintenance Expenses	\$ 73,865,591	\$ 75,874,848	\$ 77,205,968	\$ 80,690,517	\$ 87,619,563	\$ 90,156,086
Administrative & General Expenses						
Countywide Cost Allocation Plan (COWCAP)	\$ 1,454,767	\$ 1,494,338	\$ 1,520,554	\$ 1,589,182	\$ 1,725,648	\$ 1,775,604
SFPUC Bureaus	\$ 17,230,525	\$ 17,699,222	\$ 18,009,730	\$ 18,822,566	\$ 20,438,895	\$ 21,030,587
Compliance Audit	\$ 108,405	\$ 111,354	\$ 113,307	\$ 118,421	\$ 128,590	\$ 132,313
Other Administrative & General	\$ 8,313,398	\$ 8,539,535	\$ 8,689,349	\$ 9,081,527	\$ 9,861,375	\$ 10,146,854
Total Administrative & General Expenses	\$ 27,107,095	\$ 27,844,449	\$ 28,332,941	\$ 29,611,696	\$ 32,154,508	\$ 33,085,358
Property Taxes	\$ 1,582,139	\$ 1,625,175	\$ 1,653,687	\$ 1,728,323	\$ 1,876,737	\$ 1,931,067
Capital Cost Recovery						
Pre-2009 Assets (K-1 to K-4)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Pre-2009 Assets (K-5)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Debt Service on New Assets	\$ 159,474,548	\$ 168,034,980	\$ 167,208,108	\$ 169,878,841	\$ 175,167,792	\$ 174,682,616
Revenue Credit for BABs Subsidy	\$ (14,203,277)	\$ (13,559,130)	\$ (13,119,799)	\$ (13,060,270)	\$ (12,972,112)	\$ (12,650,242)
Revenue Funded Capital	\$ 13,553,940	\$ 16,452,500	\$ 16,255,000	\$ 16,547,500	\$ 16,835,000	\$ 16,857,500
Total Capital Cost Recovery	\$ 158,825,211	\$ 170,928,351	\$ 170,343,309	\$ 173,366,071	\$ 179,030,681	\$ 178,889,874
Hetch Hetchy Water & Power						
Operations & Maintenance Expenses	\$ 21,897,738	\$ 22,493,390	\$ 22,888,006	\$ 23,921,014	\$ 25,975,156	\$ 26,727,118
Administrative & General Expenses						
Countywide Cost Allocation Plan (COWCAP)	\$ 346,990	\$ 356,429	\$ 362,682	\$ 379,051	\$ 411,600	\$ 423,516
SFPUC Bureaus	\$ 3,623,344	\$ 3,721,905	\$ 3,787,200	\$ 3,958,129	\$ 4,298,021	\$ 4,422,445
Other Administrative & General	\$ 4,164,223	\$ 4,277,496	\$ 4,352,539	\$ 4,548,983	\$ 4,939,613	\$ 5,082,611
Total Administrative & General Expenses	\$ 8,134,557	\$ 8,355,829	\$ 8,502,421	\$ 8,886,162	\$ 9,649,234	\$ 9,928,572

Schedule of Projected Water Sales, Wholesale Revenue Requirements, and Wholesale Rates

