BAY AREA WATER SUPPLY AND CONSERVATION AGENCY
BOARD POLICY COMMITTEE MEETING

December 3, 2021

Correspondence and media coverage of interest between November 27, 2021 and December 2, 2021

Correspondence

From: Nicole Sandkulla, BAWSCA, Chief Executive Officer/General Manager
To: Dennis Herrera, SFPUC, General Manager
Date: December 1, 2021
Subject: Individual Wholesale Customer Tier 2 Plan Allocations

From: Steven R. Ritchie, SFPUC, Assistant General Manager, Water
To: Nicole Sandkulla, BAWSCA, Chief Executive Officer/General Manager
Date: November 30, 2021
Subject: 2021 Water Shortage Emergency Declaration

From: Los Vaqueros Reservoir Expansion Project
To: Stakeholders
Date: November 22, 2021
Subject: Monthly Report

From: Julianne Adams Frizzell
To: BAWSCA Board of Directors
Date: November 18, 2021
Subject: Bay Delta Plan

Media Coverage

Drought/Water Supply Conditions:

Date: November 29, 2021
Source: San Francisco Chronicle
Article: Snowpack in California's Sierra Nevada could disappear in just 25 years

Date: November 29, 2021
Source: Courthouse News Service
Article: A future of little to no snow in the western mountains will stress water supply, scientists say

Date: November 29, 2021
Source: SF Gate
Article: 'It doesn't look good': No rain in sight for San Francisco Bay Area

Date: November 28, 2021
Source: California Water Blog
Article: How dry will 2022 be?

Date: November 27, 2021
Source: San Francisco Chronicle
Article: No rain in forecast for 10 days. Are we headed for another dry winter?

Water Management:

Date: December 2, 2021
Source: San Francisco Chronicle
Article: California drought: State anticipates virtually no water deliveries to cities, farms next year

Date: December 1, 2021
Source: Sacramento Bee
Article: As drought worsens, officials say mandatory water cuts likely coming from urban Californians

Date: December 1, 2021
Source: Half Moon Bay Review
Article: Water managers ask for 10 percent voluntary reductions

BAWSCA
Bay Area Water Supply & Conservation Agency

December 1, 2021

Via E-Mail

Mr. Dennis Herrera
General Manager
San Francisco Public Utilities Commission
525 Golden Gate Avenue
San Francisco, CA 94102

Subject: Individual Wholesale Customer Tier 2 Plan Allocations

Dear Mr. Herrera,

This letter transmits the Wholesale Customers' individual percent share of the amount of water allocated to the Wholesale Customers collectively pursuant to Section 3.11.C of the 2018 Amended and Restated Water Supply Agreement between the City and County of San Francisco and the Wholesale Customers in Alameda County, San Mateo County, and Santa Clara County (WSA).

Please find enclosed a list of each Wholesale Customer together with its percentage share as calculated in accordance with the methodology adopted by the BAWSCA Board on November 18, 2021. BAWSCA understands SFPUC will honor the allocations enclosed in this letter to calculate each Wholesale Customer's individual annual allocation.

Sincerely,

Gustav Larsson
Board Chair

Nicole Sandkulla
CEO/General Manager

Attachment A: Wholesale Customer Individual Tier 2 Plan Allocations

cc: Steve Ritchie, SFPUC, Assistant General Manager, Water Enterprise
Alison Kastama, SFPUC, BAWSCA Liaison
BAWSCA Board of Directors
BAWSCA Water Management Representatives
Allison Schutte, Hanson Bridgett

Attachment A

Individual Wholesale Customer Tier 2 Plan Allocations
Calculated in Accordance with 2021 Amended and Restated
Tier 2 Drought Response Implementation Plan

Agency	Allocation Factor
ACWD	6.3704%
Brisbane/GVMID	0.5076%
Burlingame	2.7430%
Coastside	0.8238%
CWS Total	20.7662%
Daly City	2.7838%
East Palo Alto	1.3095%
Estero	3.2503%
Hayward	11.2695%
Hillsborough	2.0379%
Menlo Park	2.3013%
Mid Pen WD	2.0627%
Millbrae	1.5392%
Milpitas	4.7587%
Mountain View	6.2048%
North Coast	1.9200%
Palo Alto	7.8907%
Purissima Hills	1.0439%
Redwood City	6.3640%
San Bruno	0.7720%
San José	2.5341%
Santa Clara	1.9474%
Stanford	1.1600%
Sunnyvale	6.9748%
Westborough	0.6645%
Total	**100.00%**

San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102
T 415.554.3155
F 415.554.3161
TTY 415.554.3488

November 30, 2021

Ms. Nicole Sandkulla
Chief Executive Officer/General Manager
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 650
San Mateo, CA 94402

RE: 2021 Water Shortage Emergency Declaration

Dear Ms. Sandkulla:

On November 23, 2021, the San Francisco Public Utilities Commission (SFPUC) declared a Water Shortage Emergency by Resolution No. 21-0177, calling for a 10% systemwide reduction in water usage from Fiscal Year 2019-2020 baseline.

This declaration initiates action by the SFPUC, the Bay Area Water Supply and Conservation Agency (BAWSCA) and the Wholesale Customers under the 2018 Amended and Restated Water Supply Agreement Water Shortage Allocation Plan (Attachment H).

As of November 23, 2021, the SFPUC has determined under the Water Shortage Allocation Plan (WSAP) Section 1.31 that voluntary actions will be sufficient to accomplish the necessary reduction in water use throughout its service area. Thus the SFPUC and the Wholesale Customers will make good faith efforts to reduce their water purchases to stay within their annual shortage allocations and associated monthly water use budgets. The SFPUC will not impose excess use charges during periods of voluntary rationing.

<u>WSAP Section 2 – Shortage Allocations</u>

Resolution No. 21-0177 allocated 36% of the available water supply to retail customers and 64% to wholesale customers.

Per WSAP Section 2.2, BAWSCA is obligated to calculate each Wholesale Customer's individual percentage share of the amount of water allocated to the Wholesale Customers collectively and to deliver a list showing each Wholesale Customer together with its percentage share. We understand BAWSCA plans to provide this list by early December 2021.

Once received the SFPUC will utilize the BAWSCA Tier 2 allocation percentages to calculate each Wholesale Customer's individual annual allocation, and a proposed schedule of monthly water budgets based on the pattern of monthly water purchases during Fiscal Year 2019-2020 (the "Default Schedule"). We expect to deliver these calculated annual allocations and monthly water budgets by mid-December 2021.

Per WSAP Section 2.4, each Wholesale Customer may, within two weeks of receiving its Default Schedule, provide the SFPUC with an alternative monthly water budget that reschedules its annual Tier 2 shortage allocation over the course of the succeeding Supply Year. If a Wholesale Customer does not deliver an alternative monthly water budget to the SFPUC within two weeks of its receipt of the Default Schedule, then its monthly budget for the ensuing Supply Year shall be the Default Schedule proposed by the SFPUC. We hope to conclude the Section 2.4 review process by the end of December 2021.

