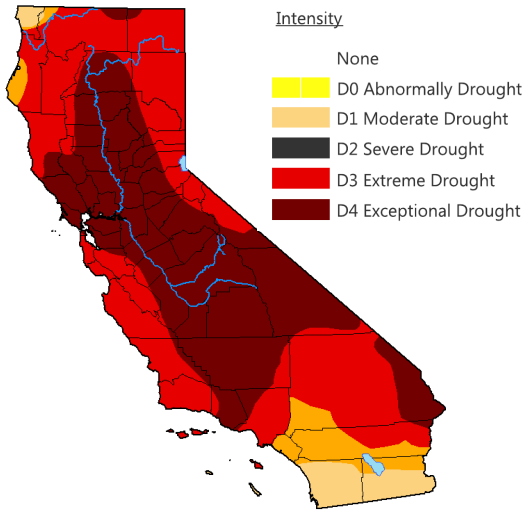
Agriculture in California: Water Crisis

Water Regulation in California: On April 21st, 2021, Governor Newsom declared a regional state of emergency for the Russian River Watershed in Sonoma and Mendocino counties due to record low water levels. Several months after, 50 out of 58 counties were declared to be in a drought emergency. The state's water board was directed to modify requirements for reservoir releases and take other conservation measures.

The state of California has historically endured droughts that have increased in duration and intensity. It experienced historic droughts between 2007 – 2009 and, most recently, a 5-year drought that lasted between 2012 – 2016. Droughts raise concerns for California's agribusiness economy with current restrictions and unknown circumstances in the future. Attempting to conserve water can be challenging. Increased probabilities of new droughts arising from dry winters and record-warm temperatures further exacerbate the effect droughts have on California.

Drought Monitor: California July 27th, 2021

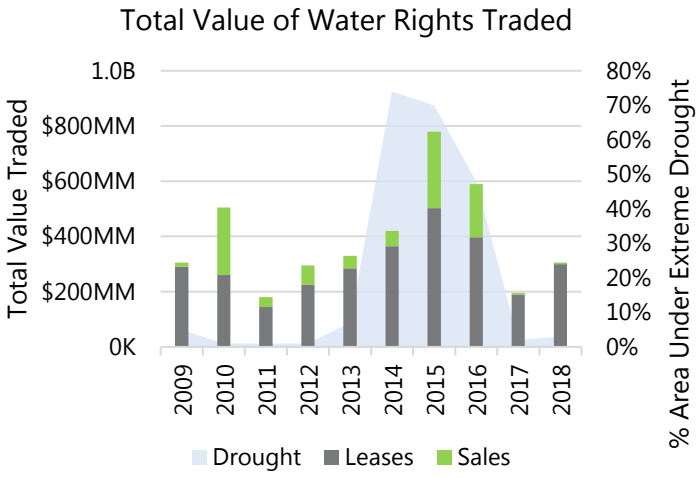


Source: Brad Rippey; U.S. Department of Agriculture

California categorizes water usage into three main sectors: environmental, agricultural, and urban. Agriculture uses 40 percent of California's total water usage on over more than nine million acres of farmland, according to the Public Policy Institute of California (PPIC).[1] In 2015, the United States Geological Survey estimated that California used nearly 30 billion gallons of water, with the most significant contributing category being irrigation, which is under agriculture.[2]

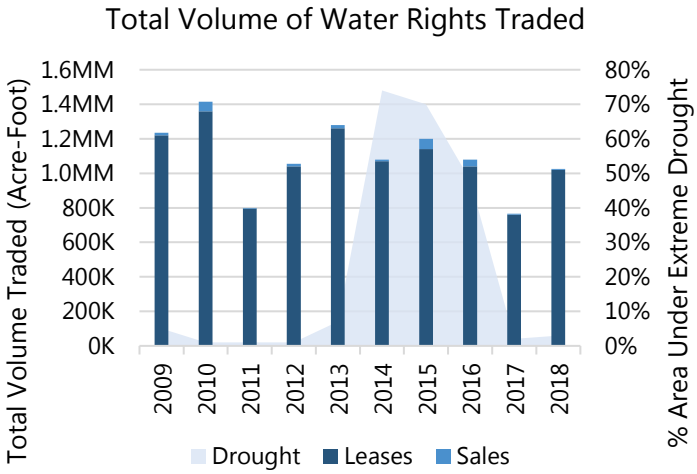
To address water usage after the drought between 2012 and 2016, California's legislature passed the Sustainable Groundwater Management Act (SGMA) in 2014, which aims to protect groundwater resources and help replenish reserves by 2040. This legislation poses risks to all farmers but specifically affects small farms who have less groundwater available to them and less capital as they may face water restrictions due to increased regulatory oversight. Farmers with capital resources will be able to mitigate these restrictions by purchasing more water rights and have the option to farm more water-intensive crops that have higher revenue.

