September 7, 2021

BAY AREA WATER SUPPLY AND CONSERVATION AGENCY
BOARD OF DIRECTORS MEETING

August 31, 2021

Correspondence and media coverage of interest between August 5, 2021 and August 31, 2021

Media Coverage

Drought/Water Supply Conditions:

Date: August 29, 2021
Source: Los Angeles Times
Article: Many California farmers have water cut off, but a lucky few are immune to drought rules

Date: August 26, 2021
Source: Lost Coast Outpost
Article: NOAA Predicts 70 Percent Chance of Rainy La Niña Weather Across the Pacific Northwest This Fall, Winter

Date: August 20, 2021
Source: San Francisco Chronicle
Article: State orders 4,500 cities, farms to stop drawing river water, including San Francisco

Date: August 18, 2021
Source: Mercury News
Article: Gov. Newsom says mandatory statewide water restrictions for California may be on the way

Date: August 15, 2021
Source: Daily Journal
Article: No immediate reprieve from San Mateo County's dry year

Date: August 13, 2021
Source: SF News
Article: La Nina Watch is Officially On This Fall, and That Could Be Disastrous for the Drought

Date: August 13, 2021
Source: Times Hearld
Article: California drought: How to get free water-saving devices in the Bay Area

Date: August 6, 2021
Source: The Almanac
Article: Three wealthy water districts consume the lion's share of local water

Date: August 4, 2021
Source: The Modesto Bee
Article: Drought update: State Water Board will make the call on refilling Don Pedro reservoir

Date: July 16, 2021
Source: Palo Alto Weekly
Article: How diverse are cities' water supplies — and are they enough?

Date: July 9, 2021
Source: Palo Alto Weekly
Article: State expands drought emergency to Santa Clara, San Mateo counties

September 7, 2021

Water Conservation:

Date: August 26, 2021
Source: Daily Kos
Article: New UC Davis Study Finds Dams Are Ineffective for Cold-Water Conservation for Salmon and Trout

Date: August 11, 2021
Source: SF Gate
Article: Residents Used Less Water In Weeks After Drought Warning

Water Management:

Date: August 11, 2021
Source: Maven's Meetings
Article: CA Water Commission: Dr. Newsha Ajami: Enhancing Regional Water Sustainability Through Virtual Water Trading

Date: August 5, 2021
Source: Public Policy Institute of California
Article: Drought, Water Supply Are Top Environmental Concerns in California

Water Infrastructure:

Date: August 3, 2021
Source: Manteca/Ripon Bulletin
Article: THE TUOLUMNE

Date: August 17, 2021
Source: KPIX 5
Article: EPA Administrator Visits Redwood City to Announce $168M in Loans for Water Infrastructure Improvements

Date: August 15, 2021
Source: Associated Press
Article: Western water projects in infrastructure deal

Water Policy:

Date: August 29, 2021
Source: AZ Central
Article: Australia's water woes offer a preview for Arizona. Will we avoid their mistakes?

Date: August 23, 2021
Source: Bluefield Research
Article: Up 43% over Last Decade, Water Rates Rising Faster than Other Household Utility Bill

Date: August 10, 2021
Source: Treatment Plant Operator
Article: WateReuse Association Applauds Introduction of the Water Reuse and Resiliency Act

Date: August 5, 2021
Source: Clean Water Current
Article: NACWA Letter to Congress Urges Greater Federal Investment, Grants for Water in Infrastructure Package

Many California farmers have water cut off, but a lucky few are immune to drought rules
Los Angeles Times | August 29, 2021 | Ari Plachta

Kim Gallagher in one of her rice fields in Knights Landing.(Max Whittaker / For The Times)

KNIGHTS LANDING, Calif. — Driving between her northern Central Valley rice fields with the family dog in tow, fifth-generation farmer Kim Gallagher points out the window to shorebirds, egrets and avocets fluttering across a thousand-acre sea of green flooded in six inches of water.

“People say agriculture uses so much water, but if you knew who lived in these areas and if you saw the animals taking advantage of it, you’d think there’s a lot more going on here,” Gallagher said. “This is where you’re going to find a Great Blue Heron. If you don’t want that type of bird then we shouldn’t be growing rice.”

The nearly 500,000 acres of sushi rice grown in the Sacramento Valley each year serve as the wetland habitat for thousands of migrating birds along the Pacific Coast. Yet the crop also uses more water than most, and about half of the product is exported to countries including Japan and South Korea.

Since the 1920s, farmers have grown rice in the Sacramento Valley, where old hands fly crop duster planes and rice emblems mark the county buildings. Now, due to decades-old agreements with the federal government, rice farmers like Gallagher are going relatively unscathed by unprecedented emergency water cuts to farmers this month as others fallow fields, wells go dry and low water levels imperil Chinook salmon, the native cold-water fish that play critical ecological roles and support a billion-dollar fishing industry.

A handful of districts supplying farmers including Gallagher are receiving nearly 2 million acre feet of water this drought year, enough to supply the city of Los Angeles for roughly four years. Their seniority is a function of the state's complicated water rights system, which some experts say is ripe for reform as extreme drought magnifies the inequities within it.

Developed in the 19th century by miners who used water to blast gold out of the Sierra foothills, California water rights are based on a concept known as "first in time, first in right."

An irrigation canal that feeds rice fields in Knights Landing.(Max Whittaker / For The Times)

The principle, which remains central to state water law today, roughly translates to "first come, first served" to a quantity of water from a natural source. During drought, rights are curtailed by state regulators from newest to oldest to protect water for residential use and human health and safety essentials.

Most farmers across the state who rely on the Central Valley Project, the nearly two dozen dams and hundreds of canals that make up the federal water allocation system, are getting 5% or less of their usual water supply this year.

The state water board's most recent emergency order barred thousands of farmers, landowners and others from diverting water from the massive Sacramento-San Joaquin Delta watershed that stretches from Fresno to the Oregon border, forcing many to turn to groundwater pumping.

Some of them with rights claims predating 1914, the year California enacted its water rights law, say the State Water Resources Control Board lacks authority to curtail them and sued over the issue during the last punishing drought.

Meanwhile, districts like Gallagher's that have contracts with the water project based on those rights, called the Sacramento and San Joaquin River Settlement Contractors, have never been cut off by more than 25% — even in the driest years.

The fish screen at the Glenn Colusa Irrigation District pumping station in Orland, which supplies water to rice farmers like Kim Gallagher.(Max Whittaker / For The Times)

The largest of this group is Glenn-Colusa Irrigation District, 260 square miles of land best known for rice growing. Its multistory pump station sits on a bend in the Sacramento River near where, in 1883, future state legislator Will S. Green nailed a paper notice to an oak tree claiming millions of gallons per minute of the river's natural flow.

When the federal government was building the Central Valley Project in the 1940s, irrigators such as Glenn-Colusa sued, settling after nearly 20 years of negotiations for contracts to stored water from Shasta Lake, the state's largest man-made reservoir.

Regardless of conditions, federal officials operating Shasta Dam are now obliged to fulfill those contracts to rice farmers and others along the San Joaquin River, with the expectation that there will be legal action if they don't.

'An unprecedented year'

Built by the federal government in the 1940s in the wake of the Great Depression, Shasta Lake is the cornerstone of the Central Valley Project.

Shasta Dam is operated by the federal Bureau of Reclamation, which is responsible for distributing water to farms and communities while protecting the watershed's fish and wildlife. (Max Whittaker / For The Times)

The dam is operated by the federal Bureau of Reclamation, which is responsible for distributing water to farms and communities while protecting the watershed's fish and wildlife. Although the two obligations are equal in the eyes of the law, they often conflict when there's not enough water to go around.

Over the years, the impact of the perennial tug-of-war between competing interests has been felt in the increasing die-off of Chinook salmon, one of California's most iconic fish species.

In April, just as rice farmers in the Sacramento Valley received water to flood their fields, record evaporation of snowpack on the Sierra Nevada mountains meant some 800,000 acre feet of water didn't melt into reservoirs as expected.

Soon after, the State Water Resources Control Board told the Bureau of Reclamation that it violated requirements to keep water flowing through the watershed, in part by allocating too much to agriculture and failing to adequately prepare for drought after a dry 2020.

The bureau had initially aimed to preserve enough cold water in the reservoir to keep nearly half of this year's young winter-run Chinook class alive. By July, it said those initial cold storage benchmarks could no longer be met and now expects a death rate of 80%.

According to Bureau of Reclamation Regional Director Ernest Conant, providing water to settlement contractors like Glenn-Colusa impacts storage levels. But predictions changed because of unexpectedly high rates of depletion downriver — evaporation and potentially unlawful diversions directly from waterways that are difficult to track.

“We started this year with a higher storage level than in previous critical years, certainly higher than 2015,” Conant said. “So, I mean, I think we have prudently planned. This is just an unprecedented year.”

Conant said the agency plans to take a critical look at the way it approaches weather forecasting as water managers throughout the West face record snowpack evaporation. This week, federal officials declared the first-ever shortage from the Colorado River as its largest reservoir, Arizona’s Lake Mead, fell to record lows.

‘An indicator from the ocean to the rivers’

The Centimudi boat ramp on a receded Shasta Lake with Shasta Dam in the background.(Max Whittaker / For The Times)

Shasta Lake is currently at 29% capacity and falling. And without enough cold water in the reservoir, state officials are warning of a near complete loss of young Chinook salmon in warm waters of the Sacramento River, which runs from the Klamath mountains out to the San Francisco Bay.

Fall-run Chinook salmon, which aren't endangered but support California's commercial salmon fishing industry, stand to be adversely affected by drought conditions as well, with the potential for lasting effects on future populations that could raise retail prices in the long run.

Jordan Traverso, a spokesperson for the California Department of Fish and Wildlife, said that the mortality of adult endangered salmon that hadn't had the chance to spawn was more than 20% higher than average this year due to dry river conditions and high water temperatures.

"The greater challenge for winter-run Chinook salmon in 2021 is ensuring that suitable water temperatures can be maintained in the Sacramento River for the developing eggs and embryos that must remain in the gravel before hatching," she said in an email.

The winter-run Chinook salmon native to the Sacramento River are born in freshwater rivers, journey to sea and live in the Pacific for two to three years before coming back as adults to spawn the next generation.

The fish historically swam high into the mountains to spawn in cold water, but since the construction of Shasta Dam, they have adapted to breed in front of it.

Cold water releases into the Sacramento River are meant to preserve water temperatures at or below 56 degrees, keeping eggs and young salmon from dying in the warm river. Dwindling cold water in the reservoir means less is available for the fish.

"Winter-run Chinook is a species that's teetering on the verge of extinction, so losing a whole year class really does not help," said Andrew Rypel, a fish ecologist at UC Davis.

In the 1960s, adult spawning classes were more than 100,000 large, he said. Now that number is 10,000 in a good year.

Winnemem Wintu tribal chief Caleen Sisk on the shore of a receded Shasta Lake.(Max Whittaker / For The Times)

Unlike rice farmers who benefit from a water rights system that prioritizes seniority, the ancestors of Winnemem Wintu tribe leader Caleen Sisk, who fished Chinook out of the same river for thousands of years, were dispossessed by it.

Construction of Shasta Dam flooded the tribe's lands, blocking access to ritual sites and breaking what the tribe sees as a covenant with the fish that once swam miles up their native McLoud River into the mountains.

Salmon are a critical part of the ecosystem, transferring nutrients from the sea to freshwater habitats along their journey, said Sisk, but she fears that message falls mostly on deaf ears among government agencies tasked with managing water.

"Can we do without salmon? Some people think we can. We believe we can't," she said. "They're an indicator from the ocean to the rivers. It's like miners going down into the mines without a canary. They can do it, but there's gonna be a whole lot more problems."

A photo of the Winnemem Wintu tribe in the 1890s whose tribal land was flooded by the Shasta Dam.(Caleen Sisk)

History repeating

A similar chain of events played out in California's punishing 2014 drought, when only 5% of the year's juvenile Chinook survived after the Bureau of Reclamation cited inaccurate computer models for underestimating the amount of cold water storage needed.

"We're repeating that disaster and it's very frustrating to watch," said Doug Obegi, an attorney with the Natural Resources Defense Council in San Francisco.

"Drought makes the challenges much harder, but we have contracts that promise so much water that you have to drain the reservoirs to be able to meet them in a year like this," he said,

pointing to the Bureau of Reclamation's legal obligations to districts including those that serve Sacramento Valley rice farmers.

If water rights can't be fulfilled during drought years without letting close to an entire class of endangered Chinook die, Obegi thinks those districts' contracts need to be reconsidered.

But Glenn-Colusa Irrigation District General Manager Thad Bettner said growers shouldn't be forced to conserve unless urban areas are doing the same. Measures such as voluntary reductions, which he said the district implemented this year, or selling more water down south by fallowing fields, could help avoid disaster in the next drought.

"This is the water rights system that we inherited from our forefathers. All people say is 'Well, maybe it's not working.' But it's like, then what do you want to change it to?" Bettner said. "Until we have that sort of conversation, I think this is a system we know we can make work."

Kim Gallagher stands in a rice field she's fallowed due to a lack of water in Knights Landing.(Max Whittaker / For The Times)

Asked whether flooding fields like hers could have played a role in depleting the cold water pool for salmon, Gallagher said the answer is above her pay grade. She had hoped that letting one of her rice fields fallow and selling the water down south later in the season was doing her part to maintain storage.

“I don’t know how it could be my fault, and I don’t know how it could be [the bureau’s] fault. I just think we don’t have a system that’s working well in a drought year and we’re just doing our best to try and make it through,” she said.

Settlement contractors are one part of the legal battle over the state’s authority to regulate California’s longest-standing water users that makes its water rights system “wholly unsuited to the modern state and even more wholly unsuited to a region facing climate change,” said Michael Hanemann, environmental economist and former UC Berkeley professor.

After studying water rights for 30 years, he said the big question is whether the state can legislate structural changes to the system and extend the authority of regulating agencies to the most senior rights.

The state water board is currently “muddling through” with emergency regulations similar to those that Gov. Jerry Brown empowered the state water board to enact for the first time in 2014, Hanemann said.

“Up to now, legislation that was far reaching enough to change the system could never pass because the vested interests were too powerful,” Hanemann said. “All of this is good, but it’s not doing much without passing legislation.”

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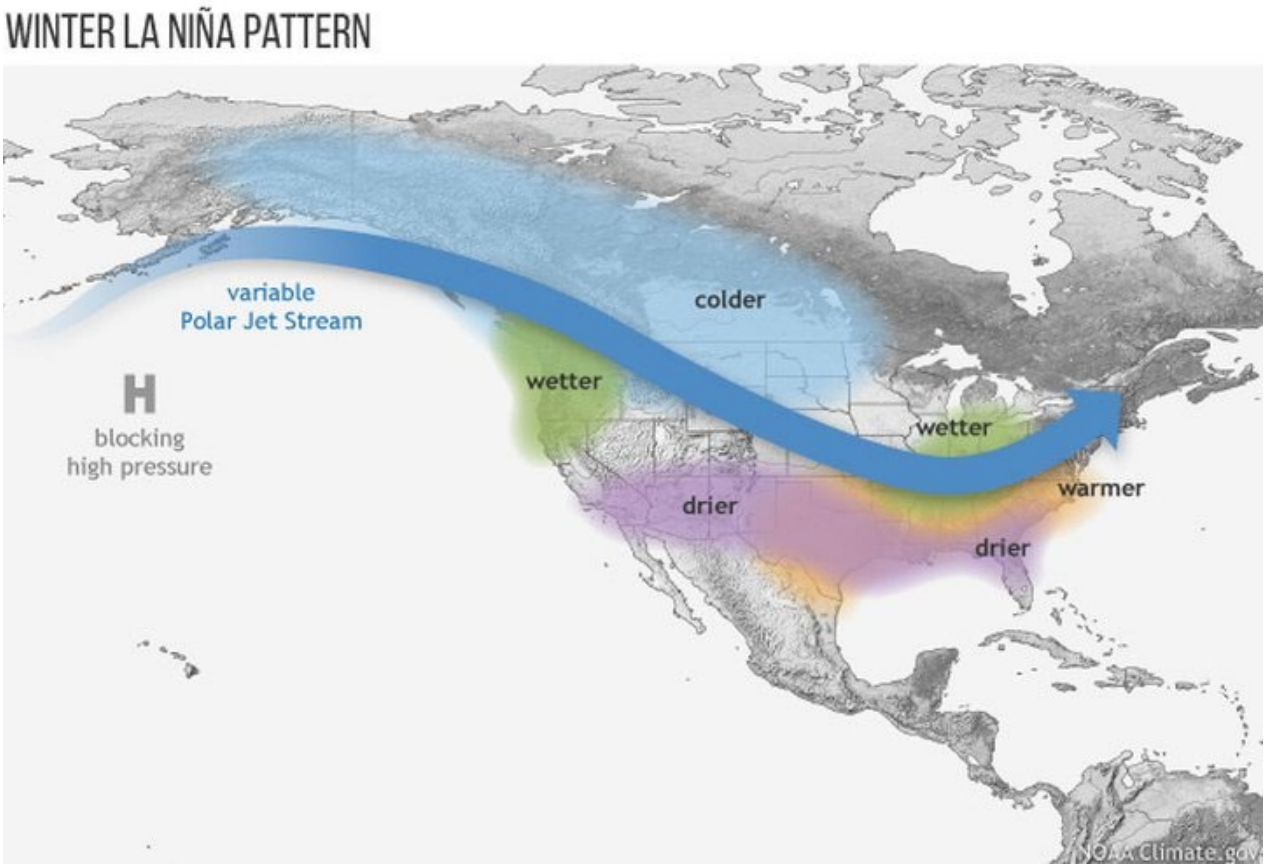
NOAA Predicts 70 Percent Chance of Rainy La Niña Weather Across the Pacific Northwest This Fall, Winter

Lost Coast Outpost | August 26, 2021 | John Ross Ferrara

The drought-stricken Pacific Northwest is expected to see heavy rainfall in the coming months, scientists say.

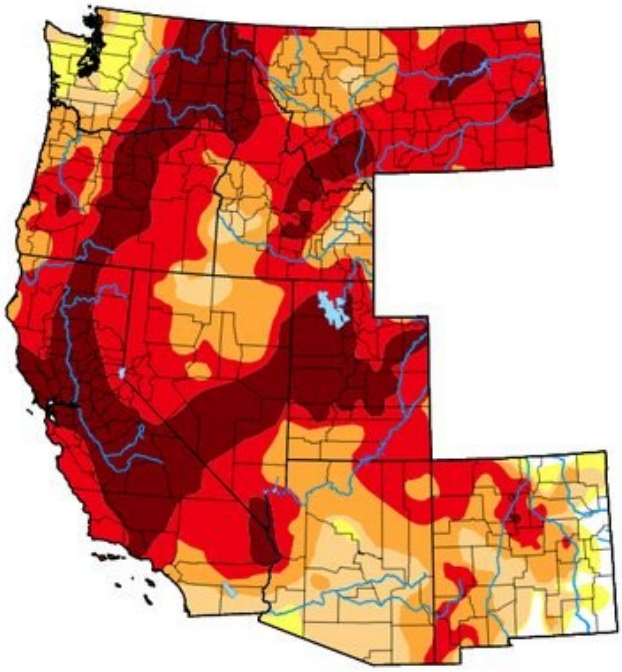
The National Oceanic and Atmospheric Administration announced earlier this month that the region has a 70 percent chance of receiving La Niña weather between November and January.



The winter La Niña weather pattern. | NOAA

La Niña is a shift in weather patterns that occurs every two to seven years, caused by strong westerly trade winds that upwell cooler ocean waters in the eastern Pacific. The cool ocean waters push the polar jet stream north, bringing colder temperatures, heavy rains and flooding to the Pacific Northwest. This shift can also spell drought for America's Southwest and severe hurricanes for the East Coast.

The NOAA predicts that the La Niña weather pattern could emerge as early as August, and have the potential to dump heavy rainfall across Pacific Northwest throughout the 2022 winter season.



Map released: Thurs. August 26, 2021

Data valid: August 24, 2021 at 8 a.m. EDT

Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Authors

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Brad Rippey, U.S. Department of Agriculture

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

The storms will likely provide relief for much of America's Northwest, which is currently experiencing various stages of intense drought.

###

State orders 4,500 cities, farms to stop drawing river water, including San Francisco

San Francisco Chronicle | August 20, 2021 | Kurtis Alexander

A worker suctions water as part of the furrow irrigation process for tomatoes in Los Banos on a farm that gets some of its water from the San Joaquin River (Leah Millis/The Chronicle 2014)

California regulators began cracking down on water use in the sprawling Sacramento River and San Joaquin River watersheds on Friday, ordering 4,500 farmers, water districts and other landowners, including the city of San Francisco, to stop drawing water in the basins — or face penalties of up to $10,000 a day.

