

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

January 15, 2021

Correspondence and media coverage of interest between December 16, 2020 and January 12, 2021

Correspondence

From: Nicole Sandkulla, BAWSCA CEO/General Manager
To: The Hon. Sophie Maxwell, President of San Francisco Public Utilities Commission
Date: December 16, 2020
Re: SFPUC's Draft Asset Management Policy

Media Coverage

Water Supply Conditions:

Date: January 12, 2021
Source: Turlock Journal
Article: Current drought conditions contributing to historically dry year

Date: January 7, 2021
Source: DWR
Article: Will This Winter Be Wet or Dry? DWR Leads Innovative Effort to Advance Forecasting

Date: December 30, 2020
Source: San Francisco Chronicle
Article: Dismal California snowpack is bad sign for water supplies

Date: December 30, 2020
Source: CBS 13
Article: 'There is A Lot Of Winter Still Ahead': California's Early Winter Snowpack Lagging

Climate Change:

Date: January 14, 2021
Source: National Oceanic and Atmospheric Association
Article: 2020 was Earth's 2nd-hottest year, just behind 2016

Date: January 13, 2021
Source: UC Davis
Article: Dead Trees Fuel Wildfire Severity in Sierra Nevada

Date: January 13, 2021
Source: CalMatters
Article: 3 critical lessons California offers to improve restoration of land on a global scale

Water Supply Management:

Date: January 13, 2021
Source: The Guardian
Article: Vast coalition calls on Biden to impose national moratorium on water shutoffs

Date: January 7, 2021
Source: Phys.Org
Article: Researchers propose a framework for evaluating the impacts of climate change on California's water and energy systems

Date: January 4, 2021
Source: YubaNet.com
Article: California's Sacramento-San Joaquin Delta – a short history of big changes

Water Infrastructure:

Date: January 12, 2021
Source: San Jose Mercury News
Article: \$2.5 billion Pacheco Dam project moves forward, despite cost increase

Date: January 12, 2021
Source: AgNet West
Article: Industry Groups Urge New Administration to Address Water Infrastructure

Date: January 6, 2021
Source: DWR
Article: Delta Conveyance Project Alternatives Screening Process

Date: December 16, 2020
Source: San Jose Mercury News
Article: Anderson Reservoir is drained as part of earthquake project to rebuild 240-foot Anderson Dam

Operations:

Date: January 11, 2021
Source: Water Finance & Management
Article: Water sector weighs in on COVID vaccine prioritization



December 16, 2020

Via e-mail

The Hon. Sophie Maxwell, President
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 13th Floor
San Francisco, California 94102

RE: SFPUC's Draft Asset Management Policy

Dear President Maxwell,

Thank you for providing the Bay Area Water Supply and Conservation Agency (BAWSCA) an opportunity to provide comments on the draft Asset Management Policy (Policy) prepared by the San Francisco Public Utilities Commission (SFPUC) for its Water, Power and Wastewater Enterprises. The version of the policy that BAWSCA has reviewed was dated October 30, 2020 and further was shared with the SFPUC's Commission on November 10, 2020.

Based on its review of the draft Policy, BAWSCA provides the following findings and makes several recommendations:

Finding 1: The Guiding Asset Management Principles (GAMP) are comprehensive and address most of the recommendations included in the Asset Management Program Audit (June 2020) conducted by BAWSCA and provided to the SFPUC and its Commission in July of 2020.

Finding 2: The one element of the Policy that is missing is a component that calls for the development of a replacement planning program to forecast long-term rehabilitation and replacement requirements. While a Budgeting GAMP is included, it appears to address more short or near-term requirements, which may not capture replacement planning for long-term expenditures.

Finding 3: The GAMP is lean on details and hence BAWSCA appreciates SFPUC's intention to revisit the Policy in coming years and at regular intervals to add to its specificity.

Recommendation 1: The SFPUC should consider how it intends to enforce the Policy as it may be appropriate to include an enforcement element in the Policy itself.

Recommendation 2: The Policy should be linked to an action plan for each of the enterprises. BAWSCA believes that an action plan is an appropriate next step in policy implementation.

- An action plan would include deadlines and deliverables, identify responsibilities for policy implementation, and put forth audit requirements to assure continual validation and improvement of the policy. In addition, performance and reporting requirements could also be included in the action plan.

The Hon. Sophie Maxwell, President
December 16, 2020
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BAWSCA appreciate SFPUC's dedication to improving its asset management practices and its work to make continuous improvements in its overall asset management program. The adoption of an Asset Management Policy is a valuable step forward for guiding future asset management and investment decisions.

Sincerely,

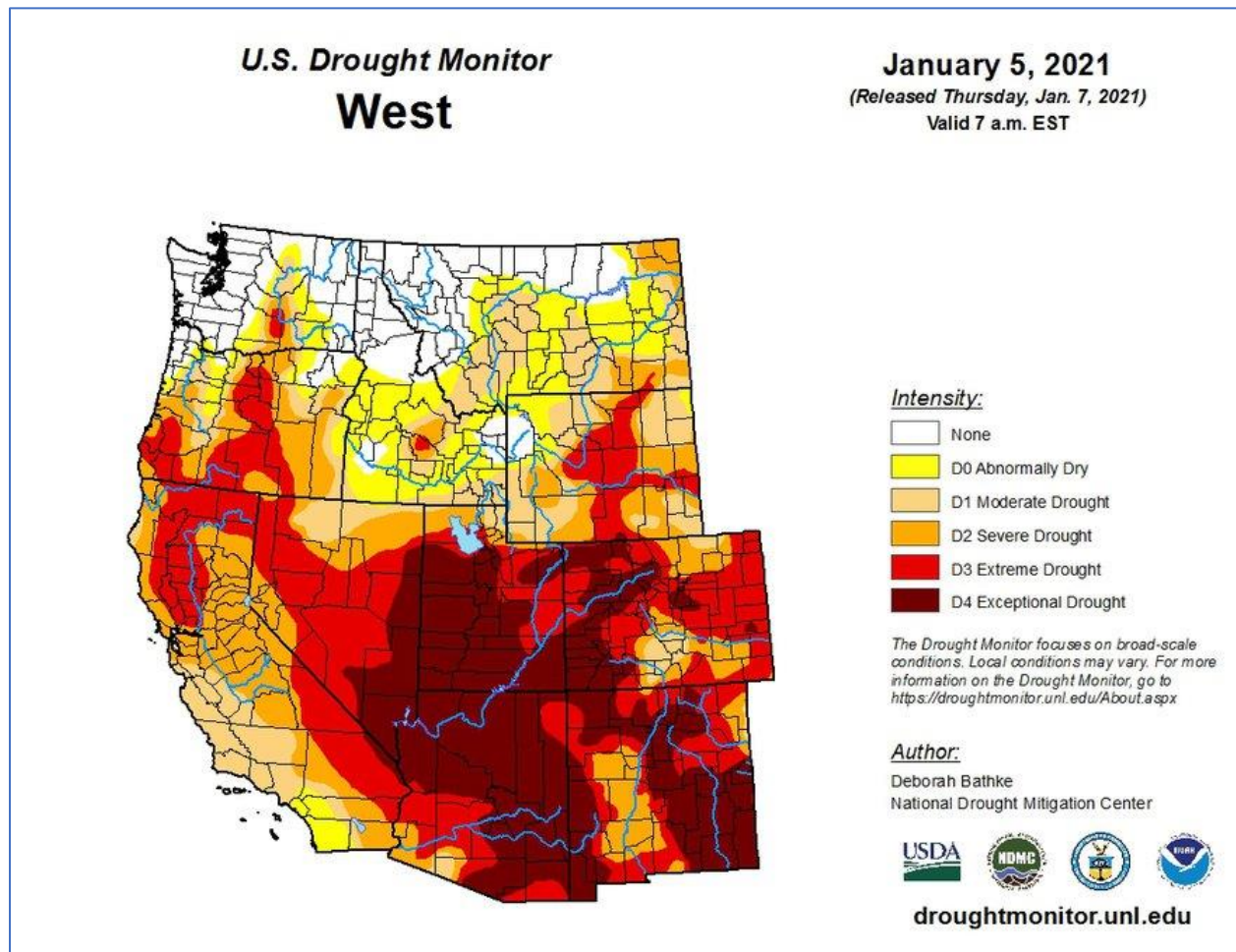


Nicole Sandkulla
CEO/General Manager

cc: SFPUC Commissioners
SFPUC CAC c/o Tracy Zhu, External Affairs Bureau
Michael Carlin, SFPUC Acting General Manager
Steve Ritchie, Assistant General Manager, Water Enterprise
BAWSCA Board of Directors
Tom Francis, BAWSCA Water Resources Manager
Allison Schutte, Hanson Bridgett, LLP

Current drought conditions contributing to historically dry year

Turlock Journal | January 12, 2021 | Angelina Martin



Updated: Jan 12, 2021, 8:54 PM

The local region's current water year is shaping up to be one of the driest on record according to Turlock Irrigation District, with below-average rainfall amplifying California's existing state of drought.