At the height of the drought between 2012 and 2016, some farmers paid up to $2,200 per acre-foot to water their crops. In Northern California, the cost can be $50 per acre-foot, while in Southern California, it can be $500 per acre-foot. Pricing is often used to regulate water usage and encourage the industry and state to use its resources efficiently, even during rainy seasons. An indicator of this is the total value of water rights traded between agribusinesses which increases during droughts. During the drought in 2015 water rights activity saw only a slight increase in volume with a total of 1.2MM of these rights traded in California but overall



[1] https://www.ppic.org/publication/water-use-in-california/
[2] https://www.usgs.gov/special-topic/water-science-school/science/total-water-use-united-states?qt-science_center_objects=0#qt-science_center_objects

remained relatively steady. At the same time the total value of water rights was at $790MM, a significant increase compared to 2014.



Today, with the ongoing drought that California is facing, all major water reservoirs are showing levels that are lower than historic average levels with the only exception being the Lake Perris reservoir. On August 5th, 2021, the Hyatt Powerplant at Lake Oroville was shut off for the first time in its history. This was due to the lake's water level decreasing below 640 feet which is insufficient for the powerplant to generate energy. This coincides with the water levels reported on August 11th, 2021, by the California Department of Water Resources showing Lake Oroville at 24 percent of total capacity and at 34 percent of the historical average level. Currently the lowest major reservoir is the San Luis Reservoir which is at 17 percent of total capacity and 37 percent of the historical average levels.

The California Water Resource Board voted unanimously on August 3rd, 2021, in favor of restricting water access to Central Valley farmers to mitigate the effects of the drought. The emergency order bans farmers from diverting water from rivers and streams in the Sacramento and San Joaquin River watersheds to irrigate crops. California farmers who divert more than 55 gallons of water per day from rivers and streams in the Sacramento and San Joaquin area must submit a petition and proposal to the state's deputy for approval.

With record dry years and new regulations being implemented to conserve water, water rights prices are expected to increase similarly to those between 2012 and 2016 with a potential to reach new highs.

Changing Crops: Crops such as rice, cotton, alfalfa, wheat, sugarcane, pasture, and almonds all use large amounts of water compared to other crops like berries. These crops are farmed due to their profitability despite them requiring more water. Still, with water restrictions in place, farmers are pivoting their farming operations to add crops that do not require as much water as mentioned above.

Perennial agriculture are crop species that can live longer than two years without the need for replanting each year. It provides benefits of less tilling and can lead to less labor and fewer pesticides, improving soil nutrients. Perennial crops have added benefits such as increased yields and deeper root characteristics compared to annual crops. Additionally, their long roots help them live in in stressful environments (like droughts) making them an attractive crop for California agribusinesses. Perennial crops have increased in California's Southern Central Valley from 21 percent in 1980 to 45 percent in 2015, with more agribusinesses farming them. Examples of perennial crops are peaches, citrus, avocados, and other fruits and nuts.

New Techniques: Crop irrigation strategies use different watering approaches, including irrigation timers, drip systems, and soil water intake characteristics which allow for efficient water use. One strategy is individual crop deficit irrigation; it allows crops to be watered less during specific periods of the crop's life cycle with minimal impact on yield and quality. This is facilitated through Micro Precise Irrigation systems that limit the water supply to the crops without overly stressing the crop. Micro Precise Irrigation systems use technology to measure the soil's water content to determine a proper irrigation frequency and quantity based on preset parameters. The system will consider changes in the weather and will adjust the irrigation schedule leading to a reduction in water use while optimizing it during the crop's life cycle.

Pistachios have shown that deficit irrigation can reduce water usage while maintaining yield. Researchers at UC Davis determined that deficit irrigation of pistachios can be practiced during shell hardening and during the postharvest period with 50% and 70% water reduction, respectively.[3] The implementation of deficit irrigation, saved approximately 10 inches of water on average during the growing season, which is equivalent to 271.5K gallons of water per acre-foot of land, with 1 acre-foot of water being equal to 325,851 liquid gallons.

