



# Public Comments on “Options for Implementation of a Statewide Low-Income Water Rate Assistance Program”

*Prepared for the California State Water Resources Control Board*

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California State Water Resources Control Board  
P.O. Box 100  
Sacramento, CA 95812-2000

Comment Letter – Options for Implementation of a Statewide Low-Income Water Rate Assistance Program.

On behalf of Resources for the Future (RFF), I am pleased to share the accompanying comments to the California State Water Resources Control Board on its proposed Options for Implementation of a Statewide Low-Income Water Rate Assistance Program.

RFF is an independent, nonprofit research institution in Washington, DC. Its mission is to improve environmental, energy, and natural resource decisions through impartial economic research and policy engagement. RFF is committed to being the most widely trusted source of research insights and policy solutions leading to a healthy environment and a thriving economy.

While RFF researchers are encouraged to offer their expertise to inform policy decisions, the views expressed here are those of the individual authors and may differ from those of other RFF experts, its officers, or its directors. RFF does not take positions on specific legislative proposals.

Since the 1950s, RFF scholars have advanced the understanding of water resource management issues. Urban water management is one of many foci of water research at RFF. RFF researchers have developed tools to understand the economics of nonlinear water pricing, the effectiveness and distributional implications of nonprice conservation policies, and the role of water consumer behavior in designing efficient policies. RFF experts and external colleagues are well-positioned to provide unbiased information based on rigorous research and policy analysis.

If you have any questions or would like additional information, please do not hesitate to contact me at [wichman@rff.org](mailto:wichman@rff.org).

Sincerely,

A handwritten signature in black ink, appearing to read "C. Wichman".

Casey J. Wichman

These comments are submitted on behalf of a group of economists working on issues relating to the efficiency and equity impacts of water pricing and water consumer behavior more generally. We hope that these comments will be useful as an input to the California State Water Resources Control Board (“Board”) in the design of the Low-Income Water Rate Assistance Program (“W-LIRA”).

Any low-income assistance program should be attentive to underlying economic incentives. One fundamental concern with water-rate assistance programs is the degree to which making water “cheaper” for low-income households can counteract conservation and efficiency incentives of water pricing. The Second Fundamental Theorem of Welfare Economics (FWT) provides a set of principles through which equity-focused policies can be achieved without distorting efficiency outcomes. In a nutshell, this theorem states that, under a standard set of conditions, any efficient outcome can be achieved through a set of lump-sum wealth transfers. What this means for W-LIRA is that it is feasible to think of a policy that achieves intended re-distributional goals to support low-income households while not changing the consumption incentives for those households. Along these lines, the proposed W-LIRA program design performs quite well. We provide supportive and critical feedback on several features of W-LIRA below.

## 1. Separating the W-LIRA Policy from Prices

In order to make “water conservation a California way of life” it is important to continue to incentivize efficient water use. The easiest way to do so is through the existing rate structures. Any policy that reduces the effective price of water consumption for a set of households may increase the quantity of water that those households consume. Common estimates of the price elasticity of water demand are approximately  $-0.3$ , suggesting that if a 50% rate reduction, as proposed for Tier 3 benefit levels, was levied on the price customers pay for water, we would anticipate a 15% increase in consumption. Moreover, research has documented that lower-income households are more responsive to price changes (Wichman et al., 2016). This price-responsiveness highlights how program design may change underlying consumption incentives.

It is important to note that although, in theory, only the volumetric price of water matters for consumption decisions (and not the fixed access fee) recent insights from behavioral economics suggest that water customers are more likely to base consumption decisions on *average* price or average bills when facing increasing-block rate structures (Wichman, 2014; Brent and Ward, 2018) and water customers even respond to changes in the frequency of their bills because they *perceive* water prices to have changed (Wichman, 2017). These behavioral biases may counteract the ability of any low-income assistance program that distributes program benefits on a customer’s bill to maintain incentives for efficient water use.

As a result, we support the Board's suggestion to structure the disbursement of W-LIRA's program benefits as a constant, lump-sum payment that is not tied to an eligible household's consumption. This structure preserves incentives for conservation as well as mitigates the ability of the program to be manipulated.

