BAY AREA WATER SUPPLY AND CONSERVATION AGENCY BOARD OF DIRECTORS MEETING

January 18, 2024

Correspondence and media coverage of interest between December 11, 2023 and January 11, 2024

Correspondence

From	Tom Francis, Water Resource Manager, BAWSCA
To:	Steven Ritchie, Asst. General Manager, SFPUC Water Enterprise
Date:	January 11, 2024
Subject:	BAWSCA's Review of the SFPUC's FY 2022-23 Annual Report on Water
	Enterprise-Managed Capital Projects
From:	Info@losvaquerosjpa.com
To:	Stakeholders
Date:	December 29, 2023
Subject:	Los Vaqueros Reservoir Joint Powers Authority Update

Press Release

From:	California Department of Water Resources
Date:	January 2, 2024
Press Release:	First Snow Survey of the Season Finds Below Average Conditions for California

Water Supply Conditions:

Date:	January 10, 2024
Article:	What Are Snow Droughts and Is Climate Change Making Them Worse?
Date:	January 8, 2024
Source:	KTLA
Article:	El Nino not living up to billing in California so far
Date:	January 4, 2024
Source:	Better Planet
Article	How the 'Snow Drought' Will Impact California Reservoirs
Date:	January 4, 2024
Source:	The Guardian
Article:	California snowpack lowest in decade despite hope with December storms
Date:	January 3, 2024
Source:	Mercury News
Article:	Sierra Nevada snowpack at lowest level in 10 years: What it means for California's water supply
Water Policy:	
Data:	lanuary 5, 2024

Date:	January 5, 2024
Source:	San Jose Inside
Article:	California's Proposed Water Conservation Rules Too Stringent and Costly, Analysts Say

Water Policy, cont'd.

Date:	January 3, 2024
Source:	Politico Pro
Article:	The new chair of the Assembly Water, Parks, and Wildlife Committee is a moderate
	Freshman Democrat with a track record on suburban water issues
Date:	January 3, 2024
Source:	Sacramento Bee
Article:	New California law updates water restrictions for businesses. What does it mean for you?

Water Infrastructure:

Article:

Date: Source:	January 11, 2024 KQED
Article:	Triumph or Insult? The Complicated Legacy of the Bay Area's Water Temples
Date:	January 3, 2024
Source:	SF Gate
Article:	Delta Water Conveyance Project Not The Only Plan In Town
Date:	January 3, 2024
Source:	Nossaman, LLP
Article:	DWR Certifies EIR for Delta Conveyance Project – Advancing Controversial Project and Setting Up Likely Legal Showdown
Water Recycle:	
Date:	December 2023
Source:	CWEA
Article:	California's Water Association Applaud Historic Approval of Direct Potable Reuse Regulations
Date:	December 27, 2023
Source:	Yale Environment 360
Article:	Beyond the Yuck Factor: Cities Turn to 'Extreme' Water Recycling
Date:	December 19, 2023
Source:	Associated Press
Article:	Regulators OK rules for turning wastewater into drinking water
Habitat Restoration	
Date:	January 3, 2024
Source:	Ceres Courrier
Article:	TID Joins effort to restore river salmon habitat
Date:	January 2, 2024
Source:	MyMotherLode.com
Article:	\$80-Million For Tuolumne River Fish Habitat Restoration
Miscellaneous:	
Date:	December 20, 2023
Source:	SF Gate

The 'exodus' has ended in these California counties, data shows



January 11, 2024

Via email

Steven Ritchie Assistant General Manager, Water Enterprise San Francisco Public Utilities Commission 525 Golden Gate Avenue, 13th Floor San Francisco, CA 94102

RE: BAWSCA's Review of the SFPUC's FY 2022-23 Annual Report on Water Enterprise-Managed Capital Projects

Dear Mr. Ritchie,

BAWSCA has reviewed the SFPUC's FY 2022-23 Annual Report on Water Enterprise-Managed Capital Projects (Current Annual Report). Based on that review, this letter presents BAWSCA's comments and questions.

Background

As of 2020, the SFPUC has prepared and provided to BAWSCA an "Annual Report" on enterprise-managed projects in compliance with the Section 6.09.I.1 of the Amended and Restated Water Supply Agreement (WSA) which states;

"In each fourth quarter of the fiscal year CIP Quarterly Projects Report, the SFPUC will also address the status of Regional projects in the 10-Year CIP that have an estimated cost of less than \$5 million, noting any such projects that are behind schedule and describing the SFPUC's plan and timeline for either making up the delay or adopting a revised project schedule."

Each year since 2020, BAWSCA has provided comments on the Annual Report, including suggestions to enhance the document in future years. The information shared in the Annual Report details work on small projects, generally less than \$5M in cost, which are not tracked in the Water Enterprise (Regional) and Hetch Hetchy (Water and Joint) Quarterly Reports. Tracking these projects is important to both BAWSCA and the SFPUC because they represent about 25% of the Regional Water Enterprise (WE) CIP and Programmatic budgets, and about 20% of the Hetch Hetchy Water (HH) CIP budget.

Format Changes Included in the Current Annual Report Provide Helpful Information

The Current Annual Report incorporates format changes that BAWSCA suggested in its review of the FY 2021-22 Annual Report. These changes provide useful information that assists in BAWSCA's review of the work documented:

 Section 4 – Project List, Pages 5-6. It is helpful that the SFPUC has added an asterisk to denote new projects since the prior Annual Report. Steven Ritchie January 11, 2024 Page 2 of 6

- BAWSCA appreciates that the SFPUC has added a financial status table at the beginning of each asset category section for the Water Enterprise CIP Divisions of Water Supply & Treatment and Natural Resources & Lands Management to show actual expenditures relative to the budget. This replaces the budget status information that was provided with the individual project status sheets in the prior Annual Report. The Hetch Hetchy Enterprise asset category sections continue to provide the financial reporting status on the individual project status sheets as in the prior Annual Report.
- To offer a similar level of detail as with previous reporting, it is suggested that two columns be added to the Water Enterprise financial summary sheets to report out actual expenditures in the two prior reporting years.
- In cases where the available balance figure is negative (implying an expenditure overrun relative to the Project-to-Date (PTD) budget) a footnote should be provided to explain how this deficit is addressed (e.g., reallocation from unspent funds at the same authority level).

Suggestions, Questions, and Minor Corrections on Content Provided in the Current Annual Report

BAWSCA has reviewed the Current Annual Report and identified select places where additional information is needed to present a complete picture of the work performed. BAWSCA understands that the Current Annual Report is final, and therefore asks that a response letter be provided by the SPFUC that provides the information requested, posed in the "questions" below, or a response as to why that information is not available. BAWSCA is open to meeting with SFPUC staff to go over these questions as well.

Suggestions:

- <u>Section 2 Financial Notes</u> In future Annual Reports, this section could present a summary of financial information at the category level of reporting, such as a bar chart with expenditures in the reporting year and another one with expenditures in the prior reporting year. This would illustrate where the effort was made in the reporting year and how that may have shifted from the prior year. This comment was made by BAWSCA as part of its review of the FY 2021-22 Annual Report and acknowledged by the SFPUC in the Addendum to the current report. It is repeated here as it was noted as under consideration for incorporating into future reports.
- 2. <u>Financial Summary Sheets</u> To offer a similar level of detail as with previous reporting, it is suggested that two columns be added to the Water Enterprise financial summary sheets to report out actual expenditures in the two prior reporting years.
- 3. <u>Financial Summary Sheets</u> In cases where the available balance figure is negative (implying an expenditure overrun relative to the project-to-date budget), a footnote should be provided to explain how this deficit is addressed (e.g., reallocation from unspent funds at the same authority level).

Steven Ritchie January 11, 2024 Page 3 of 6

Questions and Comments:

- <u>Page 9. On-line Water Quality Sampling</u> The FY 2022-23 Activity Section notes that there is insufficient staffing to maintain and calibrate the analyzers to the manufacturer's specifications. Is the data from the analyzers reliable enough to be of use to SFPUC if calibrations are not conducted as recommended? What is the scope of the programmatic study by AECOM?
- 2. <u>Page 10. East Bay Field R&R</u> Was construction WD-2871 completed in November 2023 as noted in the FY22-23 Activity Section?
- 3. <u>Page 15. Sunol Chloramination Facility</u> Will the project be advertised as scheduled in January 2024? Is the engineer's cost estimate for the project within the remaining budget?
- 4. <u>Page 20. Regional Cross Connection</u> It appears that this project will be complete in late 2025 with completion of all mitigations. What has been the typical mitigation? What is the estimated cost to complete this work?
- 5. <u>Page 23. Water Metering Upgrade R&R</u> This continuous project will be removed after FY 2023-24. What program will fund future meter equipment repair and replacement?
- 6. <u>Page 31. Dam Condition Assessments and Related Studies</u> This project goes beyond studies and includes routine maintenance such as vegetation control, rodent control, corrosion repair, and concrete repair, etc. Should this be part of a Dam R&R program?
- 7. <u>Page 37. Radio Communication</u> The narrative under future work to be performed notes that #10015119 and #10015120 are being consolidated under this project and will include R&R of associated equipment and materials. Does this consolidation mean that the program type classification will be changed from "Project" to "Continuous"?
- 8. <u>Page 47. Millbrae Yard Security Upgrade</u> Will the upgrades to be completed in December 2025 be replaced when the Millbrae Lab and Admin Buildings are constructed?
- Page 52. Watershed and ROW Protection Land Acquisition The table on Page 51 notes that about \$234,000 was spent in 2022-23 and yet the description does not indicate any significant work conducted in the period. Was this an oversight?
- 10. <u>Page 53. Sunol Native Plant Nursery</u> Update the description to note that the permanent facility was constructed. Also, please define what this continuous project is expected to fund. Future work includes "growing plants". Is this project intended to fund operations and maintenance of the Nursery?

- 11. <u>Page 55. Watershed and ROW Infrastructure (Programmatic)</u> Financial data for this program does not appear on the Watershed & Lands Management financial summary table. Financial data has been provided in prior Annual Reports. Was this an oversight?
- 12. <u>Page 58.</u> Peninsula Watershed Structures The report indicates no work was conducted in FY22-23 and yet costs in the table on page 51 shows \$741,624 spent. Was this an oversight?
- 13. <u>Page 64. Long-Term Monitoring and Permitting (Programmatic)</u> Financial data for this program does not appear on the Long-Term Monitoring and Permitting program financial summary table. Does the financial summary table aggregate the data for all Long-Term Monitoring and Permitting programs?
- 14. <u>Page 66. Natural Resources Planning</u> Financial data for this program does not appear on the Long-Term Monitoring and Permitting program financial summary table. Does the financial summary table aggregate the data for all Long-Term Monitoring and Permitting programs?
- 15. <u>Page 89. R&R SJPL Life Extension Program</u> The Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?
- 16. <u>Page 92. 2023 January Winter Storm Water</u> There is no budget shown for this project in FY 2023-24. The project description notes how the FY 2022-23 work was funded from existing projects. How are the planned activities funded? Was there sufficient funding from the initial allocation to fund all future activity?
- 17. <u>Page 95. R&R Power Distribution Line High Risk Fire Reduction</u> The Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?
- 18. <u>Page 97. R&R Power Distribution</u> The Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?
- 19. <u>Page 101. R&R Hetch Hetchy Facilities</u> The Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?

