

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

Prohibition of Activities and Mandatory Actions During Declared Drought Emergency – Informative Digest (Emergency Regulation Digest (Gov. Code, § 11346.1, subd. (b))

FINDING OF EMERGENCY

The State Water Resources Control Board (State Water Board or Board) finds that an emergency exists due to severe drought conditions and that adoption of the proposed emergency regulation is necessary to address the emergency. For the past two decades, the southwestern United States has been desiccated by one of the most severe long-term droughts—or “megadroughts”—of the last 1,200 years (NOAA, 2021a). On April 21, May 10, and July 8, 2021, Governor Newsom issued proclamations that a state of emergency exists in a total of 50 counties due to severe drought conditions and directed state agencies to take immediate action to preserve critical water supplies and mitigate the effects of drought and ensure the protection of health, safety, and the environment. On October 19, 2021, Governor Newsom signed a Proclamation extending the drought emergency statewide and further urging Californians to step up their water conservation efforts. Immediate action is needed to ensure water suppliers and all Californians are taking sufficient actions to conserve water and preserve the State’s water supply.

Authority for Emergency Regulations

Water Code section 1058.5 grants the State Water Board the authority to adopt emergency regulations in years when the Governor has issued a proclamation of emergency based upon drought conditions or when in response to drought conditions that exist, or are threatened, in a critically dry year immediately preceded by two or more consecutive below normal, dry, or critically dry years. The Board may adopt regulations under such circumstances to: “prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion, of water, to promote water recycling or water conservation, to require curtailment of diversions when water is not available under the diverter’s priority of right, or in furtherance of any of the foregoing, to require reporting of diversion or use or the preparation of monitoring reports.”

Emergency regulations adopted under Water Code section 1058.5 may remain in effect for up to one year, unless rescinded earlier or extended by the State Water Board. Per Water Code section 1058.5, subdivision (b), any findings of emergency the Board makes in connection with the adoption of an emergency regulation under the section are not subject to review by the Office of Administrative Law.

Government Code section 11346.1, subdivision (a)(2) requires that, at least five working days prior to submission of the proposed emergency action to the Office of Administrative Law, the adopting agency provide a notice of the proposed emergency action to every person who has filed a request for notice of regulatory action with the agency. After submission of the proposed emergency regulations to the Office of Administrative Law, the

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

Office of Administrative Law shall allow interested persons five calendar days to submit comments on the proposed emergency regulations as set forth in Government Code Section 11349.6.

The information contained within this finding of emergency provides the information necessary to support the State Water Board's emergency rulemaking under Water Code section 1058.5 and meets the emergency regulation criteria of Government Code section 11346.1 and the applicable requirements of section 11346.5.

Evidence of Emergency

As of October 26, 2021, the U.S. Drought Monitor has classified over 90 percent of the state of California as experiencing severe to exceptional drought conditions since May 2021. In most years, California receives about half of its precipitation in the months of December, January and February, with much of that precipitation falling as snow in the Sierra. A handful of large winter storms can make the difference between a wet year and a dry one. In normal years, the snowpack stores water during the winter months and releases it through melting in the spring and summer to replenish rivers and reservoirs and recharge aquifers. However, relatively dry weather conditions this year have reduced the amount of snowpack in California's mountains.

Rainfall also has been far below normal during this water year as recorded by weather stations throughout the state. The October 2021 atmospheric river (AR) and recent storms improved drought conditions but did not come close to ending the drought for the region. The current drought developed over many months to years, leaving soils parched. Greater than normal winter precipitation will be needed to replenish this soil moisture deficit and deliver normal spring streamflows. Recent storms, including the exceptional October 2021 AR, were much needed. However, autumn storms do not necessarily mean that the rest of the winter will be wet. Large amounts of precipitation are still needed to end the drought in this region. Parts of California and Nevada are missing one-half to a full water year's worth of precipitation (some places are missing as much as 1.5 years' worth). At the start of the water year, the State of California Department of Water Resources reported that 140% of average annual statewide precipitation would be needed to achieve average statewide runoff, according to the U.S. Geological Survey Basin Characterization Model, reflecting the moisture deficit in the climate system (NOAA, 2021b).