WSAP Section 3 – Water Shortage Banking

Beginning in February 2022, the SFPUC will provide monthly reports reflecting the water usage of each wholesale customer from January 2022 onward against their monthly water budget. This report will be provided by the 15th of each month in alignment with monthly water sales reporting. This monthly report will serve as each Wholesale Customer's Water Bank statement, recording usage, credits, debits, and transfers against each customer's shortage allocation. Reporting will continue during the voluntary reduction period until the emergency is rescinded or additional actions are taken necessitating a change in reporting.

Thank you for your assistance and consideration during these continuing dry conditions. We look forward to working closely with you and our Wholesale Customers to achieve needed water use reductions, so we may preserve our precious water resources should this drought continue.

Please let contact the SFPUC's BAWSCA Liaison, Alison Kastama at aakastama@sfwater.org should you have any questions regarding the above process.

Sincerely,

Steven R. Ritchie

Steven R. Ritchie
Assistant General Manager, Water

cc: Tom Francis, Water Resources Manager, BAWSCA
Wholesale Customers
Ellen Levin, Water Enterprise Deputy Manager, SFPUC
Paula Kehoe, Water Resources Division Manager, SFPUC
Eric Sandler, Asst. General Manager, Business Services and CFO, SFPUC
Erin Franks, Rates Administrator, SFPUC

LOS VAQUEROS RESERVOIR EXPANSION PROJECT

NOVEMBER 22, 2021

UPCOMING ACTIVITIES

November 22 – Cost allocation workshop with LAP staff

November 30 – December 2 – ACWA Fall conference, Pasadena/virtual

December 6 at 2:00 to 3:00 – LVE General Managers Meeting via Teams

December 8 at 9:30 a.m. – JPA Board Meeting via Zoom

UPCOMING LAP BOARD COORDINATION

TBD – Valley Water Storage Committee

ADDITIONAL PROJECT INFO

https://www.ccwater.com/lvstudies

https://www.usbr.gov/mp/vaqueros/

https://cwc.ca.gov/Water-Storage/WSIP-Project-Review-Portal/All-Projects/Los-Vaqueros-Reservoir-Expansion-Project

www.losvaquerosjpa.com

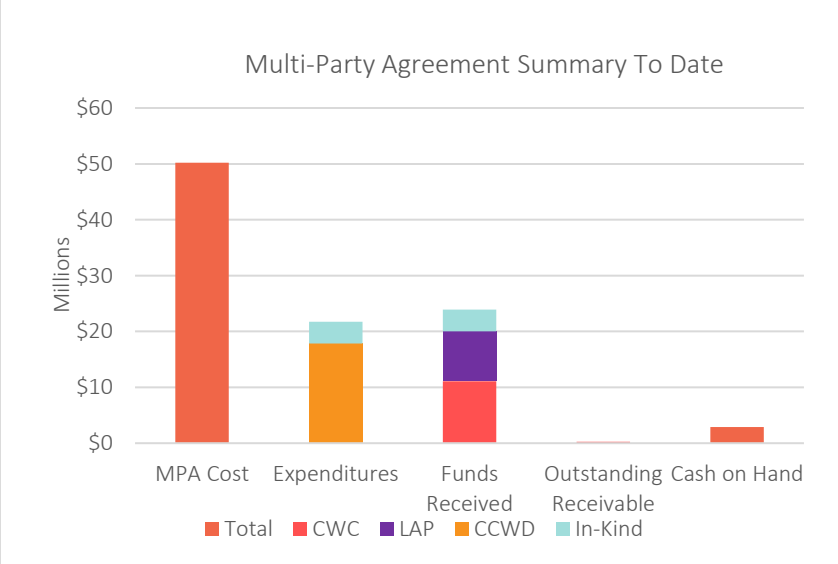
MONTHLY REPORT

FUNDING

The FY22 Continuing Resolution that went into effect September 30th included $50 million in Federal funding for the Project. This is in addition to the $14 million that was appropriated in FY21. Future Federal funding requests include the remainder of the maximum federal share of 25 percent of the total project cost (approximately $160 million). Some portion of the federal funding share may be available in the Infrastructure Investment and Jobs Act that was signed on November 15.

Amendment No. 3 to the Multi-party Cost Share Agreement has been fully executed. It is anticipated that CCWD will continue its current Program Management role and serve as initial Administrator of the Joint Powers Authority (JPA) until such time that the JPA can assume fiscal management responsibilities and execute an Interim Funding Agreement with the JPA Members.

The following chart provides an overview of the MPA expenditures through October 31, 2021. The in-kind services, funds received, outstanding receivable, and cash on hand are shown through November 16, 2021. All LAPs remain in good standing on progress payments. The next invoice will be sent to the LAPs in January 2022.



JPA BOARD OF DIRECTORS MEETING

On November 10 the Los Vaqueros Reservoir Joint Powers Authority (JPA) Board of Directors met for the first time via Zoom. All of the Directors and Alternates that were present took the Oath of Office. Angela Ramirez Holmes, President of the Board of Directors of Zone 7 Water Agency, was elected Chair. Anthea Hansen, General Manager of Del Puerto Water District and representing San Luis & Delta-Mendota Water Authority on the JPA, was elected Vice Chair. Jim Ciampa, of Lagerlof, LLP, was appointed Interim General Counsel. Rose Perea, under contract to Lagerlof, LLP, was appointed Interim Clerk. Contra Costa Water District, with Marguerite Patil acting on behalf of CCWD, was appointed Interim Administrator. CCWD was established as the Principal Office for the JPA. The JPA established the schedule for regular monthly meetings as the second Wednesday of the month starting at 9:30 a.m. via Zoom. The next monthly JPA Board Meeting has been scheduled for December 8 and it is anticipated that the meeting agenda packet will be posted to the JPA website on Thursday, December 2. The JPA issued its first press release on November 12 announcing the JPA formation.

PERMITTING

Additional information has been provided to the U.S. Fish and Wildlife Service (USFWS) related to the terrestrial Biological Assessment (BA). A Historic Properties Treatment Plan and Memorandum of Agreement, to support Section 106 of the National Historic Preservation Act consultation, are being developed. Additional information has been provided to the California Department of Fish and Wildlife (CDFW) related to the Incidental Take Permit application for terrestrial species. The second draft of the Incidental Take Permit for aquatic species was submitted to CDFW. CDFW has reviewed and provided comments on the Compensatory Mitigation Plan which supports the federal and state Endangered Species Act permitting processes. Reclamation continues its review of the plan. CDFW has begun review of the Lake and Streambed Alteration Agreement package. The U.S. Army Corps of Engineers (USACE) and Central Valley Regional Water Quality Control Board (CVRWQCB) continue review of their respective permit packages. A Delta Plan Consistency Package has been prepared and will likely be submitted to the Delta Stewardship Council in the November/December timeframe.

DESIGN

The District continued coordination with the California Department of Water Resources (DWR) to receive comments and coordinate review of the 30 percent design of the Transfer-Bethany Pipeline

Turn-in to the California Aqueduct. Evaluation of alternative alignments through sensitive areas and coordination with interested parties is ongoing.

Design of the LVE dam expansion continues to progress. The team is preparing the 90-percent design construction cost estimate update, anticipated in January, along with an updated dam construction sequencing schedule and various technical submittals to the DWR Division of Safety of Dams.