- 20. <u>Page 105. R&R Dam Condition Assessment & Rehab</u> The Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?
- 21. <u>Page 108. R&R Roads & Bridges</u> The Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?
- 22. <u>Page 110. R&R Facilities Security Project</u> The FY 2022-23 Activity table is identical to the one presented in the prior Annual Report. No expected completion dates have been updated even though two subprojects with planned completion dates during FY 2022-23 do not indicate the work has been completed. What are the current expected completion dates? Also, the Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?
- 23. <u>Page 113. R&R Communications Systems</u> The Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?
- 24. <u>Page 114. R&R HH Reservoir Boat Ramp & Access Improvements</u> The Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?
- 25. <u>Page 115. R&R Moccasin Old Powerhouse Hazard Mitigation</u> The Capital Plan Information provided is identical to the data provided in the same categories as in the prior Annual Report. The category headers have been updated to reflect the current reporting cycle, but the financial information is unchanged. Is this the current financial data?
- 26. <u>Page 117. 2023 January Winter Storm Joint</u> There is no budget shown for this project in FY 2023-24. The project description notes how the FY 2022-23 work was funded from existing projects. How are the planned activities funded? Was there sufficient funding from the initial allocation to fund all future activity?
- 27. Page 119. 2023 March Winter Storm Joint There is no budget shown for this project in FY 23-24. The project description notes how the FY 22-23 work was funded from existing projects. How are the planned activities funded? Was there sufficient funding from the initial allocation to fund all future activity?

Steven Ritchie January 11, 2024 Page 6 of 6

Minor Corrections:

 Page 58. Peninsula Watershed Structures – There appears to be an inconsistency regarding Project Code Number. The Watershed & Lands Management financial summary table lists the number as #10015106. The project data sheet lists the number as #10015105. The project list on page 6 lists the number as #10015102. This appears to be either an error and an inconsistency of some sort.

In closing, BAWSCA commends the SFPUC for the work and effort required to produce the Current Annual Report. It represents continuous improvements over the prior year's Annual Report, and the details provided serve as a useful way for BAWSCA to track the progress of the work. Suggestions provided by BAWSCA in this letter are offered with the intention of making future Annual Reports an even better means to track the progress of the work, as well as an easier way for SFPUC staff to provide the necessary input to those who are charged with the report preparation.

BAWSCA anticipates that the SFPUC will want to meet to discuss the contents of this letter. BAWSCA sees such a meeting as advantageous.

Thank you for the opportunity to review and comment on the Current Annual Report. If you would like to discuss this letter prior to scheduling any follow-up meetings and/or development of a response letter, please contact me at 510-944-4392, or email me at <u>tfrancis@bawsca.org</u>.

Sincerely,

Thomas B. Francis Water Resources Manager

TF:

cc: Stephen Robinson, SFPUC, Chief Engineer / Assistant General Manager of Infrastructure Katie Miller, SFPUC, Director, Water Capital Projects and Programs Alison Kastama, SFPUC, BAWSCA Liaison BAWSCA Water Management Representatives Allison Schutte, Hanson Bridgett, LLP, Legal Counsel From: Los Vaqueros Reservoir JPA <info+losvaquerosjpa.com@ccsend.com> Sent: Friday, December 29, 2023 1:34 PM Subject: Los Vaqueros Reservoir Joint Powers Authority Update

December 29, 2023

Los Vaqueros Reservoir Joint Powers Authority Update



UPDATE ON MULTIPARTY COST SHARE AGREEMENT AND PROJECT SCHEDULE

Amendment No. 5 to the Multiparty Cost Share Agreement (MPA) was fully executed and invoices for half of the total cost share have been sent to each of the JPA Member Agencies. The total cost share for each JPA Member Agency, excluding Grassland Water District, is \$1.239 million for FY24.

A comprehensive near-term project schedule has been developed and is under review with the JPA Member Agencies. The schedule reflects a potential delay in project implementation, due to the additional time required to enter into project agreements and obtain full funding approval from the California Water Commission (CWC). In anticipation of the projected schedule delay, the JPA is working to ensure sufficient interim funding for project activities.

The following chart provides an overview of the MPA expenditures through November 30, 2023, as well as in-kind services, funds received, outstanding receivables, and cash on hand.



Multi-Party Agreement Summary To Date

DECEMBER BOARD OF DIRECTORS MEETING RECAP

On December 13, the JPA Board of Directors met in person at Zone 7 Water Agency. Action items included approval of proposed amendments to the JPA's Conflict of Interest Code. The Board also received updates on the plan of finance, program management, budget, JPA agreement amendments, and capital preservation strategy. The next JPA Board Meeting is scheduled for January 10 at Zone 7 Water Agency. In accordance with the Brown Act, the meeting agenda packet will be posted on the <u>JPA website</u> in advance of the meeting.

SUBMISSION AND REVIEW CONTINUE FOR PROJECT PERMITTING

U.S. Fish and Wildlife Service supervisory staff continue reviewing the draft Biological Opinion for construction activities.

Reclamation continues preparing a response to comments received by the State Historic Preservation Officer on the Memorandum of Agreement required under Section 106 of the National Historic Preservation Act. Additionally, Reclamation is continuing to define the timing and path forward for the Record of Decision.

California Department of Fish and Wildlife (CDFW) continues work on the Incidental Take Permit (ITP) for construction and the Lake and Streambed Alteration Agreement for construction activities. Contra Costa Water District (CCWD) submitted a counterproposal to the administrative draft ITP for operations, addressing CCWD and JPA Member Agency concerns related to the term, monitoring requirements, and mitigation measures. CDFW is considering the counterproposal and anticipates issuing a second administrative draft in the coming weeks.

The U.S. Army Corps of Engineers continues to work on the Section 404 permit and associated Decision Document.

JPA AND CCWD CONTINUE TO COORDINATE ON DESIGN AND ENGINEERING EFFORTS

An updated work plan is under development to preserve capital funding until the end of calendar year 2024 to align with anticipated delay of agreements and California Water Commission approval. Preliminary information from CCWD on the engineering, design, and permitting portions of the capital preservation strategy is expected to be shared with the JPA in early January.

The dam raise design is near completion and associated risk register is in development. A final package addressing all California Division of Safety of Dams (DSOD) comments on the drawings and technical specifications of the dam design was submitted to DSOD for approval. CCWD stated a revised dam inundation study that addresses DSOD comments will be submitted for DSOD's records in December 2023.

Pumping Plant 1 design is at 30-percent completion. A technical memorandum outlining the recommendation to encase the Rock Slough Fish Screen afterbay to prevent aquatic vegetation growth and protect the new pump station is expected to be submitted to the JPA for review by January. This is a cost-saving measure relative to the recent cost estimate update.

The initial draft of the preliminary design report and 30-percent drawings for the Transfer-Bethany Pipeline (TBPL) is underway. The draft geotechnical report for the first phase of geotechnical investigations completed in September is being drafted. A work plan is in development outlining the process for gaining approval from landowners to acquire the TBPL right-of-way through areas under conservation protections.

Implementation of the Project Management Information System (PMIS) is underway. With design and system configuration taking place for the various projects, facilities, and budgets. The PMIS will support cost and schedule controls and reporting.

UPCOMING MEETINGS

January 10 – 9:30 a.m. JPA Board Meeting (Zone 7 Water Agency)

January 18 – 10 a.m. JPA Operations & Engineering Committee Meeting

January 22 – 10 a.m. JPA Finance Committee Meeting



ADDITIONAL PROJECT INFORMATION

losvaquerosjpa.com ccwater.com/lvstudies

Los Vaqueros Reservoir Joint Powers Authority | 1331 Concord Ave., Concord, CA 94520

<u>Unsubscribe nsandkulla@bawsca.org</u> <u>Update Profile | Constant Contact Data Notice</u> Sent by info@losvaquerosjpa.com powered by



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News Releases Published: January 2, 2024

DWR staff conduct the first media snow survey of the 2024 season

First Snow Survey of the Season Finds Below Average Conditions for California

at Phillips Station in the Sierra Nevada on Jan. 2, 2024.

With Above Average Reservoir Levels, El Niño Conditions, and a Dry Start to the Water Year, California is Preparing for Flood or Dry Conditions in the Months Ahead

SACRAMENTO, Calif. - The Department of Water Resources (DWR) today conducted the first snow survey of the season at Phillips Station. The manual survey recorded 7.5 inches of snow depth and a snow water equivalent of 3 inches, which

is 30 percent of average for this location. The snow water equivalent measures the amount of water contained in the snowpack and is a key component of DWR's water supply forecast. Statewide the snowpack is 25 percent of average for this date.

After one of the largest snowpacks on record last season, the start of this water year has been dry despite some recent storms in the last weeks of December that provided a small boost in the snowpack. While state reservoirs are still above average for this time of year and strong El Niño conditions are present in the Pacific Ocean, the outlook for the rest of the winter remains highly uncertain.

"California saw firsthand last year how historic drought conditions can quickly give way to unprecedented, dangerous flooding," said DWR Director Karla Nemeth. "Although El Niño does not guarantee an above average water year, California is preparing for the possibility of more extreme storms while increasing our climate resilience for the next drought."

DWR's electronic readings from 130 stations placed throughout the state indicate that the statewide snowpack's snow water equivalent is 2.5 inches, or 25 percent of average for this date, compared to 185 percent on this date last year.



"While we are glad the recent storms brought a small boost to the snowpack, the dry fall and below average conditions today shows how fast water conditions can change," said DWR's Snow Surveys and Water Supply Forecasting Unit Manager Sean de Guzman. "It's still far too early to say what kind of water year we will have, and it will be important for Californians to pay attention to their forecasts and conserve water, rain or shine."

Last year, California experienced climate whiplash when the driest three year-period on record ended with extreme storm events in January and March that caused damage and flooding across the state. These extreme weather events highlight the need for all Californians to prepare for flood risk. DWR is working with tribal, federal, state, and local partners to provide flood resources and training to communities across the state.

The State-Federal Flood Operations Center (FOC) has pre-positioned flood fight materials at more locations across the state and is starting this winter with more supplies on hand, including 2.2 million more sandbags. This fall, DWR coordinated pre-flood season meetings with emergency response agencies across the state and organized 38 flood-fight trainings for city, county, state and tribal agencies to prepare for possible local emergencies.

To prepare for flooding, all Californians should follow three basic steps:

- Be aware of your risk know whether your home is downslope of a burn area or in a floodplain; pay attention to weather forecasts; listen to local authorities.
- Be prepared always have an emergency evacuation kit ready; be prepared to evacuate early; have a plan for where you will go in an emergency.
- Take action subscribe to your local emergency providers to get updated information. If local authorities issue an evacuation order, do not delay, follow local guidelines for evacuation and never attempt to drive through a flooded roadway.

One year ago, the January survey at the Phillips location showed a water content of 177 percent of average and was followed by a series of damaging atmospheric river storms in January and March that caused flood impacts across the state and produced one of the largest snowpacks on record.

In addition to deploying resources including over 1.9 million sandbags across the state last year, the FOC coordinated a joint state, federal and local response to snowmelt-driven flooding concerns and prepared for the historic snowmelt by providing hydraulic and hydrologic modeling and snowmelt forecasts that allowed agencies to deploy resources, reinforce levees and protect communities.

On average, the Sierra snowpack supplies about 30 percent of California's water needs. Its natural ability to store water is why the Sierra snowpack is often referred to as California's "frozen reservoir." Data from these snow surveys and forecasts produced by DWR's Snow Surveys and Water Supply Forecasting Unit are important factors in determining how DWR manages the state's water resources. Due to last year's above average conditions and historic



snowpack, a total of 3.5 million acre-feet of water was captured in State Water Project (SWP) reservoirs. Lake Oroville, the SWP's largest reservoir, is currently at 130 percent of average to date and state water managers are prepared to capture and store as much water as possible.