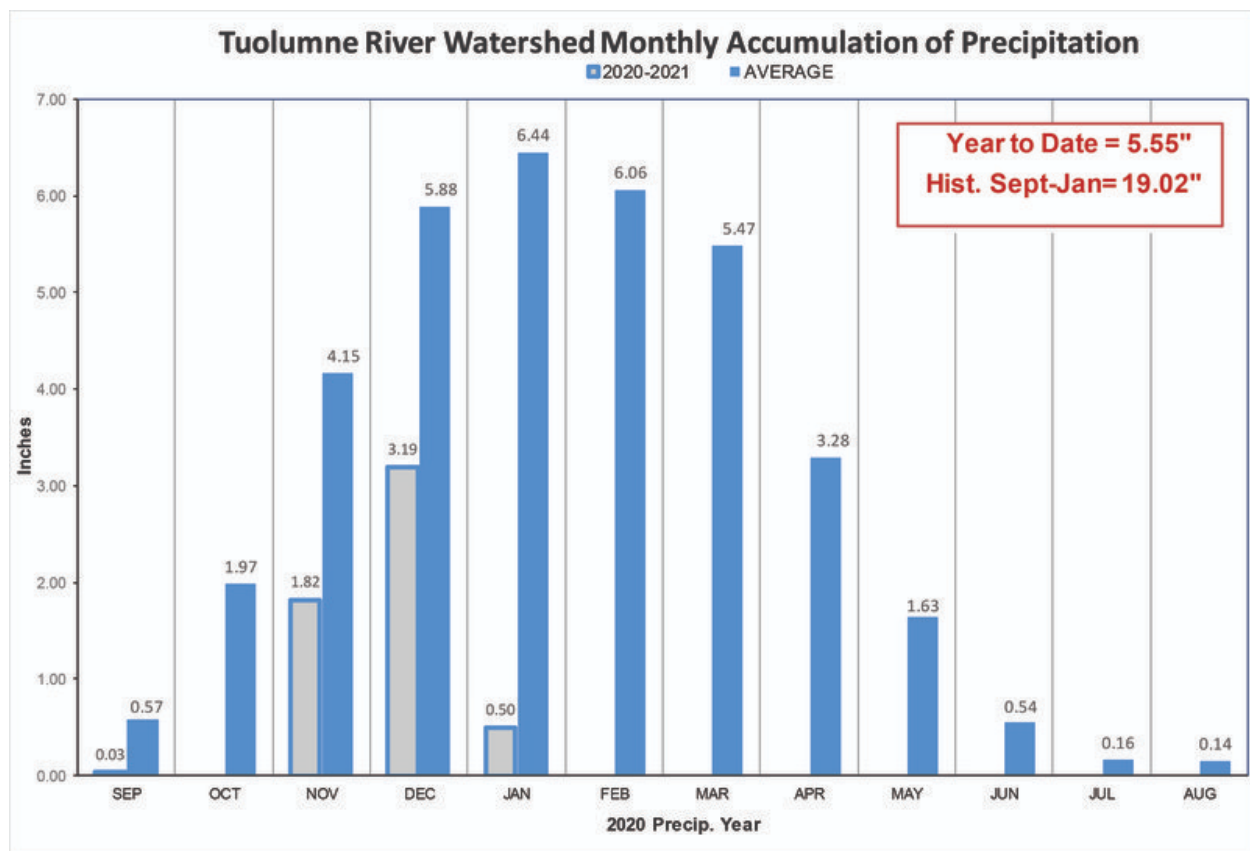
Data provided by TID Hydrologist Olivia Cramer during Tuesday's Board of Directors meeting showed that from September 2020 through Jan. 10, 2021, the Tuolumne River Watershed has so far received 5.55 inches of precipitation. Compared to TID's historical average of 19.02 inches for those same dates, the recent 2020-2021 rainfall numbers account for just 37.9% of normal.

According to Cramer, weather forecasts for the next 16 days are bleak and represent less precipitation than predicted by even the driest scenarios. The watershed could see as little as a quarter of an inch or less than one-tenth of an inch of rain in the next two weeks based on the forecast.

“Even in our dry scenario, we are expecting at least two more inches from now until the end of January, but based on the 16-day forecast we’re looking at conditions that are even drier than our normally-used dry scenarios,” Cramer said.

So far in January, the region has received .5 inches of rainfall compared to the average of 6.44 inches for the month. Storms brought some relief in December, but still provided just 3.19 inches of precipitation while the average for the month is 5.88 inches. Just 1.82 inches of rain fell in November, which typically sees 4.15 inches, and October and September brought a combined .03 inches of precipitation.

With TID’s dry scenario predictions — which Cramer stated are optimistic given recent forecasts — Don Pedro elevation would sit at about 709.5 feet by the end of the calendar year, and at 792.6 feet should wet conditions unexpectedly arise. In both the dry and average scenarios, reductions in irrigation would need to be made, Cramer said.



“If those forecasts hold and there’s not a shift to wetter conditions, then likely all of the scenarios will shift down slightly due to that lack of precipitation,” she said.

Cramer added that the current water year is comparable to some of the driest years on record. Should forecasts prove accurate, precipitations levels would be close to those of 1977 — the driest year on record. Under average conditions, the water year would more closely resemble 2013. Both 1977 and 2013 were the second years of a prolonged drought, Cramer pointed out, and following a dry 2019-2020 water year, this year is the same.

Cramer stated that the current period from October to January is the second-driest period on record and will likely only become drier. Last year, the region received just 54% of average rainfall numbers for the area. While forecasts could change for the better, they could also change for the worse, she said.

“You always have the possibility of a ‘Miracle March’ or ‘Awesome April,’ but even with extremely wet conditions or fairly wet conditions, we’re really only expecting to get close to average or just slightly below average,” Cramer said. “There’s always a possibility you could have extreme wet conditions even above what’s predicted here, but then you also have the same thing on the dry side.”

The dry conditions have also plagued the state of California as whole this year.

Recent numbers from the California Department of Water Resources show that the amount of water in the state's mountain snowpack is only about half of average for early winter, or just 52% of average to date.

According to the U.S. Drought Monitor, 100% of the state is experiencing at least some level of drought, with levels ranging from abnormally dry to moderate, severe, extreme and exceptional drought. Nearly 34% of California is in either an extreme or exceptional state of drought. According to the monitor, all of Stanislaus County is currently classified as experiencing severe drought.

While earlier forecasts from last week had previously anticipated more rain and snow than the region actually ended up receiving, Cramer explained that these predictive models have become more volatile this year.

“It’s kind of the volatility you would normally see in the fall, and now we’re seeing it within the winter period,” Cramer said, pointing to changes in atmospheric patterns as the culprit. “...Based on that, a lot of these models are changing quickly in order to adapt to those larger atmospheric changes.”

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To view the U.S. Drought Monitor, visit <https://droughtmonitor.unl.edu>

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Will This Winter Be Wet or Dry? DWR Leads Innovative Effort to Advance Forecasting

DWR | January 7, 2021

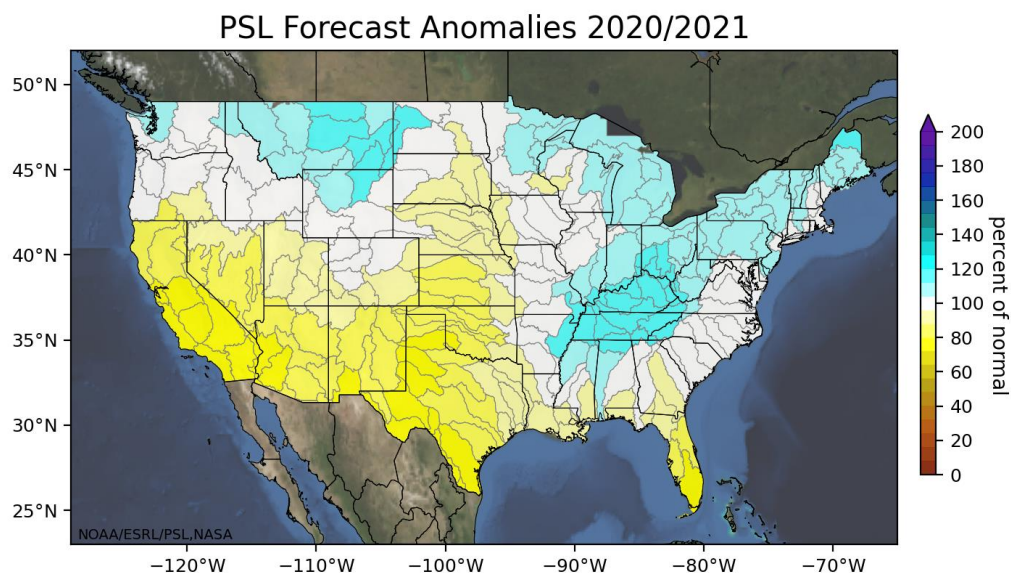
California's 2020 Water Year, which ran from Oct. 1 to Sept. 30, emphasized the State's extreme weather swings, with drenching rains in the southern part of the state and dry conditions in the north. So far, California's fall and winter seasons have seen intermittent precipitation, which has left many asking: what can we expect for Water Year 2021?

When asked this question, water managers look to forecasts. Conventional weather forecasts extend only about two weeks out, but most of their "skill" or statistical accuracy is in the first week. Sub-seasonal to seasonal (S2S) forecasts differ from conventional weather forecasts as they extend significantly further into the future.

Sub-seasonal forecasts extend to about six weeks out, which is a useful time period for considering reservoir operations scenarios. Seasonal forecasts can cover months to an entire wet season and are especially helpful for making a wide range of resource allocation decisions and informing drought preparedness activities. However, the present ability to predict precipitation through S2S is limited, reflecting the need for more investment in forecasting research.

The Department of Water Resources (DWR) is working to improve forecasting by partnering with the research community to fund experimental forecasts of S2S precipitation to help us better understand what we can expect during the winter.