The move comes as the state slides deeper into an extraordinary two-year drought. Lakes, streams and rivers no longer have enough water for everyone who is taking it, and dwindling supplies must be rationed, state regulators say.

The new and unprecedented restrictions are certain to meet resistance and legal challenges. They'll hit the state's agricultural industry the hardest, denying river water for fields that have no other water source, from Fresno to the Oregon border. Numerous towns and cities across the state are also being told to halt their draws, and while most have alternative supplies or storage to fall back on, many don't like having their hands tied.

"It's very important that everyone comply with the curtailment orders," said Erik Ekdahl, a deputy director for the State Water Resources Control Board who oversees the agency's Division of Water Rights. "We are ready to enforce on the curtailment orders should that be necessary."

Friday's action is the latest in a series of steps the water board has taken to execute the most extensive cuts ever under California's water rights system. Regulators in June sent letters to thousands of water rights holders, saying there wasn't enough water to meet their demands, but only now are they starting to take action. Past lawsuits challenging the board's authority prompted the lengthier and more procedural run-up.

The city of San Francisco, which draws water from the Tuolumne River in the San Joaquin River basin, has dozens of water rights that date from 1901 to 1911, which are curtailed under the water board's directive. Officials with the San Francisco Public Utilities Commission told The Chronicle they were looking into the situation.

The city has enough water in its reservoirs to meet demand for at least a couple of years, and stored water is not affected by the state restrictions. Water agencies also can seek an exemption from curtailments if human health or safety are compromised.

Still, even though the orders may have limited impact on San Francisco, city water officials have questioned the state's authority to restrict their water rights in the past. More recently, they have said they don't want the state to set a precedent of limiting their water.

"We look forward to receiving a notice, which we will review in detail and respond appropriately," SFPUC spokesman Will Reisman said.

The new cuts conform to the state's hierarchy of water rights. Per the historical system, priority is given to those who made the earliest claims to water, with some claims dating back hundreds of years, as well as to those who have property along a waterway.

While restrictions aren't uncommon for those with water rights from 1914 or later, cuts to those with older water rights, known as senior water users, are rare as well as legally fraught. The state board began regulating water rights in 1914, and many argue that the board doesn't have authority over water rights before that time. The issue is yet to be resolved in court.

In the Sacramento River watershed, which covers many rivers and streams north of Sacramento, the state is restricting water users with water rights appropriated after the mid-1890s. In the San Joaquin River watershed, which consists of rivers and streams south of Sacramento, all water rights holders are being restricted except those with land next to a waterway, with so-called riparian rights.

In total, 10,300 water rights are being curtailed. These rights are held by about 4,500 people, business and public agencies. There are a total of about 6,600 water rights holders in the Sacramento River and San Joaquin River watersheds.

State regulators say the restrictions will be lifted once river conditions improve.

The orders are not only meant to prioritize the limited water in the rivers for those with the strongest water rights but to protect fish and wildlife the rely on the water and keep the Sacramento-San Joaquin River Delta from getting too salty. When the rivers get low, seawater from San Francisco Bay pushes deeper into the delta, threatening to undermine that supply. Nearly 30 million Californians rely on delta water.

# # #

Gov. Newsom says mandatory statewide water restrictions for California may be on the way

In visit to Big Basin Redwoods State Park, governor talks climate change, wildfire recovery

Mercury News | August 18, 2021 | Paul Rogers

BOULDER CREEK, CALIFORNIA - August 17: Gov. Gavin Newsom, right, tours Big Basin Redwoods State Park with EPA Administrator Michael Regan, left, on Aug. 17, 2021, in Boulder Creek, Calif. (Dai Sugano/Bay Area News Group)

Gov. Gavin Newsom said Tuesday that he may put mandatory water restrictions in place in as soon as six weeks from now as the state's historic drought continues to worsen.

The declaration came as the governor and U.S. Environmental Protection Agency Administrator Michael Regan inspected recovery efforts at Big Basin Redwoods State Park in the Santa Cruz Mountains one year after a massive wildfire burned through the park's ancient redwoods.

Asked if he was going to require cities to meet mandatory water conservation targets, as former Gov. Jerry Brown did statewide during the last drought from 2012 to 2016, Newsom noted that he already called for 15% voluntary conservation, but that could change soon.

“At the moment, we’re doing voluntary,” the governor said. “But if we enter into another year of drought — and as you know our water season starts Oct. 1 — we will have likely more to say by the end of September as we enter potentially the third year of this current drought.”

California is currently suffering through its worst drought in nearly 50 years. Mandatory water conservation targets would likely mean widespread limits on watering lawns, with fines for violators, along with water allotments for homes and businesses, as occurred during the last drought as a tactic to keep supplies from running out.

Overall, 88% of the state is in extreme drought, according to the U.S. Drought Monitor, a weekly report issued by the U.S. Department of Agriculture, NOAA and the University of Nebraska.

After the least rainfall in any two-year period since 1975-77, reservoirs in many places across Northern California have fallen to shockingly low levels.

The largest state-owned reservoir in California, Lake Oroville in Butte County, on Tuesday was just 23% full — the lowest since it was built in 1969. Last week, dam operators shut down the reservoir’s hydroelectric power plant because there is no longer enough water to spin its turbines.

Other large reservoirs around California are nearly as low. The largest, Lake Shasta, was 29% full on Tuesday. Folsom reservoir north of Sacramento was 23% full. San Luis east of Gilroy was 16% full.

Some communities, including Mendocino and Fort Bragg, are in danger of running out of water entirely.

On July 8, Newsom asked all Californians to reduce their water consumption by 15% voluntarily.

But some water experts say that isn’t enough, given the gravity of the situation.

“I was glad to see him pay more attention to the drought, but I’m sorry it wasn’t more than 15%, and I’m sorry it wasn’t mandatory,” said Peter Gleick, president emeritus of the Pacific Institute, a non-profit water research center based in Oakland.

“There has been a clear underestimate of the speed and intensity of this drought,” said Gleick, who has written 11 books about water policy and climate. “There should have been calls months ago for expanded conservation and efficiency. There should have been calls for more aggressive and mandatory restrictions. This is a very severe drought, and we don’t know when it is going to end. If we are lucky it will end with the next rainy season. If it doesn’t we are going to be sorry we didn’t save more water sooner.”

Brown issued a statewide order for communities to reduce water use 25% in 2015 during the state’s 2012-16 drought, after voluntary efforts proved insufficient. Each city was given a

different target based on its per-capita water use with fines for failing to meet the targets and monthly updates on progress. The state achieved a 24.5% reduction.

Newsom noted that he already has declared a drought emergency in 50 of California's 58 counties, which can make them eligible for state and federal assistance.

"We're likely going to need to do that to the entire state," he said.

Newsom recently toured Oroville to see its low levels. Asked whether he was planning to shift the state from voluntary to mandatory conservation targets, he said:

"We are monitoring conditions in real time, and as is the case so often with so many issues that we are facing — not the least of which is COVID — we're open to facts. We're not ideological about the nature of the challenge and the willingness to lean in and make subsequent recommendations and announcements."

Currently, some communities where local supplies are running particularly short have imposed water restrictions. The Santa Clara Valley Water District, based in San Jose, on June 9 declared a drought emergency and asked the 2 million residents of Santa Clara County to cut their water use 15% below 2019 levels. But usage in June showed a 0% drop, meaning Santa Clara County residents used the same amount of water as they did two years ago.

Other large water agencies, including East Bay Municipal Utility District and San Francisco Public Utilities Commission, have no mandatory water restrictions.

Newsom is facing a recall election on Sept. 14. Some political observers say that after a year in which he asked Californians to sacrifice during the COVID-19 pandemic, he is likely hesitant to ask for more sacrifice before the election, which polls show is tight.

"In another time, a governor might call for mandatory restrictions," said Larry Gerston, professor emeritus of political science at San Jose State University. "It seems reasonable from the standpoint of self preservation that he would be very cautious about causing any more disruption among the voters than there already is."
Newsom spent an hour at the still-closed Big Basin, California's oldest state park, where crews have cleared burned buildings and removed trees in danger of falling.

"We're going to get through this," he said, looking at the charred redwoods which already are sprouting green branches and shoots. "And we're going to come out the other side more capable and more resilient."

# # #

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No immediate reprieve from San Mateo County's dry year
Daily Journal | August 15, 2021 | Julia Lee Daily

While it's hard to forecast past October, the Bay Area and San Mateo County should expect the dry season to continue as the state faces fire season and the ongoing drought.

"It's unlikely that we're going to get significant precipitation through at least the month of October. It's pretty unlikely that we see heavy rainfall move in, until we reach the winter month," said Roger Gass, meteorologist at the National Weather Service.

A little bit of rainfall across the region could start in October and then pick up more in November and December. The current drought conditions bring concerns for if there is any strong offshore wind, a wildfire would have the potential to spread rapidly, he said.

"It is typically during the fall that we get offshore wind that really crank up and are really strong at times in the hills and at higher elevation. And that's something that we all need to monitor closely, especially given the ongoing drought," he said.

Over the past five to 10 years, fire season has started earlier and lasted longer across the state of California which is also due to the ongoing dry conditions and rainfall starting later, he said.

"In the last decade plus, California has been setting some kind of new wildfire record almost every year, whether it's the size of fire, dollar value of damages from fire, the number of acres burned," Jeanine Jones, interstate resources manager and drought manager at the California Department of Water Resource, said. "And that reflects that we have this condition of ongoing aridity and high temperatures."

The water year 2021, which runs from Oct. 1 to Sept. 30 has been dry statewide. From the historical climate records, August, September and October are typically pretty dry. And on average, 50 percent of California's precipitation occurs in December, January and February, she said.

"And it really is that period from December on that's really important for how we do with the water year. And that is, unfortunately, the period that no one can predict with any lead time," she said.

To better facilitate this transition to drier conditions, she said there needs to be improved forecasting at a longer time scale, particularly for precipitation, to get a longer lead time about what to expect for the next year and what do they need to do about it now.

"And that really falls on NOAA because they are the experts at meteorology," she said.

NOAA, The National Oceanic and Atmospheric Administration, is an agency within the U.S. Department of Commerce that forecasts weather, monitors oceanic and atmospheric conditions.

Droughts are a normal part of California's hydrologic cycle but since 2000, the state has experienced a preponderance of dry years, she said.

"We're seeing a transition from drought that only occurs occasionally, which has been historically normal, to dry conditions becoming essentially drier and warmer conditions becoming essentially an ongoing thing," she said. "And what we're really doing is transitioning to a different climate state so we need to stop thinking about drought as being an emergency and think about a transition to drier conditions."

The longer dry conditions persist, the larger the deficit in terms of atmospheric or climatic moisture, such as low levels of lakes and reservoirs, low stream flows and soil moisture. The coming wet season will have to have well above average precipitation to get average runoff, Jones said.

# # #

La Niña Watch Is Officially On This Fall, and That Could Be Disastrous for the Drought
SF News | August 13, 2021 | Jay Barmann

We are looking at back-to-back La Niña winters, and while forecasters tried to keep us optimistic about the chances of average rainfall last winter, we all know how that turned out. So we should brace ourselves for another year of this drought.

Forecasters at the Climate Prediction Center issued an update Thursday giving a 60% chance that another La Niña pattern will form — and this same forecast was given last year, only to be updated the second week of September to say, "Yep, La Niña is here."

La Niña temperature patterns, in which cooler temperatures gather along the surface of the Pacific, have a mixed bag of effects on the West Coast, with the tendency to make for drier than average winters in Southern California, and wetter than average years for the Pacific Northwest. This past winter, there was hope early on that the drier than average November and December here in Northern California would give way to to wetter winter and spring months, but that didn't happen, and we had one of the driest winters on record, making our current drought that much worse.

The drought in the American West is one issue that a second La Niña winter could exacerbate. As CNN reports, this could also spell disaster for the East Coast hurricane season, because La Niña patterns tend to inhibit wind shear — and the only thing that ends a hurricane season is increased wind shear. Last year's extreme hurricane season, in which they got to the end of the alphabet with named storms and had to start using Greek alphabet letters for names — something that the World Meteorological Association decided this year it would stop doing because it got confusing. (If we get up to more than 21 named storms this season, they will revert to a supplemental list of names that uses less common names and the letters X, Y, and Z.)

The hurricane season in the Atlantic is already more active than usual, with six named storms already — including Fred, which is expected to make landfall as a tropical storm in Florida on Saturday. But there's already another tropical depression forming behind it, which forecasters say will be Tropical Storm Grace by Saturday. Storm watches have already been issued for Antigua, St. Kitts and Nevis, Montserrat, and Sint Eustatius.

As CNN notes, there typically are not six named storms until around September 8, which is when the Atlantic hurricane season hits its peak. So the Gulf of Mexico and Atlantic coast could be in for a very busy month or two, storm-wise, starting now.

We should know better in a few weeks if this really will be a La Niña year or not.

# # #

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California drought: How to get free water-saving devices in the Bay Area
Many water agencies give away water conservation tools to local residents
Times Herald | August 13, 2021 | Paul Rogers

Sprinklers water the lawn of a house in Alameda, Calif., on Tuesday, May 4, 2021. (Ray Chavez/Bay Area News Group)

By now, most Northern California residents know the state is in a severe drought, having received the least amount of precipitation over the past two years than any time since 1976-77.

As reservoir levels drop, cities, water districts and private water companies are increasingly putting in place rules limiting water use. Some are already setting monthly water allotments, with surcharges for homes and businesses that use more than the limit.

If this upcoming winter is dry again, fines, surcharges and other limits will be common across Northern California next year to preserve dangerously low supplies.

The easiest way to cut water use in urban areas, experts say, is to reduce landscape watering, which accounts for 50% of residential water use in California. After doing that, check for leaks, take shorter showers and don’t leave the faucet running when you’re washing dishes, shaving or brushing teeth.

Most of the Bay Area's largest water providers give away free water saving devices to any customer who lives in their service area. They include:

– Low-flow shower heads- Faucet aerators, or screens, that reduce water flow from faucets- Shower timers, to put inside showers- Toilet flappers, because old ones sometimes leak- Irrigation screwdrivers, to adjust sprinkler heads more easily- Blue dye tablets, to help find toilet leaks- Garden hose shutoff nozzles- Door hangers and signs for restaurants and hotels encouraging water conservation

Not all water providers give free devices, and those that do only provide them to residents of their service areas. To find out if your city gives away these items or others for free, contact your city water department. If you live in areas served by the largest water districts in the Bay Area, check their websites here, which detail what they give away and how to get it:

1) Santa Clara Valley Water District – provides water to 2 million people in Santa Clara Countyhttps://cloud.valleywater.org/ords/r/appweb/shopping-cart/store

2) Contra Costa Water District – provides water to 550,000 people in central and eastern Contra Costa Countyhttps://www.ccwater.com/339/Water-Conservation-Devices

3) East Bay Municipal Utility District – provides water to 1.4 million people in northern Alameda and western Contra Costa counties.https://www.ebmud.com/water/conservation-and-rebates/rebates/free-conservation-items/

4) Alameda County Water District – provides water to 350,000 people in Fremont, Newark and Union Cityhttps://www.acwd.org/FormCenter/Water-Conservation-11/Water-Conservation-Kit-Order-Form-63

5) San Francisco Public Utilities Commission – provides water from the Hetch Hetchy system to 2.7 million residents in San Francisco, and parts of San Mateo, Santa Clara and Alameda counties. Water-saving devices below are for San Francisco residents.

https://www.sfpuc.org/learning/conserve-water/free-evaluations-and-devices/water-saving-devices

6) Peninsula – Residents of the 26 other communities in that receive Hetch Hetchy water should contact their local water provider, such as the city water department or private water company that sends them bills, or check the website of the Bay Area Water Supply and Conservation Agency to see which of those providers offers free water-efficient gear.

https://bawsca.org/conserve

# # #

Three wealthy water districts consume the lion's share of local water
Landscaping accounts for the biggest use
The Almanac | August 6, 2021 | Sue Dremann, Palo Alto Weekly

Water flows out the fountain on California Avenue in Palo Alto on Aug. 4, 2021. (Magali Gauthier/Palo Alto Weekly)

The biggest sip of the straw from the Bay Area's water supply comes from people living in just three water districts: They consume nearly three to four times the amount of water as residents in 23 other municipalities and districts, according to data from the Bay Area Water Supply and Conservation Agency, whose member agencies receive most of their potable water from the Hetch Hetchy system.

Residential use per capita is highest in the wealthiest communities while residents in the least financially advantaged communities consumed the least, according to the 2019-2020 annual survey, the latest to be published.

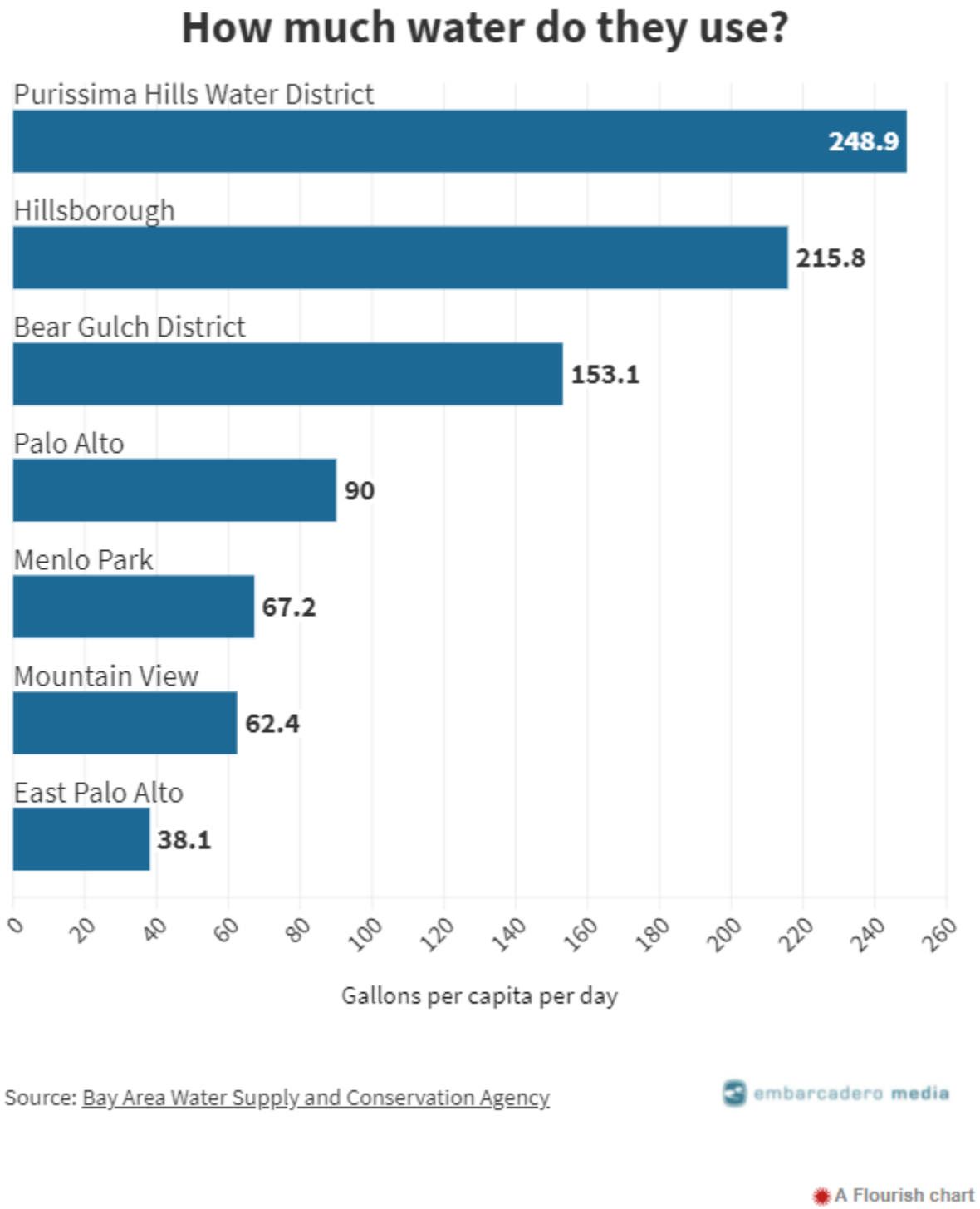
The differences are striking amid the growing drought, and there are currently no mandatory water restrictions to curtail use.

The biggest water users are in the Purissima Hills Water District, which serves two-thirds of Los Altos Hills and an unincorporated area to the south. Residents there used 248.9 gallons of water per capita per day in fiscal year 2019-2020, according to the water agency's data.