Schedule N-3

Reference Section 6.03.A.3

Fiscal Year 2022-23

	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Property Taxes	\$ 208,557	\$ 214,231	\$ 217,989	\$ 227,827	\$ 247,391	\$ 254,553
Capital Cost Recovery						
Pre-2009 Assets (K-1 to K-4)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Pre-2009 Assets (K-5)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Debt Service on New Assets	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Revenue Funded Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Capital Cost Recovery	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Wholesale Revenue Requirement	\$ 286,998,565	\$ 302,588,214	\$ 304,312,964	\$ 313,382,199	\$ 331,070,256	\$ 335,330,885
Balancing Account as of June 30 (Beginning of Year)	\$ (87,089,986)	\$ (44,582,873)	\$ 3,839,368	\$ 12,058,757	\$ 9,115,621	\$ 3,446,599
Balancing Account Deferral	\$ 44,582,873	\$ (3,839,368)	\$ (12,058,757)	\$ (9,115,621)	\$ (3,446,599)	\$ 2,562,368
Interest on Balancing Account and Coverage Reserve	\$ (617,562)	\$ (446,246)	\$ (215,621)	\$ (209,561)	\$ (226,713)	\$ (269,426)
Settlement Credits and Other Adjustments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Wholesale Debt Service Coverage Reserve	\$ 2,278,271	\$ 14,151,740	\$ (135,640)	\$ 1,110,517	\$ 4,636,444	\$ 78,583
Wholesale Revenues Before Rate Change						
Volumetric Charges	\$ (241,838,161)	\$ (227,491,708)	\$ (263,673,236)	\$ (312,912,291)	\$ (336,835,009)	\$ (336,835,009)
Excess Use Charges / Minimum Purchase	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Service Charges	\$ (4,314,000)	\$ (4,314,000)	\$ (4,314,000)	\$ (4,314,000)	\$ (4,314,000)	\$ (4,314,000)
Total Wholesale Deficiency or (Credit)	\$ (0)	\$ 36,065,759	\$ 27,755,078	\$ -	\$ -	\$ -
<i>Wholesale Deficiency or (Credit) as a Percent of Volumetric Charges</i>	0.0%	15.9%	10.5%	0.0%	0.0%	0.0%
Projected Water Sales (MGD)	120.9 MGD	113.7 MGD	113.4 MGD	122.1 MGD	131.5 MGD	131.5 MGD
Projected Water Sales (CCF)	58,984,917	55,485,782	55,510,155	59,602,341	64,159,049	64,159,049
Wholesale Deficiency or Credit (\$/CCF)	\$0.00	\$0.65	\$0.50	\$0.00	\$0.00	\$0.00
Wholesale Rate (\$/CCF)	\$4.10	\$4.75	\$5.25	\$5.25	\$5.25	\$5.25
Projected Service Charge Revenues	\$ 4,314,000	\$ 4,314,000	\$ 4,314,000	\$ 4,314,000	\$ 4,314,000	\$ 4,314,000
Projected Volume Charge Revenues	\$ 241,838,161	\$ 263,557,466	\$ 291,428,314	\$ 312,912,291	\$ 336,835,009	\$ 336,835,009
Total Wholesale Revenues After Rate Change	\$ 246,152,161	\$ 267,871,466	\$ 295,742,314	\$ 317,226,291	\$ 341,149,009	\$ 341,149,009

**Calculation of Untreated Water Discount Rate for Coastside County Water District
Rate-Setting for Fiscal Year 2022-23**

Wholesale Share of HTWTP Expenses to be Removed

Operations & Maintenance	\$	11,120,823
Cash Funded Capital	\$	-
Debt Service	\$	12,917,533
Total HTWTP Expense to be Removed	\$	24,038,355

Total Wholesale Water Consumption (CCF) 55,485,782

Untreated Water Rate Discount (\$/CCF)	\$	0.43
Untreated Water Rate Discount (\$/acre foot)	\$	187.31

Impact on Wholesale and Retail Customers

Untreated Water Rate Discount (\$/CCF)	\$	(0.43)
Projected Coastside County Water District Annual Consumption (CCF)		512,085
Net Impact of Untreated Water Rate Discount	\$	(220,197)

	Wholesale	Retail
Proportional Annual Use	65.81%	34.19%
Allocation of Untreated Water Rate Discount	\$ (144,911)	\$ (75,285)
Projected Annual Treated Water Usage (CCF)	54,973,697	26,358,149
Average Wholesale Rate Impact (\$/CCF)	\$ (0.0026)	\$ (0.0029)

SCHEDULE W-25: Wholesale Use with Long-Term Contract

For service to municipalities, water districts and others who, under long-term contracts, purchase water for resale:

First: A Monthly Service Charge base on the type and size of the meter:

Meter Size	Disc/Compound Meters	Crest Meters	Magnetic Meters	Turbine Meters
5/8 in.	\$11	-	-	-
3/4 in.	\$18	-	-	-
1 in.	\$30	-	-	-
1 1/2 in.	\$43	-	-	-
2 in.	\$79	-	-	-
3 in.	\$158	-	-	-
4 in.	\$318	\$353	-	\$577
6 in.	\$476	\$685	-	\$1,256
8 in.	\$635	\$1,335	\$2,265	\$1,875
10 in.	\$793	\$1,732	-	\$3,391
12 in.	\$953	\$1,840	\$5,159	-
16 in.	\$1,270	\$5,628	-	\$7,215
18 in.	-	\$6,133	-	-
20 in.	-	\$6,349	-	-

The service charge for a battery of meters installed on one service in lieu of one meter or for a special type of meter, shall be based on the size of single or multiple standard type meters of equivalent capacity.

Second: A charge for water delivered based on one-month's meter readings:

\$2,069.10 per acre-foot or \$4.75 per 100 cu. ft.

Third: An Untreated Wholesale Water Rate Discount Factor for Wholesale Customers receiving untreated water, based on one-month's meter readings:

(\$187.31) per acre-foot or (\$0.43) per 100 cu. ft.



