Making Water Conservation a California Way of Life Proposed Regulation

Review of the Water Board's Standardized Regulatory Impact Analysis (SRIA)

Executive Summary of Findings

An agency is required to complete a Standardized Regulatory Impact Analysis (SRIA) whenever a proposed regulation would have an impact exceeding $50 million in any 12-month period following its adoption. A SRIA is intended to:

1. Assess the potential for adverse economic impact and the imposition of unnecessary or unreasonable regulations or report, recordkeeping, or compliance requirements.
2. Provide agencies and the public with information to determine whether the proposed regulation is efficient and effective in achieving the policy objectives in statute in the least burdensome manner.

At minimum, a SRIA must:

1. Assess the benefits and costs in monetary terms to the extent that is feasible.
2. Determine the cost of enforcement and compliance to the agency, affected businesses, and individuals.
3. Determine the economic impact on the state's economy, affected businesses, and individuals.
4. Estimate benefits and costs relative to a "Without Regulation" baseline that accurately reflects anticipated behavior of individuals and businesses in the absence of the regulation.

We were requested by Mesa Water District to assess the Water Board's SRIA with respect to the following three questions:

1. Does the SRIA reasonably determine the benefits of the proposed regulation? If not, what are its key deficiencies and how would correction of these deficiencies alter the estimated benefits of the proposed regulation?

2. Does the SRIA reasonably determine the cost of enforcement and compliance with the proposed regulation? If not, what are its key deficiencies and how would correction of these deficiencies alter the estimated compliance costs of the proposed regulation?

3. Does the SRIA reasonably establish the baseline condition from which the benefits and costs of the proposed regulation are to be estimated? If not, what are its key deficiencies and how would correction of these deficiencies alter the estimated costs and benefits of the proposed regulation?

With respect to the first question, **we find that the SRIA does not reasonably determine the benefits of the proposed regulation** due to the following:

- It significantly overstates supplier avoided production costs, which account for 95% of total benefits, and appears to double count these costs.
- It bases its estimates of avoided production costs primarily on wholesale water rates even though these rate embed a sizable portion of fixed costs which in the long run are not avoidable.

- It mistakes the underlying causes of escalating wholesale water rates and consequently overstates the rate at which truly avoidable costs will escalate in the future.

Whereas the SRIA estimates present value benefits of $11.1 billion, after correcting its deficiencies we expect benefits to be on the order of $8.2 billion.

With respect to the second question, **we find that the SRIA does not reasonably determine the costs of the proposed regulation** due to the following:

- It uses constant unit costs for conservation measures despite assuming a rapid and massive ramp-up of these programs in the first five years of the regulation.
- It underestimates customer costs by ignoring the time-value-of-money costs of shifting future expenditures closer to the present.
- It underestimates the costs of requiring the installation of dedicated irrigation meters on all large CII landscapes by only counting the initial installation and inspection costs and ignoring the annual maintenance, billing, and meter replacement costs.
- It grossly underestimates the costs of program creation and reporting as well as the costs to implement the proposed CII BMPs.

Whereas the SRIA estimates present value costs of $8.9 billion, after correcting its deficiencies we expect costs to be on the order of $15.6 billion.

With respect to the third question, **we find that the SRIA does not reasonably establish the baseline from which to estimate benefits and costs** due to the following:

- It ignores the effects of future price increases on urban water use.
- It relies on mutually contradictory assumptions to set the baseline condition, estimate water savings, and calculate benefits of the proposed regulation.

These deficiencies in setting the baseline condition leads the SRIA to significantly overstate expected water savings and potential benefits of the proposed regulation.

The following table provides a numerical summary of our findings:

Present Value Costs and Benefits of Proposed Regulation

	SRIA	After Correcting Deficiencies
Benefit of Regulation (mostly avoided water costs)	$11.1 billion	$8.2 billion*
Cost of Regulation	$8.9 billion	$15.6 billion
Net Benefit	$2.2 billion	-$7.4 billion
Benefit Cost Ratio	1.24	0.53

* Corrected estimate includes 10 extra years of water savings (2041-2050) to account for residual benefits that will accrue following the end of the 2040 analysis period.

POLICY ANALYSIS FOR THE PUBLIC AND PRIVATE SECTORS
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Re: Review of Standardized Regulatory Impact Assessment *of* Proposed *Making Water Conservation a California Way of Life* Regulation by the State Water Resources Control Board

Introduction

State agencies must prepare a Standardized Regulatory Impact Analysis (SRIA) when it is estimated that a proposed regulation would have an economic impact exceeding $50 million in any 12-month period following its adoption.[1]

The purpose of the SRIA is to "*assess the potential for adverse economic impact on California business enterprises and individuals, avoiding the imposition of unnecessary or unreasonable regulations or reporting, recordkeeping, or compliance requirements*."[2] Additionally, the SRIA is intended to "*provide agencies and the public with tools to determine whether the regulatory proposal is an efficient and effective means of implementing the policy decisions enacted in statute or by other provisions of law in the least burdensome manner*."[3]

At minimum, the SRIA must:[4]

- Assess the benefits and costs of the proposed regulation, expressed in monetary terms to the extent feasible and appropriate.
- Determine the economic impact of the regulatory proposal on the state economy, business, and public welfare.
- Determine the cost of enforcement and compliance to the agency and to affected business enterprises and individuals.

More specifically, the SRIA must address all of the following:[5]

- The creation or elimination of jobs within the state.
- The creation of new businesses or the elimination of existing businesses within the state.
- The competitive advantages or disadvantages for businesses currently doing business within the state.

[1] 1 CCR § 2000(g) and 11346.3(c) of the Government Code.
[2] 11346.3(a) of the Government Code.
[3] 11346.3(e) of the Government Code.
[4] 11346.36 of the Government Code.
[5] 11346.3(c)(1) of the Government Code.

- The increase or decrease of investment in the state.
- The incentives for innovation in products, materials, or processes.
- The benefits of the regulation, 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.

For the purposes of preparing a SRIA, economic impact means "*all costs or all benefits (direct, indirect and induced) of the proposed major regulation on business enterprises and individuals located in or doing business in California*."[6] It is not enough to estimate the economic impacts only on those that would be directly affected by the proposed regulation. The indirect and induced economic impacts of the proposed regulation must also be estimated.[7]

Economic impacts are to be estimated relative to a "without" regulation baseline condition. The baseline condition should reflect the anticipated behavior of individuals and businesses in the absence of the proposed regulation.[8]

We were retained by Mesa Water District (Mesa Water®) to review the SRIA prepared by the State Water Resources Control Board (hereafter Water Board) for its proposed *Making Water Conservation a California Way of Life* regulation (hereafter proposed regulation).[9] More specifically, we were charged with answering the following questions:

- Does the SRIA reasonably determine the benefits of the proposed regulation? If not, what are its key deficiencies and how would correction of these deficiencies alter the estimated benefits of the proposed regulation?

- Does the SRIA reasonably determine the cost of enforcement and compliance with the proposed regulation? If not, what are its key deficiencies and how would correction of these deficiencies alter the estimated compliance costs of the proposed regulation?

- Does the SRIA reasonably establish the baseline condition from which the benefits and costs of the proposed regulation are to be estimated? If not, what are its key deficiencies and how would correction of these deficiencies alter the estimated costs and benefits of the proposed regulation?

In what follows, we address each question in turn and then provide a summary of our findings and conclusions. First, however, to provide appropriate context for our review, we present an overview of the SRIA's principal findings and conclusions.

[6] 1 CCR § 2000 (e).
[7] A direct impact results from the spending or other actions taken by agencies, businesses, and individuals directly subject to the proposed regulation. An indirect impact results from business-to-business transactions indirectly caused by the initial direct impacts. An induced impact results from changes in personal income, and the subsequent changes in household spending, caused by the direct and indirect impacts of the proposed regulation.
[8] 1 CCR § 2003 (d).
[9] Accessed from the Water Board's website (https://dof.ca.gov/wp-content/uploads/sites/352/2023/03/SRIA-MakingWate-ConservationaCaliforniaWayofLife.pdf?emrc=56e5b1)

Overview of SRIA Findings and Conclusions

Summary of Proposed Regulation

The proposed regulation will establish annual water use budgets for all urban retail water suppliers in the state.[10] A supplier's annual budget will be comprised of four components:

1. An allowance for residential indoor water usage.
2. An allowance for residential outdoor water usage.
3. An allowance for CII water usage served by dedicated irrigation meters (DIMs).[11]
4. An allowance for distribution system water losses.

