STATE OF CALIFORNIA — DEPARTMENT OF FINANCE

ECONOMIC AND FISCAL IMPACT STATEMENT (REGULATIONS AND ORDERS)

STD. 399 (REV. 12/2013)

ECONOMIC IMPACT STATEMENT

DEPARTMENT NAME	CONTACT PERSON	EMAIL ADDRESS	TELEPHONE NUMBER
State Water Resources Control Board	Mark Gowdy	mark.gowdy@waterboards.ca.gov	916-341-5432

DESCRIPTIVE TITLE FROM NOTICE REGISTER OR FORM 400	NOTICE FILE NUMBER
Curtailment of Diversions Due to Insufficient Flow for Senior Water Rights	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:

- ☐ a. Impacts business and/or employees
- ☐ b. Impacts small businesses
- ☐ c. Impacts jobs or occupations
- ☐ d. Impacts California competitiveness
- ☐ e. Imposes reporting requirements
- ☐ f. Imposes prescriptive instead of performance
- ☐ g. Impacts individuals
- ☐ h. None of the above (Explain below): _____

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

- ☐ 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: _____

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: _____

ECONOMIC IMPACT STATEMENT (CONTINUED)

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 through12 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: _____

STATE OF CALIFORNIA — DEPARTMENT OF FINANCE

ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)

STD. 399 (REV. 12/2013)

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 state mandate as regulations are generally applicable. Increased costs of approximately $318,000 for curtailed water agencies.

STATE OF CALIFORNIA — DEPARTMENT OF FINANCE

ECONOMIC AND FISCAL IMPACT STATEMENT
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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)

$ _____

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 _____

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	DATE
[signature]	7/3/14

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	DATE
[signature]	7/8/14

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

Appendix 10: Public Agency and Government Fiscal Impact Analysis

Summary

This cost estimate considers the fiscal effect of the proposed regulation both with and without inclusion of the exception to priority-based curtailments for public health and safety contained in California Code of Regulations, title 23, section 878.1. On June 2, 2014, the Office of Administrative Law approved California Code of Regulations, title 23, division 3, chapter 2, article 24, Curtailment of Diversions Based on Insufficient Flow to Meet All Needs. This article includes section 878.1, which identifies certain limited minimum health and safety needs that may be authorized notwithstanding the need for curtailment and declaring use under even more senior water rights to be a waste and unreasonable use when those minimum health and safety needs cannot be met. Section 878.1 also sets out a process for diverters issued curtailment notices under article 24 to avail themselves of the protection from curtailment under that section. This analysis therefore considers the fiscal effects of: 1) the proposed regulations, notwithstanding the inclusion, or not, of a health and safety exception; and 2) including the health and safety exception

Fiscal Effect without Section 878.1

Without the minimum health and safety needs exception contained in section 878.1, the only fiscal effect of the proposed regulation is the cost that would be incurred by local and state governments to complete and submit curtailment certification forms. 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 just the same. State and local governments are not required to respond to the request for reporting in curtailment notices issued under the Board's current authorities. The State Water Board estimates that the cost to state and local agencies and governments to complete and submit curtailment certification forms will be approximately $320,000. The proposed regulations are not anticipated to have a financial impact on state agencies or school districts or to result in costs or savings in federal funding to the State.

Fiscal effect with the health and safety exception (Section 878.1)

The fiscal effect on state and local government that will result from additional curtailments that result from allowing exemptions for health and safety, e.g. curtailments affecting more senior water rights is decreased revenue and increased costs totaling $ 19.1 million. This consists of reduction in agricultural and municipal water agency revenues from lost water sales of $7.9 million and a corresponding reduction in state and local tax revenues of $0.8 million. There will be additional loss in state and local tax revenue of $3.6 million associated with reduced agricultural productions resulting from curtailed agricultural supply. Agricultural and municipal water agencies will also incur water replacement costs of $6.8 million.

The fiscal effect on state and local government that will result from these government agencies being able to continue to divert a quantity of water by relying upon a health and safety exemption is a net benefit of $102.9 million. This consists of: 1) $93.5 million reduction in decreases of water agency

revenue; and 2) a $9.4 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 exemption.