March 22, 2022

Ms. Erin Franks, Rate Administrator
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 4th Floor
San Francisco, CA 94102

Subject: BAWSCA FY 2022-23 Bond Surcharge Schedule

Dear Erin:

Pursuant to Section 3.01 (a) of the Prepayment and Collection Agreement between the Bay Area Water Supply and Conservation Agency (BAWSCA) and the City and County of San Francisco (San Francisco), dated January 1, 2013 (Agreement), BAWSCA shall deliver a written schedule to San Francisco at least 45 days prior to the beginning of each fiscal year showing the amount of the surcharge that BAWSCA seeks to impose for such fiscal year.

Table 1 includes BAWSCA's FY2022-23 annual and monthly bond surcharge for each member agency that was adopted by the BAWSCA Board on March 17, 2022. Pursuant to Section 3.02 (a) of the Agreement, San Francisco shall include the identified monthly surcharge in the first wholesale water bill for the largest amount delivered to BAWSCA's member agencies each month, effective July 1, 2022.

As a heads up, BAWSCA expects to notify the SFPUC for a revised FY 2022-23 monthly surcharge schedule, as shown in Table 2, after BAWSCA's settlement of the 2023A refunding bonds in January 2023. Assuming the settlement is completed on January 5, 2023, the monthly surcharges in Table 1 would be collected through the February 2023 billings and the reduced monthly surcharges would apply to the March – June 2023 billings, as shown in Table 2. The Agreement allows BAWSCA to revise bond surcharges as of the first day of the calendar month which is at least 45 days after notice of such reduction is provided by BAWSCA to SFPUC. If such notice is not provided to the SFPUC, the monthly surcharges stated in Table 1 will remain in effect.

If you have any questions about the billing of BAWSCA's surcharges, please contact me at (650) 421-3448.

Sincerely,

A handwritten signature in black ink that reads "Christina Tang".

Christina Tang
Finance Manager

Attachments:

Table 1. BAWSCA FY 2022-23 Bond Surcharges Effective July 1, 2022

Table 2. Revised BAWSCA FY 2022-23 Bond Surcharges Effective March 1, 2023

cc: Charles Perl, SFPUC
Kristina Cordero, SFPUC
Nicole Sandkulla, BAWSCA
Allison Schutte, BAWSCA Legal Counsel

Attachments

Table 1. BAWSCA FY 2022-23 Bond Surcharges Effective July 1, 2022

Agency	Annual Bond Surcharge	Monthly Bond Surcharge	Agency	Annual Bond Surcharge	Monthly Bond Surcharge
Alameda County WD	\$1,962,564	\$163,547	Mid Pen WD	\$461,616	\$38,468
Brisbane Water	\$73,668	\$6,139	Millbrae	\$295,272	\$24,606
Burlingame	\$522,816	\$43,568	Milpitas	\$949,680	\$79,140
Coastside County WD	\$307,044	\$25,587	Mountain View	\$1,455,288	\$121,274
CWS - Bear Gulch	\$2,497,308	\$208,109	North Coast WD	\$500,688	\$41,724
CWS - Mid Peninsula	\$2,369,496	\$197,458	Palo Alto	\$1,726,200	\$143,850
CWS - South SF	\$756,756	\$63,063	Purissima Hills WD	\$382,824	\$31,902
Daly City	\$610,404	\$50,867	Redwood City	\$1,537,836	\$128,153
East Palo Alto WD	\$256,368	\$21,364	San Bruno	\$181,500	\$15,125
Estero Municipal ID	\$779,532	\$64,961	San Jose (North)	\$687,600	\$57,300
Guadalupe Valley	\$20,256	\$1,688	Santa Clara	\$571,392	\$47,616
Hayward	\$2,561,736	\$213,478	Stanford University	\$212,628	\$17,719
Hillsborough	\$538,608	\$44,884	Sunnyvale	\$1,825,332	\$152,111
Menlo Park	\$519,240	\$43,270	Westborough WD	\$130,620	\$10,885
Total				\$24,694,272	\$2,057,856