Planning for Project Review Team meetings is underway, which will consist of staff and from the JPA Members and associated Local Agency Partner agencies and will provide a forum for the District's design team to present updates on various facility design updates.

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From: julianneasla@sonic.net
To: bawscaboardofdirectors
Subject: BAWSCA meeting 11-18-21
Date: Friday, November 19, 2021 11:38:24 AM

For the BAWSCA Boars\. I was unable to attend the zoom meeting last night. The following is my letter.

BAWSCA meeting
11-18-2021

To the board:

I supported the State Water Board Bay Delta Water Quality Control Plan as it was crafted and presented in 2018 because I want the San Juaquin/Tuolumne ecosystem protected. The plan took years to complete and was based on sound science and the input of all affected groups in the Tuolumne River basin as well as the Bay Area.

It has been heart breaking to see the ecology of the river basin decline in these past years, while the folks who could help stop the destruction, and that includes BAWSCA, continue to obstruct the implementation of the Bay Delta Plan. I urge BAWSCA to drop its counterproductive lawsuit against the Bay Delta Plan. The BAWSCA position has been out of sync with the science and the will of the people of the Bay Area.

I am a resident of Palo Alto and I am also a landscape architect. Over the last decade in the landscape industry there have been great strides in designing and installing more efficient irrigation systems for private, public and commercial gardens which now use considerably less irrigation water than a decade ago. We are also saving water inside our buildings including homes and businesses. We do so because in the Bay Area we care about our California environment, and we don't want the source of our water, the San Juaquin/Tuolumne ecosystem, to collapse.

We are doing our part to help save the Tuolumne, BAWSCA needs to step up and do what is right for the Tuolumne.

Thank you

Julianne Adams Frizzell
1175 Channing Avenue
Palo Alto CA 94301

Julianne Adams Frizzell / ASLA
650-325-0905
julianneasla@sonic.net

Snowpack in California's Sierra Nevada could disappear in just 25 years
San Francisco Chronicle | November 29, 2021 | Kurtis Alexander

Mark Elmore of Virginia hikes through snow on the Mist Trail in Yosemite National Park in February. With fewer storms, the Sierra is seeing a decline in its snowpack. Max Whittaker/Special to The Chronicle

As the climate continues to warm, more and more of the snow falling on California's mountains will be replaced by rain. Already in recent decades, the snow season has shrunk by a month, according to one estimate, while snow levels have moved upward by 1,200 feet, according to another.

Scientists and water managers say that at some point California's snowpack could simply disappear. This would leave the state without the crucial spring and summer melt-off that fills rivers and streams, nourishes plants and animals, and provides a huge chunk of the water supply. It would also be devastating for the ski industry.

This snowless future, according to a new study led by researchers at Lawrence Berkeley National Laboratory, could arrive in California's Sierra Nevada in as soon as 25 years. The study is among many to detail the decline in snow, but it's unique in synthesizing decades of research to nail down exactly when the snow might be gone. And it offers a timeline that is alarmingly short.

“Warming just doesn’t allow for snow to persist,” said Alan Rhoades, a hydroclimate research scientist at Lawrence Berkeley Lab and one of the lead authors of the paper. “Our one major goal was to identify how much time we have to roll out adaption strategies.”

Experts say that preparing for a Sierra with less snow won’t be easy, or cheap, but they agree it must be done.

The new study, published last month in the journal Nature Reviews Earth & Environment, projects that by the late 2040s, half of the area historically covered by snow in the Sierra will likely have “low or no” snow for five straight years, given current warming trends. By the late 2050s, it could be 10 straight years that the same area sees low or no snow.

The paper defines “low snow” as when snowpack — technically, the snow-water equivalent, or how much water the snow releases when it melts — falls within the lower 30th percentile of its historical peak. “No snow” is defined as when snowpack falls to or below the 10th percentile.

“It’s always shocking when I see the numbers,” said Rhoades, who grew up in California. “Snow has always been part of my life, since childhood.”

The study’s findings are based on a review of hundreds of scientific papers on snowpack, 18 of which contain quantitative projections. The authors looked not only at the Sierra Nevada but at the Cascades in the Pacific Northwest and parts of the Rockies.

In all of these mountain ranges, the study finds that at least half of the historically snow-covered spots will see low or no snow for five straight years by the 2060s, at the current rate of warming. By the 2070s, the same amount of area will see 10 straight years of low or no snow.

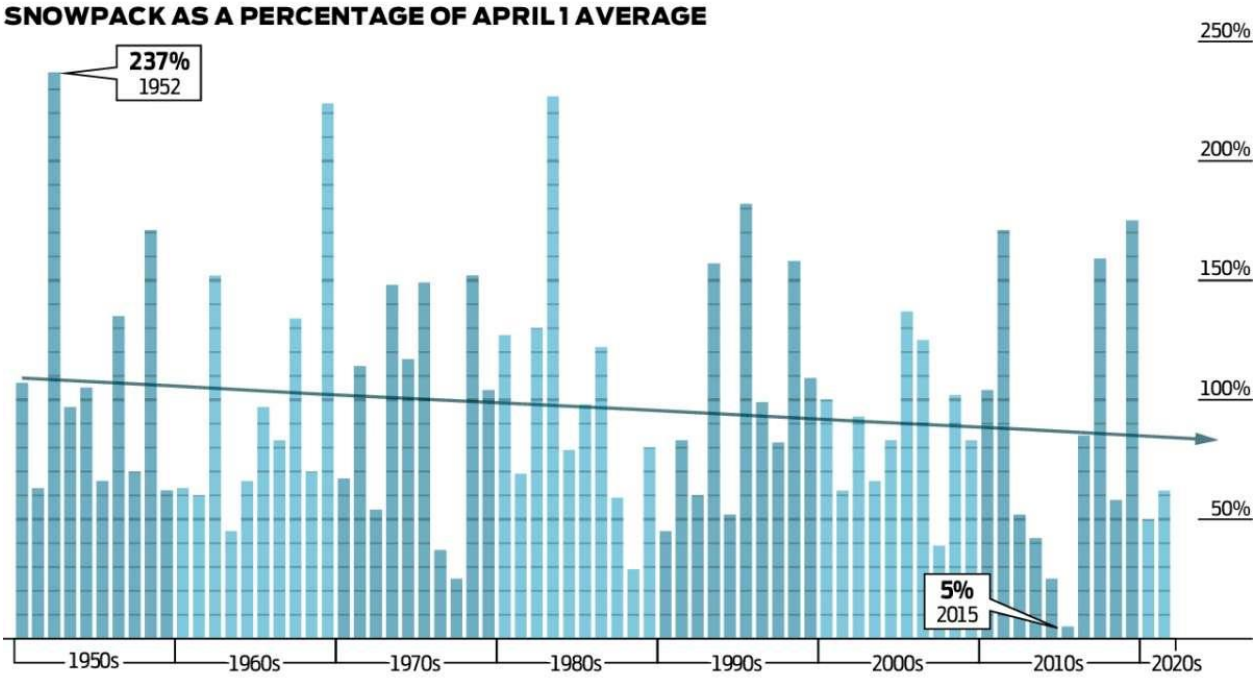
The Sierra Nevada is the first to be hit. The California mountains are more vulnerable because storm temperatures, moderated by the Pacific Ocean, are generally warmer.

