

ECONOMIC IMPACT STATEMENT

DEPARTMENT NAME State Water Resources Control Board	CONTACT PERSON Dana Heinrich	EMAIL ADDRESS dana.heinrich@waterboards.ca.	TELEPHONE NUMBER 916 341-5188
DESCRIPTIVE TITLE FROM NOTICE REGISTER OR FORM 400 Emergency Reporting and Curtailment Regulation in the Delta Watershed due to Drought Emergency			NOTICE FILE NUMBER Z

A. ESTIMATED PRIVATE SECTOR COST IMPACTS *Include calculations and assumptions in the rulemaking record.*

1. Check the appropriate box(es) below to indicate whether this regulation:

- | | |
|--|---|
| <input type="checkbox"/> a. Impacts business and/or employees | <input type="checkbox"/> e. Imposes reporting requirements |
| <input type="checkbox"/> b. Impacts small businesses | <input type="checkbox"/> f. Imposes prescriptive instead of performance |
| <input type="checkbox"/> c. Impacts jobs or occupations | <input type="checkbox"/> g. Impacts individuals |
| <input type="checkbox"/> d. Impacts California competitiveness | <input checked="" type="checkbox"/> h. None of the above (Explain below): |

Gov. Code section 11346.1, subd. (a)(1) [economic statement not required for emergency regulations]

***If any box in Items 1 a through g is checked, complete this Economic Impact Statement.
 If box in Item 1.h. is checked, complete the Fiscal Impact Statement as appropriate.***

2. The _____ estimates that the economic impact of this regulation (which includes the fiscal impact) is:
 (Agency/Department)

- Below \$10 million
- Between \$10 and \$25 million
- Between \$25 and \$50 million
- Over \$50 million *[If the economic impact is over \$50 million, agencies are required to submit a [Standardized Regulatory Impact Assessment](#) as specified in Government Code Section 11346.3(c)]*

3. Enter the total number of businesses impacted: _____

Describe the types of businesses (Include nonprofits): _____

Enter the number or percentage of total businesses impacted that are small businesses: _____

4. Enter the number of businesses that will be created: _____ eliminated: _____

Explain: _____

5. Indicate the geographic extent of impacts: Statewide
 Local or regional (List areas): _____

6. Enter the number of jobs created: _____ and eliminated: _____

Describe the types of jobs or occupations impacted: _____

7. Will the regulation affect the ability of California businesses to compete with other states by making it more costly to produce goods or services here? YES NO

If YES, explain briefly: _____

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ECONOMIC IMPACT STATEMENT (CONTINUED)

B. ESTIMATED COSTS *Include calculations and assumptions in the rulemaking record.*

1. What are the total statewide dollar costs that businesses and individuals may incur to comply with this regulation over its lifetime? \$ _____
 - a. Initial costs for a small business: \$ _____ Annual ongoing costs: \$ _____ Years: _____
 - b. Initial costs for a typical business: \$ _____ Annual ongoing costs: \$ _____ Years: _____
 - c. Initial costs for an individual: \$ _____ Annual ongoing costs: \$ _____ Years: _____
 - d. Describe other economic costs that may occur: _____

2. If multiple industries are impacted, enter the share of total costs for each industry: _____

3. If the regulation imposes reporting requirements, enter the annual costs a typical business may incur to comply with these requirements. *Include the dollar costs to do programming, record keeping, reporting, and other paperwork, whether or not the paperwork must be submitted.* \$ _____

4. Will this regulation directly impact housing costs? YES NO
 If YES, enter the annual dollar cost per housing unit: \$ _____
 Number of units: _____

5. Are there comparable Federal regulations? YES NO

Explain the need for State regulation given the existence or absence of Federal regulations: _____

Enter any additional costs to businesses and/or individuals that may be due to State - Federal differences: \$ _____

C. ESTIMATED BENEFITS *Estimation of the dollar value of benefits is not specifically required by rulemaking law, but encouraged.*

1. Briefly summarize the benefits of the regulation, which may include among others, the health and welfare of California residents, worker safety and the State's environment: _____

2. Are the benefits the result of: specific statutory requirements, or goals developed by the agency based on broad statutory authority?

Explain: _____

3. What are the total statewide benefits from this regulation over its lifetime? \$ _____

4. Briefly describe any expansion of businesses currently doing business within the State of California that would result from this regulation: _____

D. ALTERNATIVES TO THE REGULATION *Include calculations and assumptions in the rulemaking record. Estimation of the dollar value of benefits is not specifically required by rulemaking law, but encouraged.*

1. List alternatives considered and describe them below. If no alternatives were considered, explain why not: _____

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2. Summarize the total statewide costs and benefits from this regulation and each alternative considered:

Regulation: Benefit: \$ _____ Cost: \$ _____

Alternative 1: Benefit: \$ _____ Cost: \$ _____

Alternative 2: Benefit: \$ _____ Cost: \$ _____

3. Briefly discuss any quantification issues that are relevant to a comparison of estimated costs and benefits for this regulation or alternatives: _____

4. Rulemaking law requires agencies to consider performance standards as an alternative, if a regulation mandates the use of specific technologies or equipment, or prescribes specific actions or procedures. Were performance standards considered to lower compliance costs? YES NO

Explain: _____

E. MAJOR REGULATIONS *Include calculations and assumptions in the rulemaking record.*

California Environmental Protection Agency (Cal/EPA) boards, offices and departments are required to submit the following (per Health and Safety Code section 57005). Otherwise, skip to E4.