Table 2. Revised BAWSCA FY 2022-23 Bond Surcharges Effective March 1, 2023*

Agency	Monthly Surcharge Jul 2022 - Feb 2023	Monthly Surcharge Mar 2023 - Jun 2023	Adjusted Annual Surcharge	Agency	Monthly Surcharge Jul 2022 - Feb 2023	Monthly Surcharge Mar 2023 - Jun 2023	Adjusted Annual Surcharge
Alameda County WD	\$163,547	\$119,254	\$1,785,392	Mid Pen WD	\$38,468	\$26,312	\$412,992
Brisbane Water	\$6,139	\$4,179	\$65,828	Millbrae	\$24,606	\$15,954	\$260,664
Burlingame	\$43,568	\$28,157	\$461,172	Milpitas	\$79,140	\$54,141	\$849,684
Coastside County WD	\$25,587	\$18,772	\$279,784	Mountain View	\$121,274	\$84,440	\$1,307,952
CWS - Bear Gulch	\$208,109	\$152,516	\$2,274,936	North Coast WD	\$41,724	\$29,595	\$452,172
CWS - Mid Peninsula	\$197,458	\$136,762	\$2,126,712	Palo Alto	\$143,850	\$98,156	\$1,543,424
CWS - South SF	\$63,063	\$41,635	\$671,044	Purissima Hills WD	\$31,902	\$23,001	\$347,220
Daly City	\$50,867	\$34,058	\$543,168	Redwood City	\$128,153	\$88,239	\$1,378,180
East Palo Alto WD	\$21,364	\$14,269	\$227,988	San Bruno	\$15,125	\$10,659	\$163,636
Estero Municipal ID	\$64,961	\$44,899	\$699,284	San Jose (North)	\$57,300	\$37,700	\$609,200
Guadalupe Valley	\$1,688	\$755	\$16,524	Santa Clara	\$47,616	\$32,758	\$511,960
Hayward	\$213,478	\$145,701	\$2,290,628	Stanford University	\$17,719	\$11,418	\$187,424
Hillsborough	\$44,884	\$32,225	\$487,972	Sunnyvale	\$152,111	\$106,803	\$1,644,100
Menlo Park	\$43,270	\$29,529	\$464,276	Westborough WD	\$10,885	\$7,232	\$116,008
Total					\$2,057,856	\$1,429,119	\$22,179,324

* Subject to the settlement of the 2023A Bonds on January 5, 2023 and notification thereof by BAWSCA to SFPUC

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Study examines financial risks of water resilience planning in California

Phys.org | April 7, 2022 | Cornell University

Partnerships between water utilities, irrigation districts and other stakeholders in California will play a critical role in funding new infrastructure under the Water Resilience Portfolio Initiative announced in 2020 by Gov. Gavin Newsom, but a new study warns that benefits might not be evenly distributed without proper structure to the agreements.

California's initiative is a multi-billion dollar effort that encourages different water utilities and irrigation districts to work together to build shared infrastructure to ameliorate the effects of droughts, but a number of questions remain regarding how best to structure these agreements.

In a new research article published March 15 in the journal *Earth's Future*, researchers from the University of North Carolina at Chapel Hill and Cornell University explored partnership agreements in the context of the Friant-Kern Canal, which delivers water to irrigation districts and municipal utilities in the southern Central Valley of California.

"The canal has been sinking due to groundwater over-pumping and a partnership of local water providers has begun to make repairs—projected to cost \$500 million—in coordination with state and federal agencies," said Andrew L. Hamilton, a postdoctoral associate in the School of Civil and Environmental Engineering at Cornell and the study's primary author. "However, benefits to individual providers are highly uncertain. This setting is more broadly representative of the types of infrastructure investment that California and other regions are considering, as well as the challenge of bringing different parties together to collectively fund these projects."

The team tested thousands of different ways of designing candidate partnerships, to understand the impact of each design (i.e., which water providers are participating, and what share of funding is each responsible for), the type of infrastructure and the climate scenario.

In most cases, performance was very uneven across the different partners—some received significant new water supplies at low cost, while others received negligible benefits relative to their share of project cost. Local performance varied based on a variety of factors, such as the water providers' location, water rights and local factors. This highlights the importance of detailed models that can capture system dynamics at the level of individual water providers.

These results point to the importance of considering multiple factors so that investment partnerships can be constructed to satisfy all partners. Several points should be of interest to policymakers as they seek to make wise investments that improve California's water resilience:

1. If the future is drier than the past, there may not be sufficient "capturable" water available to make the investment worthwhile. This climate-related risk may be borne more heavily by some partners than others.

2. Investments in one project (e.g., canal expansion) must often be paired with another (e.g., water storage) if the full benefits of the investments are to be realized and evenly distributed across a partnership.
3. Larger partnerships make it more difficult to please everyone, since it becomes more likely that at least one partner performs poorly. This introduces a trade-off, since larger partnerships are typically viewed more favorably by the public and by policymakers.

The future is highly uncertain due to climate change, regulatory change and other stressors. This study's results demonstrate how poorly planned partnerships can lead to significant financial risk for water providers under unfavorable future scenarios. The authors posit that financial resilience should be a key aspect of water supply resilience planning in California and other regions.

#

Water Systems: At Greatest Risk from the Russian Cyber Threat?

Government Technology | April 7, 2022 | Jule Pattison-Gordon

Federal lawmakers are asking how to better help the critical infrastructure sector defend against cyber threats. The answer may involve tailored, actionable intelligence and minimum cybersecurity requirements.

Federal lawmakers scrutinized the ability of U.S. critical infrastructure to withstand a hypothetical cyber attack from Russia during an April 5 hearing, with testifying witnesses underscoring that the water sector faces unique challenges.

