

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

### **Prohibition of Activities and Mandatory Actions During Drought Emergency**

#### **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. California is currently in the third year of a significant drought resulting in severe impacts to California's water supplies and its ability to meet all of the demands for water in the State. On January 17, 2014, Governor Edmund G. Brown, Jr. declared a drought state of emergency. On April 25, 2014 the Governor signed an Executive Order stating, among things, "*...that severe drought conditions continue to present urgent challenges: water shortages in communities across the state, greatly increased wildfire activity, diminished water for agricultural production, degraded habitat for many fish and wildlife species, threat of saltwater contamination of large fresh water supplies conveyed through the Sacramento-San Joaquin Bay Delta, and additional water scarcity if drought conditions continue into 2015.*" 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. Due to these concerns, the April 25, 2014 Executive Order, directs the State Water Board to adopt emergency regulations as it deems necessary, pursuant to Water Code section 1058.5, to ensure that urban water suppliers implement drought response plans to limit outdoor irrigation and other wasteful water practices.

#### **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 270 days. 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 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.

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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 also meets the emergency regulation criteria of Government Code section 11346.1 and the applicable requirements of section 11346.5.

### **Evidence of Emergency**

The U.S. Drought Monitor currently classifies the entire state of California as experiencing severe to exceptional drought conditions. 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. Each of this season's first four snow surveys – conducted in early January, late January, late February and early April – found a statewide snowpack water equivalent far below average for the dates of the surveys. The 2014 statewide snowpack began melting and running into the state's watercourses in early April. After reaching a peak of 10.1 inches, the snowpack had almost completely melted away by late May.

Rainfall also has been far below normal during this water year as recorded by weather stations throughout the state. Despite a few storms that brought rain in February and March, electronic readings indicate that precipitation at eight Northern California stations was only about 60 percent of normal for late April. The electronic readings for San Joaquin stations show even drier conditions there – less than 50 percent of normal precipitation from October 1 to late May. As of May 31, statewide precipitation was 55 percent of average to date; runoff was 35 percent of average to date; and snow water equivalent was three percent of average for the date (one percent of the April 1 average).

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 65 percent of average for the state at the end of May. Current storage levels in key reservoirs reflect this trend. Shasta Lake, California's and the Central Valley Project's (CVP) largest reservoir, is at 45 percent of its 4.5 million acre-feet (MAF) capacity (54 percent of its historical average for this date). Lake Oroville, the State Water Project's (SWP) principal reservoir, is at 47 percent of its 3.5 MAF capacity (57 percent of its historical average for the date). Trinity Reservoir is at 47 percent of its 2.4 MAF capacity (54 percent of historical average). San Luis Reservoir, a critical south-of-Delta reservoir for both the SWP and CVP, is at 38 percent of its 2 MAF capacity (52 percent of average for this date). Folsom Reservoir is at 53 percent of its 1 MAF capacity (64 percent of average for this date). New Melones Reservoir is at 32 percent of its 2.4 MAF capacity (50 percent of average for this date). New Don Pedro Reservoir is at 52 percent of its 2 MAF capacity (67 percent of average for this date) and Lake McClure is at 29 percent of its 1 MAF (42 percent of average for this date).

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Local, state and federal water agencies across California have limited supplies due to the drought. In response, those agencies have taken various actions, including reducing or eliminating contract water deliveries and implementing mandatory and voluntary conservation efforts. A total of 46 Emergency Proclamations addressing the drought are known to have been issued by city, county, special districts, and tribal governments. The State's two major water supply projects, the CVP and SWP, have also announced severe reductions in contract deliveries. The United States Bureau of Reclamation (Reclamation) has announced that its regular CVP agricultural contractors will receive no deliveries in 2014 and its municipal and industrial contractors will receive 50 percent of their historic use. The Department of Water Resources (DWR) has announced that its deliveries to its regular SWP contractors will be reduced to five percent for both municipal and agricultural contractors. Senior SWP contractors have also received less than their full contract amounts. In addition to water supply reductions and conservation efforts, many water users have requested and received approvals for changes to regulatory requirements, including water right requirements, to extend limited supplies. Many water users have also pursued water transfers and purchases from willing sellers to make up for reduced supplies.

### **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. The State Water Board's May 2014 Drought Survey results demonstrated that urban water conservation efforts could be augmented to minimize the potential risks of threatened severe supply shortages. In addition, 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 2015 or beyond.