An example of an experimental product funded by DWR that is based on a statistical model for seasonal precipitation is shown below.



Map of the United States. This map is color coded to show wet or dry seasonal forecast. The map shows that the majority of California is expected to be dry.

What does this tell us about California's upcoming winter? The forecast, prepared by DWR's partners at the National Oceanic and Atmospheric Administration's (NOAA) Earth Systems Research Laboratory in Colorado, predicts dry conditions for the current wet season (November to March). Other experimental products being prepared for the first time in partnership with the National Aeronautics and Space Administration's (NASA) Jet Propulsion Laboratory are also suggesting dry conditions.

La Niña conditions, which historically have been mostly associated with drier conditions in Southern California, are present in the tropical Pacific Ocean and are expected to persist into the spring. The combination of experimental forecasts and La Niña suggest dry conditions for at least Southern California.

Improving prediction capabilities is an area that requires ongoing research and investment, and DWR looks forward to continued work with its research partners to improve seasonal to sub-seasonal forecasts. The ability to develop forecasts with longer lead times will greatly benefit water managers in their work to sustainably manage California's water supply.

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Dismal California snowpack is bad sign for water supplies

San Francisco Chronicle | December 30, 2020 | Kurtis Alexander

A month into California's peak storm season, the lack of wet weather is beginning to weigh on the state's water supply.

The snowpack in the Sierra and southern Cascades, which provides as much as a third of the water used by California cities and farms, is about 55% of average for this time of year. It hasn't been this low at this time since 2017, when the state was emerging from a five-year drought.

State water officials are scheduled to lug their snow gauges into the mountains Wednesday and confirm the measurement in the first snow survey of the season — the unofficial time for Californians to start worrying about water for the coming year.

Two more historically wet months lie ahead, and a few big storms could start to rebuild the snowpack. But the bleak December picture, on top of last year's dry winter, is renewing concerns about drought and prompting water agencies to begin calling for people to conserve more.

"In California, it's not if the next drought is coming, it's when," said Chris Orrock, spokesperson for the state Department of Water Resources, which conducts the snow survey. "We're having below-average dry conditions now, and we're continuing to monitor it."

The U.S. Drought Monitor, a weekly report issued by the federal government and University of Nebraska at Lincoln, considers 95% of California to be in at least a moderate state of drought. That's the state's driest condition since March 2016.

California has always bounced between wet and dry times, and water managers have learned to deal with such swings. But the variability has grown with climate change, meaning there's a higher probability that a given year will be either extremely wet or extremely dry.

"The chances of losing a storm on the shoulders of the season have gone up," said LeRoy Westerling, a climate scientist at UC Merced, referring to the possibility of shortened wet seasons. "We've seen years where we lost our fall and spring storms."

The missing wet fronts in autumn also have contributed to California's record wildfire seasons.

This fall was one of the driest that Northern California has seen. For much of the season, a mass of high-pressure air hung off the West Coast, pushing the storm track to the north.

The lack of fall precipitation rounded out an extraordinarily dry calendar year in many parts of the state. San Francisco has recorded just 7.76 inches of rain since Jan. 1, putting this calendar year on track to be the third-driest since 1850, according to the private Golden Gate Weather Services.

In recent weeks, the high-pressure system over the Pacific that kept storms from hitting the coast has begun to weaken, and California has started to get a little more rain and snow. Much of the Sierra and north state even saw a white Christmas.

The National Weather Service is calling for a small chance of showers in the Bay Area on Wednesday night and likely on-and-off rain starting Friday and continuing at least through early next week.

Long-term forecasts revolve around La Niña. The climate pattern characterized by cool temperatures in the tropical Pacific tends to maintain a northward push on storms. The Climate Prediction Center, a division of the National Oceanic and Atmospheric Administration, says that as a result of La Niña, drier-than-average weather is probable in California over the next three months in all but the northernmost counties.

As it stands, the state's water supplies are running behind average. California's 154 largest reservoirs contain about 82% of the water they should hold at this time of year, according to the Department of Water Resources. Shasta Lake, the largest reservoir, is at 72% of its historical average. Lake Oroville, the second largest, is at 57%.

San Francisco's water system, centered on Hetch Hetchy Reservoir in Yosemite, is an anomaly, holding slightly more water than average for this point in the season, according to the city Public Utilities Commission.

The snowpack over the next couple of months, which come spring will begin to melt, will determine how well storage holds up at California's reservoirs. Snow levels in the north state, home of California's biggest reservoirs, are most pivotal.

As of Monday, the snowpack in the northern Sierra and southern Cascades was 56% of average for this time of year. It was 59% in the central Sierra and 33% in the southern end of the range.

The low numbers have prompted the Department of Water Resources to project that water agencies that get water from state-run reservoirs will receive only 10% of their requested allocation next year. Although the allocation is subject to change, many water agencies aren't taking chances.

The Zone 7 Water Agency, which relies on state supplies to provide water to more than a quarter million people in Pleasanton, Livermore and Dublin, is beginning to ask residents to go a little lighter at the tap. The supplier has enough water in storage to make it through whatever comes this winter, but water managers don't want to get to the point where they're scraping the bottom of the reservoir.

"Based on 2020 being a dry year, we've started light conservation messaging," said Valerie Pryor, general manager for the district. "Obviously, two back-to-back dry years and multiple dry years is not what we prefer."

‘There Is A Lot Of Winter Still Ahead’: California’s Early Winter Snowpack Lagging

CBS 13 | December 30, 2020

PHILLIPS STATION (AP/CBS13) — The amount of water in California’s mountain snowpack is only about half of average for early winter, a state Department of Water Resources official said Wednesday, urging conservation but noting that a dry start doesn’t always predict the season’s outcome.

An automated sensor network on 260 snow courses statewide found the snow-water content to be 52% of average to date, said Sean de Guzman, chief of the department’s snow surveys.

De Guzman found a bit of better news after snowshoeing out into a clearing at Phillips Station in the Sierra Nevada, where manual measurements date to 1941.

The measurement there found 30.5 inches (77.4 centimeters) of snow with a water content of 10.5 inches (26.6 centimeters), which equates to 93% of average to date and 42% of the April 1 average, the key date when the snowpack is typically at its peak.

Fall 2020 has been extremely dry, especially in the Sierra Nevada, and comes on the heels of last year’s below-average snow and precipitation so “it remains critical that all Californians make water conservation a way of life,” de Guzman said.

He said, however, that two-thirds of the wettest months — January and February — are yet to come and a handful of storms can create most of the Sierra snowpack.

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2020 was Earth's 2nd-hottest year, just behind 2016

National Oceanic and Atmospheric Association | January 14, 2021 |

January 14, 2021 It's official: 2020 ranks as the second-hottest year on record for the planet, knocking 2019 down to third hottest, according to an analysis by NOAA scientists.

A collage of typical climate and weather-related events: heatwaves, drought, hurricanes, wildfires and changes in sea ice coverage.



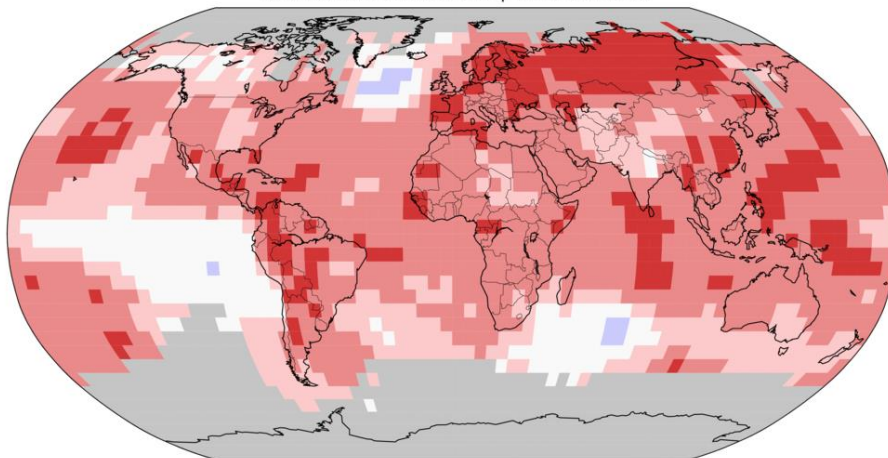
The average land and ocean surface temperature across the globe in 2020 was 1.76 degrees F (0.98 of a degree C) above average — just 0.04 of a degree F (0.02 of a degree C) cooler than the 2016 record.

The Northern Hemisphere saw its hottest year on record at 2.30 degrees F (1.28 degrees C) above the 20th-century average.

Land & Ocean Temperature Percentiles Jan–Dec 2020

NOAA's National Centers for Environmental Information

Data Source: NOAA GlobalTemp v5.0.0–20210106



A world map plotted with color blocks depicting percentiles of global average land and ocean temperatures for the full year 2020. Color blocks depict increasing warmth, from dark blue (record-coldest area) to dark red (record-warmest area) and spanning areas in between that were "much cooler than average" through "much warmer than average". (NOAA NCEI)



Record Coldest

Much Cooler than Average

Cooler than Average

Near Average

Warmer than Average

Much Warmer than Average

Record Warmest

GHCNM v4.0.1.20210105.qfe

The world's seven-warmest years have all occurred since 2014, with 10 of the warmest years occurring since 2005.

It was also Earth's 44th consecutive year with global land and ocean temperatures, at least nominally, above the 20th-century average, according to scientists at NOAA's National Centers for Environmental Information.