Due to these drought conditions and dry conditions for the past several years, storage in California's reservoirs is also at below average levels, at 51 percent of historical average for the state at the end of September 2021 (DWR, 2021) Current storage levels in key reservoirs as of November 1, 2021 reflect this trend. Shasta Lake, California's and the Central Valley Project's (CVP) largest reservoir, is at 22 percent of its 4.5 million acre-feet (MAF) capacity (41 percent of its historical average for this date). Lake Oroville, the State Water Project's (SWP) principal reservoir, is at 28 percent of its 3.5 MAF capacity (54 percent of its historical average for the date). Trinity Reservoir is at 27 percent of its 2.4

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

MAF capacity (47 percent of historical average). San Luis Reservoir, a critical south-of-Delta reservoir for both the SWP and CVP, is at 15 percent of its 2 MAF capacity (33 percent of average for this date). Folsom Reservoir is at 33 percent of its 1 MAF capacity (76 percent of average for this date). New Melones Reservoir is at 34 percent of its 2.4 MAF capacity (64 percent of average for this date). Don Pedro Reservoir is at 49 percent of its 2 MAF capacity (75 percent of average for this date) and Lake McClure is at 19 percent of its 1 MAF (45 percent of average for this date).

Need for the Regulation

Immediate action is needed to effectively increase water conservation so that remaining supplies are maintained to address the ongoing drought emergency. Current voluntary conservation goals established by many urban water suppliers will not provide for timely and effective attainment of the State's conservation needs, which include the maintenance of remaining supplies. Without adequate reserves, water suppliers will be unable to address the drought emergency. The emergency regulation improves the State Water Board's and local agencies' abilities to quickly and effectively implement and enforce mandatory water conservation measures during the current drought emergency to help preserve the State's supplies throughout a continuing drought that could last through 2022 or beyond.

Description and Effect of Proposed Regulations

The proposed regulations prohibit certain wasteful water uses and prohibit homeowners' associations, cities, and counties from impeding certain drought response actions by homeowners. These requirements are intended to preserve urban water supplies. It is both reasonable and prudent to preserve urban water supplies to the maximum extent feasible to provide local agencies with the necessary flexibility to meet the health and safety needs of Californians during the drought emergency. California has been subject to multi-year droughts in the past and there is no guarantee that precipitation this winter will lift the State out of the current drought conditions. Moreover, climate change science indicates that the Southwestern United States are becoming drier, increasing the likelihood of prolonged droughts. In addition, drought conditions have already forced the State Water Board to curtail surface water diversions, and many groundwater basins around the state are already in overdraft conditions that will likely worsen due to groundwater pumping this summer. Many water supply systems face a present or threatened risk of inadequate supply. Should drought conditions persist into 2022, more water supply systems will be at risk of depleting supplies, presenting a great risk to the health and safety of the people supplied by those systems. Maintaining urban water supplies through enhanced conservation will reduce the risks to health and safety and reduce negative impacts to the State's economy.

Each of the specific prohibitions is necessary to promote water conservation to maintain

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

an adequate supply during the drought emergency, which cannot be done if water is being used in an excessive or wasteful manner. These prohibitions affect practices that use excessive amounts of water or where more efficient and less wasteful alternatives are available. These practices are particularly unreasonable during a drought due to the need to conserve limited water supplies to meet health and safety needs. Exceptions to meet immediate health and safety concerns or to comply with state or federal permit requirements are available, however.

A prohibition on runoff of outdoor irrigation water is necessary to promote water conservation to address the drought emergency. Irrigating residential, commercial, industrial, and recreational landscapes to the point of visible runoff is an excessive use of water and more efficient alternatives are available. This practice depletes water supplies, whose maintenance is critical during a drought for health, safety, and, in some cases, operational flexibility. Runoff enters the storm drain system or evaporates, and does not provide for domestic use, sanitation, or fire protection, which are the primary needs that public water supply distributors must meet during drought periods. (Wat. Code, § 354.)

A prohibition on vehicle washing with a running hose (a hose that is not equipped with a shut-off nozzle) promotes water conservation to address the drought emergency through the use of more efficient and effective washing techniques and options. Washing cars at commercial car wash establishments—which are widely distributed throughout the state—or manual washing with a small amount of water in a bucket or with a hose equipped with a shut-off nozzle are efficient and reasonable techniques for those with a need to wash vehicles.

A prohibition on washing hardscapes, such as driveways, sidewalks, and asphalt, with potable water promotes water conservation to address the drought emergency by encouraging the use of more efficient and effective cleaning methods for hardscapes. For example, many hardscapes can be cleaned with a broom, thus conserving water for other uses during a time of extreme scarcity.