DWR conducts five media-oriented snow surveys at Phillips Station each winter near the first of each month, January through April and, if necessary, May. The next survey is tentatively scheduled for February 1.

For California's current hydrological conditions, visit https://cww.water.ca.gov

For more information on finding your flood risk, visit https://myhazards.caloes.ca.gov/

For information on obtaining flood insurance, visit <u>https://www.floodsmart.gov/</u>

For information on how you can prepare your household for flood emergencies, visit <u>https://www.ready.gov/kit</u>

Additional Resources

- <u>Video of today's Phillips survey</u>
- <u>Digital photos</u> of today's Phillips survey
- <u>B-roll</u> of today's Phillips survey
- <u>Snowpack readings (View readings for current regional snowpack and historical snowpack comparison</u>)
- <u>Precipitation data (View current California Data Exchange Center charts for the Northern Sierra</u> <u>8-station index</u> for updated rainfall readings in the critical northern portion of the state, as well as the <u>San Joaquin 5-station index</u> and <u>Tulare Basin 6-station index</u>)

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Contact:

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

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What Are Snow Droughts and Is Climate Change Making Them Worse?

Bloomberg | January 10, 2024 | Eric Roston and Brian K Sullivan



A snowboarder threads through patches of dirt in Olympic Valley, California.Photographer: Max Whittaker/Getty Images

Scientists distinguish among an expanding variety of droughts. There are droughts when it doesn't rain. There are droughts when soil is too dry, when rivers and groundwater levels fall, and when water storage can't meet society's needs. Increasingly, researchers also are talking about snow droughts, which a new study in the journal Nature links to climate change. There are also connections between snow droughts and wildfires.

1. Is "snow drought" a new term?

The term is old, with use peaking in the late 1970s, according to the Google Books Ngram viewer. It bubbled up again during the 2010s as regions that depend on snowpack for water saw their bounties thin, and it began to climb in 2017. That's when three US researchers wrote an essay titled "Defining Snow Drought and Why It Matters," which kicked off a global effort to document trends around the world and explain them.

2. Why is snow important?

In the Northern Hemisphere, which is home to almost 9 out of 10 people in the world, 80% of the population depends on snow-fed rivers that have passed a climate tipping point, after which snow drought may accelerate, according to the study published in Nature Jan. 10. These rivers includes the Mississippi, Colorado, Volga and Danube. More than 2.1 billion people live downstream from mountains that collect and store snow all winter, the study estimated. That snowpack melts in spring and summer, becoming a significant water source for agriculture, industry and consumption.

California, for example, estimates that the land irrigated by its State Water Project, which conveys meltwater from the snowy north of the state to the populated south, produces \$19 billion in agricultural products annually. New York State's Catskill Mountains collect snow that feeds 1.2 billion gallons of water delivered to New York City every day.

3. Where is snow drought a problem?

Snow drought hot spots include northern Italy, Afghanistan and parts of Central Asia, northeastern China and the Andes. California and the US southwest since 2000 have seen their worst megadrought in at least 1,200 years, perpetuated in large part because it's been either too warm or too dry for snow to collect across the Sierra Nevada mountain range during the winter.

4. What causes snow drought?

Two circumstances can give rise to poor snowpack. Sometimes, a winter is just dry. Other times, the air is too warm for snow. Precipitation then falls as rain, in extreme cases causing winter flooding and overfilling reservoirs. As the world warms, the snow line moves up mountains so only higher elevations retain water as snow. Temporary natural phenomena, such as El Niño, can push storm tracks south across North America, dropping precipitation outside regions that rely on it.

5. What's the role of climate change?

The paper in Nature for the first time identifies greenhouse gas pollution as a contributor to Northern Hemisphere snow drought over the last 40 years. The paper finds that the southwestern and northeastern US and much of Europe saw a 10% to 20% per decade drop in snow, as measured by a metric preferred by scientists — the water equivalent of snow. Some continental interiors, such as the central US, have seen an uptick in snow. The paper concludes that climate change has reduced snowpack in mid-latitudes by about 4% and increased it at higher latitudes by about 2.5% per decade since 1981. The researchers predict that as parts of the Northern Hemisphere warm, past a winter average of -8C (17F), snow drought is likely to accelerate. They warn of "rapidly emerging water security risks."

6. What is snow's relationship to wildfires?

Snow helps end or delay the start of wildfire season. A snow drought across much of Canada in 2023 left the land parched when spring arrived. The lack of snow cover also led to an early start to the wildfire season there. The year's wildfires were the most destructive Canada has recorded, engulfing 18 million hectares (44.5 million acres) of land and creating unhealthy smoke that spread to the US. The relationship also works the other way around in that fires can worsen drought by causing snowpack to melt more quickly than it would otherwise. The major determinant of snow melt, counterintuitively, isn't temperature but color. The cleaner snow is, the more sunlight it reflects, reducing the melt rate. When wildfires deposit soot and ash particles on snow, they darken its color so that it attracts more sunlight and melts faster. Also, burned out forests no longer have a canopy that blocks sunlight. Light and heat reach the surface directly and also accelerate melt.

El Niño not living up to billing in California so far

KTLA | January 8, 2024 | Marc Sternfield

El Niño is here, but California isn't seeing the impact, at least not yet.

Joe Sirard, a meteorologist with the National Weather Service office in Los Angeles, says precipitation for the current water year is generally lagging behind averages.

"Los Angeles, San Diego and San Francisco are all below normal in rainfall," Sirard told KTLA on Monday.

El Niño is the warming of surface water temperatures along the equator, which can mean heavier-thanaverage rainfall at lower elevations and above-average snowfall in the Sierra Nevada mountains.

In a 90-day outlook released in November, the government's climatologists said there was a 40% to 50% chance of above-normal moisture for all of California through February.

Sirard says that has not materialized yet, except in isolated areas.

"We've had a lot of rain along parts of the Central Coast, especially in San Luis Obispo and Paso Robles ... but the large coastal cities have been drier."

Sirard says California is currently seeing a northwestern air flow that is bringing cooler temperatures but very little precipitation, and the short-term outlook shows no significant change.



NOAA's 90-day precipitation outlook. December 2023. (NOAA)

In the current water year, which started on October 1 and runs through September 30, downtown Los Angeles has received 3.18 inches of rain, which is 79% of the average, according to the National Oceanic and Atmospheric Administration (NOAA). San Francisco has seen 5.51 inches of rain, or 75% of average. San Diego is below 50%.

At this point in 2023, California was well on its way to one of its wettest and snowiest water years on record as one atmospheric river after another drenched the state with torrential rain and buried the mountains under historic levels of snow.

NOAA's latest outlook shows a more limited area of California that is expected to see above-normal precipitation through April.

Sirard says there is still plenty of time for El Niño to deliver in California, not only this winter but through the remainder of the water year.

"We don't have a big moisture feed, like an atmospheric river, coming into our area right now," said Sirard. "But the pattern will likely fluctuate and all it takes is one week of heavy rain to put us above normal."

###

How the 'Snow Drought' Will Impact California Reservoirs

Better Planet | January 04, 2024 | Anna Skinner

Despite a slew of storms that have recently passed through California, below-average snowpack is fueling worries that the state's water crisis might return.

California battled years of drought before an abnormally wet winter last year drastically improved the state's water supply. More than a dozen atmospheric rivers laden with rain and snow pummeled the West Coast, alleviating much of California's drought and supplementing snowpack levels in the mountains to more than double the historical average in some places. When the snow melted in the spring and summer, the runoff greatly added to some of California's most impacted reservoirs, making for an impressive recovery.

Now, most of the state's largest reservoirs are near their historical average if not exceeding it. However, experts warned last winter that one wet season wasn't enough to replenish the state's water reserves, and a lack of snow this season—also known as a snow drought—is raising concerns that the crisis could return.



The snow level on a Sierra Nevada mountain peak lacks depth near the Phillips Station meadow where the California Department of Water Resources conducted its first media snow survey of the 2024 season. Snowpack is below average for this time of year. CALIFORNIA DEPARTMENT OF WATER RESOURCES

According to data from the California Department of Water Resources, most of the state's reservoirs aren't at capacity, but their water levels are at or above the historical average. For example, at 93

percent capacity, Diamond Valley Lake in Southern California is at 130 percent historical average. Pine Flat Lake is only 61 percent of capacity but is 175 percent of its historical average.

In Northern California, Lake Shasta also is over 100 percent of its historical average at 69 percent capacity, a drastic improvement from late November 2022 when it was at 31 percent.

It remains unclear how the reservoirs will respond to the limited snowpack so far this year. Despite this season's winter storms, snowfall in the Sierra Nevada mountains is below normal. When state officials conducted a snow survey throughout the mountain range earlier this week, numbers fell far below average in each of the locations studied.

"In some cases, there is literally no measurable snow on the ground at all," said climate scientist Daniel Swain, a UCLA professor who spoke during a press briefing on Tuesday, according to a New York Times report. "What this means is that right now, as of today, snowpack is at or below all-time record-low numbers for the beginning of January, and I know that's pretty alarming."

When reached for comment, the California Department of Water Resources directed Newsweek to a press release that included the snow survey data. In the northern Sierra mountains, snowpack was only 38 percent of its average. The levels turned even more dire southward. Snowpack in the central Sierra Nevada mountains was only 34 percent of average, and only 27 percent in the southern peaks.

Despite the healthy condition of most California reservoirs, the numbers are concerning, as the state relies on snowmelt in the warmer months to supplement a third of its water supply, the press release said. Last March, when the California Department of Water Resources surveyed the southern Sierra Mountains, they were at 257 percent of the average snowpack.

There is still time for the state to recover from its slow start and meet snowpack averages this winter. However, warm, wet weather spurred by El Niño's climate pattern is hampering those hopes. El Niño is predicted to bring above-average precipitation to the southern U.S. this year, including parts of California, but that precipitation will mostly come in the form of rain, given the above-average winter temperatures.

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California snowpack lowest in decade despite hope with December storms

First survey of season shows snow at 25% of historical average, with brown patches of vegetation across Sierra Nevada

The Guardian | January 4, 2024 | Gabrielle Canon



So far the snow levels are lacking depth, with a number of bare spots visible. Photograph: Fred Greaves/California department of water resources

In the first snow survey of the season, California came up short – just 25% of the historical average – despite a spate of strong storms that caused flooding and landslides along the coast in late December.

On Tuesday, officials measured a depth of just 7.5in at a monitoring station in the Sierra Nevada mountain range east of Sacramento, where brown patches of vegetation could be seen poking through the shallow snow. Statewide, the amount is the lowest logged for this time of year in the last decade.

This year's survey stands in sharp contrast to last year's, when a parade of storms caused by "atmospheric rivers" coincided with cold weather, producing one of the largest snowpacks in history. For 2023's first survey the banks stood at 55.5in, roughly 177% of average.

Most of California's precipitation falls between December and March with peak snow amounts accumulated by 1 April, so there's still time for the state to catch up. "We often get slow starts to our water year," said the state climatologist, Michael Anderson, who added that the next

measurement, scheduled tentatively for 1 February, will paint a clearer picture of how the year will play out.

Storms are indeed already in the forecast for the coming weeks. But even if this winter grows wetter, it's also expected to be warmer. That's not great news for the snowpack, or California's water managers, who are already navigating more severe swings between wet and dry.

California's climate has long produced boom-and-bust cycles when it comes to water, but the climate crisis is turning up the heat and increasing volatility. Policies and infrastructure have struggled to keep up with changes exacerbated by the thirsty state's overuse. Reservoir levels are now robust, but heavy rains without snow could cause destructive flooding in the short term with less water to go around during the hot, dry months to come.