1. Will the estimated costs of this regulation to California business enterprises **exceed \$10 million**? YES NO

***If YES, complete E2. and E3
If NO, skip to E4***

2. Briefly describe each alternative, or combination of alternatives, for which a cost-effectiveness analysis was performed:

Alternative 1: _____

Alternative 2: _____

(Attach additional pages for other alternatives)

3. For the regulation, and each alternative just described, enter the estimated total cost and overall cost-effectiveness ratio:

Regulation: Total Cost \$ _____ Cost-effectiveness ratio: \$ _____

Alternative 1: Total Cost \$ _____ Cost-effectiveness ratio: \$ _____

Alternative 2: Total Cost \$ _____ Cost-effectiveness ratio: \$ _____

4. Will the regulation subject to OAL review have an estimated economic impact to business enterprises and individuals located in or doing business in California exceeding \$50 million in any 12-month period between the date the major regulation is estimated to be filed with the Secretary of State through 12 months after the major regulation is estimated to be fully implemented?

YES NO

If YES, agencies are required to submit a [Standardized Regulatory Impact Assessment \(SRIA\)](#) as specified in Government Code Section 11346.3(c) and to include the SRIA in the Initial Statement of Reasons.

5. Briefly describe the following:

The increase or decrease of investment in the State: _____

The incentive for innovation in products, materials or processes: _____

The benefits of the regulations, including, but not limited to, benefits to the health, safety, and welfare of California residents, worker safety, and the state's environment and quality of life, among any other benefits identified by the agency: _____

**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (Rev. 10/2019)

FISCAL IMPACT STATEMENT

A. FISCAL EFFECT ON LOCAL GOVERNMENT *Indicate appropriate boxes 1 through 6 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*

1. Additional expenditures in the current State Fiscal Year which are reimbursable by the State. (Approximate)
(Pursuant to Section 6 of Article XIII B of the California Constitution and Sections 17500 et seq. of the Government Code).

\$ _____

a. Funding provided in _____

Budget Act of _____ or Chapter _____, Statutes of _____

b. Funding will be requested in the Governor's Budget Act of _____

Fiscal Year: _____

2. Additional expenditures in the current State Fiscal Year which are NOT reimbursable by the State. (Approximate)
(Pursuant to Section 6 of Article XIII B of the California Constitution and Sections 17500 et seq. of the Government Code).

\$ _____

Check reason(s) this regulation is not reimbursable and provide the appropriate information:

a. Implements the Federal mandate contained in _____

b. Implements the court mandate set forth by the _____ Court.

Case of: _____ vs. _____

c. Implements a mandate of the people of this State expressed in their approval of Proposition No. _____

Date of Election: _____

d. Issued only in response to a specific request from affected local entity(s).

Local entity(s) affected: _____

e. Will be fully financed from the fees, revenue, etc. from: _____

Authorized by Section: _____ of the _____ Code;

f. Provides for savings to each affected unit of local government which will, at a minimum, offset any additional costs to each;

g. Creates, eliminates, or changes the penalty for a new crime or infraction contained in _____

3. Annual Savings. (approximate)

\$ _____

4. No additional costs or savings. This regulation makes only technical, non-substantive or clarifying changes to current law regulations.

5. No fiscal impact exists. This regulation does not affect any local entity or program.

6. Other. Explain There is no reimbursable mandate as regulations are generally applicable. The overall fiscal effect to local agencies is a net cost savings estimated to be \$104,133,200. See attached fiscal impact analysis (Table 11) for details.

**ECONOMIC AND FISCAL IMPACT STATEMENT
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STD. 399 (Rev. 10/2019)

FISCAL IMPACT STATEMENT (CONTINUED)

B. FISCAL EFFECT ON STATE GOVERNMENT *Indicate appropriate boxes 1 through 4 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*

1. Additional expenditures in the current State Fiscal Year. (Approximate)

\$ 2,903,200

It is anticipated that State agencies will:

a. Absorb these additional costs within their existing budgets and resources.

b. Increase the currently authorized budget level for the _____ Fiscal Year

2. Savings in the current State Fiscal Year. (Approximate)

\$ _____

3. No fiscal impact exists. This regulation does not affect any State agency or program.

4. Other. Explain Net costs based on conservative assumptions. See attached fiscal impact analysis (Table 11) for details.

C. FISCAL EFFECT ON FEDERAL FUNDING OF STATE PROGRAMS *Indicate appropriate boxes 1 through 4 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*

1. Additional expenditures in the current State Fiscal Year. (Approximate)

\$ _____

2. Savings in the current State Fiscal Year. (Approximate)

\$ _____

3. No fiscal impact exists. This regulation does not affect any federally funded State agency or program.

4. Other. Explain _____

FISCAL OFFICER SIGNATURE

 **Ryan M. Wilson**

 Digitally signed by Ryan M. Wilson
Date: 2021.08.06 14:42:31 -07'00'

DATE

The signature attests that the agency has completed the STD. 399 according to the instructions in SAM sections 6601-6616, and understands the impacts of the proposed rulemaking. State boards, offices, or departments not under an Agency Secretary must have the form signed by the highest ranking official in the organization.

AGENCY SECRETARY

 **Jared Blumenfeld**

Digitally signed by Jared Blumenfeld
Date: 2021.08.06 15:36:25 -07'00'

DATE

Finance approval and signature is required when SAM sections 6601-6616 require completion of Fiscal Impact Statement in the STD. 399.

DEPARTMENT OF FINANCE PROGRAM BUDGET MANAGER



DATE

FISCAL IMPACT STATEMENT

Fiscal Effect on Local and State Government

Summary

The fiscal effects resulting from the proposed emergency regulation are the costs that would be incurred by state and local government agencies to respond to any requirements therein, or otherwise due to the requirements therein, and the savings to state and local government agencies, pursuant to Government Code section 11346 et seq. This Fiscal Impact Statement has been prepared in accordance with State Administrative Manual 6600-6616.