A prohibition on the use of potable water without recirculation pumps for fountains and other decorative water fixtures promotes water conservation to address the drought emergency through saving water that would evaporate, leak, or not be reused. In addition, ornamental water fixtures do not provide for domestic use, sanitation, or fire protection, and therefore do not promote a use of paramount importance during the drought emergency.

Estimate of Water Savings from Proposed Regulation

According to the Department of Water Resource’s Water Plan Update 2018, total urban water use between 2011 and 2015 ranged from 7.0 to 8.3 million acre-feet (MAF) per water year. The breakdown of 2015 water year urban use by customer class is provided in Table 1.

Table 1: 2015 Water Year Urban Water Use by Customer Class in Million Acre-Feet (MAF)

Sector	Volume (MAF)
Large Landscape	0.7
Residential - Exterior	1.9
Residential - Interior	2.4
Commercial and Industrial	1.3
Other	0.6
Total	7.0 (estimated)

Source: DWR, 2019

Outdoor irrigation represents approximately 40 percent of the total urban water use (1.9 MAF for residential exterior and 0.7 MAF for large landscapes, adding to 2.6 MAF of total urban outdoor irrigation). The proposed regulation prohibiting visible runoff affects the 40 percent of statewide urban use dedicated to outdoor irrigation.

Many California urban water suppliers are already implementing water conservation measures commensurate with those required by the proposed regulations and therefore conservation savings attained by their customers are not attributable to the proposed regulations.

The State Water Board September 2021 Urban Water Supplier Monthly Report data indicate that at least 146 water suppliers have already implemented restrictions on excessive irrigation of outdoor landscapes, washing motor vehicles with a hose not fitted with a shut-off nozzle, and application of potable water directly to driveways or sidewalks (SWRCB, 2021). Therefore, these 146 urban water suppliers are already implementing conservation measures that are commensurate with the requirements of the proposed emergency regulation. These 146 urban water suppliers represent approximately 19 million retail customers, which accounts for approximately 80 percent of the survey response by retail population. Based upon these assumptions, 20 percent of urban water use would be affected by adoption of the proposed regulations.

Various studies have analyzed the response of urban populations to mandatory use restrictions imposed during drought conditions. Multiple studies conclude that mandatory use restrictions are more effective than voluntary conservation measures because areas

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

that have imposed mandatory use restrictions have achieved greater use reductions than areas that imposed only voluntary measures, controlling for other variables. The amount of conservation achievable through mandatory restrictions varies. For example, a study conducted on the effects of water demand management policies of eight California water agencies during the period from 1989-1996, which included 3 years of drought (1989-1991), found that rationing and use restrictions were correlated with use reductions of 19 percent and 29 percent, respectively. The study's authors concluded:

In general, relatively moderate (5-15%) reductions in aggregate demand can be achieved through modest price increases and "voluntary" alternative [Demand-Side Management] policy instruments, such as public information campaigns. However, to achieve larger reductions in demand (greater than 15%), policymakers will likely need to consider either relatively large price increases, more stringent mandatory policy instruments (such as use restrictions), or a package of policy instruments. (Dixon et al, 1996).

A study from UCLA on use reductions in Los Angeles during the 2007-2009 drought reached similar conclusions:

Our results indicate that mandatory restrictions are most effective at reducing water consumption for [Single-Family Residential] households. The greatest impact of measures resulted from the combination of mandatory watering restrictions and the price increase, which led to a water reduction of 23% in July/August 2009, while voluntary restrictions led to only a 6% reduction in water use. (Mini, 2013).

In addition, a study of Virginia's severe 2002 drought found that mandatory use restrictions coupled with an aggressive information and enforcement campaign led to a 22 percent reduction in use (Halich & Stephenson, 2006).

During the 2014 California drought emergency, Californian reduced their water use by 25.5 percent six months after emergency regulations took effect (CNRA, 2021). Many communities, however, have permanently banned some of the wasteful water uses the State Water Board prohibited under the emergency regulations. Years later water use rates remain low, suggesting that some savings may have been locked in over the long-term (CNRA, 2021). This also suggests that future savings of similar emergency regulations may be more modest.

