Veles Water Weekly Report

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May 19th 2022

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Welcome to **WATERTALK**

by Joshua Bell

**CLICK THE LINK BELOW**

“A 2 minute technical analysis video of H2O futures”

https://vimeo.com/711517739
The new NQH2O index level of $935.38 was published on the 18th of May, up $0.48 or 0.05%. Over the past week the May contract had been trading at a premium of +$20.10-$46.10. The May contract settled at this new index level, and the June Contract is considered the front month. Over the past week the June contract has traded at a premium to the index of +$35.10 - $46.10.

NQH2O is up 32.35% Year to Date.

Below are the bid offer prices on different expiries being quoted in the market.

June 22  980@986
July 22   1011@1021
Sept 22  910@966
Dec 22   840@896
Jun 23   1010@1050
The graph above lays out the Nasdaq Veles water index by year, showing 2013-2022. In very dry years, prices clearly rise through the spring, peaking in May to July (with the exception of 2015) as demand for water from farmers peaks. Prices then taper off heading into the winter on reduced demand, and the possibility of rain/snow.

The restricted ability to “carry” water, much like one can do with financial contracts, gives this index the same type of seasonal pattern that one sees on some other commodities.

The graph for 2021 is highlighted in red. It shows the same seasonal climb, but at record-high values above each of the last eight years since February.

Current bids and offers in the market are still higher than historic prices showing that expectations are that this is an exceptionally dry year and prices may not fall seasonally as much as they have in prior dry years.

(John H Dolan, CME Market Maker)
Over the last week the April daily future volatility high has been 2.00% on May 16\textsuperscript{th} and a low of 0.07% on May 18\textsuperscript{th}.

Mixed signals for the week ending on the May 18\textsuperscript{th} the two-month futures volatility is at a discount of 1.45% to the index, a down of 1.35% from the previous week. The one-month futures volatility is at a discount of 3.36% to the index, up 1.12% from last week. The one-week futures volatility is at a premium of 0.17% to the index, up 2.53% from the previous week.

Above prices are all \textit{HISTORIC VOLATILITIES} and \textit{IMPLIED VOLATILITIES} will be introduced once an options market has been established. All readings refer to closing prices as quoted by CME.
Central Valley average is calculated using data from 19 weather stations in the Central Valley, California. Data as of 16/05/2022

### Central Valley Precipitation Index

<table>
<thead>
<tr>
<th>STATION</th>
<th>MTD (INCHES)</th>
<th>WEEK ON WEEK CHANGE (INCHES)</th>
<th>% OF 20 YEAR AVERAGE MTD</th>
<th>2022 WYTD VS 2021 WYTD %</th>
<th>2022 WY VS 20 YEAR AVERAGE TO DATE %</th>
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<tbody>
<tr>
<td>SAN JOAQUIN 5 STATION (5SI)</td>
<td>0.05</td>
<td>0.02</td>
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<tr>
<td>TULARE 6 STATION (6SI)</td>
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<td>0.00</td>
<td>0.00</td>
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<td>60</td>
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<tr>
<td>NORTHERN SIERRA 8 STATION (8SI)</td>
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<td>0.19</td>
<td>20.67</td>
<td>46</td>
<td>80</td>
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<tr>
<td>CENTRAL VALLEY AVERAGE</td>
<td>0.18</td>
<td>0.07</td>
<td>7.79</td>
<td>43</td>
<td>68</td>
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### Reservoir Storage

<table>
<thead>
<tr>
<th>RESERVOIR</th>
<th>STORAGE (AF)</th>
<th>% CAPACITY</th>
<th>LAST YEAR % CAPACITY</th>
<th>HISTORIC ANNUAL AVERAGE CAPACITY %</th>
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</thead>
<tbody>
<tr>
<td>TRINITY LAKE</td>
<td>748,748</td>
<td>31</td>
<td>53</td>
<td>39</td>
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<tr>
<td>SHASTA LAKE</td>
<td>1,823,190</td>
<td>40</td>
<td>47</td>
<td>48</td>
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<tr>
<td>LAKE OROVILLE</td>
<td>1,940,000</td>
<td>55</td>
<td>40</td>
<td>70</td>
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<tr>
<td>SAN LUIS RES</td>
<td>940,419</td>
<td>46</td>
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<td>61</td>
</tr>
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</table>

Reference: California Water Data Exchange
**SNOWPACK WATER CONTENT**

**Snow Water Equivalent Dashboard**

*Snow Water Equivalent, or SWE, is a commonly used measurement used by hydrologists and water managers to gauge the amount of liquid water contained within the snowpack. In other words, it is the amount of water that will be released from the snowpack when it melts. SWE has regional variance.*

**April 1st is used as the benchmark as it when the snowpack in California is generally deepest. It has been used the benchmark date since 1941 by DWR and can be used to predict spring river flow.**

<table>
<thead>
<tr>
<th>REGION</th>
<th>*SNOWPACK WATER EQUIVALENT (INCHES)</th>
<th>WEEK ON WEEK CHANGE (INCHES)</th>
<th>% OF AVERAGE LAST YEAR</th>
<th>% OF 20 YEAR HISTORICAL AVERAGE</th>
<th>% OF HISTORICAL <strong>APRIL 1ST BENCHMARK</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTHERN SIERRA</td>
<td>2.9</td>
<td>-1.40</td>
<td>4</td>
<td>22</td>
<td>10</td>
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<tr>
<td>CENTRAL SIERRA</td>
<td>3</td>
<td>-1.90</td>
<td>4</td>
<td>18</td>
<td>10</td>
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<tr>
<td>SOUTHERN SIERRA</td>
<td>1.1</td>
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<td>7</td>
<td>4</td>
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<tr>
<td>STATEWIDE</td>
<td>2.5</td>
<td>-1.40</td>
<td>4</td>
<td>17</td>
<td>9</td>
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</tbody>
</table>

Last Updated: 5/18/2022 5:54:52 AM
The US Drought Monitor release their statistics with a 1-week lag to this report. Over the past week the has been 19.30% Class 1 Degradation in D3 Extreme Drought conditions.

The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC.
The satellite picture shows a dry Southwestern and Southerly US. There are some remnants of weather systems moving over Southern Canada and the Northern and Northwestern US.

In the North and Western Pacific there is a large frontal system brewing which will reach the Southwesterly Canadian coastline and possibly the Northwestern US. It is not expected to bring precipitation to the Californian region or Central Valley region.

The LA area and the Southern Central Valley region will be relatively dry throughout.

There is no Monsoon activity at present and can only be expected in the next few months.

10 Day Outlook
Then for Wednesday into Thursday...the cool system over the Gulf of Alaska will make its way toward BC and the Pacific Northwest with precipitation spreading across the region. The southern extent of precipitation will reach down toward the upper Klamath River basin with some scattered hundredths of an inch possible. Bigger story will be the temporary moderation of temperatures expected for the end of the week. As this system moves over the interior...high pressure over the eastern Pacific will nudge toward the west coast and spread inland. This will allow temperatures to increase once again to well above normal for much of the region.

Reference: National Weather Service / California Nevada RFC / Sacramento CA
VELES WATER WEEKLY REPORT

WESTERN WEATHER DISCUSSION

Another round of Pacific storms impacted northern portions of the region with beneficial late-season snowfall observed in the Cascades, Klamath Mountains, Sierra Nevada, ranges of the northern Great Basin, and the central and northern Rockies. In response, improvements were made on the map in Oregon, Washington, Idaho, and Montana. In Northern California, precipitation has been above normal during the past 30-day period. However, the recent precipitation did little to make up for significant shortfalls observed since January 1 as well as in the broader longer-term context with 20+ inch precipitation deficits across Northern California during the past 24-month period. According to NOAA NCEI statewide climatological rankings, the January-April 2022 period was the driest (-9.7-inch deficit) on record for California while the last 24-month period (May 2020-April 2022) was the 2nd driest on record. Looking at the latest region-level (2-digit HUC) snowpack data across the West, the NRCS SNOTEL network (May 10) was reporting the following median SWE levels: Pacific Northwest 124%, Missouri 96%, Souris-Red-Rainy 113%, California 68%, Great Basin 61%, Upper Colorado 66%, Arkansas-White-Red 30%, Lower Colorado 10%, and Rio Grande 18%. According to NRCS National Water and Climate Center’s reservoir summary report (May 1), statewide reservoir storage levels remained below normal across all western states with exception of Washington state. In the Colorado River Basin, Lake Powell was at 24% of capacity and Lake Mead 30% of capacity on May 10, according to the USBR. In the Rio Grande Basin, New Mexico’s Elephant Butte Reservoir was 13% full and Caballo Reservoir 10% full. In Arizona, the Salt River system was 76% full while the Verde system was 33% full with the total system at 71% full—down 2% from a year ago, according to the Salt River Project. Looking at region-level climatological rankings, the West Climate Region (California and Nevada) logged its driest January-April period on record while the Southwest Climate Region (4-Corners states) observed their 3rd driest. Longer-term, the May 2020-April 2022 period was the driest on record for the Southwest Climate Region and the 2nd driest for the West Climate Region.