Residents of California Water Service's Bear Gulch District, which serves Atherton, Woodside, Portola Valley and parts of Menlo Park, use 153.1 gallons per capita per day.

Per capita, residents in the 26 Bay Area Water Supply and Conservation Agency (BAWSCA) member agencies use 63.4 gallons on average per day. Fifteen communities use less than that amount, with East Palo Alto residents using the least, at 38.1 gallons per capita per day.

Second in line are Hillsborough residents, who use 215.8 gallons per capita per day.



Frugality isn't at the heart of this stark contrast — it's real estate, some water operators said. In an urban environment or a community with few parks and higher-density housing, water use is pretty much confined to drinking, cleaning and bathing. But in communities with lush lawns, expansive acreage and landscaping, water use skyrockets.

That's the case in Hillsborough and Los Altos Hills, where there are primarily estate homes with most having a minimum lot size of one-half to 1 acre. Water demand for landscaping, pools and ponds is sizable. In its 2012 voluntary landscaping guidelines for Los Altos Hills, Purissima Hills Water District noted that landscaping accounted for 75% of water usage.

In Hillsborough, more than two-thirds of all water is used for irrigation, pools and other outdoor purposes, according to the town's website. Water conservation efforts have traditionally focused on indoor water use such as water-efficient toilets, shower heads and washing machines, the website stated.

However, "reducing outdoor water use represents the greatest opportunity for Hillsborough to conserve water. The town has implemented several new programs to promote outdoor water conservation," the town website stated.

Considering its potential water savings, the 2020 Urban Water Management Plan for California Water Service's Bear Gulch District found that limiting landscape irrigation to one to three days per week, prohibiting irrigating ornamental turf on public street medians with potable water and banning filling ornamental lakes and ponds among other restrictions could reduce a projected water-shortage gap by 26%.

Closer to home, three Peninsula cities also rank in the upper echelons of water use, according to BAWSCA: Palo Alto, Menlo Park and Mountain View. Below are snapshots of their water usage.

Palo Alto

Corey Walpoe, a shift supervisor from the city of Palo Alto's Regional Water Quality Control Plant, gives a tour of the building. (Veronica Weber/Embarcadero Media)

Most Palo Altans might not have the large lots of Hillsborough and Los Altos Hills, but the city's residents rank as the fourth thirstiest in the BAWSCA system, at 90 gallons per capita per day.

The city's 2020 Urban Water Management Plan and Water Shortage Contingency Plan, published in June, found that 63% of water was for residential use.

Most of that went to landscaping, said Catherine Elvert, city of Palo Alto Utilities communications manager.

"Landscaping in residential areas for homes constitutes 50% or more of a home's total water use. The approximate 50% of water use per household is an average estimate of water use for a single-family home. This of course will vary based on landscape area and plant type," Elvert said.

Business and industry used 18% of water; irrigation customers used 12%; and public and city facilities consumed 7%, according to the water management plan.

The city uses some recycled water from its Regional Water Quality Control Plant, including 36 acre feet that went to parks in fiscal year 2020; 316 acre feet used at the municipal golf course; and 25 acre feet for the duck pond. Fountains at Lytton Plaza and California Avenue also use recirculating water, said city spokesperson Jeanne Billeci.

At the beginning of the current drought, the city began to reduce potable water use in grass areas that were not playing fields, but it has kept watering areas with trees, Billeci said. The city converted some turf areas into native plant landscapes and uses recycled water from the Regional Water Quality Control Plant at Greer Park, she added.

Menlo Park

Cleaned wastewater, which is not potable but suitable for irrigation, drips from a spigot at the wastewater treatment plant at the Sharon Heights Golf and Country Club in Menlo Park. (Kate Bradshaw/Palo Alto Weekly)

Menlo Park Municipal Water residential customers used 67.2 gallons of water per capita per day in fiscal year 2019-2020, according to BAWSCA, ranking it the seventh largest water user among member agencies. Menlo Park Utilities Department didn't have specifics regarding how its water is used by residents, as they normally have just one meter measuring water for both indoor and outdoor use, the department stated in an email. The same goes for smaller non-residential customers. Larger non-residential customers normally have separate meters for indoor and outdoor use.

According to the city's 2020 Urban Water Management Plan, 41% of water use was residential from 2016-2020. Commercial, industrial and institutional use, large sectors in the city, used 44% during the same time period. Irrigation represented 12% of total water demand.

Overall, water users, both residential and commercial, use about 1.26 million gallons per day. The number pertains to water use within the district's boundaries only, however, and doesn't

include uses by customers in the California Water Service area, which also serves some Menlo Park customers.

In 2020, the city used approximately 70,500 million gallons per day for its parks and landscaping, which excluded any use of water in the California Water Service areas.

The city's parks maintenance team has been conserving water by using mulch, setting mower blades to three inches to encourage deep roots, using drought-tolerant and resistant plants and trees, repairing irrigation leaks as soon as they are discovered and adjusting sprinkler heads to prevent runoff, adding drip systems and smart irrigation controllers, according to the utilities department.

Mountain View

Water flows down Stevens Creek by the Google Crittenden campus in Mountain View's North Bayshore area on March 4, 2020. (Magali Gauthier/Palo Alto Weekly)

Mountain View residents used 62.4 gallons of water per capita per day, ranking the city the 11th thirstiest, but its usage is below the average per capita residential use among the BAWSCA member agencies, according to the water agency.

The city's largest category of water users is residential, followed by large landscape and commercial or institutional uses, city Water Resources Manager Elizabeth Flegel said. In 2020, 58% was for residential use; 24% for large landscape irrigation; 11% for commercial and institutional use; 3% was for industrial use; and 0.08% for construction. Recycled water

amounted to 3.7%, according to the city's 2020 recently adopted 2020 Urban Water Management Plan.

For its municipal water use, the city has nearly 200 water meters serving city-owned properties, including parks and landscaping. Usage varies over time, but typically accounts for 2% to 3% of total citywide water use, Flegel said.

Although Mountain View has overall seen a steady increase in water usage since 2017, its current water demand is 16% below the 2013 pre-drought baseline, according to the water management plan.

When pushed by a drought, customers respond to conservation efforts, Flegel said. The city's historical water demand shows a general downward trend in water use since the mid-1980s, according to its urban water management plan. In periods of drought, the city had rapid drops in water use. Landscaping water use dropped by nearly a third in 2015 and 2016 during the drought, according to the management plan, with single-family residential use also dropping significantly. Commercial, industrial and institutional use dropped and stayed steady starting in 2015 and in 2020 it is the only sector that dropped.

Mountain View encourages customers to use water wisely and limit irrigation to three days per week, Flegel said.

"The city's Parks Division carefully manages landscape irrigation to maintain efficiency and is following the same voluntary conservation measures currently requested from our customers," she said.

East Palo Alto

The Palo Alto Park Mutual Water Company in East Palo Alto on July 23, 2019. (Magali Gauthier/Palo Alto Weekly)

the evolving city of East Palo Alto tops BAWSCA's list of the water conservers at 38.1 gallons per capita per day in fiscal year 2019-2020. Water use has gone down overall since 2010, even as its population and commercial development have grown, from a high of 88 gallons per capita per day in 2010 when the service population for the city-owned utility was 22,916 to 60 gallons per capita per day in 2020 with a service population of 25,935, according to the city's 2020 Urban Water Management Plan and Water Shortage Contingency Plan, which was published in June. Some East Palo Alto residents are also served by a water cooperative and a mutual water company, which are not figured into this data.

Although the city doesn't break out its residential use by indoor and outdoor uses, it estimated residential water use as higher than BAWSCA's 2019-2020 measurement. In 2020, residents used 38 gallons per capita per day for indoor use and four gallons per capita per day outdoors.

The city estimates 71% of its water is used in residences. Commercial users consume 18%, while institutional and government uses 1% and industrial uses 1%; 8% of its water is lost through leaks and for unknown reasons.

Patrick Heisinger, assistant city manager, said that in part the city's low water use is due to half of its residences being multifamily units.

"There's not big open space watering and you don't see a lot of big gardens; there's not big, endless landscapes like in Hillsborough," he said.

Although the city is planning multiple large-scale commercial projects, those buildings would have all-new infrastructure that would save "a ton" of water, he said. The city is also looking at other ways to chip away at water use in its five parks and at school district playing fields. The city is in discussions with the Ravenswood City School District to potentially resurface its playing fields with synthetic turf, he said.

Ways to conserve water

While none of the cities has implemented mandatory restrictions on water usage, they do offer multiple incentives and rebates.

Mountain View offers free water-wise surveys, free trees to help cool the community and rebates for landscaping and other water-conserving methods. Visit mountainview.gov.

Menlo Park offers free rain barrels, landscaping rebates, smart sprinkler-control rebates, free fixtures and, for commercial and multifamily residential consumers, a free landscape analysis program. Visit menlopark.org.

Palo Alto offers rain barrel, cistern and pervious-pavement rebates as well as rebates for water-wide landscaping. The city is considering instituting an online water-monitoring program to help residents view and regulate their water use. Visit cityofpaloalto.org.

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Drought update: State Water Board will make the call on refilling Don Pedro reservoir
Modesto Bee | August 4, 2021 | Ken Carlson

The Tuolumne River emerges from the powerhouse at New Don Pedro Dam and heads downstream toward the LaGrange Dam in 2015. (Jeff Jardine/Modesto Bee)

A state board approved a drought regulation Tuesday that puts irrigation districts in Stanislaus County in the precarious position of trusting a state agency they have battled with in the recent past.

Faced with a worsening drought emergency, the State Water Resources Control Board will move ahead with curtailment orders to stop some diversions from rivers and deal with severe water shortages.

“It takes over local management of our (water storage) systems and asks local managers to trust the state water board to run their systems,” said attorney Valerie Kincaid, representing the San Joaquin Tributaries Authority, which includes the Modesto, Turlock and Oakdale irrigation districts.

“This seems awfully fast. My suggestion to build trust is to slow this process down and hear from us some more. You have to listen to the stakeholders in this process,” Kincaid said in comments to the state board.

The water board approved the regulations in a 5-0 vote Tuesday after spending almost seven hours on the item.

Three years ago, the state board pushed a controversial plan for a sharp increase in environmental flows on the Tuolumne, Stanislaus and Merced rivers. In August 2018, about 1,500 people from Stanislaus and Merced counties attended a boisterous rally in Sacramento to protest the “water grab”, which some predicted would decimate the local economy.

Lawsuits followed and the issue is not settled yet.

The same water board, which oversees water rights in California, could issue orders in mid-August to stop certain diversions on rivers flowing into the Sacramento-San Joaquin River delta to protect drinking water supplies or save endangered fish amid the worst drought since 1977.

The water board action was supported by a panel of top directors over the state Department of Water Resources, Bureau of Reclamation and California Department of Food and Agriculture.

Local irrigation districts are now faced with ceding control to a water board deputy director, who will have authority to stop diversions on rivers including the Tuolumne and then decide when to lift the orders.

In other words, if the state agency temporarily halts diversions at Don Pedro dam as a drought measure, its deputy director will decide when MID and TID can start refilling the reservoir again.

Joaquin Esquivel, chairman of the state board, thanked Kincaid for raising the trust issue, though he disagreed with a number of points raised by the San Joaquin Tributaries Authority.

“We need to build trust and it is a two-way process,” Esquivel said.

Modesto Irrigation District didn’t have an immediate comment following the state board decision. The regulation will proceed to a five-day comment period. The first containment orders to stop diversions will be issued Aug. 16-19.

The orders may be issued if data shows that water is not available for a particular use in this time of extreme imbalance between water demands and supply.

The containment orders could play more of a role in drought management next year if dry conditions persist in the fall and the drought intensifies in 2022. Most demand for irrigation water has passed this year.

No immediate impacts are anticipated for city of Modesto water customers who receive treated water from MID.

WHY THE REGULATION IS NEEDED

The state board clarified some issues regarding the proposed regulation unveiled July 23.

The orders to curtail diversions don’t apply to water previously placed in storage. Don Pedro will continue generating hydropower in the coming months as water is released for customer deliveries and environmental benefits, MID spokeswoman Melissa Williams said by email.

The state board also clarified that by Oct. 1, the deputy director will assess whether to allow diversions to resume or continue with a curtailment order. Storms or increased river flows in the fall would allow a dam operator to begin storing water for next year.

Local irrigation districts said they could see the impacts of a curtailment order in 2022. Hypothetically, a curtailment order imposed in August could keep Don Pedro’s operators from refilling the reservoir this fall if the state board does not lift the order.

The state board said curtailment orders may be lifted when river flows increase or are projected to increase, with the intent of regaining reservoir storage.

The state is open to cooperative agreements among water rights holders as an alternative to curtailment orders.

According to presentations at the meeting, the state action is needed to keep salinity levels from rising in the delta, to protect drinking water supplies for cities and avoid drawing down reservoir storage that's already critically low.

Esquivel said illegal diversions are depleting storage supplies.

A chart displayed during the meeting painted a dire picture after two dry years. The water supply in the San Joaquin River watershed is 6 percent of demand for 229,000 acre feet of water. The Sacramento River watershed can meet about a third of demand for 803,000 acre feet of water.

The state agency said reservoirs are near record low storage, including the ones that maintain salinity in the delta and supply drinking water to two-thirds of the state.

Shasta, Oroville and Folsom dams are holding about one third of historic average storage. Staff noted that the 1976-77 drought was more severe but drinking water and other demands for delta water were less at that time.

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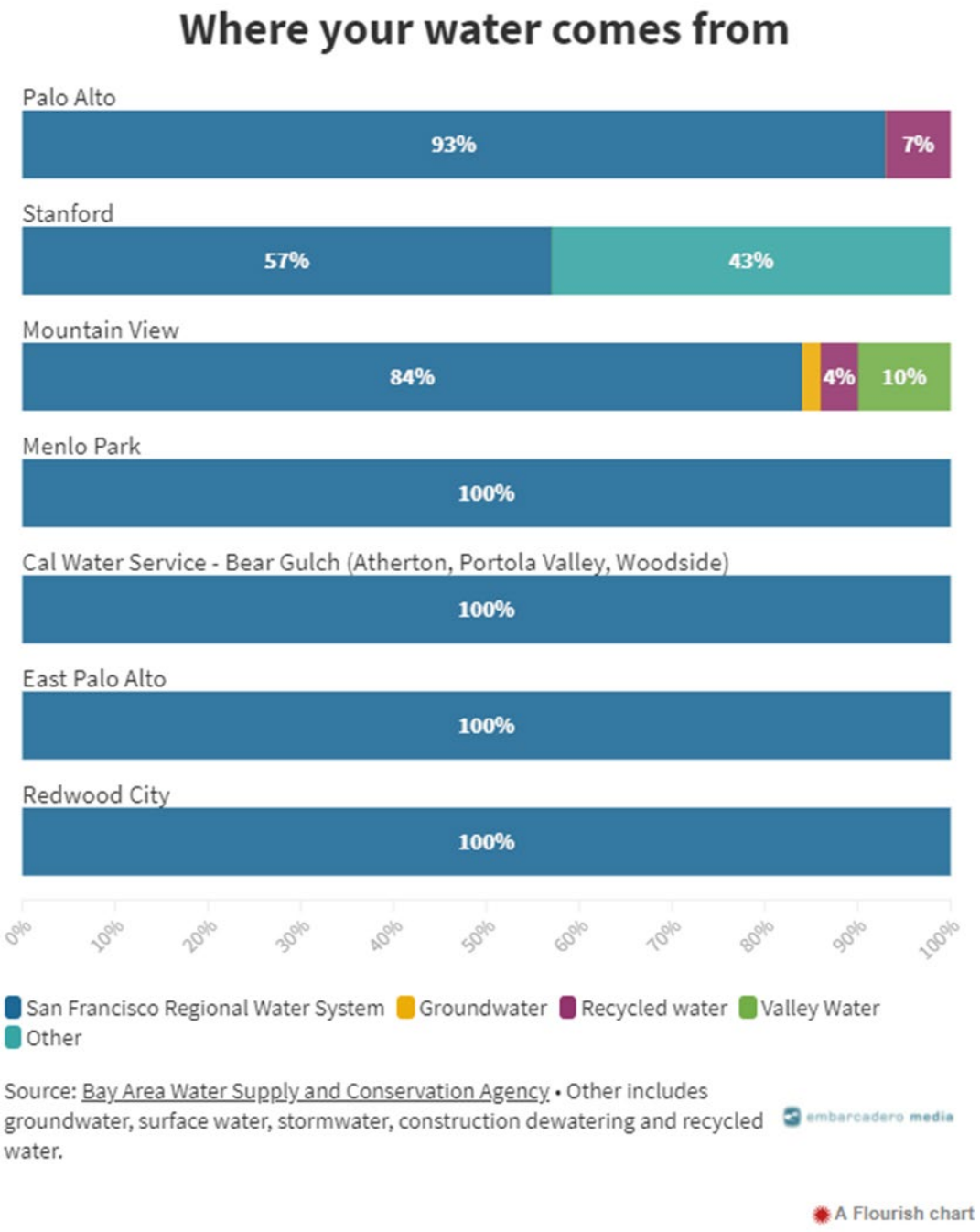
How diverse are cities' water supplies — and are they enough?
Drought raises questions about how much communities have stored
Palo Alto Weekly | July 16, 2021 | Sue Dremann

Boats on the Lexington Reservoir in Los Gatos on July 7, 2021. (Magali Gauthier/Palo Alto Weekly)

When it comes to supplies of water, many local cities are dependent on one far-away source: the San Francisco Regional Water System, which comes from the Sierra Nevada, mainly the Hetch Hetchy reservoir. Numerous Peninsula cities get 100% of their water from this supplier.

But the West's deepening drought and recent calls for Californians to voluntarily reduce their water use by 15% have residents starting to wonder: Just how resilient are local water systems in the event of a long-term drought or an emergency?

Data from the Bay Area Water Supply and Conservation Agency (BAWSCA) indicates that local cities have little in the way of alternative or local sources to their imported water supply. Storage is also limited.



Some communities are better diversified than others. Mountain View and Stanford have perhaps the greatest amount of diversity; East Palo Alto has no emergency source other than through tie-ins with surrounding cities who also rely on Hetch Hetchy supplies.

Even the well-diversified supplier Valley Water, also known as Santa Clara Valley Water District, is dependent on imported sources of water from the San Francisco Bay-San Joaquin Delta and Hetch Hetchy supplies.

Groundwater, local storage and recycled supplies would not be enough to offset a loss of water from these life-sustaining sources if they run dry. Valley Water's current concerns perhaps illustrate just how vulnerable the Bay Area's water supply can be. Anderson Reservoir, the largest in Valley Water's storage system, has been reduced to nearly a puddle since federal authorities mandated a seismic retrofit that will take a decade to complete. The water district's other major water supplies from the San Francisco Bay-San Joaquin Delta have also been vastly reduced by state and federal authorities to provide additional needed water for wildlife and natural fisheries.

California has experienced multiple, extended periods of dry weather since 1895, and one of the most exceptional occurred between 2011 and 2017, according to the National Oceanic and Atmospheric Administration's National Integrated Drought Information System.

Ask local water providers what they'll do in a deep drought or catastrophic failure of their own system and they look to the other cities. Most have interties: pipe systems that allow them to move water from one municipality to another. But in a catastrophic drought, would neighboring cities have extra water to spare?

Here's a look at the water capacity of local jurisdictions and alternative sources of water based on 2019-2020 data from BAWSCA's annual survey, which was published in March 2021.

Palo Alto

Canadian geese walk the grounds at Baylands Golf Links in Palo Alto. (Veronica Weber/Embarcadero Media)

Palo Alto is among the more diversified local municipalities when it comes to water. In fiscal year 2019-2020, the city and its 67,082 residents used 10.5 million gallons of water per day. About 93% came from the San Francisco Regional Water System. Recycled water accounted for 7%.

Palo Alto uses recycled water to irrigate its golf course and a city park and to fill its duck pond. The recycled water is also used for the city's Emily Renzel Marsh enhancement project and as part of processing at the water quality control plant. Recycled water is not for drinking or swimming in.

Palo Alto has recently improved its water capacity through its Emergency Water Supply and Storage Project, which rehabilitated five existing wells, constructed three new wells and built a new 2.5-million-gallon emergency water-storage reservoir. The eight emergency wells can pump up to 15.5 million gallons per day if needed.

The city's seven storage reservoirs — Mayfield, Boronda, Corte Madera, Dahl, El Camino, Montebello and Park — have a total capacity of 13 million gallons.

The city now has adequate storage and pumping capacity to provide back-up should there be an interruption of San Francisco water service. The wells may also be available to meet limited dry year requirements, according to BAWSCA.

It has interties with East Palo Alto County Water District, Mountain View, Purissima Hills Water District and Stanford University.