The fiscal effect on local and state government agencies as a result of the proposed emergency regulation includes the costs: (1) to complete and submit certification forms; (2) to prepare ongoing diversion reporting on a monthly basis; and (3) for exceptions to priority-based curtailments for minimum human health and safety needs.

The State Water Board conservatively estimates the cost to all state and local governmental agencies due to the emergency regulation will be \$455,000 to complete the mandatory certification forms, and \$11.1 million to provide ongoing diversion reporting.

The minimum health and safety exception to curtailments would result in additional costs to water users who must curtail diversions to ensure water is available for health and safety purposes under rights that would have otherwise been curtailed. The fiscal effect on state and local government is the cost that will result from additional curtailments of rights held by state or local government entities needed to allow diversions for minimum health and safety uses under more junior rights to continue. These impacts are conservatively estimated to amount to decreased revenue and increased costs totaling \$25.4 million to \$35.8 million. This consists of reduction in agricultural and municipal water agency revenues from lost water sales of \$5.4 million to \$10.9 million and a corresponding reduction in state and local tax revenues of \$1.1 million. There are also estimated to be additional loss in state and local tax revenue that could range from \$5.6 million to \$12.7 million associated with reduced agricultural production resulting from the additional curtailed agricultural supply. It is also estimated that agricultural and municipal water agencies would also incur water replacement costs of \$11.2 million to \$13.8 million. The fiscal effect on state and local government that are estimated to result from government agencies being able to continue to divert a quantity of water by relying upon the health and safety exception is a net savings of \$148.7 million. This consists of: 1) \$135.2 million reduction in decreases of water agency revenue; and 2) a \$13.5 million reduction in the corresponding decrease in state and

local tax revenues. These are reductions in costs that state and local governments would otherwise incur absent the health and safety exception.

The proposed regulations are not anticipated to have a financial impact on school districts or to result in costs or savings in federal funding to the State.

Fiscal Costs of Proposed Reporting Requirements

The fiscal effect on local and state government agencies as a result of the proposed reporting requirements includes the costs: (1) to complete and submit certification forms; and (2) for larger users to prepare ongoing diversion and demand projections on a monthly basis. The time and effort required to submit the certification forms and prepare these monthly filings is considered an additional cost of compliance for these water right holders and claimants.

The cost estimates are conservative because most water right holders and claimants are already required to comply with measurement and reporting regulations that went into effect with Senate Bill (SB) 88 (2015-16). Pursuant to regulations implementing SB 88, all water right diverters authorized to divert more than 10 AF annually from rivers, creeks, springs, or subterranean streams must comply with measurement requirements. There are three ways to achieve measurement compliance: (1) install, use, and maintain a device capable of measuring the rate of direct diversion; (2) propose an alternative compliance plan; or (3) utilize a measurement method for multiple diverters. SB 88 set expectations for both the accuracy of measurement devices as well as the monitoring frequency of the device and included a measurement device installation deadline of January 1, 2018 or earlier. It is likely that costs for measuring associated with the reporting under the proposed regulation overlap with existing SB 88 requirements because diverters are already subject to existing measurement requirements.

The proposed regulation would also require all diverters in the Delta watershed to complete and submit the certification form upon receipt of initial orders. Curtailments themselves (and associated costs to diverters) are already part of the existing prohibition against unlawful diversion and associated Board authority. All other costs of the regulation would be the same as for curtailments issued by the Board under its current authorities because local and state governments would need to comply in essentially the same manner.

The estimated cost of the requirement to submit the certification form is associated with changing from a request for information to a mandated obligation to submit the information. The Board determined the total number of state and local government agencies in the Delta watershed and multiplied that number by an estimated average

time to complete a simple online certification form multiplied by an average staff cost per hour.

Based on information compiled from the State Water Board's eWRIMS database, water right holders and claimants representing approximately 17,000 water rights and claims would receive an initial order and would be required to submit a certification form. Among those, it is estimated that as many as 7,000 of these water rights and claims may be held by state, local, and district/agency entities. The estimated maximum amount of time to complete the required certification form as a result of the proposed regulation is one hour of staff time per water right record at an assumed pay rate of \$65 per hour. The cost burden on local and state governmental agencies for this requirement is therefore about \$455,000 in total.

Water right holders and claimants who have been issued an initial order and whose water right or claim has a total authorized face value or recent annual reported diversion amount of one thousand acre-feet (TAF) or greater may be required to submit monthly information regarding prior diversions and demand projections. Approximately 1,731 water right records in the Delta watershed meet these criteria and may be subject to the monthly reporting requirement, including approximately 45 state and 504 local and district/agency water rights. This reporting requirement could require monthly reporting for one year. For these diverters, the monthly reporting is assumed to require both analytical and senior staff time. The first month is assumed to require the most effort, including three working days of time for mid-level staff compiling and organizing hydrologic data, plus one working day of senior staff review. The remaining eleven months of the regulation is assumed to require one working day of mid-level staff plus a half-day of senior staff time. The estimated average daily cost is assumed to be \$800 for mid-level staff and \$1,400 per working day for senior staff. Therefore, the cost for twelve months of reporting is estimated at \$20,300 per entity. For the approximately 549 state and local governments, this represents a total estimated cost of \$11,144,700.

The total maximum costs to state and local government agencies as a result of the proposed reporting requirements is approximately \$11,600,000.

Fiscal Costs of a Health and Safety Exception

This section presents the methods used to estimate the fiscal effects on state and local government that could result from implementation of exceptions to curtailments for minimum health and safety needs in the Delta watershed. A range of values is estimated that depends upon the extent of replacement groundwater pumping that may occur. The period covered by the regulation is assumed to be one year (365 days) from date of enactment.