Reference:
David Simeral, Western Regional Climate Center
Curtis Riganti, National Drought Mitigation Center
Newsom Pitches $75m In Drought Relief For Agriculture
Gov. Gavin Newsom’s revised budget proposal would set aside $75 million to aid small agricultural businesses as the drought deepens. The one-time assistance would provide grants ranging from $30,000 to $50,000, depending on the amount of lost revenue. The program would prioritize businesses in the hardest hit regions, such as the Sacramento and San Joaquin valleys.... Newsom’s budget plan would allocate $100 million for repairing conveyance canals, which was part of a 2021 budget deal. But it would not add anything further.
Original Article: Agri Pulse by Brad Hooker

Four strategies for managing California’s crucial watershed
Conditions in the Sacramento-San Joaquin Delta and its watershed are changing as droughts become warmer and more intense. But as our new study highlights, California is not doing a good job of tracking these changes. That’s making it even tougher to manage the water that is available for the benefit of the state’s communities, economy and environment.

This critical watershed supplies water to more than 30 million people and more than 6 million acres of farmland. It also supports commercial and recreational fisheries and provides vital habitat for many endangered native fish and other aquatic species.

But temperatures are rising, as is evaporative demand, or the “thirst of the atmosphere.” This is drying out vegetation and soils, shrinking the snowpack — a key part of seasonal water storage — and reducing available runoff. Upstream use of river water also appears to be rising — possibly a result of thirstier soils and crops — further reducing the amount that reaches the delta.

The drying of the delta watershed has consequences for water supply and the environment.

For example, to keep the delta fresh enough for water users, a significant (and growing) portion of runoff must flow into San Francisco Bay. This outflow also protects habitat for endangered fish. To meet outflow needs during droughts, we’re leaning more heavily than ever intended on upstream reservoirs and, in turn, making it even harder for these reservoirs to meet other needs, including protecting cold-water salmon habitat and supplying communities elsewhere in the state.

Our study identifies four imperatives for adapting delta water management to these changes. We need to:
VELES WATER WEEKLY REPORT

Get better at tracking water use. In 2021, upstream and in-delta uses accounted for a staggering 100% of the runoff in the basin, leaving depleted reservoirs to meet all other needs. Yet the state lacks timely, precise information on these uses — information that’s essential to managing the water rights system and curtailing these users when supplies are too tight.

Establish routine practices for managing severe droughts, rather than relying on emergency declarations. To improve response capacity, it’s critical to adapt forecasting to better capture the warmer, drier conditions of today’s droughts (an effort now underway). We also need to anticipate alternative actions as the season unfolds and improve the ability to curtail diversions. To better manage salinity, we also should consider new infrastructure in the delta — something similar to the temporary barrier used to impede seawater during this drought and the last one. (As less freshwater flows down the river, seawater encroaches farther into the delta, raising the salinity.)

Simplify, unify and modernize environmental regulations. Regulations to protect species and their habitat are essential in this watershed, but these regulations have become increasingly complex, overlapping and, occasionally, contradictory. Ongoing efforts to revise the water quality control plan for the watershed, and to update federal and state endangered-species protections, create an opportunity to make regulations more coordinated and effective. Building in flexibility can help both environmental water managers and water users respond to rapidly changing hydrologic conditions.

Get better at storing water in wet years. Although droughts are getting more intense, wet years still occur — and they result in outflow well beyond what’s needed for salinity and species protections. Storing more water has to be done with care for the environment and other water users. It is possible, however, to do a better job of storing water during wet years — both above and below ground — without doing harm. This is a key climate change adaptation strategy, and it will require identifying cost-effective investment options and adapting operations and regulatory approaches.

California needs to come to grips with the fact that conditions are changing in its most important watershed. Modernizing our drought and wet-year management tools is the best way to ensure that not every dry period becomes an emergency.

Original Article: Cal Matters by Ellen Hanak and Greg Gartrell

Governor Newsom’s Proposed Budget Includes Funding For Drought

Gov. Gavin Newsom today unveiled his revised state budget for the 2022-’23 Fiscal Year. The $300.7 billion budget includes several priorities of interest to ACWA members, including funding for drought, climate change, forest management and more. Building upon last year’s three-year, $5.2 billion allocation to support drought response and long-term water sustainability, the governor’s revised budget includes an additional $2 billion for drought response and water resilience. This is part of the governor’s larger $47.1 billion climate package.
The budget also includes $1.4 billion to help Californians pay utility bills, including $200 million dedicated to water bills. Below are some of the highlights of the budget proposal that address ACWA priority issue areas. The Legislature now has until June 15 to pass a state budget.

Drought Response and Water Resilience package:
- $530 million to support water recycling and groundwater cleanup; advance drinking water and clean water projects that leverage significant federal infrastructure funds; and continue aqueduct solar pilots.
- $553 million to provide grants to urban water districts and smaller community water suppliers for drought-relief projects; support data, research, and public education campaigns; support local technical assistance emergency drinking water response, including the purchase and pre-positioning of water storage tanks; enhance water rights enforcement and modernization tools; and support food assistance programs for farmworkers impacted by drought.
- $280 million to address fish and wildlife impacts associated with drought and climate change, and to build aquatic habitat and water resilience projects to support implementation of voluntary agreements with water suppliers.
- $187 million to support agricultural water conservation practices; incentivize farmers to install more efficient irrigation equipment and provide on-farm technical assistance; provide direct relief to small farm operators; and support additional water conservation projects.

Additional Water Investments:
- $500 million in the 2025-'26 General Fund, to serve as a multi-year commitment to promote strategic water storage projects in the state that benefit water supply reliability and the environment.
- $200 million for water and wastewater arrearages through the Low Income Household Water Assistance Program, administered by the Department of Community Services and Development.
- $1.2 million ongoing for the Judicial Council to address climate, environmental and water-related legal disputes.
- $75 million in one-time General Fund expenditures to support the California Small Agricultural Business Drought Relief Grant Program and provide direct assistance to eligible agriculture-related businesses that have been impacted by severe drought conditions.
- $10 million for Forecast-Informed Reservoir Operations and $6.7 million for the airborne snow observatory program.

Original Article: ACWA by ACWA Staff
Prepping for the Dry Days Ahead

In two weeks, new restrictions on outdoor watering will begin, but EcoTech Services Inc. is already seeing an increase in business. Malcolm McLaren, the president of the Azusa water system company, said that the boost has come from homeowners taking a more active approach to how they manage their yards and gardens.

McLaren said that the next big thing to come will be homeowners changing their plant material to ones that can take the new one-day-a-week watering schedule. “We haven’t seen a lot of changes yet,” McLaren said. “Some homeowners are being proactive and are doing turf removal projects to change their landscape and know this is coming.”

But once the summer months come and temperatures reach into the 90s for days in a row, cities are going to start seeing a massive die off of plants as residents are forced into the one-day watering routine.

“Cities that don’t supply their own water need to be ready to figure out how they are going to support their community when they start seeing lawns go brown and plants begin to die off,” he added.

For when it comes to irrigation, ignorance is not bliss. “You cannot just rely on your gardener to be the sole person in charge of watering,” McLaren said. “You as the homeowner need to pay attention as well.”