A supplier's annual budget (termed its *urban water use objective* in the authorizing legislation[12]) will be the sum of these allowances. Under certain conditions, a supplier may receive one or more variances which will have the effect of increasing its target above this amount.[13] Additionally, suppliers with potable reuse of recycled water may receive a "*bonus incentive*" which may further increase its target by up to 15 percent.[14]

Under the proposed regulation, a supplier's various water use allowances will be determined by the following numerical standards:

1. Indoor residential water use[15]
    a. 55 gallons per capita per day (gpcd) through 2024
    b. 47 gpcd from 2025-2029
    c. 42 gpcd from 2030 onward
2. Outdoor residential water use[16]
    a. 80% of net ETo through September 30, 2030
    b. 63% of net ETo from October 1, 2030, to September 30, 2035

[10] Per Water Code §10608.12(t) an urban retail water supplier means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that suppliers more than 3,000 acre-feet of potable water annually at retail for municipal purposes. There are roughly 400 urban retail water suppliers in the state.

[11] For the purposes of the proposed regulation, CII customers are assumed to be served by mixed use meters (MUMs) and/or dedicated irrigation meters (DIMs).

[12] Water Code §10609 (a).

[13] Water Code §10609.14(a)-(e).

[14] Water Code §10609.20(d).

[15] The supplier's allowance for residential indoor water use is the product of the standard and its service area residential population.

[16] The supplier's allowance for residential outdoor water use is the product of the outdoor standard and an estimate of residential irrigated landscape area prepared by DWR's Landscape Area Measurement (LAM) program, or by the supplier's estimate of residential irrigated landscape area provided the State Board deems the supplier's estimate to be at least as accurate as the DWR LAM program estimate. Through June 30, 2027, the supplier may include up to 20% of residential landscape area classified by the LAM program as irrigable but not irrigated (INI). After June 30, 2027, the supplier may incorporate INI area into the calculation of its outdoor water use allowance only if it demonstrates to the Water Board's satisfaction that this area has come under irrigation. Since there is no feasible way to do this short of redoing the acquisition and processing of the LAM program's aerial images of the supplier's service area, we assume that after June 30, 2027, INI area will be excluded from the calculation of the residential outdoor water use allowance.

   c. 55% of net ETo from October 1, 2035, onwards
3. CII DIM water use[17, 18]
   a. 80% of net ETo through September 30, 2030
   b. 63% of net ETo from October 1, 2030, to September 30, 2035
   c. 45% of net ETo from October 1, 2035, onwards
4. Water Loss[19]
   a. System-specific standards for water loss previously adopted by the Water Board.[20]

Starting no later than January 1, 2024, the proposed regulation will require a supplier to annually report to the Water Board its water use budget (inclusive of any variance and bonus incentive volumes) and to provide a comparison of this budget to the sum of its recorded residential, CII DIM, and distribution system water losses for the prior year. The Water Board may issue informational orders pertaining to water production, water use, and water conservation to an urban retail water supplier that exceeds its budget.[21] Beginning January 1, 2025, the Water Board may issue a written notice to a supplier that exceeds its budget, warning the supplier that it is not making adequate progress in meeting its budget, and requesting the supplier address areas of concern in its next annual report.[22] Beginning January 1, 2026, the Water Board may issue a conservation order to a supplier that exceeds its budget. A conservation order may include, but is not limited to, referral to DWR for technical assistance, requirements for education and outreach, requirements for local enforcement, and other requirements to reduce water use in the supplier's service area.[23]

Failure by a supplier to provide the information required by the proposed regulation or requested by the Water Board in a written notice or conservation order will be treated as a violation subject to civil liability pursuant to Water Code section 1846 or 1846.5.[24]

In addition to meeting their annual water use budget, the proposed regulation will require suppliers to implement the following *CII Performance Measures*.

1. Annually classify all CII customers in accordance with Energy Star Portfolio Manager (ESPM) industry categories. Additionally, annually identify every CII customer associated with (1) CII laundries, (2) large landscape, (3) water recreation, and (4) car washes. The supplier must

[17] Landscape area served by CII DIMs is to be divided into regular landscape area (RLA) and special landscape area (SLA), as defined by the Model Water Efficient Landscape Ordinance (23 CCR §§ 490-495). The numerical standards shown above are for RLA. The standard for SLA is 100% of net ETo in all time periods.
[18] The CII DIM standards would be applied to estimated irrigated landscape area served by the supplier's DIMs. Under the proposed regulation, suppliers would have until 2028 to measure irrigated area served by DIMs.
[19] The water loss allowance is the product of the supplier's water loss standard and the total of its active and inactive service connections.
[20] 23 CCR §§ 980-986.
[21] Water Code §10609.26(a).
[22] Water Code §10609.26(b).
[23] Water Code §10609.26(c).
[24] Under Water Code §1846.5, an urban retail water supplier in violation of the proposed regulation, written notice, or conservation order, may be liable in an amount not to exceed $10,000 for each day in which the violation occurs if the violation occurs in a critically dry year immediately preceded by two or more below normal, dry, or critically dry years or during a period for which the Governor has issued a proclamation of a state of emergency under the California Emergency Services Act based on drought conditions. Outside of these conditions, the supplier may be liable in an amount not to exceed $1,000 for each day in which the violation occurs.

classify all CII customers by 2030 and must maintain at least a 95% classification rate thereafter.

2. Identify all CII landscapes estimated to be using 500,000 gallons or more annually that are served by mixed use meters (MUMs). For these CII landscapes, either install dedicated irrigation meters (DIMs) or employ at least two in-lieu water technologies approved by the Water Board. The supplier must achieve 20% compliance by 2026, 60% compliance by 2028, and 100% compliance by 2030. The supplier must maintain a 95% compliance rate on an annual basis thereafter.

3. Identify all disclosable buildings in the service area by January 1, 2025.[25] For each disclosable building:
    a. Provide the building's owner or agent with the last four characters of the meter serial number(s) serving the building.
    b. For each meter serving the building, provide all water use data in monthly intervals for the previous calendar year and for any other calendar year if it is requested and available. The supplier must provide this information to not less than 20% of disclosable buildings by 2026, 60% by 2028, and 100% by 2030 and thereafter.

4. Design and implement by January 1, 2025, not less than five Best Management Practices (BMPs) from a list of BMPs approved by the Water Board and offer these programs to the top 20% of water users (excluding process water uses) in each ESPM category (plus the top 20% of customers classified as CII laundries, large landscape, water recreation, or car washes).

5. For the top 2.5% of all CII customers by volume of water use (excluding process water uses), design and implement a conservation program for these customers by January 1, 2025, that includes at least ten BMPs from a list of BMPs approved by the Water Board.

6. Ban the irrigation of non-functional turf with potable water on all CII landscapes in its service area by July 1, 2025.[26] This requirement includes carveouts in cases where banning turf would impair the health of trees and other perennial landscaping, or the user certifies that the turf is a low water use plant with a plant factor of 0.3 or less and demonstrates that the actual use is less than 40% of reference evapotranspiration. For the purposes of this CII Performance Measure, CII landscapes include homeowners' associations, common interest developments, community service organizations, and other similar entities.

[25] Per CCR § 1681(d), a disclosable building is a covered building of any property type defined by the ESPM with more than 50,000 square feet of gross floor area and has (1) no active residential utility accounts, or (2) 17 or more active residential utility accounts of each energy type service the building. Certain other exclusions apply, the most significant of which is for buildings in which more than half of the gross floor area is used for scientific experiments requiring controlled environments, or for manufacturing or industrial purposes.

[26] The proposed regulation defines non-functional turf as turf that is solely ornamental and not regularly used for human recreational purposes or for civic or community events.

The proposed regulation is remarkably complex, comprising 37 pages laden with intricate definitions, formulas, and requirements. Suppliers will need to navigate and interpret this complexity simply to grasp their mandated responsibilities.[27]

Summary of SRIA Baseline Condition

As described above, the SRIA must estimate benefits and costs of the proposed regulation relative to a baseline condition reflecting the anticipated behavior of individuals and businesses in the absence of the proposed regulation.

The SRIA baseline condition is based on the following:[28]

- Indoor residential water use will trend downward by 0.88% per annum on a per capita basis due to ongoing natural replacement of less efficient plumbing fixtures with more efficient ones required under current plumbing codes and appliance standards (i.e., passive conservation savings). **Importantly, the SRIA baseline does not incorporate the effects of ongoing utility-sponsored conservation programs (i.e., active conservation savings) or the effects of increasing marginal water service cost on future indoor residential water use.**

- Outdoor residential water use will trend downward by 0.78% per annum on a per capita basis due to the continuation of utility-sponsored conservation programs at current levels of implementation and a "net adaptation effect" in response to climate change. **Importantly, it does not incorporate the effects of increasing marginal water service cost on future outdoor residential water use. It also does not appear to incorporate changes in future outdoor water use due to shifting trends in residential construction towards smaller lots with larger building footprints and more multi-family housing.[29]**

- The volume of DIM water uses will decrease by 0.5% per annum relative to the volume of deliveries in 2019. **The SRIA does not provide a basis or justification for this assumption. Importantly, it does not incorporate the effects of increasing marginal water service cost on future CII DIM water use, nor does it incorporate the effects of utility-sponsored conservation programs, or state and local non-functional turf bans.[30]**

- Excluded CII demands (i.e., CII uses excluded from the calculation of supplier targets) will decrease by 0.5% per annum relative to the volume of deliveries in 2019. **The SRIA does not**

[27] This stands in stark contrast to the 2009 "20 x 2020" conservation legislation, which set forth relatively straightforward numerical water consumption benchmarks that suppliers were expected to achieve by 2020. Nonetheless, the "20 x 2020" initiative required significant investments of labor, finances, and administrative efforts from both water suppliers and the state to put into practice. The proposed regulation is many times more complicated and burdensome than "20 x 2020".

