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

Order Instituting Rulemaking Concerning
Energy Efficiency Rolling Portfolios,
Policies, Programs, Evaluation, and Related
Issues

Rulemaking 13-11-005

**COMMENTS OF RECURVE ANALYTICS, INC. ON ASSESSMENT OF
ENERGY EFFICIENCY POTENTIAL AND GOALS AND
MODIFICATION OF PORTFOLIO APPROVAL AND OVERSIGHT
PROCESS**

I. Introduction

Recurve is an industry leader in meter-based demand flexibility. Recurve provides transparent, accessible analytics to track changes in consumption and demand due to program interventions for both individual buildings and in aggregate to support resource planning and facilitate performance-based transactions. We encourage and support market-based solutions for decarbonization.¹ We appreciate the opportunity to comment on this proposed decision.

In the course of this proceeding, particularly concerning the setting of potential and goals, Recurve has consistently advocated for the Commission to take a holistic view of the potential impacts of decisions affecting the energy efficiency portfolio. In particular, we believe that aligning outcomes with meter-based results can move the portfolio towards its true value as a grid resource.

¹ M. Golden, A. Scheer, C. Best. Decarbonization of electricity requires market-based demand flexibility, *The Electricity Journal* Volume 32, Issue 7, August–September 2019, 106621 *Available at:* <https://www.recurve.com/blog/the-secret-plan-for-decarbonization-how-demand-flexibility-can-save-our-grid>

We strongly support the Commission's proposed decision to significantly reform and realign the energy efficiency portfolio to emphasize its system benefits and better integrate demand-side solutions to bring greater flexibility to California.

In our opening comments we will focus on three components of the proposed decision:

- Support for the adoption of "Total System Benefit" as a key metric for establishing potential and setting goals.
- Support for the adoption of the "segmentation" of the portfolio to ensure proper focus of resource acquisition programs to deliver resources for system benefit.
- Opposition to the treatment of participant costs and therefore the use of the Total Resource Cost test, which continues to represent an asymmetric treatment of the participant costs relative to benefits, disincentivizes PAs to leverage limited ratepayer dollars to maximize total program investment, and fails to differentiate between traditional rebate programs and new ratepayer-friendly financing models.

Recurve has no opening comments regarding the portfolio process issues embedded in the proposed decision, but may provide reply comments based on stakeholder comments.

I. Support for adoption of "Total System Benefit" as the key metric for potential and goals

In addressing whether and how to amend the manner in which the Commission sets the energy efficiency goals and potential for program administrators with their portfolios, Recurve supported the "more nuanced" mix of metrics and specifically the proposal offered by NRDC.

We agree with the Commission's proposal of adopting a "Total System Benefits" (TSB) metric for multiple reasons but primarily because **it offers a more direct assessment of the full stack of benefits recognized by the Commission in the Avoided Cost Calculator**, which is updated every year for the Commission.

As the time and locational value of efficiency has evolved, this "price signal" must no longer be hidden behind layers of annual savings goals and focused on validating discrete, prescriptive measures. In addition, the TSB offers a more streamlined way to consider and

reconcile the multiple benefits realized by energy efficiency and other types of demand flexibility solutions.

The TSB creates the opportunity to reorient the portfolio toward time-dependent performance and comprehensive system solutions for resource acquisition. It also presents a more flexible way to layer in a price signal for the non-resource portfolio components, which may not be directly valued in the TSB. Creative program designs could monetize the non-resource benefits, couple their deployment with resource programs and thereby achieve both high TSB and market transformation and equity objectives.

While not perfect, **grounding all demand-side resources in a common value stack is an essential step to realizing a future of technology-agnostic pathways to decarbonization and demand flexibility.** We also continue to believe that the Commission should pursue a common valuation methodology that will enable meaningful comparison across the current demand side silos, ultimately bringing demand response, energy efficiency and other distributed generation and storage opportunities together as a unified resource available to customers.