### **Description and Effect of Proposed Regulation**

The proposed regulation consists of three requirements: a prohibition on certain types of water use, an order for all urban water suppliers to implement mandatory conservation measures, and an order for water suppliers with 3,000 or more service connections to provide monthly data on water production. 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

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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 2015, 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 on water uses is necessary to promote water conservation to maintain 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 a vehicles.

A prohibition on watering of hardscapes, such as driveways, sidewalks, and asphalt, promotes water conservation to address the drought emergency through 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.

The proposed regulation to require urban water suppliers with 3,000 or more service connections to implement their Water Shortage Contingency Plans (WSCPs) at a level that includes mandatory use restrictions, and water suppliers without WSCPs and water suppliers

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which have fewer than 3,000 service connections to implement mandatory restrictions, is necessary to promote conservation to address the drought emergency because mandatory restrictions have proven to be effective at reducing water use. Data collected from the State Water Board's May 2014 Urban Water Conservation Survey indicates that 53 of the 268 urban water suppliers who responded to the survey (representing approximately 10 million retail customers) have already formally invoked their drought shortage contingency plans and have implemented both mandatory restrictions on outdoor water use and prohibitions on runoff into streets and gutters. Requiring mandatory use restrictions for the rest of the water suppliers (representing approximately 28 million retail customers) will ensure that water use restrictions are applied equitably and to the greatest effect statewide.

One of the options for mandatory use restrictions is limiting outdoor irrigation to no more than two days per week. This limit is necessary to promote conservation to address the drought emergency because outdoor irrigation accounts for 44 percent of urban water use (see Table 1 below), outdoor irrigation is generally more discretionary than other types of use, and because studies have shown that urban landscapes are often over-watered. Two days per week of outdoor irrigation increases conservation and reduces the likelihood of over-irrigation and visible runoff.

The proposed regulation to require urban water suppliers with 3,000 or more service connections to provide the Board with monthly potable water production figures along with a calculation of gallons per capita per day (GPCD) is necessary so that the Board can track the effectiveness of the proposed regulations and urban water conservation actions. Such monitoring reports will promote the conservation necessary to address the drought emergency.

### Estimate of Water Savings from Proposed Regulation

According to the Department of Water Resource's Public Review Draft Water Plan Update 2013, total urban water use between 1998 and 2005 was 8.8million acre-feet. The breakdown of the urban use by customer class is provided in the Table 1.

**Table 1: Urban Water Use by Sector in Million Acre-Feet (MAF)**

<b>Sector</b>	<b>Volume (MAF)</b>
Residential landscape	3
Large landscape	0.9
Indoor residential	2.7
Commercial, institutional, and industrial	1.7
Other	0.5
<b>Total</b>	<b>8.8</b>

*Source: DWR Public Review Draft Water Plan Update 2013*

Outdoor irrigation represents 44 percent of the total urban water use (3 MAF for residential landscape and 0.9 MAF for large landscapes). The proposed regulation prohibiting visible runoff affects the 44 percent of statewide urban use dedicated to outdoor irrigation. The

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proposed regulation to require implementation of WSCPs at a mandatory level by urban water suppliers would, in some cases, entail restrictions on use by other customer classes, including residential indoor use in instances where mandatory restrictions include rationing of residential use. However, a review of the State Water Board's May 2014 Urban Water Conservation Survey results and a select group of WSCPs indicates that water suppliers with significant supply shortages have already implemented mandatory restrictions and are therefore already in compliance with the proposed regulation, while those that will need to invoke their WSCPs at a mandatory level to comply do not include restrictions on water use by the non-residential classes at the first level of mandatory restrictions. Thus, the Board estimates that the proposed regulations will have a minimal impact on the 56 percent of water used for purposes other than 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. As described above, 53 of the 268 urban water suppliers who responded to the survey indicated that they had already formally invoked their drought shortage contingency plans and have implemented both mandatory restrictions on outdoor water use and prohibitions on runoff into streets and gutters. Therefore, these 53 urban water suppliers are already implementing conservation measures that are commensurate with the requirements of the proposed emergency regulation. These 53 urban water suppliers represent approximately 10 million retail customers, which accounts for about 38 percent of the survey response by retail population. The Board estimates that all 268 of the survey respondents collectively are representative of the urban water conservation actions being taken statewide. Based upon these assumptions, 62 percent of urban water use would be affected by adoption of the proposed regulations while 38 percent of urban water use would not be affected by adoption of the proposed regulations (i.e, they are already implementing the required conservation measures).

