



**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

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Order Instituting Rulemaking into Policies to Promote a Partnership Framework between Energy Investor Owned Utilities and the Water Sector to Promote Water-Energy Nexus Programs.

Rulemaking 13-12-011
(Filed December 19, 2013)

**COMMENTS OF THE NATURAL RESOURCES DEFENSE COUNCIL (NRDC) ON THE
PROPOSED DECISION REGARDING TOOLS FOR CALCULATING THE EMBEDDED
ENERGY IN WATER AND AN AVOIDED CAPACITY COST ASSOCIATED
WITH WATER SAVINGS**

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I. Introduction and Summary

Pursuant to Rules 1.9, 1.10, and 14.3 of the Commission’s Rules of Practice and Procedure of the California Public Utilities Commission’s (CPUC or Commission), the Natural Resources Defense Council (NRDC) respectfully submits these comments on the “Proposed Decision Regarding Tools for Calculating the Embedded Energy in Water and an Avoided Capacity Cost Associated with Water Savings,” (PD) issued August 17, 2015. NRDC is a non-profit membership organization, with nearly 70,000 members with an interest in receiving affordable energy and water services and reducing the environmental impact of California’s energy and water consumption, especially in light of the ongoing exceptional drought in California.

The PD would adopt the tools developed for calculating the embedded energy in water and the avoided capacity cost associated with water savings. It would require energy investor-owned utilities (IOUs) to use these tools in requests for customer funds for water-saving programs. Water utilities are not required to use the tools, but they are encouraged to do so to facilitate partnerships with energy agencies on these programs. This decision will establish the framework for energy utilities to pursue water efficiency programs, which are critical to meeting statewide water efficiency goals.

The PD will also provide energy IOUs with assurance that the CPUC values water savings and supports collaborative efforts to improve water efficiency. The tools created are

essential to the development of demand-side programs that reduce both water and energy consumption. They will help quantify the magnitude of embedded energy savings attributable to water saving programs so that savings can be appropriately factored into energy utilities' energy efficiency programs as part of cost-effective energy efficiency portfolios. In light of both the current drought and projections of continued water scarcity in California, the final decision will provide the direction that water and energy utilities need to respond to the drought in the short term as well as establish strategies for long-term water efficiency programs.

In summary, NRDC offers the following comments on the PD:

- NRDC supports the adoption of the tools to promote cost-effective water-saving measures in 2016 and beyond, with our recommended modifications.
- Cold water-savings measures do not automatically reduce overall *energy* consumption, and therefore the Commission should update the calculator to only account for conveyance of water *from* carry-over storage to end-users.
- NRDC agrees with the PD requirement that Commission-jurisdictional energy utilities use these tools in requesting customer funds for water-saving projects or programs.
- NRDC supports allocation of costs in proportion with benefits as well as determining cost-effectiveness in a manner that maximizes benefit to the customer.
- NRDC agrees with the mandate of cost-effectiveness on a portfolio (as opposed to program) level.
- The current lack of default inputs in some areas of the tools should not preclude their use in 2016 program planning. The Commission should make certain that future updates to the tools are made in a timely manner and take into account lessons learned and data gained from the initial use of the tools. These updates also should not be applied retroactively.

II. Discussion

- a. NRDC supports the adoption of the tools to promote cost-effective water-saving measures in IOU energy efficiency portfolios in 2016 and beyond, with our recommended modifications.**

The PD proposes to adopt the tools for use by energy IOUs in planning energy and water efficiency programs as early as 2016, which NRDC strongly supports. The Water-Energy Calculator (W-E Calculator) and the Avoided Water Capacity Cost Model (Water Tool)

represent a significant amount of work and progress, and their use will help support cost-effective water-saving programs that will benefit California and its residents.

NRDC agrees that it is appropriate to use long-run marginal supply to calculate the avoided capacity cost associated with water savings. However, there is an incongruity between the default selection of recycled water as the marginal supply and the default resource balance year (RBY) of 2016. Water agencies that are facing supply shortages that necessitate the use of marginal supply in 2016 would likely turn to more accessible sources than recycled water.