Days of storage: 1.13

Stanford University

A view of the Stanford foothills surrounding the Dish, just near the entrance to the Old Quarry off of Old Page Mill Road. (Veronica Weber/Embarcadero Media)

The Stanford Sustainability & Energy Management Department supplies water to the campus area and Stanford's unincorporated lands, serving 32,075 people, which is the university's average daytime population, according to BAWSCA.

Stanford's average daily water demand is 2.5 million gallons per day.

The university has five sources of water: purchased potable water from the San Francisco system, groundwater, non-potable surface water from the local watershed, stormwater and runoff capture, and recycled water, according to BAWSCA.

Stanford gets 57% of its water from the San Francisco system. Another 43% comes from "other" sources, including Stanford's surface-water diversions such as Searsville Lake and groundwater. Alternative sources include local groundwater, surface water, stormwater, construction dewatering and recycled water. The university now tracks its other supplies for use as irrigation water. The extent of groundwater used depends on the amount of rainfall and how much surface water is available.

Four wells on Stanford property could be used in an emergency. Three of the wells are in compliance with all drinking water standards; the fourth well is on "standby" since its manganese levels exceed current standards, BAWSCA noted. Wells can supply 3.7 million gallons per day in an emergency.

Stanford also has three storage reservoirs with a total capacity of 9.5 million gallons, according to BAWSCA. A recycled water plant completed in 2008-2009 was decommissioned in 2015 but could be used in the future, the BAWSCA report stated.

It has interties with Palo Alto.

Days of storage: 2.5 to 4

East Palo Alto

The Palo Alto Park Mutual Water Company in East Palo Alto on July 23, 2019. (Magali Gauthier/Palo Alto Weekly)

The city of East Palo Alto's water utility receives all of its potable water supply from the San Francisco system. In 2019-2020, the city used 1.5 million gallons of water per day with only about 311,000 gallons of water annually coming from groundwater.

The water utility, which serves 26,181 people, is operated and managed by a private contractor. Two privately owned water companies, O'Connor Tract Water Coop and Palo Alto Park Mutual Water Company, serve a small area of the city separate from the city's water supply.

The city's water system has no storage facilities or alternate potable water supply sources in the event of an earthquake. The city has 3.6 million gallons of storage identified but approval and funding have not been secured, according to BAWSCA.

East Palo Alto has one emergency well that is not currently certified for drinking-water use.

It has interties with Palo Alto and Menlo Park.

Days of storage: No storage. East Palo Alto cannot sustain a loss of water without obtaining water through its interties in an emergency.

Menlo Park

A runner at the duck pond in the Sharon Heights neighborhood of Menlo Park on July 15, 2020. (Magali Gauthier/Palo Alto Weekly)

The city purchases all of its water directly from the San Francisco system and uses nearly 3 million gallons of water per day. Menlo Park Municipal Water runs the city of Menlo Park's water system and serves 18,224 people. Two reservoirs supply the Sharon Heights area.

There is emergency storage in the areas supplying north and east of El Camino Real.

California Water Service and the city's storage well are the primary emergency sources of water for Menlo Park, according to BAWSCA.

The area has emergency interties with California Water Service Bear Gulch District, Redwood City, O'Connor Tract Water Coop and East Palo Alto.

Days of storage: 0.65

Mountain View

A purple fire hydrant that is part of the recycled water pipe infrastructure in North Bayshore area in Mountain View on Nov. 18, 2019. (Magali Gauthier/Palo Alto Weekly)

The city of Mountain View serves a population of 79,772. Its primary water supplier, San Francisco Regional Water System, provides 84% of the water. Valley Water supplies 10% treated water; 2% supply is from groundwater and 4% from recycled water. The city uses more than 9 million gallons per day.

California Water Service also provides water to a small part of Mountain View, according to BAWSCA.

The city has four water storage facilities, above and below ground, said Elizabeth Flegel, city water resources manager.

Mountain View has four active wells (and four are currently out of service). They are not currently operated at their maximum capacity due to various maintenance and operational issues.

Local storage in the reservoirs and the wells comprises a total of 17 million gallons, according to BAWSCA.

Flegel said the city is studying its recycled water distribution system and is updating a feasibility study for expansion. Mountain View's construction program requires contractors to do hydrant

metering so that water trucks using hydrant water to keep construction dust down track how much is expended and are charged for the water, Flegel said.

The city has interties with Palo Alto, Sunnyvale, Valley Water and California Water Service.

Days of storage: If the city lost its San Francisco water supply only, it could utilize wells, Valley Water or storage to meet an eight-hour outage.

California Water Service

The Bear Gulch district is located in southern San Mateo County and serves Atherton (pictured above), Portola Valley, Woodside, parts of Menlo Park, parts of unincorporated Redwood City and and adjacent unincorporated portions of San Mateo County. (Natalia Nazarova/Embarcadero Media)

This sprawling water operator has multiple districts on the San Francisco Peninsula, including the Bear Gulch and Los Altos districts.

The Bear Gulch district is located in southern San Mateo County and serves Atherton, Portola Valley, Woodside, parts of Menlo Park, parts of unincorporated Redwood City and adjacent unincorporated portions of San Mateo County including West Menlo Park, Ladera, North Fair Oaks, and Menlo Oaks.

The Bear Gulch district receives 85% to 95% of its daily supply from the San Francisco system. The balance is supplied by surface water runoff from California Water Service Company's watershed.

Although Bear Gulch reservoir is currently at 80% capacity, the treatment plant isn't running at this time, said Lee Blevins, production superintendent for the district. Currently, the district is using 100% of its water directly from the San Francisco system.

"Turning on the treatment plant would deplete the reservoir. The supply is seasonal," he said.

The reservoir water is used in late fall through early spring during the rainy season when it is replenished.

The district also has storage tanks ranging from 50,000 to 1 million gallons, Blevins said. The total storage capacity for the reservoir and tanks is 226 million gallons, according to the BAWSCA report. The system has Interties with Redwood City and Menlo Park.

Days of storage: If the Bear Gulch district lost all of its sources of water supply, it would have 0.92 days of water, according to the BAWSCA report.

The Los Altos district, which does not obtain water from the Hetch Hetchy system, provides water to Los Altos Hills, Los Altos, Mountain View and Sunnyvale through groundwater and water from Valley Water and serves more than 55,000 people, according to its 2010 Urban Water Management Plan, its most recent report. Water use was projected to reach 21 million gallons per day by 2020.

Between approximately 32% of its water supply comes from groundwater and up to 68% is purchased from Valley Water, but these numbers are variable based on the water supply from Valley Water. The district can pump out more water from the ground if needed and it encourages conservation.

The Los Altos district doesn't store water seasonally. In an extended drought, it would need to install new wells to meet demand, according to the water management plan.

Purissima Hills Water District

In 2019-2020, the district used nearly 11.5 million gallons of water per day to serve 60,827 residents. Local surface water, local groundwater (in its Skyline system only) offer a limited additional supply.

The water is stored in the 215-million-gallon Bear Gulch reservoir, which is treated at a filtration plant before distribution, but the reservoir's capacity has been reduced by 6 feet to be in compliance with California Division of Safety of Dams safety requirements.

The Foothill College campus in Los Altos Hills on July 1, 2021. (Magali Gauthier/Palo Alto Weekly)

The Purissima Hills Water District provides service to two-thirds of the Town of Los Altos Hills and unincorporated county land on the southern boundary. Its largest customer is Foothill College, according to BAWSCA. The population served is 6,150.

The district receives 100% of its water from the San Francisco system or 1.75 million gallons per day. It doesn't produce any local water and has no alternative supply sources. The district has 11 gravity-fed storage tanks with a total capacity of 9.88 million gallons. It has no wells.

The district does have interties with the California Water Service in Los Altos and Palo Alto.

Days of storage: The system can meet an eight-hour supply in an emergency.

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State expands drought emergency to Santa Clara, San Mateo counties
Announcement follows weeks of rising concern from water resources agencies
Palo Alto Weekly | July 9, 2021 | Sue Dremann

Boats on the Lexington Reservoir in Los Gatos on July 7, 2021. (Magali Gauthier/Palo Alto Weekly)

As the drought throughout California deepens, the state announced on Thursday that it is extending its April drought emergency to include additional counties, including San Mateo and Santa Clara, Gov. Gavin Newsom announced. He called for a voluntary 15% reduction in residential and commercial water use.

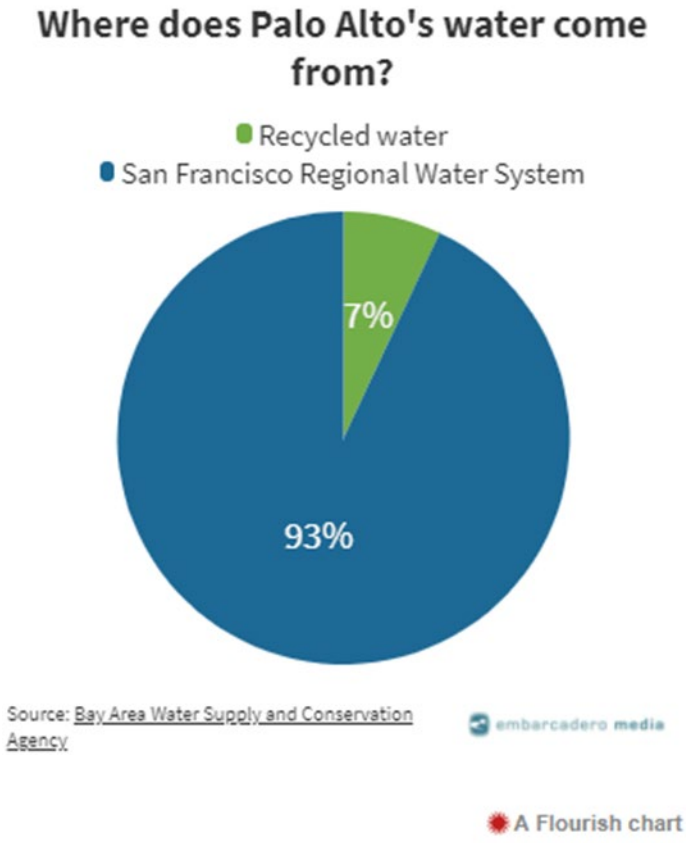
The announcement follows weeks of rising concern among water resources agencies. Members of local and state water resources agencies delivered a "scared straight" message regarding Santa Clara and San Mateo counties' future water supplies on July 1, pointing to the deepening drought and predictions of more challenging months ahead.

Armed with U.S. Drought Monitor maps showing nearly the entire state in a blaze of red, and bar graphs of dwindling reservoir water levels, representatives said the time for the public to conserve the precious supply is now.

The Bay Area Water Supply and Conservation Agency (BAWSCA), Valley Water, the California Department of Water Resources and the California Water Service discussed the worsening drought at a July 1 community meeting, which was sponsored by state Assemblymember Marc Berman, D-Menlo Park.

The drought has already extended into its second year, and this year is predicted to become one of the driest in terms of water runoff in the state's historical record. Last year's water year — from Oct. 1, 2019 to Sept. 3, 2020 — ranked as the 13th driest in statewide precipitation and the fifth driest in statewide water runoff. Much of the low precipitation occurred in the northern half of the state, which supplies the majority of the state's water supply.

The paucity extended into the 2021 precipitation year, which ended June 28. Nearly the entire state has received only about half of average annual precipitation, said Jeanine Jones, California Department of Water Resources interstate resources manager. The cumulative effect has plunged nearly the entire state into an extreme drought, according to data from the Western Regional Climate Center.



The water storage system that supplies most municipalities in San Mateo and Santa Clara counties is at 72.9% of its maximum capacity. Normally, the total storage averages 91% of this time of year, Nicole Sandkulla, CEO and general manager of BAWSCA, said on Wednesday during a phone interview.

Although the system's water bank, Hetch Hetchy Reservoir in the Sierra Nevada Mountains, is currently at 99.1% of its maximum storage capacity, looks can be deceiving.

“Clearly, it's down," Sandkulla said of the total system, adding that people need to start conserving water voluntarily.

More concerning is the amount of precipitation feeding the water system. The years 2020-2021 were the second lowest on record since Hetch Hetchy was completed in the 1930s. The lowest was the 1976-1977 drought, Sandkulla said.

"It's very close; 1976-77 had 39.14 inches of precipitation; 2020-21 had 39.28 inches," she said.

Jones noted that statewide overall reservoir levels have been dropping and are about 64% of average. Individual reservoirs such as those in the large federal Central Valley Project and California State Water Project, which serve parts of Santa Clara County, have dropped even lower. San Luis Reservoir, for example, is at 33% of capacity or 54% of its historical average, she said.

A 'canary in a coal mine'?

A dry creek bed connecting to the Lexington Reservoir in Los Gatos on July 7, 2021. (Magali Gauthier/Palo Alto Weekly)

Closer to home, Santa Clara Valley Water District, also known as Valley Water, is the poster child for how quickly a water system can become vulnerable to drought.

Water storage rates in Santa Clara County's 10 reservoirs are currently 16% in Guadalupe and Stevens Creek; Lexington, Chesbro, Coyote and Uvas are in the 20%-25% range; and Calero and Almaden at 45% and 54%, respectively. Only Vasona is at near capacity at 94%, according to the Valley Water Surface Water data portal.

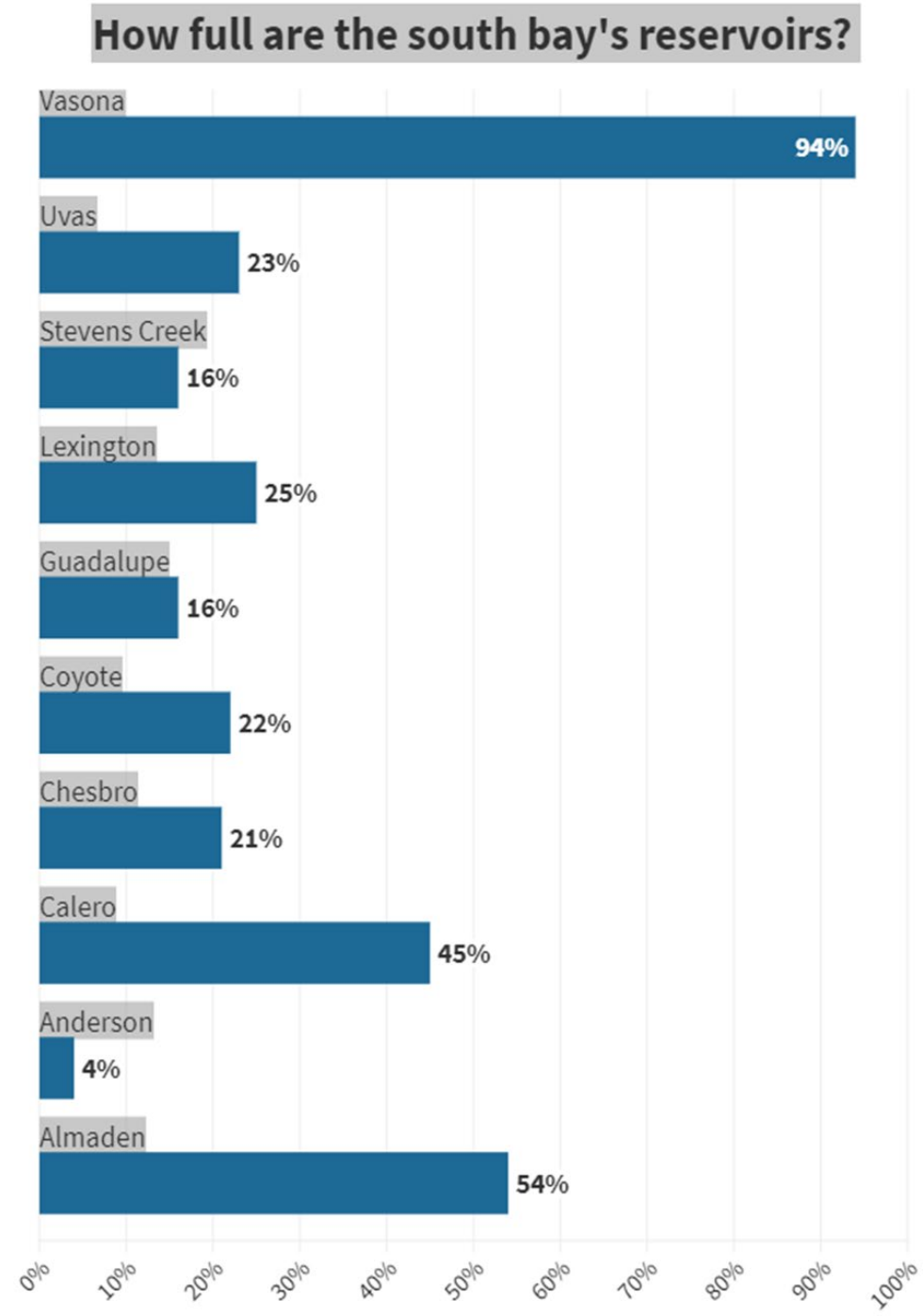
Anderson Reservoir, the district's largest, is at 4% capacity; however, the Federal Energy Regulatory Commission ordered the district to drain the reservoir over seismic concerns due to its age. Located near Morgan Hill, Anderson is Valley Water's largest reservoir and stores half of

the water in its system. The reservoir will stay empty for the next decade, depriving the county of that critical water source until a rebuild of its dam can be completed, Valley Water Board Vice Chair Gary Kremen said.

Coyote Reservoir, the district's second-largest, is also currently limited in its current surface water storage due to limits imposed by the California Department of Water Resources Division of Safety of Dams, according to a staff memo to the Santa Clara County Board of Supervisors.

Valley Water, which supplies some water to the city of Mountain View, gets about 30% of its supply from its reservoirs and the groundwater aquifer. Another 50% is imported (40% through the Sacramento-San Joaquin Delta and 10% from Hetch Hetchy); 5% is from wastewater treatment and advanced purification and 15% comes through residential and commercial/agricultural conservation, according to the district.

Valley Water's ability to get water imported from the California State Water Project, which manages 17 reservoirs statewide, and the federal Central Valley Project, which manages 20 dams and reservoirs, is also taking a hit. The State Water Project is now providing just 5% of the water, and the Bureau of Reclamation, which oversees the Central Valley Project, announced on May 26 that it is cutting the water to urban areas from 55% to 25% and for agricultural uses to 0%.



Source: Bay Area Water Supply and Conservation Agency

embarcadero media

A Flourish chart

In response, on June 9 Valley Water instituted a 15% mandatory reduction in water use among its customers compared to 2019 usage due to the state and federal cutbacks, dwindling Sierra snowpack and the Anderson Reservoir shutdown.

"Increased conservation is also necessary to protect local water supplies and guard against groundwater overdraft, subsidence and dry domestic wells, especially if the drought extends into next year," Valley Water Board Chair Tony Estremera said in a June 9 statement.

The Santa Clara County Board of Supervisors ratified the emergency order on June 22 and stated in a press release, "Reservoirs are so low, the water level is inadequate for agriculture, wildlife and urban needs." The order applies to unincorporated parts of the county and calls for customers to voluntarily use 15% less water as compared to their 2019 water usage. The order stays in effect until Aug. 21.

Given the statewide drought, Valley Water is also finding it difficult to find much water for sale. The water district is a member of a water-banking exchange through the Semitropic Groundwater Banking Program in Kern County, which is supposed to help manage variability in Valley Water's supplies from the State Water Project and the Central Valley Project. Semitropic is a member district of the Kern County Water Agency, the second largest State Water Project contractor, according to Valley Water's website. Yet, Valley Water is having trouble accessing its share, Kremen said.

The district has banked about 425,000 acre-feet of water in Semitropic over a 20-year period and has withdrawn about 190,000 acre-feet during dry years, but it must retrieve the banked water by exchange with other State Water Project water being pumped at Banks Pumping Plant in Tracy.

"We can't get it back because there's no one to trade with," Kremen said.

Purchasing water — if a supply can be found — is also expensive, he said. Between Dec. 7, 2020, and July 7, 2021, the price per acre-foot has jumped from $483.53 to $841.21, an 84% increase, according to the Nasdaq Veles California Water Index Futures (NQH2O). The prices steeply rose from just over $200 per acre-foot in March 2020, according to the data. Even if the district wants to buy water, it can't; it doesn't have a way to get it delivered into the county, he said.

The district also can't bet on pulling up groundwater from the aquifer. The California Sustainable Groundwater Management Act restricts how much water can be pumped out of the ground to protect the groundwater basin. Pulling out too much water also causes land to sink and compacts the ground and gravel layers that would normally store the water. The district has no emergency underground sources, Kremen said.

"We're not going to conserve our way out of this problem," Kremen said.