Rep. Ritchie Torres — vice chair of the Committee on Homeland Security and a member of the Subcommittee on Cybersecurity, Infrastructure Protection and Innovation — said the U.S. is particularly at risk to cyber attack because much of its infrastructure is automated or digitized.

The recent arrests of alleged perpetrators behind the LAPSUS\$ cyber crime group is also a stark reminder that cyber attackers need relatively few resources to wreak considerable damage.

“LAPSUS\$ has shown that with only \$25,000, a group of teenagers could get into organizations with mature cybersecurity practices,” said Amit Yoran, CEO of cybersecurity risk management company Tenable. “Consider Russia with much deeper pockets, focus and mission targeting critical infrastructure.”

The water sector could be at particular risk and has been previously referred to by Cyberspace Solarium Commission Executive Director Mark Montgomery as critical infrastructure’s “weakest link.”

Boosting the water system’s defenses could mean deepening industry-federal partnerships to ensure water entities are receiving quick, actionable advice tailored to their specific contexts, as well as establishing minimum cybersecurity standards across the sector, said Kevin Morley, federal relations manager for the American Water Works Association (AWWA), during the hearing.

The Challenge of Water

Unlike its more consolidated critical infrastructure counterparts, the water sector is in the hands of a vast array of organizations, many of which are small and under-resourced.

“There are more than 45,000 community water systems that serve fewer than 3,300 people,” Morley told federal legislators.

The sector also relies on a variety of physical infrastructure, and updating operational technology (OT) can be slow going, especially because services must run 24/7.

“Rehabilitating or upgrading those OT systems can often be a three- or four-year capital improvement project to ensure that the system maintains operations during that whole period. So, it’s not a rapid process, but support from our federal partners is encouraging,” Morley said.

Operational technology systems are also increasingly getting connected to Internet or cellular to enable gathering remote data to support activities like metering and billing or predictive equipment maintenance, Yoran noted. But these connections then need to be protected against potential cyber vulnerabilities.

Rep. Carlos Gimenez, R-Fla., suggested removing such risks via a mandate forbidding critical infrastructure operators from connecting operational technology to the external Internet, something Yoran said operators would likely find impractical.

The White House has also been putting attention on such vulnerabilities and recently raised funding for CyberSentry, a voluntary program that deploys sensors to monitor participating critical infrastructure owners and operators’ OT and IT networks. The new appropriations bill budgets \$95.5 million above what the Cybersecurity and Infrastructure Security Agency (CISA) had requested for the program, per LawFare.

Getting Communications Right

Morley said that the “Shield’s Up” website CISA launched recently to explain how organizations can improve their cyber postures has helped consolidate useful information in one space, making it easier for organizations to keep up with the latest threat and mitigation information.

Still, federal partners need to be careful that threat alerts and advice aren’t too technical for small water entities to parse and understand how to apply to their particular systems and contexts, Morley said. After all, many of these entities don’t have any cyber staff to decipher the intelligence.

That’s one place where sector partnerships can kick in, with the Environmental Protection Agency (EPA) and other water sector groups able to frame threat information to be most relevant to their space.

“Certain advisories, in some cases, have a certain level of technical sophistication that probably requires a little bit of contextualization. And that’s why we would encourage a little more frontline engagement between EPA and CISA, to ensure that that information is actionable to our members at the smallest level,” Morley said.

Entities also want to receive governments’ threat alerts as fast as possible.

Many testifying during the hearing praised the Joint Cyber Defense Collaborative (JCDC) and the government’s push to declassify and share information more rapidly, but any extra speed counts.

Government information sharing can get slowed down by concerns over what to declassify, but Morley said water entities are rarely looking for sensitive details like those about attributions and tactics. Instead, they often just want to know when a new vulnerability has been detected and what they should do to mitigate it.

Another piece of the puzzle is making sure entities are keeping up their cyber hygiene and at least doing the basics of defense. To that point, Morley advocated for creating a minimum set of “tiered risk- and performance-based” cybersecurity standards for water sector entities.

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California Department of Water Resources on Challenges of Forecasting Water Supply in a Hotter Climate

Sierra Sun Times | April 12, 2022



April 12, 2022 - On April 8, DWR published the Bulletin 120 and Water Supply Index (WSI) forecast update. The Bulletin 120 is a key tool for water managers across the state to understand how the melting Sierra Nevada snowpack will reach streams, rivers and eventually California reservoirs. The forecast also has important legal impacts for water rights holders across the state, especially during this third year of drought.

Very little snow remains on the ground for the California Department of Water Resources' fourth snow survey of the 2022 season at Phillips Station in the Sierra Nevada Mountains.