We agree with the Commission that while the **full stream of benefits is currently available in the Avoided Cost Calculator (ACC) and the Cost Effectiveness Tool (CET), these are not immediately accessible to most stakeholder or market actors, and therefore may not be intuitive or familiar to them.**

Recurve has put significant effort into making cost-effectiveness calculations accessible to stakeholders and market actors to optimize delivery of the net benefits allowable within the current cost tests. We recently released the [FLEXvalue calculation engine](#), which is an **open-source codebase that enables stakeholders, program administrators, and aggregators to replicate regulatory cost-effectiveness outputs (like system benefits).** With minor modifications to FLEXvalue, the TSB (based on adopted definitions) could be included to familiarize parties with this metric and full transparency at the project, program, and portfolio level prior to its official adoption.

Among other improvements to current CET, FLEXvalue:

- Enables the computation of grid and carbon benefits from measured or custom load shapes
- Is proven to deliver correct cost-effectiveness calculations in California that match existing tools, while also fixing significant known computational issues
- Is 100% transparent and available to all users without restriction, with up-to-date and accessible documentation and an open source codebase
- Provides a simplified input and output structure that also includes emissions impacts
- Allows stakeholders to modify parameters such as discount rates to readily assess the impact that associated policy changes may have on cost-effectiveness
- Fixes known computational anomalies (aka bugs) found in the CET²
- Ensures compatibility with current policy and vintage control through an inclusive governance structure

We encourage the Commission to adopt the FLEXvalue codebase³ by reference and allow program administrators to use it in developing and submitting portfolio applications in the years prior to 2024 to improve familiarity and intuition around the TSB metric prior to adoption. We also believe the FLEXvalue codebase will be a critical tool for supporting the Goals and Potential analyses of the future, as it enables timely processing of both deemed and customized load shapes. Since *"The intent of the TSB is to use the savings and load shape of an energy efficiency resource and apply the hourly values for energy, capacity, and GHG compliance costs from the ACC to understand the total net system benefits from the energy efficiency resource,"* tools that can support that connection and make it accessible to market actors and stakeholders are foundational to this transition. The Commission need not devise new tools, but instead support the stakeholder community to contribute to open-source code and tools already available

² In the CET - the NPV discount calculation is currently initiated from a fixed date set in the CET rather than the start date that the user selects. This error applies to the NPV calculation of both costs and benefits. Because of this issue, we saw errors on the order of 10% for the upcoming 2021 ABAL filings and more severe errors when using the CET to forecast future programs. Errors from this issue are almost certainly also impacting PA cost-effectiveness reporting. This error was shared with Commission staff and has been corrected in the FLEXvalue engine.

³ The full code base is available on Github: <https://github.com/recurve-methods/flexvalue>; colab notebooks are included which allow running of the FLEXvalue engine directly.

and in use.

Recurve is demonstrating that improved accessibility and understanding of the avoided cost value pays off for program administrators and aggregators/implementers by enabling them to optimize interventions around the CPUC's marginal price signal without being restricted by a limited set of pre-calculated load shapes. This is critical for innovative programs capable of improving cost-effectiveness such as the recently-launched [Demand Flexibility Marketplace](#) with MCE wherein the base price per kWh is formulated from the cost-effectiveness test and the underlying value signal from the Commission in the ACC.

The "secret sauce," above and beyond population NMEC pay for performance programs, is simply making the avoided cost value visible to the aggregators all the way from screening projects to tracking and reporting performance for the program administrator. In programs like the Demand Flexibility Marketplace, program administrators buy the resource, not the program. Potential benefits of this model include reducing some overhead costs, expanding market access to a more diverse set of implementers, and allowing business models to adapt to more effectively deliver system and customer benefits as the clean energy landscape changes.