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 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).

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A recent 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). 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 0.48 million acre-feet, as calculated below.

Total urban water use for outdoor irrigation: 3.9 MAF

Urban water use for outdoor irrigation affected by the proposed regulations:  $3.9 \times 0.62 = 2.4$  MAF

Estimated conservation savings from adoption of the proposed regulations:  $2.4 \times 0.2 = 0.48$  MAF

### **Additional Benefits to 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 water quality in receiving waters due to lower runoff volumes
- Increased drought awareness and shared sense of responsibility among urban water users
- More effective tracking of total urban water use
- Reduced potential for severe economic disruption if 2015 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.

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

California Governor Brown State of Emergency Declaration dated January 17, 2014:

<http://gov.ca.gov/news.php?id=18368>

California Governor Brown Executive Order for State Drought Actions dated April 25, 2014:

<http://gov.ca.gov/news.php?id=18496>

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## **Informative Digest**

### **Summary of Existing Laws and Regulations**

At present, there is no statewide prohibition on individual activities to promote conservation. There is also no law or regulation requiring urban water suppliers to affirmatively adopt drought shortage contingency plans, implement specific stages of their drought shortage contingency plans, or report the amount of water they produce to the state. There is also no law or regulation requiring distributors of public water supplies who are not urban water suppliers to adopt water shortage contingency plans, limit outdoor irrigation by their customers, or implement other mandatory conservation measures. The proposed regulation constitutes the first statewide directive to individuals and to urban water suppliers to undertake specific actions to respond to the drought emergency; consequently, 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.

### **Description and Effect of Proposed Regulations**

The proposed emergency adoption of section X sets forth the State Water Resources Control Board's findings of drought emergency. The proposed emergency adoption of section X.1 directs individuals statewide to refrain from engaging in certain activities to promote conservation to meet the drought emergency. The proposed emergency adoption of section X.2 directs urban water suppliers to report information to the Board and to take actions to promote conservation and directs all other water suppliers to take actions to promote conservation.

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### Proposed Emergency Regulation Section X

Proposed Section X sets forth the Board's findings of drought emergency, noting the Governor's adoption of two emergency proclamations pertaining to drought conditions, the persistence of drought conditions, the dry nature of the preceding two years, and the likelihood that drought conditions will continue.

### Proposed Emergency Regulation Section X.1

Proposed Section X.1 prohibits several activities, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency, to promote conservation. 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, and the use of potable water in non-recirculating ornamental fountains.

### Proposed Emergency Regulation Section X.2

Proposed Section X.2 directs urban water suppliers to implement the stage of their water shortage contingency plans that impose mandatory restrictions on outdoor irrigation, requires those urban water suppliers without adequate drought shortage contingency plans to adopt them or other measures to promote conservation within thirty days, and report monthly water production information to the Board. The section also directs distributors of public water supplies that are not urban water suppliers to either limit outdoor irrigation, or implement another mandatory conservation measure or measures to achieve conservation.

### **Authority and Reference Citations**

#### For Section X

Authority: Wat. Code, § 1058.5.

References: Wat. Code, §§ 102, 104, 105.

#### For Section X.1

Authority: Wat. Code, § 1058.5.

References: Wat. Code, §§ 102, 104, 105.

#### For Section X.2

Authority: Wat. Code, § 1058.5.

References: Wat. Code, §§ 102, 104, 105; 350; 10617; 10632.

**Mandate on Local Agencies or School Districts**

The State Water Resources Control Board has determined that adoption of sections X and X.1 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 section X.2 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 April 24, 2014, 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 “prevent the waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water, to promote water recycling or water conservation, and to require curtailment of diversions when water is not available under the diverter’s priority of right.” 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. California Urban Water Supplier water rates are primarily comprised of a fixed and a variable component. The variable portion of the rate is based on the volume of water used by the customer and generally the fixed portion does not change with use. The variable portion of the rate therefore represents the unit cost of lost revenue.

In addition to lost revenue from reduced water sales, urban water suppliers will also incur costs associated with water production reporting as required by the proposed emergency regulations.