The next steps

Dirt and dried plants on the shore of Lexington Reservoir in Los Gatos on July 7, 2021. (Magali Gauthier/Palo Alto Weekly)

The state legislature on June 28 approved a $3 billion water resilience drought package to expand and protect water supplies across the state, Berman noted at the July 1 meeting.

But Tom Francis, BAWSCA's water resources manager, said that the projects that could help bolster the water capacity for the future could take more than 10 years to move forward. A project at Crystal Springs Reservoir in San Mateo County would add treated but potable wastewater to the Crystal Springs supply, which comes from Hetch Hetchy, he said.

San Mateo County's three reservoirs, Upper and Lower Crystal Springs and San Andreas Lake, provide emergency backup and supply for northern San Mateo County and the city and county of San Francisco. Sandkulla said that both are being kept full to provide emergency use in the event of another wildfire such as last year's CZU Lightning Complex fires in the Santa Cruz Mountains.

‘We're not going to conserve our way out of this problem.'
-Gary Kreman, vice chair, Valley Water board of directors

For now, BAWSCA 's 26 member agencies, which include East Palo Alto, Menlo Park, Mountain View, Palo Alto, Redwood City, Stanford University, Purissima Hills Water District, which supplies water to Los Altos Hills, and California Water Service's Bear Gulch District, which covers parts of Menlo Park, Atherton, Portola Valley and Woodside, aren't under a mandate to conserve water, but that could change this fall if there's no precipitation when the rains should begin, Sandkulla said.

In the meantime, BAWSCA and Valley Water are offering incentives, tips and rebates to help people save water so the area can bank enough water if the drought continues into next year, and hopefully, to create a water-saving culture. BAWSCA is offering rebates through programs such as Lawn Be Gone, which offers residents up to a $4-per-square-foot rebate to replace their lawns with drought-tolerant native plants, up to $300 for planting a "rain garden" of native plants with deep root systems, and a rain barrel rebate.

Valley Water is offering customers up to $400 to install a greywater laundry-to-landscape system. On July 1, it kicked off a landscaping rebate increase to $3,000 for residential sites and up to $50,000 for multi-family properties of five or more units.

To learn more about the water-saving tips and rebates for water-wise landscaping, visit bawsca.org and valleywater.org.

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New UC Davis Study Finds Dams Are Ineffective for Cold-Water Conservation for Salmon and Trout

Daily Kos | August 26, 2021 | Dan Bacher

Putah Creek, a wild trout fishery above Lake Solano and the Solano Diversion Dam. (Dan Bacher/Kos Community)

For many years, federal, state and corporate proponents of building more dams in California have touted cold water river releases provided by increased water storage behind dams as a key tool in “saving” struggling salmon and steelhead populations.

Yet a just published study by the UC Davis Center for Watershed Sciences, Dams Ineffective for Cold-Water Conservation – 8/25/21, has found that dams are ineffective for the cold water conservation that is needed to preserved imperiled salmon, steelhead and other fish species.

”Dams poorly mimic the temperature patterns California streams require to support the state’s native salmon and trout — more than three-quarters of which risk extinction,” according to the study published in the journal PLOS ONE by the University of California, Davis. “Bold actions are needed to reverse extinction trends and protect cold-water streams that are resilient to climate warming.”

The study helps identify where high-quality, cold-water habitat remains to help managers prioritize conservation efforts.

“It is no longer a good investment to put all our cold-water conservation eggs in a dam-regulated basket,” said lead author Ann Willis, a senior staff researcher at the UC Davis Center for Watershed Sciences and a fellow for the John Muir Institute of the Environment. “We need to consider places where the natural processes can occur again.”

“Understanding where cold water is likely to stay cold is critical for conservation,” according to the study. “But ‘cold’ is more than just a number on a thermometer. The term represents the many factors that combine to create cold water capable of supporting aquatic ecosystems.”

Water managers deliver cold water from reservoirs to streams to support aquatic life, but Willis said this assumes that all cold water is the same — “akin to giving blood to another person without understanding their blood type and health status.”

“While previous studies have suggested that dams can be operated to achieve ideal temperatures, few tested that hypothesis against the temperature patterns aquatic ecosystems need,” the study reveals.

The UC Davis study assessed stream temperature data from 77 sites in California to model and classify their “thermal regimes,” or annual temperature patterns. It found the state’s reservoirs do not adequately replicate natural thermal patterns, making them incapable of supporting cold-water species effectively. The study states:

“In stream reaches that lack a resilience to climate warming, cool- and cold-water habitat may be unachievable through dam regulation. In particular, the stable cool regime may present the greatest challenge to cold water conservation as it generally lacks the cooler winter temperatures of unregulated variable cool regimes. One notable result was the classification of the Shasta Dam outlet (site SHD)–the only reservoir to produce a stable cold thermal regime. At 4.6 million acre feet (MAF), Shasta Lake is California’s largest reservoir and maintains its cold pool through cold-water inflows, cooling that occurs during the winter, thermal stratification, and operational decisions [38]. Despite the large capacity of New Melones (2.4 MAF, 4th largest reservoir in California), it, or any other dam included in this analysis, was unable to produce a stable cold regime at its outlet.”

In response to the release of the study Barbara Barrigan-Parrilla, Executive Director of Restore the Delta said, “We feel validated when top-notch university science programs prove what our community science researchers find. The Delta Conveyance Project is predicated on increased dam capacity. But increasing dam capacity won’t provide the cool clean water we need to restore the Delta. Climate change demands bold new solutions for water management and a reckoning of how much water we allocate for industrial ag.”

“Empty dams and a dry tunnel will not solve our problems. We predicted in 2014 that Prop 1 funds for dams would not work, and legislators would not listen. We hope those funds are rerouted for meaningful water projects that will serve all Californians,” Barrigan-Parrilla concluded.

The release of the study couldn’t come at a more grim time for imperiled salmon and steelhead in California. The California Department of Fish and Game (CDFW) has forecasted that nearly all of the juvenile winter-run Chinook hatched on the Sacramento River this year could die before spawning, due to disease spurred by warm water conditions below Keswick Dam: sacramento.newsreview.com/...

A record run of over 18,000 endangered spring-run Chinook salmon on Butte Creek, a tributary of the Sacramento River, has also turned into disaster as 14,500 fish have to date died before spawning. These fish also have perished due to the outbreak of disease in warm, low water conditions: sacramento.newsreview.com/...

The only good news is that the rate of mortality has slowed from earlier this summer after more water was finally released by PG&E down the creek on August 3 and conditions improved. “Many fish are still hanging in there,” reported Alan Harthorn, Executive Director of Friends of Butte Creek.

As adult fall Chinook salmon return to the Sacramento River and its tributaries, they will face warm water conditions and low flows, potentially spurring an outbreak of disease that would kill many fish before before they are able to spawn.

Disaster has hit the Klamath River also, where nearly all of the juvenile fall chinook salmon perished before making it to the ocean on their downstream journey this spring and summer, due to a breakout of the C. Shasta disease in the fish, according to scientists from the Yurok and Karuk Tribes: www.counterpunch.org/...

Ann Willis, the study’s lead author, says the solution to creating cold water habitat to stop the extinction of salmon and trout populations is to remove dams and restructure water management in California.

“I’m an engineer; I thought we could operate ourselves into success, but the science doesn’t support that,” Willis said. “It’s not a question of whether we remove a dam, but which dam, and how we need to restructure how we manage water. Or we need to be willing to take responsibility to be the generation that says, ‘OK, we’re letting this ecosystem go extinct.”

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Residents Used Less Water In Weeks After Drought Warning
SF Gate | Aug. 11, 2021 | Jana Kadah

It's been two months since Santa Clara County's water district declared a water shortage emergency, and so far, preliminary data reveals that residents are heeding the warnings, Santa Clara Valley Water District experts said.

Valley Water declared a drought emergency on June 9 and has only made data from January 2021 until the end June available. But the three weeks of data since the drought declaration show a downward trend, Senior Water Resource Specialist Neeta Bijoor said.

The June 9 announcement mandated that local water retailers cut water use by 15 percent compared to 2019 water usage.

In May 2021 Valley Water customers used 9 percent more water than they did in 2019.

However, by the end of June of this year, residents used the same amount of water they did in June 2019.

"We know it takes time to reduce water use," Bijoor said. "However, we are pleased to report that much progress has already been made and we are seeing total water use trend down."

Bijoor predicted by next month, Valley Water will have a better understanding of whether the mandatory 15 percent reduction will be met because the county and 10 out of the 15 cities passed similar water shortage emergency decelerations mandating similar cuts.

To meet the 15 percent reduction, the 10 cities and the county regulate irrigation, limiting it to two days a week during specific hours.

And unlike the water district, cities and counties can have enforcement power to ensure residents comply with irrigation schedules and water reductions.

"Here it's not uncommon to be watering your lawn five, six, seven times a week," Valley Water Spokesperson Matt Keller said. "And so, if you cut that, even if you cut it in half, that's the greatest place you can save."

He said even if residents cut irrigation by 50 percent, without cutting showers or using other water saving devices, the county could easily reach its goal to cut total water usage by 15 percent.

That is because outdoor water use in Santa Clara County is about half of the county's total water, Keller said.

The only cities that have not declared a water shortage emergency and mandated subsequent water use cuts are San Jose, Palo Alto, Mountain View, Monte Serrano and Los Altos Hills.

However, Keller said apart from Palo Alto and Mountain View, those cities are preparing similar water shortage decelerations that will be implemented soon.

"Palo Alto and Mountain View are two of the ones that have not because they don't get their water from us and (San Francisco Water) is not asking for conservation like Valley Water," Keller said.

Other data that indicates residents are listening to calls to conserve include high interest in Valley Water's myriad of water conservation programs and incentives.

The landscape rebate program received 600 applications in July which tripled since June and is 12 times more since January, Bijoor said.

The online shopping cart that provides free water saving devices had 800 orders in July.

Even water waste complaints from residents increased in July to 200 reports, which is eight times higher than it was in July 2020.

However, water district board members and staff warned that if water usage does not continue to decrease, the agency will have to take more drastic measures to make sure it meets its goal of 15 percent cuts.

"We've got to keep our eyes completely on what it's going to look like next year," said Aaron Baker, Chief Operating Officer for Water Utility. "The amount of water that it's going to take for us to get out of the drought, the amount of water that they're going to need to refill Shasta the amount that's going to be needed for Oroville...is a lot."

Baker continued that if goals aren't met, and rain fall in winter is not as high as they hope, "we must take additional actions."

At the Tuesday board meeting, Baker supported the board's call to direct staff to look at ways Valley Water can start enforcing the mandated 15 percent cuts.

That could look like fines or additional penalties to retailers like San Jose Water Company or City of Santa Clara, who dole out water to their customers, if they do not meet the goal.

However, so far, both San Jose Water Co and the City of Santa Clara, in addition to Sunnyvale and Stanford water retailers, have cut water usage down compared to 2019 water usage.

The water retailers furthest away from meeting the 15 percent reduction goal based on January to June 2021 data are Gilroy, which provides water to the city of Gilroy and Purissima Hills

Water District, which serves two-thirds of Los Altos Hills and an unincorporated area to the south.

Keller conceded that it will take a couple of months to see the impacts of the landscape rebate programs or even the free water conservation devices but emphasized that the actions taken now will help prevent more serious environmental consequences.

Environmental consequences could mean empty reservoirs or subsidence which is when the ground sinks because of a lack of ground water. Worst case of subsidence could case underground infrastructure damage as well as damage to roads, buildings and bridges.

"We know it's going to take a little bit of time (for data to reflect trends in water use) but there's just not a whole lot of patience right now, I think, because this (drought) is so severe," Keller said. "Here we are two years into a drought and we're taking actions we didn't take in the middle of the most severe drought last time."

The next drought data update will be in a month and will include water usage from July.

It is unclear when staff will come back with the enforcement report, but Keller said it should be relatively soon since staff reports tend to come back in a few weeks.

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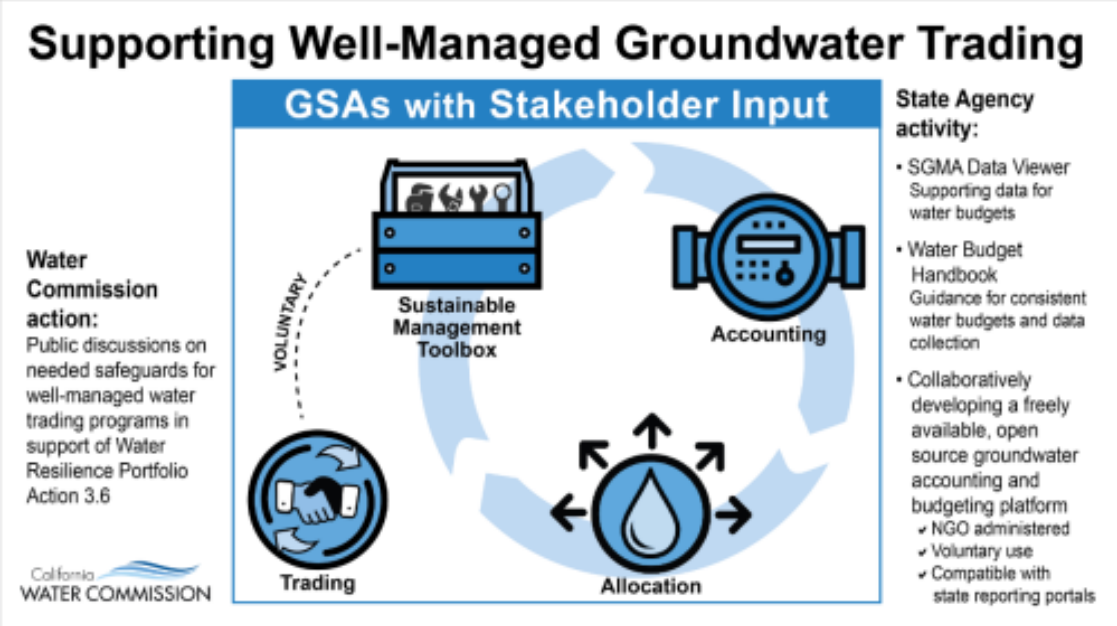
CA WATER COMMISSION: DR. NEWSHA AJAMI: ENHANCING REGIONAL WATER SUSTAINABILITY THROUGH VIRTUAL WATER TRADING
Maven Meetings | August 11, 2021

In March of this year, the Secretaries of the Natural Resources Agency, Environmental Protection Agency, and Department of Food and Ag tasked the Commission to initiate a thorough and inclusive public dialogue to frame state considerations around shaping well-managed groundwater trading programs.

This task supports action 3.6 of the Water Resilience Portfolio, which calls on the Department of Water Resources, the State Water Resources Control Board, and the Department of Fish and Wildlife to create flexibility for Groundwater Sustainability Agencies (GSAs) to trade water within basins by enabling and incentivizing transactional approaches, including groundwater markets, with rules that safeguard natural resources, small and medium-sized farms and water supply and quality for disadvantaged communities.

“The Commission’s role here is to look at governance, oversight, stakeholder engagement, and really hone in on what those rules or safeguards should look like, and how the state might enable groundwater trading that avoids negative impacts,” said Laura Jensen, Assistant Executive Director. “At the end of this, we will be producing a white paper that will inform the approach of the implementing agencies: the Department of Water Resources, the Department of Fish and Wildlife, and the Water Board.”



Ms. Jensen noted that the current extreme drought the state is experiencing will likely make the conversations around this topic more real and fraught; however, the Commission’s work on groundwater markets will not be completed in time to help with the drought. However, while the

Commission's work is future-looking, it can certainly be informed by what folks are experiencing and bringing to the table this year.

At the June meeting of the California Water Commission, the commissioners heard from a panel of speakers who discussed why groundwater sustainability agencies or GSAs might consider markets, what groundwater trading entails, its opportunities and limitations, and how it is connected to water accounting, allocations, and sustainable groundwater management. The first panelist was Dr. Newsha Ajami, the Director of Urban Water Policy with Stanford University's Water in the West and an appointed member of the San Francisco Public Utilities Commission. (Other panelists will be covered in subsequent posts).

Dr. Ajami began by noting that California is being impacted by so many different things. California's water system is quite vulnerable, and the resiliency and future reliability is definitely a challenge. Climate change is impacting water supplies, urbanization and population growth are increasing, and aging infrastructure is top of mind in California and across the US, as well as the need to provide water for the environment.

"The drought this year, and the fact that since the year 2000, we have experienced more dry years than wet years, attests to the fact that we have to be more creative in what we are doing around water and water management," said Dr. Ajami.

"While you often hear about all the wonderful technologies that are out there that are going to save us from the water limitations we are facing, the reality is we need more innovative management approaches and governance strategies to enable the water sector to make an

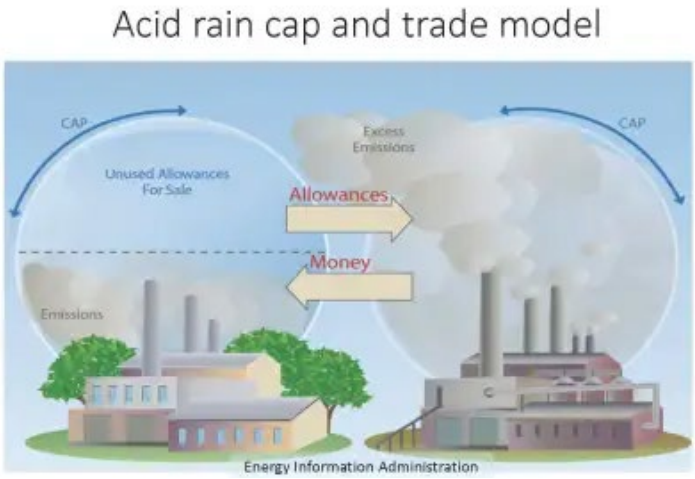
equitable and climate-resilient transition. And basically, markets are one form of those management approaches."

THE CAP AND TRADE MODEL

Water markets have been around for a long time, and water trading in California is nothing new. Temporary trading and water transfers have been happening between agricultural entities with the flexibility to fallow their land and share their water with other landowners or urban areas to alleviate the impacts of the dry years.

However, Dr. Ajami's presentation focused on a type of trading that utilizes credits and collective action to promote trading without necessarily moving water. She noted it is not a new model; it has been used for cap and trade, renewable energy, and water quality standards, among others.

The concept began in the 1990s when the United States established the world's first-ever pollution trading system and popularized the terminology 'cap and trade.' The government sought a new way to reduce sulfur dioxide and nitrogen dioxide levels that had been accumulating in the air since the Industrial Revolution.



"The idea was very much simple, but actually quite radical: Let people buy and sell the rights to pollute while developing local market-based solutions as a way to clean up the environment," said Dr. Ajami. "That first cap and trade model was basically aimed at pressing water problems, which is interesting, because of acid rain falling on the earth and causing a lot of water pollution as well. So it worked. What

happened was not only the market-based approach sliced about 36% of the emissions in 14 years in different areas, it also happened faster and cheaper than any other solution that was available at the time."

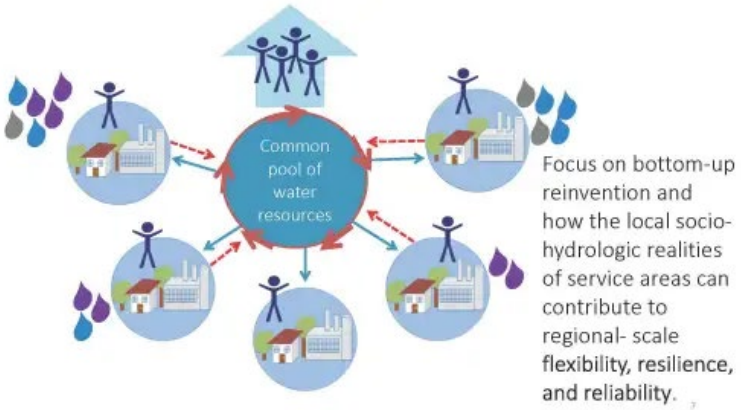
There is a similar program happening with water quality trading. The EPA has several different water quality trading platforms which operate on a more local scale. The dots on the map show the water quality trading programs happening across the country, especially on the East Coast.

"The idea is to have a cap which means that pollution can happen to a certain level, and then encouraging and allowing people to collaborate within a watershed to come up with solutions to reduce water quality challenges, and allow people to trade," she said.

APPLYING THE CAP AND TRADE MODEL TO WATER SUPPLY

Dr. Ajami then gave an example of how this might look when applied to water supply. "Let's say there is a common source of water, in this case, a groundwater basin. There are so many different stakeholders that depend on the groundwater. Each one of those stakeholders, depending on their capacity, might be able to do certain things. And not everybody has the financial means to do it, but they have the opportunity to do it. Some people have the financial means, but they have done a lot of different things, or they don't necessarily have a lot of space to do more."