II. Support for the segmentation of the portfolio to ensure proper focus of resource acquisition programs to deliver resources for system benefit

We support the proposal to segment the energy efficiency portfolio into three parts and to design each program around a primary purpose. This purpose may overlap and ultimately support others, but programs should be focused in a way that does not bog down or compromise policy objectives. In particular, we agree that programs should not be required to meet cost effectiveness tests that cannot appropriately value equity or market transformation benefits.

As we have consistently stated in comments, we believe that one of the key benefits of this new structure will be the opportunity to **optimize resource acquisition programs for their intended purpose of delivering energy resources when and where they are needed**. It will also enable other programs to focus on their intended purpose and create a better path for consideration in resource planning.

While we strongly disagree that the TRC is appropriate for the resource portfolio (for reasons cited in the next section), we do believe that the performance of programs and the resource portfolio could be significantly enhanced when focused on the single objective of delivering demand side resources when and where they are needed most.

Resource acquisition programs are also the **best candidates for "silo-neutral" demand flexibility wherein efficiency and demand response could more favorably co-exist**. As noted in a recent ACEEE study, IDSM efforts in California have a poor record of achieving this objective – largely because of siloed regulatory objectives, budgets, and mis-aligned value propositions which in some cases are even pitted against one another.⁴ These historic boundaries have hindered the ability to decarbonize and negatively impacted the customer experience. A common valuation offers hope for breaking through out-of-date barriers through comprehensive, market-based solutions.

We believe that a key element of the segmentation strategy will be ensuring that any **incentives to make technologies available (market transformation) are not plagued by complicated layering schemes**. We agree with the Commission's intention to identify a primary purpose for a program, defaulting to resource acquisition, and appropriate metrics for assessing the value of the program would be particular to each track. For example, if a resource acquisition program was population-based NMEC targeted at multifamily middle income families, costs associated with incentives for high efficiency appliances, and/or financial kickers for acquiring hard to reach customers would not have to be included in the program costs for the resource acquisition program. The resource acquisition program costs and performance payment for delivering this resource would be on track with the population-based NMEC program. Market transformation initiatives that may have ensured that high efficiency appliances are affordable and accessible would potentially be judged by their market adoption trend line. Similarly, the equity component of providing extra support (like a kicker) to reach a hard-to-reach segment would potentially be judged by penetration rates in particular population demographics. In this

⁴ *Integrated Energy Efficiency and Demand Response Programs*; Dan York, Grace Relf, and Corri Waters September 2019; U1906, ACEEE <https://www.aceee.org/sites/default/files/publications/researchreports/u1906.pdf>

way, these different segments of the portfolio would naturally align to amplify investments and scale across the state without having to fight over each others' savings attribution.

We again **urge the commission to fulfill the obligations of SB350 to focus on NMEC as the default mode of resource acquisition**. As a reminder, SB350 states that *"The energy efficiency savings and demand reduction reported for the purposes of achieving the targets established pursuant to paragraph (1) shall be measured taking into consideration the overall reduction in normalized metered electricity and natural gas consumption where these measurement techniques are feasible and cost effective."* NMEC is most certainly feasible and cost effective for a majority of the resource acquisition programs. As such, segmentation of the energy efficiency portfolio helps ensure that third-party, performance-driven, meter-based impacts can be the foundation of programs in the future. With actuarial data on performance in the form of achieved load shapes, the goals and potential analysis can reorient to a consumption-based framework.⁵ This transition is compatible with the new TSB metric. Establishing this new actuarial feedback loop will result in more reliable and dependable analysis for forecasting purposes and coordinating the combined potential for efficiency and demand impacts.

III. Oppose the treatment of participant costs and therefore the use of the Total Resource Cost test as a primary cost-effectiveness metric

The appropriateness of the cost tests was considered in the course of this proceeding. In the course of this proceeding, Commission Staff asked stakeholders to comment on the appropriateness of cost tests in relation to the question of the achievability of a 1.25 TRC. Several parties pointed out the errors in the symmetry of how participant costs are handled in the TRC for energy efficiency. A cost-effectiveness test must ensure symmetry in the treatment of costs and benefits, which is currently not the case in California's application of the TRC for energy efficiency.