The proposed emergency regulation includes an exception from curtailments for minimum health and safety needs. The State Water Board does have enforcement discretion that it could employ to achieve similar results where the Board is using its authority to implement the water rights system; however, the Board and the courts have concurrent jurisdiction to enforce the water rights priority system. This analysis conservatively assumes that exceptions to curtailments for minimum health and safety needs would only be made under the regulation, and would not occur without the emergency regulation. To determine the fiscal effects of including the health and safety exception, this analysis identifies the maximum amount of water that could continue to be diverted under a health and safety exception. Implementation of the health and safety exception could require additional curtailments of other water right holders that would not otherwise have been curtailed. There would be two types of fiscal effects attributable to implementation of the health and safety exception:

1. Costs to state and local governments as a result of additional curtailments needed to facilitate the health and safety exception; and
2. Savings to state and local governments that would otherwise be curtailed if they could not continue to divert by way of a health and safety exception to curtailment.

The exceptions to curtailments for minimum health and safety needs are specified in section 878.1. The exception would provide for diversion of water for minimum human health and safety needs of no more than 55 gallons per person per day.

Approach to Analysis

The underlying method used to determine the fiscal effect of the health and safety exception on state and local governments is to determine the maximum likely number of people in the affected region whose domestic and municipal use rely on: 1) surface water rather than groundwater; and 2) direct diversion of surface water rather than releases from storage.

The potentially affected population to be served by water exempted from curtailment for health and safety needs is multiplied by 55 gallons per person per day, and by 365 days, to determine the maximum possible quantity of additional water that could be subject to further curtailment to allow for this demand to continue. This amount is further reduced to reflect the ability of these surface water users to rely on alternative sources of water such as groundwater pumping. The final net additional curtailment needed to satisfy the health and safety exception is the amount of water that water right holders, who would not have otherwise been curtailed, must cease diverting to accommodate health and safety diversions under junior water rights. To determine the effect on state and local government, eWRIMS is used to determine the percent of public water agencies (i.e.,

local government agencies) that could be potentially affected by the additional curtailment. This percent is assumed to be evenly distributed amongst all water rights. The fiscal effect on state and local government is comprised of the following elements:

1. A reduction in agricultural and municipal water agency revenues from lost water sales;
2. A corresponding reduction in state and local tax revenues;
3. Loss in state and local tax revenue associated with reduced agricultural production resulting from curtailed agricultural supply; and
4. Water replacement costs to agricultural and municipal water agencies.

There is also a fiscal savings to state and local governments that can continue to use water for health and safety needs that would have been curtailed absent the health and safety exception. This fiscal savings is calculated by determining the quantity of water and the number of state and local agencies that may use the health and safety exception to continue to divert water when they would otherwise be curtailed.

The Delta watershed comprises the Sacramento River and San Joaquin River watersheds. Because of hydrologic and other differences between the Sacramento River watershed and the San Joaquin River watershed, the fiscal effects are analyzed and presented separately.

Changes in Water Requirement

Drinking water for the nearly 40 million residents of California (2020 estimate, California Department of Finance) is provided from a combination of groundwater and surface water sources. Of those, about 27 million, or two-thirds, receive a portion of their water supply from the State Water Project (DWR 2021). The Central Valley Project (CVP) delivers about 600,000 acre-feet of surface water from direct diversion or storage releases for municipal use (Reclamation 2014). Assuming an average use of 192 gallons per person per day for overall municipal use (not just residential use), the CVP serves 2.8 million residents. When curtailments are in effect, CVP and SWP water supplied to their contractors outside of the Delta watershed is likely to be from stored water, not direct diversion. In addition, most of these contractors have other sources of supply. Since these water suppliers all have access to a portfolio of options for replacement of curtailed surface water, they would likely not have a need to continue diversions pursuant to a health and safety exception. As such, the effects of the exception would fall only within the Delta watershed, and not beyond it.

It is estimated that the municipal utilities servicing residents in California obtain approximately 40% of their supply from surface water diversions during drought years

(Carle 2004). This proportion appears to be similar in the Sacramento and San Joaquin River watersheds among water providers. The population of the Sacramento River watershed is approximately 4.1 million residents, and 40% of that total is about 1.7 million persons. Based on a conservative assumption that providers of these 1.7 million residents face limited replacement options, then total health and safety curtailments of approximately 102,000 acre-feet would be the maximum required among water right holders.⁴ The population of the San Joaquin River hydrologic region is approximately 2.3 million residents (California Water Resilience Portfolio, 2020). Forty percent of 2.3 million is about 0.9 million persons. Total health and safety curtailments of approximately 57,000 acre-feet would be the maximum required among water right holders in this region.

This represents a conservative assumption because it is highly unlikely that the water rights associated with the water supplies for all of these residents would be curtailed or that all of these municipal providers would not have or be able to obtain an alternate source of supply, such as groundwater or previously stored supplies, that would obviate a need to rely on the health and safety exception to serve these minimum health and safety needs. For example, State Water Board databases indicate there are 37 water providers within the Delta watershed that are likely candidates to qualify for a health and safety exception due to a potential lack of alternative supplies. These providers serve a total of approximately 34,965 persons, compared to the 2.6 million persons assumed as one of the conservative assumptions used in this analysis.

Several other simplifying assumptions are included in this analysis because of the uncertainty regarding exactly where curtailments will occur, how many may be needed, and where any curtailment exception for health and safety purposes would be needed. This analysis is assumed to present a conservatively high estimate of the costs and savings of the health and safety exception to curtailments in the Delta watershed.