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.

## **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 variable 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' Public Review Draft Water Plan Update 2013, total urban water use between 1998 and 2005 was 8.8 million acre-feet (MAF). Outdoor irrigation represents 44 percent of the total urban water use (3 MAF for residential landscape and 0.9 MAF for large landscapes). The proposed regulation prohibiting visible runoff therefore affects the 44 percent of statewide urban use dedicated to outdoor irrigation. The proposed regulation to require implementation of WSCPs at a mandatory level by urban water suppliers would, in some cases, entail restrictions on use by other customer classes, including residential indoor use in instances where mandatory restrictions include rationing of residential use. However, a review of the State Water Board's May 2014 survey results and a select group of WSCPs indicates that water suppliers with significant supply shortages have already implemented mandatory restrictions and are therefore already in compliance with the proposed regulation, while those that will need to invoke their WSCPs at a mandatory level to comply do not include restrictions on water use by the non-residential classes at the first level of mandatory restrictions. Thus, the Board estimates that the proposed regulations will have a minimal impact on the 56 percent of water used for purposes other than 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. Fifty-three of the 268 urban water suppliers who responded to the State Water Board's survey indicated that they had already formally invoked their drought shortage contingency plans and have implemented both mandatory restrictions on outdoor water use and prohibitions on runoff into streets and gutters. These 53 urban water suppliers represent approximately 10 million retail customers, which accounts for about 38 percent of the survey response by retail population. The Board assumes that these 53 urban water suppliers are already implementing conservation measures that are commensurate with the requirements of the proposed emergency regulation. The Board also assumes that all 268 of the survey respondents collectively are representative

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of the urban water conservation actions being taken statewide. Based upon these assumptions, 62 percent of urban water use would be affected by adoption of the proposed regulations while 38 percent of urban water use would not 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 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 recent 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).

In many cases, mandatory use restrictions are instituted jointly with price increases. Although the proposed regulations do not mandate price increases, we anticipate that many water suppliers will implement rate design changes as part of implementing their WSCP and in order to ameliorate the impacts of reduced revenues as sales decrease due to conservation.

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 0.48 million acre-feet, as calculated below.

Total urban water use for outdoor irrigation: 3.9 MAF

Urban water use for outdoor irrigation affected by the proposed regulations:  $3.9 \times 0.62 = 2.4$  MAF

Estimated conservation savings from adoption of the proposed regulations:  $2.4 \times 0.2 = 0.48$  MAF

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### 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 2.4 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 “there are 116 investor-owned water utilities under the CPUC’s jurisdiction providing water service to about 16 percent of California’s residents”. The estimated 2.4 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 2.016 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 local government agencies of 403,200 acre-feet per year (i.e, 20% of 2.016 MAF).

### Calculation of Decreased Public Water Supplier Sales Revenues

The estimated decreased sales revenues are a function of the average variable water rate and the amount of decreased sales volume. The estimate of decreased sales revenues due to the proposed regulations is \$438,185,664, as calculated below.

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

Estimated conservation savings (local government portion) from proposed regulations: 403,200 acre-feet

Total revenue impact:  $\$1086.77 \times 403,200 = \$438,185,664$

### 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.

### **Reporting Costs**

The estimated cost of reporting as would be required by the proposed emergency regulations were determined by multiplying the total number of urban water supplies that would be required to submit monthly water production reports by the estimated average time to compile and submit water production information and by an average staff cost per hour. Based on information provided by the Department of Water Resources there are 440 urban water suppliers that are subject to Urban Water Management Planning Act requirement to prepare an Urban Water Management Plan and therefore subject to the proposed reporting requirements.

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The maximum amount of time to prepare and submit the water production data is estimated to be 4 hours per urban water supplier per month. The estimated average total hourly staff costs of urban water supplier staff required to complete the certification form is \$65 per hour or \$260 per monthly report. If adopted, the term of the proposed emergency regulations would be 270 days or almost 9 months. Therefore, the total maximum reporting costs to urban water suppliers as a result of the proposed regulations is estimated at \$1,029,600 (440 urban water suppliers multiplied by the \$260 cost per monthly report multiplied by 9 months).

### **Total Implementation Cost**

The total estimated cost of implementing the proposed regulations is \$439,215,264, which is the sum of estimated lost revenues to urban water suppliers and the estimated reporting costs as described above.

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