## **2. Benefit Distribution**

In line with our previous comment, the least distortionary mechanism to disburse program benefits would be to send all eligible households a check directly, presumably with timing that corresponds with receipt of their water bill. In addition to decoupling the benefit from the water bill itself, such a mechanism would provide the benefit to all eligible households, whether or not they are directly paying a water bill. Some potential options consistent with this description are discussed in the report's Appendix K (pg. 49). The direct costs of implementing such a disbursement system, however, may be prohibitive.

In the absence of providing benefits directly to eligible households, a lump-sum transfer on an eligible household's electricity or natural gas bill preserves the same incentive structure as a direct payment. It is important to understand, however, if customers might erroneously interpret a W-LIRA credit on an electricity bill as a decrease in the cost of consuming electricity. If this is the case, it is possible that those receiving W-LIRA credits could actually increase their electricity consumption.

## **3. Revenue Collection**

A proposed small tax increase on personal income above \$1 million is consistent with the incentives mentioned previously in that it will not affect the incentives of high-income households to change water consumption behavior and it is likely to be minimally distortionary. The effectiveness of pairing this tax increase with removal of the bottled water tax exemption depends on (a) the price-elasticity of demand for bottled water (and potentially the cross-price elasticity of demand with respect to tap water use) and (b) whether there is a meaningful rationale to discourage bottled water use (e.g., to reduce plastic pollution).