⁵ In much the same way the DR potential study has analyzed "shift" resources in [phase 3](#) of their analysis, long term "shape" and "shed" value could be inclusive of energy efficiency and electrification efforts to reconcile with the system benefits from analyzing consumption patterns and the impact of interventions on the horizon.

We reiterate the issues included in our comments last year in response to the of the 1.25 TRC requirement. We had noted that the **TRC of 1.25 is aggressive and may not be achievable with the existing participant cost burden, and more importantly, does not reflect the intended outcomes of energy efficiency as a meaningful resource for LSE investment.** We appreciate that the Commission has relaxed this requirement to 1.0 TRC in the proposed decision. However, we continue to believe that a cost test for optimizable energy efficiency as a resource needs to recognize the value of leveraging external capital (including participant contributions), not penalize it. The Program Administrator Cost test is the more appropriate test to understand the costs and benefits to the load-serving entity to capture and invest in demand-side flexibility as a resource.

As the concept of demand flexibility and the role of distributed energy resources matures, the limits of current cost tests to meet the objectives are revealed. In 2019, a comprehensive paper on the issues of the total resource cost test was published⁶ and since then other articles⁷ have made compelling arguments and practical suggestions for updating this framework for the future. California is a prime candidate for adopting these suggestions.

In considering **a long-term consistent resource valuation framework, the CPUC should prioritize approaches that carefully distinguish between private investment and ratepayer charges with the goal of encouraging private clean energy capital investment.** A new common valuation framework is fundamental to the success of distributed energy resources. The simple adoption of a common cost-effectiveness test across resources is insufficient to synchronize decision making among DERs for decarbonization resource planning.

While we continue to advocate for a comprehensive reassessment of the valuation structures, in the meantime the **CPUC should immediately retire the TRC for energy efficiency and utilize the PAC as the primary cost-effectiveness test for resource DSM**

⁶ Evolving Cost-Effectiveness Policy and Tools to Enable Modern Energy Efficiency and Demand-Side Management, Adam Scheer, 2019. Available at this link:

<https://www.recurve.com/blog/rethinking-cost-effectiveness-to-meet-the-needs-of-the-modern-grid>

⁷ Why a Bandage Fix for Cost-Effectiveness Testing Isn't Enough, Posted by Adam Scheer, Jake Millette, Olivia Patterson, and Julie Michals, Advanced Energy Perspectives

<https://blog.aee.net/why-a-bandage-fix-for-cost-effectiveness-testing-isnt-enough>

programs. Customers can make their own decisions on participation, and regulators can continue to screen programs to protect against predatory program designs via a Participant Cost Test (PCT) and program approval processes including advice letter review. While ratepayer protection is commonly cited as a key reason for maintaining the TRC, we have no evidence that predatory program designs have proliferated in jurisdictions that use the PAC as a primary test, and remedies like a participant cost test are readily available to address this concern.⁸

The TRC's biggest flaw is that it discourages co-investment in energy efficiency.

Straightforward, logical programs like on-bill financing or home upgrades that leverage external capital are hobbled within utility programs because they illogically hamper portfolio cost-effectiveness. As economic recovery initiatives emerge after the COVID-19 pandemic, the importance of leveraging external resources for investments in infrastructure will be essential. A cost test that discourages this kind of collaboration will mean California's customers (participant ratepayers and non-participant ratepayers) will miss out on an important opportunity.