Given the severity of the current drought and the level of resources already devoted to attaining the state's conservation goals, the Board anticipates the proposed regulations can result in up to a 20 percent reduction in outdoor water use, totaling 0.1 million acre-feet (MAF), as calculated below.

Total urban water use for outdoor irrigation: 2.6 MAF

Urban water use for outdoor irrigation affected by the proposed regulations:

$$2.6 \times 0.2 = 0.52 \text{ MAF}$$

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

Estimated conservation savings from adoption of the proposed regulations:

$$0.52 \times 0.2 = 0.1 \text{ MAF}$$

Additional Benefits of the Proposed Regulations

Staff has determined that additional benefits will be realized should the Board adopt the proposed regulations. These benefits include the following:

- Reduced water bills for customers that reduce water use (some of these savings will generate additional economic activity, such as investments in drought-tolerant landscaping);
- increased drought awareness and shared sense of responsibility among urban waterusers; and
- reduced potential for severe economic disruption if 2022 is another dry year.

These benefits will offset some of the fiscal impacts to water suppliers when benefits and costs are viewed from a statewide perspective. Therefore, these benefits provide additional justification for adopting the proposed regulations.

References:

CNRA (2021) Report to the Legislature on the 2012-2016 Drought (March 2021), California Natural Resources Agency <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Water-Basics/Drought/Files/Publications-And-Reports/CNRA-Drought-Report-final-March-2021.pdf>

California Governor Newsom (2021) Proclamation of a State of Emergency dated October 19, 2021 <https://www.gov.ca.gov/wp-content/uploads/2021/10/10.19.21-Drought-SOE-1.pdf>

California Water Code, Sections 354, 10608, 10630-10634

DWR (2019) California Water Plan Update 2018, California Department of Water Resources. <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2018/Final/California-Water-Plan-Update-2018.pdf>

DWR (2021) Summary of Storage in Major Reservoirs, Storage as of September 30, 2021, California Department of Water Resources <https://cdec.water.ca.gov/reportapp/javareports?name=STORSUM.202109>

Dixon, Moore, & Pint. (1996) Drought Management Policies and Economic Effects in Urban Areas of California, 1987-1992, Rand Corporation, Santa Monica
Halich & Stephenson (2006) The Effectiveness of Drought Management Programs in Reducing Residential Water-Use in Virginia, Virginia Water Resources Research Center, Blacksburg, VA, April 21, 2006

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

Mini, Caroline (2013) Residential water use and landscape vegetation dynamics in Los Angeles, Ph.D. Dissertation, University of California, Los Angeles, CA

Mini, Hogue, & Pincetl (2014) Estimation of Residential Outdoor Water Use in Los Angeles, California, Landscape and Urban Planning 127:124-135

Mini, Hogue, & Pincetl (2014) Patterns and Controlling Factors of Residential Use in Los Angeles, California, Water Policy Uncorrected Proof 1-16

NOAA (2021a) Study: Dry Future Likely Unavoidable for Southwest, But Reducing Greenhouse Gases Can Still Help, Climate Program Office News, National Oceanic and Atmospheric Administration

<https://cpo.noaa.gov/News/ArtMID/7875/ArticleID/2366/Study-Dry-future-likely-unavoidable-for-Southwest-but-reducing-greenhouse-gases-can-still-help>

NOAA (2021b) California-Nevada and Pacific Northwest Special Edition Drought Status Update, October 28, 2021, National Oceanic and Atmospheric Administration and National Integrated Drought Information System

<https://web.archive.org/web/20211028185314/https://www.drought.gov/drought-status-updates/california-nevada-and-pacific-northwest-special-edition-drought-status>

Olmstead & Stavins (2007) Managing Water Demand: Price vs. Non-Price Conservation Measures, A Pioneer Institute White Paper, No. 39

Renwick & Green (2000) Do Residential Water Demand Side Management Policies Measure Up? An Analysis of Eight California Water Agencies, Journal of Environmental Economics and Management 40,37-55

SWRCB (2021) June 2014 - September 2021 Urban Water Supplier Monthly Reports, Water Conservation and Production Reports, State Water Resources Control Board https://web.archive.org/web/20211117172835/https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html

US Global Change Research Program (2018) Fourth National Climate Assessment, US Global Change Research Program, Washington, D.C. <https://nca2018.globalchange.gov/>

Informative Digest

Summary of Existing Laws and Regulations

Existing law requires urban water suppliers to execute drought pricing or excessive use ordinances during a drought emergency (Water Code 365-367). The State Water Board is collecting data on urban water supplier compliance with the statutory requirements. At present, there is no statewide prohibition on individual activities to promote conservation. The proposed regulation is consistent and compatible with existing regulations on this subject. The proposed regulation neither differs from nor conflicts with an existing comparable federal statute or regulation.