As do business owners, particularly those with a lot of landscaping.

Sarah Wiltfong, director of advocacy and policy for the Los Angeles County Business Federation, or BizFed, said businesses such as restaurants and car washes should not be impacted by the new standards.

“It is my understanding that this is mostly affecting landscaping,” Wiltfong said. “Anecdotally, I don’t think I’ve heard of any restrictions specific to car washes or breweries,” added a spokesperson for the Metropolitan Water District, or MWD. The MWD, which acts as a wholesaler that sells to water departments and companies, is asking its member water agencies to either go to a one-day a week watering schedule or go on a “water budget” – a setting of volumetric limits on the amount of water used.

The new requirements start June 1.

A MWD spokesperson said that the agencies that don’t enforce the one-day-a-week watering restrictions or those that exceed their volumetric limits would face financial penalties from the district.

“It is not a per-person use,” the spokesperson said about the volumetric limits. “It is a total amount for the member agency, and they determine what they need to do to not purchase more water than that from Metropolitan.”

Original Article: Los Angeles Business Journal by Mark R. Madler
VELES WATER WEEKLY REPORT
Cryptocurrency and the Climate Crisis

The vision behind cryptocurrency has been to free money from the centralized control of banks and other financial intermediaries—and ultimately to replace the current sovereign-based financial system. But to achieve its aspirations, cryptocurrency uses technology that demands massive amounts of energy. Its climate impacts simply cannot be ignored.

To understand what cryptocurrency is and how it works, consider how financial transactions ordinarily occur today. Every time consumers complete a transaction without cash, the transaction must be validated through an intermediary in the form of a bank. The banks operate with additional intermediaries in the form of the U.S. Board of Governors of the Federal Reserve System or the European Central Bank. All this intermediation involves some small transaction costs, but also gives rise to concern about the value of the currency because the Federal Reserve can essentially print money. Orthodox economic theory teaches the more money created by central banks, the greater the risk of inflation. That does not mean that intermediation is not good though. It has, after all, succeeded in financing considerable economic growth for decades.

The cryptocurrency revolution intends to reduce the cost of intermediary transactions by using a distributed ledger system: Blocks that form part of a blockchain are used to validate the so-called reality of each cryptocurrency. The most well-known and biggest cryptocurrency is Bitcoin, but there are other big ones too, such as Ethereum. They are validated by a process called “mining,” which means that mathematical problems have to be solved by “miners,” who are rewarded with a particular cryptocurrency. This process analogizes well to gold mining in that if you perform the work and successfully identify what is genuine gold and not fool’s gold, you will get the reward of building a big stash of money.

The difference in the modern world is that cryptocurrency is very complicated in terms of the solutions to the mathematical puzzles used in validation, which get increasingly difficult as more crypto coins are discovered. This result has required the use of extremely large computing power to be able to compete—so large that the scale is staggering. Big banks have huge computer systems, and yet even their data centers are dwarfed by big cryptocurrency-mining centers. That intensive energy consumption has given rise to serious concerns about the environmental impacts of cryptocurrency. More efficient ways to develop and mine cryptocurrency may exist. But as more people use cryptocurrency, these supposed efficiency gains can be overwhelmed. This potential for crypto’s scale to overwhelm even greater efficiency matters because the aspiration of cryptocurrency’s proponents is ultimately to replace sovereign financial systems. That would bring about a massive increase in the growth of the use of crypto technology—and its energy demands.
At this stage, a single Bitcoin transaction uses the equivalent electrical energy of an average U.S. household over about 70 days—really big energy demand. The precise carbon footprint depends on how the electricity supplied to the servers is produced. But assuming it is based on coal, its climate impacts can be described in terms that any teenager can understand: one Bitcoin transaction equates to almost 200,000 hours of watching YouTube.

The Bitcoin network uses an electricity consumption on an annual basis that is greater than the energy consumption of the country of Norway, and not that far behind that of New York state. Every now and again, commentators even talk about Bitcoin soon using more energy than the city of London.

Ethereum is somewhat more efficient, but not much different. It has a lower volume but a single Ethereum transaction still uses the same electricity as an average U.S. household for about nine days, and it has a carbon footprint of almost 24,000 hours of watching YouTube.

This huge energy consumption translates into major health and environmental justice impacts. People living in neighborhoods near energy-generation plants, such as coal-fired utilities, have to endure the health effects associated with pollution. And any burning of fossil fuels will have effects on the climate.

Original Article: The Regulatory Review by Lawrence Baxter

Farmers across state face new water cuts

With 60% of the state now in extreme drought conditions, state officials are warning water-right holders that they should expect more curtailments during peak irrigation season in June and July.

In a statement last week, the state Division of Water Rights said "curtailments are expected to increase progressively through the spring and summer and continue through the early fall until significant precipitation occurs."

The warnings of curtailments could also include senior water-right holders. "Accordingly, water-right holders and claimants should plan for reduced supplies even if your water right or claim is not currently curtailed," the Division of Water Rights said.

Drought emergency curtailment regulations were issued last fall by the California State Water Resources Control Board for certain watersheds in response to persistent dry conditions and spurred by a drought emergency declaration by Gov. Gavin Newsom. Curtailment orders adopted last year are effective for up to one year unless readopted. The state water board is now considering renewed curtailment orders to readopt—and extend—newly revised draft drought emergency regulations.

The state water board readopted regulations for the Russian River watershed last week, and it plans to do the same for the Scott River and Shasta River watersheds and the Sacramento-San Joaquin Delta watershed.
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"We are seeing unprecedented levels of water cutbacks and water-rights curtailments throughout the system in this second year of extreme drought, and it's a real strain for everyone," said Justin Fredrickson, California Farm Bureau environmental policy analyst.

During a workshop last week, state water board staff heard comments on an updated method used to predict water supply and demand to determine needed curtailment levels. Water from the delta contributes to the supply for more than two-thirds of Californians and is used to irrigate millions of acres of farmland.

The state noted that only a small number of the more than 17,000 water rights in the delta watershed are currently curtailed. But, because supplies will diminish in coming months, it warned that "all right holders—including those with older or riparian rights—should prepare accordingly."

Meanwhile, federal and state allocations for irrigation this summer have already been reduced or cut to historic levels.

Original Article: Ag Alert by Christine Souza

Mojave Water Agency begins delivering imported water to thirsty basin near Barstow

The Mojave Water Agency began delivering imported water last week to a storage aquifer near Barstow, bringing welcome relief to the water table there that has hit a record low.

The MWA Board of Directors unanimously approved the delivery of 5,000-acre-feet of water to the Centro Basin during its April 28 board meeting.

The Centro Basin is one of five subareas or sub-basins, which are defined and separated in part by earthquake faults and other geological features but also are interconnected to some extent, water engineers say.

The subareas are referred to in the Mojave River Basin adjudication that MWA administers as the area’s water master. There also are several "transitional zones" that have been identified.

The Centro Subarea area serves Barstow, Lenwood, Hinkley and Kramer Junction. The sub-basin has maintained a relatively stable mix of agricultural and urban use.

On May 9, the water began being transferred from the MWA’s reserve storage account in the San Luis Reservoir via the California Aqueduct, which is part of the State Water Project.

In drought-stricken California: Millions face unprecedented order to conserve water

This process, called groundwater recharge, releases water into the Mojave River. The water infiltrates through the riverbed into the aquifer below, refilling the groundwater basin and raising the water table.
VELES WATER WEEKLY REPORT

“Recharging basins is part of the Mojave Water Agency’s mission to collaboratively manage groundwater basins sustainably, import water responsibly, and address risks proactively using sound science,” said MWA Board President Jeanette Hayhurst.

Original Article: Daily Press

IID Preparing Water Apportionment Plan

The Imperial Irrigation District is preparing a water apportionment plan for Imperial Valley growers to rein in a projected water overrun after the federal government declared a water shortage, reducing the amount of water that Arizona, Nevada and Mexico can claim from the Colorado River.

The IID holds the largest and most secure federal entitlement on the Colorado River, but current Bureau of Reclamation projections show the district exceeding its allocation by more than 92,000 acre-feet of water this year as grain prices reach record highs following Russia’s invasion of Ukraine.