The 2021-22 water year has seen climate-driven extremes far outside the historical norm, upending patterns used for decades to forecast California's water supply. Predicting how much snowmelt will reach California's reservoirs and be available for our communities, farms and the environment is becoming more challenging every year as previous assumptions about our climate no longer apply. DWR has been closely following climate research for decades that has warned of warming temperatures and increasing extremes and has understood these dramatic changes would be possible. During the third major drought so far this century, we have seen these changes become reality and prove the need to adapt quickly.

To address this challenge, the Department of Water Resources (DWR) is embracing a fundamental shift away from reliance on historical patterns and is investing heavily in improving forecast data collection and is focusing on the dramatic changes in California's watersheds. Over \$4 million has been provided by Governor Newsom to expand the Airborne Snow Observatory (ASO) program, which increases and modernizes the amount of data collected on the state snowpack and additional funding has been provided to upgrade electronic monitoring stations across the Sierra Nevada to provide additional details on soil moisture and atmospheric conditions. The value of these investments has already been realized this year when additional data provided by ASO flights prevented an overestimation of the snowpack in the Feather River Basin and helped forecasters get a complete picture of how snowpack is changing.

This April's water supply forecast, which utilizes data from these investments, paints a grim picture that guarantees a third year of drought conditions: the April through July runoff period is

forecasted to be just 41% of the historical average. The snowpack was just 35% of normal, the fifth smallest snowpack on record dating back to 1950. The driest January through March period in recorded state history caused the Sierra Nevada snowpack to peak a full month earlier than usual on March 8. Even more extreme, the Northern Sierra Snowpack likely peaked in January of this year, a full three months early. Although October rainfall this fall helped reduce soil dryness and was followed by significant December snowfall, the record-breaking dry spell for the past three months shattered all previously observed patterns.



April 1 2022 snow survey mountains

This winter's climate whiplash is the latest evidence of an alarming trend all Californians have witnessed over the past decade, which has been marked by dramatic climate swings from dry to wet years, extreme temperatures in the summer and a longer and more severe wildfire season. The lesson from the past two years is clear: future water supplies can no longer be predicted based on historical patterns that no longer apply in our rapidly changing climate.

DWR's Snow Surveys and Water Supply Forecasting team is meeting this challenge head on by researching and investing in tools and models that will look at the complete picture, not just the historical patterns. DWR's forecasting and data collection teams also peer-review our methodology with academic partners including the Center for Western Water Extremes, UC Berkeley's Central Sierra Snow Lab, and UC Davis, federal agencies such as NOAA, NASA-JPL, the National Center for Atmospheric Research (NCAR), and with local water management agencies to evaluate the best available science for monitoring and modeling changing hydrologic conditions.

As the threat of a hotter and drier climate continues to impact our water supply, DWR will continue to develop and adopt the best available science and technology to ensure that Californians have an adequate water supply, reliable flood control, and healthy ecosystems, now and in the future.

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No return to normal: Low mountain snowpack reflects the West's grim climate outlook
KUNR Public Radio | April 8, 2022 | Bert Johnson



Jeff Anderson, a hydrologist with the Natural Resources Conservation Service, says the first three months of 2022 were the driest on record.

As historic levels of drought persist across the Mountain West, water officials in Northern Nevada are warning that peak fire conditions might appear sooner this year than in the past – and at least one rural reservoir is so dry it can't provide water for irrigation.

As the wet season comes to an end, scientists with the U.S. Department of Agriculture are warning that the dry winter across the Mountain West broke records for its meager mountain snowfall.

“January, February, and March this year added up to the lowest precipitation for those three months that we’ve ever seen at SNOTEL sites, going back to the early ‘80s,” said Jeff Anderson.

SNOTEL – short for snow telemetry – is the automated system that tracks how much water is stored in hard-to-reach areas like the eastern Sierra Nevada mountains. That’s where

Anderson, a hydrologist with USDA's Natural Resources Conservation Service, measures seasonal snowpack.

Anderson's final report for the season shows snow levels between 46-66% of the median for this time of year across Nevada – and melting faster than in recent years, thanks to unusually warm weather. According to national data, parts of Idaho, Montana, Wyoming, Utah and Arizona had less than three-quarters of their historical median snow levels.

"The conditions that we have here are not unlike other parts of the West," Anderson said. "It was a below normal year."

He says that's partially because La Niña conditions over the Pacific Ocean created a stubborn ridge of high pressure that pushed winter storms away from much of the Mountain West

"The storms go somewhere, they don't just dry up completely," Anderson said. "And so I think the storm track was just a lot further north this year than what would have benefited us."

According to a recent study, much of the world will enter a permanent state of drought in the 21st century – including the Mountain West. Since baseline climate models are changing, the report's authors say the definitions of extreme weather need to be updated.

