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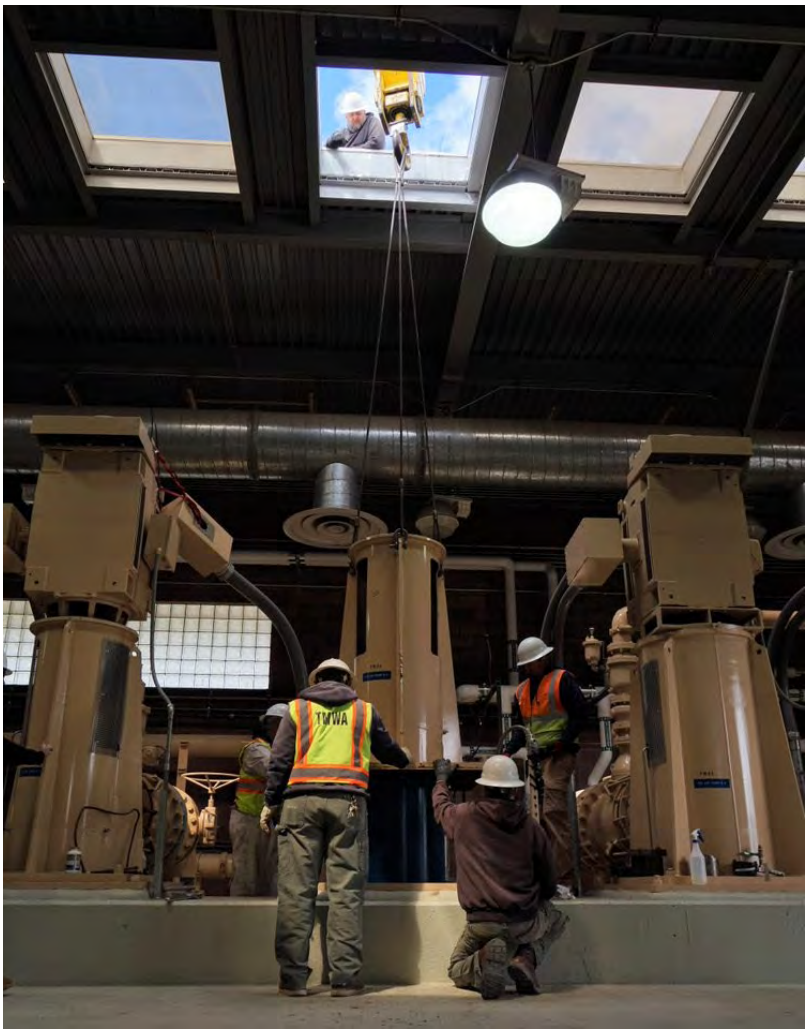

Hunter Creek #4 Installation

WATER ONLINE

News Feature | February 8, 2022

Pervasive Western Drought Exposes PFAS Contamination In Groundwater Sources

By Peter Chawaga

The ongoing water scarcity throughout much of the Western U.S. has revealed many larger trends affecting drinking water and wastewater treatment. It has disclosed tensions between neighboring states, the pervasive impacts of climate change, and the potential for local regulations to reverse consumption trends.

And now, it has also exposed the presence of a notorious contaminant in critical national sources.

"Drought is exposing new layers of risk posed by PFAS contamination in drinking water nationwide, a public health hazard expected to cost billions of dollars and take years to solve, state and federal officials say," according to Bloomberg Law. "As the historic drought hitting much of the country decreases the flow of rivers and streams, more municipalities are drawing water from underground aquifers and wells. And emerging data shows PFAS contamination could be prevalent in some of those groundwater sources."

PFAS, nicknamed "forever chemicals" because of their long-lasting environmental impact, have been connected to acute health effects when consumed through drinking water. Numerous states have issued limits on their presence in drinking water and the U.S. EPA plans to implement discharge limits on PFAS to curb their presence as well.

With the historic drought pushing many communities to draw groundwater, municipalities must be more cautious than ever to safely pull from sources that are increasingly being found to contain PFAS

"As of December 2021, the PFAS Project Lab at Northeastern University had documented per- and polyfluoroalkyl substances in soil or water at 1,781 sites, with groundwater at 1,385 of those sites contaminated with the man-made chemicals," per Bloomberg Law.

Arizona offers a case study in how water systems are adapting to this growing issue. The state is being forced to cut the amount of water it draws from the Colorado River Basin and rely more on groundwater, but the levels of PFAS in some local groundwater rose from 10 parts per trillion to more than 1,000 parts per trillion within six months, per Bloomberg Law.

In addition to searching for safer groundwater sources, reducing consumption in general, and holding polluters accountable for their roles in introducing PFAS into source water, Arizona is introducing new treatment facilities as part of the solution.

"The City of Tucson and ADEQ [Arizona Department of Environmental Quality] unveiled a pilot groundwater treatment facility in a quiet suburb of southeastern Tucson that is working to remove PFAS," *Inside Tucson Business* reported. "According to the City, the facility uses a former Tucson Water supply well to pump contaminated water from the aquifer, cleaning as much as 360,000 gallons per day."

As increased drought pushes more municipalities around the country to draw groundwater, it's clear they will need similar solutions as well.

To read more about how drinking water utilities grapple with PFAS contamination, visit Water Online's Drinking Water Contaminant Removal Solutions Center.

NEWS / CLIMATE

How much rain does California need to get out of the drought? A lot still

By Zachary Rosenthal, AccuWeather staff writer

Published Feb. 10, 2022 9:06 AM PST | Updated Feb. 10, 2022 9:08 AM PST

Shrinking snowpack reignites California drought concerns

the snowpack and drought outlook

ard to believe that California's Sierra Nevada would at this point of the winter. During October, the region

But as of early February, despite that strong start, the region has had its driest period of winter in recorded history. It has been more than 32 days and counting since the last snowfall at the U.C. Berkeley Central Sierra Snow Lab, breaking the previous record of 31 set in 1990.

"After the record-setting December 2021 in many places along the West Coast, it is difficult to fathom how the moisture tap essentially shut down along the West Coast when the ridge of high pressure aloft set up and became reluctant to move anywhere," said AccuWeather Meteorologist Brandon Buckingham. "However, that is the case this winter, and now we are once again discussing the worsening drought conditions."

The lack of snowfall has put the area at just 73% of its annual yearly snowfall, according to Andrew Schwartz, the station manager and lead scientist at the U.C. Berkeley Central Sierra Snow Lab, which currently has a bit over 5 feet of snow on the ground.

Schwartz said that only a few inches of snow fell in January, during the early part of the month.

A look at the snowy U.C. Berkeley Central Sierra Snow Lab, where about 5 feet of snowfall was on the ground as of Feb. 9, 2022. More than 23 feet of snow has fallen this winter, about 8 feet below average. (AccuWeather / Bill Wadell)

"Without any snow to replenish it, we are going to see it start to shrink pretty quickly," Schwartz told AccuWeather National Reporter Bill Wadell.

The additional 8 feet of snow needed to bring the region up to average could be crucial in chipping away California's ongoing drought. About two-thirds of California is currently in a severe drought, sparking concerns about yet another intense wildfire season.

About two-thirds of California is experiencing severe drought conditions, with the entire state experiencing at least a moderate drought. (AccuWeather)

Weather's long-range forecasters say that the won't be shut out.

s down from the Northwest Monday night into ng-Range Forecaster Paul Pastelok said, adding that

precipitation would fall in the form of rain at lower elevations." It is a quick mover and not expected to bring a lot of snow -- but a good burst."

That chance of snow next week could bring 6 to 12 inches to some peaks, Buckingham said. After that storm, precipitation chances should increase in the last week of February, with a good period of snow and rain chances appearing possible until late March.

Up and down the Sierra Nevada, the snowpack is falling behind average. (AccuWeather)

"This trend of active weather can continue through the first half of March, with Northern and Central California expected to experience near- to above-average precipitation and near- to slightly below-average temperatures," Buckingham said, pointing out that a dome of high pressure may cause a return to dry and mild weather across California by late March.

Given the somewhat snowy forecast, there is still hope for precipitation in the Sierra; however, concerns have mounted.

How much precipitation does California need to climb out of drought conditions?

California will need a lot of rain and snow to emerge from the severe drought conditions plaguing much of the state. A glance at February water levels in six of the Golden State's most critical reservoirs, which deliver fresh water to residents and farmers, shows that each is far from being at capacity. For example, Lake Oroville in Northern California was at 46% capacity as of Feb. 9, well below the average of 78% full at this time of year.

Farther to the south, the news is a little better, but not much. Castaic Lake in Southern California was at 59% capacity as of Feb. 9 -- the highest of the six reservoirs -- but still below its normal 74% capacity at this time of year.

Water levels at six key reservoirs throughout California as of Feb. 7, 2022.

"That one dry month of January basically wiped out whatever head start we had as we head towards the end of winter," Sean De Guzman, snow surveys manager for the California Department of Water Resources, said. De Guzman said the volatile shifts on a yearly, and even monthly basis are making the managemet of water resources throughout the entire year especially challenging.

"It's not all alarm bells going off just yet," Schwartz said. "If we get to the same time next month and we haven't received any snowfall and it's not looking like we will, then it becomes much more of a pessimistic situation."

Reporting by Bill Wadell.

Washoe County adds ModPods to Nevada Cares Campus

By Mike Stefansson
Published: Feb. 10, 2022 at 11:31 AM PST

RENO, Nev. (KOLO) - In a continued effort to alleviate the area's homeless population, Washoe County has added a line of individual shelters to the Safe Camp area of the Nevada Cares Campus.

The ModPods are an eight-by-eight foot space with a mattress, electricity and heating/air conditioning. They'll be occupied by people actively engaged in finding a permanent living situation while adhering to a case management plan.

"We're really focused on engaging folks who are currently in an encampment situation. Living on the river, in the wild, so to speak," said Catrina Peters, a data specialist out of the County Manager's Office. "Our idea is to engage with them, provide basic services and move them toward that housing plan."

Right now, 45 ModPods have been installed just above the Governor's Bowl. Eventually, there will a total of 50 located down within the bowl, which was being worked on as media toured the ModPods.

There are no drugs or alcohol allowed on site.

"We are heavily focused on meeting folks where they're at, but we're not leaving them there," said Peters. "We'll work with them on treatment plans, some harm reduction."

There will be no waiting list for the ModPods and Peters says the county is working with various agencies to bring those eligible to Safe Camp.

Most Read

RESEARCH NEWS

Study finds Western megadrought is the worst in 1,200 years

February 14, 2022 · 11:04 AM ET
Heard on Morning Edition

NATHAN ROTT

3-Minute Listen

Water levels at Lake Powell, the United States' second-largest reservoir, have dropped by more than 150 feet during the ongoing megadrought.

Claire Harbage/NPR

Shrunk reservoirs. Depleted aquifers. Low rivers. Raging wildfires. It's no secret that the Western U.S. is in a severe drought. New research published Monday shows just how extreme the situation has become.

The Western U.S. and northern Mexico are experiencing their driest period in at least 1,200 years, according to the new study, published in the journal *Nature Climate Change*. The last comparable — though not as severe — multidecade megadrought occurred in the 1500s, when the West was still largely inhabited by Native American tribes.

Today, the region is home to tens of millions of people, massive agricultural centers and some of the fastest-growing cities in the U.S. — all in an area where there's less water available than there was in the past, partially due to human-caused climate change.

"We have a society that's relying on there being the amount of water there was in the 1900s," said the study's lead author, Park Williams, a bioclimatologist at the University of California, Los Angeles. "But now with the number of water molecules available to us declining, it really is time for us to get real about how much water there is for us to use."

Williams looked at tree ring data from thousands of sites to conduct the research. The researchers sampled data collected from live trees, dead trees and wood beams preserved at Native American archeological sites. The tree rings gave Williams insight into drought events dating back to A.D. 800, around the time Charlemagne was being crowned emperor of Rome.

He identified four other megadroughts in that time period, the most notable being a 23-year drought that ended in the late 1500s. There were hopes during a wet 2019 that the current megadrought was following a similar pattern, Williams said.

"And then from summer 2020 through all of 2021, it was just exceptionally dry across the West ... indicating that this drought is nowhere near done."

It's time to "pull out all the stops" and plan for less water

Western water managers were again hopeful for a change at the beginning of this winter. In December, California's Sierra Nevada had record-breaking snowfall, and big snowstorms blanketed the northern Rockies. But a hot, dry start to the year has since dropped snowpack levels to below average in many places.

Water sparkles on a shrinking Lake Powell near the Cathedral in the Desert monument in Glen Canyon.

Claire Harbage/NPR

Lake Mead and Lake Powell, the country's two largest reservoirs, are filled at only about one-third of their total capacity. Communities, ranchers and farmers have depleted groundwater stores to meet demands.

Federal water managers declared the first-ever water shortage along the Colorado River last year, triggering cuts to some of the river's 40 million users. It was a recognition "that the hydrology that was planned for years ago — but we hoped we would never see — is here," said Bureau of Reclamation Commissioner Camille Touton.

"The Colorado River Basin no longer has the privilege of time," said Kim Mitchell, senior water policy adviser at Western Resource Advocates, an environmental nonprofit, after hearing about the new research. "It's imperative for water managers in the West to incorporate a smaller [Colorado] River into future operations and pull out all the stops in scaling up basin-wide conservation. Incremental solutions just won't be enough."

Human-caused climate change contributes to drought

Existing management guidelines for the Colorado River are set to expire in 2026. The seven states that draw from the watershed are negotiating with the federal government, Native American tribes and Mexico over what future management should look like.

Last December, Nevada, Arizona and California agreed to take less water from the Colorado River in an effort to prop up Lake Mead, and more cuts could follow.

"This is a wake-up call for everyone," Adel Hagekhalil, general water manager for the Metropolitan Water District of Southern California, told KUNC. "For all of us. We are facing a new normal when it comes to climate change."

Williams, the study author, said roughly one-fifth of the current megadrought can be attributed to human-caused climate change. Greenhouse gas emissions are warming the world, speeding evaporation and disrupting weather patterns.

He described water patterns in the West as a yo-yo — sometimes high, sometimes low. Climate change has put that yo-yo on an escalator heading down, he said, "and we cannot let ourselves get tricked by a few wet years into giving up on the progress we've been making."

"We actually have to change our relationship with water."

ENVIRONMENT

The Drought In The Western U.S. Is Getting Bad. Climate Change Is Making It Worse

ENVIRONMENT AND ENERGY COLLABORATIVE

Melting Snow Usually Means Water For The West. But This Year, It Might Not Be Enough

Commissioners hear update on flood mitigation efforts in the North Valleys

Back in 2017, crews make efforts to mitigate flooding on Swan Lake. (staff)

By Audrey Owsley

Published: Feb. 15, 2022 at 3:20 PM PST

RENO, Nev. (KOLO) - Flood response is continuing in the North Valleys more than five years after snowstorms pounded the area filling Swan Lake to the point where excess water made its way into neighborhoods, severely damaging some properties.

On Tuesday, an update on flood mitigation efforts was presented at the Washoe County Board of Commissioners meeting. Those efforts, totaling about $11.6 million dollars.

During the meeting, it was indicated that the Washoe County Community Services Department (CSD) has completed work to clean up the flooding and mitigated future flooding with three directives in place: manage Swan Lake within its current boundaries, prevent water from entering businesses and homes, and maintain open access for residents and emergency responders.

The County has purchased four homes (three completed, one currently in escrow) that were impacted by the flooding.

Hesco barriers used to keep the water at bay have been taken down, and the full Lemmon Drive/Swan Lake project is scheduled to be complete in April.

“It won’t be complete until we left it better than we found it,” Washoe County Engineering and Capital Projects Division Director Dwayne Smith said.

“The good thing is that the lake is low now, and we can achieve all these things without having to deal with a lake that is brimming,” Chair Vaughn Hartung said.

Also discussed at Tuesday’s meeting was that the 2017 flood revealed inaccuracies in the FEMA 100-year flood risk map, so CSD has been updating the map to more accurately reflect actual risk areas.

“Another one of our focuses is the wildlife in that area. Swan Lake is named that for a reason,” Smith said. “We are working with other partners to see what opportunities we can bring to enhance the wildlife and wetlands component. I think there’s a real opportunity to bring together those pieces that improve the quality of life of residents and wildlife alike.”

reno gazette journal

NEWS

Washoe County data shows number of homeless people living on the street has doubled

Mark Robison
Reno Gazette Journal

Published 10:37 a.m. PT Feb. 15, 2022 | **Updated 6:52 p.m. PT Feb. 24, 2022**

This story is supported by the Reno Gazette Journal Fund through the Community Foundation of Northern Nevada and does not require a subscription. Please consider supporting journalism about local government in Reno-Sparks by donating at RGJ.com/donate.

The number of homeless people on Reno-area streets has almost doubled over the past year, based on Washoe County's online "Community Dashboard."

County data and policy specialist Catrina Peters sees a big factor playing into the number of "unsheltered/unknown" homeless individuals rising from 342 in January 2021 to 656 in January 2022 – a 92 percent increase.

"During the height of COVID at the end of 2020, we weren't doing a lot of outreach," Peters said. "Now agencies are doing more."

She said government departments, nonprofits and field teams are going out and connecting with people more and inputting information from encounters with those who are homeless, causing more to be captured in the database.

Other factors are contributing to the rise, too.

Lack of affordable housing

The lack of affordable housing also plays a role. The area's median home price shattered previous records recently at $600,000, putting affordable housing out of many residents' reach.

Reno Mayor Hillary Schieve tweeted Monday to announce a special city council meeting at 10 a.m. Tuesday Feb. 22 "to discuss the critical need for affordable housing in our region."

"More people can see themselves on the brink of homelessness because of the affordability," said Devin McFarland, community administrator at The Village on Sage Street, a dorm-style facility with 216 small single-occupancy units designed for people making minimum wage or with other low incomes.

"The waiting list for subsidized properties (with lower rents) are three months, six months, two years. They're really hard to get into so if you're on the fixed income or low income, it's against you to be able to sustain yourself. Especially seniors get priced out."

When asked if the demolishing of weekly motels around downtown Reno has contributed to people being on the streets, Grant Denton of the homeless services nonprofit Karma Box said, "I'm absolutely positive it has something to do with it."

He emphasized that he wasn't criticizing the destruction of those buildings because they were well past their natural lifespan and many were unfit for human habitation.

"It's something that had to happen, but the timing may have been off a little," he said.