Analysis of Fiscal Effects without Section 878.1

The proposed regulation requires only one obligation, or cost, to a diverter that does not already exist under the State Water Resources Control Board's (State Water Board or Board) existing process for curtailment. Currently, the Board has issued curtailment notices that direct the curtailed diverters to complete a certification form to confirm compliance with the curtailment notice (certification form). Because these curtailment notices are not Board orders, there is no mandate requiring that the diverters submit the certification forms to the State Water Board or otherwise file information with the Board regarding compliance with the curtailment. The proposed regulation requires diverters who receive orders of curtailment to complete and submit the certification form. Filling out this form is the only additional burden to public agencies associated with the emergency regulations. The curtailments themselves (and associated costs to diverters) are already part of the existing prohibition against unlawful diversion and associated Board authority.

To conservatively estimate the cost of the proposed regulation 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 California having a water right record and multiplied that number by an estimated average time to complete a simple online certification form multiplied by an average staff cost per hour.

The estimated costs associated with the proposed regulation are based on a worst case scenario that all water rights within the state will ultimately be included in a curtailment. Based on information compiled from the State Water Board eWRIMS database, there are approximately 2,446 water rights owned by the state or local government agencies (7.1% of all adjudicated, appropriated and riparian water rights) that could be affected by a curtailment. The estimated maximum amount of time to complete the required certification form as a result of the proposed regulation is 2 hours per water right. The estimated average total hourly staff costs of state and local government agency staff required to complete the certification form is $65 per hour or $130 per certification form. Therefore, the total maximum costs to state and local government agencies as a result of the proposed regulation is $317,980 (2,446 total water rights owned by state and local government agencies multiplied by the $130 cost per certification form).

Although it is projected that more curtailments will be necessary, the total number of water rights curtailed will likely be a small percentage of the total number of water rights owned by state or local government agencies throughout California. Therefore, the total costs to state and local government agencies will likely be much less than the maximum estimated cost.

Analysis of Fiscal Effects with Section 878.1

The proposed emergency regulations specify that section 878.1 does not apply to proposed section 875. This section of the fiscal analysis presents the methods used to estimate the fiscal effects on state and local government that could result if the State Water Board decides to modify the proposed emergency regulations to include exceptions to curtailments for minimum health and safety needs described in section 878.1 of title 23 of the California Code of Regulations. Accordingly, the fiscal effects described in this section would only be added to those described above for reporting in the event that the State Water Board decides to modify the proposed emergency regulations.

The State Water Board's current curtailment notices do not include a specific exception to curtailments for minimum health and safety needs. However, the State Water Board does have enforcement discretion that it could employ to achieve similar results. This fiscal effects analysis conservatively assumes that exceptions to curtailments for minimum health and safety needs would only be made under the regulation, and not through the exercise of enforcement discretion. To the extent that these exceptions would be applied under the State Water Board's existing curtailment methods, the fiscal effects would be less. 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 to a curtailment. Continued diversions under 878.1 would 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 inclusion of a health and safety exemption:

1) Costs to state and local governments as a result of additional curtailments needed to facilitate the health and safety exemption; and
2) Benefits to state and local governments that would otherwise be curtailed if they could not continue to divert under a health and safety exemption.

The exceptions to curtailments for minimum health and safety needs are specified in section 878.1. The principal exception is for diversion of water for municipal and domestic use of no more than 50 gallons per person per day. The exception also includes other categories of health and safety water use that may be approved by the State Water Board. However, it is anticipated that these uses would be minimal and that the conservative assumptions used for the analysis of the fiscal effects of the municipal and domestic exceptions will encompass the quantity of water excepted from curtailment, and therefore the fiscal effect of the other categories of minimum health and safety uses that may be approved by the State Water Board. Accordingly, the following analysis is based on a conservative (assuming more exceptions will be made than likely will) assumption of the amount of exceptions to curtailments that will be made for health and safety purposes for minimum municipal and domestic uses.

The overall method used to determine the negative fiscal effect of the health and safety exemption (cots) on state and local governments is to determine the maximum likely number of people statewide who's domestic and municipal use rely on: 1) surface water rather than groundwater; 2) on direct diversion of surface water rather than releases from storage. This subset of the California population is

multiplied by 50 gallons per person per day, and again by 270 days, to determine the maximum possible quantity of additional curtailments that could be needed to meet the demand of these water users if they are all exempted from curtailment. 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 this health and safety exemption means that water rights holders that would not have been curtailed absent the health and safety exemption will now be curtailed. To determine the effect on state and local government, EWRIMS is used to determine the percent of public water agencies, versus private, that could be potentially affected by the additional curtailment. This percent is assumed to be evenly distributed amongst all water rights. Finally 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 productions resulting from curtailed agricultural supply; and 4) water replacement costs to agricultural and municipal water agencies.