2020 as ranked by other scientific organizations

NASA scientists, who conducted a separate but similar analysis, have determined that 2020 ties 2016 as the warmest year on record, sharing the first-place spot.

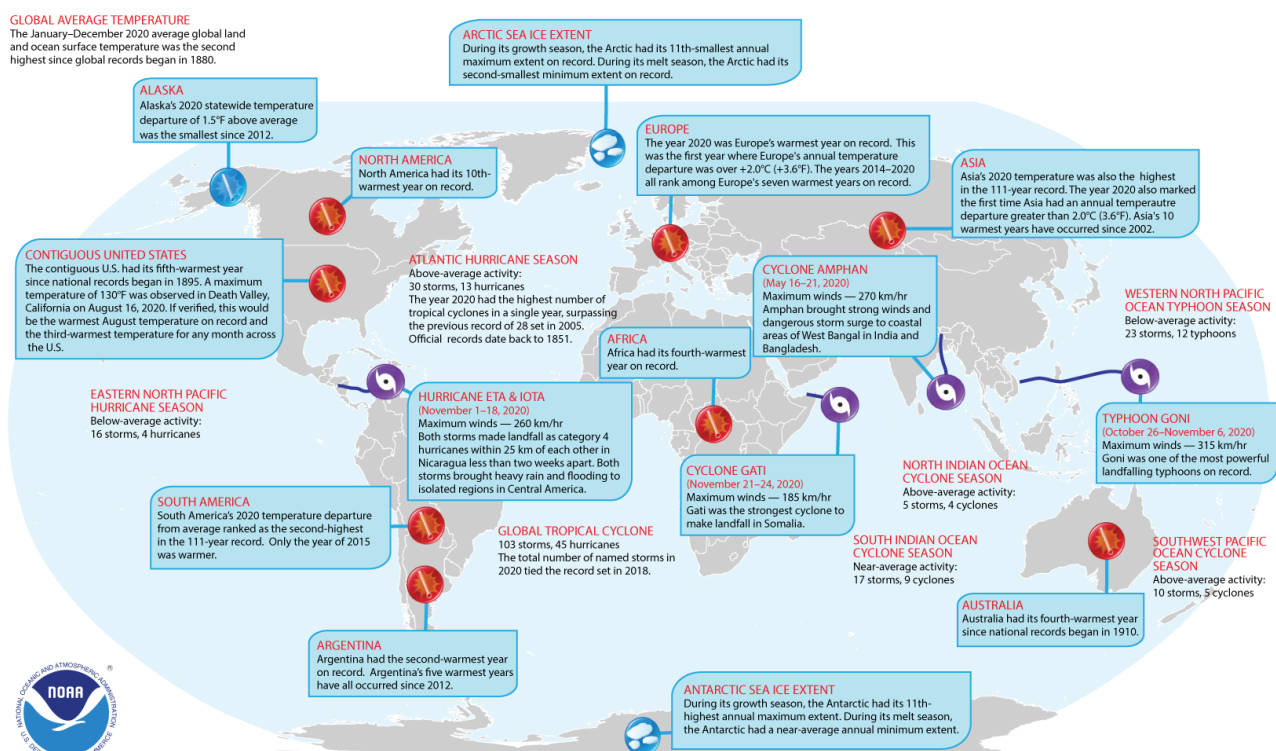
Scientists from Copernicus also link also have 2020 tying with 2016 as the warmest year on record, while the United Kingdom Met Office ranked 2020 as the second-warmest year on record.

The state of sea ice

The 2020 average annual Arctic sea ice extent (coverage) was approximately 3.93 million square miles and ties 2016 for the smallest on record. The five smallest Arctic annual extents have occurred in the last five years (2016-20).

The annual Antarctic sea ice extent was near average at 4.44 million square miles.

Selected Significant Climate Anomalies and Events in 2020



Please Note: Material provided in this map was compiled from NOAA's NCEI State of the Climate Reports and the WMO Provisional Status of the Climate in 2020. For more information please visit: <http://www.ncei.noaa.gov/sotc>

An annotated map of the world plotted with the year's most significant climate events. Please see the story below as well as the report summary from NOAA NCEI at <http://bit.ly/Global202012>. (NOAA NCEI)

Additional NOAA findings

- Global tropical cyclones in 2020 tied a record: A total of 103 named storms occurred around the world in 2020, tying the record number seen in 2018. The North Atlantic played an unusually large role in the global activity in 2020, accounting for about 30% of the global accumulated cyclone energy (ACE) and named storms — which is more than twice its usual share.
- Oceans were exceptionally warm: The 2020 annual global sea-surface temperature was the third highest on record at 1.37 degrees F (0.76 of a degree C) above the 20th-century average — only 2016 and 2019 were warmer. Record-high sea surface temperatures were observed across parts of the Atlantic, Indian and Pacific oceans.
- Northern Hemisphere saw sparse snow cover: The average annual Northern Hemisphere snow cover for 2020 was 9.31 million square miles. This was the fourth-smallest annual snow cover in the 1967–2020 record.
- December 2020: Last month's average temperature across global land and ocean surfaces was 1.40 degrees F (0.78 of a degree C) above the 20th-century average, making it the eighth-warmest December in the 1880–2020 record.

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More > View and access [NOAA's year-end 2020 global climate report](#) and related images.

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Dead Trees Fuel Wildfire Severity in Sierra Nevada

Study Highlights the Role of Forest Fuels Amid a Warming Climate

UC Davis | January 13, 2021 | Kat Kerlin



Scientists collect data about a year after the 2016 Cedar Fire. (R. Wayman/UC Davis)

California's drought of 2012-2016 killed millions of trees in the Sierra Nevada — mostly by way of a bark beetle epidemic — leaving a forest canopy full of dry needles. A study published from the University of California, Davis, and the U.S. Forest Service helps answer concerns about what effect dense, dead foliage could have on subsequent wildfires and their burn severity.

In the study, published in the journal *Ecological Applications*, scientists found that the presence of recently dead trees on the landscape was a driver of wildfire severity for two large fires that occurred toward the end of the drought: the 151,000-acre Rough Fire in 2015 and the 29,300-acre Cedar Fire in 2016.

The publication is the first field-based study to document the important role recently dead trees can play in exacerbating fire severity in California forests that are historically adapted to frequent, low-severity fire.

Climate change and forest management

The study highlights the importance of forest fuels, in addition to climate change, as a strong driver of fire severity in Sierra Nevada forests.

"We've long known that both fire weather and forest fuels can influence wildfires, but it was unclear whether recently dead trees would change conditions enough to alter fire severity," said lead author Rebecca Wayman, an associate specialist of forest and fire ecology in the UC Davis Department of Environmental Science and Policy. "We found that the dead trees did increase

fire severity, even though these fire-suppressed forests were already at risk of unnaturally severe wildfire prior to the drought.”

It wasn't drought alone that killed millions of trees, Wayman noted. A prolonged, hot drought hit forests that were overly dense and water-stressed due to more than a century of excluding wildfire and Indigenous fire from the landscape. This resulted in a bark beetle outbreak that was unprecedented in the Sierra Nevada.

Fortunately, the same strategies commonly used to reduce the risk of catastrophic wildfire — thinning and prescribed fire — also can reduce the severity of future bark beetle epidemics.

“It's a win-win to restore forests to healthier, less-dense conditions, especially as they face hotter and drier climate conditions that promote both wildfire and bark beetle attacks,” Wayman said.

Disturbance brings shifts

For the study, the researchers collected data on 180 plots within the Rough Fire and Cedar Fire footprints, located in the Sierra and Sequoia national forests, and the Giant Sequoia National Monument. It identified pre-fire tree mortality as influential on all measures of wildfire severity on the Cedar Fire, and on two of three measures on the Rough Fire. For the Rough Fire, it was the most important predictor of trees killed by fire. For the Cedar Fire, weather conditions during burning had the strongest influence on fire severity.

The dual disturbances also shifted the pine-dominated system of the Rough Fire study area to a cedar/pine/fir system, which is less well-adapted to wildfire. Dominant species remained unchanged in the area affected by the Cedar Fire, which was already dominated by fire-sensitive species.

Pre-fire tree mortality may have a greater influence on fire when weather conditions are mild compared to when high temperatures, low relative humidity and high winds can drive extreme wildfire behavior, the study indicated.

“The question of how two profound disturbances — drought and fire — interact to affect California forests is an important one,” said co-author Hugh Safford, regional ecologist for the USDA Forest Service's Pacific Southwest Region and an adjunct member of the research faculty at UC Davis. “Current and projected future trends suggest that this sort of double-whammy will become more and more common as the 21st century progresses and the climate continues to warm. Our study helps us better understand how California forests are impacted by two extreme events in close proximity in time and how we might change these impacts with proactive management.”

The study was funded by the USDA Forest Service Pacific Southwest Region.

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3 critical lessons California offers to improve restoration of land on a global scale

CalMatters | January 13, 2021 | Julie Rentner, Guest Commentary

2021 presents opportunities for decisive and positive action, including the launch of the United Nations' Decade on Ecosystem Restoration which reinforces the importance of healing degraded ecosystems around the world before it's too late. It gives us great hope to know that California is committed to leadership through investment and sharing lessons learned from decades of experience.

Our diverse ecosystems, abundant natural resources and a mild climate have helped attract millions of residents and developed California's world-class economy. Sadly, our approach to economic progress has imperiled our unique wetlands, grasslands, rivers and mountain meadows – natural assets directly responsible for purifying and storing our drinking water, sequestering carbon, providing recreational opportunities, supporting diverse wildlife habitat and so much more.