[28] See pages 16-21, Figures 6 and 7, Tables 6 and 9, and Appendix D, of the SRIA for additional details regarding the baseline condition.

[29] See, for example, Joint Center for Housing Studies of Harvard University (2023): The State of the Nation's Housing 2023. Accessed from: www.jchs.harvard.edu/sites/default/files/reports/files/Harvard_JCHS_The_State_of_the_Nations_Housing_2023.pdf.

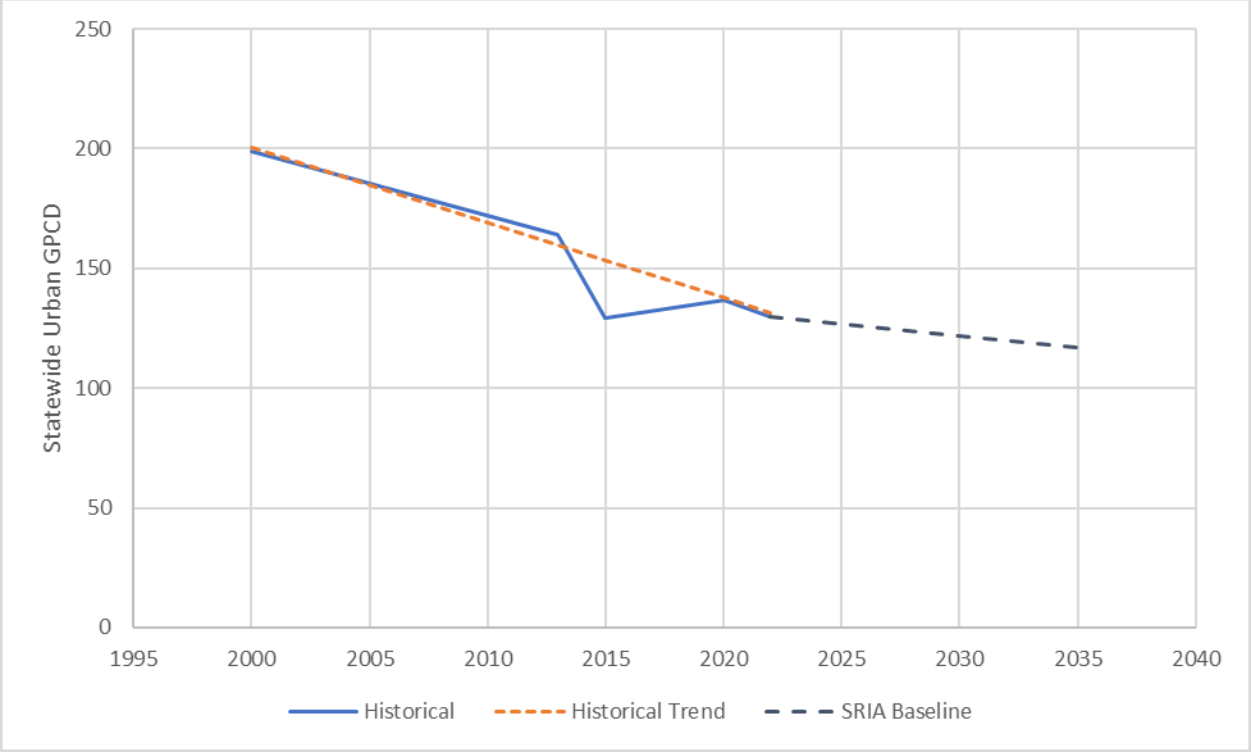
[30] Such as AB 1572, which passed the Senate on September 11, 2023, and passed the Assembly on September 12, 2023, and will become law if signed by the Governor.

provide a basis or justification for this assumption. Importantly, it does not incorporate the effects of increasing marginal water service cost on future CII water use, nor does it incorporate the effects of utility-sponsored conservation programs, or state and local non-functional turf bans.

- Distribution system water losses will remain constant between now and 2040. **Importantly, the baseline excludes expected reductions in distribution system water loss due to implementation of SB 555 (Wolk) even though in the absence of the proposed regulation SB 555 requirements will remain in full effect.**

Figure 1 shows historical statewide per capita water use (blue solid line) and the baseline future per capita water use assumed for the SRIA (grey dashed line). This figure is a reproduction of Figure 6 from the SRIA. We have added to the figure the historical trend in per capita water use (orange dotted line) so that it may be compared to the SRIA's baseline condition.[31] **As can be seen in the figure, the SRIA baseline condition assumes a significantly slower average rate of reduction in per capita water use than has been the case historically.[32] As will be discussed more fully later, this has the effect of inflating the water savings and hence the expected benefits of the proposed regulation.**

Figure 1. Historical and SRIA Baseline GPCD



[31] In calculating the historical trend, we exclude the significant dip in water use caused by 2015/16 drought water use restrictions so as not to impart a downward bias to the trend line.

[32] The compound annual rate of growth in per capita water use between 2000 and 2022 was -1.9% per annum. Going forward, the SRIA baseline assumes this rate of change will slow to -0.8% per annum, a more than 50% reduction.

Summary of SRIA Water Savings Estimates

The SRIA estimates the proposed regulation will save the volumes of water shown in Table 1. The values in Table 1 were drawn from Tables 20 and 31 in the SRIA (pages 51 and 64 respectively). In 2035, at its peak, the SRIA anticipates that the proposed regulation will curtail urban water consumption by roughly 0.45 million acre-feet (MAF). According to our calculations, this equates to a slightly more than 1.5% reduction in statewide water usage for 2035.[33] **Consequently, the SRIA posits that when the regulation is fully implemented, it will have only a very minor impact on statewide water usage.[34] Furthermore, as we discuss below, there are compelling reasons to believe that the actual effect of the proposed regulation on statewide water consumption may be significantly less than what is shown in Table 1.**

Table 1. SRIA Water Savings Estimates in AF

Year	Private Suppliers	Public Suppliers	Total
2025	32,841	205,280	238,121
2026	37,785	235,435	273,220
2027	42,729	265,589	308,318
2028	47,673	295,744	343,417
2029	52,617	325,898	378,515
2030	57,561	356,053	413,614
2031	58,624	360,951	419,575
2032	59,727	366,074	425,801
2033	60,870	371,411	432,281
2034	62,049	376,951	439,000
2035	63,263	382,684	445,947
2036	63,359	380,864	444,223
2037	63,487	379,218	442,705
2038	63,645	377,737	441,382
2039	63,831	376,413	440,244
2040	64,044	375,238	439,282
Total	894,105	5,431,540	6,325,645

[33] The SRIA estimates 2035 urban uses in the absence of the proposed regulation will be 5.16 MAF. In 2018, agricultural uses totaled 26.6 MAF, according to DWR data. It is estimated that up to 20% of irrigated acreage in the San Joaquin and Tulare Hydrologic Regions will need to be removed from production to comply with the Sustainable Groundwater Management Act (Hanak, et al., 2019). Assuming this occurs by 2035, agricultural uses would decrease to 23.6 MAF, urban and agricultural uses would total 28.8 MAF, and the proposed regulation's 2035 savings represent 1.56% of this total.

[34] This reinforces a point made by Professor Jay Lund in a California Water Blog post dated July 24, 2022: "*When presented as a percent of net water use, agriculture is the largest overall water use in California, and urban use is a distant third [the environment is the second largest use] … Urban water conservation is good and merits some attention, but we clearly obsess with it disproportionately from a statewide perspective. Agriculture is the big water use, and it is important how this use is managed (and largely reduced) for the future and for droughts. Slash and burn approaches to water conservation hurt people and often ecosystems.*" Accessed from: https://californiawaterblog.com/2022/07/24/follow-the-water/.