Estimates of the Distribution of Source Water for the Emergency Regulation

In order to determine the fiscal impacts of the health and safety exception, the fiscal analysis includes assumptions about the types of additional water use that are expected to be curtailed to allow for continued diversions of water for health and safety needs. The fiscal impacts of curtailments vary based on the type of use that must be curtailed, primarily between agricultural and urban uses. For the purpose of this analysis, agricultural water use is assumed to have one average value and domestic is assumed to have another.

⁴ 1.6 million residents * 55 gallons per capita * 365 days * 325,851 gallons per acre-foot = approximately 102,000 acre-feet.

To estimate the relative percentage of agricultural versus domestic and other use, and the relative percentage of state and local governments that may be affected, the analysis is based on eWRIMS data from the Delta watershed. Agricultural irrigation use represents approximately 87 percent of water diverted from the watershed, with domestic and other uses accounting for the remaining 13 percent. Of the water used for agriculture, 94 percent was provided by public agencies (e.g., irrigation districts) with the remaining 6 percent being provided by private entities. Of the water used for domestic and other uses, 93 percent was provided by public agencies (e.g., municipalities) with the remaining 7 percent being provided by private entities. Based on these percentages, the 102 TAF maximum curtailment in the Sacramento River watershed is assumed to be comprised of 83 TAF of agricultural, 12 TAF of municipal (that are not otherwise accruing the benefit of health and safety diversions under these regulations), and 6 TAF of various private diverters (see Table 1). Similarly, the 57 TAF maximum curtailment in the San Joaquin River watershed would be comprised of 46 TAF of agricultural, 7 TAF of municipal, and 3 TAF of private diverters.

Table 1. Assumed maximum curtailment required from diverters for health and safety exception (acre-feet).

	Sacramento River Watershed	San Joaquin River Watershed
Maximum Curtailment	101,899	56,679
Agricultural – public	83,333	46,352
Municipal – public	12,320	6,853
Private diverters	6,246	3,474

Changes in Quantity of Water Available for Sale by Public Agencies

Reductions in surface water available for diverters being curtailed as a result of the emergency regulation would likely be offset to some extent by increased groundwater pumping and water purchases (short-term leases). The net loss in water available for sale by public agencies is the amount of curtailed water they cannot replace in this fashion.

The time required to construct new wells is generally greater than the timeframe for the emergency regulations, but pumping from existing wells will likely be increased to replace a portion of the supplies reduced by curtailments. As not all affected water right holders will have access to additional groundwater pumping, however, only a portion of the curtailed water can be replaced by additional pumping. In addition, the Sustainable Groundwater Management Act (SGMA) may result in restrictions on the amount of replacement groundwater available. Agriculture is more likely to respond to curtailments

with groundwater replacement pumping and fallowing, while municipal and urban areas tend to have more capacity to trade water and to implement short term conservation.

A 2015 UC Davis report (Howitt et al., 2015) on the economic effects of the drought contained an analysis and projection of the amount of replacement groundwater by region that would likely be used by agriculture, based on groundwater pumping records and interviews with irrigation districts. The report estimated that 52 percent in the Sacramento River watershed and 76 percent in the San Joaquin River watershed of curtailed surface water would be replaced by additional groundwater pumping. Although drought conditions in 2015 were somewhat different than current conditions, there are enough similarities to use these projections for estimates. One key difference from 2015, however, is the implementation of SGMA, which may result in less groundwater replacement in many locations and overall. This suggests that the use of the estimates from the 2015 UC Davis report would be high and may overstate contemporary groundwater replacement levels for agriculture.

Previous analyses (e.g., 2014 emergency regulations) have estimated that only 20 percent of public agricultural supply can be replaced by groundwater pumping during the curtailment period. This modest level of replacement has the effect of greater reduction in overall water supply, reduced agricultural production, and smaller sales of irrigation district water to growers. For the remainder of this analysis, a range of costs is presented that represents the range between high and low levels of replacement water assumptions.

Municipal groundwater replacement rates are assumed to range from 40 to 50 percent in the Sacramento River watershed, and 20 to 50 percent in the San Joaquin River watershed. In the latter case, the lower bound rate (20 percent) is used to account for the larger presence of critically dry groundwater basins. Municipalities are also anticipated to implement voluntary (or possibly mandatory) conservation measures that are consistent with their Urban Water Management Plans and past responses to drought conditions. For this analysis, it is assumed that 20 percent of their surface water supply curtailment would be absorbed by water conservation and would not need to be replaced, a target similar to the drought in 2015 (PPIC, 2015, p. 8).

Water transfers and leases between agricultural districts and growers, among municipalities, and between agriculture and municipal providers, are serving an increasingly prominent role in the Central Valley. It is assumed that 5 percent of agricultural supply and 10 percent of municipal supply reductions can be replaced by additional purchases or water transfers (personal comm., Medellin-Azuara 2014). These replacement percentages are generally consistent with recent historic levels of water transfers during past periods of drought.

Tables 2 and 3 provide a summary of the net reductions, in AF, of water supply available for public agricultural and municipal water agencies being curtailed and the amount available for municipal agencies under the health and safety exception. This does not include net reductions in supply for private diversions.