Already, the Sierra has seen a glimpse of its future. In 2015, at the height of a five-year drought, state snow surveyors marched into the mountains on April 1, when snow is historically at its peak, and found mostly dry ground. Their gauges measured the snowpack at 5% of average, the lowest ever recorded in decades of surveying.

This year marked another grim milestone. While the April snowpack was greater, 59% of average, the melt-off from the snow was extraordinarily low because of how much water was absorbed by parched soils amid the current drought or lost to evaporation amid extreme heat. State officials said runoff efficiency, essentially a measure of how much snow makes it to rivers and reservoirs, was 20% compared to the usual 60%.

California historical snowpack

Snow surveys by the the Department of Water Resources show that snowpack in the Sierra Nevada and the mountains to the north, while variable, has declined over the past several decades.



Source: California Department of Water Resources

John Blanchard / The Chronicle

A primary concern about snow loss is the dent it puts in the water supply.

Much of the infrastructure that collects and delivers water in the state is conditioned upon having snow on mountaintops well into summer. Hundreds of reservoirs, including such giants as Shasta Lake and Lake Oroville, rely not only on storms for water during the wet winter months, but melting snow to provide another boost once the weather dries out in spring.

Without this spring and summer bump, as much as 30% of the state's water supply could be lost.

"It's hard to picture: thinking about a future where our kids and grandkids have little or no snow and what that means for our water resource," said Erica Siirila-Woodburn, a research scientist at Lawrence Berkeley Lab and the other lead author of the new paper. "Our part in all of this is to put our science out there ... to inform some of the policy."

The authors framed their paper as a "call to action."

While state water managers are generally aware of the problem, their response has been slow, especially relative to the new, more dire timetable for snow loss.

Some want to expand or even build new reservoirs so that more of the winter runoff can be captured in the face of the decline in spring and summer. One of the biggest proposals is Sites

Reservoir, an off-stream storage project in Colusa County that would collect surplus water from the Sacramento River. Its estimated cost has varied from $3 billion to $5 billion.

The high price of these projects, as well as the need to protect fish and wildlife, have made them difficult to get off the ground. Also, most of the good spots for reservoirs have been taken.

Ellen Hanak, director of the Water Policy Center at the Public Policy Institute of California, who was not part of the study, said the state will have to pursue a range of initiatives to maintain adequate water supplies as the snowpack decreases.

One of the best investments, she said, is storing more winter runoff not just in reservoirs but underground.

“California is really well positioned to use aquifers in an active way by recharging them,” she said. “Some of our systems have been doing it for decades ... and there’s a lot of interest in expanding groundwater recharge.”

Karla Nemeth, the director of the California Department of Water Resources, speaking at a virtual conference held by the Water Policy Center this month about water infrastructure, also advocated a multiprong approach to the future. Among the most important strategies, she said, is doing a better job both projecting California’s runoff and managing it.

“DWR is really redoubling efforts to improve our forecasting,” Nemeth said. “Foundationally, we need better information.”

In September, Gov. Gavin Newsom announced that several billion dollars of state money would go to drought resilience, including expanding water supplies.

A ballot measure proposed for next year, which supporters are still trying to gather qualifying signatures for, calls for even more money for water projects: 2% of the state’s entire general fund budget. Voters in 2014 approved a $7.5 billion water bond, much of which is still being spent on new supplies and storage.

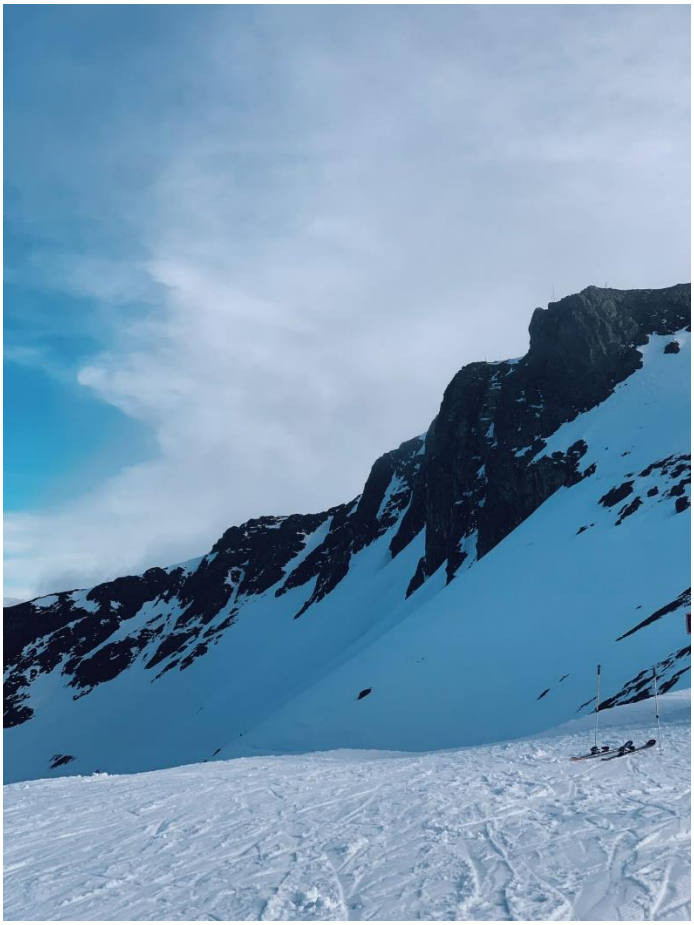
# # #

A future of little to no snow in the western mountains will stress water supply, scientists say

The American West will need to reevaluate its approach to a water management system that once relied on consistent snowfall.

Courthouse News Service | November 29, 2021 | Carson McCullough

(CN) — The U.S. will need to make some serious changes to its water supply strategies as Earth's climate continues to warm and snowpack in the country's western mountains becomes much harder to come by in the coming decades, according to a new study.



The snowy terrain of Olympic Valley, California. (Patrick Bald/Unsplash)

In America's long and often strained history of managing its water infrastructure massive amounts of water from mountain snowpack has long been viewed as a comforting constant. Frigid temperatures and frequent snowfalls allow nearly 162 million acre-feet worth of snow to accumulate in the western mountains each year, only to melt during the spring and summer seasons when it becomes a key component of America's water supply.

But, as with countless other things, climate change is about dramatically change that.

In a study published in the science journal Nature, experts warn that human-driven climate change is currently on track to send the country's supply of snow plummeting. Scientific circles largely agree that if current trends keep up, roughly a quarter of the snowpack in the western mountains will be gone by 2050.

Data models suggest there is even a future where snowpack could disappear entirely in these areas on a persistent basis — and it may happen much sooner than we think.

"There is less consensus on the time horizon of snow disappearance, but model projections combined with a new low-to-no snow definition suggest ~35–60 years before low-to-no snow becomes persistent if greenhouse gas emissions continue unabated," the study states.

Scientists stress that these changes could prove catastrophic for communities that rely on the water from snowpack. According to the study, assuming that the western mountains of the U.S. lost around 54 million acre-feet of snow storage that was valued at around $200 per acre-foot with little-to-no snow conditions cropping up within the next century, economic costs reach up to $850 billion dollars — more money than the U.S. is shells out annually on defense spending.