Summary of SRIA Cost-Benefit Estimates

The SRIA estimates the proposed regulation will generate the costs and benefits shown in Table 2.[35] In present value terms, the SRIA estimates the proposed regulation will generate costs of approximately $13.5 billion, benefits of approximately $15.6 billion, and net benefits of approximately $2.2 billion. **Note that the SRIA incorrectly includes financial transfer payments between suppliers and households in its tally of the economic costs and benefits. These financial transfers do not represent true economic costs or benefits[36], and as shown in Table 2, they simply net out to zero.[37]** Excluding these transfer payments, the SRIA estimates the proposed regulation will generate costs of approximately $8.9 billion and benefits of approximately $11.1 billion.

Table 2. SRIA Present Value Cost/Benefit Estimates of Proposed Regulation (Mil. 2022 $)

Cost/Benefit Category	Cost	Benefit	Net Benefit
Supplier Program Creation and Reporting Cost	$ 35		$ (35)
Residential Measures paid by Suppliers	$ 4,794		$ (4,794)
Residential Measures paid by Households	$ 1,004		$ (1,004)
MUM to DIM Conversions paid by Suppliers	$ 461		$ (461)
CII BMP Implementation paid by Suppliers	$ 14		$ (14)
Urban Forestry Mitigation Actions	$ 103		$ (103)
Wastewater Agency Costs	$ 2,495		$ (2,495)
Avoided Water Production Cost		$ 10,538	$ 10,538
Avoided Stormwater Management Cost		$ 17	$ 17
Avoided Residential Energy Cost		$ 528	$ 528
Transfer Payments from Suppliers to Households	$ 4,552	$ 4,552	$ (0)
Total	**$ 13,459**	**$ 15,635**	**$ 2,176**
Excluding Transfer Payments	*$ 8,907*	*$ 11,083*	*$ 2,176*

The SRIA's assessment of costs and benefits omits a crucial element within the proposed regulation—the budget for CII DIM water uses. While the SRIA does provide an estimate of the cost for MUM to DIM conversions, it is unable to estimate the costs (or benefits) that both suppliers and CII customers will

[35] The values in Table 2 are based on the data in tables 12, 14, 16, 17, 18, 19, 21, 22, 24, 25, 26, 27, 28, 29, 32, 33, 34, and 35, in the SRIA.

[36] They represent the reduction in the revenues of water suppliers from lost sales (cost column) and the equivalent reduction in the bills of customers using less water (benefit column). However, as the SRIA repeatedly notes (for example, pp. 46, 53, and 76), it is fully expected that water suppliers will overtime adjust their rates to recover these forgone revenues. Thus not only do they represent financial transfer payments, but they are also not even expected to occur, making their inclusion in the tally of costs and benefits even more mysterious.

[37] Although the inclusion of transfer payments in the tally does not impact the net benefit estimate, it does distort the benefit-cost ratio and other financial metrics such as the rate of return of the proposed regulation. More importantly, it obfuscates the analysis of costs and benefits, and adds unnecessary complexity to the SRIA. As already noted, one of the intended purposes of the SRIA is to provide agencies and the public with tools to determine whether the regulatory proposal is an efficient and effective means of implementing the policy decisions enacted in statute or by other provisions of law in the least burdensome manner. The inclusion of financial transfer payments in the tally of costs and benefits muddies the waters and makes comparison of the actual economic costs and benefits of the proposed regulation more difficult to discern.

bear in complying with the CII DIM water use standard for the simple reason that the data needed to do so (CII DIM landscape area measurements) are not presently available. **Significantly, the proposed regulation includes a major requirement that, as of now, cannot be quantified, rendering it impossible to gauge its feasibility, let alone assess its cost and potential benefits.**

We further note that 95% of the estimated benefits of the proposed regulation are associated with avoided water production costs. As we show below, there are strong reasons to believe actual avoided water production costs will be significantly less than what is shown in Table 2. **In fact, we show that it is much more likely that the costs of the proposed regulation will exceed the benefits, rather than the other way around.**

Summary of SRIA Economic Impact Estimates

The SRIA estimates the proposed regulation will result in statewide economic impacts shown in Table 3. Except for the implied net benefit multiplier shown at the bottom of the table, the values in this table come from Table 40 in the SRIA (page 87).

Table 3. SRIA Estimates of Statewide Economic Impacts of Proposed Regulation (Mil. 2022 $)

Year	Gross Output	Value Added	Earnings
2025	$ 4,117	$ 2,103	$ 1,435
2026	$ 1,143	$ 587	$ 323
2027	$ 1,278	$ 667	$ 371
2028	$ 1,397	$ 736	$ 407
2029	$ 1,526	$ 813	$ 450
2030	$ 1,657	$ 890	$ 492
2031	$ 1,405	$ 795	$ 430
2032	$ 1,468	$ 833	$ 453
2033	$ 1,525	$ 867	$ 471
2034	$ 184	$ 902	$ 490
2035	$ 1,621	$ 925	$ 499
2036	$ 1,513	$ 867	$ 449
2037	$ 1,553	$ 891	$ 461
2038	$ 1,959	$ 915	$ 474
2039	$ 1,640	$ 941	$ 487
2040	$ 1,683	$ 967	$ 500
2022 Present Value	**$ 19,306**	**$ 10,973**	**$ 6,184**
Implied Net Benefit Multiplier	**8.9**	**5.0**	**2.8**

The SRIA used the RIMS II Input-Output Model to generate the values in Table 3. The RIMS II model traces a direct change in economic activity through the rest of the economy in terms of indirect and induced knock-on effects that result from a direct change in economic activity. The indirect effects arise from multiple rounds of business-to-business spending. For example, an increase in toilet replacements directly increases demand for and production of new toilets which in turn increases demand for and

production of all the parts and services needed to produce, transport, and install new toilets, such as porcelain and metal and plastic fittings, etc. The induced effects follow from household spending of increased earnings in the directly and indirectly affected economic sectors. The values in Table 3 represent the sum of the direct, indirect, and induced impacts associated with the spending changes the SRIA assumes would occur under the proposed regulation.

These spending changes are as follows:

- Spending by water suppliers to comply with the proposed regulations, including spending for (1) program creation and reporting, (2) implementation of residential programs and payment of rebates or other financial incentives, (3) conversion of MUMs to DIMs or equivalent in-lieu technology, and (4) implementation of CII BMPs.

- Spending by households to participate in residential programs.

- Spending by other public agencies for wastewater and urban forest mitigation.

Additionally, the SRIA assumes that almost all households will face lower water service costs under the proposed regulation. It models this reduction in water service cost as an increase in household disposable income and runs this increase through the RIMS II model to estimate the induced impacts of this increase in household income.[38]

Concurrently, however, water suppliers would reduce their spending to produce and deliver water. As shown in Table 2 above, the SRIA estimates that suppliers would, in present value terms, avoid $10.5 billion in water production costs between 2025 and 2040.[39] As far as we can discern, the SRIA did not include the direct, indirect, and induced impacts of this spending reduction in the estimate of statewide economic impacts. The impacts of this reduced spending would be sufficiently large to offset most of the positive impacts shown in Table 3.[40] **Thus, we conclude that the SRIA almost certainly overstates the positive economic impacts of the proposed regulation to an unknown, but likely significant degree.**

It is clear from Table 2 that the net benefit under the proposed regulation, as estimated by the SRIA, is only $2.2 billion in present value. In the last row of Table 3, we show the implied net benefit multipliers associated with this spending. These multipliers imply that the SRIA assumes that an additional dollar of

[38] It also models households facing higher water bills as a decrease in disposable income, which are modeled similarly. However, under the SRIA's assumptions only 0.2% of individuals in households will face higher water service costs under the proposed regulation. While we vehemently disagree with the SRIA's bill impact estimates, we acknowledge that it attempted to model both positive and negative changes to household income stemming from the proposed regulation.

[39] Reported in the benefits column in Table 2 as $10,538 million dollars of avoided water production costs. This is a benefit for the purposes of the benefit-cost analysis, but it is a large negative change in economic activity for the purposes of the economic impact assessment.

[40] It is clear from Table 2 that the net increase in spending under the proposed regulation, as estimated by the SRIA, is only $2.2 billion.

net benefit in present value would generate $8.9 in gross output, $5 in value added, and $2.8 in wage earnings. **These estimates appear to be excessively high to us.**[41]

This completes our review of the proposed regulation and the main findings of the SRIA. We now turn to the three questions regarding the validity and robustness of SRIA's findings and conclusions regarding the expected water savings, costs, and benefits, of the proposed regulation.

Review of SRIA Benefit-Cost Analysis

We now turn to the three questions that we were charged with answering.

Does the SRIA reasonably determine the benefits of the proposed regulation? If not, what are its key deficiencies and how would correction of these deficiencies alter the estimated benefits of the proposed regulation?

Based on a detailed review of the methodology and data used to estimate the benefits of the proposed regulation, **we conclude that the SRIA significantly overstates the benefits of the proposed regulation**.