Table 2. Agricultural Agency and Irrigation Districts Net Curtailment (Acre-Feet)

	Sacramento River Watershed	San Joaquin River Watershed
Surface Water Supply Curtailment (Maximum) (AF)	83,000	46,000
Groundwater Replacement (Range of %)	20%–52%	20%–76%
Water Transfer and Leases	5%	5%
Net Reduction (AF)	62,250–35,719	34,500–8,700

Table 3. Municipal Water Provider Net Curtailment (Acre-Feet)

	Sacramento River Watershed	San Joaquin River Watershed
Surface Water Supply Curtailment (Maximum) (AF)	12,000	7,000
Conservation	20%	20%
Groundwater Replacement (Range of %)	40%–50%	20%–50%
Water Transfer and Leases	10%	10%
Net Reduction (AF)	3,600–2,400	1,400–3,500

As shown in Table 2, the volume of groundwater replacement that may take place has a significant effect on the net reduction in overall water supply for agricultural producers. A similar circumstance is evident for municipal providers, as shown in Table 3. As water diversions that would otherwise have been curtailed continue, further curtailments will be required of additional agricultural and municipal public agencies, and to the extent water made unavailable by these further curtailments can be replaced by those agencies, there is an effective net increase in the total amount of water available to public agencies across the state and a net decrease in water available to agricultural water agencies. In effect, water is being curtailed from diverters who do not have a health and safety need, to the benefit of municipal agencies that have no ability to find alternative sources for those minimum amounts necessary to serve those health and safety uses. Also, and strictly from the perspective of public agencies, the curtailment of

private diversions pursuant to these regulations would have the effect of increasing water available for public agencies (see Table 4).

Table 4. Net Change in Water Available for Public Agencies (Thousand Acre-Feet)

	Sacramento River Watershed		San Joaquin River Watershed	
	Low*	High*	Low*	High*
Health and Safety Exception	102	102	57	57
Agricultural Agency	-62	-36	-35	-9
Municipal	-4	-2	-4	-1
Net Change in Water Supply	36	64	19	47

* “Low” versus “high” extent of groundwater replacement for curtailed surface water (see Tables 2 and 3).

Fiscal Impacts to Public Water Supply Agencies

Fiscal impacts to both public agricultural and urban water agencies are assumed to result primarily from changes in water sale revenues and increased water replacement and conservation costs. These are calculated below by applying unit sales and cost values to the supply change estimates developed above.

Change in State and Local Agency Water Sale Revenues

Estimates of the price of water charged by public agricultural and municipal water supply agencies were developed after an informal review of agency rates and previously developed public information. These prices are then applied to the net change in water available for sale as calculated and presented above in Table 4. This provides an estimate of the total associated change in revenue to these agencies. Table 5 presents the estimated change as ranges based on extent of groundwater replacement. The results indicate that there is a greater reduction in water sales revenues to agricultural and municipal agencies associated with lower groundwater replacement. However, when accounting for the health and safety exception to curtailment, the net effect for public agencies as a whole is positive.

Table 5. Net Change in Public Agency Water Sales Revenues (\$ million)

	Rate (\$ per AF	Sacramento River Watershed		San Joaquin River Watershed	
		Low*	High*	Low*	High*
Health and Safety Exception	\$850	\$86.7	\$86.7	\$48.5	\$48.5
Agricultural Agency	\$50	-\$3.1	-\$1.8	-\$1.7	-\$0.4
Municipal	\$850	-\$3.1	-\$2.0	-\$3.0	-\$1.2
Net Change in Revenues		\$80.5	\$82.9	\$43.8	\$46.8

* “Low” versus “high” extent of groundwater replacement for curtailed surface water (see Tables 2 and 3).

Increased Public Agency Water Supply Replacement and Conservation Costs

State and local agricultural and municipal agencies affected by curtailments pursuant to the proposed regulation are anticipated to pump groundwater and purchase additional supplies to replace a portion of their reduced surface water supplies. These agencies will also likely need to implement conservation and enforcement measures to address the shortages that remain after obtaining such replacement water.

The cost of replacing curtailed surface water diversions with groundwater will be primarily the energy costs associated with the additional pumping. Based on prevailing energy rates and groundwater depth and other information contained in the SWAP⁵ agricultural economics model, an average of \$84 per acre-foot of additional cost is assumed for replacement water obtained in this manner. The cost of leasing replacement surface water from willing sellers is assumed to be \$500 per acre-foot in the Sacramento River watershed and \$600 per acre-foot in the San Joaquin River watershed.

Public agencies are also anticipated to incur costs associated with conservation and enforcement measures needed to address the overall shortage of water available for use in their service areas. The costs of implementing these measures are estimated to be \$30 per acre-foot and \$165 per acre-foot for the shortage amounts within the public agricultural and municipal water agency service areas respectively (pers comm., Medellin-Azuara 2014).

⁵ SWAP (Statewide Agricultural Production Model (SWAP, Howitt et al. 2012)

Table 6. Net Change in Public Agency Water Sales Revenues (\$ million)

	Rate (\$ per AF	Sacramento River Watershed		San Joaquin River Watershed	
		Low*	High*	Low*	High*
<u>Agriculture</u>					
Additional Groundwater Pumping	\$84	\$1.4	\$3.6	\$0.8	\$2.9
Water Transfers	\$500– \$600	\$2.1	\$2.1	\$1.4	\$1.4
Conservation and Enforcement	\$30	\$1.9	\$1.1	\$1.0	\$0.3
<u>Municipal</u>					
Additional Groundwater Pumping	\$84	\$0.4	\$0.5	\$0.1	\$0.3
Water Transfers	\$500– \$600	\$0.6	\$0.6	\$0.4	\$0.4
Conservation and Enforcement	\$165	\$0.6	\$0.4	\$0.6	\$0.2
Net Change in Revenues		\$6.9	\$8.3	\$4.3	\$5.5

* “Low” versus “high” extent of groundwater replacement for curtailed surface water (see Tables 2 and 3).