Peters from the county said the lack of affordable housing is a huge issue in our community.

"We've pretty much gotten rid of the housing of last resort – the weekly motels," she said.
"It's incredibly naïve to think that's not had an impact on our increasing homeless population."

Personal safety at shelter

Another contributing factor to more homeless people being on the streets rather than in shelters is safety. An RGJ public records request of police, fire and EMS calls to
the Cares Campus emergency shelter revealed weeks averaging more than a dozen calls a day to its Fourth Street address.

Some people feel more comfortable living on the streets. Crystal, who asked that her last name not be used because of her homeless status, said the county's emergency shelter does not allow unmarried opposite-sex couples to be together so she and her boyfriend Cliff would rather stay on the streets.

"It's not safe for a single woman at the shelter," she said.

How homeless data is tracked

Having accurate counts of people experiencing homelessness is important so officials can better assess whether efforts are working to decrease the numbers.

Also, federal funding to support homeless services is tied to collecting such data. About $2.2 million a year annually comes into Washoe County from the Department of Housing
and Urban Development, or HUD.

In order to get a piece of this money, HUD requires that all participating organizations –government agency or nonprofit – track their homeless encounters in a database called Homeless Management Information System, or HMIS.

All organizations serving homeless populations in the state of Nevada that use HUD funds use this same system.

If someone gets a bed at the emergency shelter and later encounters outreach staff after setting up a tent in a park, this change will be noted in the database, Peters said.

People are tracked by birthdate, with fields for multiple nicknames. Photos are also input to decrease the chance an individual will disappear from the system because of an alias or false information being given.

"What the data shows," Peters said, "is that we've made a lot of headway."

How homeless data is used

Karma Box participates in the HMIS database. Denton's group also provides services at Safe Camp, one of Washoe County's homeless programs, and helps provide non-perishable food, toiletries, and other useful items to those in need through small public boxes scattered throughout Reno.

He said he doesn't think the number of unsheltered people is increasing.

"On the street, it's not as bad as it used to be," he said.

He likes the database because it helps officials identify trends with individuals.

“You might see this guy who goes into motels for the first two weeks of the month and then he’s out (on the streets) in the last two weeks. He might then stay in a certain area because hegets messed with less there," Denton said. "We can identify a narrative that helps us get that person into a better situation.”

Government agencies and nonprofits participating in the homeless database have regular conference meetings broken into four different case categories: veterans, transition age youth (meaning they’ve recently aged out of the foster system), people who are on the streets, and “coordinated entry” based on a standardized HUD assessment for those needing quick housing because they are at high risk of dying on the street.

One big challenge is getting people “document ready.” They need ID to get housing, but many don’t have access to Social Security cards, birth certificates, and drivers’ licenses.

“We pull reports,” Peters said of the HMIS database. “And then we get case managers and program managers around a table and talk about how we can get these people housed. We’ve seen huge success.”

Update: This story was updated on Feb. 24, 2022 to clarify that only organizations that get HUD funding use the HMIS database.

Mark Robison covers local government for the Reno Gazette-Journal, as well as writes Fact Checker and Ask the RGJ articles. His position is supported by donations and grants. Because of this, all of the journalism he publishes will be made available for free without concern for commercial return. If you'd like to see more articles like this, please consider sharing this article or donating at RGJ.com/donate.

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Western Voters Strongly Favor More Protec on of U.S. Rivers

With threats to waterways moun ng, support cuts across geographic and poli cal lines

ARTICLE
February 11, 2022
By: Bre Swi
Read me: 2 min
Projects: U.S. Public Lands and Rivers Conserva on

A rafter navigates rapids on the Arkansas River in Colorado's Browns Canyon. The river's flow has been diminishing for decades, affecting local communities and economies.

Bob Wick/Bureau of Land Management

In October 2022, the Wild and Scenic Rivers Act turns 54 years old and the Clean Water Act turns 50. Both federal laws were established to safeguard this country's precious freshwater resource. And while both statutes have helped do that to some degree, our na on's rivers con nue to face threats and degrada on. Today, less than 1% of more than 3.6 million miles of rivers in the U.S. are protected under the Wild and Scenic Rivers Act.

As Western states con nue to ba le record-breaking heatwaves and increased droughts, healthy rivers and river systems will become even more important to ensure that people and nature have what they need to thrive. These water resources, while necessary for a huge variety of life, including people, are indeed finite.

It is therefore urgent that Congress and state policymakers act to protect more of America's rivers and streams from the moun ng threats they face.

And perhaps not surprisingly, a poll of registered U.S. voters in five Western states found overwhelming support for addi onal conserva on of our na on's rivers. In the states surveyed—California, Colorado, New Mexico, Oregon, and Washington—67% of voters favored more safeguards for U.S. rivers, with 59% suppor ng the protec on of at least 50%of the na on's rivers. The survey, commissioned by The Pew Charitable Trusts and conducted in fall 2021 by the opinion research firm GBAO, found the support to be widespread regardless of poli cal party (82% Democrats, 64% Independents, and 51%Republican voters), geographic loca on, and community popula on: 65% of respondents in small towns and 60% of those in rural communi es favor stronger protec ons.

Safeguarding rivers and river systems under the Wild and Scenic Rivers Act and the Clean Water Act conveys a host of benefits to people and wildlife. The Wild and Scenic Rivers Act prohibits new dams as well as ac vi es that would significantly harm a river's "outstandingly remarkable values," such as fish habitat, scenic values, and recrea on.

Similarly, states may prevent ac vi es that degrade water quality by designa ng Outstanding Na onal Resource Waters (ONRW) under the Clean Water Act.

Healthy rivers provide cri cal habitat for aqua c species, clean drinking water for communi es, climate change resilience (for example, by providing cold water refugia for aqua c species), and recrea onal opportuni es that help sustain local economies.

To honor the importance and staying power of these two federal laws, along with the strong public support for expanding river protec ons, policymakers across the U.S. should take steps to lock in permanent safeguards of our country's invaluable rivers and streams.

The survey was conducted for The Pew Charitable Trusts via telephone (landline and cell) by GBAO, an independent research company. Interviews were conducted Aug. 25-Sept. 5, 2021,

among a representa ve sample of 1,542 respondents. The margin of error is +/-5.6 percentage points.

Brett Swift works on The Pew Charitable Trusts' efforts to protect and restore free-flowing rivers for the U.S. public lands and rivers conserva on project.

ARTICLE
February 11, 2022
Projects: U.S. Public Lands and Rivers Conserva on
Topics: Land Conserva on
Tags: Public lands & Wilderness
Experts: Bre Swi

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HAPPENING NOW

Pentagon spokesman John Kirby holds a briefing. Watch CNN

Exclusive: Experts say the term ‘drought’ may be insufficient to capture what is happening in the West

By Ella Nilsen, CNN

7:00 AM EST, Wed February 16, 2022

Justin Sullivan/Getty Images

The "bathtub ring," showing how far the water level has dropped, is visible on the rocky banks of Lake Powell on June 24, 2021, in Page, Arizona.

(CNN) — As the American West continues into its 22nd year of a parching megadrought, officials at the federal government’s top water resource management agency are trying to plan for an uncertain and unprecedented time for the nation’s largest reservoirs.

“When [the system] was built 100 years ago, you could look outside your window if you’re in Colorado and see snow, and know that that s your reservoir for the spring, Bureau of Reclamation Commissioner Camille Touton told CNN in an exclusive interview. “It’s not like that anymore. What you’re seeing there is just a completely different way in which the system is managed.”

Winter weather conditions in the West have been, in a word, inconsistent.

After California's Sierra Nevada mountains were blanketed by 17 feet of snow in late December, the state then experienced one of its driest Januarys on record. Denver went an unusually long stretch with no snow in the early winter before the state saw storms in January.

This lack of consistency and predictability with winter snowpack means Reclamation is "operating in a completely different regime, as we've never done before," Touton told CNN.

"What we're seeing in 2022 is good snow, generally, in some places – but at the same time, not consistent," Touton told CNN. "You're seeing record events, followed by record dry months. Now add to that low reservoir level, because we didn't get a lot of inflow into our reservoirs last year."

The bigger picture is stark. The West's megadrought is the region's worst in at least 1,200 years, according to a study published Monday, and researchers said the human-caused climate crisis has made the megadrought 72% worse.

Western water experts echoed the concern that the term "drought" may be insufficient to capture the region's current hydrology. "Aridification" might be more accurate, said Eric Kuhn, a retired former manager of the Colorado River Water Conservation District.

"Are these temporary conditions? We don't know; the science is suggesting they're not," Kuhn said. "It puts Reclamation in a tough situation, because they're learning how to deal with a changing climate. Operating these systems under deep uncertainty is not what they were designed for."

Competing for water

The Bureau of Reclamation, situated in the Department of Interior, has a big role to play in how the West manages its declining water resources.

Established in the early 1900s, Reclamation built some of the West's largest reservoirs and dams. It works with states, Native American tribes, farmers and other stakeholders to manage water, generate electricity from hydroelectric dams and prepare for drought.

Touton is overseeing the bureau at a time when competition over the remaining water resources is intensifying. Last summer, the federal government declared a water shortage on the Colorado River for the first time as Lake Mead's and Lake Powell's levels hit new lows.

But a megadrought of this proportion had already been planned for on the Colorado River – a complex, negotiated priority system that favors some water shareholders ahead of others based on need and historical dependence.

"We've never been in these conditions before," Touton said. "But with the partnerships that we've had in the basin for decades, there was always a concern that it could get there. And it was planned for and, unfortunately, that's what we're seeing now."

Patrick T. Fallon/AFP/Getty Images

An aerial image shows Lake Mead on the Colorado River during low water levels in July.

The bureau is due to receive $1.66 billion per year for the next five years from the bipartisan infrastructure law, effectively doubling its yearly budget. Most immediately, that means it can spend $420 million on rural water projects, $245 million for water recycling projects, $100 million each for dam repair and aging infrastructure fixes, and $50 million on drought contingency planning for the region.

Touton said that as Reclamation repairs some aging reservoirs and water facilities, it will also look at new water sources – including capturing stormwater when it rains and treating it to use later.

John Fleck, a Western water expert and professor at University of New Mexico, said that for Reclamation, the challenge of repairing aging water infrastructure pales in comparison with drought contingency planning with states, tribes and farmers.

The Colorado River basin "has a fundamental problem with overallocation of the water," Fleck told CNN. "These rules that were written down on pieces of paper over 100 years ago promised more water to users in states than the river can actually provide."

'A moment of opportunity'

Even in years with decent snowpack, the climate-fueled megadrought has meant the parched ground soaks up what moisture there is faster. That means intense competition for lower levels of water used for drinking, agriculture and electricity generation.

As CNN has reported, the first group of people impacted by Colorado River water cuts will be farmers in Arizona – but municipalities in the state could also see reductions depending on far the river levels fall.

Robyn Beck/AFP/Getty Images

Cows graze on dry grass in California's drought-stricken Central Valley in July.

“The vast majority of this water is used for irrigated agriculture across the basin; there’s just no way around the footprint of irrigated agriculture shrinking,” Fleck told CNN.

Kuhn said that in-home water use ultimately doesn’t account for much of the overall usage, as many cities re-treat and recycle water from appliances. Los Angeles, for example, is working on a plan to treat and recycle all of its wastewater.

RELATED ARTICLE
US sea levels will rise rapidly in the next 30 years, new report shows

The bigger problem is how to sustain agriculture and lawns.

“The future of the river is going to be about grass, it’s not going to be about indoor plumbing,” said Kuhn. “The action is outdoors. It’s crops and grasses.”

Last summer, Nevada banned nonfunctional grass that uses up too much water, and some cities are looking at planting native plants and grasses that don’t need constant watering.

Fleck said that even though the drought is anxiety-inducing, it also creates opportunities for the federal government, states and stakeholders to have a realistic conversation about how to save water.

“When the reservoirs are full, people blow it off,” Fleck said. “When they are draining, that’s when these opportunities arise. This creates a moment of opportunity; there are hard decisions to be made.”

CALIFORNIA

La Niña expected through spring, brings uncertainty to Sierra snowpack

by: Dennis Shanahan, Jonathan Taraya
Posted: Feb 16, 2022 / 10:26 PM PST
Updated: Feb 16, 2022 / 10:26 PM PST

SHARE

SACRAMENTO, Calif. (KTXL) — The recent dry weather in Northern California might be sticking around for a while.

The Climate Prediction Center forecasts a 77% chance La Niña conditions will continue through the month of May.

The term La Niña refers to a correlation between ocean water temperatures and winter weather patterns.

Oftentimes, the weather event brings wetter than normal conditions to the Pacific Northwest and drier weather to Southern California.

La Niña forecast: NOAA gives update for spring ›

Idamis Del Valle, a meteorologist with the National Weather Service in Sacramento, explained to FOX40 that for residents living in the middle La Niña can tilt either way.

“La Niña will likely continue into the spring,” Del Valle said. “Equal chances of either above or below normal precipitation meaning that we’re pretty much dependent on the individual storms.”

“We would probably need at least two atmospheric river storms to finish the water year at or above-normal precipitation,” Del Valle added.

Bottom line: It’s not looking good, but there is still time to at least hope for a March miracle.

Dr. Andrew Schwartz is a researcher at the UC Berkeley Central Sierra Snow Lab near Donner Summit.

“If the last couple months have taught us anything, it’s that we can have those large swings that’ll bring in a lot of precipitation, or we could wind up where we were for the last month and be completely dry,” Schwartz explained. “These extremes are going to get more extreme. So even if we had 200% of our annual snowpack at this moment, we have to remain in conservation mode because every drop saved is going to matter at a later date.”

Light snow leads to slick roads, chain controls in the Sierra ›

Drought and conservation were top of mind as the California Water Commission met on Zoom for several hours Wednesday.

The speakers included John Yarbough, assistant deputy director at the State Water Project.

“October, wettest year on record, then one of the driest Novembers, one of the wettest Decembers, one of the driest Januarys. So, this oscillation between extremes really becomes a challenge as we’re planning out making decisions about what drought actions are needed,” Yarbough said.

Looking ahead to the rest of the year, Yarbough talked about the need to approach the water situation differently with the following recommendations:

- Consider more extreme scenarios when planning
- Adjust water supply forecasting approaches
- Increase cross-agency coordination

With the La Niña weather pattern causing so much uncertainty, this might be a good time to reflect and be extra thankful for what December delivered.

“And yeah, even though we haven’t gotten more snow here at the lab, we still have five feet underfoot. So, it’s not a complete loss,” Schwartz said.

Nevada town in canal fight seeks another chance in US court

Water flows through an irrigation canal in Fernley, Nev. in this photo taken Thursday, March 18, 2021. Lawyers for the U.S. government and the town of Fernley go before a federal judge, Wednesday, Dec. 8, 2021, in a lawsuit over the government's plan to renovate a 115-year-old earthen irrigation canal with changes that would eliminate leaking water that local residents have long used to fill their domestic wells. (AP Photo/Scott Sonner, File) (Scott Sonner | AP)

By Scott Sonner/Associated Press

Published: Feb. 16, 2022 at 8:07 PM PST

RENO, Nev. (AP) - A rural Nevada town wants another chance to try to prove the U.S. government's plans to repair an aging, earthen irrigation canal are illegal.

Fernley says in a new motion filed in federal court in Reno that the government ignores the fact the project would eliminate leaking water residents have used for more than a century to fill their own domestic wells.

Judge Miranda Du dismissed Fernley's lawsuit in December. She said the harms it claimed under the National Environmental Policy Act had no legal basis because their interests in the water are economic, not environmental.

Fernley's lawyers say they want a chance to better explain why they're concerned about both.

Related Content

Judge dismisses Fernley's lawsuit over leaking canal repairs

reno gazette journal

NEWS

Scenic new Sparks trail boosts Truckee River access for fishermen, hikers. Here's how to find it

Amy Alonzo
Reno Gazette Journal

Published 9:17 a.m. PT Feb. 17, 2022 | **Updated 4:40 p.m. PT Feb. 17, 2022**

A new trail in east Sparks is opening access to people looking to explore the Truckee River.

The half-mile path connects to Washoe County's Lockwood Park trail system and increases access to fishing and wildlife viewing areas, according to the Nevada Department of Wildlife. The Lockwood Park system includes 1.2 miles of trails, a picnic area and restrooms.

Work started on the project in summer 2021 and is slated for completion later this month. The trail includes two foot bridges and new fencing.

Users can access the new trail by parking at the Lockwood Park trailhead and taking the Lockwood Loop about 300 yards upstream.

To reach the trailhead, when driving east from Sparks, take Exit 22 at Lockwood. The trailhead is west of the bridge.

Year-round access: Pines to Mines trail system would connect Truckee, Nevada City

The project is a partnership among NDOW, Tahoe-Pyramid Trail, Nevada Division of State Lands, Washoe County Parks and Granite Construction Company.

Amy Alonzo covers the outdoors, recreation and environment for Nevada and Lake Tahoe. Reach her at aalonzo@gannett.com. Here's how you can support ongoing coverage and local journalism.

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Vidler Water Resources, Inc. Announces Formal Approval of Agreement With Truckee Meadows Water Authority

February 17, 2022 · 6 min read

CARSON CITY, Nev., February 17, 2022--(BUSINESS WIRE)--Vidler Water Resources, Inc. ("Vidler") (Nasdaq: VWTR) announced today that the previously disclosed agreement between its subsidiary, Fish Springs Ranch, LLC ("FSR") and Truckee Meadows Water Authority in Reno, Nevada ("TMWA") has been formally approved by TMWA's Board. The agreement with TMWA includes the sale of up to 400 acre-feet of water credits from the Fish Springs Ranch inventory in northern Nevada for use in TMWA's service areas and an ongoing use of 3,000 acre-feet for Truckee River instream flow requirements and water quality enhancement, conjunctive use, groundwater recharge, effluent management alternatives and irrigation within the Reno and Sparks, Nevada area. The agreement is for a period of up to ten years and will generate $1 million in annual revenue to FSR each year over the term of the agreement.

with TMWA last year has now been formally approved. We have an excellent working relationship with TMWA to ensure we are good partners in their water resource management efforts throughout their service areas in Washoe County and we believe this agreement benefits both parties. It allows TMWA to increase their overall water resources and provides them with a certain volume of water, while available, to efficiently manage their existing resources during the current drought. This agreement also reflects our collaborative efforts with TMWA to collect additional data relative to the aquifer quality and viability at FSR and aids our efforts in moving forward on the next 5,000 acre-feet of our permitted water rights which we aim to import to the North Valleys of Reno and/or other TMWA service areas. From our perspective, while we are receiving a lower price point per acre-foot of water than from sales in the North Valleys, this agreement provides a regular stream of cash flow of$1 million per year for the next ten years. Applied against our current estimate of our future annual net annual expenditures of approximately $4.8 million (that is, all net cash use without any sale or acquisition of assets or associated sale costs), it reduces our estimate of annual expenditures to approximately $3.8 million. We also believe utilizing some of our FSR inventory outside the North Valleys is a strategic entrance to potentially serving other areas in the Reno / Sparks region as and when demand occurs in other fast-growing areas of Washoe County."

reno gazette journal

NEWS

Controversial election overhaul pulled from agenda; Commissioner Herman calls it 'unfair'

Mark Robison
Reno Gazette Journal

Published 4:31 p.m. PT Feb. 21, 2022 | **Updated 6:06 p.m. PT Feb. 21, 2022**

A controversial resolution to overhaul Washoe County's election processes – including a return to paper ballots and a military presence at voting sites – has been pulled from the board of commissioners' agenda a day before they were to address it, upon legal advice from the district attorney's office.