As we showed in Table 2, 95% of the estimated benefits of the proposed regulation are associated with avoided water production costs. We therefore focused our review on the calculation of these avoided costs. We believe they are significantly overstated for three reasons.

1. First, the SRIA states that it used variable production costs reported by suppliers as the basis for its avoided cost estimates.[42] However, we find that the average avoided cost of production in the SRIA is much higher than the variable production costs reported by the vast majority of suppliers. **Based on statements in the SRIA, it appears that supplier-specific operating costs were double counted resulting in highly inflated avoided cost estimates.**[43]

[41] IMPLAN is another widely used input-output model. The mean Type-SAM output multiplier for the 544 sector California IMPLAN model is 1.9 and 99% of the 544 sectors have an output multiplier that is less than 2.9. Thus an implied gross output multiplier of 8.9 appears to us to be outside the bounds of credulity.

[42] SRIA, page 51.

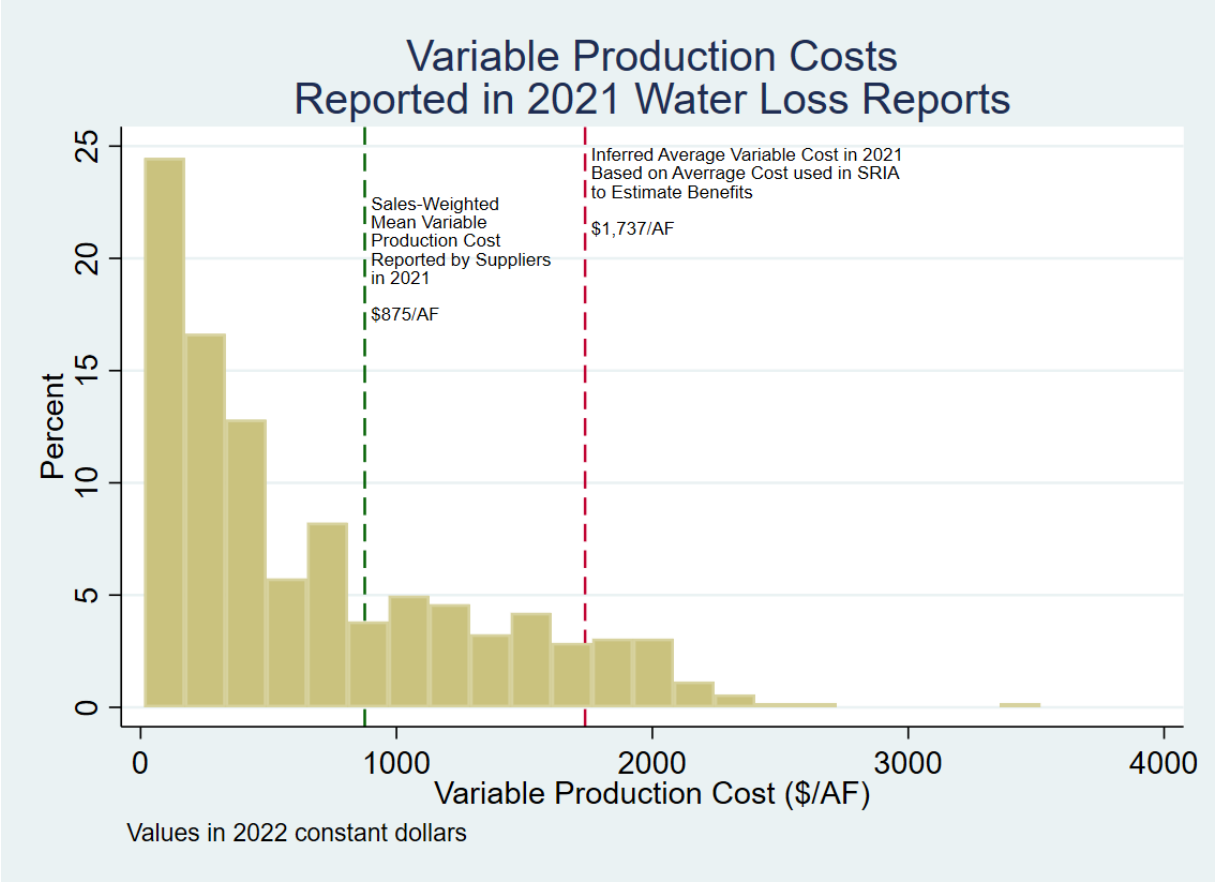
[43] On page 51, the SRIA states "*To calculate a supplier's avoided water cost per acre-foot, we added the suppliers' average cost of purchasing an acre-foot of water to supplier-specific operational costs. We used the cost of purchasing water reported in annual water loss audits provided by suppliers to state agencies. Additionally, we used operational costs for distribution and treatment, such as the cost to pump, treat, and deliver water to customers. These supplier-specific operational costs were obtained from the leak loss audit data*." However, the water loss reports that suppliers annually submit to DWR record the total variable production cost, which already includes any supplier-specific costs as well as any purchased water costs. Specifically, the water loss report instructs suppliers to report the following as their variable production cost: "*The cost to produce and supply the next unit of water (e.g., $/million gallons). This cost is determined by calculating the summed unit costs for ground and surface water treatment and all power used for pumping from the source to the customer. It may also include other miscellaneous unit costs that apply to the production of drinking water. It should also include the unit cost of bulk water purchased as an import if applicable*." Consequently, adding supplier-specific or purchased water costs to these estimates will result in the double counting of production costs.

This is illustrated in Figure 2 on the next page. It shows the distribution of variable production costs reported by suppliers to DWR in 2021. The sales-weighted mean variable production cost is $875/AF (in 2022 constant dollars), which is marked by the green dashed line in the figure.

The SRIA reports that the mean variable production cost would be $1,970/AF in 2025.[44] Based on the water cost escalation factors the SRIA used to escalate water costs over the analysis period, the inferred 2021 average variable cost would be $1,737/AF (marked by the red dashed line in Figure 2), or nearly twice the sales-weighted mean variable production cost actually reported by suppliers in 2021. **It is worth noting that only 11% of suppliers in 2021 reported variable production costs equal to or greater than the mean cost used to compute the avoided water cost benefits of the proposed regulation**.

If avoided cost benefits are instead calculated using the sales-weighted mean variable cost of $875/AF, keeping all else the same, including the water cost escalation factors used in the SRIA, the benefits of the proposed regulation fall from $11.1 billion to $6.2 billion, net benefits fall from a positive $2.2 billion to a negative $2.7 billion, and the Benefit Cost Ratio (BCR) drops from 1.24 to 0.7. By itself, this adjustment is sufficient to conclude that the costs can be expected to outweigh the benefits of the proposed regulation.

Figure 2. Reported Variable Production Costs Compared to the SRIA's Mean Estimate



[44] SRIA, page 51.

2. **Second, the variable costs reported by suppliers in their annual water loss reports are themselves in many cases inflated estimates of their true avoided cost**. There is a misconception that the full wholesale rate will be avoided when less water is purchased by retail water suppliers from their wholesaler. This is untrue because wholesale rates recover a large percentage of the wholesaler's fixed (sunk) costs. In the long run, these fixed costs cannot be avoided by retailers unless they exit their wholesaler's system -- something Rainbow and Fallbrook WDs are currently attempting to do for this very reason. This misconception stems from a fallacy of composition – i.e., assuming that what is true for one member of a group is true for the whole group. If one retailer reduces its wholesale purchases while all the other retailers maintain their purchases, then the retailer's avoided cost will indeed approximate the wholesale rate. However, if all retailers simultaneously reduce their purchases, as will occur under the proposed regulation, then the wholesaler will necessarily increase its rate to account for the fact it must now spread its fixed costs over fewer units of water. An analogy is a fan at a sporting event rising out of her seat to get a better view of the action. Provided only a small number of fans in the same vicinity do this, she will indeed be rewarded with a better view. However, if all fans do this at the same time, as is usually the case, the benefit will be quickly dissipated. We would argue that this has been the predominant dynamic for retailers in large wholesale networks for at least the last two decades. **Thus, the downward adjustment to the avoided cost we made in #1 is itself conservative since many of the variable costs reported by suppliers in their water loss reports are themselves overstated estimates of avoidable cost.**

3. **Third, the SRIA mistakes the underlying causes for escalating wholesale water rates and consequently overstates the likely rate at which truly avoidable costs will escalate in the future**. The SRIA assumes that avoided wholesale water costs will escalate, on average, by 4.2% per annum above the general rate of inflation and that water costs overall will escalate in real terms by about 3.2% per annum, on average.[45] This is a significantly faster rate of increase than has been observed historically, as illustrated in Figure 3.