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

Description and Effect of Proposed Regulations

The proposed emergency adoption of section 995 directs individuals statewide to refrain from engaging in certain activities to promote conservation to meet the drought emergency and prohibits homeowners' associations, cities, and counties from imposing penalties against homeowners for their actions in response to a declared drought emergency.

Proposed Emergency Regulation Section 995, Subdivision (b)

Proposed section 995, subdivision (b) prohibits several activities to promote conservation, except where necessary to address an immediate health and safety need. The section prohibits the application of water to outdoor landscapes in a manner that causes visible runoff, the use of a hose to wash an automobile except where the hose is equipped with a shut-off nozzle, the application of water to hardscapes, the use of potable water in non-recirculating ornamental fountains, the application of water to irrigate turf and ornamental landscapes during and within 48 hours after measurable rainfall of at least one fourth of one inch of rain, and the use of potable water for irrigation of turf on public street medians or publicly owned or maintained landscaped areas between the street and sidewalk.

Proposed Emergency Regulation Section 995, Subdivision (c)

Proposed section 995, subdivision (c) prohibits homeowners' associations, community service organizations, and similar entities from imposing or threatening to impose penalties for reducing watering of lawns or from requiring owners to reverse or remove landscaping measures in response to a declared drought emergency.

Proposed Emergency Regulation Section 995, Subdivision (d)

Proposed section 995, subdivision (d) prohibits any city, county, or city and county, from imposing a fine under any local maintenance ordinance or other relevant ordinance as prohibited by section 8627.7 of the Government Code.

Proposed Emergency Regulation Section 995, Subdivision (e)

Proposed section 995, subdivision (e) specifies the potential penalties for violations of subdivisions (b), (c) and (d).

Proposed Emergency Regulation Section 995, Subdivision (f)

Proposed section 995, subdivision (f) specifies process for someone issued an order or decision under this section to seek reconsideration of that order or decision.

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

Authority and Reference Citations

For Section 995

Authority: Wat. Code, § 1058.5.

References: Article X, Section 2, California Constitution; Sections 4080, 4100, 4110, 4150, 4185, and 4735, Civil Code; Section 8627.7, Government Code; Sections 102, 104, 105, 275, and 350, Water Code; *Light v. State Water Resources Control Board* (2014) 226 Cal.App.4th 1463; *Stanford Vina Ranch Irrigation Co. v. State of California* (2020) 50 Cal.App.5th 976.

Mandate on Local Agencies or School Districts

The State Water Resources Control Board has determined that adoption of section 995 does not impose a new mandate on local agencies or school districts. The sections are generally applicable law.

The State Water Resources Control Board has further determined that adoption of proposed section 995 does not impose a new mandate on local agencies or school districts, because the local agencies affected by the section have the authority to levy service charges, fees, or assessments sufficient to pay for the mandate program or increased level of service. (See Gov. Code, § 17556.)

Suspension of California Environmental Quality Act

On October 19, 2021, the Governor issued an executive order addressing the drought emergency, which, among other things, suspended the California Environmental Quality Act (CEQA) as applied to the State Water Resources Control Board's adoption of emergency regulations to "supplement voluntary conservation by prohibiting certain wasteful water practices." The proposed emergency regulation falls under this suspension.

Public Agency and Government Fiscal Impact

Analysis Summary

Increased urban water conservation will result in reduced water use by the customer, which in turn will result in reduced water sales and lost revenue for urban water suppliers. This loss in revenue will be a function of the amount of water conserved (and therefore not sold) and the unit price that water would have sold for.

Implementation of the proposed emergency regulations will result in additional workload for the State Water Board and possibly for the Department of Water Resources, however, this work will be accomplished through redirection of resources within existing agency budgets. Significant costs or saving for State agencies are therefore not anticipated.

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

Fiscal Impacts to Public Water Supply Agencies

Fiscal impacts to urban water agencies are assumed to result primarily from changes in water sale revenues. These are calculated below by developing a statewide average rate for water and multiplying it by the estimate of water sales reduction resulting from the proposed regulation.