Commission Chair Vaughn Hartung and Vice Chair Alexis Hill released a statement saying, "On the advice of the Washoe County District Attorney's Office, we will be pulling Agenda Item 14 put forth by Commissioner Jeanne Herman related to election security."

The proposal listed 20 measures for the commission to consider in order to "to ensure accuracy, security, and purity of elections."

Herman said she had been very careful to make sure that everything was legal in the proposal itself and that county staff were the ones who rewrote the language that the DA's office now objects to.

"I thought it was unfair," Herman said. "They're trying to say I didn't get it done properly. I did it as properly as anyone has ever done."

Ask the RGJ: Does Washoe County test voting machines for vulnerabilities?

Q&A with Commissioner Jeanne Herman about Washoe County election overhaul proposal

Hill said the right thing happened.

"I'm so grateful this has been taken off the agenda and that the DA's office saw this was not appropriate," she said. "This whole thing just shows how important local government is, how important it is to see what your local officials are up to, and how important local journalism is to get the word out."

The Washoe County District Attorney's office looked more closely at the proposal over the weekend and put out a statement Monday.

"Upon legal review, Item 14 on the Board of County Commissioner's agenda for February 22, 2022 – concerning a possible resolution making changes to the county's election process and rules — a recommendation has been made that the item should be removed from the agenda at this time due to Nevada Open Meeting Law requirements," the statement said.

The reason for the removal was described this way: "Specifically, Item 14 was submitted the day before the agenda deadline by a commissioner and did not go through the customary agenda review process. As a result, the agenda item description does not match the resolution that has been submitted for possible approval and does not adequately describe the possible action to be taken."

Herman said she's been dealing with this type of hindrance for seven years.

"It's not good," she said. "It shows what's going on in our county and shows why we need to change it."

There are two ways to bring a resolution forward: through the commission chair or through the county manager's office. In this case as well as a few other times, Herman said, she's gone through the manager's office because of obstructive actions by county staff when trying to go through the chair.

With the election resolution, "they rewrote the document and weakened it quite a bit," she said. The rewording caused it not to be phrased like a typical resolution, which caused the problems with the DA's office, she said.

Hill said she looked at this as an opportunity to learn from the confusion over having the item added and taken off the agenda. "Let's revisit how the process works," she said. "Maybe we can clarify our rules" to avoid such situations in the future.

Herman plans to re-submit the proposal.

Regarding the controversial idea to have the military at all voting sites, she said, "The National Guard item could have come out of there as one of the items that it's contingent upon to remove (for approval). It was a good idea (to consider the National Guard) because

during the election, people from other states came here and they weren't very kind to a lot of people. I've had so many people call me about the election last year."

Herman added that when she tried to vote in the last election, she was told her signature didn't match and she wouldn't be allowed to cast a ballot.

"Another person at the end of the table said, 'Don't you know that's your commissioner?' and he got all flustered and finally let me vote – but it was only because that lady spoke up."

Mark Robison covers local government for the Reno Gazette-Journal, as well as writes Fact Checker and Ask the RGJ articles. His position is supported by donations and grants. Because of this, all of the journalism he publishes will be made available for free without concern for commercial return. If you'd like to see more articles like this, please consider sharing this article or donating at RGJ.com/donate.

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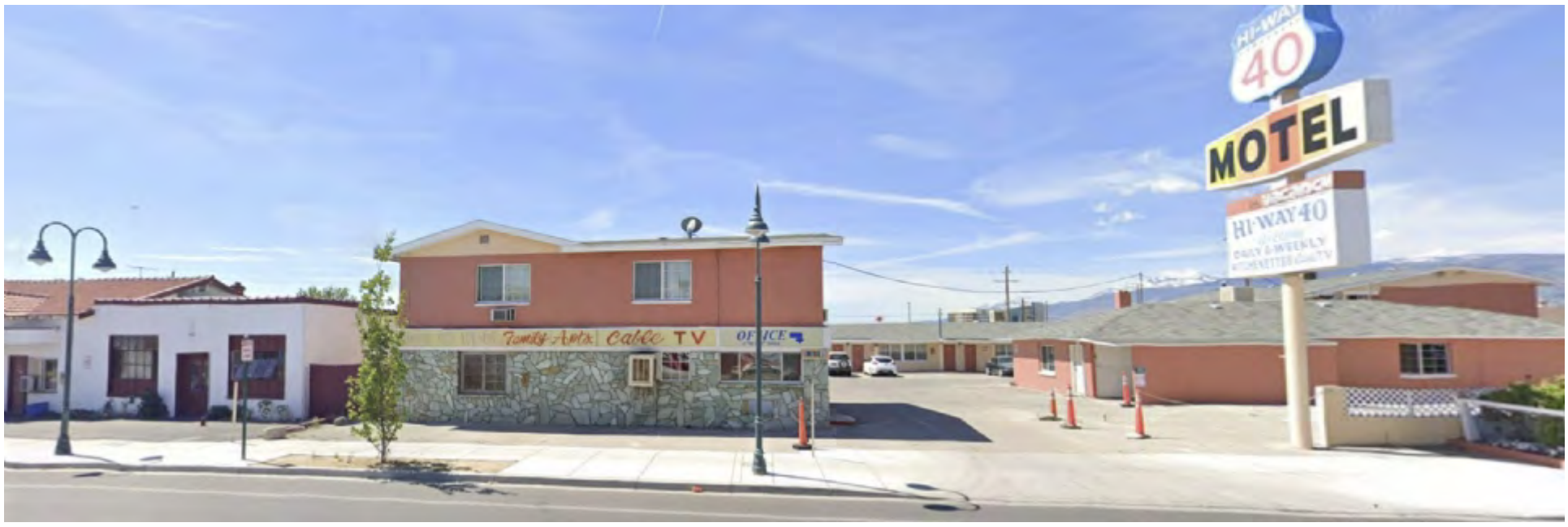
Report on City Council Affordable Housing Meeting



BY MIKE VAN HOUTEN / FEB 22, 2022

The first of several special meetings for affordable housing was conducted today, and in case you don't want to sit through the multi-hour meeting, here is what you need to know. Let's start with the state of Reno, the second presentation by Kelly Mullen.

The State of Reno report

The Area Median Income (AMI) is currently $83,800 a year for a family of 4.

60% of AMI is $50,100

60% AMI is considered housing burdened if rent and utilities exceeds $1,252 a month.

The average monthly rent is $1,616 spanning all types of housing.

The Median Sales Price in Reno is $600,000 and $570,000 for Reno/Sparks combined.

The average Reno/Sparks Rent in Q1 2020 is $1,341, and in Q4 2021, was $1,616 (almost 21% increase in 2 year period). Thus, 7 out of 10 households are unable to afford a median priced home in our area. Less than 23% of households in Reno earn enough to qualify for a median-priced home but that number is actually lower, because some of this data was pulled from last year. It would be fewer than 23% of households because it was based on lower than current median home price ($541k). A household would need to earn $117,000 a year to qualify for median home price in Reno.

Year over Year			Month over Month		Year to Date		
Dec 2021	Dec 2020	Change	Nov 2021	Change	2021	2020	Change
$545,000	$449,700	▲ 21.2%	$535,000	▲ 1.9%	**$515,000**	$427,000	▲ 20.6%

Here are some more growth numbers:

Expected Growth in next decade:

2021 Reno Population: 264,318
Dwelling Units: 118,612 Dwelling Units

By 2030, Reno population: 313,708
Dwelling Units: 132,927

PUD (approved lots remaining to be built)
Reno: 39,850
Regionally: 55,319

Subdivisions (approved lots remaining to be built)
Reno: 10,544
Regionally: 22,100

Existing dwellings in Reno:
Multi-family: 45,169
Single Family: 71 901
Single-Family: 71,901

Dwellings brought online the last two years:
Multi-family: 3,815
Single-Family: 3,222

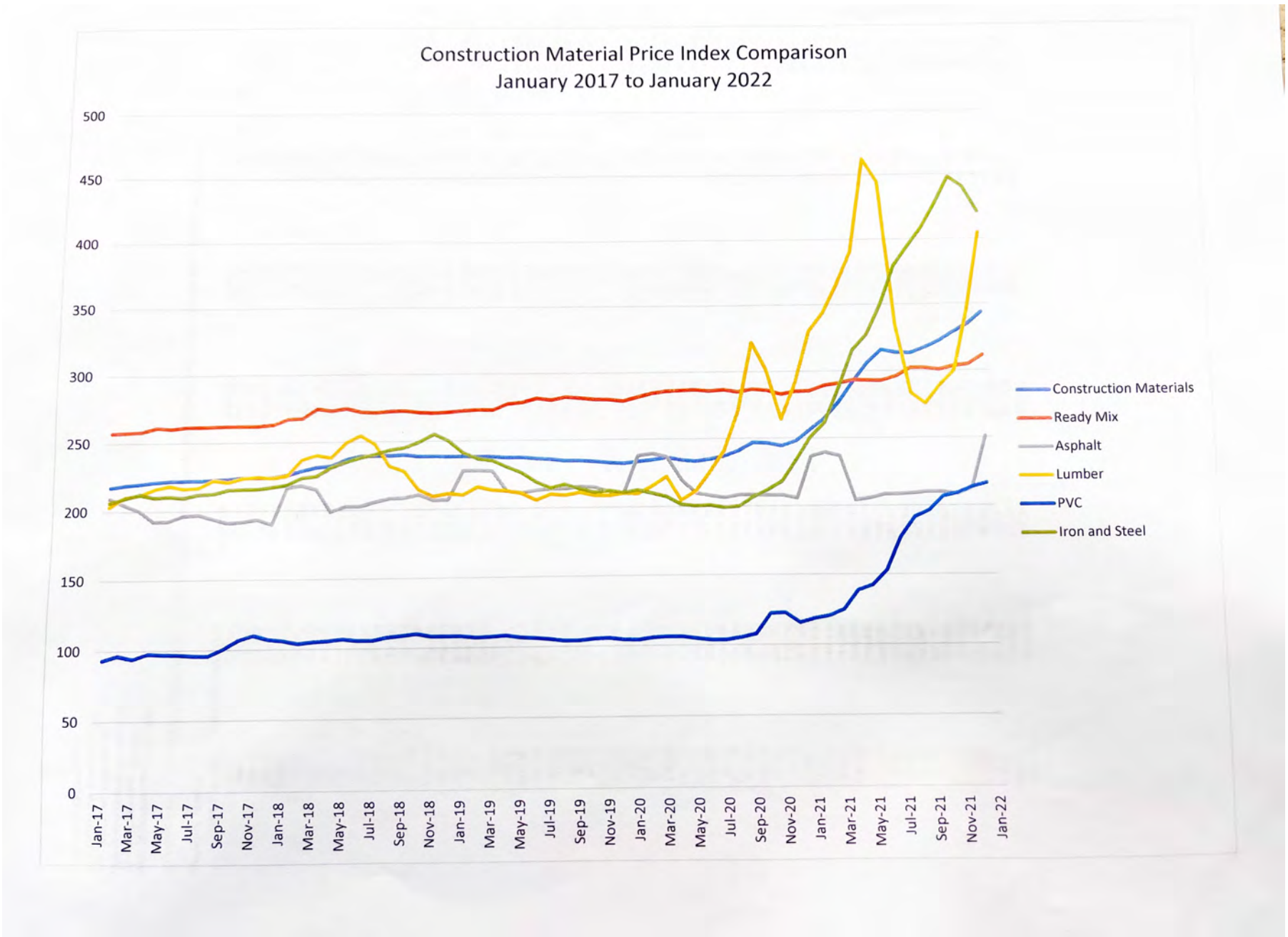
Dwellings to start construction in 2022:
Multi-family: 2,200
Single-Family: Over 2,000

Projects Under Construction		
Project Name	Units	City
Villas at Keystone Canyon-Ph. II	115	Reno
Esprit Townhomes	126	Reno
Westlook	192	Reno
Indigo	260	Reno
Emory at RED	282	Reno
The Retreat	283	Reno
Integra Peaks	300	Reno
SyRes	330	Reno
Basecamp at RED	340	Reno
Overlook at Keystone Canyon	342	Reno
Double R Apartments	440	Reno
Reno City Center (was Harrah's)	530	Reno
The Atrium	132	Sparks
Stonebrook Apartments	396	Sparks
Total Units:	4,068	

Projects in Planning Stages		
Project Name	Units	City
Ryland Apartments	90	Reno
Bennie Lane Studios	119	Reno
Northtowne Apartments	120	Reno
The Kallan	242	Reno
Edison	242	Reno
550 North Virginia	261	Reno
Elysium	270	Reno
The Lakes at Lemmon Valley	280	Reno
5th & Vine Apartments	295	Reno
Gardella Avenue Apartments	300	Reno
Palomino	328	Reno
Lemmon Landing	342	Reno
Reno Experience District	359	Reno
Riverfront Apartments	393	Reno
Ballpark Apartments	396	Reno
Spectrum-Dandini Dev.	420	Reno
PromWest	168	Sparks
Promenade-Phase I & II	288	Sparks
Kiley Ranch North Phase 6	306	Sparks
The APEX @ Vista	360	Sparks
Azure-Phase II	441	Sparks
Kiley Ranch Apartments	441	Sparks
Total Units:	6,461	

The Construction Challenges of Developers

Developers are often vilified, but when you look at the overall cost to construct, it’s a huge barrier as to why affordable housing isn’t being built without subsidies or assistance.
Here's a graph showing the rising costs of construction, hindering affordable development.



Labor shortages and supply chain issues have increased timeline schedules by 35%, said Chris Pingree, director of development services for the city of Reno.

Solutions at the State Level

State Treasurer Zach Conine gave a great presentation on the **Nevada State Infrastructure Bank** and **Affordable Housing Trust.**

It is a way to help finance a project, that is NOT free money or a handout to developers. It is a bonding method. This is money that would be available for bonding capacity. The State is essentially borrowing money from its general obligation debt which would be repaid with property taxes. They are able to do that much more cheaply than a private developer because the state has the highest credit rating in the state's history.

State of Nevada as a whole is facing deficit of 105,000 affordable housing units and 84,000 units short for extremely low-income individuals (those earning 30% or less of AMI) . To afford a one bedroom in Reno, one has to earn $51,000.

Nevada is dedicating 87% of its 2021 private activity bond allocation to affordable housing, creating more than $300 million in bonding authority that will support almost 3,000 new housing units by 2024

The State Infrastructure Bank is designed to provide low-interest financing to local govts, non profits and public private partnerships for development of infrastructure projects, authorized through assembly bill 399 in the 2017 legislature and then Senate bill 430 expanded the types of projects to include social infrastructure, which includes education, affordable housing, homelessness and food security.

Affordable housing rose to the top of the State's priority list when they took the Nevada Recovers Listening Tour, which consisted of over 120 listening sessions over 80 days.

The $75 million in general obligation bonds available to the Infrastructure Bank will support projects in three areas;

- Up to $20 million for the Affordable Housing Investment Front
- Up to $15 million for the Charter School Capital Needs Fund
- Up to $40 million to serve as a matching fund to leverage federal infrastructure funds
- Funding will be available to state agencies, local govts, non profits and tribal govts.
- The $20 million set aside for affordable housing will serve as a revolving loan fund to support the development, construction, maintenance, repair and acquisition of affordable housing.

The program requirements:

- All projects must attract a match from a pension fund investor or commingled fund of pension fund of investment, with a responsible contractor policy and track record of successful investment in affordable housing.

- Borrowers should ensure any developer that is being utilized can demonstrate long term commitment to hiring local residents and utilizing apprentices in registered programs.

- All projects must adhere to the statutes and regulations governing the Nevada State Infrastructure Bank, including the payment of prevailing wage

Through a partnership with ALF-CIO HIT and Building and Construction Trades of Northern Nevada, the State is working to develop a potential pipeline of affordable housing projects in Washoe County and throughout Northern Nevada first. Potential sites have been identified for new construction of affordable housing developments and acquisition and rehab of existing sites. Some of these projects will begin moving later this year.
Bonds should be able to start being issued in a few months.

Reno Housing Authority Presentation – Amy Jones

The Reno Housing Authority was created in 1943, and adopted by Washoe County and City of Sparks as a regional housing authority in 1975. It is a HUD-designated top performing agency, and only 39 of 4,000 orgs earned the designation. It is the largest affordable housing provider in Washoe County, and serves more than 9,000 residents in 4,000+ households. 2/3 of those residents are seniors and persons with disabilities.

They own and operate eight public housing sites, three sites for seniors and persons with disabilities, five sites for families, for 750 units total, and residents pay no more than 30% of thir income. Each site has resident councils, similar to NABs, and plan community events.

They also manage a Housing Choice Voucher program, and provide 3,000+ vouchers to individuals, Veterans, former foster youth and homeless or facing homelessness.

RHA market activities include owning 500+ apartments, duplexes, and single-family homes, all unsubsidized. They rent those units all below market rate. They also serve an additional 1,500 people through their own financial stewardship, and is used as a path to home ownership.

Their two short-term plans include Sundowner, 180-200 units, for sale for $18 million and the Bonanza Inn, which bidding should start soon.

Additionally, a 12-unit complex serving homeless veterans.