“Moreover, the disappearance of snow in the [western United States] has important hydrologic ramifications on both natural and managed systems,” according to the study. “Changes in the seasonal snow cycle influences the timing and magnitude of groundwater recharge, vegetation dynamics and stream discharge, which then directly impacts water availability.”

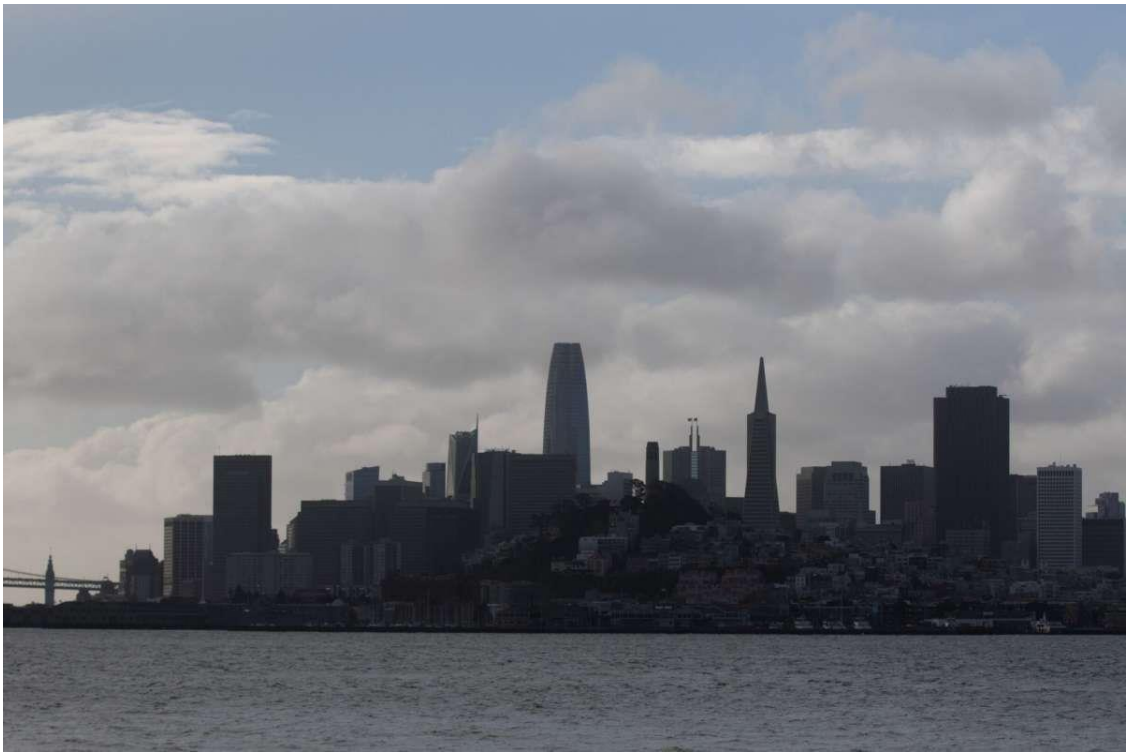
Experts say the western U.S. will likely need to make some serious changes to its water infrastructure. Future water management strategies could include entirely new surface storage capacity projects, not unlike the proposed Sites Reservoir project in California, and while they can prove costly and take time to develop, other strategic dams and canals might be called for.

Current infrastructure can also be retrofitted with modern innovations to be more effective. One option would be to use forecast-informed reservoir operation that allows reservoirs to retain or release water more strategically based on advanced weather and hydrologic forecasts. A recent case modeling study on Lake Mendocino showed that an approach such as this could increase water storage by 33%.

“A path forward can be made by including Earth scientists, infrastructure experts, decision scientists, water management practitioners and community stakeholders, in a collaborative, iterative process of scientific knowledge creation through a co-production framework,” the study states.

# # #

'It doesn't look good': No rain in sight for San Francisco Bay Area
SF Gate | November 29, 2021 | Amy Graff



After two atmospheric rivers hit the region, the Bay Area has dried up. Douglas Zimmerman/SFGATE

There's no rain in sight for the San Francisco Bay Area in the next 10 days, a concerning dry weather spell for a region plagued by drought.

While there are hints of a shift to wetter and cooler conditions toward mid-December, some experts say the forecast for rain doesn't look convincing.

"We look out 10 to 14 days and even beyond that, there doesn't look like there's any substantial rain on the horizon," said Brian Garcia, a meteorologist with the National Weather Service. "This is just me, I really don't think we're going to get any substantial rain the rest of this calendar year."

Local forecaster Jan Null of Golden Gate Weather Services is more hopeful. Null said there's still more than a full month ahead of us to get rain before the end of the year.

"I wouldn’t go that far," he said of the potential for no rain in December. "I’d be surprised if we didn't see any rain."

Null noted that in 1997, when he was working for the weather service, models showed high pressure over the region with no rain in the long-term forecast. Then, two days before New Year's Day, the models suggested storm activity. "It was an atmospheric river, the trail all the way to Hawaii," Null said. "In two days time, the models changed greatly. The models are obviously better now."

The weather service looks at a dozen forecast models that help pinpoint the weather as far as two weeks out. It's difficult to predict the weather with accuracy beyond seven days, but these models can provide a suggestion of conditions beyond a week. Garcia said the models are in a pattern where they have been pushing any signal of rain to the end of the forecast period. You run them one day, and they provide a weak signal of rain 14 days out. The next day, the chance for rain is still 14 days out.

"When that happens, that's the models trying to lean toward a climatological solution because this time of year we're supposed to see rain. But it's not happening so it keeps pushing it back," Garcia explained. "When we see that continual push back, that's when we know there's going to be no rain."

The San Francisco Bay Area saw a promising start to the rainy season.

A historic atmospheric river drenched Northern California in October, and precipitation totals shot up well above normal. It was a monstrous storm that's rarely seen so early in the rainy season, and the soaking ended wildfire season in Northern California. In November, another storm, weaker than the one in October yet still rich in moisture, swept the region. Since then, the Bay Area has seen little rain.

In October, precipitation totals were hundreds of percentage points above normal. Downtown San Francisco recorded 7.04 inches of rain in October — that's 750% above average. The Santa Rosa Airport saw 10.76 inches (647% of average) and the Oakland Airport 5.32 inches (605% of normal).

In November, the Bay Area is likely to end up drier than normal. San Francisco has recorded 1.28 inches of rain since Nov. 1; normal precipitation for the month is 2.6 inches.

"It's the season of giving, but the atmosphere will not be giving rain to us," said Garcia. "It will be giving us sunshine."

This is bad news for the Bay Area where drought conditions persist after two consecutive dry winters.

The San Francisco Public Utilities Commission on Tuesday declared a water shortage emergency and is calling on nearly 3 million of its customers in San Francisco and three other Bay Area counties to take shorter showers and conserve water.

The commission supplies water to San Francisco residents and wholesale water to customers in portions of Alameda, San Mateo and Santa Clara counties. The declaration asks for a 5% reduction in water use in San Francisco and 13.7% among wholesale customers. The reductions are based on fiscal year 2019-2020 levels, the commission said.