Determination of Average Water Rates

Data was compiled from a 2013 Water Rate Survey prepared by published by Raftelis Financial Consultants, Inc., and the California-Nevada Section of the American Water Works Association to develop a statewide average estimate for the variable portion of urban water rates. The 2013 Rate Survey included information on the average fixed and variable water rates for 46 California Counties based on survey responses from 216 urban water suppliers statewide. The average rate (variable portion only) for each represented county was weighted by county population to determine a statewide average rate of \$1,086.77 per acre foot of water sold.

Estimate of Water Savings from the Proposed Emergency Regulation

According to the Department of Water Resources Water Plan Update 2018, total outdoor irrigation in 2015 represents approximately 40 percent of the total urban water use (includes both Large Landscape and Residential – Exterior).

Many California urban water suppliers are already implementing water conservation measures commensurate with those required by the proposed regulations and therefore conservation savings attained by their customers are not attributable to the proposed regulations. 146 urban water suppliers who submitted a State Water Board September 2021 Urban Water Supplier Monthly Report responded that they have already implemented restrictions on excessive irrigation of outdoor landscapes, washing motor vehicles with a hose not fitted with a shut-off nozzle, and application of potable water directly to driveways or sidewalks (SWRCB, 2021a). Therefore, these 146 urban water suppliers are already implementing conservation measures that are commensurate with the requirements of the proposed emergency regulation. These 146 urban water suppliers represent approximately 19 million retail customers, which accounts for about 80 percent of the survey response by retail population. Based upon these assumptions, 20 percent of urban water use would be affected by adoption of the proposed regulations.

Various studies have analyzed the response of urban populations to mandatory use restrictions imposed during drought conditions. Multiple studies conclude that mandatory use restrictions are more effective than voluntary conservation measures because areas that have imposed mandatory use restrictions have achieved greater use reductions than areas that imposed only voluntary measures, controlling for other variables. The amount of conservation achievable through mandatory restrictions varies. Conservation savings of up to 29 percent have been observed. For example, a study conducted on the effects of water

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

demand management policies of eight California water agencies during the period from 1989-1996, which included 3 years of drought (1989-1991), found that rationing and use restrictions were correlated with use reductions of 19 percent and 29 percent, respectively. The study's authors concluded:

In general, relatively moderate (5-15%) reductions in aggregate demand can be achieved through modest price increases and "voluntary" alternative [Demand-Side Management] policy instruments, such as public information campaigns. However, to achieve larger reductions in demand (greater than 15%), policymakers will likely need to consider either relatively large price increases, more stringent mandatory policy instruments (such as use restrictions), or a package of policy instruments. (Dixon & Moore, 1996).

A study from UCLA on use reductions in Los Angeles during the 2007-2009 drought reached similar conclusions:

Our results indicate that mandatory restrictions are most effective at reducing water consumption for [Single-Family Residential] households. The greatest impact of measures resulted from the combination of mandatory watering restrictions and the price increase, which led to a water reduction of 23% in July/August 2009, while voluntary restrictions led to only a 6% reduction in water use. (Mini, 2013).

In addition, a study of Virginia's severe 2002 drought found that mandatory use restrictions coupled with an aggressive information and enforcement campaign led to a 22 percent reduction in use (Halich & Stephenson, 2006).

During the 2014 California drought emergency, Californians reduced their water use by 25.5 percent six months after emergency regulations took effect (CNRA, 2021). Many communities, however, have permanently banned some of the wasteful water uses the State Water Board prohibited under the emergency regulations. Years later water use rates remain low, suggesting that some savings may have been locked in over the long-term (CNRA, 2021). This also suggests that future savings of similar emergency regulations may be more modest.

In many cases, mandatory use restrictions are instituted jointly with price increases. Although the proposed regulations do not mandate price increases, water suppliers may institute price increases to comply with the statutory requirements to reduce excess water use specified in Water Code 365-367.

Thus, given the severity of the current drought and the level of resources already devoted to attaining the state's conservation goals, the Board anticipates the proposed regulations can result in up to a 20 percent reduction in outdoor water use, totaling 0.1 MAF, as calculated below.