The IID’s senior water rights protect it from planned water cuts, but they don’t cushion the Valley’s growers if the district uses more water than it is allocated during a drought. IID officials worry that if there is an inadvertent overrun, the Bureau of Reclamation will shut off the tap.

The Equitable Distribution Plan, which IID staff presented to the public for feedback at the IID Board of Directors meeting on May 3, would use “the previously implemented hybrid methodology, comprised of both straight line and historical use components.” Growers that need more water can order it from the IID’s water clearinghouse, and those who are eligible for more water than they need can leave it in the clearinghouse for those who need it. The plan would be retroactive to Jan. 1, so all farm water that has been used this calendar year would count toward the apportionments.

The new EDP is similar to the program that the IID implemented in 2014, when the district had to pay back nearly 155,000 acre-feet of water that it used in excess of its allotment in 2011 and 2012. Under the 2014 program, the IID calculated half of a field’s water allocation based on its historic use and half based on an equal “straight-line” allocation.

The Colorado River 2007 Interim Guidelines give the district some flexibility to order more water than it is allotted. However, low water levels at Lake Mead meant that the district had to repay the entire 2012 overrun in one year.

Conditions have grown increasingly dire since then. Hotter, drier conditions driven by climate change have reduced snow packs and runoff which feed and replenish the river. Water levels in Lake Powell and Lake Mead are at their lowest points in history.

Lake Mead, which holds Colorado River water allocated to the IID and other western Lower Colorado River Basin states water users, dropped to 35 percent of its capacity last
VELES WATER WEEKLY REPORT

August, prompting the Bureau of Reclamation to declare a Tier 1 shortage, nixing the inadvertent overrun policy.
Original Article: Calexico Chronicle by Antoine Abou-Diwan

US WATER NEWS

New bill aims to boost tribal access to clean water

Two recent moves aim to benefit water access for tribal communities in the Colorado River basin. One, a bill in the U.S. Congress, could increase access to clean water. Another, the release of a "shared vision" statement, outlines the goals of tribes and conservation nonprofits.

Tribes in the basin hold rights to about a quarter of the river's flow, but have often been excluded from negotiations about how the river’s water is used. At the same time, tribal communities often lack reliable access to clean water as a result of aging infrastructure and a history of underinvestment.

The bill, called the Tribal Access to Clean Water Act, was heard by the House Natural Resources Subcommittee on Water, Oceans, and Wildlife. It calls for the allocation of $2.3 billion across different federal agencies, all aimed at developing and maintaining water infrastructure. Some of that work would be carried out by federal agencies themselves, such as the Indian Health Service and Bureau of Reclamation, while more than half of the funds would be made available for grant programs.

It was introduced by a bipartisan group of four representatives, including one from within the Colorado River basin — Colorado's Joe Neguse.

The measure is largely designed to fill in funding gaps left by the bipartisan infrastructure law — money to operate and maintain existing water systems, and design and engineer new ones.

"The bipartisan infrastructure law provided extraordinary new funding for the infrastructure associated with tribal water systems," said Anne Castle, a senior fellow at the University of Colorado Law School. "But this bill provides the necessary human part of the equation."

She said new funding from the Tribal Access to Clean Water Act would prevent clean drinking water systems from deteriorating quickly.

Jonathan Nez, president of the Navajo Nation said that native american households are 19 times more likely than white households to lack access to clean drinking water through indoor plumbing, calling that fact "one of the great inequities of our time."
"Tribal water systems present unique challenges such as managing high capital and operating costs in remote locations, and finding and retaining qualified water system operators," he said.

**Original Article:** [KUNC by Alex Hager](#)

**Gradiant Acquires Synauta, Machine Learning Company, to Advance AI Technology in Water**

Gradiant's digital twin combined with Synauta's AI creates powerful models for water and wastewater treatment and reuse – resulting in lower energy and chemical consumption and operating costs.

Gradiant, a global solutions provider and developer for cleantech water, today announced it has acquired Canadian artificial intelligence (AI) water technology company Synauta, to accelerate the use of digital twin technology in water. The use of digital twins in industrial water treatment and desalination and water reuse has been pioneered by Gradiant. The acquisition strengthens Gradiant's position as a technology leader in end-to-end water solutions and accelerates deployment of digital twin technologies to build a digitized water future.

"Digital water is the fastest-growing area in the global water industry and this acquisition brings together the very latest technologies," said Prakash Govindan, COO of Gradiant. "The application of digital twins in water will grow even more rapidly as we further leverage 5G communications, industrial automation, and predictive analytics. Combined with Synauta's AI data models, industrial water treatment just got smarter, cleaner, and significantly more efficient."

Spun out of the Massachusetts Institute of Technology, Gradiant is an end-to-end water solutions provider offering design, operations, and asset optimization integrated on to a single digital platform for clients that include Micron, Glaxo Smith Kline, Pfizer, Rio Tinto, and Coca-Cola. An estimated $1.5 trillion per year is required to address global water infrastructure, and digital solutions play a major role. Recent market research forecasts annual capital expenditures for digital water to reach $10 billion by 2030, with investments in artificial intelligence technologies to account for $6.3 billion.

Industrial and municipal customers are increasingly adopting AI platforms for their water and wastewater operations to address challenges from sustainability and cost pressures, business continuity, regulatory compliance, and climate events.

**Original Article:** [Benzinga by Business Wire](#)

**Rain brings relief to crews battling New Mexico’s largest-ever wildfire**

Lightning sparked a few new small fires in the drought-stricken Southwest on Monday but the thunderstorms brought welcome rain to the monster blaze that’s been churning for a month in New Mexico and is now the state’s largest in recorded history.
VELES WATER WEEKLY REPORT

“We haven’t seen rain in a really long time so that’s exciting,” San Miguel County Sheriff Chris Lopez said Monday at a briefing on the biggest active fire in the U.S. burning east of Santa Fe.

“It gave us a little bit of a breather,” he said at one of the command posts in Las Vegas, New Mexico, on the southeast flank of the blaze that’s charred 465 square miles. More than 2,000 fire personnel remain on the lines in the Sangre de Cristo mountain range south of Taos. The fire now covers an area nearly one-quarter the size of Delaware.

More than 260 homes have burned and more evacuations were prompted over the weekend as the blaze moved through dry — and in some cases dead — stands of pine and fir trees. Huge columns of smoke could be seen from miles away, and fire officials and weather forecasts continue to refer to it as an unprecedented situation.

Stepped up aerial attacks also helped about 1,000 firefighters continue to make progress Monday on a big fire west of Santa Fe.

Richard Nieto, wildland fire manager officer for the Los Alamos National Laboratory, said Monday night authorities were preparing to relax the status of evacuation alerts as crews were pushing back the flames about 3 miles southwest of the lab’s federal boundary.

New lightning-sparked fires Monday included one about 2.5 miles from Sedona, Arizona, but fire officials said Monday night it had burned less than an acre and the growth potential was low.

Original Article: Market Watch by Associated Press

Texas approves $28M for water infrastructure

The Texas Water Development Board has approved financial assistance totaling $28,611,956 for water, wastewater, and flood projects. The funds come through a mixture of grants and loans, and will go toward the following projects:

- The City of Socorro — $10,097,281 for a drainage improvement project: The city is proposing new, strategically placed drainage culverts, the concrete lining of the Sparks Arroyo drainage channel, the construction of the proposed Stockyard Detention Basin, and the expansion of the Onion Field Retention Basin. The improvements aim to decrease flooding, help stop erosion, and prevent the buildup of silt banks, which also contributes to localized flooding in the city.

- The City of Jacksonville — $5,919,000 for wastewater system improvements: The city will use the assistance for the planning, design, acquisition, and construction of a wastewater collection system project. The city will replace approximately 9,500 linear feet of sewer trunk main with a larger, 24-inch pipe, will replace the Lakeshore Lift Station to increase its capacity.
VELES WATER WEEKLY REPORT

- The City of Ennis — $3,456,790 for a flood management project:
  The city will make improvements to Cottonwood Creek, including the
  removal of 7,500 linear feet of debris, construction of a four-acre detention basin,
  stabilization of 15,000 linear feet of creek channel bank, and the repair of five
  vehicular crossings. The proposed improvements will address drainage issues,
  reduce creek bank erosion, and prevent damage to property.