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

Drinking water for the nearly 37 million residents of California (as of the 2010 U.S. census) is provided from a combination of groundwater and surface water sources. Of those, 25 million receive a portion of their water supply from the State Water Project (DWR 2014). The Central Valley Project (CVP) delivers about 600,000 acre-feet of surface water from direct diversion or storage releases for municipal use (USBR 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. The San Francisco Public Utilities District serves 2.6 million customers (including commercial and industrial), and gets most of its water from surface water sources mainly from the Tuolumne River (SFPUC 2014). These water suppliers all have adequate storage in their reservoirs such that curtailment of other diversions is not be needed to deliver a minimum health and safety amount for residential users of 50 gallons per person per day over the 270 day term of the emergency regulation. While these users do not get all of their water supplies from the above sources, in an emergency situation, it is assumed that those that require additional supplies could get those supplies from the various projects and would not require a health and safety exception under section 878.1. In the 2014 Drought Operations Plan for the SWP and CVP, it was estimated there is enough stored water to meet human health and safety needs through 2015 (DWR, USBR 2014). This leaves 6.6 million California residents that rely upon other sources of water for health and safety.

It is estimated that the municipal utilities servicing the remaining 6.6 million residents in California obtain about 40% of their supply from surface water diversions during drought years (Carle 2004). So for the approximately 2.6 million residents relying on surface water diversions for drinking water, and assuming conservatively that the water rights under which the 2.6 million remaining residents are served are curtailed, and that there are no other alternative sources or stored water available, at 50

gallons per day per person over the 270 day duration of the emergency regulations, curtailments of approximately 110,000 acre-feet would be required. This represents a very 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 users would not have or be able to obtain an alternate source of supply, such as groundwater or storage supplies, that could not be used instead of using the health and safety exception for these supplies. There are a number of other simplifying assumptions included in this analysis because of the uncertainty regarding exactly where curtailments will occur, how many may be needed, and how any curtailment exception for health and safety purposes would be needed and where. This analysis is assumed to present a conservatively high estimate of the impacts and benefits of section 878.1 if it is applied to the proposed emergency regulation.

Estimates of the Relative Percentage of Agricultural vs. Domestic and Other Uses and Public vs. Private Diversions that May be Affected by the Emergency Regulation

In order to determine the fiscal impacts of potentially including the health and safety exception in the emergency regulation, the fiscal analysis includes assumptions about the types of additional water use that will to be curtailed to make water available 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. In addition, pursuant to statutory and regulatory requirements, the State Water Board only needs to complete a fiscal analysis of the effects of the regulation on state and local governments. For the purpose of this gross analysis, agricultural water use is assumed to have one average value and domestic is assumed to have another. The values vary depending on a number of factors, but there is too much uncertainty about the specific circumstances of curtailments and potential health and safety exceptions to provide a more definitive estimate.

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 Sacramento-San Joaquin Delta (Delta). The Delta watershed is appropriate for this analysis as that watershed encompasses a large portion of agricultural and municipal use in the state. Based on data from 2012 statements of water diversion and use for water rights in the Delta watershed, agricultural irrigation use represented 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 110 thousand acre-feet (taf) maximum amount of water that would be curtailed so that water is available to satisfy the minimum health and safety needs as provided by these regulations is assumed to be comprised of 90 taf of agricultural, 13 taf of municipal (that are not otherwise accruing the benefit of health and safety diversions under these regulations), and 7 taf of various private diverters.

Changes in Water Available For Sale by Public Agencies

Reductions in water available for diverters being curtailed, however, would likely then be offset by some level of groundwater pumping and water purchases. 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. Agriculture is more likely to respond to curtailments with groundwater replacement pumping and fallowing, while municipal and urban areas have more capacity to trade water and to implement short term conservation (pers comm Medellin-Azuara 2014).

It is estimated that 20 percent of public agricultural supply and 50 percent of municipal supply reductions can be replaced by groundwater pumping during the curtailment period. It is also estimated that 5 percent of agricultural supply and 10 percent of municipal supply reductions can be replaced by additional purchases or water transfers. These replacement percentages are applied in the table below to the range of maximum overall curtailment amounts to provide an estimate of the net reduction in water available for sale and distribution by public agencies (pers comm Medellin-Azuara 2014).