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

Total urban water use for outdoor irrigation: 2.6 MAF

Urban water use for outdoor irrigation affected by the proposed regulations:
 $2.6 \times 0.2 = 0.52$ or 0.5 MAF (using significant figures)

Estimated conservation savings from adoption of the proposed regulations:
 $0.52 \times 0.2 = 0.1$ MAF

Reduction in Public Water Supplier Water Sales Volume

As described above, urban water use for outdoor irrigation affected by the proposed regulations is estimated to be up to 0.5 MAF per year. Urban water suppliers in California, however, are comprised of both governmental agencies and investor owned utilities that are regulated by the California Public Utilities Commission (CPUC). Costs to investor owned utilities need not be considered for the purposes of estimating the costs of the proposed regulations on local agencies. The CPUC indicates that it is “providing water service to about 16 percent of California’s residents” (CPUC, 2021). The estimated 0.5 MAF per year of water used for outdoor irrigation can therefore be reduced by 16 percent for the purpose of determining the amount of conservation and corresponding revenue impact to local government resulting from adoption of the proposed regulation. This brings the total volume of outdoor irrigation water use down to approximately 0.4 MAF per year. Since the proposed regulations are estimated to achieve in as much as a 20 percent reduction in water use it follows that the proposed regulations could result in a reduction in water sales by water supply agencies of 0.09 or 0.1 MAF per year (i.e., 20 percent of 0.4 MAF with result using significant figures).

Calculation of Decreased Public Water Supplier Sales Revenues

The estimated decreased sales revenues are a function of the average water rate and the amount of decreased sales volume. The estimate of decreased sales revenues due to the proposed regulations is \$100,000,000, as calculated below.

Average statewide water rate: \$1,086.77 per acre-foot of water sold

Estimated conservation savings from proposed regulations: 0.09 MAF = 90,000 acre-feet

Total revenue impact: $\$1,086.77 \times 90,000 = \$100,000,000$ (using significant figures)

Note on Calculation Methodology

This methodology likely overstates the fiscal impact of decreased revenues for several reasons. First, it does not account for the savings in energy and chemical costs water suppliers will realize due to decreased water production. Second, it does not account for the avoided cost of supply augmentation that could be necessary if not for the conservation savings generated by the proposed regulations.

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

References:

CNRA (2021) Report to the Legislature on the 2012-2016 Drought (March 2021), California Natural Resources Agency <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Water-Basics/Drought/Files/Publications-And-Reports/CNRA-Drought-Report-final-March-2021.pdf>

CPUC (2021) Water Division, California Public Utilities Commission, accessed November 16, 2021

<https://web.archive.org/web/20211116223945/https://www.cpuc.ca.gov/about-cpuc/divisions/water-division>

DWR (2019) California Water Plan Update 2018, California Department of Water Resources. <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2018/Final/California-Water-Plan-Update-2018.pdf>

Dixon, Moore, & Pint. (1996) Drought Management Policies and Economic Effects in Urban Areas of California, 1987-1992, Rand Corporation, Santa Monica

Halich & Stephenson (2006) The Effectiveness of Drought Management Programs in Reducing Residential Water-Use in Virginia, Virginia Water Resources Research Center, Blacksburg, VA, April 21, 2006

Mini, Caroline (2013) Residential water use and landscape vegetation dynamics in Los Angeles, Ph.D. Dissertation, University of California, Los Angeles, CA

Mini, Hogue, & Pincetl (2014) Estimation of Residential Outdoor Water Use in Los Angeles, California, Landscape and Urban Planning 127:124-135

Mini, Hogue, & Pincetl (2014) Patterns and Controlling Factors of Residential Use in Los Angeles, California, Water Policy Uncorrected Proof 1-16

Olmstead & Stavins (2007) Managing Water Demand: Price vs. Non-Price Conservation Measures, A Pioneer Institute White Paper, No. 39

Raftelis Financial Consultants, Inc. and California-Nevada Section of the American Water Works Association. 2013 Water Rate Survey.

Renwick & Green (2000) Do Residential Water Demand Side Management Policies Measure Up? An Analysis of Eight California Water Agencies, Journal of Environmental Economics and Management 40,37-55

SWRCB (2021a) June 2014 - September 2021 Urban Water Supplier Monthly Reports, Water Conservation and Production Reports, State Water Resources Control Board https://web.archive.org/web/20211117172835/https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html

Emergency Regulations Digest (Gov. Code, § 11346.1, subd. (b))

SWRCB (2021b) Electronic Annual Report (EAR) Data from Public Drinking Water Systems, State Water Resources Control Board

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/eardata.html