Programs for Agribusinesses: Investing in new techniques that require a large amount of capital can be challenging, but programs such as the State Water Efficiency and Enhancement Program (SWEEP) can help. This program aims to reduce Greenhouse Gas (GHG) emissions and save water on California agricultural operations by providing financial assistance. It provides aid in the form of grants to implement irrigation systems such as soil monitoring, drip systems, and pump retrofits, among other equipment and components.

The program is administered by the California Department of Food and Agriculture (CDFA) and launched in 2014 with 832 projects funded valued at $80MM. The impact of this program has saved 35.8 billion gallons of water annually and reduced Greenhouse Gas emissions by 80K metric tons per year[4]. This is achieved by enabling projects that consist of the following:

- Weather, soil, or plant-based sensors for irrigation scheduling
- Micro-irrigation or drip systems
- Conversion of fossil fuel pumps to solar, wind, electric, or natural gas
- Low-pressure irrigation systems
- Other management practices that save water and reduce GHG emissions

Seven rounds of grant awards were completed, with the most recent being in Spring 2020. SWEEP typically accepts applications annually but as of August 2021 is not currently accepting any. A $40MM one-time General Fund was budgeted for the SWEEP program in California's Fiscal Year 2021-2022 budget enacted on June 28th, 2021. To be kept up to date as to when the SWEEP program reopens and more information regarding it, we recommend signing up for their email service detailed in the resources section below.

USDA Grants & Loans

	Grant/Loan Purpose	Elegibility Requirements	Grant/Loan Details
Direct Farm Ownership Microloans	• Downpayment on a farm • Build/Repair/Improve Buildings • Soil & Water Conservation Projects	• Unable to obtain sufficient credit elsewhere • 3 years farm mgmt experience within 10 years of application date	• $50K maximum limit • 25 year maximum term length
Value Added Producer Grants	• Planning activites/working capital expenses related to producing and marketing a value-added agricultural project	• Pre-register at SAM.gov and obtain a DUNS number	• Planning Grants max limit: $75K • Working Capital Grants limit: $250K
Organic Certification Cost Share Program	• Certified operations may receive up to 50% of their certification costs	• Obtaining or renewing certification under the NOP program	• Apply 10/1/2020 - 9/30/2021 • $500 maxmum limit

[3] http://ucmanagedrought.ucdavis.edu/Agriculture/Crop_Irrigation_Strategies/Pistachios/
[4] https://calclimateag.org/sweep/

The United States Department of Agriculture has various grant and loan programs that can be used to grow and develop agribusiness operations as well as help in times of need. For example, Direct Farm Ownership Microloans, Value Added Producer Grants, and Organic Certification Cost Share Program are all financial examples that agribusinesses can apply for and are detailed in the chart above. The Direct Farm Ownership Microloans are a segment of the Microloan Programs that the USDA offers which are used to finance small beginning farmers, farms with niche and non-traditional farm operations, and/or farms using hydroponic, aquaponic, organic and vertical growing methods. Depending on the type of Microloan that a farmer applies for, it can be used to make a down payment on a farm or be used for essential tools, among other things, making the loan versatile. For more information about the programs and where to apply please see the resources section at the end of the document.

Resource Links:

SWEEP: https://www.cdfa.ca.gov/oefi/sweep/

SWEEP email notifications: https://www.cdfa.ca.gov/subscriptions/MailChimp-signup.html

USDA: https://www.usda.gov/topics/farming/grants-and-loans

Beginning Farmers and Ranchers Loans: https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/beginning-farmers-and-ranchers-loans/index

About ClearPath Business Advisors:

ClearPath Business Advisors is a multi-faceted, high-end consulting & advisory firm delivering on our perspective that business owners should build a healthy, sellable business whether they plan to sell or not. Everything that builds a sellable business creates a stronger business and a more balanced life for its leaders and teams.

We are a team of seasoned, multi-disciplinary business executives with finance, accounting, operations, sales, and legal expertise. We strive to become a part of our client's teams, working closely and alongside business owners and their management.

We are also a firm with a heart, guided by our core values in creating high value for our clients while delivering on our promise of being a different type of consulting and advisory firm. We lead with our core values of Integration, Convergence, Service, and Every|One, and we donate 25% of our M&A transaction success fees to charity.

Ultimately, we just want to work with good people who could use our help.

Contact Our Team

Leadership
Chris Crawford
Founder & CEO

Patrick Bormann
Partner & COO

Research Team
Pat Wilkie
Director of Research and Analytics

Megan Johnson
Senior Analyst and Consultant

Jose Sanchez
Analyst

Email:
info@clearpathba.com

LinkedIn: