



See article on page 8

<https://norcalwater.org/2024/06/26/confessions-of-a-known-alfalphile/>

California Water and Infrastructure Report For June 27, 2024

(With expanded coverage of all the Western States)

by Patrick Ruckert

Published weekly since July, 2014

An archive of all these weekly reports can be found at both links below:

<http://www.californiadroughtupdate.org>

<https://www.facebook.com/CaliforniaDroughtUpdate>

A Note to Readers

You are invited to my presentation in San Francisco Saturday, June 29, 2024, livestream at 7:30pm.

“The Water and Energy Policy California Urgently Needs to Revive Itself”

Livestream will start Saturday, June 29 at 7:30pm.

<https://youtube.com/live/xTslYR21uuU>

Presentation Preview

First, a brief history of the beginning of serious water infrastructure construction, which includes water not only for agriculture and flood control, but also, importantly, hydroelectricity generation.

Then: a brief history of the California water management system—the largest and most complex such system in the world.

Since our state swings between drought and flooding, the shaping of water policy is one of the most critical areas of government responsibility. It has been a disaster for decades, directly connected to the transformation, through financialization, of the US economy into something indistinguishable from a gambling casino.

50 years of legislative policy preventing the building of water infrastructure created this avoidable crisis. Anyone running for office today must be aware of this, and know what projects California needs to move forth to leave an insane environmentalist, eugenicist bureaucracy to a growing country once again.

The Rest of This Week's Report

The major focus of this week's report is, as the title above makes clear, the importance of the state's agriculture to the state and national economy, and, just as important, the fact that the state is the largest agricultural state in the country. And, the state grows more than 50% of all of the vegetables, fruits and nuts produced by the United States.

Two parts follow: First an overview, with graphs, of the productive power of the state's agriculture. Part II reports on the difficulties, conflicts and policies in regard to water supplied to the agricultural sector that the label “water wars” apply describes.

The federal *Bureau of Reclamation* announced this week that it is increasing the amount of water it sending to farm districts from 40% to 50% of the amount the districts requested, and paid for. It is too late in the year for many farmers as planting is completed for them and they cannot take advantage of more water being available.

The Colorado River basin is one of the top producers of alfalfa in the nation. The crop does use a lot of water, but alfalfa being an excellent cattle feed, the attempts by some, especially in the media, to demand farmers and ranchers stop growing it, is not only insane, but like the attempt to tell farmers not to grow almonds a few years ago, for that crop also uses a lot of water, will fail. Simply put, the American people prefer milk and meat in their diet.

A recent scientific study provides a potential pathway to a new method of desalination that can possibly dramatically lower the costs of the process. The title of the report is: “*MIT Hypothesis Holds Possibility of Higher Efficiency Desalination.*”

This week's **Feature** is the semi-weekly report from *Promethean Action*, “*Physical Economy and Technology Report for June 27, 2024.*”

California Agriculture, Water and the Policy War

The major focus of this week's report is, as the title above makes clear, the importance of the state's agriculture to the state and national economy, and, just as important, the fact that the state is the largest agricultural state in the country. And, the state grows more than 50% of all of the vegetables, fruits and nuts produced by the United States.

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that the label “water wars” apply describes.

Part I: An overview of California agriculture.

Water Use in California’s Agriculture

[Caitlin Peterson](#), [Alvar Escriva-Bou](#), [Josué Medellín-Azuara](#), and [Spencer Cole](#)

Supported with funding from the S. D. Bechtel, Jr. Foundation



Irrigated crops underpin California’s agricultural dominance.

- *California’s agriculture sector produces over 400 commodities, generates more than \$50 billion in annual revenue, and employs over 420,000 people. Most farm revenue comes from irrigated crops.*
- *Irrigated farmland is concentrated in the San Joaquin Valley (54% of the state total), the Sacramento Valley (21%), the North, Central, and South coasts (9%), and the southeast desert region (6%).*
- *Farms use both surface water and groundwater. In recent decades, reductions in surface water—a result of drier conditions and changes in environmental regulations—have prompted more groundwater use.*
- *Chronic overpumping of groundwater causes negative impacts such as dry wells and land subsidence. The 2014 Sustainable Groundwater Management Act (SGMA) requires water users to address these impacts.*

The following are the titles of the remaining topics in this post:

California has a diverse crop mix, but acreage has been shifting to perennials.

The value gained from agricultural water use continues to rise.

A warming climate is raising agricultural water demand and reducing supplies.

Sustainable farm water management will require a reduction in irrigated acreage.

A legal battle could determine fate of groundwater regulation in rural San Joaquin Valley

KVPR | By [Joshua Yeager](#)

Published June 26, 2024 at 9:24 AM PDT

<https://www.kvpr.org/local-news/2024-06-26/a-legal-battle-could-determine-fate-of-groundwater-regulation-in-rural-san-joaquin-valley>

The Kings County Farm Bureau is suing the state over an order to rein in groundwater pumping.

KINGS COUNTY, Calif. – In May, the Kings County Farm Bureau sued the California State Water Resources Control Board, arguing the agency’s decision to place the region on groundwater probation was unconstitutional.

The State Water Board handed down the probationary order after a marathon April 16 hearing in which growers revolted against the agency, complaining pumping fees attached to the probation could spell disaster – especially for smaller farms. Under probation, growers will have to pay fees based on the number of wells owned and the volume of water pumped.

“The stakes are high, extremely high,” Dusty Ference, who leads the farm bureau, told KVPR.

The conflict is playing out under the Sustainable Groundwater Management Act, also known as SGMA, which was enacted a decade ago in 2014. The Tulare Lake subbasin, which covers almost the entirety of Kings County, was the first to be placed on probation under the law.

If local groundwater agencies can’t agree on a plan to rein in pumping voluntarily, the state could impose stricter measures.

“Our concern is that they will limit pumping so much that it doesn't allow growers to grow anything if they have to use groundwater. The ramifications of that are not just to the grower. That negatively impacts the entire county of Kings,” Ference said.

SJV WATER: Chaos continues to reign among Kings County water agencies following state action

[SJV Water](#)

[News](#)

June 27, 2024

<https://mavensnotebook.com/2024/06/27/sjv-water-chaos-continues-to-reign-among-kings-county-water-agencies-following-state-action/>

By Lisa McEwen, SJV Water



It's been two and a half months since the state brought the hammer down on water managers in Kings County for lacking an adequate plan to stem overpumping in the region and the situation is, in a word – chaotic.

One [groundwater sustainability agency](#) (GSA) [has imploded](#), leaving the county to potentially pick up the pieces. Another doesn't have enough money in the bank to pay its newly hired manager.

One GSA has repeatedly canceled meetings, others appear to be crafting their own plans and one is banking on being exempted as a “good actor,” despite the state’s repeated insistence that there will be

no such exemptions in San Joaquin Valley basins now under scrutiny.

Oh, and the [Farm Bureau is suing](#) the state Water Resources Control Board over its vote April 16 to put the region, the [Tulare Lake subbasin, into probation](#) – the first step toward a possible state pumping takeover.

All this while a deadline is rapidly approaching July 15 for all Kings County pumpers to register their wells and begin [tracking their groundwater consumption](#). The largest pumpers, those who extract more than 500 acre feet per year must install meters. All pumpers are required to report their information to the state through its new GEARS (Groundwater Extraction Annual Reporting System) platform between September 30 (the end of the water year) and December 1.

Central Valley Farmers Withstand Legislation, Litigation, and Regulatory Pressure

By Natalie Willis, Reporter, Valley Ag Voice

June 26, 2024

<https://www.valleyagvoice.com/central-valley-farmers-withstand-legislation-litigation-and-regulatory-pressure/>



(Photo: Adobe Stock)

Two L-words are getting Central Valley agriculture in the weeds — legislation and litigation. Alongside [water regulations](#), [pesticide bans](#), [bankruptcy filings](#), and other issues afflicting the industry, legislation and litigation are generally the root causes of concern.

Despite these challenges, there was a notable development recently as the groundwater measure that would restrict local entities from issuing a permit for a new groundwater well — AB 2079 — failed in the Senate Natural Resources and Water Committee on June 11.

Timing Is All Important in When the Managers of the State's Major Water Projects Announce the Year's Amount to Be Released

To late in the year means decisions and planting have already taken place and it is too late for farmers to plant more if the amount is increased.