"Essentially, we need to stop thinking about returning to normal as a thing that is possible," said Samantha Stevenson in a written statement. Stevenson studies climate modeling at the University of California, Santa Barbara and led the study.

But around Reno, at least, Bill Hauck with the Truckee Meadows Water Authority says residents will still have plenty of water in the next year.

"We're going to have basically normal Truckee River flows through the summer months and past our peak demand season," he said. "We'll actually be able to continue providing our customers with the same reliable supply of high-quality drinking water we always do."

Not every Nevada community is quite so lucky. The Rye Patch Reservoir, which supplies irrigation for farmers in rural Lovelock, Nevada, is too low to provide any water at all. And those in Nevada and surrounding states who rely on water from the Colorado River are also feeling the pinch. One of the system's major reservoirs, Lake Powell, dropped to critically low levels in March.

Meanwhile, researchers at the University of Nevada, Reno were recently awarded a grant to help establish a statewide network that will bring together groups that use water, utilities that provide it to cities and towns, and owners of water rights in the state.

Anne Nolin teaches at UNR and says Nevada Water will seek input from tribal communities, too.

“It includes them in a way that is about learning from them, rather than explaining from a science perspective to them,” she said.

Nolin hopes that by combining Indigenous knowledge with modern science, the network could address the problems that already exist in Nevada, which is the driest state in the country.

In the near term, Jeff Anderson with the USDA expects the poor snowpack to allow forests to dry out more quickly, raising the risk of large wildfires. Over the last several years, megafires have torn through parched California woodlands and choked the air with hazardous smoke. For example, the Caldor Fire last year burned more than 22,000 acres near Lake Tahoe, about an hour’s drive from downtown Reno.

“The forest is going to have for a longer period of time to dry out this summer,” Anderson said. “I think that should be, you know, a concern for us.”

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This story was produced by the Mountain West News Bureau, a collaboration between Wyoming Public Media, Nevada Public Radio, Boise State Public Radio in Idaho, KUNR in Nevada, the O'Connor Center for the Rocky Mountain West in Montana, KUNC in Colorado, KUNM in New Mexico, with support from affiliate stations across the region. Funding for the Mountain West News Bureau is provided in part by the Corporation for Public Broadcasting.

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Report to California Legislature: Prepare for sweeping effects of climate change

CalMatters | April 5, 2022 | Rachel Becker and Julie Cart



Cattle graze as the Tamarack fire burned due to drought conditions and gusty winds on July 17, 2021.
Photo by Ty O'Neil/SOPA Images/Sipa USA

IN SUMMARY

From housing and health to transportation and education, the Legislative Analyst's Office provides a litany of sobering climate change impacts for California legislators to address as they enact policies and set budgets.

Painting alarming scenes of fires, floods and economic disruption, the California Legislature's advisors today released a series of reports that lays out in stark terms the impacts of climate change across the state.

The typically reserved, nonpartisan Legislative Analyst's Office outlined dire consequences for Californians as climate change continues to alter most aspects of daily life. Much of the focus of the six-part series is detailing the economic cost as the changing climate alters where and how Californians build, grow food and protect the most vulnerable residents.

- Wildfires, heat and floods will force more frequent school closures, disrupting education, child care and availability of free school lunches. More than 1,600 schools temporarily closed because of wildfires each year between 2017 and 2020, affecting nearly a million students a year.

- Workers in outdoor industries like agriculture, construction, forestry and recreation — 10% of California's workforce and mostly made up of Latinos — will continue to bear the brunt of extreme heat and smoke.
- Wildfire smoke may have killed about 20 people among every 100,000 older Californians in 2020, and is projected to become more deadly. A 50% increase in smoke could kill nine to 20 more people among every 100,000 each year.
- Housing, rail lines, bridges, ports, power plants, freeways and other structures are vulnerable to rising seas and tides. "Between \$8 billion and \$10 billion of existing property in California is likely to be underwater by 2050, with an additional \$6 billion to \$10 billion at risk during high tide."
- Extreme heat is projected to cause nine deaths per 100,000 people each year, "roughly equivalent to the 2019 annual mortality rate from automobile accidents in California."
- Lower-income Californians, who live in communities at greater risk for heat and floods because of discriminatory housing practices, will be hit especially hard by climate change and have fewer resources to adapt.
- Housing will be lost: For example, in the San Francisco Bay Area alone, 13,000 existing housing units and 104,000 job spaces "will no longer be usable" because of sea rise over the next 40 to 100 years.
- Beaches will disappear, too: Up to two-thirds of Southern California beaches may become completely eroded by 2100.

The report's unsaid but unambiguous conclusion: Climate change could alter everything, and spare no one in California, so legislators should consider preparing for sweeping impacts.