To take just one example, California has lost more than 90% of its wetlands since the arrival of European settlers. Wetlands play an increasingly crucial role in absorbing excess water and protecting coastal and inland communities from flooding. They also provide critical habitat for wildlife, including a variety of species found nowhere else on Earth, some of which are at risk of blinking out of existence.

The organizations we lead, River Partners and Point Blue Conservation Science, have decades of experience studying, planning, implementing and evaluating restoration projects around the state. Together, we've identified three critical lessons California has to offer the world to improve restoration on a global scale:

First, all restoration needs to be "climate smart." We can't aim to simply restore landscapes and habitat corridors to how they once were. We need to prepare them for climate extremes. That means, for example, using drought-hardy plants to prepare for drier years ahead. At the other end of the spectrum, we must establish robust native forests and marshes to buffer and protect our communities from the more intense flooding experts predict from increased rainfall and sea-level rise.

Second, we need ongoing science. In California, we are connecting scientific innovation to the practice of wetland and river restoration at scales seen nowhere else on Earth. For more than 20 years, River Partners and Point Blue Conservation Science have partnered to link cutting-edge research with large-scale restoration to deliver significant public benefits such as flood control, carbon capture and biodiversity, renewing tens of thousands of acres of wetlands and forests across California's most imperiled regions.

Third, strong partnerships are essential for getting anything done. Decades of successful collaboration among farmers, land managers, local stakeholders, scientists and policymakers here have achieved tangible, lasting benefits for our natural resources and communities. While

diverse interests may not agree on everything, the power of collaboration over confrontation produces transformative results needed at this critical time.

At a moment when we could all use a little hope, the UN's declaration is just one of many key commitments coming together to accelerate ecosystem restoration.

In October, Gov. Gavin Newsom signed a bold executive order charging state agencies with developing strategies for addressing the global biodiversity and climate crises here at home. As part of the order, Newsom established the unprecedented goal of conserving at least 30% of California's land and coastal waters by 2030.

In doing so, California joins a global movement of countries, including the U.S. through pledges from President-elect Joe Biden, committed to achieving equally bold targets. Bipartisan passage of the Great American Outdoors Act this summer permanently funded the Land and Water Conservation Fund to help provide desperately needed resources to better steward our public lands.

Scientists urge that the world has the next decade or so to avoid the most dire environmental scenarios. With no time to waste, and with the robust knowledge that restoration is a good societal investment, the recent national and international commitments to restoration should give us all hope for 2021 and beyond. We call on California to increase investments in community-based restoration, and we've already rolled up our sleeves to turn pledges into progress.

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Julie Rentner has also written about how mega fires and mega floods in California require a response of similar scale.

By Julie Rentner

Julie Rentner is president of River Partners, an NGO that builds multi-benefit floodplain habitat restoration projects across California, jrentner@riverpartners.org.

Profile Image

Manuel Oliva, Special to CalMatters

Manuel Oliva is the CEO of Point Blue Conservation Science, a California-based wildlife conservation and research nonprofit, ceo@pointblue.org.

Vast coalition calls on Biden to impose national moratorium on water shutoffs

More than 600 environmental, rights and religious groups to present draft order amid widespread shutoffs despite pandemic

The Guardian | January 13, 2021 | Nina Lakhani



Rabbi Yosef Chesed, left, helps unload bottled water being donated by Lorie Lutz, right, at a Detroit food pantry in March. Photograph: Paul Sancya/AP

A broad coalition of organizations is urging Joe Biden and Kamala Harris to mandate a national moratorium on water and other utility shutoffs on day one in the White House, in order to curtail the spread of Covid-19 and ease the financial burden on struggling Americans.

More than 600 environmental, rights and religious groups will on Wednesday present the incoming Democratic administration with a draft executive order that would impose an immediate nationwide ban on disconnecting essential utilities like water, gas and electricity until at least 12 months after the coronavirus pandemic ends.

The groundswell of pressure comes amid mounting reports of water and energy shutoffs across the country despite Covid cases, hospitalizations and deaths spiralling. A study from Duke University last year found that banning water and utility shutoffs helps reduce the Covid infection rates.

Cutting off access to running water is particularly dangerous as regular hand-washing is crucial to minimize the spread of the highly contagious virus.

Yet moratoriums on water shutoffs have so far been patchy and often short-lived. Only 20 states banned disconnections last year despite warnings from public health experts, and 11 of these moratoriums have expired. Currently, 56% of Americans – 183 million people – are at risk of losing their water supply if they cannot keep up with bill payments.

There is no national watchdog tracking water debt and shutoffs, but at least 226 utilities that issued moratoriums last year have also since let the bans expire, according to analysis by Food and Water Watch (FWW).

“This patchwork of protections has more than half of the country falling through the cracks and vulnerable to water shutoffs during the height of the pandemic. Zip code should not determine access to water. This is a basic matter of public health and humanity,” said Mary Grant, the Public Water For All campaign director from FWW, which is spearheading the campaign for a federal moratorium.

The latest federal aid package included \$638m to help struggling households pay water bills, but research by the Guardian suggests this is a drop in the ocean:

- In Virginia, more than half a million households are behind on water bills, with municipal utilities owed at least \$88m in arrears as of mid-December. The latest state budget, lauded by rights groups, restricts evictions and prohibits utilities from cutting off power, water and gas until the state of emergency is over.
- In Pennsylvania, just 14 private utilities were owed \$50m by November 2020 – a 40% rise in arrears compared with the previous year. The number of households indebted to these companies increased by 240% to 183,000, according to analysis by the Pennsylvania Utility Law Project (Pulp). There is a partial moratorium in place for regulated private utilities until the end of March, but most people are connected to public water systems, which are not included.
- According to state filings, American Water, the country’s largest private utility, disconnected more than 12,600 home in Illinois, Tennessee and Missouri between September and November last year.

A growing number of Democratic lawmakers are calling for a national moratorium to end to the zip code lottery.

“In the richest country in the world, no one should have to choose between keeping the lights and heat on, water running, having broadband so their children can go to school, or putting food on the table for their family – especially during a global pandemic when people are being asked to stay at home to curb the spread of infection,” Jeff Merkley, senator for Oregon, told the Guardian.

Rashida Tlaib, the congresswoman for Michigan who has been leading efforts in Washington to transform federal funding for ailing water utilities, supports an immediate national moratorium but said this alone would not solve America’s water crisis.

“We must commit to a serious long-term solution that extends beyond the pandemic, wipes out existing debt, and ensures that nobody ever lives without running water ... We will defeat this virus soon, but that cannot mean a return to a ‘normal’ where people are forced to live without running water in the richest country the world has ever known,” said Tlaib.

Water affordability was a growing burden even before the pandemic.

A landmark investigation by the Guardian last year found that millions of Americans were struggling to afford running water due to rapidly rising tariffs and lax regulation. Evidence suggests that communities of color were already disproportionately affected by punitive measures such as shutoffs and foreclosures linked to water debt.

Covid has since exposed – and exacerbated – a multitude of economic and health inequalities and over the past week, the daily average number of new cases has topped 250,000 – higher than ever.

As of Tuesday, 22.6 million people had been infected with the virus, with almost 380,000 deaths so far, according to the New York Times database. Things are likely to get worse as new, significantly more contagious variants from England, South Africa and elsewhere are yet to take hold.

Vaccines are being gradually rolled out, but some scientists have warned that herd immunity is unlikely to be achieved this year.

The economic recovery will undoubtedly take much longer – especially for women of color, who have been disproportionately hit by job losses.

It doesn’t take long for bills to pile up.

Ashlee Brown, a single mother from Knoxville, Tennessee, was furloughed from her job as a medical receptionist between March and August 2020. Debts began to accumulate as it took several months to receive the enhanced federal unemployment benefit, after which she tried her best to catch up on rent and bills.

Things started to spiral after the federal unemployment cheques stopped, and the only job she could find, scheduling deliveries for an appliance company, didn’t pay enough to cover household expenses. At the same time, utility and food costs went up as Brown, 35, and her children, aged 10 to 16, were stuck at home.

“I got behind on everything and just couldn’t catch up. I got really down and depressed, losing my job, seeing friends get sick and die, trying to support my kids who were struggling at home ... it was a lot, really hard just keeping afloat,” said Brown.

Like millions of Americans, Brown was forced to rely on food aid from a local pantry to feed her family.

The Knoxville utility board (KUB), which provides water, electricity, gas and wastewater for about half a million people, lifted its moratorium on shutoffs in mid-October.

Brown says she paid off the arrears thanks to a local group administering Covid federal aid from the Cares Act. But shortly afterward, she found a pink warning slip hanging on the front door – threatening to shut off their utilities if the new bill were not paid in two days. It was Christmas week, and even though Brown had by then found a better-paid job, she didn't have enough money.

Luckily, a local grassroots group, Sleeves 4 Needs, stepped in to help – otherwise Brown and her children would have been forced to find alternative emergency accommodation over Christmas.

Constance Every, director of Sleeves 4 Needs, said: "There's no debt forgiveness, and the charges keep building up which keep people in poverty. It's inhumane to shut people off from water and energy during a pandemic, but money rules everything in this country."

In the days before Christmas, the group paid off utility bills for eight vulnerable families at risk of shutoffs, but it turned several others away due to lack of funds.

In a statement, KUB said it had implemented one of the longest pandemic moratoriums in Tennessee, and since then had provided customers struggling to pay bills with repayment options. The company said no households had been disconnected since 10 December as part of its annual winter moratorium.