- North Hunt Special Utility District — $3,275,000 for water system improvements:
  The district will construct a new water well, pressure tank, and booster pump
  station, including a new disinfection and control building. Additionally, the District
  will upgrade approximately 46,000 linear feet of water lines and replace 400 water
  meters with radio-read meters. The proposed improvements for existing
  distribution pipelines aim to alleviate water losses.

- Greater Texoma Utility Authority — $2,160,000 for wastewater system
  improvements:
  The City of Pottsboro requested the additional funding to supplement previous
  financing from the Clean Water State Revolving Fund for the last phase of
  construction. With the assistance approved today, the authority will complete the
  rehabilitation and expansion of the city’s wastewater treatment plant.

- The City of Strawn — $2,001,900 for water system improvements:
  With the financial assistance, the city will replace three existing filters at its water
  treatment plant with new microfilters and construct a new building to shelter the
  microfilters and associated electrical controls, piping, and appurtenances. In
  addition, the City proposes to replace all retail water meters with new radio-read
  meters to reduce water loss.

- M&M Water Supply Corporation — $1,269,700 for water system improvements:
  The corporation plans to use the funds to install mixers into their existing elevated
  storage tanks and upgrade the system with a one-ton chlorine cylinder.

- The City of Kennedale — $432,285 for a flood management project:
  The city plans to use the funds to stabilize the Kennedale Branch channel bank.
  The project includes approximately 2,400 cubic yards of gabion baskets and 1,673
  linear feet of metal beam guard fence. The proposed improvements will address
  riverbank failure along Valley Lane Road.

Original Article: Water World

State water officials approve $300K study of cloud seeding in local
mountain ranges
The 10 members of the of the Wyoming Water Development Commission on Friday
approved a $300,000 proposal to fund a hydrologic study of cloud seeding in the
Medicine Bow and Sierra Madre Mountains.
The bid was awarded to NCAR—the National Center for Atmospheric Research in Boulder, Colorado. NCAR is a federally funded research and development center. Much of its work in applied science focuses on meteorology, climate science and atmospheric chemistry.

Cloud seeding is the process of releasing naturally occurring silver iodide into specific types of clouds to amplify and enhance the process of making snow. Ground based generators or airplanes can be used to inject clouds with the chemical agent. A pilot project in the early 2000’s, demonstrated that cloud seeding during the winter months can help increase snowpack over Wyoming’s mountains ranges.

Water Commissioner Ron Kaily of Cheyenne made the motion to approve the contract with NCAR.

The commissioners approved the proposal without seeing the contract, necessitating the need for the Wyoming Attorney General to approve the contract.

Jason Mead, the interim Director of the Wyoming Water Development Office, said NCAR was the only agency to respond to the request for proposal sent out by his office.

The nine-year pilot cloud seeding program in the Medicine Bow and Sierra Madre ranges using ground based generators concluded in 2014. An executive summary prepared for the WWDC in December of that year concluded that physical and modeling analysis suggests that cloud seeding is a viable technology to augment existing water supplies for the two big mountain ranges in south-central Wyoming. While acknowledging that snowpack increases were not significant during the pilot project, statistical analysis showed precipitation increase of three to 17 percent for seeded storms compared to unseeded ones.

The study recommended implementing a cloud seeding program in the Medicine Bow and Sierra Madres using best-practices learned from the pilot project to maximize precipitation and minimize cost.

With the approval Friday of the NCAR contract, the legislature’s select water committee will vote on whether to approve after the review by the state attorney general.

Original Article: Big Foot 99

State offers $1.3B for water and sewer projects

Massachusetts cities and towns will have access to $1.3 billion in low-interest loans and grants to replace aging drinking water and sewer systems.

The money, which would be provided through the state’s Clean Water Revolving Trust Fund, will partially fund 183 projects by providing low-interest loans and grants to fund construction, planning and asset management projects designed to improve water quality, upgrade or replace aging drinking water and sewer systems.

Energy and Environmental Affairs Secretary Beth Card said the funding would help communities “by updating their water infrastructure, investing in energy efficiency and
VELES WATER WEEKLY REPORT

renewable energy at treatment facilities, and addressing the problem of emerging contaminants in our drinking water.”

“These efforts make the delivery of local water resources more sustainable, reliable, and affordable,” she said in a statement.

Locally, Haverhill is getting the largest share of funding through the program with more than $84 million in low-interest loans and grants awarded through the program. The funding will be devoted to several projects, some of which are already underway, to repair sewage pumps. The city will also be getting $7 million through the state program to help cover the cost of closing and capping the 20-acre Northern Mound landfill.

Meanwhile, Lawrence is slated to receive $6.4 million from the latest round of funding for sewer and stormwater projects, according to the state agency.

Gloucester will be getting more than $2.6 million in loans and grants for water and sewer projects at Riggs Point and Riverdale Park, the Massachusetts Department of Environmental Protection said.

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Gloucester will be getting more than $2.6 million in loans and grants for water and sewer projects at Riggs Point and Riverdale Park, the Massachusetts Department of Environmental Protection said.

The money comes from a $1 trillion infrastructure bill signed into law by President Joe Biden in November, which provides more than $50 billion for states to update drinking water and wastewater systems.

Initially, the U.S. Environmental Protection Agency will be releasing $7.4 billion in clean water funds to states, tribes and territories.

The Baker administration said the latest round of funding through the trust fund is backed by $189 million from the new infrastructure law and another $100 million in American Rescue Plan Act funds.

The uplift in funding comes as Massachusetts cities and towns are facing major water and sewer infrastructure needs — and a hefty price tag to go along with it.

In 2012, a legislative task force found cities and towns face $21.4 billion worth of water and sewer upgrades in the next two decades, calling it “one of the biggest fiscal challenges” for local governments. State officials say that estimate is likely much larger from the impact of record inflation levels and other cost factors.

Original Article: Newbury Port News by Christian M. Wade

UW Wins $20M Grant to Study Climate-Driven Changes to State’s Water Supply

A five-year, $20 million grant from the National Science Foundation (NSF) to the University of Wyoming will allow researchers to work with Wyoming’s communities to deal with expected significant and lasting changes in water availability.

Through fieldwork and high-performance computing, researchers will quantify how a changing climate in one of the nation’s key headwater regions is likely to affect streamflows, aquatic ecosystems and vegetation -- and the communities and people who depend upon them.
“This project has the unique goal of linking high-performance and data-intensive computing with both environmental field research and social science,” UW President Ed Seidel says. “It will establish new innovative capacity in Wyoming to address the ecological and socioeconomic consequences of climate-driven changes to the water supply. And it will establish Wyoming as a key player in climate change research and integrated Earth system modeling.”

The grant was announced today (Monday) through NSF’s EPSCoR (Established Program to Stimulate Competitive Research) program, which supports efforts to enhance research, science and mathematics education, and workforce development. The award comes on the heels of two other five-year, $20 million NSF grants to UW in 2012 and 2017 that stimulated wide-ranging research into Wyoming’s water resources and microbes in the state’s landscapes.

The project’s official name is WY-ACT: Wyoming Anticipating Climate Transitions. It will include establishment of a Laboratory for Regional Earth System Modeling; the launch of a Center for Climate, Water and People; and investment in new capabilities centered at the UW-National Park Service (NPS) Research Station in Grand Teton National Park. Five new faculty positions will initially be supported by the federal grant.

The highly interdisciplinary project is led cooperatively by five principal investigators already at UW: Brent Ewers, a botany professor and director of the Biodiversity Institute and Wyoming EPSCoR; Bart Geerts, a professor of atmospheric science; Corrie Knapp, an assistant professor in the Haub School of Environment and Natural Resources; Bryan Shuman, a professor of geology and geophysics; and David Williams, a professor of botany.

Original Article: University of Wyoming

State allots $11M to upgrade local water works

Five communities in Otsego and Delaware counties have received a total of $10.81 million in state funding to make improvements to water treatment facilities.

It’s the local share of $638 million in grants from the state to municipalities and public authorities for 199 water infrastructure projects across New York, according to a media release from Gov. Kathy Hochul.