After the presentation, Jenny Brekhus raised concerns that Jacobs Entertainment and the RHA could conflict and wanted re-assurance that there are no backdoor deals or benefits because both properties happen to be in the Reno Neon Line. It stemmed from RHA pondering selling Sarrazin Arms to Jacobs Entertainment, but then backed out of the deal to keep the units at that project affordable. This angered the Mayor Hillary Schieve, who then explained exactly what happened, and scolded Brekhus for never being at the table for Jacobs Entertainment or understanding what was going on, and accused her of inventing a narrative in her own head. Devon Reese brought up concerns about the Bonanza Inn being in probate court, and the sheer cost of the Sundowner project, including rehab, but the RHA mentioned they received estimates that would come in at about $50 million for the project including purchase price.

The RHA needs $13 million from the city to possibly complete both deals for the project. There is a sense of urgency for the Sundowner project, since the developer told the RHA 'show me the money' essentially.

Mayor Schieve mentioned she would call another special housing meeting to address these two projects.

Additional Solutions

Village on Sage 2.0

The second part of the Village on Sage will be 96 additional units. The hard cost for the units would be $430,000 for 96 units. Would bring total of units at both Sage projects up to 312.

The cost of moving the units and setting them up is $6.5 million, and the project would take 6-8 months. Rents would be $400 a month.

They are requesting $3.5 million from the state and $2.5 million from the City of Reno to complete it.
The mayor and Duerr would like to keep the land under City of Reno ownership.

Highway 40 Motel – 1750 East 4th Street

32-unit motel, some motel style rooms, one some 1 bedroom units. Near the Village on Sage Street.
The estimated renovation and purchase cost would be $4 million, rents would be $675 to $1000 a month. The motel style rooms would be converted to kitchenettes. Nobody would be displaced and renovations would occur as they became available. 20 of the 32 are not currently rented out. They are requesting $2 million from the State and $2 million from the City of Reno. IT would be a partnership with Volunteers of America just like Village on Sage Street.

The Council made a motion to move forward with both projects, coming back before the ocuncil as the project progresses.

Identify Zoning Code That Can be Modified

Also on the table are zoning code modifications, including accessory dwelling units, inclusionary zoning and updated permitting processes and standards.

Rent Control a no-go

Because Nevada is a Dillon's Rule state and not a Home Rule State, the state legislature would have to include the ability for municipalities to enact rent control in NRS statutes before any city in Nevada could implement rent-gouging ordinances or rent control ordinances.

NEWS

After months of inconsistent snowpack, water experts are hopeful

by: Jordan Verdadeiro
Posted: Feb 24, 2022 / 05:55 PM MST
Updated: Feb 24, 2022 / 05:55 PM MST

SHARE

HURRICANE, Utah (ABC4) – Water experts say it's been a unique year with inconsistent snowpack during our state-wide drought.

Last year, Governor Spencer Cox asked residents to save water and according to the Washington County Water Conservancy District General Manager, Zachary Renstrom, they listened.

"So last year, even with 5% growth, we actually saved 400 million gallons of water compared to the previous year," he says.

Renstrom says the last few months have been inconsistent, filled with many dry days and few snowfalls.

"November we didn't receive a single drop of rain or snow, down in this area but then December comes along and it was a beautiful December," he says.

But then it went back to a dry climate until Wednesday's snowfall.

"We're about 100-110% down here in Southwest Utah which is where we'd like to be, we're still in a little bit of a deficit with last year's drought being so bad," says Renstrom.

Renstrom says this drought has shown the importance of infrastructure, like reservoirs and dams.

"But we're hoping that we might get a few more spring snowstorms or rainstorms to help us fill that deficit from last year," says Renstrom.

He says it looks like the current water supply will be enough for this Spring and Summer, reminding residents to use water wisely.

Calif. launches website to track local water conditions

As the state continues to grapple with extreme dry conditions, Calif.'s new platform will provide a more enhanced and specialized version of the U.S. Drought Monitor's services.

Feb. 24, 2022

Calif.'s Department of Water Resources (DWR) has launched a new website, California Water Watch that helps Californians Californians easily access information on current local and statewide water conditions — down to their own region and even neighborhood.

"The variability of California's climate and current water conditions we are experiencing now make this data more important than ever," said DWR Director Karla Nemeth. "Climate whiplash is our new reality living in this State, and we are innovating and developing new tools like California Water Watch to provide water managers, researchers, and policymakers with the data necessary to make better informed decisions about our limited water supply,"

The website brings together data from DWR and other sources to provide dynamic real-time information on precipitation, temperature, reservoirs, snowpack, groundwater, streamflow, soil moisture, and vegetation conditions. Users can enter an address to see local conditions, including daily precipitation and temperature statistics, for their area and links to water supplier information. The website also allows users to compare data on local conditions by year and by region.

The website was developed in response to Governor Newsom's call for a California-centric version of the U.S. Drought Monitor website in his drought state of emergency proclamation.

The website was also recommended in the California Natural Resources Agency's report to the Legislature on lessons learned from the 2012-2016 drought.

California Water Watch also includes precipitation forecast maps and links to other forecasting products, all from one web page. Regular hydroclimate summaries developed by California State Climatologist Mike Anderson will also be posted to the California Water Watch website. These summaries will succinctly describe what current water conditions look like in California and their impacts on the current drought.

California Water Watch is just one of many tools being leveraged and developed by DWR to improve water supply forecasting.

The NEVADA INDEPENDENT

What the past can tell us about the future of public lands in the West

Daniel Rothberg February 24th, 2022 at 8:00 AM Environment

An alpine lake in the Ruby Mountains, part of the Humboldt-Toiyabe National Forest. (Daniel Rothberg/The Nevada Independent)

Good morning, and welcome to the Indy Environment newsletter.

As always, we want to hear from readers. Let us know what you're seeing on the ground and how policies are affecting you. Email me with any tips or suggestions at daniel@thenvindy.com

To get this newsletter in your inbox, subscribe here.

The federal government manages about 85 percent of Nevada's land. One agency alone, the U.S. Bureau of Land Management, oversees about 67 percent of land within Nevada's borders.

This land, public land, is used for many purposes, and it belongs to the American people.

We hear a lot (though probably not enough) about public land, and for good reason. Decisions made on public land have lasting e ects on the way large swaths of the state, and the country, are managed, developed or conserved. Public lands can be a tool for conservation, but they have also, at times, enabled the cheap exploitation and monopolization of natural resources.

Federal agencies play a major role in how these lands are managed, and oftentimes they are given challenging (if not altogether con icting) missions. The Bureau of Land Management, for instance, is charged with permitting mines, approving energy developments, allocating grazing allotments and selling or exchanging public land for urban growth or economic development.

At the same time, the same federal agency is responsible for weighing other public land values — wildlife habitat, recreation opportunities, conservation and the protection of cultural spaces —against some of the many uses listed above. **This conflict is often at the center of public land debates. And how the agency balances its role can vary from federal administration to administration, from state to state, even from local district office to local district office.**

But in general, public lands policy for the past century has shifted toward a greater focus on conservation. At least this is the argument that John Leshy, **a UC Hastings law professor** and former Department of Interior lawyer, argues in a new book, *On Common Ground: A History of America's Public Lands*. The book focuses on how the American public — and **leaders across political parties in the 20th century — came to favor the protection of public land after the 1800s saw a torrent of free-for-all development with often damaging consequences.**

The book tracks how public lands preservation, in addition to public lands development, became an increasingly popular idea for the American public and was eventually codified into law.

Last week, I interviewed Leshy more about this shift, what motivated it and what it means for the future of public lands. I've annotated and edited down our conversation for length and clarity.

The dynamics that drove the shift toward conserving public land: Leshy said one of the major driving forces had a lot to do with the economy of the late 1800s and early 1900s.

"One of the major dynamics was there was sort of a reaction to the Gilded Age, to the post-Civil War [attitude of] 'let's industrialize, let's build railroads and let's turn people loose and give them what they want in terms of land and all of that," Leshy said. "There was a big backlash to that, [which] developed in the 1870s, 1880s. And that had a very powerful influence. I talk about Henry George, a political economist who basically says 'If we're not careful, the ultra-rich are going to end up owning all these lands and excluding common people.' And that resonated."

But there was another big factor that played a role in protecting land, Leshy said. **That had a lot to do with water. Leshy said there was an increasing acknowledgment of the connection between forests and watershed health.** This was especially true throughout the West.

“The concern about water,” Leshy said, “was a concern that we've got to preserve the upper watersheds, because they're our water supply, and we're living in a water scarcity environment. Once that idea took hold, which it did in the 1880s, then quite quickly, in the next 20 years, Congress authorized the president to set aside forest reserves. And presidents, Republicans and Democrats, set aside 150 million acres, not quite overnight, but it was very quick.”

There was more to it, though. I asked Leshy about the connection here, at the same time, with the federal government’s desire to promote agricultural (and later urban) economies in the West. As presidents were protecting all this land, the idea of the Bureau of Reclamation was coming into focus, an agency to build dams and canals that manipulated watersheds.

Although there was this shift to conservation, there was also this desire for development.

“It was a giant tradeoff,” he said. “[President] Theodore Roosevelt saw the brilliance of this, because he understood that protecting the watersheds was very powerful, so he, like his immediate predecessors, set aside lots of land and forest reserves. But he also understood, OK, there’s kind of a payback here. We’re going to set aside to protect these lands, but we also should put the federal government in the business of building water projects so we can capture and deliver some of that water to people downstream for small farms and that sort of thing.”

Reconciling the legacy of public lands policy as an outgrowth of brutal, violent Western settlement: Many of the public lands, conserved and protected today as national monuments or wilderness areas, are the ancestral homelands of Indgienous people who were often brutally forced off their land. In many cases, Native American tribes were neither fairly compensated when the United States took title, nor did the federal government meet its treaty requirements to sovereign tribal nations after treaties were signed. Conserved land, even institutions such as national parks (seen by most Americans as wholly positive) are an outgrowth of this legacy.

In recent years, there have been efforts to repatriate lands, including national parks, incorporate more Indigenous knowledge in public lands management and address environmental injustices.

Leshy has a chapter about that in his book, and I asked him specifically about how public lands policy has engaged with this history. He said there have been efforts in recent decades and pointed to the appointment of Interior Secretary Deb Haaland, a member of the Pueblo of Laguna and the first Native American cabinet secretary, as an important moment.

“A lot has happened, actually,” he said. “That chapter is pretty long in recounting how, in modern times, Congress and the executive branch has addressed these issues. That has a rich history.”

Leshy identifies a pivotal moment in 1975, when conservationists were looking to expand Grand Canyon National Park, the creation of which pushed the Havasupai tribe and 10 other tribes off their traditional lands. At the same time, the Havasupai Tribe wanted to expand their reservation into that same area as the proposed park expansion. Congress, Leshy said, ultimately sided with the Havasupai Tribe, against some of the wishes of the conservation groups at the time.

"The Sierra Club had led the fight, really, against enlarging the Havasupai reservation, but in the end, acquiesced to it, and I think, learned from that," Leshy said of the Grand Canyon example.

As another example, he pointed to a bipartisan bill to transfer management of the National Bison Range in Montana to the Confederated Salish and Kootenai Tribes.

Nearly a century after the federal government began designating national parks and forest reserves, the modern environmental movement became a driving force in politics. **What did this all mean for public lands?** Leshy said the environmental movement of the 1960s and 1970s (which helped spur the creation of the EPA, the Clean Air Act and the Clean Water Act), "was related to the public land conservation movement, but was also quite distinct from the environmental movement." He said it was much more driven by concerns over public health.

But some of the laws that were adopted had a significant impact on what voices were heard in discussions about public land management and what values were prioritized when deciding how to manage land. One law was the National Environmental Policy Act, known as NEPA, which requires the federal government do an environmental review before taking an action. Another was the Endangered Species Act, which is considered one of the strongest environmental laws on the books and aims to protect habitat for threatened species.

"It kind of bridges the two," he said. "The Endangered Species Act, a lot of it is concerned about habitat, because that is where the species live. That means it has a big impact on land use."

It's important in today's context, too, as Leshy identified two challenges facing public lands: Climate change and biodiversity. He said public lands can be part of the solution to both. Public lands provide a space, he said, for renewable energy development, where it is appropriate. And they also are important for conserving land to help protect habitats. The lesson he sees in public land policy, at its best, is prioritizing collective action over self-interest.

"One of my favorite lines is 'the Stone Age did not end because the world ran out of stone. The Stone Age ended, because we figured out a better way to do things,'" he said.

Here's what else I'm watching this week:

Pushback on solar tariffs: Sen Jacky Rosen (D-NV) and David Bobzien, Gov. Steve Sisolak's director of energy, called for repealing solar tariffs at a press conference Wednesday. Last week, Rosen introduced legislation that would repeal the tariffs, enacted by the Trump administration and renewed by the Biden administration earlier this year (with an important exemption).

Nevada Independent reporter Jazmin Orozco Rodriguez wrote a fantastic piece about Autumn Harry, the first Paiute woman licensed as a fly-fishing guide at Pyramid Lake. "I really want to talk to people about the history of Derby Dam, how our water was stolen, that our lake level dropped by 80 feet and there was a local extinction event here with the trout," Harry said in an interview. **"I want it to be more than just fishing for them."** Check out Jazmin's story.

Supreme Court weighs in on Southwest Gas rate regulations: The Nevada Supreme Court, in a unanimous order last week, ruled that the onus is on Southwest Gas — and other utilities — to prove that their costs, typically recovered in rates, are prudent. The Supreme Court rejected arguments that there exists a "presumption of prudence" in certain cases. More on that here.

President Joe Biden held a press conference this week to **discuss the administration's strategy on permitting new mines as it pushes to secure a domestic supply of critical minerals, including lithium.** A few Nevada companies, including Redwood Materials (based in Carson City) were mentioned in a press release. *Reuters* reporters Ernest Scheyder and Steve Holland wrote more about it, including how the administration plans to view projects.

The northeastern Nevada mining community is mourning **the tragic loss of an underground miner at Cortez Hills** on Feb. 14. The mine is operated by Nevada Gold Mines, a joint-venture between Barrick and Newmont. The Mine Safety and Health Administration is investigating the fatality and expected to release its preliminary report on the incident in the coming weeks.

After the 9th Circuit Court of Appeals cleared the way for construction to begin on a geothermal plant in Churchill County's Dixie Meadows, the Center for Biological Diversity announced this week that it had reached an agreement with the U.S. Fish and Wildlife Service that requires the agency to decide whether a rare toad, which relies on the meadows for habitat, warrants federal protection. **The center's Great Basin director, Patrick Donnelly, said "Dixie Valley toads are facing extinction if this plant is built, and federal protections are these animals' only hope."** *The Nevada Current's* Jeniffer Solis has more on the agreement.

Much-needed snow in Northern Nevada this week, *The Reno Gazette Journal*'s Amy Alonzo reports. This precipitation comes after the driest January on record for the Reno area.

The Lake Tahoe Tribune reports on the legislative committee **to review the Tahoe Regional Planning Agency and the Marlette Lake Water System.**

The UC Davis Tahoe Environmental Research Center is partnering with Palisades Tahoe, Protect our Winters and Brand XR **on a "Save our Snow" campaign.**

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- Southwest Gas - $16,250
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- Patrick Donnelly - $1,064
- David Bobzien - $246
- Center for Biological Diversity - $100

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https://www.highlandnews.net/news/public_works/agencies-break-ground-for-regional-recycled-water-facility/article_3ebb2da2-98b9-11ec-856f-8b1e5048a579.html

BREAKING

Agencies break ground for regional recycled water facility

Feb 28, 2022

San Bernardino Valley Municipal Water District, East Valley Water District and San Bernardino Municipal Water District break ground on the Weaver Basins, Feb. 24.

Photo coutesy of SBVMWD

Thursday, Feb. 24, three lead water agencies broke ground on the first phase of a regional recycled water project that will keep recycled water in local groundwater basins for future use. East Valley Water District (EVWD), San Bernardino Municipal Water Department (San Bernardino Water) and San Bernardino Valley Municipal Water District (Valley District) are partnering on a multi-phase regional recycled water project that includes infrastructure to store and transport water through Highland and San Bernardino.

The Weaver Basins Groundbreaking was held at the site on Greenspot Road in the city of Highland. This groundbreaking is just one part of Phase I of a larger Regional Recycled Water System. Included in Phase 1 is the installation of a 30-inch pipeline, which will bring water to the Weaver

Basins site. Phase II of the project will include extension of the Regional Recycled Water System through construction of Dike D and the Enhanced Recharge Basins, and connection to San Bernardino Water's Tertiary Treatment System (TTS).

"The Weaver Basins are one critical piece of the regional puzzle and an investment in our region's long-term water supply sustainability," commented EVWD Board Chairman Phillip R. Goodrich. "Thanks to the collaboration between East Valley, San Bernardino Water and Valley District, the region will benefit from recycled water."

The project provides a new local, reliable and drought-proof water supply that will increase long-term regional water supply reliability and drought resilience. Recycled water will augment the local groundwater supply of the Bunker Hill Groundwater Basin. Highly treated water from EVWD's Sterling Natural Resource Center (SNRC) and San Bernardino Water's Tertiary Treatment System will be conveyed for groundwater recharge to the newly constructed Weaver Basins.

"Regional efforts have been ongoing to replenish groundwater in the San Bernardino Basin, especially given the ongoing drought conditions over the last few years," stated San Bernardino Water Board President Toni Callicott. "Even without rain, we will always have a source of recycled water that can be treated and kept locally. It's exciting to be designing and building these facilities now."

As the regional wholesale water provider, Valley District has spearheaded this and other projects throughout the region that can augment groundwater supplies, increase local storage, and reduce overall water use. Valley District imports State Water Project water for direct deliveries and groundwater recharge in the San Bernardino Basin for local retail water providers, including EVWD and San Bernardino Water.

"We're pleased to partner with the retailers on projects that will keep water locally for future use," added President Paul Kielhold, SBVMWD. "As the drought conditions worsen in California, it is essential to have the facilities in place that can capture the water supply when it is available. That's exactly what the Weaver Basins project will allow us to do."

The SNRC will be capable of treating up to 8 million gallons a day, with water recycled at the facility undergoing a rigorous treatment process using state-of-the-art technology before being recharged into the local groundwater supply. The TTS will provide an additional treatment capacity of up to 5 million gallons per day, which will contribute to regional groundwater recharge for the San

Bernardino valley. (Recycled water flows available for recharge are estimated to be 8 million gallons per day (mgd) and reaching up to approximately 13 mgd based on future SNRC and TTS production.) It is expected that the Weaver Basins project will be completed in December 2022.