Snow is incredibly important to California's water supply, acting as a kind of water savings account by slowly flowing into streams, soils and reservoirs in the drier seasons. The snowpack in the Sierra provides, on average, roughly 30% of California's water supply, but that could change in the coming decades as snow becomes more scarce.

"Our snow season is shortening," said Andrew Schwartz, the lead scientist of the UC Berkeley snow lab, a field research station in the Sierra Nevada. Snow used to be common in October and May, buffer months at the edges of autumn and spring that are now producing mostly rainfall, he said. Even in the middle of winter, warm rainstorms are increasingly creeping in and eating through snowbanks.

That's why – without a helpful surge in cold weather that coincides with more precipitation – it may be less likely that California will accumulate even average amounts of snow this year. The climate scientist Daniel Swain isn't optimistic.

Calling the current snowpack levels "absolutely abysmal" during an online discussion about the survey broadcast on Tuesday, he warned that California may be in for a "snow drought" this year even with more storms in the forecast.

"In some places there is literally no measurable snow on the ground at all," he said, noting that these are record-low numbers for January. "Even if we end up seeing wetter storm cycles later this winter, which I still think is likely, that doesn't necessarily mean we are going to catch up to the average snowpack."

Residents, meanwhile, are reeling from climate whiplash as state officials have warned them to prepare for floods this winter even as they call for more water conservation. Prior to the extreme storms of 2023, California saw its driest three-year period on record, and the hydrological coin will flip again.

The big question for California – and for its water managers – is how to handle a future with warm, wet winters, and ensure that water supplies don't surge or grow too scarce.

"The water infrastructure we have is going to be increasingly out of alignment with the climate that we have," Swain said. "The real challenge is how to manage this increase in hydroclimate whiplash and the increasingly wide swings between drought and flood. Right now we don't have a system that's able to accommodate that."

Ellen Hanak, a water expert with the Public Policy Institute of California, said the state has made strides in recent years, but that there's more work to do.

Water managers were not positioned to take full advantage of all the rain that fell during 2023's cold, wet winter. An analysis done by Hanak and her colleagues found there was a lack of sufficient surface storage, poor coordination, limited infrastructure to move water, and a complicated maze of permitting requirements that hampered efforts to adequately save the extra water – an amount that could have supplied 1.2m typical California households for a full year.

There were some improvements implemented last year, though, that could put the state in a better position when storms dump rain instead of snow. Projects that divert excesses into underground basins – including over-tapped ones in California's Central Valley agricultural hub – helped capture roughly 3.8m acre-feet last year according to the department of water resources. Governor Gavin Newsom also issued a series of executive orders that streamline the regulatory process for diverting water, enabling more nimble action when flood threats are high.

"I think folks are going to be more ready this year to deal with big storms," Hanak said. "That said, I think we are probably going to still leave some water on the table – especially if we aren't lucky with the temperature ... It is about being ready to pivot when you need to."

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Sierra Nevada snowpack at lowest level in 10 years: What it means for California's water supply

Reversal from last year's wet winter has left the Sierra snowpack at just 25% of normal for early January

Mercury News | January 3, 2024 | Paul Rogers



Officials from the California Department of Water Resources conduct a snow survey on Tuesday Jan. 2, 2024 at Phillips Station, along Highway 50 near Sierra-at-Tahoe in the Sierra Nevada. After a dry winter so far, there wasn't much to measure. (Photo: Andrew Nixon / California Department of Water Resources)

California's statewide Sierra Nevada snowpack — the source of nearly one-third of the state's water supply — is at its lowest level in a decade, a major turnaround from last year when huge storms ended a three-year drought and buried ski resorts in massive amounts of snow.

On Tuesday, the snowpack was just 25% of its historical average for Jan. 2. A year ago on the same date, it was a staggering 185% of normal. The last time there was less snow at the beginning of a new year was 2014 when it stood at just 19%.

The lack of snow so far this year is due to fewer big storms hitting the state than normal. And when storms have come, they have been warmer, depositing snow mostly at higher elevations.

But the meager totals so far across California's pre-eminent mountain range are not a cause to panic, experts say.

Not only are there three months left in the winter season, which typically ends in early April, but last year's soaking winter filled reservoirs across the state. That "money in the bank" means chances are low that there will be significant urban water restrictions across the state this summer, even if the winter ends with below-average snow and rain.

"The reservoirs are in great shape," said Jay Lund, vice director of the Center for Watershed Sciences at UC Davis. "Almost every reservoir in the state is near or well above its historical average for this time of year. We can sleep better knowing there is water in the reservoirs."



Sean de Guzman, snow survey manager for the California Department of Water Resources, right, and Anthony Burdock, a DWR engineer, examine the aluminum snow depth survey pole on Tuesday Jan. 2, 2024 at Phillips Station in the Sierra Nevada. (Photo: Andrew Nixon / California Department of Water Resources)

On Monday, Shasta Lake, California's largest reservoir, was 69% full, or 116% of its historic average for New Year's Day. Similarly, Oroville in Butte County, the state's second-largest reservoir, was 68% full, or 130% of its historical average. To the south, Diamond Valley in Riverside County, a key water supply for Los Angeles, was 93% full.

Heading into the winter, many water managers were concerned that if huge atmospheric river storms pounded the state in November and December, that could have caused major flooding because there was less space left in the big reservoirs than in most years to catch runoff.

On Tuesday, officials from the state Department of Water Resources headed into the Sierra Nevada to take a manual snow reading as part of a monthly news conference at Phillips Station in El Dorado County, along Highway 50.

"While we are glad the recent storms brought a small boost to the snowpack, the dry fall and below-average conditions today show how fast water conditions can change," said Sean de Guzman, manager of snow surveys and water-supply forecasting for the state Department of Water Resources. "It's still far too early to say what kind of water year we will have, and it will be important for Californians to pay attention to their forecasts and conserve water, rain or shine."

The statewide totals Tuesday come from 130 automated snow sensors spread across the Sierra Nevada range.

Two storms are forecast to bring new snow to the Sierra on Wednesday and Saturday. Each is expected to deliver up to 1 foot to elevations above 5,000 feet, according to the National Weather Service in Sacramento. That's not enough to get the Sierra back to normal, but it will help.

"Finally there is some good cold air coming in this week," said Mike Anderson, state climatologist with the Department of Water Resources.

Large storms bringing many more feet of snow could still arrive in January, February and March. But with each passing dry day, the odds increase that this winter will end below normal.

"Because the first wet season months have been drier than average," Lund said, "we are less likely to have a very wet year overall and more likely to have a drier year overall."

California cities have fared better in the precipitation department this winter than mountain areas have.

Through Monday night, San Francisco had received 6.68 inches of rain since Oct. 1 - 79% of its historic average. With 3.43 inches, San Jose was at 83% of normal. And with 3.18, Los Angeles was at 80%.

As the climate continues to warm, California's winters have become less predictable, swinging from very dry to very wet, experts say. Since the 1970s, more precipitation is falling as rain in the Sierra, rather than snow, which makes capturing water more difficult than if much of it was frozen for months and melting gradually. In recent decades, the trend has been particularly pronounced in October, November and May, said Andrew Schwartz, lead scientist at the UC Berkeley Central Sierra Snow Laboratory.

"We are seeing a shortening of the (snow) season from either end," he said, "and a lot more rain in the winter."

One area already feeling the impact of this year's low snowpack is California's ski industry. Ski resorts around Lake Tahoe opened in December, some of them several weeks late. But without much natural snow, they have had to rely heavily on snowmaking machines.

SNOWPACK FAR BELOW NORMAL

The Sierra Nevada snowpack, the source of one-third of California's water supply, is off to a slow start this winter.



"Obviously things have been a little lighter than we would have hoped for. It's been a bit of a challenge," said Mike Reitzell, president of Ski California, an industry association.

Only about half the lifts are open at many Sierra resorts. This weekend, 12 of 20 were open at Northstar, 6 of 12 at Sugar Bowl, 9 of 27 at Heavenly, 9 of 13 at Kirkwood, and 23 of 36 at Palisades.

Reitzell said the industry had its best year in 20 years last year when there was so much snow that some resorts were open into April and May, and the large Palisades resort hosted Fourth of July skiing. Pent-up demand after the COVID pandemic had people flocking to the mountains, and last year's massive Sierra snowpack — 237% of its historical average on April 1 — buried the Tahoe area in snow.

Ski resorts have invested heavily in snow-making equipment in recent years as climate change has made winters less predictable, Reitzell added. As a result, in a dry year as California has seen so far, there is still plenty of good opportunity to ski.

"It's still early in the season for sure," he said. "We've dealt with this before. It's obviously not ideal. But our resorts know how to handle it."

Working inside a nearly 18-foot-deep snow pit at the UC Berkeley Central Sierra Snow Lab, Shaun Joseph, I-r, Claudia Norman, Helena Middleton take measurements of snow temperatures ahead of an atmospheric weather storm, on March 9, 2023 in Soda Springs. (Karl Mondon/Bay Area News Group)



Showing the stark difference between last winter and this winter, Shaun Joseph, I-r, Claudia Norman, and Helena Middleton take measurement inside a nearly 18-foot-deep snow pit at the UC Berkeley Central Sierra Snow Lab, on March 9, 2023 in Soda Springs, Calif. (Karl Mondon/Bay Area News Group)

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California's Proposed Water Conservation Rules Too Stringent and Costly, Analysts Say San Jose Inside | January 5, 2024 | Rachel Becker, CalMatters



Photo courtesy of Valley Water.

California's legislative advisors today lambasted the state's ambitious proposal to regulate urban water conservation, calling the measures costly and difficult to achieve, "in many cases without compelling justifications."

The proposed rules, unveiled in August, call for more than 400 cities and other water suppliers serving about 95% of Californians to meet conservation targets beginning in 2025.

The state Legislative Analyst's Office suggested significant changes to the State Water Resources Control Board's proposal, warning that the regulations would set "such stringent standards for outdoor use that suppliers will not have much 'wiggle room' in complying." They also warn that the added costs will ultimately be borne by customers.

"Whether the benefits of the new rules ultimately will outweigh the costs is unclear," the report says. "These doubts are particularly worrisome given we find that suppliers will face notable challenges complying with these requirements."

The report recommended that lawmakers direct state regulators to "make several of the proposed requirements less stringent (such as the residential outdoor standard), consider how to target state funding to assist lower-income customers, and extend some of the deadlines for suppliers to ensure they can actually achieve the framework's goals."

Water board officials didn't comment on the criticism or recommendations, but spokesperson Edward Ortiz said the report, along with other feedback received from industry and the public, will be considered. He said a new draft of the rules will be released this spring. "With changing weather conditions threatening to reduce the state's water supply 10% by 2040, California is advancing an all-of-the-above strategy to bolster water supplies throughout the state, including conservation," Ortiz said.

Heather Cooley, director of research at the Pacific Institute, a global water think tank, said conservation and efficiency are the cheapest, fastest ways to meet California's water needs as climate change renders supplies more variable and uncertain.

"We have to take real action to ensure we can provide safe, clean, reliable water for California communities," she said. "Retrofitting and taking out old devices, transforming our landscapes, all of those things have a cost. But it's far less than developing new sources of supply."

Mandated by a package of 2018 laws, the intent of the rules is to make conservation "a way of life" in California. The rules, which are two years behind schedule, are expected to be adopted by the water board this summer before taking effect in October.

The rules don't target individuals or businesses, instead setting individualized conservation targets for urban water agencies across the state based on goals for indoor and outdoor water use, leaks and other factors.