The city of Oneonta, village of Otego and town of Edmeston each received grants of $3 million through the state’s Water Infrastructure Improvement Act.

Oneonta plans to use the funding to make improvements to the drinking water treatment plant on East Street. Otego and Edmeston will spend money on their full water systems, including water source infrastructure, distribution and transmission water lines. Otego also applied to upgrade a pump station and its water storage capability.

Richfield Springs got a smaller grant, $68,000 for a raw water transmission main pipeline, to enable the village to comply with EPA surface water treatment rules. The village of
VELES WATER WEEKLY REPORT

Sidney was the only Delaware County community to win a WIIA grant, $1.13 million for wastewater infrastructure improvements.

The estimated total cost for the Oneonta project is $5.05 million, reported City Administrator Greg Mattice. The state grants pay 60% of the cost of the municipal water projects. The renovation “will replace concrete basins that are deteriorating. It won’t change the capacity or type of treatment,” that the facility uses, Mattice said.

The Oneonta water plant was built in 1957, Treatment Plant Chief Operator Stan Shaffer said during a phone interview Monday, May 16. “We’ve done quite a few upgrades since about 1990 to now, but there’s a couple larger upgrades that need to be done,” he said.

The priority work is replacing deteriorating concrete in the water treatment basins used for flocculation and sedimentation, two steps in purifying the water, Shaffer said. During a site visit Monday, crumbling and discolored concrete was visible around the rims of the basins. The grant will also fund rehabilitation of water filtration systems.

Other improvements planned for 2022 include equipment to analyze the water’s pH levels and oxidation, pipe painting and pump house improvements, according to the city’s 2021 Annual Drinking Water Quality Report.

Oneonta municipal water system serves 15,954 people — the entire city and parts of the town of Oneonta. In 2021, the plant treated and pumped an average of 1.62 million gallons per day into the distribution system, the report said — a total of 540 million gallons. Of this amount, only about 2/3 was delivered to customers; the remaining 200 million gallons went to flush mains, fight fires or was lost to leaks. In addition to the planned water treatment work, Oneonta has now completed work on a five-year, $1.4 million Lower Reservoir dam improvement project, Mattice said.

That work was necessary mainly because both upper and lower reservoir “dams no longer met DEC dam regulations,” Shaffer said. Stone walls that lined the spillway were replaced with poured concrete walls, and the top of the dam was raised. “But while we were at it, we also fixed or replaced all the infrastructure that brings the water from the reservoirs to the plant,” he said.

Original Article: The Daily Star by Mike Forster Rothbart

Western states turn to homeowners to deflect drought

On the brink of what all agree is bound to be another drought-stricken summer across the West, water managers are already beseeching the public: Don’t water your lawns. But as states and local jurisdictions struggle to address aridification and shrinking water supplies from the Colorado River Basin and elsewhere, a more permanent version of that plea is gaining traction.

Rather than expanses of Kentucky bluegrass drinking up a diminishing resource, homeowners and public spaces alike could be decorated with less-thirsty native plants and rock gardens.
VELES WATER WEEKLY REPORT
While turf replacement programs aren’t new — water agencies have encouraged homeowners to swap out their front yards for less water-intensive landscaping dating back at least 20 years — states are expanding the effort. Utah recently approved its first statewide program to swap out lawns for other landscapes, and Colorado is on track to do the same.
Both of those programs follow in the footsteps of a Nevada plan approved last year that addresses how water from the Colorado River is used, including aggressive efforts to remove “nonfunctional” or decorative grasses.
“Cities are really recognizing that municipal water conservation, in general, is a really big opportunity for them to improve their water resiliency and their water security. Outdoor landscape conversion — these turf replacement projects, in particular — are some of our lowest hanging fruit to do that,” said Lindsay Rogers, a water policy analyst with Western Resource Advocates.
She added: “Replacing that turf is a really big opportunity for our communities to save water without needing to sacrifice on quality of life.”
That’s in large part because outdoor residential watering can easily dominate water use in arid states.
The Utah Division of Water Resources calculates that about 60 percent of its residential water use goes to outdoor irrigation. An average quarter-acre yard in the Beehive State — which contains about 7,400 square feet of green space — can soak up 3,000 gallons of water each time the sprinklers are turned on.
Similarly, statistics published by Colorado State University show outdoor water use amounts to 55 percent of residential water use in the Front Range, home to Colorado’s major urban centers.
A 5,000-square-foot Kentucky bluegrass lawn can drink up 18,500 gallons of water monthly, even when users water on a conservative schedule of one-half inch every three days.
The Southern Nevada Water Authority likewise reports that 60 percent of its water is used outdoors.
Original Article: Green Wire by Jennifer Yachnin

Texas Water Development Board Approves $28M for Improvements
The Texas Water Development Board has approved financial assistance totaling $28.6 million for water, wastewater and flood projects.
The funds come through a mixture of grants and loans, and will go toward the following projects:
Socorro: $10M for Drainage Improvement Project:
The city is proposing new, strategically placed drainage culverts, the concrete lining of the Sparks Arroyo drainage channel, the construction of the proposed Stockyard Detention Basin and the expansion of the Onion Field Retention Basin. The
improvements aim to decrease flooding, help stop erosion and prevent the buildup of silt banks, which also contributes to localized flooding in the city.

Jacksonville: $5.9M for Wastewater System Improvements:
The city will use the assistance for the planning, design, acquisition and construction of a wastewater collection system project. The city will replace approximately 9,500 linear ft. of sewer trunk main with a larger, 24-in. pipe and will replace the Lakeshore Lift Station to increase its capacity.

Ennis: $3.4M for Flood Management Project:
The city will make improvements to Cottonwood Creek, including the removal of 7,500 linear ft. of debris, construction of a four-acre detention basin, stabilization of 15,000 linear ft. of creek channel bank and the repair of five vehicular crossings. The proposed improvements will address drainage issues, reduce creek bank erosion, and prevent damage to property.

North Hunt Special Utility District: $3.2M for Water System Improvements:
The district will construct a new water well, pressure tank and booster pump station, including a new disinfection and control building. Additionally, the District will upgrade approximately 46,000 linear ft. of water lines and replace 400 water meters with radio-read meters. The proposed improvements for existing distribution pipelines aim to alleviate water losses.

Strawn: $2M for Water System Improvements:
With the financial assistance, the city will replace three existing filters at its water treatment plant with new microfilters and construct a new building to shelter the microfilters and associated electrical controls, piping and appurtenances. In addition, the city proposes to replace all retail water meters with new radio-read meters to reduce water loss.

M&M Water Supply Corporation: $1.2M for Water System Improvements:
The corporation plans to use the funds to install mixers into their existing elevated storage tanks and upgrade the system with a one-ton chlorine cylinder.

Original Article: [Construction Equipment Guide](#)

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**Hydropower’s future is clouded by droughts, floods and climate change – it’s also essential to the US electric grid**
The water in Lake Powell, one of the nation’s largest reservoirs, has fallen so low amid the Western drought that federal officials are resorting to emergency measures to avoid shutting down hydroelectric power at the Glen Canyon Dam.
The Arizona dam, which provides electricity to seven states, isn’t the only U.S. hydropower plant in trouble.
The iconic Hoover Dam, also on the Colorado River, has reduced its water flow and power production. California shut down a hydropower plant at the Oroville Dam for five
months because of low water levels in 2021, and officials have warned the same thing could happen in 2022.

In the Northeast, a different kind of climate change problem has affected hydropower dams – too much rainfall all at once.

The United States has over 2,100 operational hydroelectric dams, with locations in nearly every state. They play essential roles in their regional power grids. But most were built in the past century under a different climate than they face today.

As global temperatures rise and the climate continues to change, competition for water will increase, and the way hydropower supply is managed within regions and across the power grid in the U.S. will have to evolve. We study the nation’s hydropower production at a systems level as engineers. Here are three key things to understand about one of the nation’s oldest sources of renewable energy in a changing climate.