The tables below summarize the net reductions, in taf, 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 exemption. This does not include net reductions of 7 taf in supply for private diversions.

Agricultural Agency Curtailments	%	(TAF)
Surface Water Supply Curtailment:		(90)
Groundwater Replacement:	20%	18
Water Purchase Replacement:	5%	4
Net Reduction (TAF):		(67)
(negative = reduction in volume)		

Municipal Agency Net Reductions	%	(TAF)
Surface Water Supply Curtailment:		(13)
Groundwater Replacement:	50%	7
Water Purchases:	10%	1
Net Reduction (TAF):		(5)
(negative = reduction in volume)		

As curtailed water from one set of agricultural and municipal public agencies is made available to municipal suppliers through the health and safety exception in the emergency regulation, and to the

extent this curtailed water can be replaced by those agencies, there is an effective net increase in the total amount of water available by public agencies across the state and a net decrease in water available to agricultural water agencies. In effect, water is being curtailed from diverters that do not have a health and safety exception, to municipal agencies that by definition under section 878.1 have no ability to find alternative sources. Also, 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.

Net Change in Water Available for Public Agencies	(TAF)
Health & Safety Exemption:	110
Agricultural Agency Net Reductions:	(67)
Municipal Agency Net Reductions:	(5)
Net Change:	37
(negative = reduction in volume)	

Reduction in Overall Water Available for Agricultural or Municipal Use

In addition to the replacement of curtailed water by public agricultural water agencies described above, there will likely also be an increase in groundwater pumping by farmers from privately owned wells. It is estimated that about 40 percent of overall supply reductions resulting from agricultural curtailments will be replaced by farmers in this fashion. This additional 40 percent supply will reduce the net shortage to public agricultural water users to about 35 of the total amount of agricultural water curtailed, or 31.5 TAF. Conservation and enforcement measures by public agricultural water agencies will need to be implemented to address these shortages and are discussed further in the section below.

It is estimated that urban water agencies will replace 60 percent of curtailed water supply (50 percent by additional groundwater pumping and 10 percent by water purchases) as described above, but generally they, or the customers they serve, will not have the option to obtain additional water from private wells. So this leaves a net shortage for municipal use of about 40 percent of the total amount of municipal water curtailed, or 5 TAF. Such shortages will need to be addressed through conservation and enforcement measures implemented by these agencies and are discussed further in the section below.

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 urban water supply agencies were developed after an informal review by economists at University of California, Davis of publicly available information (pers comm Medellin-Azuara 2014). These prices are then applied in the table below to the net change in water available for sale as calculated in section 2.3 above. This provides an estimate of the total associated change in revenue to these agencies.

Health & Safety Exemption Increases			
Quantity of Diversion (TAF):	110		
$/ac.-ft.:	850	$	93,500,000
Agricultural Agency Net Reductions			
Quantity of Diversion (TAF):	(67)		
$/ac.-ft.:	50	$	(3,362,659)
Municipal Water Agency Net Reductions			
Quantity of Diversion (TAF):	(5)		
$/ac.-ft.:	850	$	(4,502,212)
Subtotal Change in Water Sale Revenues:		**$**	**85,635,129**
(negative = decreased revenue)			

Increased Public Agency Water Supply Replacement and Conservation Costs

As estimated in section 2.3, State and local agricultural and municipal agencies affected by curtailments pursuant to the proposed regulation are expected 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 SWAP[1] model, an average of $84 per acre-foot of additional cost is estimated for replacement water obtained in this manner. The cost of purchasing replacement surface water (i.e. transfers) is estimated to be $500 per acre-foot. These costs are considered to apply the same for both agricultural and municipal agencies (pers comm Medellin-Azuara 2014).

In addition to the water replacement costs described above, public agencies are expected to incur costs associated with conservation and enforcement measures needed to address the overall shortage of water available for use in their service areas as described in above. 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).