In Tennessee, where there has been no state moratorium, calls to a non-profit hotline requesting assistance with utility bills increased by 73% last year.

Only eight states – California, Michigan, New Jersey, New York, Vermont, Virginia, Washington and Wisconsin – and the District of Columbia currently have moratoriums in place, but even these don't include debt forgiveness programs.

It is unclear how low-income households will pay off utility debts without federal intervention.

"There is no question that low-income households are being saddled with debts and we're going to see a crisis in utility disconnections like never before," said Elizabeth R Marx, from Pulp, in Pennsylvania. "There must be a plan on what to do with arrears, or else this – just like the housing crisis – will cause a profound economic burden that disproportionately hits low-income families and people of color."

#

Researchers propose a framework for evaluating the impacts of climate change on California's water and energy systems

Phys.Org | January 7, 2021 | Harrison Tasoff, University of California - Santa Barbara



Hydroelectric stations like Shasta Dam, along the Sacramento River, are integral to California's water and energy needs. Credit: U.S. Bureau Of Reclamation

As the planet continues to warm, the twin challenges of diminishing water supply and growing energy demand will intensify. But water and energy are inextricably linked. For instance, nearly a fifth of California's energy goes toward water-related activities, while more than a tenth of the state's electricity comes from hydropower. As society tries to adapt to one challenge, it needs to ensure it doesn't worsen the other.

To this end, researchers from UC Santa Barbara, Lawrence Berkeley National Laboratory and UC Berkeley have developed a framework to evaluate how different climate adaptations may impact this water-energy nexus. Their research appears in the open access journal *Environmental Research Letters*.

"Electricity and water systems are linked in many different ways," said coauthor Ranjit Deshmukh, an assistant professor in the environmental studies department. "Climate change is expected to stress these links so we presented a framework that maps these interdependencies and will enable us to understand and quantify its impacts on the energy-water nexus."

Although it's not the first study to look at these topics, it takes a more nuanced approach than the papers that have come before. "There have been many analyses on how climate change could affect the water and energy sectors separately, but those studies were not typically looking at interactions and feedbacks between the two," said lead author Julia Szinai of

Berkeley Lab's Climate and Ecosystem Sciences Division. "Our paper develops a generalized framework that identifies how climate change affects these coupled water and electricity systems and potential adaptations to future gaps in supply and demand. By doing so we illustrate often overlooked tradeoffs and synergies in adapting to climate change."

The framework uses systems analysis to identify the biggest potential climate stressors on the water and energy sectors. It quantifies actions that will be needed to adapt to climate change, and examines the feedbacks that would result from these actions.

"For example, our framework shows how increased temperatures due to climate change will likely increase electricity demand for air conditioning and water demand for irrigation," Deshmukh explained. "Whereas snowpack loss in the Sierras and variable precipitation will affect the water supply, not just for urban and agricultural use, but also for hydropower generation and thermal power plant cooling."

California relies on snowpack in the Sierra Nevadas to slowly mete out water over the course of the year.

The team applied the framework they developed to California, which relies on the snowpack for a good deal of its water and expends significant amounts of energy to transport water from the north to the southern part of the state. They examined multiple adaptation strategies in the water sector and found that some are energy intensive while others can actually save both water and energy.

The researchers integrated data across a number of fragmented studies to estimate the overall range of possible water and energy futures for the state under various climate scenarios at the end of the century. Their analysis found that two factors will likely dominate climate change's direct impacts on California's electricity sector: higher air conditioning loads and decreased hydropower availability.



The climate crisis has severely impacted California's water-energy nexus. Here we see the contrast between a full reservoir behind Folsom Dam in July 2011 compared to the water level under the extreme drought in January 2014. Credit: United States Bureau Of Reclamation

"One of the most important points of the paper is that adapting our water system to climate change can either significantly exacerbate electricity grid stress, or on the flip side, it could help

to alleviate it," said co-author and Berkeley Lab climate scientist Andrew Jones. "If we focus on adapting the water system by using big transfers of water across basins, or by using energy-intensive desalination, that's just going to make the electricity problem much more difficult. If, on the other hand, we adapt the water system by conserving water, it's actually a win-win situation because you're also reducing the energy required for water."

Currently, a staggering 19% of California's electricity consumption goes toward water-related applications, such as treating, transporting, pumping and heating. Additionally, about 15% of in-state electricity generation comes from hydropower.

The state has already seen some impacts of climate change on its water-energy systems. Extended droughts exacerbated by climate change have led to spikes in electricity consumption for groundwater pumping, and corresponding hydropower deficits have required replacement by dirtier fossil fuels.

The team is certain that the climate crisis will have a huge impact on the state's future water supplies. That said, the effect is wildly uncertain. In the worst case, available water supplies could decrease 25%; however, they could increase 46%.

"There are significant uncertainties in the climate model projections for precipitation," said Deshmukh. "But irrespective of those uncertainties, the adaptation measures offer significant co-benefits." Conserving water would save energy as well as money for consumers, and allow for greater flow in the state's natural streams and rivers.

When the team applied their framework to the worst-case scenario, they found that choosing the most energy-intensive adaptation strategies in the water sector could result in an energy imbalance as large as that caused directly by climate change.

"I think this is the first study to show that water sector adaptation can have as large of an impact on the electricity sector as the direct effect of climate change itself," said Jones.

"This study has highlighted the benefit of coordinated adaptation planning between the two sectors," added lead author Szinai, "so we're now linking a more detailed water resources management model and an electricity planning model that can demonstrate resilient pathways for building out electricity infrastructure in the Western U.S. when climate change impacts are included from the water sector."

Deshmukh is currently leading a team to explore the connections between energy, water and the climate by quantifying the impacts of climate change on hydropower dams and thermal power plants in 12 countries across southern Africa. He hopes to identify optimal investments in electricity infrastructure.

"California has a choice in how it wants to adapt its water sector to the impacts of climate change," Deshmukh stated. "The state can either pursue energy intensive climate adaptation measures such as desalination or develop a portfolio of measures that maximize water

conservation potential. Planners and policymakers in the water and energy sectors need to coordinate their actions and plans for adapting to climate change."

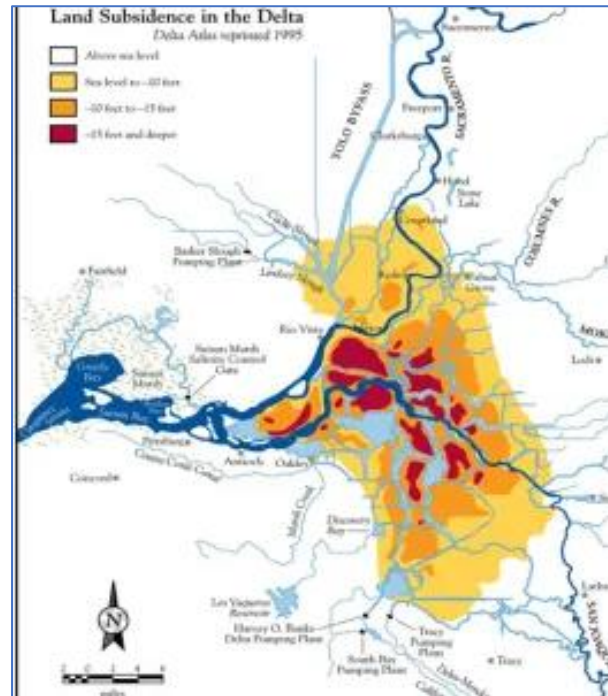
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California's Sacramento-San Joaquin Delta – a short history of big changes

YubaNet.com | January 4, 2021 | Jay Lund, Center for Watershed Sciences at UC Davis

January 4, 2021 – Deltas globally adjust with changes and fluctuations in external conditions, internal dynamics, and human management. This is a short history of big changes to California's Sacramento-San Joaquin Delta (Delta) in the past and present, and its anticipated future. This history is important for understanding how many of the Delta's problems have developed, changed, and continue to change.

Sea level rise. California's Delta is a product of sea level rise. At the end of the last Ice Age, about 11,000 years ago, the sea was about 300 feet below today's levels and the delta from the Sacramento and San Joaquin rivers formed in the Pacific Ocean, outside the Golden Gate. As sea level rose, San Francisco Bay flooded, and about 6000 years ago, the rising sea level began to drown the confluence of the Sacramento and San Joaquin rivers, forming an inland delta at the Delta's present location. Sea level rise during this latter period was slow enough that the resulting immense tidal freshwater marsh arose with the sea level, forming the Delta's deep peat soils of partially decomposed marsh plants. These peat soils typically are deepest in areas longest affected by sea level rise. Before 6000 years ago, today's Delta was not a delta at all, but a river corridor subject to probably extensive seasonal flooding. (Atwater and Belknap 1980)



Land subsidence in California's Sacramento-San Joaquin Delta

Poldering. From the 1850s until the 1930s, most of the Delta's 750,000 acres of wetlands were diked and drained to produce today's agricultural Delta islands and tracts, which are predominantly agricultural with a few towns. The Delta was California's first large irrigated area, with year-round access to fresh water, near sea-level elevations that supported both field flooding and drainage with the tides, and location on steamship routes to markets. However, the drainage of peat soils quickly accelerated their chemical decomposition, lowering the elevation of many island interiors by up to several inches per year. After several decades, lowering lowland elevations required pumping for drainage and increasing costs for maintaining Delta dikes. This dominant agricultural land use and increasing drainage and flood risk costs from land subsidence continues today, with occasional abandonment of islands to become flooded tracts (such as Big Break, Franks Tract, Mildred Island, and Liberty Island). (Thompson 1957; Weir 1950)