Total Fiscal Impact to Public Water Supply Agencies

The total maximum fiscal impact to public agricultural and municipal water supply agencies (e.g., irrigation districts and municipalities) resulting from both decreased water sales and increased replacement and conservation costs are summarized in Table 7. The subset of municipal water providers granted a health and safety exception, will receive a savings which, as a whole, is larger than the additional costs incurred by other water providers. In addition, there is a net effect of a transfer or redistribution of impacts from agriculture to municipalities. Finally, it should be emphasized that these impacts represent the maximum potential impact, and the actual impact may be far less if fewer municipal water agencies require continued diversions to meet minimum health and safety needs, notwithstanding curtailment, than are assumed in this analysis.

Table 7. Total Fiscal Impact on Public Water Supply Agencies (\$ million)

	Sacramento River Watershed		San Joaquin River Watershed	
	Low*	High*	Low*	High*
Municipal Water Providers	\$88.8	\$87.6	\$50.4	\$48.5
Agricultural Agencies	-\$6.6	-\$7.5	-\$3.9	-\$4.8
Net Change in Revenues	\$82.2	\$80.2	\$46.5	\$43.8

* “Low” versus “high” extent of groundwater replacement for curtailed surface water (see Tables 2 and 3).

Changes to State and Local Government Tax Revenues

Changes to government tax revenues would be expected due to increased public agency water sales and reduced agricultural production sales (revenue) resulting from the curtailments associated with these emergency regulations.

Tax Revenue Impacts from Changed Public Agency Water Sales

Increased overall water sales by public water agencies as described above will result in higher associated government income tax revenues. An estimated tax rate was applied to the increased public agency revenues to determine the corresponding impact on government income tax revenues. An average tax rate of \$99 per \$1,000 was estimated using an IMPLAN⁶ model for the region. This is an estimate of the impact primarily on income taxes collected by state government and local governments; however, it does not include a breakdown of these two categories or consider indirect and induced economic effects.

Table 8 provides a summary of impacts on tax revenues from changes in sales by municipal water providers and agricultural agencies. For municipal providers, the change results from *increased* sales of water by suppliers to meet minimum health and safety needs as compared to if those suppliers’ right to continue diversions were curtailed, and decreased sales for those not utilizing the exception. Agricultural agencies would experience decreased sales. Overall, the exception would lead to an increase in state and local tax revenues.

⁶ Economic impact analysis software - IMPLAN (<http://www.implan.com>).

Table 8. Net Change in Tax Revenues due to Changes in Agency Sales Revenues (\$ million)

	Tax rate	Sacramento River Watershed		San Joaquin River Watershed	
		Low*	High*	Low*	High*
Change in Exempted Agency Sales		\$86.7	\$86.7	\$48.5	\$48.5
Change in Curtailed Municipal Provider Sales		-\$3.1	-\$2.0	-\$3.0	-\$1.2
Change in Agricultural Agency Sales		-\$3.1	-\$1.8	-\$1.7	-\$0.4
Applicable tax rate	10%				
Net Change in Tax Revenues		\$8.1	\$8.3	\$4.4	\$4.7

* “Low” versus “high” extent of groundwater replacement for curtailed surface water (see Tables 2 and 3).

Tax Revenue Impacts from Reduced Agricultural Production

Agricultural production sales revenue by growers would be negatively affected as irrigation surface water supplies are reduced by further curtailments than would occur without the minimum health and safety needs exception. Reduced agricultural production in turn would reduce associated income tax revenues. An analysis of the impact of curtailments on agricultural gross revenue was performed by multiplying an estimate of the amount of agricultural revenue generated per acre-foot of applied water by the total amount (from both public and private sources) of irrigation water reduced as a result of further curtailments than would occur without the minimum health and safety needs exception. The estimate of revenue per acre-foot of applied water was developed by calculating a weighted average of cropping patterns and acreage, irrigation water requirement, and revenue per acre across SWAP model geographic units covering the Sacramento River watershed and San Joaquin River watershed, respectively. The product gross revenue per acre-foot in the Sacramento River watershed is estimated at approximately \$1,200 per acre-foot, and approximately \$1,500 per acre-foot in the San Joaquin River watershed. Revenue per acre-foot of applied water varies throughout the region, and an average value provides a reasonable, if conservative, estimate that assumes curtailment affects all irrigated lands equally. This estimate likely overstates impacts as it does not factor in the likelihood that farmers can be expected to fallow lower revenue crops first as water becomes more scarce, or that water transfer activity may increase in drought conditions. In either case, lower revenue crops may predominate any acreage decrease, making the impact smaller. The same income tax

rate developed above is then applied to this reduction in agricultural production to estimate the associated impact to income tax revenues. Table 9 provides a summary of the impact (decrease) on state and local tax revenues in the Sacramento River watershed and San Joaquin River watershed.

Table 9. Change in Tax Revenue as a Result of Reduced Agricultural Production (\$ million)

	Sacramento River Watershed		San Joaquin River Watershed	
	Low*	High*	Low*	High*
Change in Irrigation Supply (TAF)	-62	-36	-35	-9
Product Gross Revenue (\$) per acre-foot	\$1,200	\$1,200	\$1,500	\$1,500
Change in Agricultural Production Sales (\$ million)	-\$74.7	-\$42.9	-\$51.8	-\$13.1
Net Change in Tax Revenues @ 10% (\$ million)	-\$7.5	-\$4.3	-\$5.2	-\$1.3

* “Low” versus “high” extent of groundwater replacement for curtailed surface water (see Tables 2 and 3).