As a mitigating factor, we appreciate the intention that program administrators can override this selection in favor of options that more accurately reflect the situations at their respective agencies. We again note that although the method for setting an alternate resource balance year is described in Section 3.3.3 of the April 27, 2015 final consultant report “Water/Energy Cost-Effectiveness Analysis,” *the current Water Tool does not actually include the functionality to change the default resource balance year.* Changing the resource balance year requires the user to change the values for the variable “Year to Capital Outlay” in the Selection tab of the Water Tool, which is a protected cell in the most recent release of the tool (April 27, 2015, version 1.03). Addressing this lack of functionality would be an easy fix that would critically improve the flexibility of the Water Tool and should be done prior to adopting the tool.

In the PD, the Commission “delegates to Commission Staff responsibility for integrating the W-E Calculator and the Cost Effectiveness Calculator,” the tool currently used for evaluating the cost-effectiveness of IOU energy programs without water savings. The PD also authorizes the Staff to retain and fund consultants for this support.¹ With this mechanism for applying necessary changes to the tools already in place, NRDC suggests that the Commission also task Commission Staff with correcting the RBY and other functionality errors in the tool that may be identified. We offer the following additional underlined text to be added to OP 4:

4. The Commission delegates to Commission Staff responsibility for integrating the Water-Energy Calculator with the Avoided Water Capacity Cost Model, and for correcting functionality errors in the tool that may be identified, including the inability to make changes to the default value for the resource balance year. To the extent that this requires consultant support, we authorize Commission Staff to retain consultants and to

¹ PD, at 37.

fund such consultants from evaluation budgets. Funding for the evaluations will be proportional to program expenditures, as adopted in past energy efficiency decisions.

NRDC supports other elements of the tools that the PD proposes to adopt including geographic granularity at the California Department of Water Resources hydrologic region scale as a simplifying default assumption, alignment of the capital structure consistent with that used for other energy efficiency measures, and the variety of load profile choices available in the W-E Calculator, as well as the ability for users to implement their own unique settings. NRDC also strongly supports the use of long-run marginal supply for quantifying the benefits of avoided water capacity; however, PD Ordering Paragraph (OP) 5 does not explicitly state that it is the *long-run* supply that should be used when overriding defaults. NRDC suggests that the Commission add language to OP 5 to clarify this important point. We offer the following additional underlined text to be added to OP 5:

5. When overriding default values in the Water-Energy Calculator and the Avoided Water Capacity Cost Model (collectively, tools), users should continue to use values for a long-run marginal supply; rather than for historical/existing supplies, when using the tools in connection with anything that the Commission is reviewing in a proceeding or advice letter.

NRDC agrees with the PD that non-IOU embedded energy primarily used for long distance conveyance should not be considered when determining the cost-effectiveness of energy IOU programs. Evaluating programs in this manner would overstate the benefits of these programs to IOU energy customers and potentially lead to inappropriate use of customer funds.

Recognizing that a number of the default assumptions used in the tools rely on sparse data, NRDC agrees with the provisions in the PD that would prioritize review of partnership programs supported by the tools and lay the groundwork for improvements of the tools' data inputs in the future. These include the provisions that the Class A and Class B water utilities provide Commission Staff with energy intensity data that will be publicly posted for use in the tools, as well as that water-energy projects will be prioritized for ex post evaluation on an annual basis. The accumulation of a greater quantity of high-quality data combined with the fast track review of water-energy projects and programs will help ensure that the tools are vetted and refined as quickly as possible, which would greatly benefit California customers.

b. Cold water-savings measures do not automatically reduce overall energy consumption from all components of the water supply system, and therefore the Commission should update the calculator to only account for conveyance of water *from* carry-over storage to end-users.²

The PD does not fully address the fundamental issue posed by the “elephant in the room” question, which is whether cold-water savings measures actually lead to energy savings from all components of the water supply system, particularly due to the prevalent use of carry-over storage in the state’s water conveyance operations. As we stated in previous comments in this proceeding, considerable energy is used by the state’s major long-distance conveyance systems (e.g., State Water Project and Colorado River Aqueduct) to transport water. The movement of water to and from treated (or “finished”) water storage is generally responsive to end user water demand (i.e., “load-following”) whereas the upstream conveyance of water to carry-over storage is not load-following. Rather, it is intended to dampen large fluctuations in supply and demand driven by interannual variability of the hydrologic cycle.³