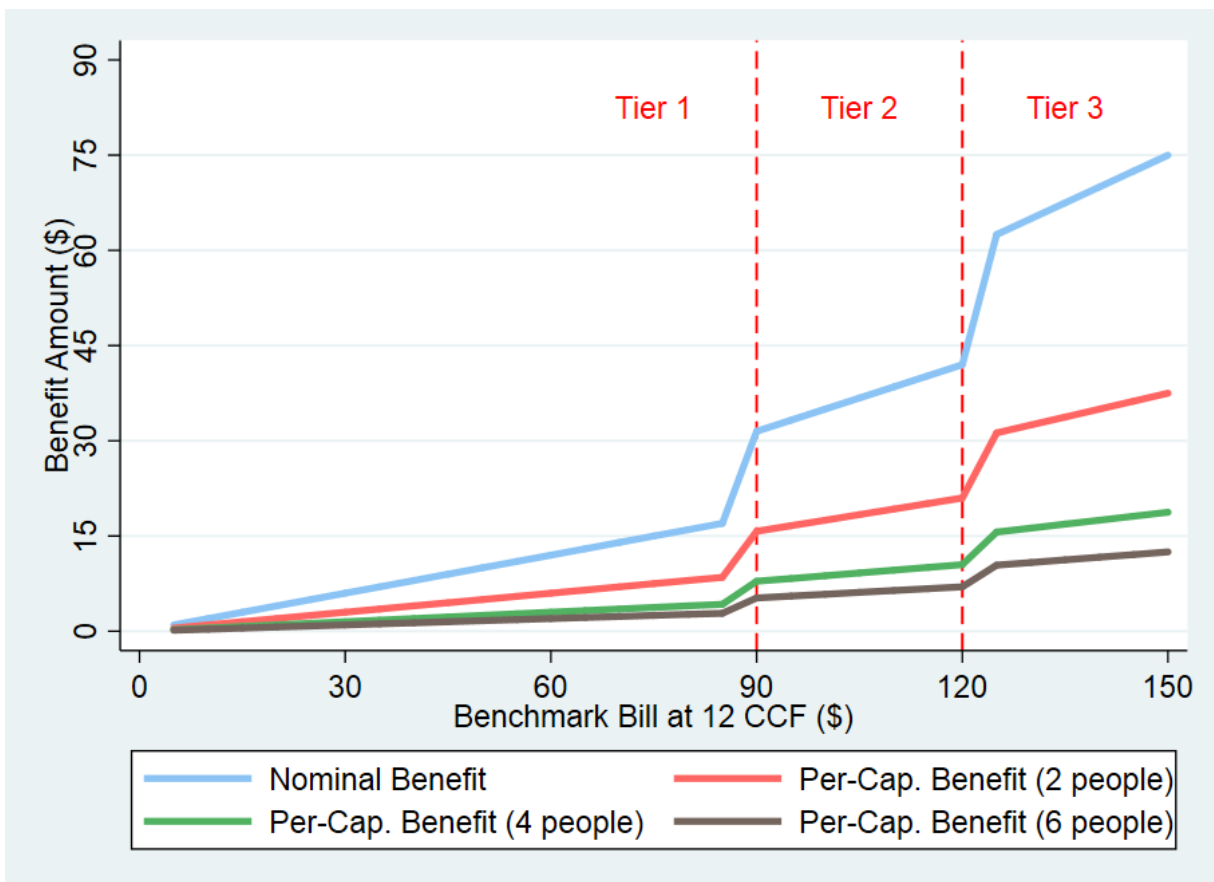
## **4. Program Design – Why 12 CCF?**

There is little justification for the choice to tie the level of program benefits to customer bills at 12 ccf per month. 12 CCF of water per month corresponds to roughly 75 gallons per capita per day (GPCD) for a four-person household, roughly 100 GPCD for a three-person household, and roughly 150 GPCD for a two-person household. Given that the target for indoor daily water usage established by AB 1668 is currently 55 GPCD and falls to 50 GPCD by 2030, tying the program benefit to a consumption level of 12 CCF appears large.

Because program eligibility is based on the federal poverty limit (which is defined in per-capita terms), constructing program benefits that depend on household size would be feasible. With a lump-sum benefit for program participants that is constant across household sizes, the proposed W-LIRA program provides a larger per-capita benefit to small households and a smaller per-capita benefit to larger households. According to Table 5 (pg. 19), the Board appears to have chosen the 12 CCF/month quantity with the implicit judgment that approximately 75 GPCD for a family of four is a reasonable quantity of water. To remain equitable, the benefit paid to a family of two should be based on a water bill calculated at the same per-capita consumption per month: 6 CCF.

Figure 1 provides a quick illustration of this point. We plot the per-capita benefit amount that would be paid out against the benchmark bill amount at 12 CCF for various household sizes. As total bill amounts rise, the per-capita benefit for smaller households rises much more quickly, especially in the second and third program tiers. Additionally, households with fewer people will likely be able to limit their consumption to well under 12 CCF, meaning that a larger percentage of their total bill will be covered by the benefit credit. Given the variance in household sizes across low-income households, a per-capita based benefit system should be considered.

**Figure 1: W-LIRA Per-Capita Benefit Amounts**



## 5. Accommodating Budget-based Rate Structures

One recent trend in CA water pricing is the adoption of “budget-based” water rate structures where price tiers are dictated by household characteristics (e.g., household size, lot size, etc.) and evapotranspiration. These rate structures are unique in that there are many potential bill amounts for the same level of consumption within each billing period. Even if an individual household were able to keep its consumption fixed across billing periods, it still may pay a different bill amount each month due to weather shocks that adjust water budgets. The current guidance does not suggest how W-LIRA will determine program eligibility under nonstandard rate structures.

Because budget-based rates are typically regressive in lot size and household size (i.e., customers with larger lots receive a larger budget and thus pay relatively less for the same amount of water use), both of which correlate positively with household income, we recommend that the 12 CCF eligibility criteria be evaluated relative to local socioeconomic characteristics of households within 200% of the federal poverty limit.

Sincerely,

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## References

- Brent, Daniel A. and Michael Ward. "Price Perceptions in Water Demand," Working Paper (December 2018)  
[<https://drive.google.com/open?id=1yQ4lge0hh5WLFWOVklLkLolWv6qUcg898>]
- Wichman, Casey J. "Perceived price in residential water demand: Evidence from a natural experiment." *Journal of Economic Behavior & Organization* 107 (2014): 308-323.  
[<https://www.sciencedirect.com/science/article/pii/S0167268114000560>]
- Wichman, Casey J. "Information provision and consumer behavior: A natural experiment in billing frequency." *Journal of Public Economics* 152 (2017): 13-33.  
[<https://www.sciencedirect.com/science/article/abs/pii/S0047272717300804>]
- Wichman, Casey J., Laura O. Taylor, and Roger H. Von Haefen. "Conservation policies: Who responds to price and who responds to prescription?." *Journal of Environmental Economics and Management* 79 (2016): 114-134.  
[<https://www.sciencedirect.com/science/article/pii/S0095069616301243>]