Total Tax Revenue Impacts for State and Local Governments

The total impact on income tax revenues resulting from both increased public agency water sales and reduced agricultural production are summarized in Table 10. This is an estimate of impacts mainly on income taxes collected by the state and local governments. This represents an upper bound tax revenue impact based on the curtailment estimates presented in this analysis, with actual impacts likely being less depending on actual curtailments. Also, fiscal support to local agencies from the state could in turn be affected, but such tax and funding relationships between the state and numerous local agencies are difficult to characterize and cannot be readily estimated. The proposed regulations are not anticipated to result in costs or savings in federal funding to the State.

Table 10. Total Tax Revenue Impacts for State and Local Governments (\$ million)

	Sacramento River Watershed		San Joaquin River Watershed	
	Low*	High*	Low*	High*
Due to Changes in Public Agency Sales Revenues (\$ million)	\$8.1	\$8.3	\$4.4	\$4.7
Due to Reduced Agricultural Product Sales (\$ millions)	-\$7.5	-\$4.3	-\$5.2	-\$1.3
Net Change in Tax Revenues	\$0.6	\$4.0	-\$0.8	\$3.4

* “Low” versus “high” extent of groundwater replacement for curtailed surface water (see Tables 2 and 3)

Fiscal Effect on State Government and Local Government

The fiscal impacts presented in this report reflect the combined totals for all state and local governments. In this section, the impacts are separated for those affecting state agencies and state government in aggregate from those affecting local governments and district agencies. There is limited information about which agencies will be affected in what manner, so simplifying assumptions are made to determine impacts in the two categories of government. For this analysis only the upper bound estimate of costs is provided, which represents the maximum cost to state and local governments. Costs are included for the two reporting requirements and four categories affected by the health and safety exception.

As noted above, there are approximately 45 state and 504 local and district/agency water rights in the two watersheds with total authorized face value or recent annual reported diversion amount of one TAF or greater. State agencies therefore represent about 8 percent of these water rights and local agencies the remaining 92 percent. Applying these percentages to the certification reporting cost means that state government costs are an estimated \$36,400 and local government costs are \$418,600. For the monthly reporting cost, applying the same percentages means that state costs are an estimated \$892,000 and local governments costs are approximately \$10,253,000 (see Table 11).

A reduction in water sales revenues to agricultural and municipal water agencies is disaggregated according to the same share of state versus local water rights. Water

replacement and conservation enforcement costs are distributed to state and local governments by the same procedure. These reduction in revenues and costs, respectively, are also shown in Table 11.

Government tax revenues are also affected by changes in water sales and by reductions in tax revenues associated with foregone agricultural product sales. To estimate the allocation of tax revenues, tax rates reported from the California Department of Tax and Fee Administration are used. California's sales tax rate is 7.25 percent; local taxing districts can apply an additional tax of 0.1 to 1.0 percent (CDTFA, 2021). For this analysis, a 0.5 percent local tax rate is assumed. As such, state tax revenues represent approximately 94 percent of all tax collected, and local districts receive the remaining 6 percent.⁷ These shares of tax revenue are applied to (1) reduction in water sales and (2) reduction in agricultural product sales.

In summary, Table 11 presents the upper bound fiscal impact to state and local government, or \$47.4 million, for reporting and for the health and safety exception. This is distributed as \$15.6 million to state government and \$31.8 million to local governments.

The health and safety exception provides a savings to those agencies that apply and are approved. The savings resides in their ability to continue to divert water, and to receive revenues associated with the water sales. Stated another way, the health and safety exception allows more water to be sold by participating agencies than they would otherwise sell, absent the exception. It is assumed that all agencies seeking the exception would be local districts, and that none are state agencies, so the savings would accrue entirely to local government. State and local tax revenues associated with these water sales would be distributed using the same tax assumptions listed as above. As shown in Table 11, the savings to state government is up to \$12.7 million, and the savings to local government is up to \$136.0 million.

Net savings to each of state and local government can be calculated by subtracting costs from savings in each category. The bottom of Table 11 shows that the cost to state government exceeds the savings by \$2.9 million; that is, the fiscal impact to state government of the emergency regulation is a cost of \$2.9 million.

The fiscal impact to local government is a net savings of \$104.1 million, or the amount saved from the health and safety exception exceed the costs to local governments as a whole associated with the emergency regulation.

⁷ State share of tax = $7.25\% / (7.25 + 0.5)$, or 94 percent.

Table 11. Fiscal Impact Summary for State Government and Local Governments

Category of Impact	Upper Bound	State Government	Local Government
<i>Costs</i>			
Certification Form	\$455,000	\$36,400	\$418,600
Monthly Reporting	\$11,144,000	\$892,000	\$10,253,000
<i>Subtotal - Reporting</i>	<i>\$11,599,700</i>	<i>\$928,400</i>	<i>\$10,671,600</i>
Reduced water sales by water districts	\$10,870,000	\$869,600	\$10,000,400
Tax revenue reduction due to change in water sales	\$1,090,000	\$1,024,600	\$65,400
Tax revenue reduction due to change in agricultural production	\$12,650,000	\$11,891,000	\$759,000
Replacement water cost & conservation / enforcement	\$11,230,000	\$898,400	\$10,331,600
<i>Subtotal – Health and Safety Exception</i>	<i>\$35,840,000</i>	<i>\$14,683,600</i>	<i>\$21,156,400</i>
TOTAL COSTS	\$47,439,700	\$15,612,000	\$31,828,000
<i>Savings</i>			
Agency water sales attributed to health and safety exception	\$135,150,000	\$0	\$135,150,000
State & local tax revenues	\$13,520,000	\$12,708,800	\$811,200
TOTAL SAVINGS	\$148,670,000	\$12,708,800	\$135,961,200
SAVINGS MINUS COSTS	\$101,230,300	-\$2,903,200	\$104,133,200

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