Upstream diversions. In the late 1800s, irrigation expanded using water upstream of the Delta, diverting from the Sacramento and San Joaquin rivers, and their tributaries. Without major reservoirs, these upstream diversions occurred predominantly in the summer, and largely depleted summer inflows to the Delta in dry years during the early 1900s. In the 1924 drought, the Carquinez Strait sugar plant was sending barges west to Marin, instead of east to the Delta, for freshwater. By the 1930s drought, summer seawater intrusion extended inland to near Stockton. Even today, most water taken from the Delta is diverted upstream. (Jackson and Paterson 1977)

In-Delta diversions. By the 1930s, plans were being made to build reservoirs above the Central Valley to store water from winter for summer water supply and build pumps and canals from the Delta to thirst parts of the Bay Area, San Joaquin Valley, and southern California. Preventing seawater intrusion by building a dam west of the Delta was considered, but rejected due to its high costs compared to the water cost of a “hydraulic barrier” of required Delta outflows. Major in-Delta diversions began in 1949 by the USBR Central Valley project, growing faster with the State Water Project, to the present time. These major in-Delta diversions, especially those from the southern Delta, caused major changes in the flow directions and magnitudes in Delta channels, and tied the Delta even more to the state’s economy as a whole. (DWR 1931)

Invasive species. From the time of the Gold Rush, non-native species have been introduced to the Delta by ships hulls and ballast water, fishermen, fish agencies, and household aquarium owners. Today’s Delta ecosystem is dominated by non-native species. The Delta seems destined to be dominated by non-native species in highly altered habitat. However, efforts can be made to manipulate conditions to be more conducive for native species overall, recognizing that most non-natives will be impossible to eradicate. (Moyle et al. 2012)

Climate change. Climate change will continue to shape the Delta, likely more rapidly than in the past century, especially from more rapid sea level rise and higher temperatures. The maintenance of some subsided Delta islands will become less sustainable, with higher sea levels, continued land subsidence, less summer and more winter inflows (due to loss of snowpack), and more frequent flood flows and high water. Temperature increases and more frequent droughts seem likely to further squeeze some native species and facilitate expansions of non-native species. (Brown et al. 2013; DISB 2020)

Other human-induced changes. Additional human-caused changes in the Delta should be expected from increased economic demands for Delta water exports from ending groundwater overdraft and more valuable agriculture, changes in conveyance and storage infrastructure, increased management for native species, and changes in environmental regulations and regulatory approaches (such as voluntary agreements).

What this means for Delta science and management. Changes build upon changes. Many old changes will continue, like sea level which has always defined the Delta, and there are

more, mostly faster, and different changes to come. The Delta's ecosystems, water supplies, and communities will be challenged by these changes. Managers, policymakers, and Delta communities will have to deal with all of these changes altogether – not one by one. To be prepared, our scientific efforts must face these challenges in advance.

Historically, managing the Delta was about making planned changes, building and operating levees, pumps, canals, and land uses to provide services. The future will include making planned changes, but management will increasingly be responding to changes driven from outside the Delta and the internal dynamics of Delta landscapes and ecosystems.

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\$2.5 billion Pacheco Dam project moves forward, despite cost increase

Santa Clara Valley Water District board decides not to drop huge reservoir plan

San Jose Mercury News | January 12, 2021 | Paul Rogers



The Santa Clara Valley Water District has proposed building a 319-foot tall dam on Pacheco Creek in Southern Santa Clara County near Highway 152 and Henry Coe State Park, a location shown here in August, 2019. (Photo: Santa Clara Valley Water District)

Leaders of the largest water district in Silicon Valley decided Tuesday to move forward with a plan to build a \$2.5 billion dam near Pacheco Pass in Southern Santa Clara County — in what would be the largest new reservoir in the Bay Area in 20 years — despite learning that the cost has doubled due to unstable geology on the site.

Although several board members of the Santa Clara Valley Water District expressed concerns during their meeting about the growing price tag, others said the proposed project's water storage is needed for the future, and that the agency should continue ahead with studies and public meetings.

"This represents a very important part of the water supply system for the future," said board member John Varela, who represents Gilroy and Morgan Hill, adding "All of us should work toward completing this project, as long as it takes and how much it ever costs."

The project, proposed by the Santa Clara Valley Water District, a government agency based in San Jose, calls for a 319-foot-high dam to be built along Pacheco Creek in the rural canyons just north of Highway 152 near Henry W. Coe State Park. For the past three years, the district has considered the dam to be a key part of the future water plans for 2 million people in the South Bay.

But studies by a contractor earlier this year found the area has unstable rock. About 130 test borings found that crews would have to dig down at least 30 feet deeper to hit bedrock than previously thought. That will add three years to construction — from five to eight years — and add at least \$1 billion or more in additional costs, water district engineers estimate, sending the price tag soaring from \$1.3 billion to \$2.5 billion.

Critics of the plan say that the price tag will make it difficult to find other Bay Area water agencies to partner with, and will raise water rates for Santa Clara County residents.

“There are a lot of alternative ways we can get this water, which would be less expensive, especially with this extreme cost escalation,” said Katja Irvin, water committee chair for the Sierra Club’s Loma Prieta chapter.

She urged the board to pull the plug on the plan and instead expand conservation like boosting spending on rebates to pay people to remove lawns and install high-efficiency dishwashers, toilets and other appliances, and also to expand the use of recycled water. The Pacheco project, with the cost increases and geologic issues, she said, faces the same fate as many other dams proposed over the years in California in difficult locations whose costs grew so high that the water’s price became impractical.

“It’s going to die of its own weight eventually,” Irvin said. “Hopefully sooner rather than later.”

The project, if it is ever built, would construct a reservoir that holds 140,000 acre feet of water — nearly as much as all 10 existing dams the water district currently operates. It would be the largest new reservoir built in the Bay Area since 1998 when the Contra Costa Water District built Los Vaqueros Reservoir in eastern Contra Costa County.

Under the current plan, the water district would replace a small, existing dam and reservoir on the site near Highway 152 and build the new Pacheco Dam about half a mile upstream.

The existing reservoir was built on the North Fork of Pacheco Creek in 1939. It can hold only 5,500 acre-feet of water behind an aging 100-foot-high earthen dam, while the new reservoir would hold more than 23 times as much. The district hopes to take water it now stores in nearby the massive San Luis Reservoir and pipe it into the new Pacheco reservoir, filling it during wet years.

The water district received a huge boost in 2018 when the administration of former Gov. Jerry Brown awarded it \$485 million from Proposition 1 — a \$7.5 billion water bond passed by voters in 2014. But to get that money, it must complete draft environmental studies by Dec. 31 and show how it will pay for most of the rest of the costs.

Board member Nai Hsueh said she is still “keeping an open mind,” but noted that \$2.5 billion may not be the final price tag.

“The updated cost estimate will probably increase again,” said Hsueh, a civil engineer. “That’s the hurdle, the cost.”

The \$2 billion or more the district needs to find for the project would almost certainly come from higher water rates, although the incoming Biden administration is proposing new spending on roads, bridges and water projects, which might provide some money.

The water district board also voted Tuesday to have its audit committee look into the timetable of how the price tag grew so fast, and why top officials at the agency weren’t notified earlier.



“There’s no question we are having a drought again,” said board member Dick Santos. “The best decision I can make is to keep this going. What do we do for our children and grandchildren for the future to have a source of water?”

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Industry Groups Urge New Administration to Address Water Infrastructure

AgNet West | January 12, 2021 | Brian German



A large group of agricultural organizations and water districts are calling for more federal support to address water infrastructure. More than 200 organizations sent letters to President-elect Joe Biden and congressional leadership, highlighting water issues in the West. The coalition points out the significant need for federal support in any future infrastructure or economic recovery package. Much of the Western water infrastructure is more than 50 years old and is in dire need of upgrades.

“While many think of infrastructure in terms of highways, bridges and other transportation facilities, there is an equally compelling need for federal investment in water infrastructure across the West,” Western Growers President and CEO Dave Puglia said in a press release. “Meaningful and timely federal investment in water infrastructure, along with a regulatory system that prioritizes efficiency and completion of projects, is necessary to preserve our farms and strengthen our rural communities in the West.”

The coalition notes several priority areas that would benefit from federal support. Water conservation, watershed management, and habitat restoration are listed as recommended actions. The group also explains the need for new water storage facilities and federal financing options to make them possible. Addressing the regulatory constraints for water projects will also be needed to ensure timely construction. The coalition is also advocating for more water

recycling and desalination investment along with funding support for local districts overseeing federal irrigation projects.

President-elect Biden and Congress are being urged to consider the consequences of failing to act on water infrastructure needs. Investing in upgrades for Western water need is vital for keeping agricultural production viable and ensuring the safety of water supplies for communities. Signatories of the letters include Western Growers, American Farm Bureau Federation, California Citrus Mutual, Groundwater Management Districts Association, and California Fresh Fruit Association. Altogether, the coalition represents nearly one-third of all agricultural production in the U.S. and tens of millions of water users.