By 2035, water providers will collectively need to reduce water use by 14%. The savings would be enough to supply about 1.2 million homes every year, or about 1% of the state's total water use.

The report called this amount "modest," noting that "the agricultural sector uses about four times as much water as the urban sector."

Water agencies and city officials warned state regulators last fall that complying would be costly — roughly \$13.5 billion from 2025 to 2040 for rebates and other efforts to cut residential use. The benefits are anticipated to reach about \$15.6 billion, in large part because suppliers and customers will buy less water.

The Legislative Analyst's report noted that an assessment by a consulting firm commissioned by a water supplier raised questions about those calculations. They noted that customers — particularly low-income households — would likely bear the brunt of rates increased to cover the costs.

"Even if benefits outweigh costs in the long run, whether they merit the amount of work and costs to implement the requirements as currently proposed is uncertain," the report said.

Jay Lund, vice-director of the Center for Watershed Sciences at the University of California, Davis, called the report "an unusually frank assessment."

"Although there is good room for further conservation, this additional State effort seems like it is probably not needed, or at least, need not be as stringent and complicated as it seems. It has been asked, 'Is this juice worth the squeeze?'" he told CalMatters in an email.

During the last three-year severe drought, which ended last year, the Newsom administration set voluntary conservation goals that were largely ineffective. Californians used only about 6% less water from July 2021 through the end of last year compared to 2020, far less than Gov. Gavin Newsom's 15% goal.

Some areas, especially in hot, inland areas of the state, will require more stringent conservation than others under the proposed rules. Inland and eastern California will be required to cut back the most, with the biggest cuts, up to 34%, needed in desert areas, followed by the Tulare Lake region.

Even in the North Coast area, which as a whole is not expected to need to cut back at all to meet the 2035 targets, two large suppliers serving more than 1.6 million customers will nevertheless need to reduce their water use by a quarter.

But increasing conservation in the places that need it most will seem a bargain when inevitable longer and drier droughts occur, said Felicia Marcus, former chair of the water board and now a visiting fellow at Stanford University's Water in the West Program.

"The goal is both to make each locality more resilient to the nightmare curveballs climate change is throwing at us, and to do it in a way that integrates efficiency first and foremost as the most cost and carbon effective measure in the long run," Marcus said.

Sonja Petek, the principal fiscal and policy analyst who authored the report, said the office isn't saying to abandon the conservation regulations, it's just recommending changes to make them more feasible.

"Water conservation is one of the important components of the state's overall water management strategy," she said, citing more severe and prolonged droughts and the need to reduce reliance on overdrafted groundwater basins. "Our concern is that if these regulations were adopted as written, it could lead to a scenario where compliance is not feasible for some water suppliers, so the state might not achieve its ultimate goals.

Assemblymember Laura Friedman, a Democrat from Burbank and an author of the original legislation, said the report "raises some valid concerns with the rulemaking process thus far, however, I have faith in the water board to do its due diligence in implementing the standards that were passed."

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The new chair of the Assembly Water, Parks and Wildlife Committee is a moderate freshman Democrat with a track record on suburban water issues.

POLITICO Pro Q and A: Assemblymember Diane | January 3, 2024 | Camille von Kaenel



Assembly member Diane Papan, D-San Mateo, speaks on a bill before the Assembly at the Capitol in Sacramento, Calif., Thursday, June 1, 2023. Diane Papan told POLITICO in an interview that she's planning to focus on helping local water districts respond to climate change, and signaled less of a focus on water rights reform than her predecessor. Rich Pedroncelli/AP

SACRAMENTO, Calif. — Assemblymember Diane Papan (D-San Mateo) is a freshman, but she's no stranger to Sacramento— or the hot-button water issues she began overseeing in November as the new chair of the Assembly Water, Parks and Wildlife Committee.

A close ally of Speaker Robert Rivas (D-Hollister), Papan takes over from Assemblymember Rebecca Bauer-Kahan (DOrinda), another Bay Area Democrat who moved to chair the Privacy and Consumer Protection Committee. Papan told POLITICO in an interview that she's planning to focus on helping local water districts respond to climate change, and signaled less of a focus on water rights reform than her predecessor — a stance that will likely please the Northern California water districts she's close to, as well as the agricultural industry.

Papan is a former San Mateo city councilmember and the daughter of former Assemblymember Lou Papan, a 20-year legislative veteran who also represented the Bay Area peninsula and helped create the Bay Area Water Supply and Conservation Agency, which represents some two dozen local water agencies that take water from San Francisco's Hetch Hetchy reservoir system. Her first committee hearing on Jan. 8 will focus on CA AB828 (23R), a bill by Assemblymember Damon Connolly (D-San Rafael) to exempt small community water systems and managed wetlands from some groundwater pumping limits.

This transcript has been edited for length and clarity.

Why did you want this committee and what would you say makes you the best fit for the chair?

I consider the issues that the committee is tasked with some of the biggest issues of our time. For me, it's fire, flood and drought. I was really involved in one of the most threatened communities in the state, so I've learned a lot at the local level about the impacts. We created a sea level rise district because local municipalities really don't have the expertise or the funding... Water knows no boundaries.

Also, infrastructure is one of the most important things that a government does. When I first ran for office, my tagline was I was gonna make sewers sexy. We needed to replace our wastewater treatment plant to the tune of a billion dollars, which is a big task for a local municipality, and I was very involved in the funding of it.

What are you hoping to accomplish in the committee?

We're going to be focused on resilience. The effects of climate change are upon us, so I'm very interested in developing policies, and hopefully funding mechanisms, so that we can construct and reconstitute our built environment so that we can manage our water challenges. The other aspect of water, of course, is making sure during the drought times that we have enough, whether that's recharge for groundwater or making sure that we have conservation techniques in place.

Fighting over water supplies pits cities and agriculture and the environment against each other. How do you balance those different needs? What's your vision?

Therein lies the challenge, because we're balancing the needs of many different folks, but I think I'm up to the challenge. That's the part I really enjoy about government. I really want to sort of catalyze, if you will, and reward collaboration. The climate resilience bond that Garcia has introduced and I'm a co-author on I think reflects collaboration and ways that we can work together rather than compete.

What do you want to see in the bond?

I'm really focused on the water part. How do we conserve? How do we make sure we have stored groundwater, recycled groundwater? And also the resilience. How do we make sure that we're protected along the coasts and along the waters? The other one that I'm very interested in is modernizing our dams.

Where do those discussions stand?

The amount is the subject of discussion. And that's going on between the legislature and the executive branch. There's a lot of people who want a lot of different bonds, right. So we have to kind of work collectively on what we can take to the voters.

You mentioned modernizing dams. Does that mean removing dams, does that mean building fish passageways, does that mean building more dams?

I'm very worried about the existing ones being safe. That's really where my focus is on it. So stay tuned. But there are some pretty alarming statistics that a lot of our dams are not as structurally sound as they could be. So that's what I'm thinking about. I don't want any disasters on my watch.

Another topic I wanted to address with you is water rights reform. The previous committee chair made a big deal out of that, although it largely faltered. Will you back those bills and/or propose more reform on water rights?

I do want to see a database that you can go to and I know that that's something that everyone's buying into, if you will. I think that would be just something that is a good resource. My focus is going to be to get people to collaborate and work together on how to best use the resources that they're currently managing. So I'm maybe coming at it from a slightly different angle.

I don't want to reduce you to being your father's daughter, but your name is known in Sacramento circles through that connection. [Lou Papan served in the Assembly for 20 years, including as Speaker.] What have you learned from him about water politics and chairing committees?

I did watch him create BAWSCA and he put a lot into that. The Hetch Hetchy system was in dire need of upgrading. The suburban water users didn't have the power, the (San Francisco Public Utilities Commission) really had the power, and yet they were not doing what they should have been doing to get those upgrades started. I see similarities in the work I'm doing.

I watched him do it and get a lot of input from stakeholders, and really tried to make it so that the suburban water users had a voice.

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New California law updates water restrictions for businesses. What does it mean for you?

Sacramento Bee | January 3, 2024 | Jacqueline Pinedo

Restaurants, stores and other property owners will be banned from using drinking water to irrigate their lawns under a new California law.

Assembly Bill 1572 requires business owners, public agencies and other entities to phase out the use of potable water to irrigate nonfunctional and decorative turf starting in 2027.

Instead, they'll have to use recycled and non-potable water to keep landscaping looking fresh and green.

Assemblywoman Laura Friedman, D-Burbank, introduced the bill in February.

Gov. Gavin Newsom signed the bill into law on Oct. 13, 2023, according to a news release from the Governor's Office.

"Landscaping has so much potential to support California's important goals to conserve water, support biodiversity and connect more people to nature," Friedman said in a May news release.

Friedman is also the legislator behind a companion bill, Assembly Bill 1573, that aims to replace non-functional turf with California native plants for commercial and public landscaping projects in an effort to conserve water. AB 1573 was last amended Sept. 1.

WHO'S AFFECTED BY CALIFORNIA'S NEW WATER LAW?

AB 1572 prohibits the use of drinking water to irrigate nonfunctional turf located on "commercial, industrial and institutional properties" and on "properties of homeowners' associations, common interest developments, and community service organizations or similar entities."

The list of property owners affected by the bill ranges from industrial parks and corporate campuses to government agencies.

Those watering restrictions do not apply to residential lawns, apartment complexes, sports fields or cemeteries, the Sacramento Bee previously reported.

WHAT ABOUT MY HOME'S LANDSCAPE? MY GARDEN?

Under the bill, drinking water can still be used to water home landscapes, edible gardens and lawns that are used for "any type of recreational or civic gatherings," according to a May news release from Friedman's office.

WHEN DO NEW WATER RESTRICTIONS TAKE EFFECT?

AB 1572 takes a phased approach that starts in 2027 and continues through 2031.

All properties that are owned by the California Department of General Services will be required to transition to recycled water starting Jan. 1, 2027, according to the California State Legislature.

That year, local governments, public water systems and local or regional public agencies will also need to make the shift to using recycled water.

One year later, commercial and industrial properties must stop using drinking water to irrigate their lawns.

Then, in 2029, homeowners' associations, common interest developments and community service organizations must switch up their watering source.

The final phase will roll out in 2031 or when state funding is made available to local governments, local public agencies and public water systems in disadvantaged communities.

That includes areas of multifamily residential family homes.

The State Water Resource Control Board will need to create a "compliance certification" to ensure that owners of properties covered by AB 1572 are following the rules, according to the California State Legislature.

WHY DOES THE BILL MATTER?

AB 1572's efforts to ban the use of drinking water to irrigate lawns fall in line with Newsom's goal to convert 500 million square feet of ornamental turf to climate-tolerant landscaping by 2030, The Sacramento Bee reported in October.

Ending irrigation of non-functional grass will save the equivalent of water used by as many as 780,000 households every year, according to the State Water Board.

In 2021, Nevada adopted a similar law that prohibits commercial and multi-family homes from irrigating lawns with Colorado River water.

Lawns are considered a "water wasting culprit," according to the UC Cooperative Extension's Division of Agriculture and Natural Resources.

"If California's home and public landscapes, parks, sports fields, and golf courses were not irrigated the state would save about 9% of its water consumption," according to the Agriculture and Natural Resources division.

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Triumph or Insult? The Complicated Legacy of the Bay Area's Water Temples KQED | January 11, 2024 | Katherine Monahan



For years, the Pulgas Water Temple in Redwood City has amazed visitors with its classical columns. (Navaneeth KN/Flickr)

In Redwood City, there's a round, open-air rotunda that looks like it was plucked right out of ancient Rome. It has stone columns, an ornate dome and even a reflecting pool. It's called the Pulgas Water Temple, and there's another one just like it in Sunol, about 40 miles away.