February storms help ski resorts but do little to boost snowpack

By Ben Deach
Published: Feb. 28, 2022 at 3:17 PM PST

INCLINE VILLAGE, Nev. (KOLO) - Federal water master Chad Blanchard made the trip to Mt Rose Summit on Monday for the third of four annual snow surveys, and was disappointed by the results.

“With the very dry conditions in January and February - which are supposed to be our two biggest months - the conditions are not looking good as far as storing a lot of water,” he noted.

Hydrologist Jeff Anderson measured the snow depth – which was 76 inches deep at the SNOTEL site located within the confines of Mt Rose Ski Tahoe, and also weighed it to check the water content – which the snow had over 27 inches of.

“The old adage boom or bust is how our water supply happens and we’ve seen both this year,” Anderson said.

Following the storms in October and December the snowpack was at 200%. But following a January with no snow, and a February with very little – that number is down to as low as 77% at some sites around the region, and 86% at the Mt Rose site.

Despite the dry start to 2022, Anderson says some areas are still enjoying very good water years.

“Topaz Lake which feeds the Yerington area actually has a lot more storage than last year in fact almost twice as much,” he mentioned.

The hope is March will bring in some snow and help turn this year around, but as of Monday, there wasn’t a lot of optimism about that happening.

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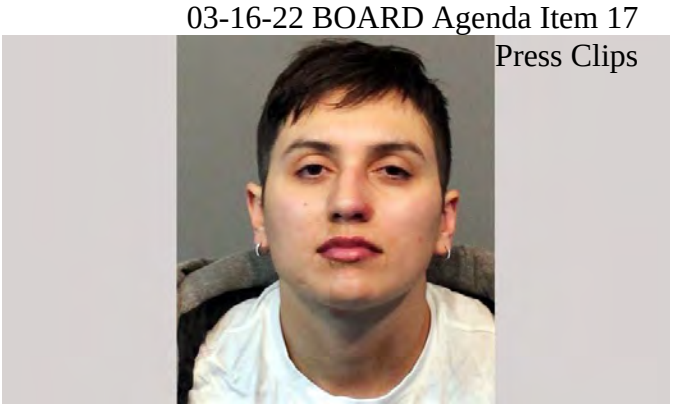

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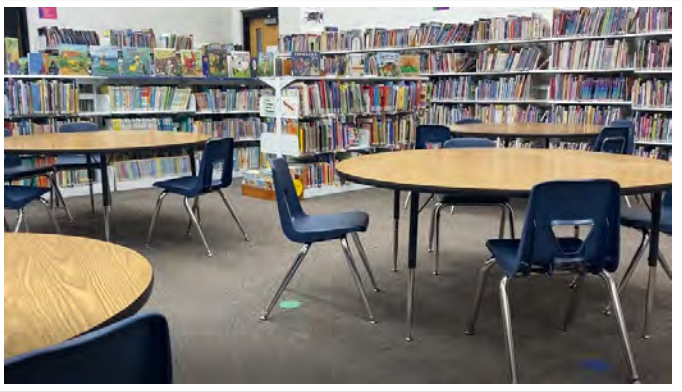

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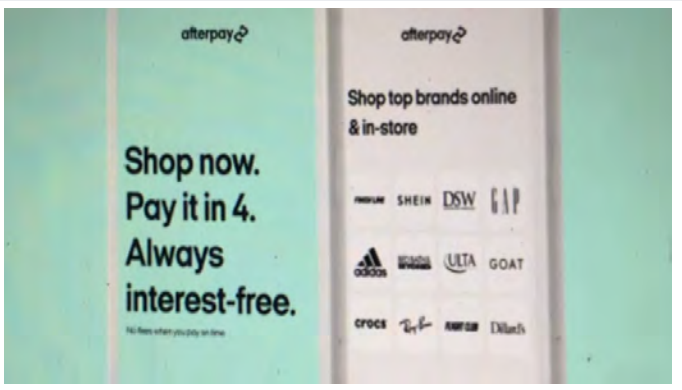

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LAW

Supreme Court to hear a case that could limit the EPA's power to fight climate change

February 28, 2022 · 5:00 AM ET
Heard on Morning Edition

NINA TOTENBERG

RYAN ELLINGSON

The U.S. Supreme Court hears arguments Monday in a major environmental case that could hobble the ability of federal agencies to regulate air pollution — and potentially, much more.

The case has been years in the making. It began in 2009 when the Obama administration faced an unpleasant reality. Climate change is a problem too big to address without an international agreement, but "the other nations would not do anything unless the Unites States went first, and showed it was serious," says environmental law professor Richard Lazarus.

So, the Obama administration set about doing that, first getting the auto industry to reduce carbon emissions, and then addressing the country's single largest carbon emissions problem—coal fired power plants. Instead of regulating the plants themselves, the Environmental Protection Agency set strict carbon limits for each state and encouraged the states to meet those limits by transitioning to alternative sources of energy—wind, solar, hydro-electric, and natural gas. The goal of the plan was to produce enough electricity to satisfy U.S. demand in a way that lowered greenhouse emissions.

The legal fight continues

The concept worked. Indeed, it worked so well, that even after Obama's Clean Power Plan was temporarily blocked by the Supreme Court and repealed by the Trump administration, market forces still continued the trajectory. Most utilities continued to abandon coal because it is too expensive. As the Sierra Club's Andres Restrepo observes, the EPA initially projected that it would reach the targeted emission reductions under the plan by 2030, but "even without the regulation in place, the industry achieved that level of reductions in 2019, 11 years early."

That, however, didn't stop the coal industry, West Virginia, and 16 other states from continuing their fight against the now-defunct Obama plan. Presumably, they did that to prevent the plan from being resurrected.

The states and the coal industry appealed to the Supreme Court last year. The Biden administration, fearing a disastrous ruling, "unilaterally surrendered the Clean Power Plan" and pledged to write a new rule that would regulate only the coal fired plants themselves, says Harvard's professor Lazarus. "They buried it, and they told the court it's gone. There is no more case."

But the court, in an unusually muscular assertion of power, agreed to review the now-revoked plan. It is no secret why. To one degree or another, the court's six-justice conservative supermajority has been itching to limit the power of regulatory agencies, and potentially even the power of Congress.

Implication for other federal agencies

In recent cases, the conservative court majority has begun to outline something it calls the "major questions doctrine," which could hamstring the authority of all agencies, from the EPA to the Securities and Exchange Commission to Federal Reserve Board.

In general, it is far less deferential to agencies than the court's previous case law suggested. Specifically, the major questions doctrine requires Congress to specifically authorize new policies or directions, even when the language of a statute gives an agency broad power. The question is, "has Congress spoken clearly enough to tell a federal agency that you can create a program that has substantial effects on the American economy," explains Tom Johnson, a lawyer who previously worked for West Virginia in its opposition to the Clean Power Plan.

Here, Johnson argues, the EPA went too far "reshaping the energy economy by determining what mix of clean power and coal-operated power we should have." It did so with a powerful stick; the Clean Power Plan set emissions caps below what was economically feasible, essentially coercing coal-fired plants to invest in alternative energy sources, he says.

Congress could be hobbled, too

But the major questions doctrine is not the only new twist that some of the court's conservatives have advocated. Another is something called the non-delegation doctrine. As some conservatives see things, Congress is quite limited in how much regulatory power it can give to agencies.

Jonathan Brightbill, an environmental lawyer who previously represented the Trump administration in the case, summarizes the outer edges of the nondelegation argument—namely that Congress cannot delegate unlimited power to executive agencies, no matter what the circumstances are. After all, he points out, "ours is a constitutional system," and the Constitution places legislative power in hands of representatives in Congress—not unelected executive agencies.

That point was initially made by Justice Clarence Thomas in a 2001 case, an EPA case no less. But no other justice joined his opinion. Even Justice Antonin Scalia, a conservative icon, rejected the non-delegation argument. Scalia's majority opinion greenlit delegation of broad regulatory authority as long as Congress guides the agency with an "intelligible principle."

But in 2019, Trump appointee Neil Gorsuch, sought to resuscitate Thomas's non-delegation argument in an opinion joined by Chief Justice John Roberts. They argued that the Founders rejected the idea that Congress could delegate its powers.

Law professors Nicholas Bagley and Julian Davis Mortenson have disputed this reading of history after an exhaustive examination of the debates at the founding.

"To the extent that we have evidence about what the Founders thought about the non-delegation doctrine, the evidence cuts pretty hard in the direction that they thought there wasn't any such thing," said Bagley in a recent episode of the podcast *Strict Scrutiny*.

Professor Lazarus, for his part, worries that severely limiting Congress's delegation powers would create a dysfunctional system of governance. He points out that, like the Clean Air Act at issue in this case, many statutes use "broad and capacious language" to authorize federal agencies to regulate commerce, health, and safety. These constitutional delegations were permissible when these laws were passed, but now, decades later, the Supreme Court seems to have changed its mind.

Taken to the extreme, the major questions and non-delegation doctrines could debilitate the federal agencies. For example, the Federal Reserve's power to set interest rates is certainly a power of "vast political and economic significance," Lazarus observes. Must Congress act every three months to review interest rates?

Lazarus doesn't think the court will go that far.

"At some point the court will find equilibrium," he says, "but that's going to be a time from now" and, when it comes to climate change, we are running out of time.

Forecasters: 'Miracle March' not likely for Tahoe, Sierra as drought continues

Amy Alonzo
Reno Gazette Journal

Published 2:11 p.m. PT Feb. 28, 2022 | **Updated 11:46 a.m. PT March 2, 2022**

It's been a tale of two winters.

After record-breaking storms pushed Tahoe-area snowpack to 200% of normal on Jan. 1, winter has all but disappeared.

January and February are historically the wettest months for Nevada and California. But this year, many snow-measuring sites in the eastern Sierra recorded the lowest precipitation levels on record for the first two months of 2022.

More: As climate warms, overhauling California water projections gains urgency

At 30 of 35 snow-measuring sites, just an inch of precipitation or less was recorded over the two months, compared to an average of 12 inches during a normal water year, according to Jeff Anderson, hydrologist with the Natural Resources Conservation Service Nevada.

Heading into March, snowpacks in the Tahoe, Truckee, Carson and Walker basins are sitting anywhere between 77 and 88% of median. In other parts of Northern Nevada, the snowpack is as low as 64% of median.

To bounce back, Nevada and California need a minimum of 150% of normal precipitation over the next three months. That's in part because the West is stuck in the driest megadrought the region has experienced in the last 800 years, according to a study by the University of California, Los Angeles.

But a dramatic comeback is not likely to happen.

The Center for Western Weather and Water Extremes forecast predicts that a high-pressure ridge will remain off the West Coast in the coming weeks, resulting in ongoing dry conditions. About 90% of the West is in a drought.

UN panel's climate report: 'Parts of the planet will become uninhabitable'

Increased fire potential, limited water supply, reduced recreational opportunities and poor pasture conditions are forecast for the coming summer, according to the National Integrated Drought Information System.

In California, all 58 counties are under a drought emergency proclamation. The 2021 water year was the second driest on record for the state. In Nevada, all 17 counties are have been tagged with United States Department of Agriculture disaster designations.

Despite the West's dire conditions, there are a few bright spots locally.

The Carson River is flowing at 85% of average, compared to 28 percent last year. And Lahontan Reservoir has increased its storage to 95,000 acre-feet after dropping to nearly empty last fall.

The West Walker River is flowing at 145% of average, and Topaz Lake south of Gardnerville is twice as full as it was last year.

And the Reno Airport has already received more than 80% of its average precipitation, indicating the Reno area is likely to receive a normal amount of precipitation this water year.

On Thursday, Reno residents have a 50% chance of seeing rain showers, with a slight chance of snow showers on Friday. In Truckee, there is a 60% of rain and snow showers on Thursday, with less than an inch of accumulation; the Mt. Rose area will also see about an inch of snow.

Amy Alonzo covers the outdoors, recreation and environment for Nevada and Lake Tahoe. Reach her at aalonzo@gannett.com. Here's how you can support ongoing coverage and local journalism.

Environment & Energy

Cascading Climate Calamities Target West's Water, Legal System

By Bobby Magill

Deep Dive
March 1, 2022, 3:00 AM

- Global warming poised to worsen West's water scarcity
- Attorneys disagree whether legal system can keep up

A dire United Nations climate change report confirms what water lawyers in the West have known for a long time—that drought is becoming the norm in the region, and adaptation is essential.

"Every time we see it written down, it gets a little more real," said William Caile, a water lawyer who is of counsel at Holland & Hart LLP in Denver, referring to the report's forecasts of water scarcity.

The report, released Monday by the Intergovernmental Panel on Climate Change (IPCC), is a 3,675-page deep-dive into what the latest scientific research says about what's at risk as fossil fuels continue to warm the planet. Water scarcity amid rising air and streamwater temperatures will afflict much of North America, exacerbating biological diversity losses, agricultural productivity decline, and wildfire, the report found.

The Southwest is among the regions that the IPCC says will soon be profoundly different. The Colorado River, which provides water to 40 million people from Denver to Los Angeles, courses through the increasingly arid Southwest, which is approaching a "tipping point" at which long-term water scarcity conflict with high water use and farming, the report concludes.

Just last year, the Bureau of Reclamation declared a first-ever water shortage on the Colorado River. That region has been baking in extreme heat and drought for 20 years, with signs pointing only to even more dire water scarcity.

The IPCC report is a "wake-up call," and "climate change is killing humanity," tweeted Rep. Jared Huffman (D-Calif.), who chairs a House Natural Resources Committee panel on water.

Legal Challenges

The Southwest's ability to adapt to climate change may be limited by complex legal and administrative battles over the Colorado River and ultimately by the depletion of groundwater and river flows throughout the Southwest, the report says.

"The report shows how clearly how our western U.S. water management institutions, developed in the 19th and 20th centuries, are ill-suited to the challenges posed by climate change," said John Fleck, director of the University of New Mexico's Water Resources Program.

"Laws, for example, that presume we can pump groundwater to make up for short term surface water shortfalls no longer work when the surface water shortfall is permanent," Fleck said. "You can already see that struggle playing out now with California's efforts to rein in overpumping of groundwater."

Farmers in California's Central Valley have been relying too heavily on groundwater amid streamwater scarcity, leading to the land sinking beneath the farm fields and increasing the threat of arsenic contamination in the water.

The report shows that the ravages of climate change are foreseeable and people should be preparing for a be preparing for a "profoundly different" world, said Michael Gerrard, founder of the Sabin Center for Climate Change Law at Columbia University.

"The challenges to the legal system (and every other system) are profound, and we are not on a trajectory to meet them. Very far from it," Gerrard said in an email.

Reusing wastewater is among the measures many Western cities are considering to adapt to long-term water scarcity—something that water lawyers and attorneys across the country are fitting within an existing legal framework.

Caile said he's bullish on the ability of existing legal structures, such as the Colorado River Compact, to handle the crisis. The compact, which was written nearly a century ago in a time of water abundance and determines how the river's water is allocated among Western states, could be poised for a revamp, he said.

In the West, the competing pressures of increased drought, which leads to dry-year water shortages, and explosive growth act "like a vise," Caile said.

Water Protection Battles

The report's vision of an arid future for the West is likely to fuel the Biden administration's efforts to include a wide array of waters and wetlands under the Clean Water Act protections as waters of the U.S., or WOTUS, said Kevin Desharnais, a water lawyer at Dickinson Wright PLLC in Chicago.

Many of the West's streams that the Clean Water Act protects are ephemeral, or only run part of the year because they're in a desert. A Trump-era definition of federally-protected waters, which a court tossed out last year, excluded these waterways, effectively lifting safeguards on numerous streams in arid states such as New Mexico.

"This issue is particularly important in the Southwest, where a significant portion of the waters may be ephemeral or intermittent waters that may not be within the scope of WOTUS," Desharnais said.

The U.S. Supreme Court will hear a case later this year about WOTUS and the scope of the Clean Water Act at the same time the Biden administration is considering two different rules defining that scope.

"The IPCC report may be cited as supporting the need for a broad interpretation of WOTUS" due to water shortages, Desharnias said.

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circle of blue
where water speaks

IPCC Climate Report: Six Key Findings for Water

Scientific body warns of 'rapidly closing window' for action

A woman reaches for a hose from a water tanker in Rajasthan, India. Temperatures on this day in July 2016 exceeded 110 degrees Fahrenheit. Photo © J. Carl Ganter/Circle of Blue

By Brett Walton, Circle of Blue – March 1, 2022

The United Nations climate panel issued a blunt and urgent warning to the world on Monday. In summarizing its report on the consequences of climate change, the scientific body described a society running out of time to prevent unbearable damage to the planet's lands and waters — and to the people and creatures that depend on them.

"The scientific evidence is unequivocal," said Hans-Otto Pörtner, co-chair of the IPCC working group that produced the report. "Climate change is a threat to human well-being and the health of the planet. Any further delay in concerted global action will miss a brief and rapidly closing window to secure a livable future."

Burning fossil fuels, cutting down forests, raising livestock, making cement, and using synthetic fertilizers are among the actions that have increased the amount of heat-trapping gases in the atmosphere to the point that the planet's basic functions are coming undone.

This IPCC report, one of eight to be published in the sixth assessment cycle, examined the societal risks and vulnerabilities from a changing climate. More than any previous IPCC report, it cast a light on the intersections between climate, communities, and economies, recognizing that risk from warming temperatures is not evenly distributed around the world.

To right those inequities, the report urges leaders to quicken the pace of emissions reductions as well as adaptation to expected environmental changes. “It emphasizes the urgency of immediate and more ambitious action to address climate risks,” said Hoesung Lee, chair of the IPCC. “Half measures are no longer an option.”

The IPCC, which includes hundreds of climate experts, does not conduct original research. Instead it evaluates and synthesizes the current state of knowledge about climate change.

Some of the biggest risks and opportunities identified in the report center on water. Here are six key water-related findings:

1. **Climate Impacts Are Accelerating**

The water cycle is speeding up. Warming temperatures are causing rapid shifts between wet and dry, flood and drought.These impacts are not linear — they accelerate with more warming. Unless people adapt to rapid environmental change and greenhouse gas emissions are slowed, the risks to biodiversity, water security, food production, infrastructure stability, and health are much higher toward the end of the century.