# # #

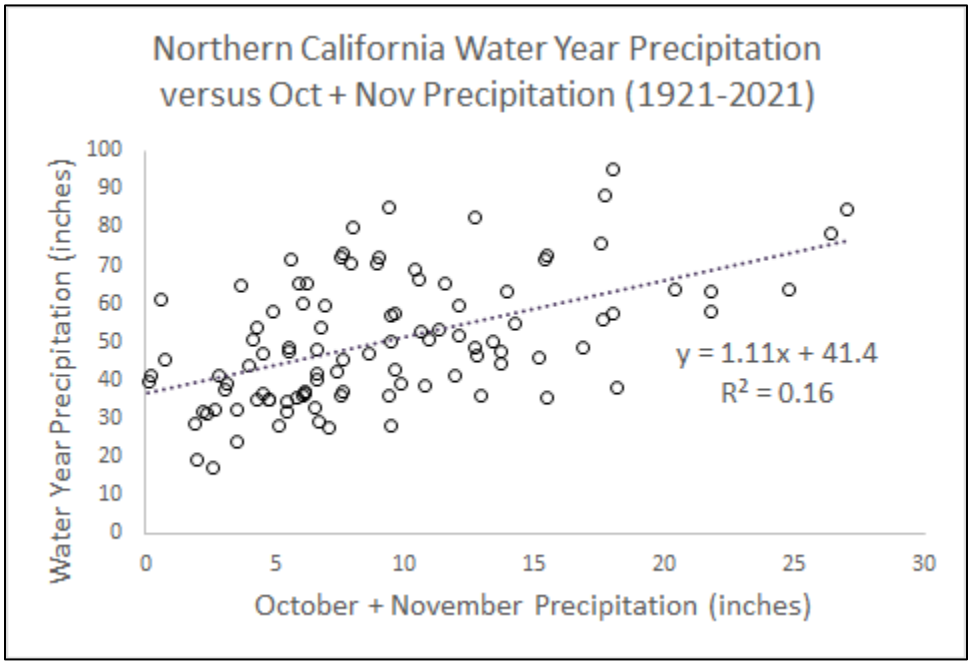
How dry will 2022 be?
California Water Blog | November 28, 2021 | Jay Lund

Last year, Northern California had very little precipitation in October and November, and we wondered if California was entering into a multi-year drought. Today, we know – last year became the 3rd driest year on record for northern California, in terms of precipitation.

This water year, so far

This year, Northern California had one of its wettest Octobers (in one two-day storm!), followed by a dry November. This year's October + November precipitation has been about 16 inches so far. This is eight times what it was last year at this time and twice historical average precipitation for these months. So should we anticipate a dry or a wet year overall for water year 2022 (October 2021- September 2022)?

Below are some informative historical data. (Even in unprecedented times, there is much to learn from the past.) Data are from DWR's CDEC.



October + November 2021 precipitation has been about 16 inches for northern California

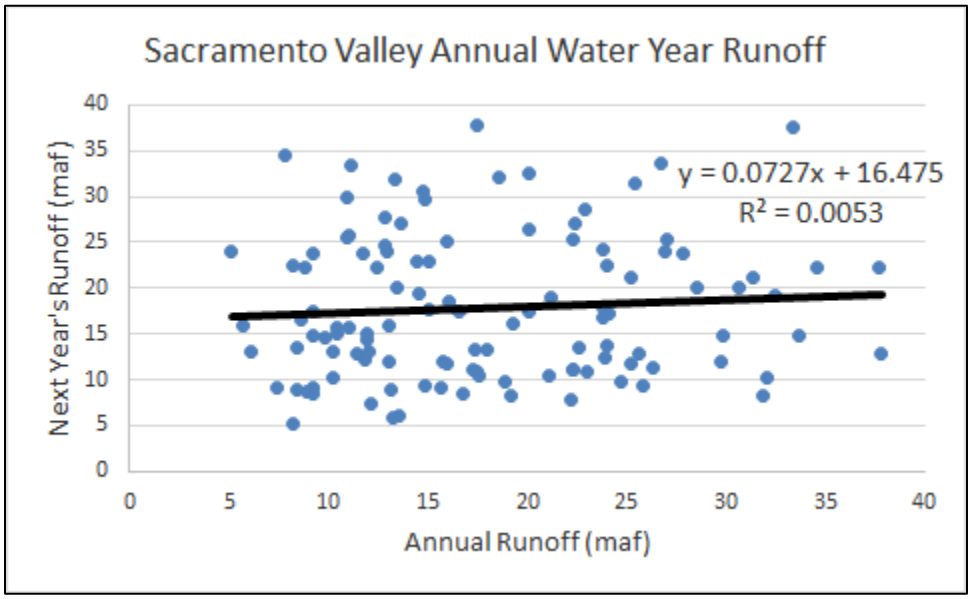
From a historical perspective, the October + November precipitation is good news overall, but certainly not enough to cinch a wet year, or preclude a dry year. The plot above shows that October + November precipitation is not a great predictor of overall annual precipitation.

Legacy from 2021

Today, California is in a multi-year drought. Reservoir levels are low, and groundwater levels have been dropping. Soil moisture in much of southern California remains low, although the October storm really helped soil moisture in northern California, and has started to increase

reservoir levels. These conditions alone mean that more than average precipitation and runoff will be needed for California to emerge from this drought.

Does last year being dry tend to be correlated with the next year being dry? Again, some more data from DWR's CDEC.



Alas, last year's runoff seems to offer even less insight for the runoff likely in the coming year.

As shown in last year's blog of this time, there is also almost no correlation of northern California runoff with El Nino conditions (see Further Readings below).

So what should we do?

There is a significant probability that this year will be the third year of a multi-year drought, mostly because we enter this year with much reduced reservoir and groundwater storage, and much reduced soil moisture in some places.

It makes sense to prepare for another dry year, and perhaps several additional dry years.

Most agencies are preparing relatively well for another dry year. Some are preparing new rate structures and other innovations. These innovations are likely to pay off for future droughts, even if this year becomes wet.

And if the coming year is wetter, many San Joaquin Valley groundwater agencies and users will be mindful that the accumulating overdraft from these drought years must be repaid with additional fallowing or recharge in the coming years (wet or dry!) before 2040.

This year could be dry, wet or both (a dry year with one or more short floods).

Water managers are being attentive. Environmental managers are likely to also be apprehensive, given the plight of much of the Central Valley's salmon and other populations. If this year is dry, the drought could be a whopper for ecosystems, rural groundwater users, agriculture, and some cities!

So, as usual for this time of year, Californians should be prepared for both floods and drought.

# # #

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No rain in the forecast for 10 days. Are we headed for another dry winter?
San Francisco Chronicle | November 27, 2021 | Michael Cabanatuan

Now that Thanksgiving is past, the Bay Area's attention is turning to precipitation or, more specifically, whether the record rains of October will return. The answer, meteorologists say, is not anytime soon.

The forecast for the next 10 days calls for more dry, mostly sunny and warm days with cool nights, according to the National Weather Service. The closest chance for rain, meteorologists say, is in early December — but that forecast is so far off that it's nothing we can count on.

"It's a little early to be sure," said Rick Canepa, a National Weather Service meteorologist for the Bay Area. "We're looking at dry weather conditions for the foreseeable future in the short- to mid-term."