Bay Curious listener Will Hoffknecht enjoys photographing unique places around the Bay Area. These classically styled temples make for some great shots, so he's visited a few times.

"I'm just trying to better understand the history of those," Hoffknecht said. "It seems like an odd thing that there's these multiple temples around."

The story of these temples begins back in the 1770s.

When the Spaniards chose the location for what's now San Francisco, it was for strategic reasons. It was the perfect point from which to control the entrance to the bay.

"But for every other reason, it was a terrible place to establish a mission," said Mitch Postel, the president of the San Mateo County Historical Society. "The worst problem — and they realized this from the beginning — was water."

There wasn't much of it, especially once the Gold Rush started and the population of San Francisco ballooned. Drinking water had to be barged in from Marin County. Barrels of it were sold in the streets for as much as one gold dollar per bucket. That was more than most residents' entire day's pay.



The Sunol water temple was built to mark the spot where three sources of water come together in Alameda County. ((Lindsey Moore/KQED))

As the population grew, San Francisco became increasingly dependent on a private company called Spring Valley Water, which had bought up the freshwater sources to the south of the city.

Recognizing their precarious position, city leaders started searching for freshwater elsewhere, even asking the federal government for permission to dam the Tuolumne River at the start of the 20th century. But the Secretary of the Interior wouldn't allow it because the dam would be inside Yosemite National Park.

But public opinion shifted after the San Francisco earthquake of 1906 caused fires that destroyed much of the city, partly because there wasn't enough water to put them out. Congress responded to the pressure, and despite passionate objections from environmentalists, San Francisco built the O'Shaughnessy Dam in the Hetch Hetchy Valley. It's the only time Congress has allowed a dam in an already-established national park.

A long wall stretches across the right side holding back a huge lake with mountains rising behind.



The Hetch Hetchy Reservoir in Yosemite National Park on May 2, 2023. This reservoir provides water to much of the Bay Area. (Beth LaBerge/KQED)

The city then bought Spring Valley Water and all its infrastructure. This included not just reservoirs but also a giant water temple in Sunol. It's a replica of the ancient Temple of Vesta in Tivoli, Italy, near where several aqueducts came together on their way to Rome. One of the Spring Valley owners was a fan of the classics, and he had it built in 1910 to mark where three water sources converged on their way to San Francisco.

When the Hetch Hetchy aqueduct was completed in 1934, San Francisco built a second temple at the end of it — the Pulgas Water Temple. Some 20,000 people came out to watch mountain water flow through the circular Roman temple onto the peninsula for the first time.

Today, when you turn on your tap in San Francisco — and much of the South or East Bay — 85% of the water that comes out is from the Hetch Hetchy water system.

"This is the lifeblood of 2.7 million people," said Steven Ritchie, assistant general manager at the San Francisco Public Utilities Commission. The water temples celebrate this engineering feat.

But Aanthony Lerma, stewardship coordinator for the Southern Sierra Miwuk Nation, has a different perspective: "That's blood water that a lot of those people in the Bay are drinking," he said.

If you follow the water system upstream into the Sierra Nevada, you come to its beginning — the Hetch Hetchy Valley. It was home to Native Americans for thousands of years before Europeans arrived in California. Now it's underwater, flooded by the O'Shaughnessy Dam.

Miners that flooded into California looking for gold made their way into the Sierra Nevada, displacing or killing the Native Americans living there. The remote and enclosed Yosemite Valley became a stronghold for native Californians until a state-sponsored militia burned their villages to make way for what would become the national park and, eventually, the dam.

Lerma was surprised to learn about the giant water temples on the other side of the state celebrating this history. "It seems very removed from what the real story and relationship is with the water system," he said.

He suggested adding a monument that's more representative of indigenous Californians.

"I think these are times and opportunities to heal," he said.

###

Delta Water Conveyance Project Not The Only Plan In Town

SF Gate | January 3, 2024 | Ruth Dusseault

Around the glitter of the holidays, Gavin Newsom's ambitious proposal to engineer a water tunnel under the San Joaquin Delta moved a step closer to reality; but there are alternatives to the controversial tunnels, including one proposed by U.S. Representative John Garamendi, D-Walnut Grove.

On Dec. 21, the California Department of Water Resources, or DWR, announced its certification of the environmental impact report for the Delta Conveyance Project. Governor Gavin Newsom's \$16 billion plan is designed to draw freshwater from tributaries of the Sierra Nevada and deliver it south to satisfy the thirst of greater Los Angeles.

From two intakes in the north delta, 3,000 cubic feet of water per second will flow for 45 miles through a 36-foot-wide tunnel buried 150-feet below ground. At the Bethany Reservoir, near the town of Tracy, it will be pumped up to join the surface waters in the California Aqueduct. From there, the water will ride in the flume over mountains and valleys to Southern California.

While the governor's plan has seized headlines, Garamendi believes building a tunnel is a "multibillion-dollar boondoggle."

"As I told the six previous governors and now Governor Newsom, this tunnel will never be built," said Garamendi in a statement Tuesday. "Tunneling under the Delta to export more water to Southern California risks collapsing the Delta's earthen levees and inundating this iconic working landscape with saltwater."

Garamendi, whose family grows pears and raises cattle in the Delta community of Walnut Grove, has long pushed an alternative no-tunnel plan. His proposal, Little Sip, Big Gulp: A Water Plan for All of California, builds on pre-existing land engineering.

"While I share the Governor's enthusiasm for modernizing California's water supply infrastructure, forcing a tunnel on Delta residents ignores better ways to meet our state's future water needs," he said.

According to Garamendi's office, the Port of Sacramento Ship Channel could be deepened and used as a line of freshwater conveyance instead of the tunnels. But they're building an expensive tunneling system instead of using an existing intake and existing conveyance infrastructure.

Parts of Garamendi's comprehensive water plan, which has been under development since 2015, have already been adopted by the state. Construction begins this year on the new Sites Reservoir, an off-stream holding pool on the west-side of the Sacramento Valley that can

capture and save water during high runoff. The Los Vaqueros reservoir in Contra Costa County will also be expanded.

The Garamendi plan also calls for broader use of recycled and desalinated water, including in agriculture, which would require a change in public perception towards recycling. He also believes the levies, some 50-years-old, should be repaired.

Rather than dig a tunnel under the delta and threaten the levies' collapse, he calls for fixing them through new funding policies. Some levies were built by private landowners to the benefit of everyone downstream, according to Garamendi.

"For years, federal and state water contractors have depended upon these levees for the delivery of water to their fields and cities without paying to maintain them," his plan states. "It's time for everyone who benefits from the Delta levees to pay to maintain them."

Efforts to stop the tunnel project flared mid-December, when the state released its final Environmental Impact Report on Dec. 8 and then certified it 13 days later.

Environmental groups were joined by the Contra Costa Board of Supervisors and the Delta Counties Coalition in petitioning for 60 days of public review of the final report.

In an email clarification on Wednesday, the DWR said the public comment period concluded when DWR Director Karla Nemeth certified the report Dec. 21.

In Congress, Garamendi worked to block the Delta Tunnel at every turn by prohibiting any federal permitting or funding. Last February, Garamendi reintroduced the Stop the Delta Tunnel Act (H.R.924).

The DWR is no longer accepting public comment, but they will collect public input around the Community Benefits Program to help identify and implement commitments to those affected by the project. The State Water Board will also conduct public engagement around the Change in Point of Diversion. That is a petition process required by water rights holders seeking to change the conditions of their permit.

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DWR Certifies EIR for Delta Conveyance Project – Advancing Controversial Project and Setting Up Likely Legal Showdown

Nossaman, LLP | January 3, 2024 | Alexander Van Roekel



After releasing the final environmental report (EIR) for the Delta Conveyance Project on December 8, the Department of Water Resources (DWR) certified it on December 21, 2023. The certification of the final EIR is a significant step forward for the Delta Conveyance Project, a key project for the Newsom administration. It also provides the basis for legal challenges, which are all-but inevitable.

The Delta Conveyance Project is the latest in a long line of proposed conveyance projects designed to bring water from northern California to southern California. Different iterations of the project have been discussed for several decades, with key distinguishing features for the Delta Conveyance Project including the fact that there will be a single tunnel constructed to convey water and that it will be underground. Governor Newsom started working on this project shortly after taking office in 2019 and it is a critical part of both California's Water Resilience Portfolio and Governor Newsom's Water Supply Strategy. Other recent milestones include DWR's release of the draft EIR for the project in July 2022 and the Army Corps of Engineers' release of its draft environmental impact statement in December 2022.

DWR issued press releases for both the release of the final EIR and its certification. The press releases include quotations from Governor Newsom and DWR Director Karla Nemeth, highlighting the project as one designed to modernize the state's infrastructure while also helping the state adapt to better confront the impacts of climate change on the state's water supply, including longer and more severe droughts and heavier storms. The press releases also discuss how the project developed during the EIR process. Over 700 letters and 7,000 comments were submitted on the draft EIR and the final EIR addresses all substantive comments. Changes to the project based on feedback included "avoiding the central Delta, avoiding forebays and barge landings, reducing pile driving, undergrounding power near sandhill crane habitat, minimizing acreage needed to store tunnel material, and minimizing the project footprint."

In certifying the project, DWR selected one of the project's alternatives, labeled as the "Bethany Reservoir Alignment," as the version of the project that would move forward. DWR developed the Bethany Reservoir Alignment to reduce environmental impacts, and those decreased impacts provided the justification for DWR selecting the alternative. As part of the certification,

DWR also completed other California Environmental Quality Act (CEQA) actions, including adopting findings of fact and a statement of overriding considerations and adopting a mitigation, monitoring, and reporting program.

Despite the selection of the Bethany Reservoir Alignment and other choices made to address parties' concerns about the Delta Conveyance Project, opposition to the project remains fierce. Numerous organizations put out statements both about the release and the certification of the final EIR. Estimates put the cost of the Delta Conveyance Project around \$16 billion, although the state will likely release an official estimate later this year (DWR says the Delta Construction Authority will provide a new cost estimate and a benefit-cost analysis in mid-2024).

The certification of the final EIR moves the Delta Conveyance Project forward and onto its next stages. Those next stages include DWR obtaining numerous state and federal permits/approvals. The next stages also likely include litigation, which seems all-but inevitable at this point. CEQA challenges are extremely common and, with the price tag and established opposition to this project, it would be surprising if there are no CEQA lawsuits. It should also be noted that it is extremely unlikely that opponents could kill the project directly via a CEQA lawsuit given the way judicial review works under the statute. Notwithstanding that limitation, CEQA lawsuits drive up costs and drive out deadlines, which can lessen political will for a project. While the outcome is uncertain, the battles over the Delta Conveyance Project are likely to heat up now that DWR certified the final EIR.

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California's Water Associations Applaud Historic Approval of Direct Potable Reuse Regulations

CWEA | December 2023 | Technology and Innovation, Wastewater News

Valley Water's Silicon Valley Advanced Water Purification Facility (Photo by Sundry Photography, stock.adobe.com)

On December 19th, the State Water Board made California history by granting approval for direct potable reuse regulations, also known as DPR. California's water and wastewater associations are joining forces to celebrate this momentous achievement. United in the spirit of 'One Water' we are proudly working together to build California's utilities of the future.

Following a final State administrative review, expected to conclude in April, the DPR regulations provide a roadmap and standards for municipal water agencies to follow when building advanced water treatment facilities (AWTFs). These state-of-the-art systems have a proven track record of transforming recycled water into pure water. Already, two pure water facilities are nearing completion in the San Diego area, with dozens of additional facilities in the planning pipeline.