In particular, we noted that “[o]peration of the conveyance to carry-over storage is driven by source water availability, and changes in retail customer end-use of water may not influence such conveyance operations for many years or decades, if ever.”⁴ Accordingly, the Commission should exercise caution before allowing end-use water efficiency measures to claim energy savings from the embedded energy related to water conveyance and/or other components of conveyance and distribution systems that are not load-following. The PD does not adequately address this threshold issue, which will likely lead to a significant overstatement of the energy savings attributed to end-use water efficiency.

While the PD does reference the Project Coordination Group’s (PCG) early identification of this issue,⁵ it does not resolve the underlying problem at hand. Instead, it includes an extended overview of actions taken by state agencies and other entities to save water during the drought and concludes by stating that recent Executive and Commission orders “add urgency to our work

² This title differs from that of the Proposed Decision (p. 13) because the fundamental question is whether end-use water savings measures actually reduce *energy* consumption from all components of the water supply system.

³ NRDC. *Comments of the Natural Resources Defense Council on Tools for Calculating Embedded Energy in Water and Avoided Capacity Cost Associated with Water Savings, and on Cost Allocation*. June 10, 2015, at 8-9.

⁴ *Id.*

⁵ PD, at 14-15.

to save water and thus embedded energy...”⁶ as justification for moving forward with use of the calculator tools. In the near-term, the impact of the PD’s omission is negated by the Commission’s decision to only allow IOU energy savings to be credited.⁷ To that point, the Commission correctly states that electricity for water conveyance operations is typically provided by non-IOU entities.⁸

Thus, while the potential to significantly over-credit energy savings from water conveyance operations is largely avoided in this proceeding by the exclusion of non-IOU power, the underlying concern is that if the Commission agrees in theory that the energy used to convey water to carry-over storage can be credited as embedded energy savings (and also greenhouse gas reductions) for end-use water efficiency measures, other state agencies (e.g., the Department of Water Resources, the California Energy Commission) will similarly follow suit and allow such embedded energy savings to be credited to various water savings programs and thereby, greatly expand the scope of over crediting energy savings. This concern is underscored by the Commission’s encouragement to other entities, such as the State Water Resources Control Board, to adopt and use the calculator tools for analysis.⁹ In practical terms, this will potentially divert energy efficiency funds (e.g., cap-and-trade auction proceeds) to end-use water efficiency measures when other energy efficiency measures might lead to greater and more cost-effective energy savings and GHG reductions.

The default values in the W-E Calculator do not explicitly separate energy use for conveying water from a supply source to carry-over storage from energy use for conveying water from carry-over storage to end-users. We recommend that the W-E Calculator be updated to include only the energy use from conveyance of water to end-users and not include the energy use from conveyance of water to carry-over storage. Currently, in the W-E calculator, users can modify the default extraction and conveyance energy intensity values as well as the percentage of that energy that is attributable to IOUs for some water sources, including seawater or brackish

⁶ *Id.*, at 18.

⁷ *Id.*, at 32-33.

⁸ *Id.*

⁹ PD, at 51-52.

desalination, recycled water, groundwater, or local deliveries.¹⁰ For other sources including local imported deliveries,¹¹ the Colorado River Aqueduct (CRA), the Central Valley Project (CVP) and other federal deliveries, and the State Water Project (SWP), users *cannot* edit the energy intensity and percentage of IOU energy values, as the tool states that the supplies represent specific systems with known values for these variables.

A user of the W-E Calculator who wants to exclude conveyance of water to carry-over storage might work around this issue by changing the default supply mix to eliminate imported deliveries, the CRA, the CVP, and the SWP as supply sources, and instead opting to increase the amount of water assumed to come from local deliveries (and changing the energy intensity and percentage of IOU energy for local deliveries to correspond to their local systems). Even so, this workaround is imperfect as completely eliminating imported water from the supply mix might overlook the conveyance energy that occurs downstream of carry-over storage. While there are imperfect workarounds to eliminate the conveyance energy intensities of long distance conveyance systems like the CRA, the CVP and the SWP, it is desirable that the default values only include conveyance energy use that occurs downstream of carry-over storage.