Hydropower contributes 6% to 7% of all power generation in the U.S., but it is a crucial resource for managing the U.S. electric grids. Because it can quickly be turned on and off, hydroelectric power can help control minute-to-minute supply and demand changes. It can also help power grids quickly bounce back when blackouts occur. Hydropower makes up about 40% of U.S. electric grid facilities that can be started without an additional power supply during a blackout, in part because the fuel needed to generate power is simply the water held in the reservoir behind the turbine.

In addition, it can also serve as a giant battery for the grid. The U.S. has over 40 pumped hydropower plants, which pump water uphill into a reservoir and later send it through turbines to generate electricity as needed.

So, while hydroelectricity represents a small portion of generation, these dams are integral to keeping the U.S. power supply flowing.

Climate change affects hydropower in different ways in different regions. Globally, drought has already decreased hydropower generation. How climate change affects hydropower in the U.S. going forward will depend in large part on each plants’ location.

In areas where melting snow affects the river flow, hydropower potential is expected to increase in winter, when more snow falls as rain, but then decrease in summer when less snowpack is left to become meltwater. This pattern is expected to occur in much of the western U.S., along with worsening multiyear droughts that could decrease some hydropower production, depending on the how much storage capacity the reservoir has.

Original Article: The Conversation by Caitlin Grady and Lauren Dennis
US Bureau of Reclamation fudges water levels in Lake Mead to avoid implementing additional water cuts

The water crisis in the American Southwest has reached a critical point. Lakes Mead and Powell, the two largest reservoirs in the United States, continue to break records for their lowest levels since first filling.

Lake Powell, which provides electricity and water to millions in Arizona and Utah, is at 24 percent of full capacity. The water level has fallen to an all time low elevation of 3,522 above sea level, below the target minimum level of 3,525 feet for hydro power production. If the water level declines further, to 3,490 feet, it will be unable to produce hydro power at all.

Lake Mead is in a similar situation. The reservoir is currently at 31 percent capacity and fell below an elevation of 1,075 feet last August, triggering a Tier 1 shortage and significant cuts to the water distributions to Arizona and Nevada. The reservoir currently sits at 1,054 feet; if it falls below 1,050 feet it will set off additional rounds of cuts that will become increasingly severe as the lake’s level declines.

The decline in Lake Mead has been so severe that even dead bodies dumped decades ago have been discovered.

Desperate to navigate the crisis, the US Bureau of Reclamation (USBR)—the federal agency which is tasked with managing all federal water projects in the American West—proposed holding an extra 480,000 acre-feet of water (enough to provide water to 2 million people for a year) in Lake Powell to prevent the loss of hydro power capacity. A further 500,000 acre-feet of water was released from the Flaming Gorge Reservoir on the Utah-Wyoming border last month to bolster Powell’s water levels. The two actions combined are expected to raise the water elevation by 16 feet.

This proposal was supported by state water managers in the Lower Colorado River Basin, but they were concerned about how the holding might affect water levels in Lake Mead, the source of water and electricity for 25 million people and hundreds of thousands of acres of farmland.

Original Article: [World Socialist Web Site by Alex Findjis](https://www.wsws.org/articles/2022/07/12/water-220712.htm)
GLOBAL WATER NEWS

Waiting for the water train in scorching India
Afroz misses school every day to spend hours waiting with a handcart full of containers for a special train bringing precious water to people suffering a heatwave in India's desert state of Rajasthan.

Temperatures often exceed 45 degrees Celsius (113 Fahrenheit) here, but this year the heat came early in what many experts say is more proof of climate change making life unbearable for India's 1.4 billion people.

"It's always been very hot here and we have always struggled for water," Afroz, 13, told AFP as he waited in Pali district for the second time that day for the special train.

"But I don't remember filling up containers in April."

For more than three weeks now, the 40-wagon train—carrying some 2 million litres—has been the only source of water for thousands of people in the district.

Untreated
Every day, dozens of people—mostly women and children—jostle with blue plastic jerry cans and metal pots to fill from hoses gushing water out of the army-green train into an underground tank.

Water has been dispatched by train to Pali before, but according to local railway officials, the shortage this year was already critical in April so they started early.

The wagons—filled in Jodhpur, around 65 kilometres (40 miles) away—are first emptied into cement storage tanks, from which the water is sent to a treatment plant for filtering and distribution.

But for Afroz's family and many others like them, life is easier if they fill directly from the storage tanks, despite the water being untreated.

That their children skip school at times to ensure there is water in the house is what hits the families the most.

"I can't ask the breadwinner of the family to help me. Otherwise, we'll be struggling for both food and water," Afroz's mother Noor Jahan said as she filled up an aluminium pot.

"It is affecting my child's education, but what do I do? I cannot carry all these containers on my own," she told AFP.

Cracked feet
Hundreds of millions of people in South Asia have been sweltering in an early summer heatwave in recent weeks, with India seeing its warmest March on record.

In India and Pakistan, "more intense heat waves of longer durations and occurring at a higher frequency are projected", the Intergovernmental Panel on Climate Change (IPCC) said in a recent landmark report.
VELES WATER WEEKLY REPORT
The "cascading impacts" of heatwaves on agricultural output, water, energy supplies and other sectors are already apparent, World Meteorological Organization chief Petteri Taalas said this month.
On Friday, India banned wheat exports—needed to help fill a supply gap due to the Ukraine war—in part due to the heat wilting crops.
Original Article: Phys.org by Aishwarya Kumar

45.3 Percent of Gambia's Population Relies On Contaminated Water Sources With Presence of E-Coli
With back-up from UNICEF-Gambia Water Sanitation and Hygienic survey, Young Volunteers for the Environment-The Gambia (YVE), an environmental civil organisation, said 45.3 percent of the Gambian population relies on contaminated water sources with presence of e-coli bacteria for survival.
In a press statement shared with this medium, Joe Bongay, executive director of YVE added: "The presence of e-coli in water causes abdominal cramp, diarrhea, urinary tract infections and pneumonia, among other illnesses. It can even kill young children and the elderly."
According to the Demographic and Health Survey 2019 - 2020, the most common sources of drinking water in urban households are water piped into the household's dwelling, yard, or plot (61%) and water piped to a neighbour (16%).
It added "rural households obtain their drinking water mainly from a public tap or standpipe (55%) or tube well or borehole (19%)."
Meanwhile, Bongay said: "Lacking access to this basic need means people are deprived of an equal chance to be healthy, educated, improve livelihoods and be financially secure.
"Women, girls, people living with disabilities and other vulnerable groups are especially at a higher risk of bearing the brunt of a lack of access to water, sanitation and hygiene facilities and services."
He though recognised The Gambia government's hard strive on the WASH components, such as supplying improved water for over 90% of the population and reducing open defecation to less than 1%.
He said: "Clean and quality, accessible water for all are fundamental human rights that all peoples should enjoy to provide them the highest attainable standard of health everywhere."
On 18th-19th May 2022, a delegation of government officials, ministers, civil society and development partners would leave for Jakarta, Indonesia to attend the Sector Ministers Meeting (SMM) 2022 where water, sanitation, hygiene and climate change issues would be discussed.
The Sector Ministers Meeting recognises the important role for countries' MDA to be represented at their Ministries, Department and Agency's highest level and the
VELES WATER WEEKLY REPORT

importance of the political leadership of the Ministry of Health, Ministry of Water Resources, Environment and Finance around these topics.
YVE-The Gambia, therefore encouraged the minister and entire Gambian delegation to take advantage and participate well in this high-level meeting.
The YVE head further recommended the government to prioritise increase in budget and investments in water, sanitation, and hygiene in integrated crisis recovery strategies, focusing on the climate, the economy and public health.
Original Article: All Africa by Sulayman Waan

Water services in South Africa deteriorating – despite billions spent on projects