USBR: Reclamation again increases 2024 Central Valley Project water supply allocation for south-of-Delta ag to 50%

[Maven](#)

[News](#)

June 25, 2024

<https://mavensnotebook.com/2024/06/25/usbr-reclamation-again-increases-2024-central-valley-project-water-supply-allocation-for-south-of-delta-ag-to-50/>



The Central Valley Project

From the Bureau of Reclamation:

Today, the Bureau of Reclamation announced another increase in the Central Valley Project 2024 water supply allocation for south-of-Delta contractors.

While all north-of-Delta Central Valley Project contractors are currently at 100% of their supplies, south-of-Delta agricultural contractors are being increased from 40% to 50%. All other Central Valley Project contract allocations remain the same per the [March 22 water supply update](#). Initial contract allocations were [announced](#) on Feb. 21 and updated in March and April.

“With the current and forecasted conditions that factor into Central Valley Project allocations, in particular, a greater than expected rate of exports during the month of June, we are pleased to be able to provide an additional increase to south-of-Delta agricultural contractors,” said California-Great Basin Regional Director Karl Stock.

Feds Boost Water to Central Valley Farmers. Is it Too Late?

By **Edward Smith**

June 26, 2024

<https://gvwire.com/2024/06/26/feds-boost-water-to-central-valley-farmers-is-it-too-late/>

The U.S. Bureau of Reclamation increased its water allocation to south-of Delta users from 40% to 50% on Tuesday, June 25, 2024. Valley farmers and water district leaders say the boost should have come earlier. (GV Wire Composite/Paul Marshall)

HIGHLIGHTS

- The Bureau of Reclamation increased water allocations to 50% from 40% on Tuesday for Valley farmers.
- Farmers say given the significant rainfall this year and last the allocation should have come earlier.
- Westlands Water District calls for a more collaborative approach in determining allocations and their timing.
- Better-than-expected water supplies prompted the federal government to increase the water it gives to farmers in the Central Valley on Tuesday.

The latest boost from the Bureau of Reclamation grants water districts 50% of their allotment, up from 40% earlier. But farmers hoped to get the increase earlier.

By June, Most Farming Decisions Already Made

The bureau in February only gave farmers 15% of their contracted amount, despite an above-average snowpack. A storm in early March further solidified the Sierra Nevada reserve, bringing snow levels statewide to 104% of average.

A decent water allocation in late June means increasing water to farmers who have already made most decisions of what they're planting months ago, said Ryan Jacobsen, CEO of the Fresno County Farm Bureau.

Getting an earlier allocation could have meant more crops planted, Jacobsen said.

“When you get allocations that are past the early part, the mid part of February, most of our planning is already in process and being done at that point,” Jacobsen said. “So, not a lot of changes can take place for that current crop year.”

Endangered Species Act Forced Farmers to Pump More: Congress

Days ahead of the increase, members of Congress — including Valadao and Jim Costa (D-Fresno) — penned a letter to Reclamation asking for the June increase.

Water restrictions dictated by the Endangered Species Act intended to protect fish in the San Joaquin River Delta meant farmers had to pump groundwater even in back-to-back years of plentiful rainfall, the letter stated.

State Water Allocation Still at 40%

Jacobsen said he's still awaiting an increase from state-controlled water projects. Though largely supplying municipal and industrial sources, the Department of Water Resources supplies some agricultural users as well.

The Colorado River

Guest Commentary: Confessions Of A Known “Alfalfaphile”

Wednesday, Jun 26th, 2024

<https://norcalwater.org/2024/06/26/confessions-of-a-known-alfalfaphile/>



By Dan Keppen, Family Farm Alliance Executive Director

Never in my wildest dreams as a much younger man would I have thought that I would someday spend so much of my professional time defending the production of alfalfa.

In recent years, after over three decades in the Western water policy arena, alfalfa matters have consumed much of my time. The Family Farm Alliance membership encompasses most of the “Reclamation West” – those arid and semi-arid states located West of the 100th Meridian.

That includes all seven Colorado River Basin states.



The mainstream media in the past two years has been obsessed with the amount of water that goes to producing alfalfa and other important forage crops in the West. The Colorado River right now is understandably a favorite topic of environmental journalists, as state, federal and tribal decision-makers are scrambling to negotiate a long-term river operating agreement to replace the current one that expires in 2026.