   The SRIA's escalation assumption suffers from the same fallacy of composition error described in #2. The SRIA uses recent changes in wholesale water rates as the justification for escalating avoidable production costs at a rate significantly above the historical trend.[46] However, these rate changes were primarily a consequence of decreasing sales rather than increasing costs. As already noted, a large percentage of the wholesale rate is dedicated to recovering fixed costs which are, by definition, not avoidable.[47] Even when fixed costs are unchanging, if sales decline, the posted wholesale rate will necessarily increase. This does not necessarily mean that avoidable costs are increasing. It may simply mean that the system's fixed costs are being spread over fewer units of production. This is nicely illustrated by looking at Metropolitan's Tier 1 rate

[45] SRIA, page 52.
[46] SRIA, page 52.
[47] Additionally, many other expenditures driving future cost increases, such as main rehabilitation and replacement, treatment plant upgrades, and regulatory compliance, will not directly vary with the volume of production and thus will not be avoided by reducing sales.

versus its treated water deliveries as shown in Figure 4. Ninety percent of the Tier 1 rate increase is explained simply by decreases in the volume of treated deliveries.[48]

Figure 3. Historical and Projected Real Rate of Increase in Water Service Cost

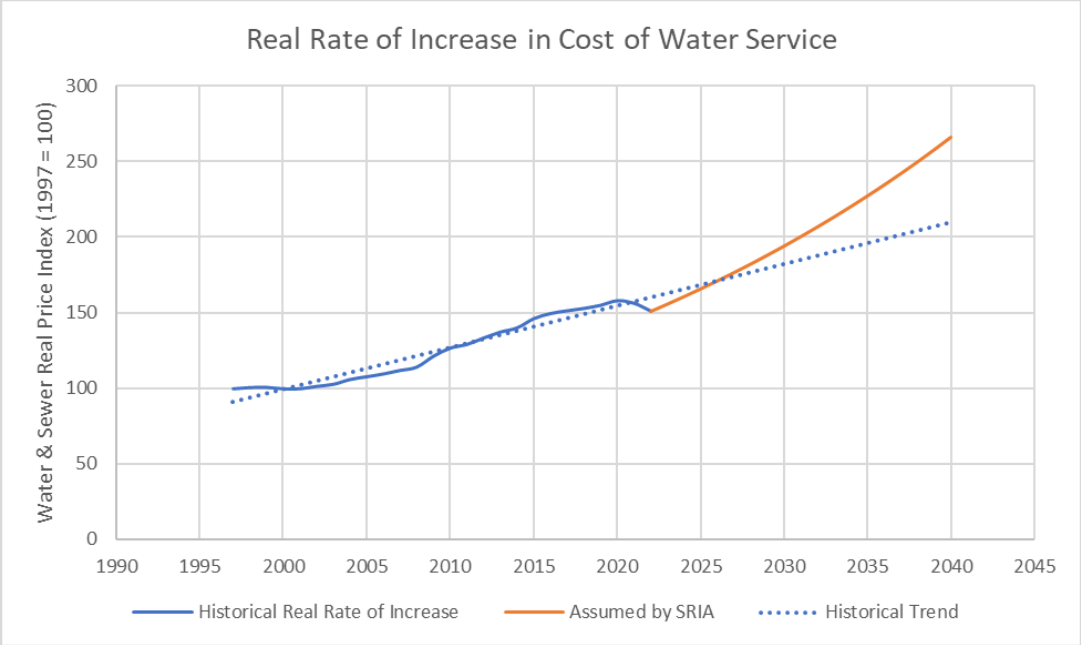
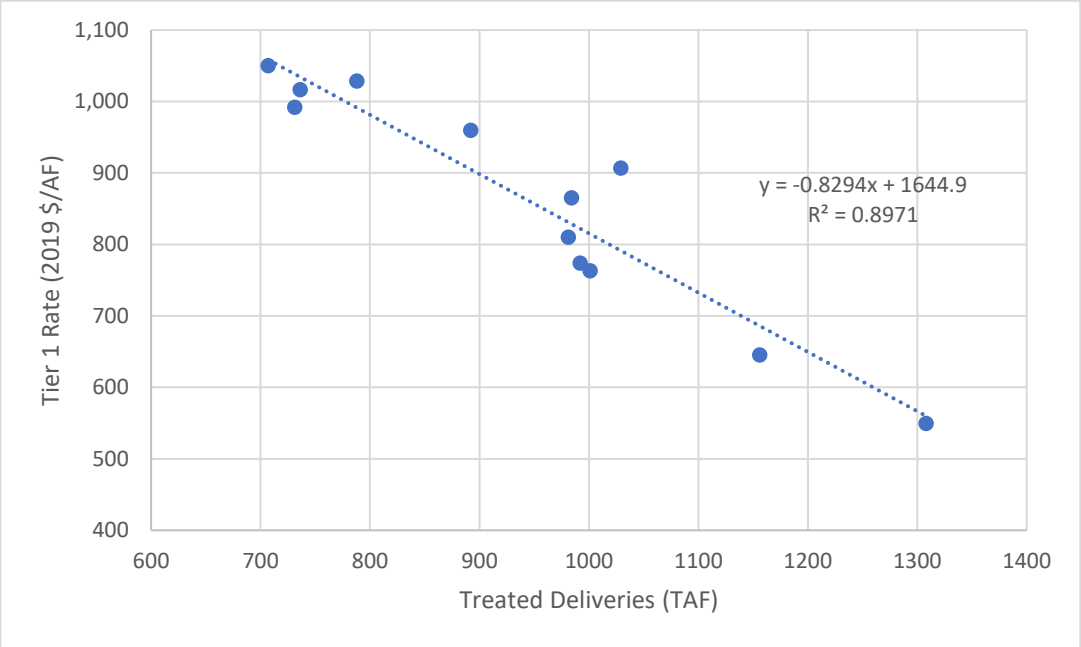


Figure 4. MWD Tier 1 Rate vs Treated Deliveries (2007-2019)



[48] Note that the revenue generated from the lowest rate (about $550/AF) is nearly identical to the revenue generated by the highest rate (about $1,050/AF). Roughly, these revenues are $715 and $735 million, respectively. This is a difference in revenue of only 2.8%, despite the fact the wholesale rate increased by 91%.

A more reasonable assumption for calculating benefits of the proposed regulation is that truly avoidable costs will escalate at a rate equal to the long-term trend in water service costs. Since 1997, this real rate of increase has averaged 1.7% per annum, which is about 40% less than the escalation rate used by the SRIA.

When this adjustment is applied to the previous one, the benefits of the proposed regulation decrease from $11.1 billion to $5.4 billion, net benefits fall from a positive $2.2 billion to a negative $3.5 billion, and the BCR drops from 1.24 to 0.6.

This last estimate is probably too pessimistic. The SRIA correctly notes that water savings (and therefore benefits) will persist to some degree beyond the period of analysis (2040).[49] **However, even if we assume an additional ten years of savings, continue to escalate the benefit of these savings, and assume no additional costs after 2040,[50] the benefits of the proposed regulation would increase only to $8.2 billion, the net benefits would be a negative $0.7 billion, and the BCR, at 0.9, would remain below the breakeven threshold of one. Thus, even under very generous assumptions, the benefits of the proposed regulation would not exceed the costs.**

For these reasons, we conclude that the SRIA significantly overstates the potential benefits of the proposed regulation and that the likelihood that realized benefits will exceed costs is extremely small.

Does the SRIA reasonably determine the cost of enforcement and compliance with the proposed regulation? If not, what are its key deficiencies and how would correction of these deficiencies alter the estimated compliance costs of the proposed regulation?

Based on our review of the methodology and data used to estimate the costs of the proposed regulation, as well as numerous conversations with the staff of suppliers and conservation professionals, we conclude that the SRIA significantly understates the likely costs of the proposed regulation for the following reasons.

1. **The SRIA unrealistically assumes that conservation measure unit costs will remain constant in real terms over the analysis period.**[51] However, the same economic forces the SRIA uses as justification for escalating water production costs – namely that supply curves slope upward -- surely also would impact conservation program costs, particularly in the first 5 years of the regulation when the SRIA assumes an across-the-board rapid and massive expansion of these programs. In 2025, for example, the SRIA estimates programs costs will be 13 times greater than in the next highest year of expenditure**.[52] It is inconceivable that such a large and rapid expansion of these programs could be accomplished without impacting their unit costs.**

   Most of the estimated program cost (75%) is for turf conversion. The SRIA assumes this

[49] SRIA, page 5.
[50] Admittedly an unrealistic assumption since suppliers will continue to incur costs for CII BMPs, reporting, and program administration.
[51] SRIA, page 39, footnote 15.
[52] SRIA, Table 16. Total expenditures in 2025 are $3.99 billion. The next highest year is 2030 where expenditures are $0.3 billion.

conversion can be accomplished at a constant unit cost of $6 per square foot with suppliers covering one-third of the cost ($2/sqft) and households covering the other two-thirds ($4/sqft).[53] However, suppliers and conservation professionals we have spoken with have indicated that they will need to significantly increase their rebate amounts to have any hope of achieving the level of conversion that will be required by the proposed regulation.[54]

If we assume suppliers will, on average, need to double their turf rebates to drive the needed level of program participation,[55] and holding household costs constant, the present value cost of turf conversion reported in the SRIA would increase from $5.0 billion to $9.0 billion, and the total present value cost of the regulation would increase from $8.9 billion to $12.9 billion.