Therefore, we recommend that the final decision recognize that some energy associated with water conveyance will not change as a result of end-use water efficiency programs and direct Staff to revise the default energy intensity values for long distance conveyance systems in the W-E Calculator to only account for conveyance of water *from* carry-over storage to end-users. This modification should be added to the list of potential changes to the tools (PD, at 62), but due to the high degree of interest from other state agencies, critical modifications to this functionality should be considered in the next phases of this proceeding and not deferred to an unspecified future date.

c. NRDC agrees with the PD requirement that Commission-jurisdictional energy utilities use the Water Tool and the W-E Calculator in requesting customer funds for water-saving projects or programs.

¹⁰ Navigant Consulting, Water/Energy Cost –Effective Analysis Final Report, April 2015, at 25. Local deliveries represent water delivered by local water agencies and individuals including direct deliveries of water from stream flows.

¹¹ *Id.* “Local imported deliveries represent water transferred by local agencies from other regions out of the state.”

The PD's requirement that energy IOUs use these tools when requesting customer funds for water-savings programs ensures that the value of the embedded energy savings and reduced need for marginal water supplies attributable to these programs will be captured for customers. Using these tools will also provide a consistent framework for energy IOUs to evaluate water-saving programs as compared to other energy efficiency measures. Although water agencies are not mandated to use these tools or undertake any additional water-saving programs as a result of this decision, NRDC encourages water agencies to contribute their expertise and information and partner with energy agencies in using these tools to support water efficiency programs, in order to benefit a wider range of California energy and water users.

NRDC also supports the PD's directive for energy IOUs and the California Water Association (CWA) to work together with Commission Staff and file pilots on advanced metering infrastructure (AMI) integration. The leak detection capabilities of AMI make it a valuable tool in saving water and water-energy and pilots could help identify if the technology is an effective use of energy funds and energy or gas meter data upload infrastructure.

d. NRDC supports allocation of costs in proportion with benefits as well as determining cost-effectiveness in a manner that maximizes benefit to the customer and is measured at the portfolio level.

NRDC supports allocating costs in proportion with benefits. In the case of energy and water agency partnerships, we also find reasonable the PD's allocation of embedded energy savings to the energy agency and allocation of avoided water capacity costs to the water agency. We strongly support measuring energy efficiency cost-effectiveness at a portfolio level, in line with the current requirements for other energy efficiency programs approved by the CPUC. Ultimately, the Commission's policies should send both water agencies and energy utilities a strong message that water savings and embedded energy savings are a high priority, while also assuring that customer funds are used as efficiently as possible.

e. The current lack of default inputs in some areas of the tools should not preclude their use in 2016 program planning. The Commission should make certain that future updates to the tools are made in a timely manner and take into account lessons and data gained from the initial use of the tools.

NRDC agrees with the PD that a variety of important default data is still lacking in the tools, including gas energy intensity and water commodity cost data, but we also recognize that given the lack of robust data for these inputs, it would be detrimental to program development to

delay adoption of the tools for this reason. We maintain the opinion that the tools should remain flexible in the initial stages of their use to allow for a wide range of applications. In the future, after a wealth of user experience and input data is accumulated, substantive additions to the tools can be revisited. Although the PD does not specify a timeline for future updates to the tools, the Commission should make certain that updates to the tools occur in a timely manner – intervals of no more than two years would be appropriate for the foreseeable future -- as this data becomes available. Further, these updates should not apply retroactively to water-efficiency measures that have been previously included in energy efficiency portfolios.

III. Conclusion

NRDC commends the work of the Commission in tackling the important issues addressed in the PD. We urge the Commission to revise the PD by incorporating the recommendations above and the specific recommendations to Ordering Paragraphs 4 and 5. We appreciate the opportunity to offer these comments and look forward to the implementation of the tools discussed in order to evaluate real water-saving programs.

Dated: September 8, 2015

Sincerely,

A handwritten signature in black ink that reads "Edward R. Osann". The signature is written in a cursive style with a large initial 'E' and 'O'.

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