Over the past two years, we’ve witnessed a steady stream of media coverage, essentially carrying a similar message: Growing less hay is the only way to keep the Colorado River’s water system from collapsing.

As Western farmers struggle to find adequate water supplies, competing interests are pressuring the

federal government to cut the water supply farmers are using to grow our food, including alfalfa, which is a foundational food chain crop.

Alfalfa has received a bad rap in recent years, often due to misinformation.

In reality, alfalfa is important to rural communities, and it is grown throughout the West for good reasons.

That's why the Family Farm Alliance has developed "ALFALFA 101" – a new [webpage](#) to help the public, policy makers and journalists better understand the rest of the story about alfalfa and forage production in the Colorado River Basin and other parts of the American West.

Desalination

MIT Hypothesis Holds Possibility of Higher Efficiency Desalination

October 2023 and April 2024 papers from MIT researchers hypothesize a "photomolecular effect" in which polarized green light is able to release clusters of water molecules on a water/air surface interface, which then go into the air and collide with air particles. The air molecules contribute the energy necessary to break the water clusters into water molecules, thereby cooling the air and accomplishing desalination with only a manufactured light source and without a manufactured heat source. If this hypothesis is proven to be correct, it might be possible to build much more energy efficient desalination systems (or even A/C systems) than the current boiling, or reverse osmosis systems. The linked video provides some visualization of the hypothesized process.

<https://www.pnas.org/doi/full/10.1073/pnas.2312751120>

<https://www.pnas.org/doi/10.1073/pnas.2320844121>

<https://www.youtube.com/watch?v=17Y82tJDk2o> (edited)

[YouTube](#) | [Two Bit da Vinci](#)

[New MIT Discovery Just Solved Water's BIGGEST Mystery!](#)

Feature: This Week's Report From Promethean Action



Physical Economy and Technology Report for June 27, 2024

By Michael Carr

June 27, 2024

<https://www.prometheanaction.com/physical-economy-and-technology-report-for-june-27-2024/>

[ref=promethean-action-newsletter](#)

This latest report shines the spotlight on innovative American companies pushing the boundaries of space technology, nuclear power, and steel manufacturing. Meanwhile, China's rapid progress in these areas serves as a timely reminder that intention and credit can achieve remarkable results.



A Joby EVTOL aircraft at Edwards Air Force base where it is undergoing testing.

In this edition we note a couple of impressive American space, nuclear, and steel developments, but we also take note of rapidly building Chinese capabilities. As President Trump and Elon Musk have recently repeated, the regulatory barriers to productive activity in the United States are far more destructive than any possible taxation. The founder of Radiant put it another way: technical problems can be overcome, our biggest difficulties are people problems.

The rapid progress in China demonstrates what unity of intention and credit can accomplish. Once we unite America behind our vision of the future, we can rapidly transform our broken-down country into the center of scientific and industrial progress.

- Musk Gives Tour of New Starfactory and Postflight Review
- SpaceX Spinoff, Radiant, Is Building Portable Nuclear Power
- Joby CEO Gives Tour of Its EVTOL Development Plant
- China Returns Samples from Lunar Far Side
- China's Building of 150 Nuclear Plants Demonstrates the Difference That Intention Makes
- Energy Singularity Builds World's First Fully High-Temperature Superconducting Tokamak
- China's Cosco is Completing South America's Biggest Deep-Sea Port
- A Better Way to Make Steel?
- *Wall Street Journal* Discovers Young Tradesmen Making Physical Work Cool Again

Musk Gives Tour of New Starfactory and Postflight Review

Right before the successful fourth launch of the Starship/Superheavy rocket a couple of weeks back, Elon Musk gave a tour of the new Starfactory going up near the launch tower. The Starfactory will enable efficient, high-production rates as the pace of flight testing and early commercial operations picks up. The fifth test launch is expected to take place in July and will likely include landing the Superheavy back at the launch pad and testing of an upgraded heat-shield system on the Starship. This following 2 videos cover the new factory, Starship aerodynamics, and a postflight review of the fourth

test flight.

Take a tour of the Starfactory!

Discussion of aerodynamics of Starship, and postflight review with Musk.