Temperatures are expected to be in the upper 60s to mid-70s in the Bay Area with some inland areas possibly reaching 80 on Saturday. Overnight lows are expected to dip into the 40s and 50s and possibly the upper 30s in some inland valleys. Skies are expected to be mostly sunny with some overnight valley fog disappearing in the mornings, leaving blue skies.

While that hardly seems like the kind of weather to fret about, California remains in danger of a third year of drought, climatologists say. The National Oceanic and Atmospheric Administration projects that drought conditions will persist in almost all of California through February — typically the wettest parts of the Bay Area and Northern California winter.

According to the National Drought Monitor, all of California is at some level of drought, and in some parts of the state, including the Bay Area, are already rationing water supplies while farmers have been forced to irrigate less and contend with smaller harvests of grapes, rice, cotton and other crops..

So where has the rain gone?

While the Bay Area has been dry since the start of November, "the Pacific Northwest has been getting hammered," Canepa said, and is likely to continue getting soaked while the Bay Area continues to dry out from the atmospheric river storms that drenched much of the region in October then dampened it again early this month.

A high-pressure ridge has established itself and is pushing rain to the north of California. Even the far northern reaches of the state, which sometimes get rain when the Bay Area doesn't, have been dry. And it appears that the pattern could continue — at least for the next several days.

According to the weather service, the Bay Area's next chance of rain appears to be toward the end of the first week of December, or perhaps during the second week.

“We’re kind of stuck,” Canepa said.

Climatologist Daniel Swain agrees, tweeting that “there’s nothing convincing yet” in terms of a shift toward a wetter winter.

Earlier forecasts from the federal government had suggested that the drought might ease its grip on Northern California this winter but strengthening La Niña conditions have diminished that possibility.

La Niña is a weather pattern characterized by cool water in the equatorial Pacific Ocean. It affects the way air moves in the tropics, and can cause the jet stream to push north. On the West Coast, that means storms are more likely to hit Oregon and Washington than California, especially Southern California.

La Niña is less of a drought guarantee for the Bay Area. If the jet stream can undercut the high-pressure ridge, as it did in October and November, it can deliver moist air from the tropics, Canepa said. But that tends to occur infrequently in a La Niña winter.

“We just have to wait and hope,” Canepa said.

# # #

California drought: State anticipates virtually no water deliveries to cities, farms next year

San Francisco Chronicle | December 2, 2021 | Kurtis Alexander

A line of charred trees sits above Lake Oroville, seen from Lumpkin Road in Oroville, Calif. on Sept. 24, 2020, as crews work to mop up areas in Oroville damaged by the Bear Fire. Jessica Christian/The Chronicle

California water officials acknowledged Wednesday that another painful year of drought is likely, and warned the many communities receiving water from the State Water Project that they may get no water at all next year, except in cases of emergency.

The record low 0% water allocation would leave parts of the state, including San Jose, much of the East Bay and Napa County, with significant dents in their water supplies. Local water agencies would have little choice but to seek out additional sources of water, which are certain to be sparse, as well as lean heavily on customers to make cuts — even more so than they're already doing.

"If it starts to look worse, we will have to call for more conservation," said Valerie Pryor, general manager of the Tri-Valley's Zone 7 Water Agency, which last summer mandated a 15% water reduction across its service area of Livermore, Pleasanton and Dublin. The agency usually gets more than two-thirds of its water from the state.

Wednesday's announcement is just the latest fallout of two critically dry years in California, which have been exacerbated by unprecedented heat. Across the state, communities are grappling with water shortages, farmers are churning out smaller harvests, grasslands and forests are losing vigor, and the threat of wildfire won't go away.

As for the State Water Project, its nearly three dozen lakes, reservoirs and storage facilities don't have enough supply to meet demand. Lake Oroville, the largest state-managed reservoir, has become one of the most potent symbols of the drought, rimmed with dusty banks and bathtub-like rings and standing at just 30% of its capacity, about 60% of where it typically stands this time of year.

"Here we are with pretty extreme conditions," said Karla Nemeth, director of the Department of Water Resources, which runs the State Water Project. "We need to prepare now for a dry winter and severe drought conditions to continue through 2022."

The forecasts for below-average precipitation for the coming months, and less runoff to fill the state's reservoirs, are fueled by a developing La Niña weather pattern. The bulk of the rain and snow that the project relies on comes between December and March.

The reservoir water, sometimes piped hundreds of miles across the state, serves 29 water agencies that contract for supplies. In total, more than 27 million Californians and 750,000 acres of farmland get at least some of their water from the project.

The 0% water allocation projected for next year follows this year's allocation of just 5% of what the water agencies requested. Consequently, many are already feeling a squeeze. The level of dependence on the state varies between agencies, with some having lots of alternative supplies and some having little else to fall back on.

State water officials said Wednesday that they will provide at least some water to agencies that don't have enough to meet "critical health and safety" needs. So far, seven of the project contractors have said they will need the emergency supply.

In the Bay Area, the Santa Clara Valley Water District, Alameda County Water District, Napa County Flood Control and Water Conservation District and Solano County Water Agency, in addition to the Tri-Valley's Zone 7, get some portion of water from the state project. So does Southern California's Metropolitan Water District, the biggest state contractor, supplying water to 19 million people.

Pryor, at the Zone 7 Water Agency, said she's been planning for little water from the state and is hoping that conservation measures, on top of supplies from nearby Lake Del Valle and storage, will help the agency weather another dry year. She's also hoping to buy water from another agency, should it become available.

The Alameda County Water District, which serves Fremont, Newark and Union City, has not had to enact mandatory water restrictions but likely will with no new state water deliveries. The agency typically gets 40% of its water from the State Water Project.

“To be very clear, this is extraordinary,” said district General Manager Ed Stevenson. “Our customers are going to need to conserve more. ... As long as we do get conservation from our customers, we’ll be OK, for now.”

The water allocation announced Wednesday is subject to change as the winter progresses. The initial projection is meant to give water agencies time to plan ahead. The 0% allocation is the lowest ever made at this point in the year.

The State Water Project is the sibling of the federally run Central Valley Project, which similarly funnels runoff from the mountains to California cities and farms. The federal project has not announced an estimated allocation for next year.

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As drought worsens, officials say mandatory water cuts likely coming for urban Californians

Sacramento Bee | December 1, 2021 | Dale Kasler

Drone video shows Folsom Lake on eve of series of storms Drone video shows Folsom Lake on Oct. 20, 2021, when its surface elevation stood at 370 feet – the lowest level since December 2015. The reservoir is 22% full. A storm is forecast to bring a few inches of much-needed rain to the Sacramento region. By Hector Amezcua

With the drought showing no signs of abating, California officials announced Wednesday they plan to deliver almost no water from the State Water Project to begin next year — and suggested that mandatory cutbacks in urban usage could come if conditions stay dry.

Karla Nemeth, director of the Department of Water Resources, said the various cities and farm-irrigation districts that belong to the State Water Project — the elaborate state-run network of reservoirs and canals — are getting “essentially a zero allocation” to start 2022.

While conditions could improve if the winter turns wet, it marks the first time that the project has announced a zero allocation initially for the upcoming year. The project delivered a 5% allocation in 2021.