Water and sanitation minister Senzo Mchunu says that there is an “anomaly” in South Africa where municipal water services continue to decline – despite his department making substantial grant allocations to various projects.
In his budget vote speech delivered to parliament on Friday (13 May), Mchunu noted that R37.4 billion has been allocated over the next three years for conditional infrastructure grants for municipal water services.
This includes R19 billion for the Regional Bulk Infrastructure Grant and R14 billion for the Water Services Infrastructure Grant. These grants will be spent on 313 different projects across the country, he said.
“It is an anomaly that municipal water services continue to decline while we make these very substantial grant allocations. Mark my words – we are going to stop this going forward – through necessary intervention guaranteed to deliver water,” the minister said.
South Africa’s recently-published Blue Drop 2022 report shows a significant decline in the country’s water quality, with 23% of municipalities flagged as being at critical risk.
Access to sufficient, safe water is a basic right enshrined by South Africa’s Constitution. The Water Services Act places the responsibility for the provision of water services on local government, while the oversight and monitoring duties are delegated to the provincial and national governments.
The 2022 report shows that 40% of the country’s water supply systems achieved microbiological water quality compliance, and 23% have achieved chemical water quality compliance. When looking at the ‘drinkability’ of the water in these systems, the data shows:
  - 48% of water supply systems are in the low-risk category;
  - 18% are in the medium-risk category;
  - 11% are in the high-risk category;
  - 23% are in the critical risk category.
While the country’s major metropoles still have safe drinking water, the report flags concerns in more rural and isolated municipalities.
VELES WATER WEEKLY REPORT

Mchunu flagged non-payment by municipalities as a major concern for the delivery of water services in the country, noting that the Water Trading Entity – which manages water infrastructure and resources, and the sale of raw water – is owed almost R25 billion from customers. Municipalities and water boards account for 65% of this debt, Mchunu said. Municipalities owed the water boards just under R14 billion, due to non-payment by their water users. This in turn resulted in the water boards owing the Department R7.6 billion. Direct municipal debt to the department amounted to R8 billion. The WTE has been allocated R9.55 billion over the MTEF to augment its budget for the development and management of national water resource infrastructure. In total, the medium-term expenditure estimate for the Water Trading Entity is R51.6 billion, consisting of R16.4 billion, R17.2 billion and R18 billion in 2022/23, 2023/24 and 2024/25 respectively.

“It is critical that government as a whole addresses the problem of poor revenue management and debts in the water sector,” Mchunu said. “If this problem is not addressed, we will not see a sustainable improvement in water and sanitation services. The underlying problem that we all need to focus on is weak billing and revenue collection at a municipal level,” he said.

Original Article: Business Tech by Staff Writer

After fires and floods, climate-conscious independents could determine Australian election

After some of the worst fires and floods ever to hit Australia, a new cohort of climate-conscious independents are threatening to shake up the federal election on Saturday, putting the government under pressure in key districts and potentially reshaping the country's political landscape.

Enraged by the lack of government action on climate change, the candidates are campaigning hard on environmental issues in the hope of wooing moderate voters away from the major parties. "There is deep frustration that real action hasn't been taken on climate change," said Allegra Spender, 44, an independent candidate in the wealthy Sydney electoral district of Wentworth. "It's become ideological rather than based on science and business, and that's what people are seeking: just a rational, proportional response to the evidence."

Spender, a former analyst with McKinsey & Co, is one of more than 20 independent candidates, predominately women, who are running for seats in traditionally conservative, mostly urban districts, and who draw some of their funding from Climate 200, a fund set up three years ago to back candidates looking to advance climate policy. About half a dozen of these candidates have come to be known as the "teal independents," reflecting the combination of their appeal to 'blue' moderate liberals and 'green' stance on climate change.
VELES WATER WEEKLY REPORT

Opinion polls show the group is gaining traction among voters with their environmental, anti-corruption and gender equality policies, posing a threat to the established parties which have trodden lightly around the climate issue for fear of alienating voters in a country that is one of the world’s largest exporters of coal and gas. Liberal Party leader Scott Morrison, who became prime minister in August 2018, seems likely to lose power at the election, ending nine years of conservative government. A poll conducted last week suggested the Labor Party would win 80 seats, more than the 76 needed for majority government. The poll showed the current government could be reduced to 63 seats with the remaining eight seats won by minor parties and independents. If the polls are wrong, as they were at the last election, a hung parliament where independents hold the balance of power is possible.

Treasurer Josh Frydenberg - the country’s most senior finance minister and widely seen as the next leader of the Liberal Party – is in danger of losing his Melbourne seat of Kooyong to a teal independent, neurologist Monique Ryan, according to a recent poll. Another independent, former journalist Zoe Daniel, is leading a poll in her Melbourne seat.

Spender appears to be attracting voters across the spectrum in Wentworth, which includes Bondi and some of the country’s most affluent harbourside areas. "Climate change," said 36-year-old Jess Daniel, when asked about her top priority after casting an early ballot in Bondi. "I have a little one and I am thinking of him, not just the here and now."

Original Article: Reuters by Kate Lamb

Bumper Barmah water trading opportunity

Water available to trade downstream of the Barmah Choke from July 1 will be about 40.6 gigalitres, the highest since trade restrictions through the choke came into force in 2014.

“Each year we make this information available ahead of the new season to allow water users to make plans,” Murray-Darling Basin Authority’s Andrew Kremor said.

“The Barmah Choke is a naturally narrow stretch of the River Murray that runs through the Barmah-Millewa Forest near Echuca,” he said.

“A restriction on the trade of water through the choke has been active since 2014 to protect water delivery to existing entitlement holders and to maintain the river environment in the choke.

“While trading water from downstream to upstream of the choke is always open, trades from upstream to downstream can only happen if the same or greater amount has first gone the other way — this is the ‘balance’ of trade.

“River managers will continue to assess the balance of trade through the choke in planning for the year ahead, by considering factors like storage levels, expected demand, state allocations and climate forecasts.”
Information on trade opportunities and applications to trade are provided by the relevant basin state trade approval authorities. Water market participants should consider the closing times and opening times of basin state water registers for the 2021-22 and the 2022-23 water years respectively, when determining their trade activity. There are no plans to relax the restriction on trade across the choke in 2022-23.

Original Article: Shepperton News

PM Modi leads slew of ambitious water projects to conserve water, secure future

Recognizing the urgency of water conservation along with a goal to provide tap water connections in all rural households in India, the national government led by Prime Minister Narendra Modi has launched a slew of ambitious water projects. One of the key global issues is Global Warming and all the countries are struggling to cope with this challenging situation. India, just like any other country, is not immune to its effects. Although India has 18 per cent of the world’s population, it only possesses 4 per cent of the world’s renewable water resources, reported Saudi Gazette.

In order to better manage the country’s water resources, PM Modi has taken many crucial steps to ensure that there is a full stop to the wastage of water. In order to achieve this, the Prime Minister has launched a number of water-saving projects. Prime Minister Modi has proposed a five-point formula to ensure that India does not suffer a water problem in the future.

Firstly, the water-related departments were combined or integrated. Secondly, in a diverse country like India, the focus was placed on determining the nature of the plans while taking into account the ground condition in every area. Thirdly, extreme care was taken to ensure adequate water harvesting and proper distribution of water. Fourth, every drop of water should be utilised, water recycling should be prioritised in the schemes, and finally, public knowledge and engagement should be encouraged.

The government has made many steps to prioritise ‘water governance.’ It has also established separate ministries for water resources. Recognizing the need for water conservation, the Ministry of Jal Shakti was established in 2019. Its goal is to improve water management and supply safe drinking water to all citizens of the country.

The government has adopted the ‘Bhagirathi resolve,’ and within five years has taken the initiative to provide tap water to every rural household in the country. An amazingly successful journey consists of the individual stories of employing indigenous water saving methods, the move from conservation to harvesting, and the extension of Jal Jeevan Mission into crores of homes.
VELES WATER WEEKLY REPORT
Any region’s or country’s average yearly water availability is primarily determined by hydrometeorological and geological variables. The overall water availability by rainfall in India is 3,880 billion cubic metres (BCM) per year, according to the Reassessment of Water Availability in the Basin through Space Input Report-2020, as per the media portal.

The availability of potable water is restricted to 1,122 BCM per year owing to geological and other factors. The country’s overall need for the years 2025 and 2050 is anticipated to be 843 BCM and 1180 BCM, respectively. Water availability per capita is determined by population.

In 2001 and 2011, the average annual per capita water availability was predicted to be 1,816 cubic metres and 1,545 cubic metres, respectively.

Original Article: [The Print](#)

*Note the attachment is not an inducement to trade and Veles Water does not give advice on investments.*