SpaceX Spinoff, Radiant, Is Building Portable Nuclear Power

Radiant Nuclear is building a small (1.2 MWe) High Temperature Gas Reactor (HTGR) that can be transported by Starship, C-17, or truck. They aim to deliver their first product in 18 months and proceed to mass production both for the Moon and Mars and deployments on Earth that would replace diesel generation in many remote situations.

[Radiant](#)

[Making Nuclear Power Portable](#)

[Radiant Nuclear](#)



An Introduction to Radiant's mobile HTGR nuclear reactor.

Interview with Radiant's CEO, Doug Bernauer.

Joby CEO Gives Tour of Its EVTOL Development Plant

There are about 200 companies worldwide which are developing flying cars or Electric Vertical Takeoff or Landing (EVTOL) aircraft for urban and regional movement of people. As is the case with SpaceX, Joby is heavily vertically integrated--even to the point of producing its own avionics electronics. Joby has partnered with Toyota and Delta Airlines to produce an air taxi service. The goal is to produce cheap, quiet, safe, convenient, and rapid air mobility on the Uber or Lyft model—or maybe on the model of the Jetsons. Whether or not Joby or other companies working in this general area can achieve all their objectives, the technology is very impressive and will inevitably lead to great results of one sort or other.

Take a tour of the Joby plant.

More on Joby and emerging EVTOL technologies.

China Returns Samples from the Lunar Far Side

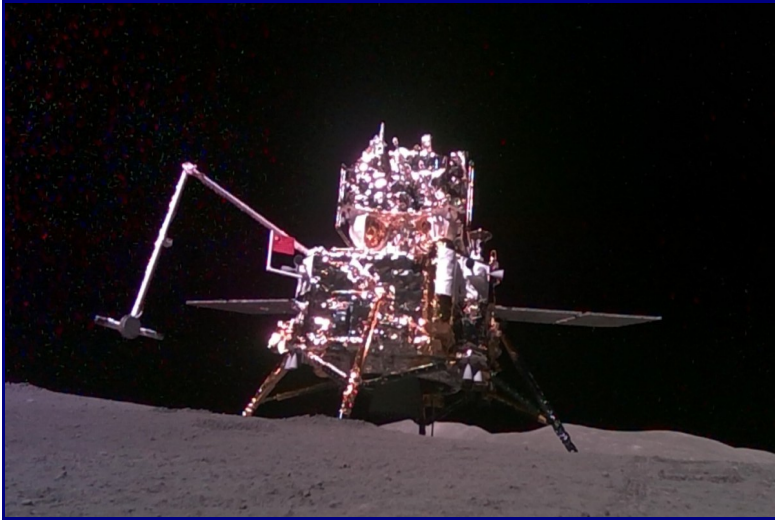
China keeps making steady progress in space technology. On June 25th, Chang'e 6 returned about 4 pounds of regolith to China's Inner Mongolia Autonomous Region. Samples will soon be distributed to researchers around the world. Also, *Aviation Week* reports that China's state launch provider CASC has

completed China's most complex test of reusable rocket technology (similar to the Falcon 9 technology of SpaceX) in a hop test. Several other private Chinese companies are also developing and testing similar technologies. A unique booster capture technology using moving cables is being designed for the Long March 10 heavy lift system.

[China returns samples from the moon's far side in historic 1st \(video\)](#)

[The lunar material touched down in China's Inner Mongolia Autonomous Region early Tuesday morning \(June 25\).](#)

[SpaceMike Wall](#)



China's Building of 150 Nuclear Plants Demonstrates the Difference That Intention Makes



China is building 150 nuclear reactors at a pace of 6-8 a year. They are taking the lead in many industrial areas--simply due to intention. They are deliberately pursuing progress, while, in the United States, the British imperial overlords have imposed "environmental" cannibalization. Now, many former environmentalists who promoted interruptible power sources for decades are suddenly realizing that, even in order to build AI capabilities (not to mention mining, steel, manufacturing, etc.), baseload power must be built up. The new Trump administration must cut through the impediments to building nuclear power, both for power and space propulsion.