2. **The SRIA underestimates the costs customers participating in conservation programs will incur.** It argues that, on average, only 40 percent of the total costs incurred by customers should be counted as a cost of the regulation.[56] The other 60 percent of the costs it argues customers would have incurred anyway. According to the SRIA, the proposed regulation will merely shift these costs forward in time and therefore they should not be counted.[57] However, shifting a cost forward in time increases its present value. Thus in terms of present value, shifting a cost forward in time constitutes a cost increase.

   The degree to which customer costs will increase under the proposed regulation cannot be precisely calculated because the SRIA does not state how far forward customer costs will shift in time. However, since it estimates 75% of customer costs will be incurred in the first five years of implementation (and most of these costs will occur in 2025), it is at least plausible to assume that the proposed regulation will shift costs forward by five to ten years. Using the SRIA's 3% discount rate, a nominal cost incurred in 2025 would be 16% greater in present value than the same nominal cost incurred in 2030 and 34% greater than the same nominal cost incurred in 2035. We would argue that these time value of money difference are too large to ignore, and that the SRIA should have included them in its tally of customer costs.

   Assuming the 60 percent of customer costs the SRIA did not count are shifted forward by an average of five years implies a present value cost increase for customers of $1.2 billion while assuming they were shifted forward by an average of ten years implies a present value cost

[53] SRIA, Table 15.

[54] For example, the Inland Empire Utilities Agency has estimated that its retailers will need to convert more than 200 million square feet of turf to comply with the proposed regulation and notes that over the previous 20 years, turf rebate programs in the region have been able to remove only 9 million square feet, or less than 5% of the expected requirement. Personal communication on September 21, 2023, with Cathleen Pieroni, Acting Water Resources Manager, Inland Empire Utilities Agency.

[55] Maureen Erbeznik of Erbeznik & Associates, whose firm has been developing and implementing water and energy conservation programs for 30 years, estimates that turf rebates will need to increase by a factor of 3-5 to get the level of program participation needed to comply with the proposed regulation. Personal communication on July 10, 2023, with Maureen Erbeznik, president of Erbeznik & Associates. A doubling of the rebate is thus likely conservative.

[56] SRIA, page 42.

[57] SRIA, pages 41 and 42, and footnotes 18 and 19.

increase of $2.2 billion. **We take the midpoint of these two values, $1.7 billion, as a credible estimate of the cost increase associated with shifting customer conservation expenditures forward in time by five to ten years. Adding this to the adjustment in #1, the total present value cost of the proposed regulation increases from $8.9 billion to $14.6 billion.**

3. **The SRIA's estimates of program creation and reporting costs are unrealistically low**. It estimates that suppliers will spend, on average, $33,500 to initially plan and implement conservation programs needed for compliance with the proposed regulation, and $5,400 per annum thereafter for data collection and reporting. The cost for program design and implementation is roughly equivalent to 0.17 full-time-equivalent (FTE) utility engineering positions.[58] Based on our 30 years of experience preparing conservation planning documents for utilities, we believe this estimate is too low by at least a factor of 5. The cost for annual reporting, roughly equivalent to 0.03 FTE utility engineering positions, is similarly off by a factor of at least 5. **Adjusting these costs increases the present value cost for program creation and reporting from $0.035 billion to $0.18 billion. Adding this to the adjustments from #1 and #2, the total present value cost of the proposed regulation increases from $8.9 billion to $14.8 billion.**

4. **By counting only the initial costs of installation and inspection, and excluding the incremental billing, maintenance, and replacement costs, the SRIA understates the present value costs of MUM to DIM conversions**. It is typical to budget 2-5% of the replacement asset value for maintenance and the typical useful life for a meter is 15 years. **We estimate that the present value costs for annual maintenance and replacement over two meter replacement cycles would be on the order of $0.8 billion. Adding this to the adjustments from #1-#3, the total present value cost of the proposed regulation increases from $8.9 billion to $15.6 billion.**

5. **The SRIA's estimates to implement CII BMPs are almost certainly too low**, on an annual basis averaging about $7,400 per supplier from 2025-2030, and about $500 per supplier thereafter. As with program creation and reporting costs, the estimates for 2025-2030 are easily too low by a factor of 5 or more. The post 2030 estimated costs are patently absurd. However, because these costs are small relative to the other cost items, we do not bother adjusting them.

   For these reasons, we conclude that the SRIA significantly understates the potential costs of the proposed regulation. **Whereas the SRIA estimates costs of $8.9 billion, we believe the actual costs will be closer to $15.6 billion, or about 74% greater than what the SRIA predicts.**

Given the above, our revised estimates of the benefits and costs of the proposed regulation are as follows:

Expected benefits (Including additional 10 years of residual savings at no cost)	$8.2 billion
Expected costs	$15.6 billion

[58] Based on an average salary of $100,000/yr and a 2.0 benefits and overhead multiplier, for a fully load position cost of $200,000/yr, or $96/hr.

(Including adjustments for turf replacement, customer costs, and MUM to DIM conversions)	
Net Benefits	-$7.4 billion
BCR	0.53

Does the SRIA reasonably establish the baseline condition from which the benefits and costs of the proposed regulation are to be estimated? If not, what are its key deficiencies and how would correction of these deficiencies alter the estimated costs and benefits of the proposed regulation?

Based upon our review, we conclude that the baseline condition used in the SRIA does not reasonably reflect water use by individuals and businesses in the absence of the proposed regulation, as required by statute, and that this leads to the SRIA overstating the potential water savings and benefits of the proposed regulation.

Importantly, the SRIA ignores the effects of changes in marginal water cost in its establishment of the baseline condition as well as in its estimation of impacts under the proposed regulation. We note that this is at odds with statutory requirements which state that the baseline must "*reasonably reflect the anticipated behavior of individuals and businesses in the absence of the proposed regulation*."[59] The SRIA's authors characterize their analysis as "*closer to a 'partial equilibrium' approach than it is to a 'full equilibrium' approach where price-elasticities of urban water demand and supply are considered*."[60] This is too bad, because **if they had considered price effects, they would have easily seen that their baseline condition was inconsistent with a key assumption underpinning their analysis, namely that marginal water costs would increase in real terms by an average of 3.2% per annum and that suppliers would pass these cost increases through to their customers.[61]**

Retail water service, like any other good or service, is subject to the Law of Demand which simply means that consumers will choose to buy more at lower than at higher prices. Economists use price elasticity to measure the strength of this relationship between price and quantity demanded.[62] Dozens, if not hundreds, of empirical studies have estimated price elasticity of urban water service, and several meta-analyses of these studies have been completed (Renzetti 2000; Dalhuisen, et al. 2003; Hanemann 1998). Griffin (2016) states that "*modern price elasticities for annual water use are likely to lie in the -0.3 to -0.5 range. Lower elasticities might prevail in regions where scarcity policy (price and nonprice) has caused households to reduce consumption. Examining the Dalhuisen et al. results more closely, it can be argued that long-term residential price elasticity may be approximately 0.3 or more points higher (e.g., -0.7), but 0.2 points higher would be a conservative estimate*." This suggests short- and long-run price elasticities of -0.4 and -0.6, respectively.

[59] 1 CCR § 2003 (d).
[60] SRIA, page 77.
[61] See page 52 of the SRIA for the discussion of marginal water cost escalation. See page 76 for the discussion of utility cost pass through.
[62] An own-price elasticity measures the percentage change in demand for a good or service given a one percent increase in its price. Hence, an elasticity of -0.5 implies that a 1% increase in price will decrease demand by 0.5%.

In Figure 5, we show what the effect of a sustained increase of 3.2% per annum in the marginal cost of water service would be on statewide GPCD using the short- and long-run elasticities of -0.4 and -0.6. The blue dashed line represents the short-run response path while the red dashed line represents the long-run response path. The short-run response provides the more likely response path in the initial years. However, under a sustained price increase, the long-run response shows the likely response path after several years. The long-run response path is significantly below the SRIA's baseline GPCD forecast, and almost exactly tracks and then drops below predicted GPCD under the proposed regulation.