This situation, **the weight of participant costs, is particularly acute for emerging NMEC programs.** NMEC portfolios include below code savings. Because of this, the CPUC erroneously chose to apply full measure cost for the entirety of project costs. While it may make sense in theory, in practice this approach counts large costs beyond savings at the meter, as customers pay for non-energy benefits such as a comfortable home and hot showers. Parties initially expected that additional savings would make up for this additional cost, but this has not turned out to be the case, largely because customers are buying value beyond energy savings in the course of upgrades.⁹ This has a chilling effect on the nascent NMEC programs (as they prepare savings claims) which are intended to enable SB350 and explicitly intended to capture to-code savings. NMEC is also the way to reflect hourly grid impacts and relative impacts on avoided costs, as well as to shift risk to pay for savings achieved as opposed to lofty program budgets, otherwise ratepayers are left to fully fund programs that may or may not deliver on their

⁸ Cost-Effectiveness Adjustments: How Effective Have States Been At Recreating the PAC? Luke Nickerman and Richard Aslin, Pacific Gas and Electric 2014 ACEEE Summer Study on Energy Efficiency in Buildings <https://www.aceee.org/files/proceedings/2014/data/papers/8-1084.pdf>

⁹ Impact Evaluation Report: Home Upgrade Program – Residential Program Year 2017, DNV GL, 2019 <https://pda.energydataweb.com/api/view/2171/CPUC%20GroupA%20Res%20PY2017%20HUP%20-%20Final%20Report.pdf>

savings projections.

As the Commission considers consumer financing and the integration of distributed energy resource programs, we offer additional examples of how the current treatment is incentivising the wrong behaviors.

IV. Conclusion

Overall, we feel the proposed decision successfully addresses some of the key barriers to successful animation of demand flexibility markets, and steps should be taken immediately to adapt to the new paradigm in preparation for full adoption of the TSB in 2024.

By **adopting the Total System Benefit metric**, the CPUC, program administrators, and market actors will be able to coordinate their efforts to meet the numerous goals of the portfolio to maximize system benefits, including decarbonization, now and into the future by:

- Providing a direct signal to the marginal value for demand side resources captured in the Avoided Cost Calculator.
- Stepping toward a common value stack inclusive of the time-value of both electrification and efficiency pathways to decarbonization goals that optimize system benefits.
- Leveraging existing data fields from common cost tests and enabling new tools like the FLEXvalue engine to support understanding and adaptation to the TSB.
- Enabling and supporting cost-effective performance-based program designs like the Demand Flexibility Marketplace.

The **segmentation of the portfolio** will further this objective as well by allowing greater synergy of programs and incentives with different core objectives within the energy efficiency portfolio and will enable integration across the demand flexibility landscape. In addition it will:

- Optimize resource acquisition programs for their intended purpose: delivering energy resources when and where they are needed.
- Open greater opportunity for "silo-neutral" demand flexibility, wherein efficiency and demand response could co-exist as resource acquisition strategies.

We **caution that the segmentation strategy will struggle unless** it can ensure that:

- Incentives that are available to make technologies available (in market transformation mode) or to accelerate equity objectives are not plagued by

complicated incentive layering schemes.

- Normalized Metered Energy Consumption is used as the default mode of resource acquisition to comply with SB350.

Finally, we note again that a **cost test for optimizable energy efficiency as a resource needs to recognize the value of leveraging external capital** (including participant contributions), not penalize it. CPUC should immediately retire the TRC for energy efficiency and utilize the PAC as the primary cost-effectiveness test for resource DSM programs until the full common valuation methodology is considered and adopted by the Commission. Adopting a cost test of 1.0 TRC is a welcome improvement alongside the segmentation of the portfolio; but it will only serve as a bandaid until the systemic problem of valuing this demand side resource is fixed.

The implementation of the proposed decision will enhance the flexibility of market actors to deliver value to the grid (including decarbonization value) and to customers. It will enhance the cost effectiveness of programs, if actual load shapes are the basis of performance reporting and potential analysis; and segmentation will enable clearer tracking of progress toward the multiple objectives of a portfolio while simultaneously enhancing the compatibility between programs.

Recurve Analytics, Inc. appreciates the opportunity to comment and respectfully requests the Commission to consider the concerns raised herein.

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Respectfully submitted,

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