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Delta Conveyance Project Alternatives Screening Process

DWR | January 06, 2021



Aerial view looking South at the S Bacon Island road bridge over Middle River, connecting the eastern side of Bacon Island (right) and Jones Tract, both part of the Sacramento-San Joaquin River Delta in San Joaquin County, California. Photo taken March 08, 2019. Ken James / California Department of Water Resources

Selection of alternatives to evaluate in an Environmental Impact Report (EIR) is an important component of public agency project planning and is typically a required as part of the environmental review decision-making process. The Department of Water Resources (DWR) has initiated this process for the proposed Delta Conveyance Project and is currently preparing a Draft EIR in compliance with the California Environmental Quality Act (CEQA).

With regard to alternatives, CEQA directs that an EIR must analyze a reasonable range of potentially feasible alternatives that meet most of the project's objectives and avoid or reduce potential significant environmental impacts of the proposed project. An EIR is not required to consider alternatives which are infeasible or do not meet most of the project objectives.

For the proposed Delta Conveyance Project, the alternatives screening process involves identifying and studying in greater detail in the EIR alternatives that would restore and protect the reliability of State Water Project (SWP) water deliveries, consistent with the state's Water Resilience Portfolio, in the face of many challenges (such as climate change, sea level rise and

earthquake risk), while avoiding or minimizing potential significant impacts of the proposed project.

To determine the alternatives to be evaluated in detail in the EIR, DWR uses a multi-step screening selection process to filter alternatives based on whether they 1) meet most of the basic project objectives and 2) avoid or substantially lessen expected significant environmental effects of the proposed Delta Conveyance Project. For an alternative to be carried forward it must meet both screening filters.

DWR started the process by reviewing the alternatives considered for previous Delta conveyance efforts and also assessing and screening alternatives received from the public during CEQA scoping for the proposed Delta Conveyance Project, and then organized alternatives into the following category types, among others:

- Dual Conveyance: Includes new points of diversion in the Delta and facilities to move water from those new points of diversion to the existing pumping facilities in the south Delta.
- Isolated Conveyance: May include new points of diversion in the Delta but would not use existing pumping facilities in the south Delta.
- Through-Delta Conveyance: No new intakes in the Delta but could include new infrastructure in the Delta to ensure continued/improved conveyance capacity through existing Delta waterways.

The Draft EIR will document alternatives considered. The following are samplings of alternatives summary descriptions (additional detail on the description and results of screening will be included in the EIR).

- Bethany Reservoir Alternative: Water would be conveyed in the tunnel (consistent with the proposed project's eastern alignment) but continue further south and pumped directly into the existing Bethany Reservoir.
 - Screening outcome – met both filters so it will be carried forward for additional evaluation in the Draft EIR. Specifically, it could result in fewer surface impacts because construction of a new terminal forebay and additional south Delta conveyance facilities are not needed.
- Continued Through-Delta Conveyance with Levee Improvements: Use of existing conveyance facilities with improvement to Delta levees in several locations.
 - Screening outcome - filtered out for failing to meet most of the basic project objectives. Specifically, this alternative would not address the water quality component of climate change and sea level rise for the SWP and continued use of the existing system (even with upgrades) as a long-term plan does not address seismic resiliency and the associated water supply reliability concerns.
- “A Water Plan for All of California” (Congressman Garamendi Plan): Construction of a new north of Delta diversion structure and pump station in West Sacramento into the

Sacramento Deep Water Ship Channel (DWSC), intake near the southern end of the DWSC, boat lock to prevent water from flowing into the Delta and a 12-mile pipeline to convey water through the western Delta to the existing pumping plants in the south Delta.

- Screening outcome – filtered out for failing to avoid or lessen impacts. Specifically, significant construction, noise, transportation, visual, air quality and other impacts associated with construction activities in West Sacramento and potential habitat disturbances at various proposed construction locations.
- Western Intake Concept (Pyke Proposal): Use of Sherman Island as an intake forebay, construction of a pumping plant and one or more tunnels to convey water to a new reservoir near Clifton Court Forebay with connections to existing south Delta pumping plants, an enlarged Los Vaqueros Reservoir and a boat lock at the Delta Cross Channel.
 - Screening outcome – filtered out for failing to meet most of the basic project objectives. Specifically, this alternative does not address SWP water supply reliability or operational resiliency. Additionally, water quality regulations could constrain water quantities and use of the Sherman Island reservoir.

In addition to the “action” alternatives analyzed in the EIR, a “No Project” alternative will also be included. The No Project alternative will describe likely conditions if the project is not implemented, including potential actions that may be taken absent a project, such as conservation, recycling and desalination, and the EIR will present the potential effects of not approving an action alternative. Although these alternative actions that may be implemented if the proposed Delta Conveyance Project or alternative is not implemented, several of which were proposed during scoping, don’t address the fundamental project purpose and were therefore screened out as standalone alternatives, the EIR will identify and analyze the effects of these additional actions that local water agencies may consider taking in the absence of the Delta Conveyance Project.

The alternatives selection process for the proposed Delta Conveyance Project is ongoing and the alternatives formulation process and detailed evaluation and analysis will be documented in the Draft EIR.

For more information on the proposed Delta Conveyance Project alternatives selection process, see this presentation from the July 2020 Delta Conveyance Design and Construction Authority Stakeholder Engagement Committee meeting.

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Anderson Reservoir is drained as part of earthquake project to rebuild 240-foot Anderson Dam

Largest reservoir in Santa Clara County will be nearly empty for 10 years

San Jose Mercury News | December 16, 2020 | Paul Rogers



Anderson Reservoir, near Morgan Hill, was only 3% full on Friday Dec. 11, 2020 after officials from the Santa Clara Valley Water District reduced its water level to begin a 10-year, \$576 million earthquake safety project to tear down and rebuild its 1950-era dam. (Photo: Santa Clara Valley Water District)

Anderson Reservoir, the largest in Santa Clara County, is nearly empty.

The Santa Clara Valley Water District, which owns the reservoir located east of Highway 101 between Morgan Hill and San Jose, said Tuesday that its crews have finished draining nearly all of its water — leaving it just 3% full — as part of a historic, \$576 million earthquake repair job.

Draining began Oct. 1.

Construction workers can now begin a 10-year seismic safety project to rebuild Anderson's 240-foot earthen dam, which was built in 1950. The reservoir will remain nearly empty until 2024, water district officials said, while a 1,700-foot-long tunnel, up to 24 feet in diameter, is built on the north side of the dam. It is expected to increase by five-fold the rate at which water can be released during major storms or after an earthquake that could damage the dam.

After that, the rest of the water will be drained out for six years, until about 2030 or 2031, while the dam is rebuilt to more modern standards. During that time, most of Anderson Lake County Park will be closed.

Seismic problems at the dam were first identified 12 years ago. But the district's delays in beginning the repair work prompted the Federal Energy Regulatory Commission in February to order the reservoir drained.

For the past three months, the massive lake was drained at the rate of about 200 acre feet, or 65 million gallons a day — the equivalent of 98 Olympic swimming pools every 24 hours. The water wasn't wasted, however. Most of it went to drinking water treatment plants, and was served to the public, while some was percolated back into underground aquifers for storage, and some was released into Coyote Creek for fish.

Federal regulators criticized the water district for taking so long to undertake the project. The agency first learned of the seismic problems in 2009, and subsequently released engineering studies showing that a 6.6 magnitude quake on the Calaveras Fault directly at Anderson Reservoir, or a 7.2 quake centered one mile away, could cause the reservoir's huge earthen dam to slump and fail.

Although the chances of that are extremely slim, if such a disaster had occurred when the reservoir was full, it could have sent a 35-foot wall of water into downtown Morgan Hill in 14 minutes. The waters would have been 8-feet deep in San Jose in three hours, potentially killing thousands of people.

Ironically, on Tuesday morning, two earthquakes occurred 1 mile east of Anderson Reservoir on the Calaveras Fault — a magnitude 3.7 and 3.5. No damage was reported. Some local residents wondered whether the draining of the reservoir, which had been 18% full on Oct. 1, caused the earthquakes by shifting the amount of weight on the nearby fault. No, said federal geologists.

"The recent earthquakes occurred along a known fault patch that typically has several similarly sized, naturally occurring earthquakes per year," said Rob Skoumal, a research geophysicist, with the USGS Earthquake Science Center at Moffett Field.

When full, Anderson Reservoir holds 89,278 acre feet of water — more than all other nine dams operated by the Santa Clara Valley Water District combined.

The district, which serves 2 million people, will make up for the lost water during construction by pumping more local groundwater, using recycled water, and importing water from the Delta and from the Semitropic Water Storage District in Kern County, where it has been storing water underground for years.

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Water sector weighs in on COVID vaccine prioritization

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The Water Sector Coordinating Council (WSCC) released a December 14 memo encouraging water and wastewater utilities to contact their state and local public health agencies about prioritization of their staff for COVID-19 vaccinations.

The WSCC is a policy, strategy and coordination mechanism for the U.S. Water and Wastewater Systems Sector in interactions with the government and other sectors on critical infrastructure security and resilience issues. Although the federal government has published recommendations for vaccine prioritization, the final decisions about vaccine distribution will be made at the state and local levels. Local engagement by utilities is therefore critical to ensure that water workers receive priority for the vaccine.

The National Association of Clean Water Agencies (NACWA) and other water sector associations have drafted a template letter for utilities to use when contacting their state or local health authorities. With the vaccine now becoming available and health departments finalizing their distribution plans, utilities are encouraged to contact the appropriate state and local agencies to enquire about the plans and request that essential utility workers be given vaccine prioritization.

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For more information visit [NACWA's Advocacy Alert](#) or contact Cynthia Finley, NACWA's Director of Regulatory Affairs, for more information.