2. **We’re Making Them Worse**

Cities blanketed with pavement. Homes built in flood plains. Forests uprooted for cattle grazing. Rivers and lakes overloaded with nutrients.

Climate change is bad enough, but human actions are making the fallout worse.

Hard surfaces and channelized rivers increase flood peaks. New developments in flood plains put more people at risk of high waters. Cutting down trees in Brazil’s Amazon region is threatening to destabilize moisture feedbacks that nourish the iconic rain forest. Warmer lake temperatures mean less dissolved oxygen in the water and more algae blooms, which are a problem for fish and swimmers, as well as for drinking water systems.

3. **Food and Water Security Are in Jeopardy**

Warming temperatures are melting the world’s glaciers, causing an irreversible loss of high-mountain water storage. Rising seas are pushing salt water into coastal aquifers, spoiling a source of fresh water for hundreds of millions of people. Rainfall in the Mediterranean and U.S. Southwest is becoming more variable. All these changes in water supply are a major stressor for the sector that consumes more water than any other: agriculture. Warmer temperatures and more severe droughts are already slowing the growth in crop yields.

4. **Human Health Is At Risk**

Vector-borne diseases like malaria and dengue fever are expected to increase as mosquitoes expand their range outside the tropics. Droughts and floods are forcing people to flee their homes. Meanwhile, extreme weather like the Millennium drought in Australia has been shown to trigger anxiety and worsen mental health.

5. **Some People Are More Vulnerable Than Others**

Not all people are exposed to the same level of risk. Vulnerability is higher in high-poverty areas, in countries with poor government, and in farming and fishing communities that are more exposed to climate change. The report notes that these vulnerability hot spots are clustered in Africa, South Asia, Central and South America, and small islands like those in the South Pacific.

Those discrepancies can be illustrated in numbers. Between 2010 and 2020, the death rate from floods, storms, and droughts in high vulnerability areas was 15 times higher than in low vulnerability areas.

6. **There Is Still Time to Act**

The report authors were careful to note that the worst potential outcomes of climate change are not a foregone conclusion. There is still time to reduce carbon emissions — though scaling up a low-carbon economy requires marshalling political will, public support, technical expertise, and financing.

The same factors apply to adaptation, especially to water.

"This report also shows that water can be a part of the solution," said Aditi Mukherji, coordinating lead author for the water chapter.

Mukherji noted that when people adapt to climate change, they are usually responding to changes in water. Adaptation actions such as storing rainwater, reviving the water-trapping capacity wetlands, and conserving water in agriculture not only reduce carbon emissions. They can also help communities persevere in an era of extreme shifts in water supply.

An earlier version of this article incorrectly stated that dengue fever and malaria are water-borne diseases. They are vector-borne.

Brett Walton

Brett writes about agriculture, energy, infrastructure, and the politics and economics of water in the United States. He also writes the Federal Water Tap, Circle of Blue's weekly digest of U.S. government water news. He is the winner of two Society of Environmental Journalists reporting awards, one of the top honors in American environmental journalism: first place for explanatory reporting for a series on septic system pollution in the United States(2016) and third place for beat reporting in a small market (2014). He received the Sierra Club's Distinguished Service Award in 2018. Brett lives in Seattle, where he hikes the mountains and bakes pies.
Contact Brett Walton

Press Release

NAWC Applauds Attention to Water Infrastructure in State of the Union Address

For immediate release:

March 1, 2022

info@nawc.com

PHILADELPHIA (March 1, 2022) – Following the State of the Union address, Robert F. Powelson, president and CEO of the National Association of Water Companies, issued the following statement regarding President Biden's remarks on water infrastructure:

"By specifically including water infrastructure in tonight's State of the Union address, President Biden underscored the importance of fixing the country's ailing water infrastructure by dedicating funding to this essential part of the American economy.

"NAWC and its member companies have long emphasized the importance of sensible investments in our water and wastewater systems as a way to ensure safety and reliability at the tap. NAWC's 10 largest members invest $3.7 billion annually to maintain and improve their systems and the services their customers receive.

"The men and women who are America's water companies work tirelessly to ensure that every customer has access to safe, reliable drinking water at affordable rates. We welcome the support in these efforts from the Biden Administration."

About NAWC

National Association of Water Companies (NAWC) member companies safeguard public health and promote environmental stewardship as they serve the water and wastewater needs of nearly 73 million Americans every day. NAWC members have an exceptional record of compliance with federal and state health and environmental regulations. Ensuring this high standard of quality requires extraordinary amounts of capital investment. The 10 largest NAWC member companies collectively invest nearly $3.7 billion annually to ensure their water infrastructure is well maintained and that safe and clean drinking water is available whenever needed. Learn more about NAWC and the companies we proudly represent at www.nawc.org or follow on Twitter and LinkedIn.

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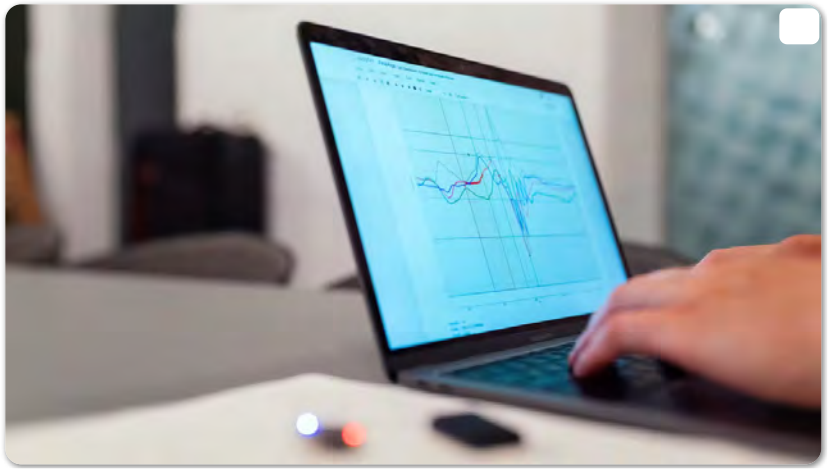
WATER UTILITY MANAGEMENT > SMART WATER UTILITY

AMI infrastructure: from water meters to business intelligence

According to a release from Idrica, AMI not only facilitates billing but also improves leak detection, forecasts demand, increases customer satisfaction, and reduces CO_2 emissions.

March 3, 2022



Photos courtesy Idrica.

The search for water efficiency, both in water utilities and among citizens, will drive investment in AMI in the coming years,

according to a new release from smart water company Idrica:

From Meters to Intelligence

For some years now, water utilities have been investing in the digital transformation of micro-metering as a way to extract value from data and turn information into business intelligence.

Growing investment in advanced metering infrastructure (AMI) systems globally is intended to help businesses and consumers make better decisions — not just reactive or corrective ones. AMI helps users to predict. It is a groundbreaking tool thanks to the amount of information it can generate.

The Road to Big Data

According to Carlos Tejedor, smart metering and instrumentation specialist at Idrica, developments in meters are one of the most important advances of the last 50 years in the water industry. From the first innovations, centering on faster, remote reading (walk-by and drive-by), which was mainly geared towards billing, the meter becomes an IoT sensor that transmits useful information to digitally transform all processes in AMI systems.

If the term automatic meter reading (AMR) refers to remote reading using smart meters connected to communication devices, AMI goes one step further.

“It focuses not only on data collection, but also on its integration and processing using Big Data technologies,” said Tejedor. “Platforms are a key element of these infrastructures, which are the most mature in the micro-metering field. Their aim is to offer value-added services and to manage water resources more efficiently. For example, developing algorithms to detect leaks and predict demand.”

To achieve this, Tejedor points out that “AMI must ideally process consumption data on an hourly basis with optimum quality. Compared to proprietary protocols and LPWAN technologies, such as SigFox and Lora, new communication protocols (NB-IoT, 5G) are helping to make this a reality due to their greater scope, penetration and coverage. In addition, they enable more efficient battery management, which is essential if we take into account smart metering’s need to frequently send data.”

AMI benefits:

- **Increased operational efficiency** Operators can associate consumption data with other data sources— such as SCADA —to optimize processes. It can reduce OPEX and help predict water demands in advance, according to Idrica.
- **More sustainable use of resources** AMI reduces the volume of non-revenue water by conducting hourly water balances. It also reduces consumption of fuel that would otherwise be spent on manual meter readings.
- **Value-added services for citizens** Data analysis opens the door to useful services: such as alerts for domestic leaks, curated water use data, and billing based on actual readings.

2022: more metering for better management

Today, society demands a commitment from companies and utilities to ensure responsible water consumption, in line with the Sustainable Development Goals.

According to the World Bank, by 2030, there will be a 40 percent world shortfall between the forecast demand for water and the amount available. In the light of this situation, governments and social partners are highly likely to support technologies that represent a step forward in terms of sustainability.

“AMI is one of these technologies, as it helps us to take the first step towards process

improvement through metering,” said Tejedor. “More and more utilities understand that these infrastructures not only facilitate billing, but also serve to improve leak detection, forecast demand through algorithms, increase customer satisfaction, fine tune digital twin simulations, and reduce CO2 emissions.”

Digital transformation in the water industry will gather speed in the coming years.

Right now, many water utilities use different communication technologies (NB-IoT, LoRa, Sigfox, etc.) and meters manufactured by different vendors. However, accelerating digital transformations will change this.

“Big Data platforms that standardize information and help us to convert it into business intelligence will be one of the main trends for 2022," said Tejedor. “The increased use of sensors we expect to see poses one of the main challenges for AMI: the coexistence of smart metering with other smart devices."

Utilities’ commitment to AMI deployment is one of the trends for 2022 which are listed in

Yale Environment 360

Cloud seeding equipment on the wing of plane flying over North Dakota. JIM BRANDENBURG VIA MINDEN PICTURES

Can Cloud Seeding Help Quench the irst of the U.S. West?

In the midst of an historic megadrought, states in the American West are embracing cloud seeding to increase snow and rainfall. Recent research suggests that the decades-old approach can be effective, though questions remain about how much water it can wring from the sky.

BY JAMES DINNEEN · MARCH 3, 2022

Not since Charlemagne was crowned Holy Roman Emperor in 800 A.D. has the American West been so dry. A recent study in *Nature Climate Change* found the period 2000 to 2021 was the driest 22 years in more than a millennium, attributing a fifth of that anomaly to human-caused climate change. e megadrought has meant more fires, reduced agricultural productivity, and reduced hydropower generation. Last summer, the United States' two largest reservoirs – Lake Mead and Lake Powell –reached their lowest levels ever, triggering unprecedented cuts in water allocations to Arizona, Nevada, and Mexico.

Desperate for water, several Western states have expanded decades-old programs to increase precipitation through cloud seeding, a method of weather modification that entails releasing silver iodide particles or other aerosols into clouds to spur rain or snowfall. Within the past two years, Idaho, Utah, Colorado, Wyoming, and California have expanded cloud seeding operations, with seeding a key plank in the Colorado River Basin Drought Contingency Plan.

Cloud seeding operations have also expanded in water-stressed regions outside the U.S. e United Arab Emirates, which currently gets more than 40 percent of its water through desalination plants, has built a weather enhancement factory that can churn out 250 cloud seeding flares a week. China has long had a far more substantial weather modification infrastructure, with millions of dollars spent each year seeding clouds in the semi-arid north and west, often with anti-aircraft guns launching silver iodide flares into the sky. In 2020, the central government announced that the weather modification program would expand to include more than half of the country, with a grand vision of a "sky river" carrying water from the humid south to the drier north.

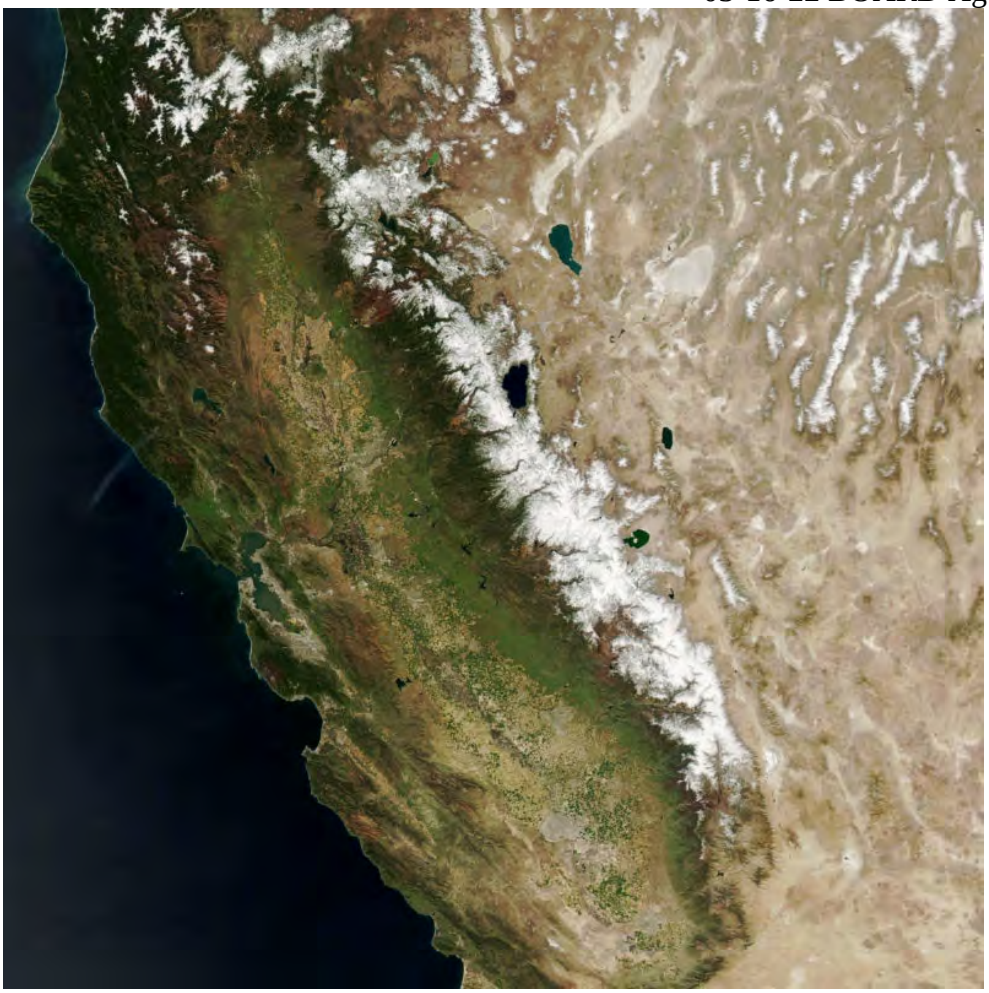
> "We still don't have a very great understanding of how much water we can produce," an expert says.

Some of the renewed attention on cloud seeding is driven by fresh evidence that it actually works — at least when seeding for snow. In 2020, a group led by researchers at the University of Colorado and the National Center for Atmospheric Research reported the results of a study conducted at a cloud seeding operation in Idaho. Called SNOWIE, the study used sophisticated radar and meteorological methods to demonstrate unambiguously that cloud seeding can increase snowfall.

"Cloud seeding works," says Katja Friedrich, an atmospheric scientist at the University of Colorado and lead author of the SNOWIE study. "We know that. We know that from experiments in the lab. We also have enough evidence that it works in nature. Really the question is: We still don't have a very great understanding of how much water we can produce."

Governments and users aren't waiting for more certainty to pursue projects. In the U.S. West, the need for water is so acute and cloud seeding so cheap that even a very slight increase in precipitation is worth it, says Friedrich. "Cloud seeding is something people consider in areas where they're desperate for water," she says.

But cloud seeding should not be thought of as a response to drought, experts agree. For one, in a drought there are likely to be fewer seed-able storms. And when there are storms, even the estimates from cloud seeding companies themselves show the practice increases precipitation by only around 10 percent in a given area. at might be worth the effort when every acre-foot counts, but it's not going to end a drought across an entire region.



California's Sierra Nevada mountains in March 2010 (left), a typical year for snowpack, and in March 2021 (right), a drought year. NASA

Cloud seeding, if it's done at all, is most effective when practiced continually, seeding in wet years and dry years alike to try to keep reservoirs full and soil moist. Along with conserving and using water more efficiently, "it's just another tool in the toolbox for water supply," says Mike Eytel, a senior water resource specialist for the Colorado River District. "It's not the panacea that some people think it is."

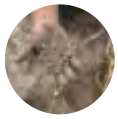
Cloud seeding got its start because of a problem with planes. When pilots began to fly through clouds, ice sometimes accreted on the wings, impacting their ability to fly. During World War II, this was a major issue for American planes flying from India over the Himalayas to supply Chinese forces, a treacherous trip known as " e Hump." Many planes turned back after icing up. After the war, General Electric began studying how supercooled water in clouds – water that is below freezing temperature but still liquid – became ice. " ey were creating the supercooled water clouds in this freezer, and they threw some dry ice in there," says Frank McDonough, a meteorologist at the Desert Research Institute. e dry ice caused the supercooled water to form ice crystals – snow.

Soon, General Electric scientists were running experiments in real clouds, first with dry ice, then with silver iodide, crystals of which resemble ice. When silver iodide particles are released into a cloud, droplets of supercooled water form crystals around them, which fall to the ground as snow. Clouds can be seeded from rockets, planes, or from the ground by burning silver iodide in acetone, so the particles rise in smoke. Warm weather seeding for rain works somewhat differently. Instead of silver iodide, "giant aerosols" such as salt are released into clouds by planes, causing larger droplets to form among the trillions of supercooled droplets too small to fall, which can spark a chain reaction leading to rain.

“In terms of research, this is a really exciting time for cloud seeding,” says a scientist.

e finding that weather modification was possible generated a lot of interest, but attempts to demonstrate that seeding reliably caused more precipitation were inconclusive. Stymied by a limited understanding of cloud physics and the difficultly of running well-controlled experiments in nature, researchers were unable to distinguish the effects of cloud seeding from natural variability. e ambiguous evidence, combined with some overzealous promises, gave weather modification a reputation for charlatanism, and research dwindled.

In 2003, recognizing that a number of states had continued cloud seeding programs despite the limitations of prior
research, the National Research Council revisited the literature on weather modification. “ e Committee concludes that there still is no convincing scientific proof of the efficacy of intentional weather modification efforts,” the report found. “In some instances there are strong indications
of induced changes, but this evidence has not been subjected to tests of significance and reproducibility.”