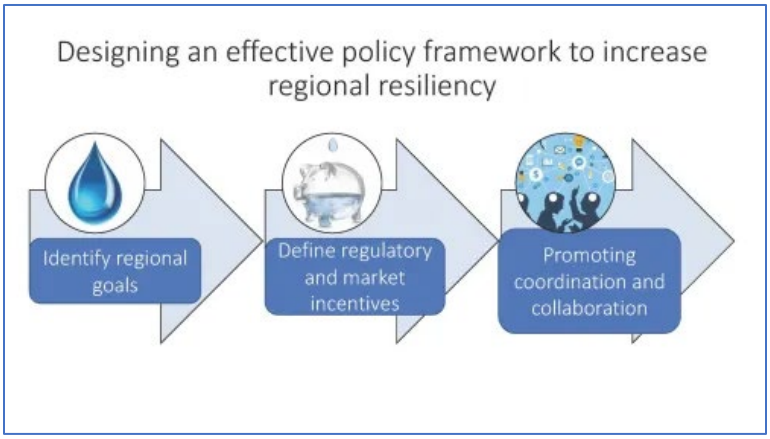
In this application, the cap would be set as sustainable yield, or how much groundwater can be extracted on an annual basis; that target or goal would be a way to incentivizing a community and a region to work together to achieve the goal, rather than the haphazard efforts of individuals trying to implement projects on their own.



"It's using regional-scale solutions to create more flexibility, resilience and reliability, and long-term sustainability at the same time," said Dr. Ajami.

She also noted that the cap needs to be fixed at first and then adjusted lower as time goes on. "That means that as you're doing more and more and you reach the

cap, you need to lower your cap, again, to make sure you can do more to reduce your reliance or environmental impacts."



An important part of the design is the identification of regional goals. Dr. Ajami noted that the SGMA process is trying to establish specific requirements for basins, but all of these groundwater management plans have identified a safe yield, which is different for each basin. However, that potentially could lead the discussion on setting regional goals.

After the regional goals are set, the next step is to set up regulatory and market incentives. "For example, we have the renewable energy portfolio, which was supposed to be 30% renewables by 2030," said Dr. Ajami. "We are now in 2021, and we are past that goal. We are actually going to 100% renewable by 2050, so it's definitely achievable. And a goal that transects regional goals and that everybody can aspire towards is extremely important; then the regulations and market can provide the financial means. That can provide some local coordination and collaboration to make sure that equity is met. It also creates more resiliency."

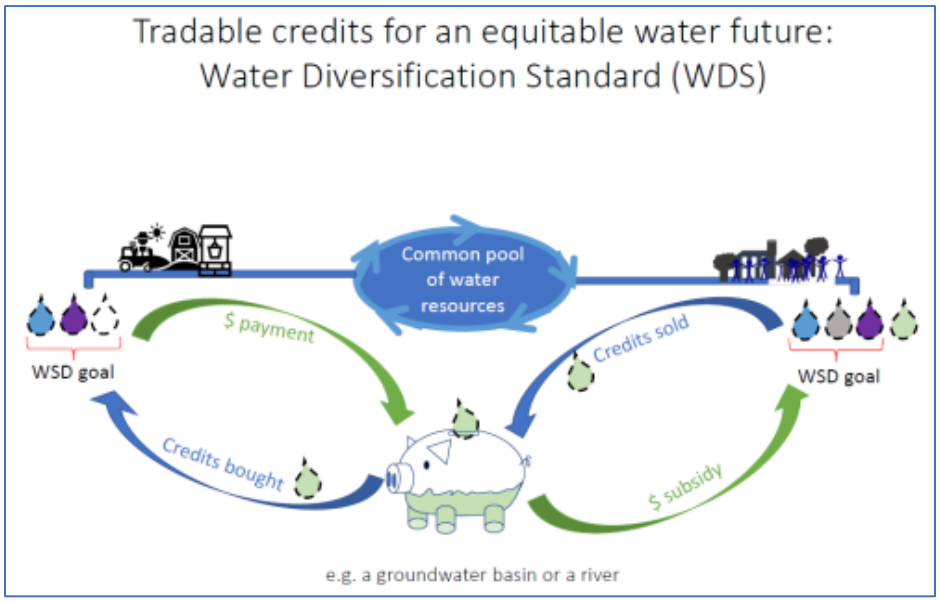
TRADING CREDITS FOR DIVERSIFYING WATER SUPPLY

Dr. Ajami then walked the commissioners through some examples of how this model can be modified and applied to groundwater, much like the acid rain model was used for water quality trading.

So the question is, how could utilities or stakeholders coordinate their efforts and diversify their water supplies? One of the reasons to reduce reliance on a specific water supply source, for example, groundwater supply, is to basically make sure that we can have alternative water supplies, including some of the efforts around conservation efficiency.

The idea is to have a system of tradable credits for the pursuit of a regional water supply diversification goal. There is a common pool of water source, such as a groundwater basin. Many stakeholders depend on that single groundwater basin, so every stakeholder's action can have a positive or negative reaction in another location.

"It's really important to focus on this common pool of water as our piggy bank that helps us to exchange credits and resources," said Dr. Ajami.



In this example, there are two entities: a farm and a community. They are each given a specific water diversification goal, represented on the graphic by three drops of water. On the right side of the graphic, Community A can do many different things, such as conserving more water, building a recycling plant, or doing more stormwater capture. They could do more than their share; they might not have the resources to do it, but they have the capacity. On the left side of the graphic, the farmer might have a chance to recharge groundwater or do more water conservation but might not have as many opportunities.

"So the idea is that the community can generate more than they need to meet the goals; the farmer can only do less," said Dr. Ajami. "So the community can put that extra water as a credit in the bank, and then the farmer can buy that back as a credit. Because as a region, we have to reach a goal. And that goal needs to be met. So the way to do it is individuals have their own goals, generating these extra drops of water to meet the ultimate goal regionally. The resources that the farmer provides to this bank can then go back and subsidize the cost of the projects [that the community implemented]."

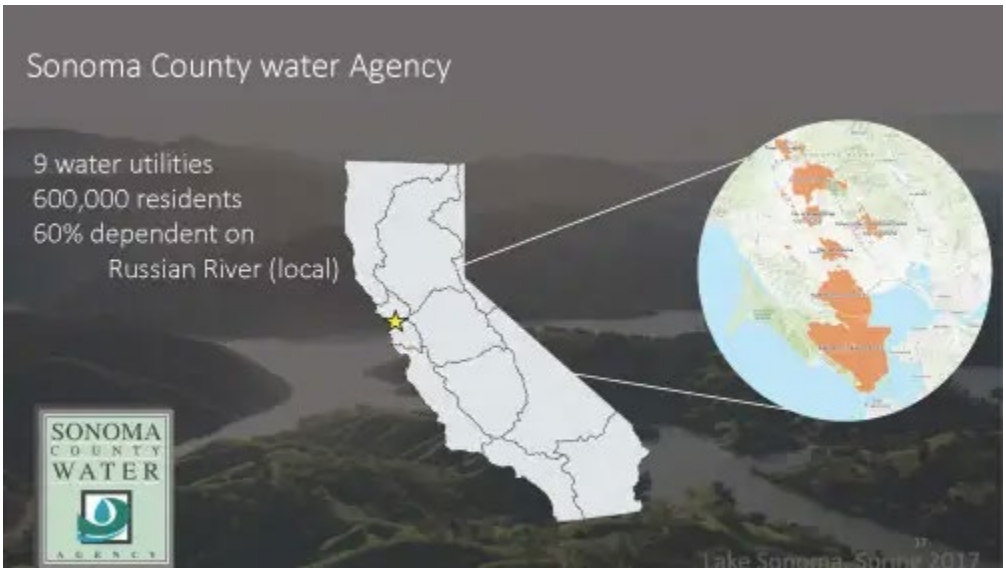
The virtual credit trading model provides a way to invest in local solutions by those who have the capacity to do more but do not have the financial resources.

"This is a very important part because the reality is there are a lot of communities out there who can do more, but they don't have the resources," she said. "They are often left behind in this process. So, for example, major stakeholders and beneficiaries in the region can indirectly invest in water reuse sanitation, deepening wells, and other sorts of solutions for underprivileged members of the community while achieving this regional water diversification

goal. So, if operated effectively, this can ultimately improve access and equity across the region. Because that also needs to be one of the goals that you're achieving. And, in this specific case, the common source of groundwater."

CASE STUDY: SONOMA COUNTY WATER AGENCY

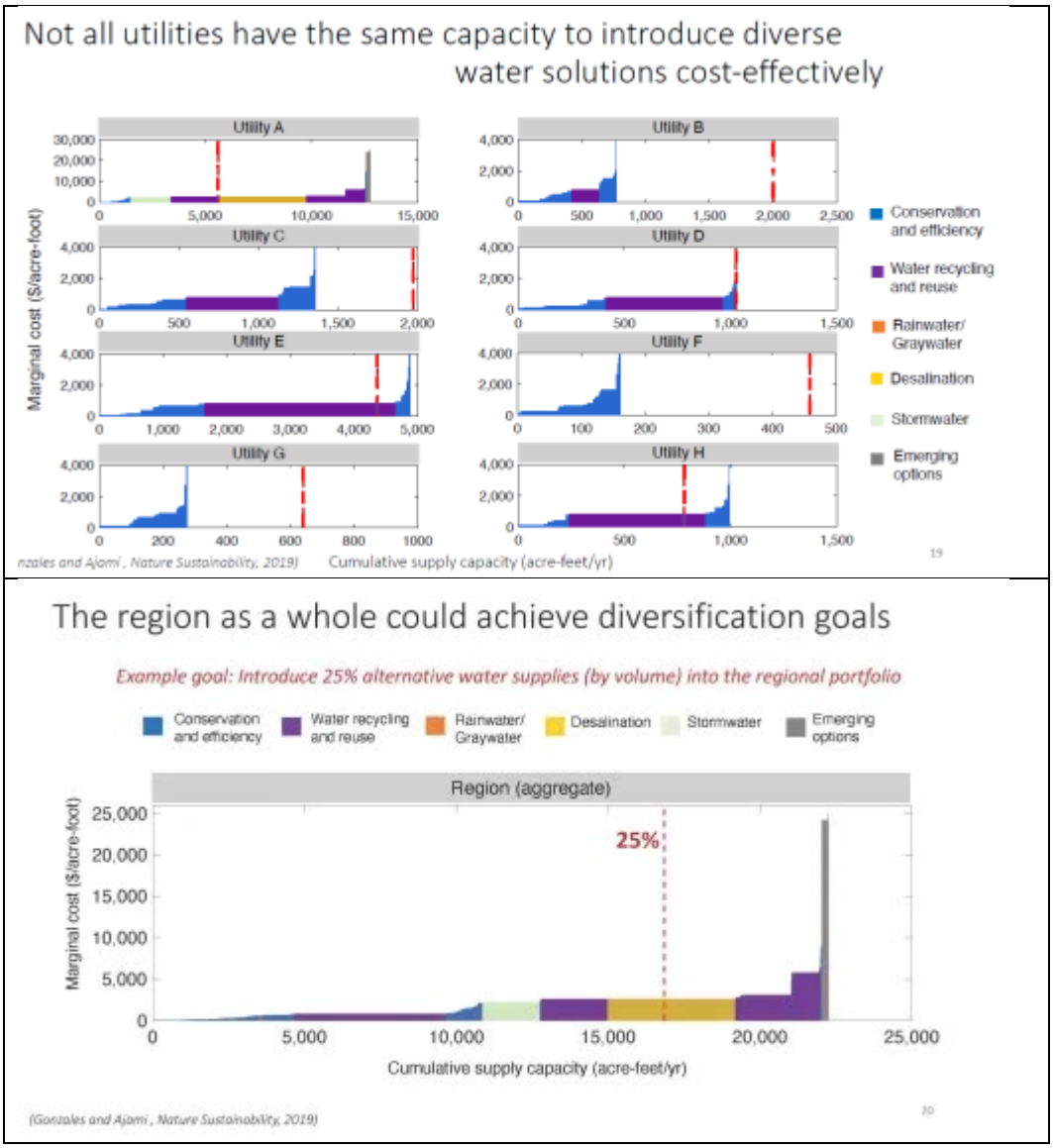
Dr. Ajami then discussed a case study for the Sonoma County Water Agency. There are nine water utilities and about 600,000 residents. 60% of their water comes from the Russian River, and 40% comes from groundwater. So the region is very much connected in that they depend on the same water source and watershed. So every credit that goes back to the common pool of water either becomes available to another community that doesn't have the capacity to develop more water; it can also stay in the environment, as the environment can be one stakeholder in this process, she said.



Suppose the region collectively defines the need to diversify the water supply and reduce their reliance on a common source of water, for example, groundwater or the Russian River as a source. How could they coordinate this effort?

"Let's say the regional target is set for them at 25% diversification goal by 2040," said Dr. Ajami. "In this case, communities A and B have different options available to them, and not all the utilities or not all the stakeholders have the same capacity in this specific example. We went through all sorts of documents provided to us by Sonoma County Water Agency to look at different communities and their capacity to do things."

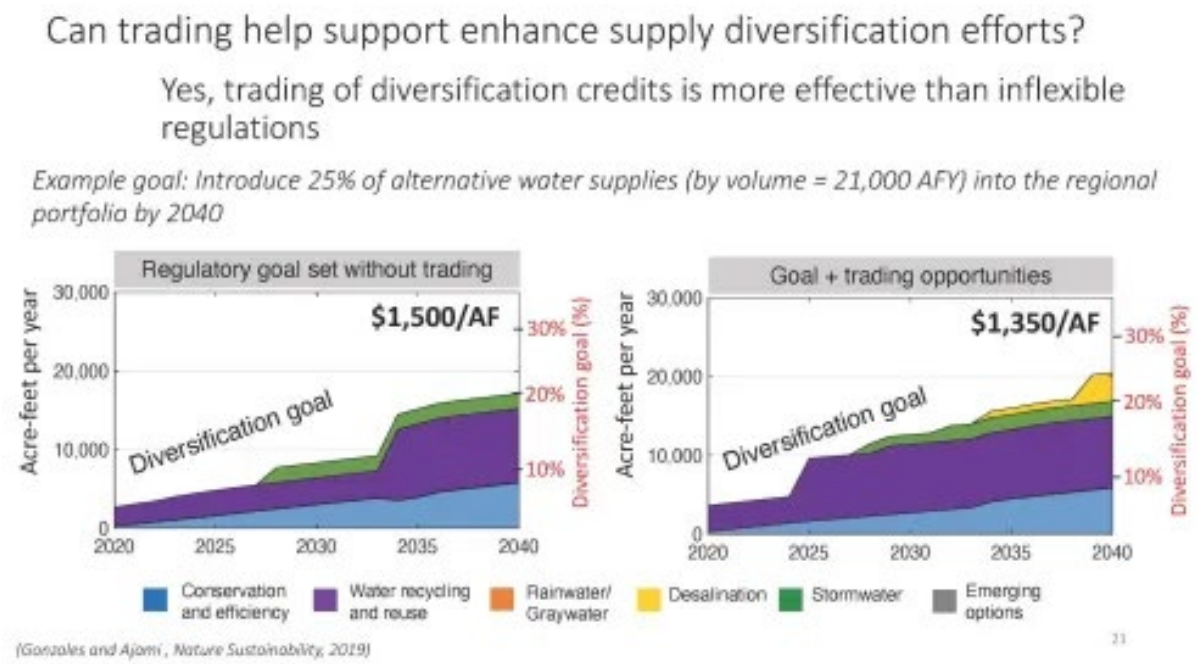
Dr. Ajami presented a graph that illustrates the resources and capacity for each utility; the red line shows the 25% diversification goal is for that specific community. She pointed out that Utility A on the left top has a lot of resources and many projects that they want to do; however, some of those projects are costlier than others. On the other hand, Utility F would have a hard time achieving that 25% diversification goal.



“However, if you put all these things together and assume they’re all part of the same region, and they depend on the same water supply, what you see is all of a sudden, they all can collectively achieve that 25% diversification goal, and with a reduced cost at the same time, so the marginal cost reduces as the basins collaborate,” said Dr. Ajami.

She emphasized that this trading format is rooted in the idea of collaborative governance, which means the stakeholders recognize that they are all in it together and have to work together collectively to invest together in solutions and deal with the problem simultaneously.

For the case study, they tested the market to see how it would function for Sonoma County Water Agency’s water utilities. The first question asked was, can trading help support enhanced water supply diversification efforts? Dr. Ajami said the answer is yes; trading of diversification credits was quite effective, rather than inflexible regulations.

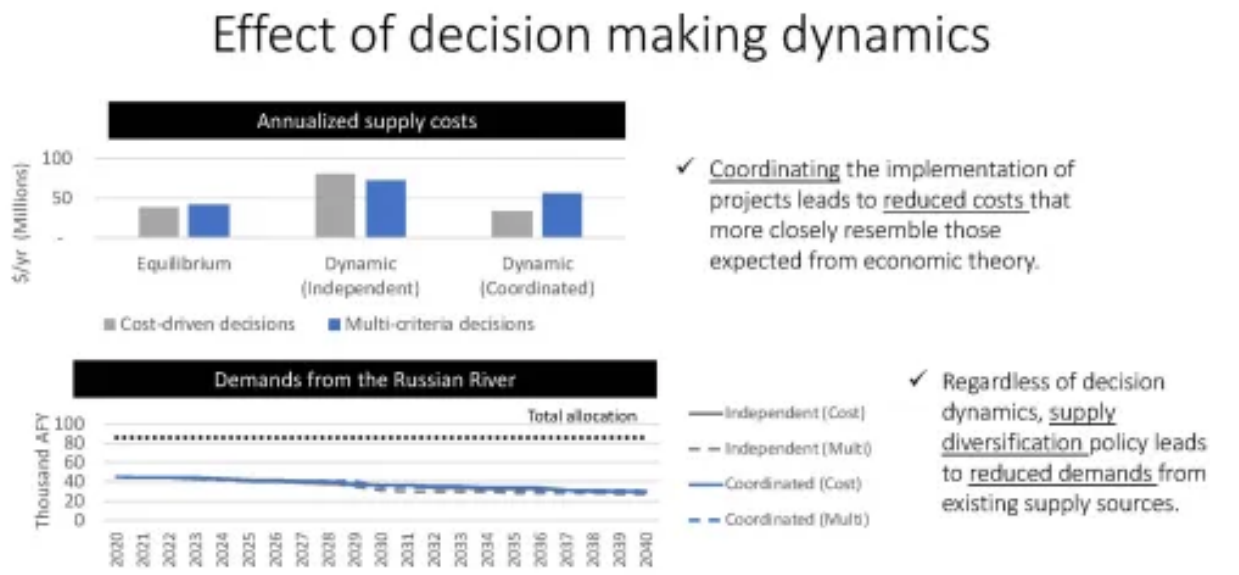


“On the left-hand side, the goal was set at 25%. There wasn’t any trading platform set up for that model, and what you see is collectively, the region does not end up reaching its goal of 25%, and the cost per acre-foot of solutions is about $1500 per acre-foot,” said Dr. Ajami. “When you look at the right side, what you see is, if you allow these communities to work together, collaborate, coordinate, and trade through this common source – remember, we’re not moving water, we’re just leaving water as a credit in our bank, which is the common pool of water – then all of a sudden, what you see here is they do achieve their diversification goal by 2040, they achieve it with a lower cost, about $1350 per acre-foot. So that shows that trading and the governance structure helps a lot more than just having a regulatory goal and letting people depend on different technologies and infrastructure solutions to achieve it.”

The second question they asked was if it mattered if the stakeholders shared information? Does it matter if communities worked together from the beginning to identify options and coordinate actions before trading begins?

The graph shows the response to that question. "On the left side, we did not allow the information sharing within the Sonoma County Water Agency water utilities when we were very giving them the 25% diversification goal, and what you see there is that they sort of barely achieve their 25% diversification goal with a lot higher price," said Dr. Ajami. "The reason is … if there is an incentive for everybody to diversify the water supply portfolio, and you can sell your credit, and people don't talk to each other, they may go and develop solutions because they would like to subsidize the costs to them. So what happens is, they may over-invest in solutions that they think they need … and then there are so many sellers, not enough buyers in the market. So then, at the end of the day, the trading doesn't necessarily happen. So the cost of this diversification increases."

"On the right-hand side, on the other hand, it's very similar to what designed a previous slide, they can talk, they coordinate from the beginning, and they achieved the goal and also achieved it cheaper."