Figure 5. Projected Statewide Urban GPCD with Price Effects

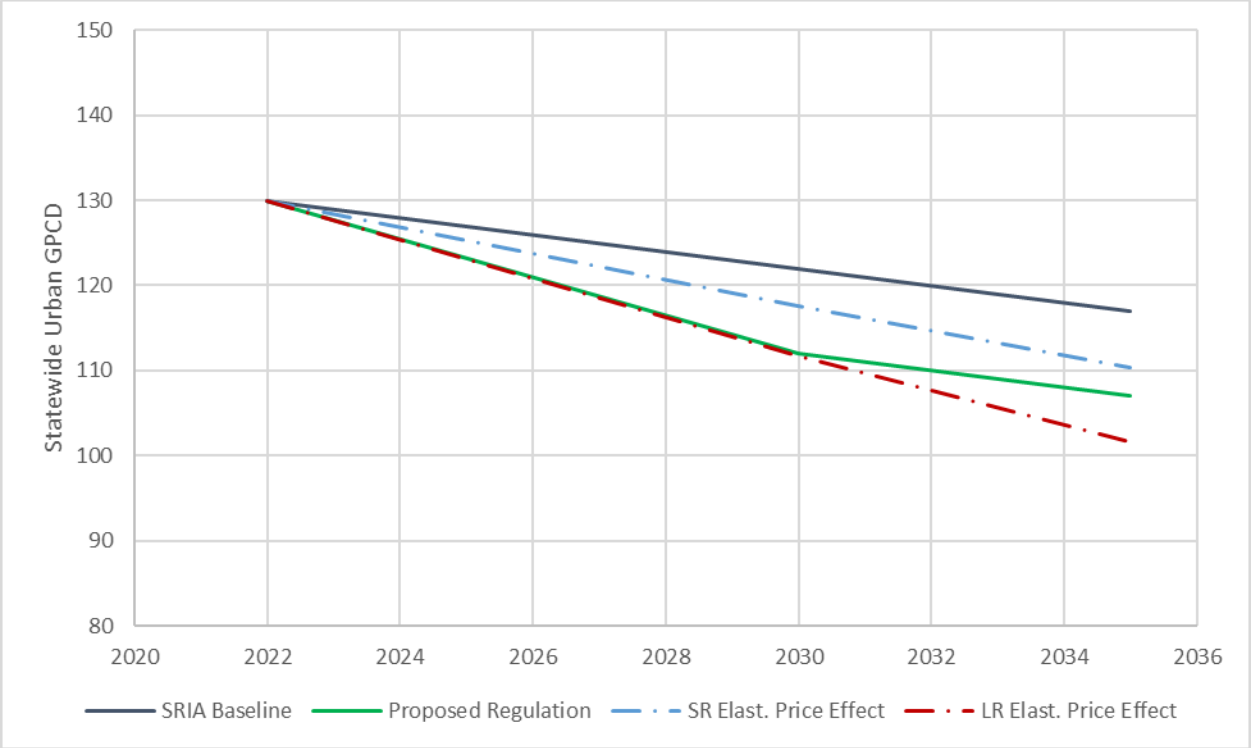


Figure 5 highlights an internal contradiction within the assumptions used in the SRIA to estimate the water savings and economic benefits of the proposed regulation. The contradiction is namely this:

a) If the SRIA is correct regarding future increases in marginal water cost, then the baseline is certainly too high. It should be closer to the red dashed line in Figure 6. This, in turn, **implies that the proposed regulation would generate little or no water savings relative to the baseline condition.**

b) If the SRIA is correct regarding the baseline condition, then its forecast of future marginal water service cost is certainly wrong. This, in turn, **implies the SRIA has substantially overestimated the benefits of the proposed regulation.**

c) The two assumptions are mutually exclusive. One cannot hold without contradicting the other.

As it now stands, we believe that the SRIA does not fulfill its primary statutory purpose, which is to "*provide agencies and the public with tools to determine whether the regulatory proposal is an efficient and effective means of implementing the policy decisions enacted in statute or by other provisions of law in the least burdensome manner*."[63]

Summary of Findings

- Based upon our review, we conclude that the **SRIA does not reasonably determine the benefits of the proposed regulation** due to the following:
    - It overstates supplier variable production costs and appears to double count these costs.
    - It bases its estimates of avoided water production cost primarily on wholesale water rates even though these rates embed a sizable portion historical sunk costs which in the long run are not avoidable.
    - It mistakes the underlying causes for escalating wholesale water rates and as a consequence overstates the rate at which truly avoidable costs will escalate in the future.

- While the SRIA estimates the present value benefits of the proposed regulation (excluding transfer payments) will be on the order of $11.1 billion, **after correcting for the above deficiencies, we estimate the benefits will be significantly lower, on the order of $8.2 billion.** Note that this revised estimate assumes 10 years of residual water savings and associated avoided cost benefits at no additional cost.

- Based upon our review, we conclude that the **SRIA does not reasonably determine the costs of the proposed regulation** due to the following:
    - It relies on constant unit costs for conservation measures despite assuming a rapid and massive ramp-up of these programs in the first five years of the regulation.
    - It underestimates customer costs by ignoring the time-value-of-money costs of shifting future expenditures closer to the present.
    - It underestimates the costs of CII MUM to DIM conversions by only counting the initial installation and inspection costs and ignoring the annual maintenance, billing, and meter replacement costs.
    - It grossly underestimates the costs of program creation and reporting as well as the costs to implement the CII BMPs.

- While the SRIA estimates the present value costs of the proposed regulation (excluding transfer payments) will be on the order of $8.9 billion, **after correcting for the above deficiencies, we estimate the costs will be significantly higher, on the order of $15.6 billion.**

[63] 11346.3(e) of the Government Code.

- Together, our revised estimates of the benefits and costs of the proposed regulation are as follows:

Expected benefits (Including additional 10 years of residual savings at no cost)	$8.2 billion
Expected costs (Including adjustments for turf replacement, customer costs, and MUM to DIM conversions)	$15.6 billion
Net Benefits	-$7.4 billion
BCR	0.53

- Based on our review, we conclude that the **SRIA does not reasonably establish the baseline condition from which the benefits and costs of the proposed regulation are to be estimated** due to the following:
    - It ignores the effects of future price increases on residential and CII water uses.
    - It relies on mutually contradictory assumptions to set the baseline condition, estimate water savings, and calculate benefits of the proposed regulation.

- On the one hand, if the SRIA is correct regarding future increases in marginal water cost, then the baseline condition used to calculate water savings is certainly too high which, in turn, means that the **proposed regulation will not generate anything close to the water savings reported in the SRIA**.

- On the other hand, if the SRIA is correct regarding the baseline condition, then its forecast of future marginal water service cost increases is certainly wrong, which, in turn, means the SRIA has **substantially overestimated the benefits of the proposed regulation and that the regulation is unlikely to be cost-effective**.

- The fundamental problem with the analysis is one that the SRIA's authors themselves point out: The SRIA they prepared is "*closer to a 'partial equilibrium' approach than it is to a 'full equilibrium' approach where price-elasticities of urban water demand and supply are considered.*" **If they had considered price effects, with respect to both demand and supply, they would have more easily seen that key assumptions underpinning their analysis were internally inconsistent and contrary to empirical evidence.**

Implications of Findings

There are numerous implications of these findings, however, the ones that concern us most are with respect to the affordability of water service and the impact on low-income communities.

- Although the SRIA portrays the proposed regulation as cost reducing (it estimates only 0.2% of households would face higher water bills), our analysis strongly indicates that it will drive up costs for most water suppliers which in turn will put further upward pressure on rates and

charges.

- Although Figure 2 above clearly indicates that most water suppliers have variable production costs far below the average cost of savings, which the SRIA puts at $2,128/AF,[64] there are no provisions in the proposed regulation concerning the cost-effectiveness of the mandated requirements. Under the proposed regulation, a supplier may receive a variance if its customers have, say, an inordinate number of horses, but not if the costs of compliance significantly outweigh its avoided costs of production. The proposed regulation should incorporate *at the supplier level* basic tests of economic efficiency with respect to the mandated requirements.

- An analysis we completed of the distribution of reduction requirements and compliance costs across suppliers revealed a concerning trend: the burden appears to disproportionately affect disadvantaged communities (DACs). We've estimated a clear positive correlation between supplier reduction requirements and the prevalence of DACs within a supplier's service area. In practical terms, we estimate that the top 25% of suppliers with the highest DAC prevalence are likely to face roughly double the compliance costs, on a per connection basis, compared to suppliers with lower DAC prevalence.

- Many of these suppliers are situated in the Central Valley, where variable production costs are significantly lower than in coastal urban areas. Consequently, the likelihood of the proposed regulation increasing costs and potentially driving up rates and charges for suppliers who are already grappling with the challenge of maintaining affordable services is, in our estimation, quite high.

[64] SRIA, page 91.