[How Innovative Is China in Nuclear Power?](#)

[Though China built upon a foreign base of technology, it has become the world's leading proponent of nuclear energy. Chinese firms are well ahead of their Western peers, supported by a whole-of-government strategy that provides extensive financing and systemic coordination.](#)
[Information Technology and Innovation Foundation | ITIFStephen Ezell](#)

<https://www.axios.com/pro/energy-policy/2024/06/17/what-advance-means-for-nuclear>

<https://www.washingtonpost.com/business/2024/06/21/artificial-intelligence-nuclear-fusion-climate/>

Energy Singularity Builds World's First Fully High-Temperature Superconducting Tokamak

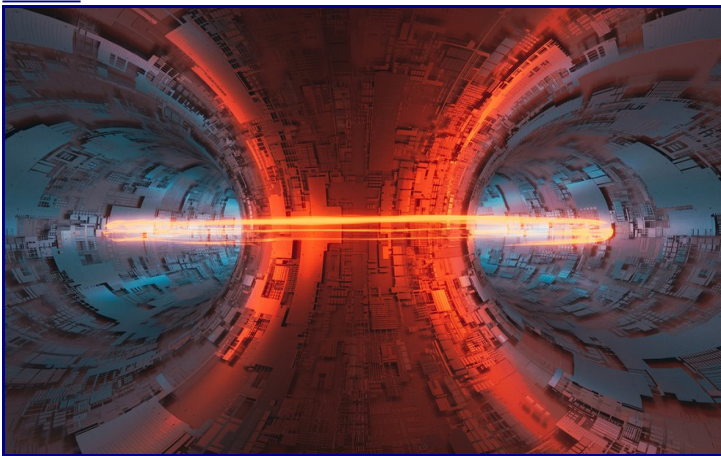
The Chinese fusion company, Energy Singularity of Shanghai, has built the world's first fully high-temperature superconducting tokamak. Named the HH70, it uses superconducting magnets made of easily manufactured Rare Earth Barium Copper Oxide. The fact that these superconductors can be superconductive at relatively high temperatures (compared to early superconductors) makes the design more efficient. And the fact that the magnets are superconductive, and therefore much more powerful, allows the dimensions of the machine to be a tiny fraction of the size of early tokamaks.

Commonwealth Fusion Systems (a spinoff of MIT) is building what it calls the "world's first commercially-relevant net energy fusion machine, called SPARC." It would appear that SPARC and HH70 are using similar technology approaches. Helion is expecting to produce its first net electricity output from its Polaris machine this summer. We are awaiting word on that.

China reveals fusion tech breakthrough

[The world's first high-temperature superconducting tokamak has been tested in China, marking a key step towards commercial nuclear fusion](#)

[RTRT](#)



[CFS-MIT High-Field Magnet Technology for Commercial Fusion Experimentally Validated](#)

[The fastest path to clean, limitless fusion energy.](#)

[Cfs](#)

China's Cosco is Completing South America's Biggest Deep-Sea Port

Peru's Chancay will become a giant logistics center serving South America and the Indian and Pacific Ocean nations.

[Washington Frets As Chinese Company Cosco Wraps Up Construction of South America's Largest Deep Sea Port | naked capitalism](#)

["Due to its potential size and volume of operations, Peru's Chancay mega-port is destined to become a nerve centre of international trade." And it will be exclusively controlled by Cosco.](#)

[naked capitalism](#)[Nick Corbishley](#)

A Better Way to Make Steel?



An MIT professor, Donald Sadoway, figured out how to make an electrolysis anode (positive terminal) that can survive the environment of molten iron, and, thereby, enable the conversion of iron ore into iron and steel using electrolysis. This is a perfect marriage for nuclear power. He and his colleagues formed a company, Boston Metal, which is now building a refinery due to be up and running next year. This new technology removes an array of expensive and complex processes involved in current steelmaking technology. So, it promises to be cheaper, cleaner, and able to process rare elements from low-concentration ore and waste--one of Edison's last projects. Rebuilding the United States requires such a leap in technology!

[High-Value Metals - Boston Metal](#)

[Innovative metals processing](#)

[Boston Metal](#)[Boston Metal](#)

***The Wall Street Journal* Discovers Young Tradesmen Who Are Making Physical Work Cool Again**

The Wall Street Journal covers a largely organic growth in interest in trades, based on young people using social media to promote them.

<https://www.wsj.com/lifestyle/careers/gen-z-plumbers-and-construction-workers-are-making-bluecollar-cool-0c386274>