The top graph on the slide shows the cost of achieving the diversification goals. On the left-hand side, the gray bar illustrates that if it was only driven by decisions that economically make sense to different communities, the cost can be high. However, when people can make decisions based on various criteria that they have, the cost might be slightly higher, especially on the right-hand side, but the solutions can fit the needs of different members of the stakeholder group.

“Not everybody wants to do the same thing,” said Dr. Ajami. “It’s important to prioritize what is important to various stakeholders. For one community, it might be a reliable water supply; for another, it might be having a sustainable water source for their crops. So it’s like two different goals achieved two different ways.”

The bottom graph shows that regardless of what kind of decisions people make and the resources they have, the dependence on the common source of water, in this case, the Russian River, was reduced in the end.

“This means that collectively, these groups not only diversify the water supply portfolio but also actually reduce the dependence on the common source of water,” she said. “For this, it was Russian River; for you, it can be the groundwater basin.”

BENEFITS AND KEY COMPONENTS OF TRADING SCHEMES

There are several expected benefits of trading schemes, including

- Financial accessibility for smaller projects and smaller communities that don’t have the means;
- Equal access to resources for some of the small service providers who may not necessarily have the capacity or the institutional and financial means to do things. This can provide various opportunities for various groups, such as investing in disadvantaged communities;
- Enhancing regional collaboration to implement these solutions through collaborative governance within each groundwater basin; and
- Empowering a bottom-up reinvention.

“The state is not telling you how to do it; they only give you a goal; you go work together as a community and figure out what fits you best and make sure you can achieve this over time,” said Dr. Ajami.

However, there are some key things needed for successful implementation:

Set a regional cap: The regional cap needs to be reevaluated periodically, so as people achieve the cap, it is further adjusted. For example, in the beginning, it was 30% renewables by 2030, and it’s 100% by 2050. “We are increasing the cap to make sure people can collaborate and work more and reduce their environmental footprint.”

Limited credits available: The idea is to encourage collaboration and to create flexibility around local solutions. Regional collaboration is key.

Credit banking: The common pool of water brings everybody together; they all depend on our groundwater basin. “They need to understand when they put the water in the bank, they can access it later, or actually, they can access another form of water in a different way. So that common pool creates the exchange opportunity.”

Monitoring: Unless there is an active monitoring system, so it is known how much water is generated, how much is withdrawn, and how much water is left in the bank, it cannot be done effectively. That's something that the state can provide incentives for to create the information technology and data gathering platforms that are the foundation for the governance structures to work effectively, she said.

Penalties: There needs to be a penalty in place for those who don't do anything and to make sure that all the beneficiaries are at the table and working together.

DISCUSSION HIGHLIGHTS

COMMISSIONER ANDREW MAKLER: The question of teeth and enforcement: when creating these joint governance structures, is it appropriate to consider it a contractual matter with standing to sue? Or would there be a government entity responsible for enforcement? Second, what is the purpose of the markets? 'When I think about markets, I'm thinking about sending a price signal that's going to elicit investment behavior. So is the intention of trading is to create a market to have pricing efficiencies to then have investment decisions?'

"I think your point on having teeth is really, really important," said Dr. Ajami. "We need to make sure these systems are set up in a way that people would follow the rules and guidelines and everything. And ultimately, whatever goal we have in place, we can accomplish it eventually. And that's key."

"About the market, I think you're absolutely correct," Dr. Ajami continued. "If you think about this as pure economic markets, then the price is the only signal that drives the movement. People keep paying for bottled water without thinking about how much they're paying for, but they're not willing to pay for water infrastructure that brings water to the tap, which is the saddest story of our generation. The way I was trying to frame this is to move away from thinking about these as pure economic markets and help you so think about this as more of a trading platform that has other opportunities in place."

"The reason I'm emphasizing this is because if you only think about markets as pure economic drivers of what is going on, then the cheapest available resource would be the one that most used. And eventually, that may mean you're not going to invest in recycling because it's more expensive than surface water, or you're not going to invest in stormwater recharge or groundwater recharge."

"That's why, in one of my slides, I mentioned that if you think about priorities of different communities, these markets need to actually have social and environmental elements within them, which takes them away from the pure economic market, but makes them more sensitive to the social and economic realities on the ground. For example, with cap and trade and acid rain, it was the same concept; not everybody had the same capacity to invest in the same thing.

Maybe some people want to invest in different things; they're willing to pay for other solutions. So it sort of takes that away … the economic driver still is in there. But it's not the only driver."

VICE CHAIR MATTHEW SWANSON commented that the Commission needs to be careful not to create a purely financial model around this whole system. "There are entities, and there are individuals that will come in and buy the whole state water supply, if possible. Okay. So I think that we just need to remember that we have a variety of constituencies. And I think what this plan allows us to do is to, in the end, work together to find solutions; no individual constituency is going to be able to win the whole day and have everything they want."

COMMENT: Chair Teresa Alvarado: "At the beginning, listening to Dr. Ajami's presentation, it felt like we were talking about the early days of cap and trade where it felt like folks were being authorized to pollute. And there's an ethical hurdle to even thinking about trading a precious, and in some minds, a sacred and ancient resource like groundwater. And so there's that kind of principle to overcome. Then we talk about the human right to water and the concerns and levels of distrust in government and distrust in the industry because of the historical treatment and inequitable treatment of poor people and people of color. So all of those things were in the back of my mind is I heard the presentation.

"But I really appreciate what Dr. Ajami said, which was talking about a trading platform, versus marketing of the basin. That feels more comfortable. It feels more like what we're talking about, which is we're trying to within basin change behavior and get to sustainability and resilience. So that feels more comfortable. But what Commissioner Arthur said, really having clear governance structures spelled out and power-sharing models. And I think, as Dr. Ajami said, having very good data and monitoring to ensure and reinforce, through transparency, that we're managing appropriately. And it is not a free for all trading of water, precious groundwater."

"One of the postdocs looked at some of these groundwater management plans, and one problem we have with some of these plans is that they use different baselines and different climate projections and so many different kinds of formats, whatever it works to make the basin look good or make it work," said Dr. Ajami. "If you want to set up something like this, you have to be very honest about your basin and what is possible. It should not be, 'I do whatever I can to make sure everybody's pleased with me,' but actually, collectively sitting down and thinking, we're running out of water, we need to do something. These are the things that we have to do, and everybody should be at the table."

"I think we really do not have very good measures in place right now to make sure access to clean water," continued Dr. Ajami. "We are talking about unintended consequences, but we don't have any measures that say this is what needs to happen to make sure people have access to water. So some of those have to be as part of this conversation embedded in the way we measure the performance of different basins and different actors within the basins."

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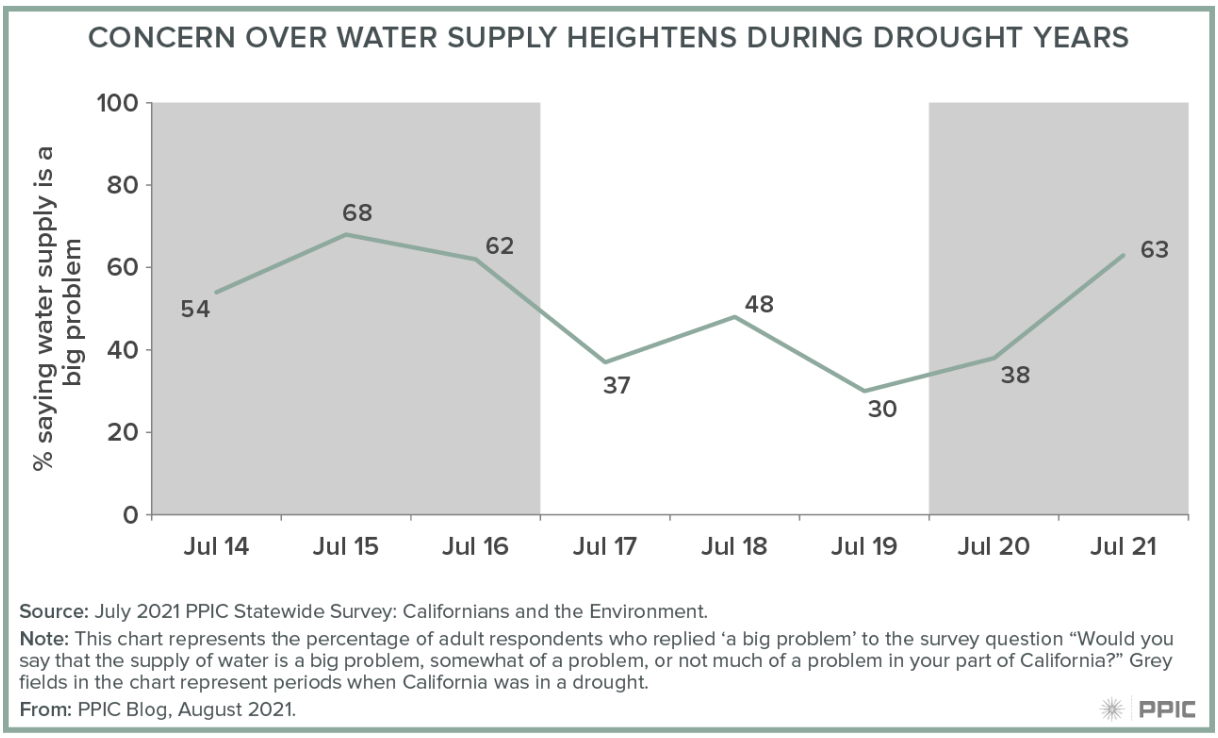
Drought, Water Supply Are Top Environmental Concerns in California
Public Policy Institute of California | August 5, 2021 | Rachel Lawler, Annabelle Rosser, Gokce Sencan

As the state copes with yet another severe drought and a challenging fire season, a new PPIC survey on Californians and the Environment finds that Californians are increasingly concerned about drought and water supply. More than ever before, they also recognize that climate change is worsening drought and wildfires in the state, and they broadly support the state taking action on climate change.

Drought, wildfire, and climate change round out the top three environmental issues that most concern Californians.

When asked about the most important environmental issue facing the state, one in four Californians named water supply and drought. 63% say water supply is a big problem in their part of the state, and majorities feel it is a big problem regardless of their political affiliation or region. While California's only in the second year of the current drought, we're seeing a level of concern similar to the fourth year of the previous drought—highlighting the fact that the current drought came on much faster and hit wetter parts of the state harder than last time.



Concern over Water Supply Heightens during Drought Years

Five years ago, wildfires were one of the least-pressing environmental issues for Californians—just 2% said it was the most important environmental issue facing the state in the July 2016 PPIC survey—but today 17% view it as the most important, second only to drought and water supply. This share has been steadily increasing as wildfires have worsened in recent years.

Over half of residents now see wildfires as a big problem in their region, including majorities across political leanings and demographic groups. This reflects the fact that wildfires affect not only those directly in the fire's path, but also millions of Californians across all regions who experience poor air quality.

The third most-pressing environmental issue for residents is climate change (13%). According to 68% of adults, the effects of climate change have arrived, and 83% of respondents view climate change as a very serious or somewhat serious threat to the state's economy and quality of life.

More Californians are linking the impacts of climate change to more severe drought and wildfires.

Although there are differences across party lines, there's growing agreement that drought is linked to climate change. The July PPIC Statewide survey found that 80% of the state thinks that climate change has contributed to our current drought, a marked increase from 64% in 2015, the last time this question was asked in a PPIC survey. A similar share (78%) also say climate change is contributing to California's recent wildfires, up from 63% in 2019, when the survey first asked about this topic.

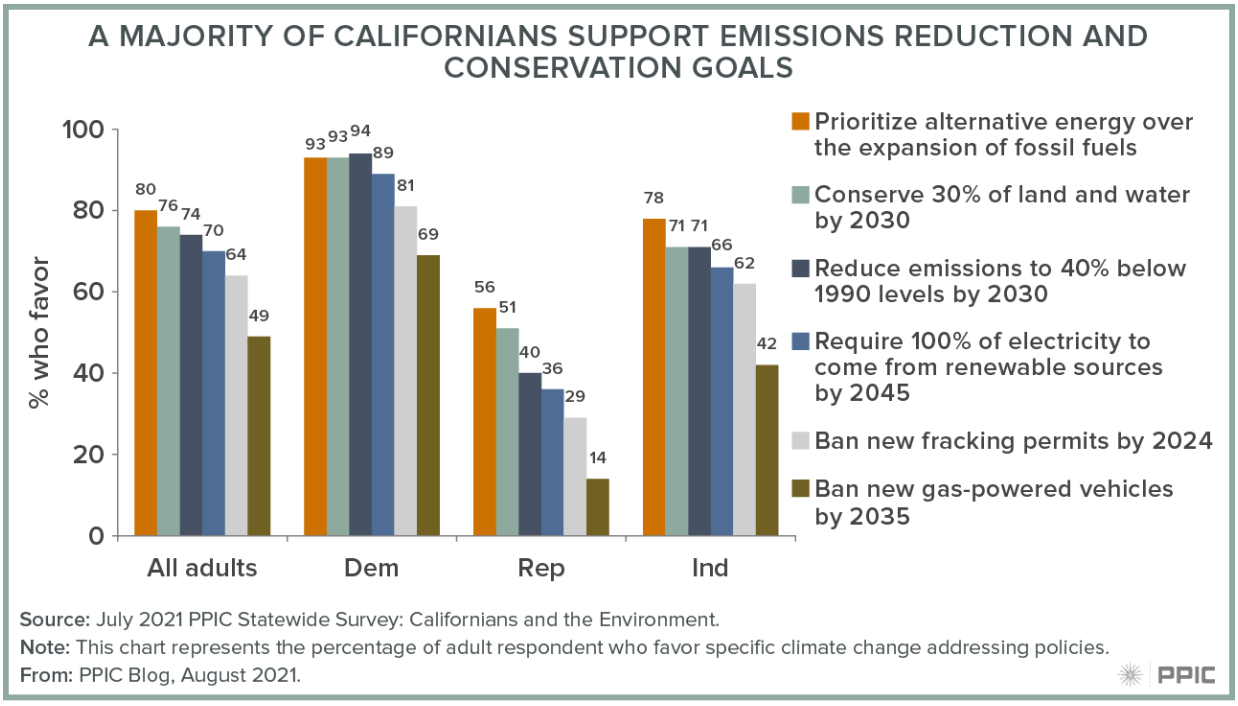
This shift in public perception reflects the state's environmental reality. The warming climate is exacerbating California's drought conditions and threatening the snowpack. The current drought is leading to stressed ecosystems, depleted reservoirs, hard-hit farms and rural communities, and threats to urban water supplies. PPIC research suggests that around 2,700 wells could go dry this year in the Central Valley, and nearly 1,000 more next year if dry conditions persist. Impacts are already being felt across the state.

Extreme wildfires also may be changing public perceptions of climate change. During last year's fire season, residents saw a record-breaking 4.2 million acres burn. Drought and wildfires can be tied to California's warming and more variable climate, which is making both more frequent and intense.

There is an appetite for climate action.

Californians went into this drought using about 16% less water than they were using before the last drought. According to the July PPIC survey, a majority report they have started saving water again: 41% said they have done a lot to reduce water use and 39% have done a little. Still, two in three would like to see their government and communities do more to address the drought.

There is also widespread approval of carbon emissions reduction policies to address climate change. 74% support the 2030 target to reduce emissions to 40% below 1990 levels, a 6 percentage point increase from five years ago. While there are strong partisan differences on some environmental issues (like banning the sale of all new gasoline-powered vehicles by 2035), others—like prioritizing the development of alternative energy sources and the Governor's "30 by 30" conservation goal—enjoy bipartisan support, with majorities of Democrats, independents, and Republicans all in favor.



A Majority of Californians Support Emissions Reduction and Conservation Goals

One piece of good news is that California is able to devote some of its budget surplus to boosting climate resilience and reducing greenhouse gases. The newly passed state budget includes $15 billion in investments over multiple years to support action in both areas, and the legislature will continue to work on wildfire and climate spending when they return from summer recess in August. Though California faces very real challenges in a warming climate, the state is using its resources and policy tools to address residents' concerns.

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THE TUOLUMNE

Watershed that powers Bay Area growth

Manteca/Ripon Bulletin | August 3, 2021 | Dennis Wyatt

Editor's note: This is an occasional series on California's water issues, storage and conveyance systems as well as the current drought.

The waters of the Tuolumne River flow through Modesto two ways.

One is in the natural riverbed that cuts through the city just south of downtown.

The other is in the original "Delta bypass tunnel" — the 46.7 mile pipeline across the San Joaquin Valley beneath the Hetch Hetchy Trail that moves water diverted from the reservoir the urban trail is named after.

The pipeline since 1934 has been delivering water to the City of San Francisco after Congress in 1913 granted it permission to build a dam in Yosemite National Park. The Raker Act — for an annual payment of $30,000 — allowed the city that prides itself on strong ties to the environmental movement through such organizations as the Sierra Club — to flood the Hetch Hetchy Valley.

The valley — viewed as a smaller version of the iconic Yosemite Valley — is the last dam to be built within a national park. It was viewed by John Muir as an act of desecration.

As such San Francisco, just like Los Angeles with its foray into the Owens Valley, supported it's growth that exceeded the ability of the natural water basin to support by committing environmental damage to a distant valley.

Flooding the valley the Tuolumne River once flowed through freely is not the only consequential and lasting environmental impact.

The 146-mile diversion of Hetch Hetchy water out of the Tuolumne before it reaches the Delta has put additional pressure on the Stanislaus and Merced rivers — as well as farmers and cities that depend upon them — to address fish flows and clarity issues in the San Joaquin River and by extension the Delta.

That is especially true during periods of drought.

Unlike water Los Angeles takes from the Sierra, none of the water diverted at Hetch Hetchy flows through the Delta to contribute to fish flow and other environmental issues before continuing its journey to urban faucets. The Delta tunnel pursued by the Metropolitan Water District that is the biggest wheeler of water in Southern California and big agricultural interests essentially would prevent water they procure from the Sacramento River watershed from flowing through the Delta as well where it is subject to court orders and legislative mandates regarding minimum flows for fish and the environment.

It is not a small point.

The Tuolumne River has the largest natural flows of all the southern Sierra rivers at 1,850,000 acre feet a year. The Hetch Hetchy diversion has greatly diminished its flow into the San Joaquin River and ultimately the Delta. The lowest flow at its mouth was 134,000 acre feet in the drought year of 1977. That is less than a tenth of an average year.

San Francisco — that also has a substantial water bank in the 2.03 million acre foot Don Pedro Reservoir that supplies Modesto Irrigation District and Turlock Irrigation District — has resisted efforts to make the city pay "market price" for use of the land they flooded. At the same time they have steadfast refused to honor segments of the Raker Act that require development of recreational uses for the 360,000 acre feet of water captured behind the O'Shaughnessy Dam that flooded Hetch Hetchy.

Hetch Hetchy is an aberration among other western reservoirs and not just because they have escaped a consistent federal mandate for dam projects to have public recreation components as well as being able to flood a national park.

It's because water captured at Hetch Hetchy comes from the predominately granite covered upper Tuolumne watershed, which allows the water to be exceptionally clean. San Francisco is one of the few cities in the United States allowed not to treat its drinking water although they do use chlorine.

The clarity of the water means silt build-up that ultimately can render a dam useless isn't much of an issue for Hetch Hetchy.

The San Francisco Hetch Hetchy system serves 2.5 million Bay Area residents. That's because even though the City of San Francisco owns the major backbone of the system it was authorized by Congress to benefit the greater Bay Area population.

Cities in Santa Clara, Alameda, and San Mateo counties as well as water districts and private utilities that are part of the Bay Area Water Supply and Conservation Agency account for two thirds of the water use and consequently pay for two thirds of the system's upkeep.

Just over 85 percent of the water used in the Bay Area comes from the Sierra. The remainder is runoff from watersheds on the Peninsula and in the East Bay.

The Hetch Hetchy system consists of 280 miles of pipelines, 60 plus miles of tunnels, 11 reservoirs, five pump stations, and two water treatment plants that deliver an average of 260 million gallons a day.

The watershed stretches as far east as the eastern border of Yosemite National Park. The southeastern most point is the 7-mile long Mt. Lyell fork below the peak of the same name that is the highest point in Yosemite at 13,115 feet. The Mt. Dana fork is five miles long and originates below the 13,046-foot Mt. Dana.

The forks join in Tuolumne Meadows to continue the 149 mile journey to the San Joaquin River.

There are two reservoirs in Yosemite National Park — Lake Eleanor and Hetch Hetchy. The two reservoirs along with the 273,500 acre foot Cherry Valley Reservoir constitute the high Sierra reservoirs above Don Pedro.

The Calaveras and San Antonio reservoirs are in the Coastal Range.