ALSO ON YALE E360

As the climate warms, could the U.S. face another dust bowl? Read more.

e 2020 study from SNOWIE, which demonstrated that seeding for snow can work in the right meteorological contexts, changes that picture. “In terms of research, this is a really exciting time for cloud seeding,” says Sarah Tessendorf, a researcher at the National Center for Atmospheric Research and another author of the SNOWIE study, though she is careful to qualify the results.

For one, the SNOWIE findings don’t apply to warm weather seeding for rain, which exploits a different mechanism within different types of clouds. And what worked in Idaho doesn’t necessarily apply elsewhere, Friedrich says; even within the SNOWIE study itself, increased snowfall was not observed after every seeding run. Further, the sophisticated radar methods used in the study are not available to analyze every operation, and many questions remain about when, where, and with what methods cloud seeding is most effective, with robust data in short supply.

A cloud-seeding rocket launched in Shijiazhuang, China on May 15, 2021. ZHANG HAIQIANG / VCG VIA GETTY IMAGES

Cloud seeding operators submit annual reports to states estimating additional precipitation caused by their efforts, often claiming hundreds of thousands of additional acre-feet, but "it's kind of crude," says Eric Hjermstad, who runs Western Weather Consultants, a cloud seeding company that manages several seeding operations in Colorado. For instance, company reports make comparisons between seeded areas and unseeded areas at different altitudes or with different levels of humidity, or they make assumptions about the amount of snow that actually ends up in river systems. "I don't think they are really off in what they are saying," says Friedrich. "But sometimes we need to question these [reports]."

To address this, Friedrich, Tessendorf, and others aim to use the SNOWIE data to develop more accurate cloud seeding models, which could improve predictions of how much additional precipitation is caused by given operations and determine where and when cloud seeding is most effective – not that cloud seeding operations are waiting around for better models.

Cloud seeding projects are often funded through cost-sharing agreements between state and local governments, and private parties, such as ranchers or ski resorts, willing to accept some risk that their money is for naught, says McDonough. And many are convinced that cloud seeding is having an effect, despite considerable uncertainty in the annual reports. " ey know their local water supplies and snowpack well enough that I think they feel like they're seeing the results," he says. " ese people don't have that much money. I think that if they had doubts, they probably would have stopped a long time ago."

An Idaho Power cloud seeding site. DAVID BOGIE / IDAHO POWER COMPANY

Since 2000, more than 800 reports from more than 50 weather modification projects have been submitted to the National Oceanic and Atmospheric Administration, with most focused on increasing precipitation. State weather modification budgets typically range in the hundreds of thousands of dollars. Utah, which has one of the most extensive seeding programs in the U.S., spends a little more than $700,000 a year on seeding, with contributions split between the state, municipalities, and other states in the Lower Colorado River Basin.

e recent efforts to expand long-standing cloud seeding programs have largely not met opposition, though some projects have been controversial. In New Mexico, which has no active cloud seeding operations, a proposal to begin seeding in the north of the state was abandoned in January after facing public backlash over concerns about environmental impacts, as well as the lack of consultation with tribal governments. Another proposal to seed clouds in the east of the state is under review.

Cloud seeding costs money, but the cost is relatively low compared to the value of water, even if the reports overstate increased precipitation, proponents say. And there do not appear to be environmental downsides to seeding. People are often concerned about contamination from silver iodide because silver can be toxic in high concentrations, Tessendorf says, but studies have found levels of silver iodide in cloud seeded areas are comparable to levels in unseeded areas and are unlikely to accumulate to toxic levels. Because seeding affects such a small portion of the total

moisture in a given cloud, there also aren't likely to be significant downstream effects where "you're robbing Peter to pay Paul," she says. In other words, seeding clouds over Colorado doesn't deprive Utah of snow.

In New Mexico, some commenters opposed to cloud seeding expressed concern that it represents a kind of hubris, that humans shouldn't "play God" or mess around with nature. Such arguments have been made since seeding became possible. It's worth pointing out, says McDonough, that seeding or not, "clouds aren't pristine things." In many cases, car exhaust and other industrial pollution has reduced the efficiency with which clouds precipitate by shrinking the size of cloud droplets. "Cloud seeding may be putting the clouds back to a more efficient state where they may have been prior to humans," he says. Or at least prior to Charlemagne.

MORE ON YALE E360

Geoengineer the planet? More scientists now say it must be an option. Read more.

James Dinneen is a science and environmental journalist from Colorado, based in New York. Read more of his work at jamesdinneen.wordpress.com. MORE →

Great Salt Lake bill passes unanimously, other water conservation bills advance

Play Video

By: Ben Winslow

Posted at 5:57 PM, Mar 02, 2022 and last updated 6:00 PM, Mar 02, 2022

SALT LAKE CITY — A bill pumping $40 million toward getting more water into the shrinking Great Salt Lake has unanimously passed the legislature.

The Utah State Senate on Wednesday gave final approval to support House Bill 410 and sent it to Governor Spencer Cox's desk. He is expected to sign it.

The bill allows for a private-public partnership to help lease water rights. It had the support of environmental groups.

The Great Salt Lake has dropped 11-feet since it first started being measured back in the 1800s as a result of water diversion, drought and climate change.

"Over 1,600 square miles of lake bed have been exposed to the elements, generating toxic dust, reducing snowpack and threatening the economy and quality of life and Utahns across the state," said Senate Majority Leader Evan Vickers, R-Cedar City. "So much like our pioneer ancestors did before us, we too have an opportunity to establish a system which will not only help us address the problems we face today, but will benefit generations of Utahns for decades to come."

It's not the only water conservation bill lawmakers are advancing. Lawmakers are approving bills to include the impact on the Great Salt Lake in future water plans. There are also bills to offer incentives to get Utahns to ditch non-essential turf, and incentives to get agriculture producers (a big water user) to switch to more water-saving technologies.

The Senate on Wednesday advanced a big bill requiring cities across the state to implement secondary water metering by 2030. Some smaller cities and counties were exempted, but were required to impose some stringent water conservation measures.

Sen. Mike McKell, R-Spanish Fork, said cities that did implement secondary water-metering saw immediate savings as people saw how much they were using on outdoor watering and cut back without being required to.

"The statistics I saw in my city? We saw about 30 to 35% water savings," Sen. McKell said.

Sen. David Hinkins, R-Orangeville, objected to forcing it to happen statewide.

"For the state to impose on water rights, the cities or individuals, is completely wrong," he said.

The bills are efforts the state is taking in the face of growth and demands for water.

MOST POPULAR

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Travel // Tahoe

This Tahoe neighborhood destroyed the largest wetland in the Sierra. Now it's being besieged by bears.

Julie Brown, SFGATE

March 2, 2022

Tahoe Keys is viewed from the Heavenly Ski Resort observation tower, in South Lake Tahoe,

“Use bear-resistant garbage cans.”

It's the first piece of advice on a list of things residents should do to keep Tahoe bears wild.

Bear boxes are a common installation in front of homes throughout the Tahoe Basin because they are effective. They prevent bears from accessing human food

and garbage — the gateway drug, so to speak, before a bear's quest to find food leads it farther into human turf, into garages and houses.

But in the Tahoe Keys — the neighborhood that’s been in the national news because Hank the Tank and other resident bears have been so active, breaking into at least 28 homes since the fall — bear boxes were prohibited by the property owners association until last year.

Homeowners didn’t want to feel as if they were surrounded by a “wall-of-steel,” stated an article published by the Tahoe Keys’ architectural control committee in a March 2020 edition of the Keys Breeze newsletter.

The Tahoe Keys is a lakefront subdivision in South Lake Tahoe with more than 1,500 luxury homes and townhouses. The development is known for its shallow lagoons and canals that connect the houses to Lake Tahoe. It was built in the late ’50s and ’60s, and its construction destroyed both the largest wetland in the Sierra Nevada and the largest tributary into Lake Tahoe.

The grievances about bears breaking into people’s homes is the latest in a long history of environmental disasters centered at the Tahoe Keys.

Bears have increasingly become a big problem in the Tahoe Keys, ripping

Bears have increasingly become a big problem in the Tahoe Keys, ripping holes in garage doors, opening sliding glass doors and destroying kitchens. The property owners association noted a bear den was found under the pavilion. But instead of bear boxes, the Tahoe Keys Property Owners Association advised residents to use trash cans with "lock tops," to stop feeding pets outside and to delay putting garbage cans on the street until the early morning hours just before trash pickup.

The bears persisted. A year later, in the April 2021 Keys Breeze newsletter, new rules were printed: bear boxes are allowed, but each box must get a stamp of approval by the architectural control committee.
Now, according to the most recent edition of the Keys Breeze, the association is considering a new design for a bear-proof garbage can. It's called a "tote enclosure," made of steel with a 65-gallon capacity and wheels, easier to store inside the garage, away from public view.

The Tahoe Keys Property Owners Association did not respond to multiple requests for comment.

The Tahoe Keys is one of those neighborhoods that feels like an endless cul-de-sac. Set back with a good-sized buffer from the main thoroughfares of South Lake Tahoe, it's not a neighborhood that you'd stumble upon randomly. Most of the time, it feels pretty quiet here. Homes sell for an average of $1.7 million, according to December 2021 figures.

Despite the quiet streets, when historians look back, they say the Keys are one of Tahoe's biggest environmental disasters.

"In the early 1960s, the lake still appeared clear and blue from the shore," wrote Charles R. Goldman, the founder of the Tahoe Environmental Research Center at UC Davis, in a 1989 essay titled "Lake Tahoe: Preserving a Fragile Ecosystem."

"But development for Incline Village at the north end of the lake and dense [illegible] of

But development for Incline Village at the north end of the lake and destruction of 100 Upper Truckee marsh acres by dredging for the Tahoe Keys development were followed by an algal bloom at the south shore and massive plumes of sediment from various disturbed watersheds," Goldman continued. "With these highly visible signs of disturbance, the forces of conservation tightened their battle lines."

In this 2008 file photo, a black bear scans the water while hunting for fish along Taylor Creek near South Lake Tahoe, Calif.
Rich Pedroncelli/ASSOCIATED PRESS

According to Michael J. Makley, author of the book "Saving Lake Tahoe: An Environmental History of a National Treasure," the Tahoe Keys crisis could have been averted had the Forest Service possessed more foresight. About 750 acres of the Upper Truckee River marsh — the largest wetland in the Sierra Nevada, and the site of multiple Washoe ethnographic sites — were offered to the Forest Service for $75,000. But the Forest Service declined the offer. "Forest Service representatives rejected the offer because they saw no reason to acquire a swamp," Makley wrote.

Instead, a private corporation named Tahoe Keys, Inc., bought the marshland in December 1956 for $201,476 and immediately began to excavate the land, digging 150-foot-wide boating canals, according to Makley. In the early 1960s, the Dillingham Corporation acquired the Keys subdivision, which was then projected to be worth $150 million.

“The effects of the development were devastating,” Makley wrote.

The Upper Truckee River was once a meandering waterway with grasses to filter sediment before the water reached Lake Tahoe. When the Tahoe Keys were built, the Upper Truckee was funneled into an artificial channel that led to massive amounts of debris reaching the lake.

Inside the canals, invasive weeds began to grow in the water.

The water in the Tahoe Keys is dark from all of the weeds swirling at the surface. Conditions worsen in the summer, when longer days and warmer temperatures provide fuel for aquatic weeds to multiply. The weed problem began in the 1970s, when a vessel dubbed the “Tahoe Keys Dragon” was dispatched to cut back the underwater growth, almost like mowing an aquatic lawn.

But cutting back the weeds never stopped the problem; the fragments of the plants actually spread the growth. In recent years, the issue has gotten out of control. The invasive aquatic weed infestation has proliferated inside Tahoe Keys’ marina — experts say about 90% of the 172 acres of lagoons are infested. And now the weeds are marching across the threshold of the marina and spreading into Lake Tahoe.

Most Popular

Bay Area firm says worker and her children identified as family killed in Ukraine

Homes and condominiums along the canals with marina and lake access and a dock are shown at Tahoe Keys, in South Lake Tahoe, Calif.
George Rose/Getty Images

Last month, Lake Tahoe regulatory officials approved the use of herbicides, as part of a controlled test, to combat the overwhelming infestation of aquatic weeds that proliferate inside the Tahoe Keys. The Tahoe Keys Lagoons Aquatic Weed Control Methods Test may start as early as this spring and will measure the effectiveness of herbicides, along with multiple other treatment methods, to find a way to knock down the infestation before conditions deteriorate even more.

The test will mark the first time herbicides will be used in Lake Tahoe.

There are more exotic problems stemming from the Tahoe Keys. In 2013, fish biologists from the U.S. Forest Service discovered gigantic goldfish in Lake Tahoe, measuring 4 to 8 inches long and weighing several pounds. Historians, including Makley, say the goldfish were likely released in the Tahoe Keys, where warm, shallow waters incubated the invasive fish until they could swim into Lake Tahoe.

“As Lake Tahoe’s waters warm, invasive species can more easily breed in the near shore and travel to other parts of the lake,” said Sarah Muskopf, a fish biologist for the Forest Service, in a 2013 article. “We’re most concerned about marinas, canals and wetlands that are closely connected to Lake Tahoe.”

The Tahoe Keys development ultimately destroyed about 11% of Tahoe’s wetlands, which play a critical role in filtering sediment and protecting the clarity of the water, Tahoe historian David Antonucci wrote in a recently self-published e-book about the geologic and social history of Lake Tahoe.

“All told, the Tahoe Keys was an environmental disaster of monstrous proportions

All told, the Tahoe Keys was an environmental disaster of monstrous proportions that appeared in the early resort development boom era," Antonucci wrote, "and continues to be an open infected wound in Lake Tahoe's gut."

Last week, Fish and Wildlife officials said their attempts to trap the "severely food-habituated bears" have been thwarted by vandalism. When they do succeed in trapping the bears, officials have few options for what to do next. After DNA evidence confirmed that multiple bears were raiding Tahoe Keys properties, officials said they would not euthanize the bears. Relocating the animals or keeping them in captivity with an accredited facility are the remaining options for animals that pose a threat to human residents and property.

According to the California Fish and Wildlife Department, multiple bears have "forcefully entered" at least 28 homes in the Tahoe Keys, with extensive damage documented in 33 separate cases since August.

The outcry in response to news reports about the bears — its leading hero is dubbed Hank the Tank — has overwhelmed local authorities.

Bears target neighborhoods and homes throughout the Lake Tahoe Basin, but the sheer number of cases reported in the Tahoe Keys is above and beyond what most neighborhoods experience.

The environmental cost of building this lakefront neighborhood was high from the start, and Tahoe is still paying. From an aquatic weed infestation to an urbanized bear invasion, it seems as if nature is now striking back.

More Lake Tahoe News

- 'Please stop': Tahoe's local law enforcement overwhelmed by angry calls about

UC Davis

Leaks an Untapped Opportunity for Water Savings

Reducing Leaks a Cost-Effective Way to Save Urban Water Without Draining Utilities

by Kat Kerlin | March 07, 2022

Amanda Rupiper of the UC Davis Center for Water-Energy Efficiency conducts a water quality analysis. (Paul Fortunato/UC Davis)

UC Davis

Before a drop of treated water in California ever reaches a consumer's faucet, about 8% of it has already been wasted due to leaks in the delivery system. Nationally, the waste is even higher, at 17%. This represents an untapped opportunity for water savings, according to a study from the University of California, Davis.

The study, published in the journal Environmental Research Letters, is the first large-scale assessment of utility-level water loss in the United States. It found that leak reduction by utilities can be the most cost-effective tool in an urban water manager's toolkit, provided utility-specific approaches are used.

"When I first heard about 'leaks' I thought it sounded boring, but leaks are a huge component of our water systems and have a larger opportunity than many other water-saving methods to make an impact," said lead author Amanda Rupiper, a postdoctoral scholar with the UC Davis Center for Water-Energy Efficiency. "As the first state to regulate its water losses, a lot of eyes are watching California, and this is an opportunity to impact policy here and elsewhere."

Amid a multiyear drought, the passage of Senate Bill 555 in 2015 made California the first in the nation and among the first in the world to require water utilities to regulate their water losses.

Be specific

Tennessee and Texas, the authors characterized water losses across the country. They developed a model to assess the economically efficient level of losses, and used that model to compare various water loss regulations and modeling approaches.

The study found that one-size-fits-all approaches to leak management are not effective, economical or equitable for utilities, which vary in size and resources. Uniform approaches could lead to the mismanagement of urban water losses. However, applying utility-specific performance standards can deliver a similar amount of water savings at a profit for both utilities and society.

“Regulations that impose a uniform standard across all utilities will result in water reductions that are too stringent in some cases, too relaxed in others, and too costly overall,” the paper concludes.

Saving drips without draining utilities

Ideally, no leaks would occur in a system. However, while some leaks are obvious and accessible, others can be harder and more cost-prohibitive for some utilities to find and repair. The authors’ model assessed when utilities could save the most water for their dollar to find and fix leaks in the system.

They found that for the median utility, it is economically efficient to reduce water losses by 34.7%, or 100 acre-feet per year. The median cost of water savings from leak management is $277 per acre-foot —

UC Davis

conservation campaigns and rebate programs.

“It’s cost-competitive to do this and should be part of the profile of how we manage our water,” Rupiper said. “We tend to think of leaks as being a little drip, but leaks are not inconsequential. Drips add up to big flows, and we can’t ignore them anymore.”

The study’s co-authors include Frank Loge, Joakim Weill and Katrina Jessoe of UC Davis, and Ellen Bruno of UC Berkeley.

Media Resources

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Image for download.

Primary Category

Science and Climate

Secondary Categories

Environment Science & Technology

HOMELESSNESS

Officials: Complaints about homeless camps on decline

By Bob Conrad | March 7, 2022

Local government officials today said last year's homeless camp sweeps have led to a decline in complaints about the camps, particularly on the Truckee River.