The purified water that flows from these advanced facilities holds the potential to be harnessed by water agencies for raw water augmentation or treated drinking water augmentation. The water is tested and treated one more time at a drinking water treatment facility before being sent into the distribution pipelines. Over the last six decades, California's water associations have steadfastly championed water recycling innovations, with the aim of creating dependable local water supplies and reusing our available water supplies as many times as possible.

"The passage of these DPR regulations heralds a new era for water reuse in California. We believe this will benefit communities by providing a safe and resilient supply. These regulations will serve as a model for the nation," said Jennifer West, managing director of WateReuse California.

"It's essential for Californians to know there's nothing to waste in wastewater. It is a resource we can recycle over and over again. With the introduction of these rules, the State is opening the flood gates for water reuse ideas and innovation to start flowing," said Jenn Jones, Executive Director and CEO of the California Water Environment Association (CWEA). "As communities ramp-up water recycling projects, California is going to experience a jobs boom, a construction boom, and a technology-innovation boom. Water reuse will create supplies that last for generations to come."

"Adoption of the DPR regulations is a pivotal step forward for the clean water sector and all Californians. Increasing water reuse opportunities and maximizing options for resource recovery will provide an important public benefit, and help cultivate a sustainable water supply for the future," said Adam Link, Executive Director of the California Association of Sanitation Agencies (CASA).

"Regulatory staff, advocacy groups, industry partners, manufacturers, academia, associations, and the general public have all played a crucial role in this historic accomplishment. The regulations adopted today are grounded on science, innovative technology and knowledge sharing activities that have spanned decades," said Sue Mosburg, the Executive Director of the California-Nevada Section of the American Water Works Association (CA-NV AWWA). "These DPR regulations advance water management and sustainability while prioritizing public health. They also emphasize the importance of operator education and certification to safeguard water quality, and reinforce the value of trained professionals that have the necessary skills and knowledge to operate advanced facilities."

"Recycled water has been an important tool in California's water supply tool kit for decades. These criteria will allow the expanded use of advanced recycled water, in a manner that undergoes extensive treatment and monitoring, to be protective of health and safety. This will provide greater water supply reliability and environmental benefits," said Dave Eggerton, Executive Director for the Association of California Water Agencies (ACWA).

Beyond the Yuck Factor: Cities Turn to 'Extreme' Water Recycling

San Francisco is at the forefront of a movement to recycle wastewater from commercial buildings, homes, and neighborhoods and use it for toilets and landscaping. This decentralized approach, proponents say, will drive down demand in an era of increasing water scarcity. Yale Environment 360 | December 27, 2023 | Jim Robbins

A rooftop wetland on the Salesforce Transit Center in San Francisco filters wastewater from sinks and showers for reuse. JEREMY GRAHAM / ALAMY STOCK PHOTO

In downtown San Francisco, in a cavernous garage that was once a Honda dealership, a gleaming white-and-blue appliance about the size of a commercial refrigerator is being prepared for transport to a hotel in Los Angeles.

There, this unit, called a OneWater System, will be installed in the basement, where its collection of pipes will take in much of the hotel's graywater — from sinks, showers, and laundry. The system will clean the water with membrane filtration, ultraviolet light, and chlorine, and then send it back upstairs to be used again for nonpotable uses.

And again. And again.

"There is no reason to only use water once," said Peter Fiske, the executive director of the National Alliance for Water Innovation, a division of the Lawrence Berkeley National Laboratory, in Berkeley. Just as natural systems use and reuse water repeatedly in a cycle driven by the sun, he said, "we now have technologies to enable us to process and reuse water over and over, at the scale of a city, a campus, and even an individual home."

While centralized water reuse for nonpotable purposes has been around for decades, a trend called the "extreme decentralization of water and wastewater" — also known as "distributed water systems," or "on-site" or "premise" recycling — is now emerging as a leading strategy in the effort to make water use more sustainable.

In 2015, San Francisco required all new buildings of more than 100,000 square feet to have on-site recycling systems.

The concept is to equip new commercial and residential buildings as well as districts, such as neighborhoods and universities, with on-site recycling plants that will make water for nonpotable use cheaper than buying potable water from a centralized source. By driving down demand for potable water, which is costly to filter, treat, and distribute, the units will help manage water more efficiently. It is, many experts believe, the future of water. Eventually it's hoped that buildings will be completely self-sufficient, or "water neutral," using the same water over and over, potable and nonpotable, in a closed loop.

It's not just a pipe dream. Proof of concept is unfolding in San Francisco, which in 2015 required all new buildings of more than 100,000 square feet to have on-site recycling systems. So far, six blackwater and 25 graywater systems are using the technology, and many others are in the works. (Blackwater comes from toilets, dishwashers, and kitchen sinks; graywater comes from washing machines, showers, and bathtubs.) The headquarters of the San Francisco Public Utilities Commission has a blackwater system, called the Living Machine, that treats its wastewater in engineered wetlands built into the sidewalks around the building, then uses it to flush low-flow toilets and urinals. The process reduces the building's imported potable supply by 40 percent.

Recycling graywater alone can save substantial amounts of water. Using it to flush toilets and wash clothes reduces demand for new water by about 40 percent. Using recycled water for showers would eliminate another 20 percent of water demand, though the safety of that practice is being researched and is not yet permitted in San Francisco.

Ryan Pulley of Epic Cleantec holds a beaker of graywater. Right: A beaker of potable treated graywater. TED WOOD

To demonstrate its technology, Epic Cleantec, a water recycling company, has even brewed a beer called Epic OneWater Brew with purified graywater from a 40-story San Francisco apartment building.

With the meagdrought and water crisis on the Colorado, the Rio Grande, and other Western rivers, "extreme decentralization" is making its way to other places in the American West, including Colorado, Texas, and Washington State. And decentralized projects are ongoing in Japan, India, and Australia. There are serious pressures on fresh water supplies around the world, with climate change exacerbating shortages. A recent study found that more than half the world's lakes have lost significant amounts of water over the last 30 years. By 2050, the UN estimates that 5 billion people could be subjected to water shortages.

"This is the future of water for everybody," Newsha Ajami, director of Urban Water Policy at Stanford's Water in the West program, said of decentralized water systems and recycling. "It's a slow-moving process, but at the end of the day — considering all the scarcity — a lot of communities are going to pick this up as a way of having economic development while having water security."

A fully circular system, in which water is reused on-site for both potable and nonpotable uses, is at least five years away.

San Francisco's recycling systems are not water neutral. The largest building with an on-site system is the Salesforce Tower, a 61-story office tower that opened in 2018 and is the tallest building in San Francisco. Built by the Australian company Aquacell, the system cleans 30,000 gallons of sewage, sink, shower, and other wastewater each day and uses it for irrigation and toilet flushing, saving an estimated 7.8 million gallons of water a year. That's the equivalent of the annual use of 16,000 San Franciscans, the company says. Outside water is still needed for potable uses. (In New York, the Domino Sugar Refinery redevelopment project, currently under construction on the Brooklyn waterfront, will recycle 400,000 gallons of blackwater a day.)

The San Francisco Public Utilities Commission, the water provider, estimates that there are a total of 48 reuse systems in operation and 29 more projects being planned in the city. By 2040, the agency says, its Onsite Water Reuse program will save 1.3 million gallons of potable water each day.

The technology for these buildings to capture and treat all their water to potable standards already exists. But the safety of direct reuse of recycled wastewater is still being studied, and U.S. regulations so far do not allow that. A fully circular system, in which water is reused on-site for both potable and nonpotable uses, is at least five to 10 years away in this country, experts say.

Centralized recycled water systems, by contrast, have been used for decades, though they too have rapidly grown as a solution to water shortages. Orange County, California, for example, is home to the world's largest water recycling facility. It cleans 130 million gallons of blackwater a day in a process called indirect potable reuse. Highly treated wastewater, which would normally have been discharged into the ocean, is put through an advanced three-step purification process that includes micro-filtration, reverse osmosis, and disinfection with ultraviolet light and hydrogen peroxide. The output is injected into nearby groundwater, to be pumped up and treated to drinking-water standards by local utilities.

In water-short Singapore, the massive Changi Water Reclamation Plant cleans and purifies 237 million gallons of wastewater a day to potable standards.

But the new reuse paradigm fundamentally rethinks water systems, localizing them in much the same way that households and districts with rooftop and community solar have transformed energy systems away from centralized power plants.

New buildings and neighborhoods, said Fiske, of the National Alliance for Water Innovation, may someday no longer need to hook up to sewer lines and water supplies. People will be able to build without regard to connections to water infrastructure, simply by using the same water again and again in a virtually closed loop. "The water that falls on the roof in most places in the world will be enough to sustain a home," predicts Fiske, citing a recent study that found that this approach could save at least 75 percent of water demand.

"The technology to do this has been around for a long time. What has prevented [its] adoption has been regulatory hurdles."

Premise recycling not only saves water, it can also save the cost of pumping water over long distances and the costs associated with digging up streets for replacement and installation of pipelines. "Water is heavy," said Fiske, "And we live on a planet with gravity. So use water where you live over and over again."

While in some situations decentralized systems are expected to save money by reducing the energy needed to pump water, in others situations they could require more electricity to pump water through a building.

The increased prevalence of water recycling will allow water to be cleaned to varying standards — or different "flavors" — according to its intended use, a concept called "fit for purpose." Water to flush toilets, for example, doesn't need to be cleaned as thoroughly as drinking water.

The recycling systems being built in San Francisco are widely considered a success, and representatives from water-stressed cities around the world have come here to study the approach.

Epic Cleantec has designed a system that will provide 30,000 gallons a day for the Park Habitat office building, under construction in San Jose. Its blackwater system will be used to irrigate a living green wall on the tower's 20-story exterior. The system collects water from rain, cooling towers, showers, toilets, and sinks, then circulates it through a multistep treatment process in the basement. The solids are separated, sterilized, and turned into a soil amendment.

A rendering of the Park Habitat office building, now under construction in San Jose, which will use treated wastewater to irrigate a living green wall. HAYES DAVIDSON / WESTBANK

"San Francisco has written the playbook and de-risked the whole process" by smoothing the regulations needed to build these systems, said Aaron Tartakovsky, who founded Epic Cleantec with

his father, Igor, and is its CEO. "The technology to do this has been around for a long time. What has prevented the adoption of the technology has been regulatory hurdles. Without any established framework there was no way to get this done. What cities and states are doing is coming up with a clear playbook for how these systems can be operated safely and efficiently."

Tartakovsky said the systems Epic Cleantec is building cost from a few hundred thousand to a few million dollars. The return on investment takes about seven years, he says. After that, there are considerable ongoing savings on water and sewer costs that vary from building to building.

Heather Cooley, director of research for the Pacific Institute in Oakland, an independent organization that studies water sustainability, and an author of a report on distributed systems and water resilience, believes premise systems are essential for California's water future. "These on-site and distributed systems are an exciting addition to the range of tools to meet weather challenges," she said. "They will help build resilience." However, she added, "there's no silver bullet. They're not going to be applied in every building everywhere."

What are the barriers to wider-scale residential changes [on water reuse]? The yuck factor, experts say.

It might seem counterintuitive that the San Francisco Public Utilities Commission requires new buildings to reduce their consumption of city water: After all, the commission is in charge of selling that resource. But San Francisco has a policy of densification in the urban core. As three- and four-story buildings are replaced with 10- and 12-story buildings, the cost of building new water infrastructure and finding new water sources is soaring.