The most visible reservoir in the Bay Area — Crystal Springs on the Peninsula — always appears full because it is the last major reservoir before Tuolumne River runoff enters the City of San Francisco water distribution system.

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EPA Administrator Visits Redwood City to Announce $168M in Loans for Water Infrastructure Improvements

KPIX 5 | August 17, 2021

REDWOOD CITY (BCN) — U.S. Environmental Protection Agency Administrator Michael Regan made his way to Redwood City on Tuesday to announce three water infrastructure loans that would invest $168 million to support projects in the Peninsula and East Bay.

The loans from the Water Infrastructure Finance and Innovation Act (WIFIA) seek to upgrade water infrastructure throughout the nation so that it is safe and sustainable.

“I’ve seen firsthand the urgency of modernizing our nation’s water infrastructure and ensuring that it can withstand the impacts of climate change,” Regan said. “Investing in our water infrastructure is one of the best decisions we can make to improve the health of our communities, and the health of our economy.”

Two of the loans are allocated to Silicon Valley Clean Water, a joint powers authority that recycles and treats wastewater from 220,000 residents and businesses in southern San Mateo County.

The newest loans, totaling $143 million, will help finance their RESCU program — 11 projects which constitute full replacement and rehabilitation of SVCW’s conveyance system including the Gravity pipeline among other improvements to its treatment plant.

“This is a tremendous project for our residents,” said Silicon Valley Clean Water commission chair Alicia Aguirre.

Aguirre said this project will ensure that residents have clean water that is recycled and will not have to overpay in fees.

“That’s why loans like this are so important, because now we have a state-of-the-art infrastructure (to save costs),” Aguirre said.

“What’s most exciting for me is the jobs that it brings with and assistance to the economy … especially during COVID,” said Teresa Herrera, manager at Silicon Valley Clean Water. “That and the sustainability and innovative technologies that we use.”

The improvements to the treatment facility, which was originally built in 1980, will create more than 2,300 jobs and is expected to be completed by 2023.

The remaining loan of $25 million is allocated to the Oro Loma Sanitary District in Alameda County to help finance upgrades to the sewer collection system.

There are 273 miles of clay pipes, originally built in the 1940s and 50s, that have been decaying and will be reconstructed with the WIFIA loans.

“So, we’re really excited,” said Oro Loma board president Rita Duncan. “But the other great thing is we serve one of the under privileged communities, so it was really wonderful to be getting this money to help our community.”

Regan said this latest round of WIFIA loans is an example of what’s to come if the infrastructure bill being considered by Congress is passed by the House of Representatives.

Under the Senate’s approved version of the bill, the EPA is poised to get $50 billion to accelerate progress on “much needed water infrastructure improvements,” including lead service lines and lead pipes and improving drinking water, wastewater and stormwater infrastructure all across America, Regan said.

“Importantly, we will also be able to create good paying jobs and support the foundation for future economic vitality for all of our communities,” Regan concluded.

# # #

Western water projects in infrastructure deal
Associated Press | August 15, 2021 | Suman Naishadham

WASHINGTON — Included in the sweeping $1 trillion infrastructure bill approved by the Senate is funding for Western water projects that farmers, water providers and environmentalists say are badly needed across the parched region.

The Senate voted this week in favor of the legislation that seeks to rebuild U.S. roads and highways, improve broadband internet access and modernize water pipes and public works systems. The bill's future in the House is uncertain.

The federal funding would come as the West bakes under a decades long drought that is straining water supplies.

A look at some ways the $8.3 billion for water projects would help bring relief in coming years.

Water storage
The plan would provide $1.15 billion for improving water storage and transport infrastructure such as dams and canals. Groundwater storage projects, which replenish underground aquifers that aren't vulnerable to evaporation, would also get funding. Western states have for years over-pumped groundwater from wells during dry years, even causing land to sink in parts of California.

"California has to do more to store and otherwise stretch the use of water in wet years in order to have enough to sustain through the dry years," said California Sen. Dianne Feinstein, a Democrat whose office helped get water provisions in the bill.

Water recycling
To help stretch existing water supplies, $1 billion would go toward projects that recycle wastewater for household and industrial use. Many states and cities already have or are developing programs that recycle storm water runoff and wastewater. The U.S. Bureau of Reclamation, which manages water, dams and reservoirs in 17 Western states, would decide which projects are funded.

Drought plan
Prolonged drought, scorching temperatures and climate change are draining the Colorado River that supplies water to 40 million people and farmland in the West. The bill would provide $300 million for drought measures, such as conservation and storage projects, to maintain water levels at the river's reservoirs and prevent additional water cuts.

Already, the first-ever shortage declaration at the river is expected next week. Some Arizona farmers will be among those to feel the effects next year.

Desalination
The bill would add $250 billion for studies and projects to make sea water and brackish water usable for agricultural, industrial and municipal use. Desalination plants send ocean water through filters that extract fresh water and leave behind salty water that's often returned to the ocean. The technology is expensive but increasingly viewed as a critical way to supplement water supplies in drought prone areas.

Dam safety
About $800 million would fund improvements and repairs at dams that are used for drinking water, irrigation, flood control and hydropower. Scores of dams across the U.S. are in poor or unsatisfactory condition, according to state and federal agencies. In 2017, damage at California's Oroville Dam prompted evacuation orders covering nearly 200,000 people. Feinstein's office recently said that California alone has 89 dams that are "in less than satisfactory condition."

Rural water
Another $1 billion would be dedicated for water projects in rural areas, where aging water treatment facilities and infrastructure are often in need of repair.

Taken together, the water projects funded by the infrastructure plan could make an impact in the West, said Dan Keppen, executive director of Family Farm Alliance, which lobbies for farmers, ranchers and irrigation districts.

"It's sort of an all-of-the-above approach and that's what's needed," he said.

# # #

Australia's water woes offer a preview for Arizona. Will we avoid their mistakes?
Opinion: Australia offers a stark warning about the consequences of crisis decision-making, and how quickly decades of progress can unravel when trust is lost.
AZ Central | August 29, 2021 | Dustin Garrick and Erin O'Donnell

Jasmin Kew seeks relief from the heat in a blow pool filled with muddy water from the Darling River in 2019. This area is a bellwether for water-scare regions. (Jenny Evans/Getting Images)

Hunched around a small boardroom table, a group of policy wonks known as “water buffaloes” were in a familiar place: debating the fate of a drying Colorado River. There are no solutions, just strategies to buy time, they concluded.

That was in 2010. More than 10 years later, time – and water – is now running short.

In a summer defined by heat, drought and fire, August 2021 marks the first water shortage declaration in the Lower Colorado Basin, affecting the water supply for around 40 million people and an economy within the top 10 globally.

That it’s taken this long to trigger a shortage is a testament to those creative strategies – fallowing farmlands, increasing water-use efficiency, taking voluntary cuts – and, overall, a paradigm shift in managing the basin to account for its economic and ecological resilience.

The easy trade-offs on the Colorado are over

All of this progress is supported by efforts to broaden the inner circle and address legacies of exclusion for Indigenous and environmental voices across a region that spans nine states, two countries and 29 tribal nations.

Arizona is on the sharp end of this transition due its junior priority, but the last 20 years of planning have transformed an existential risk into an opportunity. The state's water leaders have moved from a defensive position to a more proactive one with a portfolio of options, and a readiness to come up with more.

The successes are encouraging: over the past two decades, the Colorado River basin has shown that the science – and art – of cooperation and conflict resolution are as important as its climate and hydrology.

Despite these encouraging signs, the shortage declaration is expanding the political theater during a period of perennial crisis. August is a line in the sand: the end of the era of incrementalism, of buying time. There's not enough water, and the easier trade-offs and creative solutions are giving way to tough choices about who loses, how much, and what, if any, steps can ease the pain.

Today there is a growing chorus of calls to break "the chains that unnecessarily tie us to the past" and move faster to cope with a drier future arriving too suddenly.

What happens when you lose trust

We're worried because we have seen this before. Australia's Murray-Darling Basin has long served as the bellwether for water-scarce regions. The Murray-Darling is a "sister basin" for the Colorado River, bearing a striking resemblance in terms of their climate and culture. Even as their paths have diverged in important ways, the Murray-Darling offers a preview for the West.

The summer of 2006-7, the driest summer of the Murray-Darling Basin's longest drought, offers a stark warning about the consequences of crisis decision-making, and how quickly decades of progress can unravel when trust is lost.

The prime minister at the time, John Howard, called for "radical and permanent change" – a 10-point plan backed by $10 billion in spending that created a new federal authority for water management decisions to break the stalemate between the states.

His plan also enshrined water markets and basins as the way to make trade-offs and claw water back to restore river ecosystems.

Water markets went horribly wrong

Water markets, however, were never meant as a silver bullet in Australia.

Just last year, Australia's competition commission warned of deficiencies that undermine confidence: a lack of transparency, unregulated brokerages and complexities that favor larger agribusinesses with the resources to navigate the market.

Inadequate metering and enforcement created prime conditions for theft as the value of water increased.

Australia shows that markets can be an important tool, but also that markets should be the servant of sound governance and planning, not the master. It's easy to get the hierarchy mixed up.

Unless communities have a big role in creating and governing water markets, trading can foster individualistic connections to water that can crowd out the civic duty to cooperate and contribute to the river's sustainability.

A locally crafted, state supported process for charting rural futures can reduce the fear of unfettered markets by allowing communities to cope with the double whammy of climate change and structural changes in the agricultural economy.

In Australia, it became winner-takes-all

Collaboration takes time, and is often seen as too slow to manage an emergency. In Australia, in 2006-7, frustration with the slow pace of progress boiled over and the new 10-point plan replaced the former cooperative approach of the National Water Initiative.

Efforts to speed up proved counterproductive in the long run. The ambition of the 10-point plan – and the resources to implement it – were there, but implementation became mired in accusations of corruption and conflict.

What Australia lost sight of was the crucial importance of managing conflict. A winner-takes-all mindset creeps in quickly during a crisis, blinding us to the broad benefits of collaboration. Urgent water reforms driven by an absolute reduction in water availability, coupled with increasing demands are always contested.

The fear of cities "buying and drying" up agricultural lands runs deep and wide from Owens Valley, Calif., and Crowley County, Colo., to Arizona's La Paz County.

Hard choices can leave some high and dry, and if they don't recognize those choices as legitimate, then they will reject them. Communities can tear themselves apart and future water reforms become even more politicized. When coupled with the individualism of water markets, water reform becomes impossible to navigate.

But it doesn't have to be this way.

A new vision (and value) for water

River management in crisis must embody the ideals of cooperation, interconnectedness and interdependence between people and the river. We need a vision for river management that transcends the overriding emphasis on individual rights and strengthening collective action, both locally and basin-wide.

Around the globe, new modes of collaborative river governance are taking shape, as communities come together to plan and manage their water. The very value of water is shifting, as are the ways of valuing it. Water is life: for people, for industry, for farms, for ecosystems.

We need to keep what's already working in the Colorado River Basin: a growing, but fragile, experience of cooperative federalism, and a capacity for adaptive innovation even during crisis.

Colorado's "water buffaloes" have been learning by doing for decades, and we must keep working to plug the gaps: respecting Indigenous sovereignty, reconnecting the river to the sea and investing in safe, accessible water for all.

New spaces for people to come together at a basin level in the Colorado River have been forged, supported in part by large infusions of philanthropy.

How Arizona can lead this effort

The system is not perfect, but we have the tools to solve these urgent problems, together: understanding and setting limits on water extraction, navigating rural transitions, and ensuring continued monitoring and transparency as water begins to move from historic to new users.

As Australia shows, downstream states are particularly vulnerable to what happens upstream. But they are also well positioned to build new coalitions for working across state lines and finding creative ways of sharing risks and benefits, a leadership role that Arizona can and should step into.

Australia has prided itself in its ability to learn from the struggles of the U.S. to manage its water. Now, the tables are turned, and Australia's struggles are the beacon that should draw the eyes of the world – and the attention of the Colorado River's diverse decision-makers.

Sometimes the messages from Australia can take a while to travel around the world. This August, we don't have time to wait.

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Up 43% over Last Decade, Water Rates Rising Faster than Other Household Utility Bill
Cost of Water
Bluefield Research | August 23, 2021 |

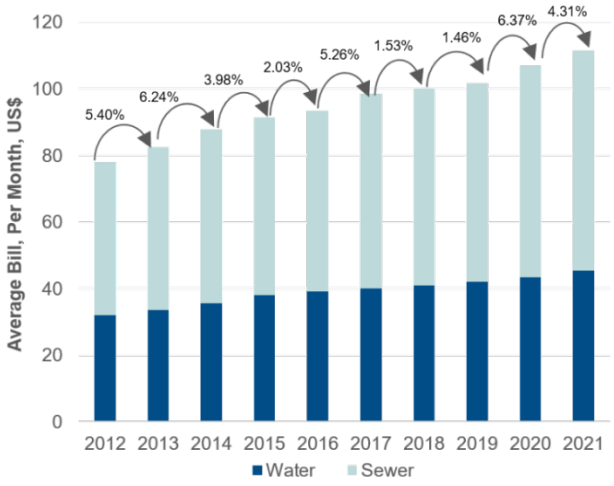
Boston, Massachusetts: New analysis shows water rate growth currently outpacing other household utility services (e.g., power, gas) at an average of 4.2% per year. As such, the combined water & wastewater bill for a typical U.S. household has swelled to 43.2% from 2012 to 2021, an indicator of the water sector's growing financial burden, according to new analysis from Bluefield Research's annual benchmark study of residential water rates across U.S. cities.

Across the 50 largest metropolitan areas in the U.S., combined monthly water and wastewater bills for a typical U.S. household surpassed US$111.60 per month, based on average household consumption. Typically, wastewater makes up approximately 60% of the total bill while water services make up the remaining 40%.

Many water utilities are making efforts to balance affordability with the financial requirements to adequately operate treatment facilities and pipe networks. Amidst these annual increases, 29 of the 50 cities examined have maintained rate discounts for low-income households and the elderly, attempting to insulate the most vulnerable customers from rate increases.

"Our data indicates that water rates are growing at a faster clip than rates for other utilities services like electricity and natural gas, which, surprisingly, only average a 1% increase per year," says Bluefield Research Director Erin Bonney Casey. "While water still only makes up 26% of consumers' average household water utility bill, consumers are beginning to feel the impacts. At the same time, utilities and municipalities are beginning to see more unpaid bills, or non-revenue water."

Exhibit: Household Water and Wastewater Utility Bills for 50 U.S. Cities, 2012-2021



Source: Utilities, Bluefield Research

Utility revenues generated through water rates are used to fund ongoing operations and maintenance of systems. Regional variations in water & wastewater rates illustrate the unique water management challenges faced by cities across the U.S. western utilities that frequently

require infrastructure investments to secure new water supplies in the face of drought. In contrast, large water utilities in the Northeast implement higher bills in part due to the scale of operations and maintenance and the rising cost of operating aging water treatment and pipe networks.

Monthly combined household water & wastewater bills range from a low of US$46.35 in Memphis, Tennessee to a high of US$296.23 in San Francisco, California. The most significant water rate increases have been in response to specific capital investment needs. Baltimore, Maryland residents are subject to a fixed wastewater Bay Restoration Fund rate explicitly levied to support wastewater treatment plant upgrades. San Francisco, California has been steadily increasing rates to fund its US$4.8 billion Water System Improvement Plan.

“A common question presented to our team is the impact of drought on water rates,” says Ms. Bonney Casey, “but to date, there is little, if any, correlation demonstrated in our analysis. If anything, it is tied to infrastructure investment and operating costs rather than the availability of water.”

Multiple western utilities—including those in Los Angeles, California and Riverside, California—cite drought concerns and loss of revenue due to prolonged droughts as reasons for escalating rates. In these cases, utilities are not using price as a means of controlling water demand, but rather acknowledging that droughts can result in revenue declines at a time when operations are under the most strain.

# # #

WateReuse Association Applauds Introduction of the Water Reuse and Resiliency Act
Treatment Plant Operator | August 10, 2021

Senators Alex Padilla (D-California), Diane Feinstein (D-California) and Jon Ossoff (D-Georgia) recently introduced legislation authorizing federal investments to help communities across the country adopt water reuse as a resource management tool.

The Water Reuse and Resiliency Act authorizes up to $200 million per year over five years ($1 billion total) for the Alternative Water Source Grants Pilot Program, through which the U.S. Environmental Protection Agency would provide competitive grants to state, interstate and intrastate water resource development agencies to engineer, design, construct and test alternative water source systems, including water recycling systems. The program would ensure that communities in all 50 states plus the District of Columbia and Puerto Rico can access water recycling tools to solve local water challenges.

“The WateReuse Association applauds Senators Padilla, Feinstein and Ossoff for developing strong legislation to improve our nation’s water recycling infrastructure,” says Patricia Sinicropi, executive director of the WateReuse Association. “This legislation provides tools and investments to help communities address complex and evolving challenges through the adoption of water reuse. We look forward to working with Congress to incorporate Alternative Water Source Grants funding into major infrastructure legislation in the coming days and weeks.”

Communities across the country are incorporating water reuse into their water management strategies as a proven method for ensuring a safe, reliable, locally controlled water supply — essential for livable communities with healthy environments, robust economies and a high quality of life. Some important examples of how communities and businesses are increasingly turning to water reuse to stabilize their water management systems and ensure stronger and more resilient supplies include:

- By 2035, the City of Los Angeles expects to recycle 100% of its water supplies and reduce its reliance on costly imported water from the Colorado River.
- Truckee Meadows Water Authority in Reno, Nevada, is planning 13-mile pipeline to provide 1.3 billion gallons of recycled water annually to the Tahoe-Reno Industrial Center, home to Tesla, Switch and Google, and ensure 20,000 jobs remain in Nevada.
- The Hampton Roads region of Virginia, home to the largest concentration of military and naval installations, plans to recycle 100% of its effluent through an aquifer recovery system to prevent rising sea levels from threatening inundating the entire region.

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NACWA Letter to Congress Urges Greater Federal Investment, Grants for Water in Infrastructure Package
Clean Water Current | August 5, 2021

Early this week the bipartisan group of 22 Senators who have been negotiating with President Biden and the White House on a bipartisan infrastructure bill released legislative text and quickly began to advance it through the Senate with the support of leadership.

The release of the bill text marks a significant turning point in this year's federal infrastructure investment debate, moving beyond framework proposals. As Senators and the public reviewed the legislation – more than 2,500 pages encompassing $550 billion in new spending – hundreds of amendments to improve the bill were quickly filed. NACWA has been coordinating with municipal government and water sector groups to advocate for a bipartisan amendment to increase the grant share of the water spending portion of the package.

In line with NACWA's main ask for infrastructure investment, the Senate bill incorporates direct spending through appropriations as well as important authorizations. The package would provide $11.7B each over 5 years for the Clean Water State Revolving Fund (CWSRF) and the same amount for the Drinking Water State Revolving Fund (DWSRF) for a total of $23.5B in new spending, of which about half would need to be in the form of grants or 100% principal forgiveness. These funds would be on top of annual Fiscal Year spending bills passed each year that could further fund the SRFs.

The Senate Infrastructure bill would flow additional funds through the SRFs for specific uses: $1.0B through the CWSRF and $4.0B through the DWSRF to address emerging contaminants such as PFAS and $15B through the DWSRF to address lead in drinking water. The bill also appropriates funds for small and disadvantaged drinking water systems and EPA's geographic programs around the country.

The bipartisan bill would also authorize EPA to conduct a study of low-income water assistance needs around the country and stand up a pilot program of EPA federal assistance for low-income households; authorize a clean water resiliency program; reauthorize the Sewer Overflow and Stormwater Reuse Grants program at higher funding levels; reauthorize the CWSRF at higher funding and additional subsidization levels for future years; and more – all of which have been important asks for the public clean water sector. However, the bill also includes some concerning provisions, notably extending Buy America to manufactured goods. NACWA joined other organizations in a joint letter expressing concerns with this provision earlier this week.

In sum, the Senate package is a significant step forward in terms of providing direct new spending and authorizations for clean water. At the same time, the bill would spend only about half of what was initially proposed by the Biden Administration for infrastructure investment overall as well as for water specifically.

Maintaining bipartisan support has been a major achievement for the Administration and Senators to this point. The bill, however, now moves to the House as it considers its next steps, incldluing whether to consider the bill "as is", dramatically scale up funding, or simply turn to

drafting their own priorities through the Budget process. The House will face considerable pressure to hew more closely to the Administration's and House-proposed spending levels.

We anticipate the infrastructure investment negotiations to continue into the fall, and NACWA will remain very closely engaged with Congress as bills advance. Contact Kristina Surfus, NACWA Managing Director of Government Affairs, or Jason Isakovic, NACWA Legislative Director with any questions.

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