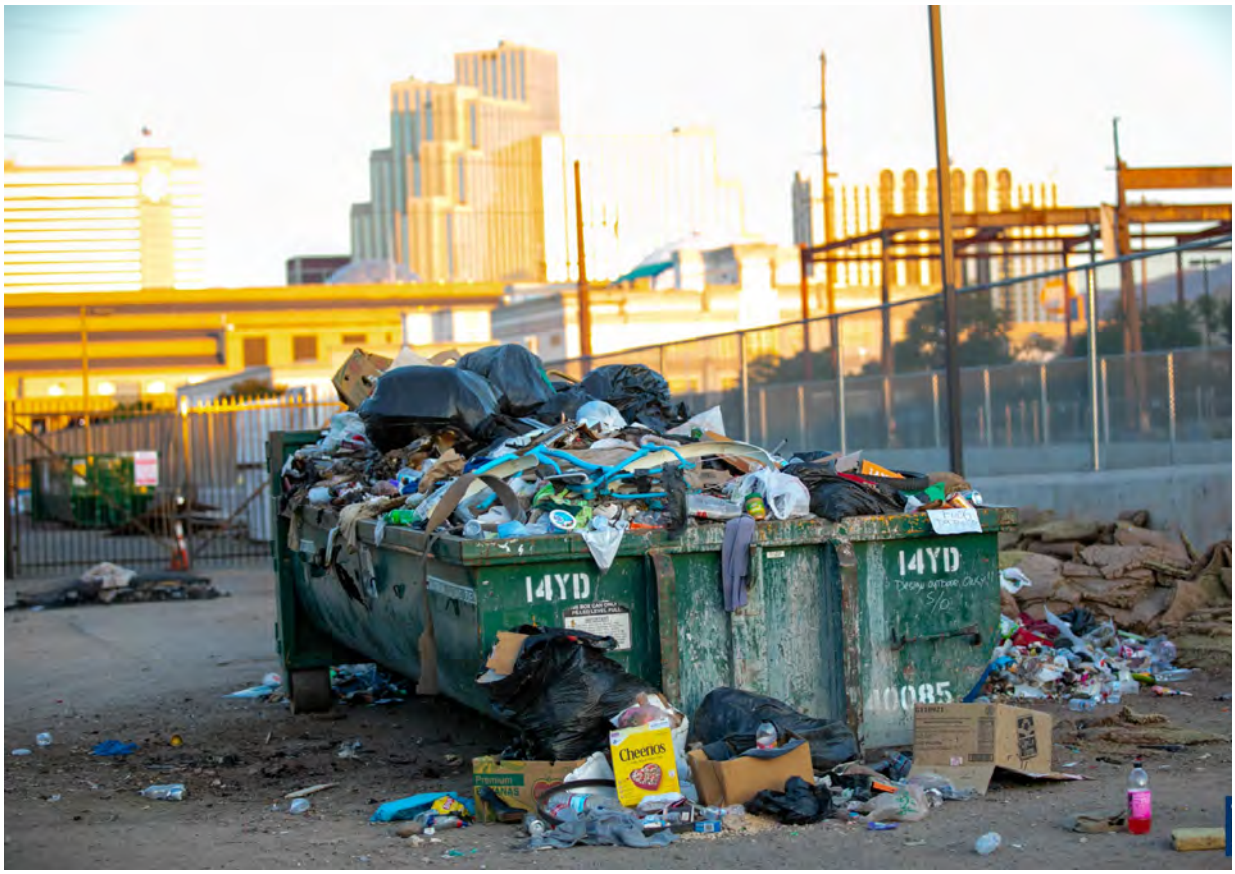
Calls for service about homeless concerns peaked in 2020. There were more than 2,000 complaints 2020 but that number dropped to 1,755 in 2021.

Cynthia Esparza, with the City of Reno, told the Community Homeless Advisory Board today that w due in part to the COVID-19 pandemic, the inability of city staff and contractors to respond to calls, camp cleanups and the opening of Nevada Cares Campus.

"We continue to see a rise in the summertime [and a] decrease in the winter," she said. "The vast majority of concerns are homeless concerns. That could mean an encampment in a public area, a sidewalk or an observation from a resident."

The city collected 10,000 cubic yards of waste last year from 229 cleanups. Esparza said many of th areas cleaned are still now free of debris.

"The amount of waste collected would cover Mackay Stadium at 5-feet, 6-inches tall," she



A dumpster of trash overflowed near a homeless camp during a cleanup June 3, 2020 in downtown Reno, Nev. Image: Eric M
This Is Reno

Esparza said some of those experiencing homelessness are “service resistant” – meaning, they do n
want government help and will not go to Cares Campus or other shelters.

Of the thousands of contacts with those experiencing homelessness by city staff and Reno Police
community officers, 55 housing arrangements were made in 2021. Of the 55, 28 went to the county
safe camp area of the Nevada Cares Campus.

The city began razing homeless encampments last year before the Cares Campus opened. Those alo
the river were drawing hundreds of citizen complaints, Esparza said.

Reno Councilmember Neoma Jardon said the river improvements are notable.

“It looks like we’re trending in the right direction,” she said.

Officials from the Washoe County Sheriff's Office and Sparks Police Department said abandoned an hazardous RVs are causing environmental contamination and drawing complaints from citizens.

"The biggest hazard that we're seeing is a lot of these RVs are broken down and they're old," said Lt Chris Rowe with Sparks Police. "Their sewage holding tanks aren't really holding anymore, and wha we're seeing is that here's black and gray water that is leaking onto city streets. Additionally, they're parking in areas that are restricting view for traffic which is causing traffic concerns and potential tr accidents."

Lt. Anthony Maselli with the sheriff's office said they're seeing the same problem in unincorporated Washoe County.

Maselli said the county does not have an illegal camping ordinance, something he said they would pursue, as well as a streamlined process for towing abandoned RVs and trailers.

"Large encampments can allow for an unsafe balance in our community due to large accumulations rubbish and debris, unsanitary conditions, drug paraphernalia, and calls for service..." he added.

The City of Reno is seeing similar problems. City officials said there were 113 RVs towed last year.

A homeless camp sweep by the City of Reno near Mill Street and Edison Way on June 2, 2021. Several RVs were removed from th
Image: Bob Conrad / This Is Reno

Cashell leaves VOA

Pat Cashell of the Volunteers of America said he is leaving the organization after more than a decade operating homeless shelters. He did not say where he was going.

“It’s been 10 years now since I took over at VOA and operating the shelters, and it’s been the best 10 years of my life,” he said. “At the end of March, I’ll be starting a new chapter in my life again.”

He said his experience was an amazing journey working with the local governments, service organizations and “even the homeless advocates. It’s been a blessing. We’re making a diff[illegible]”

He thanked the homeless advisory board members.

Bob Conrad Publisher & Editor

Bob Conrad is publisher, editor and co-founder of This Is Reno. He has served in communications positions for various state agencies and earned a doctorate from the University of Nevada, Reno in 2011, where he completed a dissertation on social media, journalism and crisis communications. In addition to managing This Is Reno, he holds a part-time appointment for the Mineral County University of Nevada Extension office.

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RATING ACTION COMMENTARY

Fitch Upgrades Truckee Meadows Water Authority, NV's Water Revs to 'AAA'; Outlook Stable

Wed 09 Mar, 2022 - 10:41 AM ET

Fitch Ratings - Austin - 09 Mar 2022: Fitch Ratings has upgraded the following ratings to 'AAA' from 'AA' for Truckee Meadows Water Authority, NV (TMWA; the authority):

--Approximately $24.3 million senior lien water revenue refunding bonds series 2015A;

--Issuer Default Rating (IDR).

The Rating Outlook is Stable.

ANALYTICAL CONCLUSION

The upgrade of the IDR and bond rating to 'AAA' reflects TMWA's sustained very low and declining leverage, measured as net adjusted debt to adjusted funds available for debt service (FADS), within the framework of very strong revenue defensibility and very low operating risks. The upgrade is further supported by the resilience of the service area during the recent economic contraction, which demonstrated an increasingly diversified and much-improved service territory as compared to a decade ago.

The service area was hard hit by the Great Recession due to the housing bubble and an economic base that was largely centered on legalized gambling. The subsequent opening of an Amazon distribution facility and Tesla Motor's Gigafactory in the immediate area has vastly improved employment growth. The county's unemployment rate has been below the national rate since 2017.

The authority's 'aa' revenue defensibility assessment is anchored in its rate-setting autonomy and service area that displays solid demand characteristics. The 'aa' operating risk assessment reflects the authority's very low operating cost burden, low life cycle ratio, and healthy levels of capex.

CREDIT PROFILE

The authority is a joint powers authority formed in 2000 between Washoe County (the county) and the cities of Reno and Sparks to purchase the water assets of Sierra Pacific Power Company. Operations commenced June 2001, primarily in the Reno and Sparks areas. The authority merged with two smaller county water agencies in 2014, consolidating urban water agencies, and it now serves most of the county's population of over 486,000 through around 131,000 customer accounts.

TMWA historically relied heavily on surface water supplies. The authority's surface water supplies, fed by runoff from the nearby Sierra Nevada Mountains and Lake Tahoe, are significant and remain essential to the supply portfolio. The 2014 merger increased groundwater supplies and TMWA's ability to shift usage between the two sources across the hydrological cycle. This further improved drought resiliency, which was already strong due to the authority's significant water storage capacity.

Treatment capacity is also sound as the authority operates eight treatment plants. The two largest plants, Chalk Bluff Water Treatment Facility (WTF) and the Glendale WTF account for most production, totaling about 130 mgd, compared to recent demand of about 71 mgd. A ninth, smaller WTF with 4 mgd capacity is expected to come online later this year.

KEY RATING DRIVERS

Revenue Defensibility 'aa'

Economic Diversification, Rates Affordable for Vast Majority

The authority's board maintains independent rate-setting authority with no additional oversight. Nearly all of the authority's revenue is derived by its monopolistic business line

providing retail water services. Sustained diversification in the local economy over the last several years and through the pandemic has greatly improved the unemployment rate, bolstering revenue defensibility and contributing to the upgrade. Rates are considered affordable for the vast majority of customers, supporting strong rate flexibility.

Operating Risks 'aa'

Very Low Operating Cost Burden, Manageable Capital Needs

The authority's operating cost burden is very low and quite stable, ranging between $3,700 per million gallons (mg) and $3,900 per mg since fiscal 2018. Consistent healthy levels of capex are reflected in the low life cycle ratio. Planned capex in upcoming years should continue to outpace the annual depreciation expense. Fitch expects both metrics will remain solid and continue supporting the 'aa' assessment for the long term.

Financial Profile 'aaa'

Very Low Leverage Expected to Continue

The last several years of financial performance now reflect consolidated operations after the merger in 2014 and actual results have generally exceeded expectations. The upgrade is driven by leverage that declined annually from 4.1x in fiscal 2018 to 2.7x in fiscal 2021 and expectations that leverage will not exceed 5.0x in Fitch's base or stress scenario. The authority's liquidity profile is robust, albeit neutral to the assessment.

Asymmetric Additive Risk Considerations

No asymmetric additive risk considerations affected this rating determination.

RATING SENSITIVITIES

Factors that could, individually or collectively, lead to positive rating action/upgrade:

--Not applicable given the 'AAA' rating.

Factors that could, individually or collectively, lead to negative rating action/downgrade:

--A sustained increase in leverage to over 5.0x in Fitch's base and stress scenario, assuming stability in the current revenue defensibility and operating risk assessment.

--A weakening of the service area that materially affects either the socio-economic demographics or rate flexibility.

Best/Worst Case Rating Scenario

International scale credit ratings of Sovereigns, Public Finance and Infrastructure issuers have a best-case rating upgrade scenario (defined as the 99th percentile of rating transitions, measured in a positive direction) of three notches over a three-year rating horizon; and a worst-case rating downgrade scenario (defined as the 99th percentile of rating transitions, measured in a negative direction) of three notches over three years. The complete span of best- and worst-case scenario credit ratings for all rating categories ranges from 'AAA' to 'D'. Best- and worst-case scenario credit ratings are based on historical performance. For more information about the methodology used to determine sector-specific best- and worst-case scenario credit ratings, visit https://www.fitchratings.com/site/re/10111579.

SECURITY

The senior bonds are secured by a first lien on TMWA's net water system (the system) revenues.

Revenue Defensibility

Revenue defensibility is very strong, reflected in the 'aa' assessment. Nearly all of the authority's revenue is derived from its monopolistic business line: providing water treatment and delivery, which supports the very strong revenue source characteristics. Approximately 2% to 3% of annual operating revenue is derived from hydroelectric sales to NV Energy under three purchase power agreements and an additional 1% of annual water sales revenue is derived from wholesale contracts. Customer concentration is not a concern as the top 10 customers typically account for about 6% of total operating revenue.

The authority's service area has very favorable economic underpinnings and demand characteristics, as evidenced by steady growth and a diversification of the economy over the last decade. After a significant increase in the number of customers after the merger in 2014 the compound annual growth rate the last two fiscal years (2020 and 2021) still reflects growth between 1% and 2%. Income levels are generally in line with the national median.

Diversification of the economy away from legalized casino gambling is evident in the county's unemployment rate, which previously exceeded the national rate by nearly 20% as recently as 2015. Since 2017, the county's unemployment rate has tracked lower than the

national rate and as of December 2021 the unemployment rate was 2.8%, well below the national rate of 3.7%. The sustained resilience of the service territory through the economic contraction related to the pandemic contributes to the upgrade as the area has diversified since the Great Recession.

The monthly residential bill based on Fitch's standard usage metric of 7,500 gallons is about $36, as of fiscal 2021. A little over half of the bill is recouped from a fixed meter charge, while the balance is collected through tiered, volumetric rates. The charges are considered affordable for the vast majority of the population (around 85%), supporting very strong rate flexibility.

Operating Risks

The authority's operating risk profile is assessed at 'aa', reflecting a very low operating cost burden and moderate investment needs. Over the last five fiscal years (2017-2021), the operating cost burden has not exceeded $3,900 per mg and should remain well below the $6,500 per mg threshold for the foreseeable future, supporting the 'aa' assessment. The life cycle ratio is low but has gradually increased from 29% in fiscal 2017 to 34% in fiscal 2021. It still remains comfortably below the 45% threshold and supports the 'aa' assessment.

The fiscal 2022-2026 CIP totals around $255 million, down slightly from the prior CIP, and is expected to be funded by pay-go sources, developer contributions, and reserves dedicated to construction projects. No debt issuances are anticipated. Projects are largely dedicated to repair and replacement work and improvements to treatment and distribution facilities, providing for a degree of flexibility as they are not regulatory driven.

Although not part of the formal CIP, the authority expects to move forward in the next several years with construction of an advanced WTF. The current CIP includes $5 million for planning and design, but the total cost of construction is likely to be around $100 million. Under an existing interlocal agreement, the authority would cover 30% of the costs and the city of Reno would cover the remaining 70%. Fitch expects capex in upcoming years will keep pace with or marginally exceed annual depreciation costs and keep the life cycle ratio low. In conjunction with the very low operating cost burden, Fitch expects long-term stability in the operating risk assessment.

Financial Profile

The financial profile is exceptionally strong, reflected by the 'aaa' assessment and supported by leverage that has generally decreased annually from 5.1x in fiscal 2015 to

2.7x in fiscal 2021. The authority's rapid amortization coupled with growing cash balances supports the declining leverage.

The authority's liquidity profile is very solid but neutral to the assessment. Coverage of full obligations (COFO) is 2.8x, and current days cash on hand is 966, as of fiscal 2021. Despite an uptick in connection fees in fiscal 2021, the authority has decreased its reliance on this revenue stream and COFO excluding connection fees measured at least 1.7x since fiscal 2017.

Fitch Analytical Stress Test (FAST)

The five-year forward look provided by FAST considers the potential trend of key ratios in a base case and a stress case. The stress case is designed to impose capital costs 10% above expected base case levels and evaluate potential variability in projected key ratios. The base case was informed by management's financial forecast with some analytical adjustments made by Fitch.

After assuming flat operating revenue in fiscal 2022 compared with fiscal 2021, operating revenue growth in fiscal years 2023 through 2026 averages 2.6% annually, driven by a modest 2.5% rate adjustment in fiscal 2023 and continued customer growth, typically between 1% and 2%. Fitch assumes operating expenses will increase 4.1% annually, reflecting the three-year growth rate, yet recognizes this is higher than management's assumption. Connection fee revenue is assumed at just over 50% of the five-year average, which likely includes a level of conservatism. The authority's CIP is also included, with no additional debt planned over the five-year horizon.

Under these assumptions leverage remains exceptionally low which supports the 'aaa' financial profile assessment. In the base case, fiscal 2022 leverage is 3.4x that declines to 3.0x by fiscal 2026. In the stress case, leverage measures between 3.3x and 3.5x each year through fiscal 2026. As mentioned above, Fitch also considered a scenario with $30 million of additional capex across 2024 through 2026 to represent potential spending on the advanced treatment facility and leverage in this scenario does not exceed 4.0x and continues to support the 'aaa' assessment. Fitch expects the authority's liquidity profile to remain neutral to the assessment with COFO measuring at least 2.0x and solid days' cash annually.

Asymmetric Additive Risk Considerations

No asymmetric additive risk considerations affected this rating determination.

Sources of Information

In addition to the sources of information identified in Fitch's applicable criteria specified below, this action was informed by information from Lumesis.

REFERENCES FOR SUBSTANTIALLY MATERIAL SOURCE CITED AS KEY DRIVER OF RATING

The principal sources of information used in the analysis are described in the Applicable Criteria.

ESG Considerations

Unless otherwise disclosed in this section, the highest level of ESG credit relevance is a score of '3'. This means ESG issues are credit-neutral or have only a minimal credit impact on the entity, either due to their nature or the way in which they are being managed by the entity. For more information on Fitch's ESG Relevance Scores, visit www.fitchratings.com/esg

RATING ACTIONS

ENTITY / DEBT	RATING			PRIOR
Truckee Meadows Water Authority (NV)	LT IDR Upgrade	AAA Rating Outlook Stable		AA Rating Outlook Positive
Truckee Meadows Water Authority (NV) /Water Revenues/1 LT	LT	AAA Rating Outlook Stable	Upgrade	AA Rating Outlook Positive

VIEW ADDITIONAL RATING DETAILS

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APPLICABLE CRITERIA

U.S. Water and Sewer Rating Criteria (pub. 18 Mar 2021) (including rating assumption sensitivity)

Public Sector, Revenue-Supported Entities Rating Criteria (pub. 01 Sep 2021) (including rating assumption sensitivity)

ADDITIONAL DISCLOSURES

Dodd-Frank Rating Information Disclosure Form

Solicitation Status

Endorsement Policy

ENDORSEMENT STATUS

Truckee Meadows Water Authority (NV)	EU Endorsed, UK Endorsed

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