Premise recycling is also taking place in what are known as districts. The University of California, Davis, has a blackwater system used for irrigation, and new neighborhoods are rising with their own closed-loop recycling systems. In San Diego, for example, developers are building a large district system to recycle blackwater at a shopping center that's being converted into an office campus.

"Neighborhood scale is the right scale for sustainability" for recycled water, said Claire Maxfield, director of the San Francisco office of Atelier Ten, a London-based engineering and design firm.

Maxfield led the sustainability team that helped design an 11-acre mixed-use district system for Mission Rock, a neighborhood now under construction next to the San Francisco Giants ballpark. It will collect blackwater from a main sewer, filter it, then send it to all 17 of the neighborhood's buildings to be used for irrigation and toilet flushing. "It works really well, and it works really cost effectively" at the neighborhood scale, said Maxfield. "It shares the cost, it's good for resilience and environmental justice. It's better than telling everybody to solve this on their own."

Orange County, California's wastewater recycling plant, the largest in the world, puts treated wastewater through a three-step purification process. MARIO TAMA / GETTY IMAGES

A recent study found this approach to water recycling adds about 6 percent to the cost of a single home and 12 percent to the cost of a multifamily dwelling. But as the number of people using these systems increases, economies of scale come into play, making recycled water far less expensive than city water.

The Hydraloop, created in Holland, is one home-based technology on the market, a kind of "water washing" machine. It recycles up to 95 percent of a household's water, disinfecting shower and washing machine flows to irrigate lawns, flush toilets, and fill swimming pools. Overall water consumption declines by 25 to 45 percent. A company in Vancouver makes a product called RainStick, which recycles shower water over and over while you shower.

What are the barriers to even wider-scale residential changes? The yuck factor, experts say. "When we talk about reuse there's a lot of fear" among builders and architects, said Maxfield, though she believes they can be overcome.

That's why, she said, decentralization of water and waste systems appears to be destined to play a major role in a water-stressed world. "No one talked about carbon 20 years ago" in the design of buildings, Maxfield said. "And now everyone does. Water is going to have that moment."

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Correction, June 27, 2023: An earlier version of this story incorrectly stated that Salesforce Tower contains office, hotel, and residential space; it only contains office space. An earlier version also identified Atelier Ten as an architecture firm; it is an engineering and design firm.

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Regulators OK rules for turning wastewater into drinking water

Associated Press | December 19, 2023 | Adam Beam

Lakeisha Bryant, the public information representative at the Santa Clara Valley Water District, holds flasks of water before and after it is purified at the Silicon Valley Advance Purification Center on Dec. 13 in San Jose. TERRY CHEA — THE ASSOCIATED PRESS

SACRAMENTO >> When a toilet is flushed, the water can end up in a lot of places: An ice skating rink near Disneyland, ski slopes around Lake Tahoe, farmland in the Central Valley. And — coming soon — kitchen faucets.

California regulators on Tuesday approved new rules to let water agencies recycle wastewater and put it right back into the pipes that carry drinking water to homes, schools and businesses.

It's a big step for a state that has struggled for decades to secure reliable sources of drinking water for its more than 39 million residents. And it signals a shift in public opinion on a subject that as recently as two decades ago prompted backlash that scuttled similar projects.

Since then, California has been through multiple extreme droughts, including the most recent one that scientists say was the driest three-year period on record and left the state's reservoirs at dangerously low levels.

"Water is so precious in California. It is important that we use it more than once," said Jennifer West, managing director of WateReuse California, a group advocating for recycled water.

California has been using recycled wastewater for decades. The Ontario Reign minor league hockey team has used it to make ice for its rink in Southern California. Soda Springs Ski Resort near Lake Tahoe has used it to make snow. And farmers in the Central Valley, where much of the nation's vegetables, fruits and nuts are grown, use it to water their crops.

But it hasn't been used directly for drinking water. Orange County operates a large water purification system that recycles wastewater and then uses it to refill underground aquifers. The water mingles with the groundwater for months before being pumped up and used for drinking water again.

California's new rules would let — but not require — water agencies take wastewater, treat it, and then put it right back into the drinking water system. California would be just the second state to allow this, following Colorado.

It's taken regulators more than 10 years to develop these rules, a process that included multiple reviews by independent panels of scientists. A state law required the California Water Resources Control Board to approve these regulations by Dec. 31 — a deadline met with just days to spare.

The vote was heralded by some of the state's biggest water agencies, which all have plans to build huge water recycling plants in the coming years. The Metropolitan Water District of Southern California, which serves 19 million people, aims to produce up to 150 million gallons per day of both direct and indirect recycled water. A project in San Diego is aiming to account for nearly half of the city's water by 2035.

Water agencies will need public support to complete these projects — which means convincing customers that not only is recycled water safe to drink, but it's not icky.

California's new rules require the wastewater be treated for all pathogens and viruses, even if the pathogens and viruses aren't in the wastewater. News Update

###

TID joins effort to restore river salmon habitat

Teams with MID, SFPUC on \$80 million project led by River Partners Ceres Courier | January 3, 2024 | Joe Cortez

Chinook salmon in the Tuolumne River.

Turlock Irrigation District, Modesto Irrigation District, and the San Francisco Public Utilities Commission have joined forces on an \$80 million habitat restoration program along the lower Tuolumne River to improve the health and long-term recovery of the fishery and local communities it serves.

TID, MID and the SFPUC recently chose River Partners — a non-profit restoration organization based in Chico — to lead the planning and restoration efforts.

Over the next year, River Partners is slated to design a series of projects along the lower Tuolumne River and its floodplain — from Don Pedro Reservoir downstream to the San Joaquin River — that will improve conditions for salmon and other native aquatic species.

Nearly 30 years ago, TID, MID and SFPUC entered a settlement with Tuolumne River Trust and other parties to help restore the Tuolumne River fall-run Chinook salmon population.

By 2030, project partners are hoping to develop 77 acres of suitable salmon rearing and floodplain habitat, and add approximately 100,000 tons of gravel in specific areas for optimal salmon spawning and rearing.

"We're making significant investments and partnering with renowned experts to put years of discussions, scientific-based planning and river studies into action and accelerate momentum in implementing our unwavering commitment to a successful habitat restoration program," said Michelle Reimers, TID's general manager. "We're excited to continue the ongoing stewardship of the Tuolumne River — improvements that our community will see the benefits of for generations to come."

Peter Drekmeier, policy director for Tuolumne River Trust, suggests that while habitat restoration is important, it should not be seen as an alternative to higher flows.

"The river needs both," Drekmeier said in an email. "For example, they can restore floodplains, but if there isn't enough water to inundate them, they won't serve an ecological purpose."

Higher flows can reduce water temperature, activating floodplain habitat, improving freshwater inflow into the Delta to prevent toxic algae blooms, and help baby fish out-migrate more quickly so there's less change they'll be eaten by invasive, non-native bass, according to Drekmeier. Bass are warm water fish that are now thrive in the altered Tuolumne River ecosystem.

Higher flows, however, means less storage available for farmers and cities.

"River Partners believes creating a thriving future for California's natural resources, ecosystems and people requires deep commitment with diverse public and private partners," said River Partners president Julie Rentner. "That's why we're excited to partner with the unique alliance of MID, TID and the SFPUC who are working proactively to restore the lower Tuolumne River and achieve real, lasting benefits for species on the brink and vulnerable communities. Our hope is that this partnership and its impact will serve as a model for effective collaboration and results along other California rivers and communities."

According to information from the Tuolumne River Trust, the Tuolumne River is nearly 150 miles long and begins at 13,000 feet elevation inside Yosemite National Park. Water from the Tuolumne irrigates more than 200,000 acres in Stanislaus County and provides drinking water Ceres and Turlock and for more than 2.7 million Bay Area residents.

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\$80-Million For Tuolumne River Fish Habitat Restoration

MyMotherLode.com | January 2, 2024 | B.J. Hansen

Tuolumne County, CA — Calling the action historic, Central Valley and San Francisco water agencies have launched a joint effort to restore the salmon habitat along the Tuolumne River.

The Modesto and Turlock Irrigation Districts, along with the San Francisco Public Utilities Commission, will collectively invest \$80 million over the coming years toward a holistic habitat restoration program along the lower Tuolumne River to improve the health and long-term recovery of the fishery and the local communities it serves.

Tuolumne River

The agencies recently hired the organization River Partners to design a series of restoration projects along the lower Tuolumne River and its floodplain from Don Pedro Reservoir downstream to the San Joaquin River that will improve conditions for salmon and other native aquatic species.

By 2030, the project partners aim to develop 77 acres of suitable salmon rearing and floodplain habitat and add approximately 100,000 tons of gravel in specific river reaches for optimal salmon spawning and rearing.

TID General Manager, Michelle Reimers, says, "We're making significant investments and partnering with renowned experts to put years of discussions, scientific-based planning, and river studies, into action and accelerate momentum in implementing our unwavering commitment to a successful habitat restoration program."

Dennis Herrera, General Manager of SFPUC, adds, "We're proud to collaborate with River Partners, the irrigation districts, and others on the Tuolumne River to restore habitat and make improvements that will benefit salmon and other native species. We've always been willing to do our part to further protect natural habitats, including in times of drought. We and the districts have committed to self-fund millions of dollars in habitat improvement projects, as well as ensure more water for the Tuolumne, even in dry years."

Since its founding in 1998, the organization River Partners has restored nearly 20,000 riverside acres in over 20 watersheds. Most of the projects have been in the Central Valley.

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The 'exodus' has ended in these California counties, data shows

SF Gate | December 20, 2023 | Sam Mauhay-Moore

Santa Clara County experienced a 0.45% population increase from 2020, new data shows. Steve Proehl/Getty Images

New data shows that several Bay Area counties are now growing in population, signaling a recovery from losses incurred during the pandemic.

Four Bay Area counties — Alameda, San Francisco, Santa Clara and San Mateo — grew in population between July 2022 and July 2023, after a period of population decline during the height of the pandemic, according to a new report conducted by California's Department of Finance. Alameda, San Francisco and Santa Clara counties were among the top five counties in terms of population gain by numbers from 2020 to 2023, despite their early pandemic losses; the other two are Sacramento and San Diego. Alameda County grew in population by 6,062 people, or 0.37%, San Francisco by 4,925 people, or 0.58%, Santa Clara by 8,475 people, or 0.45%, and San Mateo by 2,813 people, or 0.38%, between 2020 and 2023.

As a whole, California's population declined by 0.1% between July 2022 and July 2023 — a small fraction of the state's drop in population during the first year of the pandemic, the study notes.

With a population increase of 8,475 people, Santa Clara County ranked No. 1 in population growth by number. San Francisco had the most population growth by net migration, with about 4,700 people moving into the city from both domestic and international destinations.

According to the report, recent population increases in the state were impacted by a higher natural population increase, or the number of births minus the number of deaths, along with a smaller number of people moving to other states. Foreign immigration also increased and is now back to pre-pandemic levels.

Marin, Contra Costa, Napa, Sonoma and Solano counties saw slight population losses, with Marin's declining 0.43%, Contra Costa's 0.31%, Napa's 0.75%, Sonoma's 0.31% and Solano's 0.06%.

Along with the Bay Area, the Central Valley saw the most population growth in the state. Yuba County had the highest percentage of population growth with a 0.76% increase, and counties like Fresno, Merced, Kings, Sacramento and San Joaquin saw population increases as a result of natural increases.

Los Angeles County underwent a population decrease of 0.15%, making it one of five California counties with populations of over 1 million — the others being Contra Costa, Riverside, Orange and San Bernardino — that declined in population during the analysis.

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