[1] SWAP (Statewide Agricultural Production Model (SWAP, Howitt et al. 2012)

Agricultural Supply Replacement and Conservation

Groundwater Pumping Costs			
Quantity of Replacement (TAF):	18		
$/ac.-ft.:	84	$	(1,506,471)
Water Purchase Costs			
Quantity of Replacement (TAF):	4		
$/ac.-ft.:	500	$	(2,241,773)
Conservation/Enforcement Costs			
Demand Reduction (% curtailment)	35%		
Quantity of Curtailment (TAF):	90		
$/ac.-ft. for Conservation	30	$	(941,544)
Subtotal Irrigation Replace/Conserve Costs:		**$**	**(4,689,788)**
(negative = increased cost)			

Municipal Supply Replacement and Conservation

Groundwater Pumping Costs			
Quantity of Replacement (TAF):	7		
$/ac.-ft.:	84	$	(556,156)
Water Purchase Costs			
Quantity of Replacement (TAF):	1		
$/ac.-ft.:	500	$	(662,090)
Conservation/Enforcement Costs			
Demand Reduction (% curtailment)	40%		
Quantity of Curtailment (TAF):	13		
$/ac.-ft. for Conservation	165	$	(873,959)
Subtotal Municipal Replace/Conserve Costs:		**$**	**(2,092,204)**
(negative = increased cost)			

Total Fiscal Impact to Public Water Supply Agencies

The total 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 below:

	Fiscal Impact $
Municipal Agencies:	$ 86,905,584
Agricultural Agencies:	$ (8,052,447)
Total:	**$ 78,853,137**

(negative = decreased revenue)

This represents an upper bound fiscal impact based on the curtailment estimates presented in section 2.1, with actual impacts likely being less depending on actual curtailments and the need for health and safety exceptions to those.

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 (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 in section 3.1 will increase associated government income tax revenues. An estimated tax rate was applied to the increased public agency revenues (calculated in section 3.1 above) to determine the corresponding impact on government income tax revenues. An average tax rate of $99 per $1,000 was determined using an IMPLAN[2] model evaluation (pers comm Medellin-Azuara 2014). This is an estimate of the impact primarily on income taxes collected by state government and local governments, yet it does not include a breakdown of these two categories or indirect and induced economic effects.

Tax Revenue Changes from Agricultural Agency Sales		
Change in Agency Revenue:	$ (3,362,659)	
Tax Rate:	10%	$ (336,266)

Tax Revenue Changes from Municipal Agency Sales		
Change in Exempted Agency Sales:	$ 93,500,000	
Change in Curtailed Agency Sales:	$ (4,502,212)	
Tax Rate:	10%	$ 8,899,779

Subtotal Tax Revenues Impacts:	**$ 8,563,513**

(negative = decreased revenue)

Tax Revenue Impacts from Reduced Agricultural Production

Agricultural production (revenue) would be impacted as irrigation supplies are reduced by curtailments. Reduced agricultural production in turn would reduce associated income tax revenues.

[2] Economic impact analysis software - IMPLAN (http://www.implan.com)

An analysis of the impact of curtailments on agricultural production (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 curtailments. The estimate of revenue per acre-foot of applied water was developed by calculating an average of such values ($1,065 per acre-foot) across the SWAP model geographic units covering the Delta watershed, where much of this agricultural production is located (pers comm Medellin-Azuara 2014). Revenue per acre-foot of applied water varies around the watershed, and given the uncertainty of knowing which water rights within the watershed would be affected by curtailments, an average value provides a reasonable estimate. This estimate is also somewhat conservative as it does not factor in the likelihood that farmers would fallow lower revenue crops first as water becomes more scare. The same income tax rate developed in section 4.1 above is then applied to this reduction in agricultural production to estimate the associated impact to income tax revenues.

Agricultural Production (Revenue) Impacts		
Reduced Agricultural Supply (ac-ft):		(33,495)
Revenue ($) per ac.-ft.:		1,068
Reduced Agricultural Production:	$	(35,772,660)
Tax Rate:		10%
Subtotal Tax Revenue Impact:	**$**	**(3,577,266)**
(negative = decreased revenue)		

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 below:

		Tax Revenue ($)
Due to Increased Public Agency Water Sales:	$	8,563,513
Due to Reduced Agricultural Production:	$	(3,577,266)
Total:	**$**	**4,986,247**
(negative = decreased revenue)		

This is an estimate of impacts mainly on income taxes collected by the state and local governments, yet a breakdown of these two groups is not available and indirect and induced effects are not included. This represents an upper bound tax revenue impact based on the curtailment estimates presented in section 2.1, 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.

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