"These hazards will threaten public health, safety, and well-being — including from life-threatening events, damage to public and private property and infrastructure, and impaired natural resources," the analysts say in their report.

The pain, and costs, will be shared among state, regional, local, private and industry sectors, according to the report.

Scientists say it's not too late to stop the most severe effects, although the clock is ticking. Technologies and other solutions already exist to reduce greenhouse gases from fossil fuels and other sources and prevent more irreversible harm, according to a landmark international scientific report released Monday. But international accords and plans continue to fall far short, with emissions expected to keep increasing.

California's legislative analysts did not conduct new research; instead, they compiled existing data and projections, providing a comprehensive clearinghouse for legislators as they enact policies and approve budgets.

State Sen. Bob Wieckowski, a Democrat from Fremont and chair of the budget subcommittee on resources, environmental protection and energy, said he plans to turn to the reports as references and rationale for the subcommittee's budget proposals.

"It's impressive," he said. "(It) turns the climate conversation into an all-hands-on-deck versus, 'Oh, this is just some tree hugger over here.'"

The analysts make no explicit policy recommendations but they advise legislators to consider such questions as: How can the state avoid exacerbating climate impacts? How can lawmakers protect the most vulnerable Californians? And how should California pay to prepare and respond to climate change?

Assembly Speaker Anthony Rendon, a Democrat from South Gate, asked the Legislative Analyst's Office to assess the impacts of climate change on a variety of policy sectors, and the reports grew from there. They frame climate change as a complex, multi-disciplinary problem that requires response from all of the state's agencies.

Project manager Rachel Ehlers said the aim is to assist lawmakers incorporate climate change into decisions outside of traditionally environmental realms, including housing, health and education. For instance, would a new housing policy "have the potential to inadvertently worsen climate change impacts?" she said.

Last year's budget package reflected the overarching scope of the problem, proposing to spend \$9.3 billion over three years to bolster the state's responses to drought, floods, fire and sea level rise.

The reports come in the lead-up to California Gov. Gavin's Newsom's May revision to his January budget blueprint, when the administration can reframe and update its proposals. Thus far, the proposed budget included more than \$22 billion for climate change efforts that include protecting communities against wildfires and extreme heat.

Despite the state's climate-forward reputation, critics and many legislators note that California's follow-through has been inconsistent.

"I don't at all feel that we are leading the world anymore," Rendon, a Democrat from South Gate, told CalMatters last year.

Although the state passed a \$15 billion climate budget, California Environmental Voters, an advocacy group, gave California its first "D" grade for what it called its climate inaction last year.

"We're plagued by 'climate delayers' in Sacramento – members of the Legislature who talk about climate change but don't back up those words with action," CEO Mary Creasman wrote in a CalMatters commentary.

Last month, a coalition of California's environmental justice advocacy organizations pushed for a phase-out of fossil fuels, and warned that clean air regulators have failed to adequately consider public health in crafting the state's blueprint for curbing greenhouse gas pollution.

California is already reeling from climate change

The analysis made clear that many of the worst consequences are already here, even as it noted that future impacts are coming sooner and may be worse than scientists had predicted.

Summer temperatures scorched records as the state's second-largest wildfire tore across Northern California during the third-driest year on record for rain and snowfall. California must brace for yet more climate hazards, the reports warn, from extreme heat to more severe wildfires, whiplash from drought to flood and sea level rise along the coast.

Drought clutches California and a statewide heat wave forecast for Wednesday is poised to sap the remaining snowpack that supplies about a third of the state's water. California's firefighting arm warns that a record-dry start to the year could spell a devastating fire season ahead.

It's a disaster drumbeat that Californians have heard many times before. The Legislative Analyst's Office has released report after report assessing the state's climate policies and spending. It has warned that sea level rise will submerge billions of dollars in homes, roads and businesses by 2050, and that the state must accelerate planning to protect state assets including college campuses, prisons and even state workers from soaring heat, flooding, fire and extreme weather.

Newsom's administration launched a preemptive response to the reports, with the Monday release of its updated climate adaptation strategy. The guidelines pull together plans from 38 departments and address priority issues, such as protecting communities vulnerable to climate change and combating risks to health and safety.

California Natural Resources Secretary Wade Crowfoot said the strategy is "a matter of protecting our residents and our communities, our natural places, from climate threats that are already here."

State officials regularly recalibrate the official response to climate change, often in response to dire reports. Four years ago, California's Fourth Climate Change Assessment released under former Gov. Jerry Brown warned that climate change would lead to death and property damage on the order of tens of billions of dollars by 2050.

Though today's reports were focused largely on how California must adapt to the ravages of climate change, the Legislative Analyst's Office also has warned repeatedly that California's landmark greenhouse gas market, cap and trade, will fail to meet California's goals to reduce emissions.