The member agencies won’t be completely shut out. Nemeth said the project expects to deliver 340,000 acre-feet of water for “critical health and safety needs” to a handful of urban contractors, with most of the water going to the large Metropolitan Water District of Southern California. Still, that’s just a sliver of the 4.2 million acre-feet the project is supposed to deliver in a wet year.

“We have such exceedingly dry conditions,” Nemeth said. “We are absolutely living climate change.” An acre-foot is 326,000 gallons. Thank you for subscribing.

So far Gov. Gavin Newsom has resisted suggestions that he institute mandatory conservation measures on urban Californians. That could well change if the drought continues much longer, Nemeth said.

“If conditions continue this dry, we’ll see mandatory cutbacks,” she told reporters on a Zoom call. She said the state will work with local government agencies to impose mandatory rules, and “if they won’t, the state will.”

To this point, urban Californians have largely ignored Newsom’s call for a 15% cutback in urban water use. In September, the most recent month with available data, urban Californians cut back a mere 3.9% compared with a year earlier, according to the State Water Resources Control Board.

LAST WATER CUTBACKS FROM A DROUGHT

The last time urban Californians saw mandatory conservation was in 2015, when former Gov. Jerry Brown ordered a 25% cutback. The restrictions were largely lifted the following year, and lifted altogether when historic rain and snow fell on California in 2017, prompting Brown to cancel the drought emergency.

While Newsom hasn’t yet imposed across-the-board restrictions, the State Water Resources Control Board this week released proposed new rules that would force homeowners to stop wasting water outdoors. The proposed rules include prohibitions on letting water run on sidewalks or driveways, and a ban on washing a car unless the hose has a shutoff valve. Most cities, including Sacramento, already have rules similar to those already in place.

The State Water Project’s zero initial allocation speaks to the severity of the drought and the degree to which available supplies are stretched perilously thin. In 1991, the project’s agricultural districts got a zero allocation, but urban districts received 30% of what they requested.

The federal government hasn’t yet announced an initial allocation for its Central Valley Project, which runs in tandem with the state project, but it’s likely it too will come out at zero. The federal project delivered no water to most of its contractors this year.

Despite a stunningly strong start to the water season, thanks to record rainfall in late October, state officials and other experts believe California could be in for another dry winter.

Although two small storms could hit Northern California next week, “we’re not talking anything significant here,” said Jan Null of Golden Gate Weather Services, a private forecasting consultant.

And with each dry day that goes by, the effect of the Oct. 24 rainstorm diminishes. “We’re eating up that bonus we got Oct. 24 pretty rapidly,” Null said.

That's left state officials to undertake a delicate balance between agriculture, urban use and the environment. Nemeth said state officials are conferring on how to keep river temperatures cool enough to maintain fragile fish populations and other needs, but she added: "When there's no water in the system, the environment is going to suffer as well."

Already this year, the vast majority of the juvenile winter-run Chinook salmon population perished in the relatively warm waters of the Sacramento River, state officials believe, although exact figures haven't yet been released. The winter-run Chinook is listed as an endangered species.

What's more, Nemeth announced that state and federal officials have asked the State Water Resources Control Board to relax water-quality standards in the Sacramento-San Joaquin Delta, the estuary that serves as the hub of California's water system. That would allow the two water projects to keep more water in the system and let less water flow to the ocean.

Still, the state can't ignore Delta water quality altogether. Lake Oroville, the linchpin of the State Water Project, is less than one-third full, and most of its water will be dedicated to flushing salinity out of the Delta. If too much salt water pours into the Delta from the Pacific, it renders much of the delivery network inoperable.

But some of the water stored in Oroville and San Luis Reservoir, the main reservoir south of the Delta, will go for urban usage. Metropolitan, which serves 19 million Southern Californians, will get about 80% of that supply. Another 10% will go to the Santa Clara Valley Water District, while the rest will be split among smaller agencies such as Napa County, Yuba City and Plumas County.

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Water managers ask for 10 percent voluntary reductions
CCWD awaits new water allocations
Half Moon Bay Review | December 1, 2021 | August Howell

The San Francisco Public Utilities Commission, which relegates most of the available water to the Coastside, declared a water shortage emergency last week and urged its 2.7 million customers to voluntarily reduce water usage by 10 percent compared to 2019-2020 levels.

The new policy is effective immediately and is meant to curtail retail customer water by 5 percent and wholesale water use by nearly 14 percent. In addition to allowing the SFPUC more water reserves and resources, the declaration also includes a temporary 5 percent drought surcharge for San Francisco users that will go into effect on April 1.

Montara Water and Sanitary District is not a Bay Area Water Supply and Conservation Agency member and is not impacted by SFPUC's declaration. But the CCWD and Pacifica's North Coast County Water District

are member agencies, and now both are awaiting their allocations from San Francisco's regional water system for the remaining fiscal year. Cathleen Brennan, CCWD's water resource analyst, said the district is likely to get those allocations by Dec. 24.

Based on those allocations, the CCWD board at some point in January will determine how much water customers will need to save. The district is currently in the first stage of its Water Shortage Contingency Plan, which advises a 10 percent voluntary reduction. Stage 2 is a Water Shortage Emergency Warning requiring a 20 percent reduction.

Brennan said the district's allocations are based on what the district purchased from SFPUC in 2020. Because the district didn't purchase more than usual due to good local sources that year, the amount of conservation needed by customers hinges on the status of local sources this year.

"We could be cut back 10 percent from SFPUC, but that can translate to a 20 percent shortage for us, or even higher, depending on how our local sources are doing," Brennan said.

If the SFPUC doesn't see results from retail and wholesale customers, it could implement mandatory restrictions later. SFPUC Assistant General Manager Steve Ritchie said last week that nearly one-third of San Francisco's reservoir supply, about 360,000 acre-feet, is off-limits. That's due to the state's curtailment orders on the Tuolumne River and other streams that flow to the Sacramento-San Joaquin River to help irrigation districts amid the drought. He said the agency's reservoir is in decent shape at 73 percent capacity, a little under the 80 percent capacity expected for this time of year.

"Every time we add uncertainty, it means that our planning has to get more conservative," Commission President Anson Moran said. "As we're trying to look at a more flexible way of

doing things, all the signals we're getting from the state say that we should be more conservative, not less."

Though the Tuolumne River curtailments that began in August have been suspended on Oct. 19 because of the storm that passed through the Bay Area, they could be reinstated at any time, possibly as early as this week, Ritchie said.

"Certainly, those recent storms have helped out, but the drought definitely still remains, necessitating action," Ritchie said.

According to the SFPUC, San Francisco customers have reduced their average daily water use in 2019 and 2021 by 15.5 percent, and wholesome customers have saved 9 percent. The two groups have reduced average daily water use by 10.9 percent from 2019 to 2021.

BAWSCA CEO Nicole Sandkulla said she supported the proclamation, citing that Bay Area customers in 13 of the 26 agencies used less than 55 gallons of water per person per day in 2019-2020. The statewide average is closer to around 90 gallons per person per day.

"Our member agencies and their customers are currently using record-low amounts of water, but we can and will reduce our use so that we can best prepare ourselves for this continuing drought."

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