

**DOCKETED**

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California Energy Commission  
Docket No. 23-DECARB-01  
*Submitted Electronically*

**Re: Recurve's Response to RFI on the Inflation Reduction Act Home Energy Rebates**

Dear California Energy Commission Staff and Commissioners,

Thank you for the opportunity to provide further comment on the Inflation Reduction Act (IRA) Home Efficiency Rebate Program. Recurve Analytics, Inc. respectfully submits the following comments to the California Energy Commission. Recurve is a leading demand flexibility solution provider specializing in open-source advanced measurement and verification to enable program optimization and validation of performance-based incentives. Recurve's work in deploying residential measured programs originated in California, and we are proud to support the state as a pioneer of innovation in this space to deliver solutions that can meet the urgent decarbonization objectives and align with grid optimization and affordability for participants and rate-payers alike.

We look forward to working with California to implement these important programs successfully.

If you have any questions about these comments, please contact me at [Carmen@recurve.com](mailto:Carmen@recurve.com) or 608-332-7992.

Respectfully submitted,



Carmen Best, Chief Policy Officer

## Questions for Stakeholders:

### **Scale and market transformation**

*1. Residential P4P programs in CA have been small. How can a P4P approach scale to move tens of millions of dollars in residential decarbonization incentives quickly?*

The design of P4P programs makes them highly scalable for efficiently deploying millions of dollars toward residential decarbonization incentives. The fundamental structure is set up to encourage the industry to actively engage. Aggregators and contractors, in response to market price signals, have been integrating these incentives into their operations, pushing for deeper and more extensive retrofits in ongoing and new projects. This approach not only drives significant enhancements in energy efficiency but also aims to expand the reach of comprehensive decarbonization retrofits.

The initial uptake of these programs has shown promise. It demonstrates that when the performance incentive aligns appropriately with the cost and other effort required for the projects, aggregators have a strong incentive to drive customer participation. However, a primary challenge encountered in existing residential P4P programs has been the limitations imposed by the Total Resource Cost test applied in the utility programs. This particular constraint means that the financial performance value offered by the program does not match the actual value delivered by the project - because private investments by participants are penalized in the cost test and the value in the avoided cost calculator does not include the significant future value of decarbonization efforts today.

The per-unit incentives estimated for the IRA-HOMES program for electric and gas savings would help augment the value currently available, ensuring more projects could be completed in California to accelerate action in meeting our climate goals.

*2. Can existing residential P4P programs adjust to incorporate HOMES requirements?*

Existing residential P4P programs are well-equipped to integrate the HOMES requirements. The programs can layer the kWh or therm per-unit incentives by adding them to any existing incentives based on avoided costs or other value streams in the program. Additional requirements such as energy audits and certification stipulated by the DOE can also be integrated into the existing processes of P4P programs.

As long as the total incentives still exceed the cost of these additional requirements, the additional funding should have the effect of accelerating existing programs and delivering more projects. If the incentives for the federal program are not sufficient to cover the cost of audits and certification, then the program may struggle as a stand-alone offering.

It's also important to note that the measurement frameworks outlined in DOE guidance are fully compatible with the OpenEEmeter, an advanced open-source measurement and verification method and software code base used for Population NMEC in California. The normalization called for in the HOMES programs is consistent with standard industry practice for pre-post analysis using actual weather normalization.

*3. How can the unique needs of multifamily properties be addressed through a residential P4P program?*

To effectively address the unique needs of multifamily properties through a residential P4P program, the split incentive challenge should be addressed. This challenge primarily arises from the fact that the benefits of energy efficiency investments are often divided between building owners and residents, and in a single technology rebate, it is difficult to divide the value streams to either party.

P4P programs offer a strategic opportunity to address this conundrum. Building owners can act as aggregators and monetize the value of the incentives as well as tap into any grid value these upgrades may bring to load-serving entities sponsoring the program. At the same time, residents would benefit from the direct bill savings and the comfort and health benefits of an upgraded home. By creating a framework where both parties, building owners and residents, stand to gain benefits from energy efficiency improvements, multifamily properties could become more inclined to engage with P4P programs.

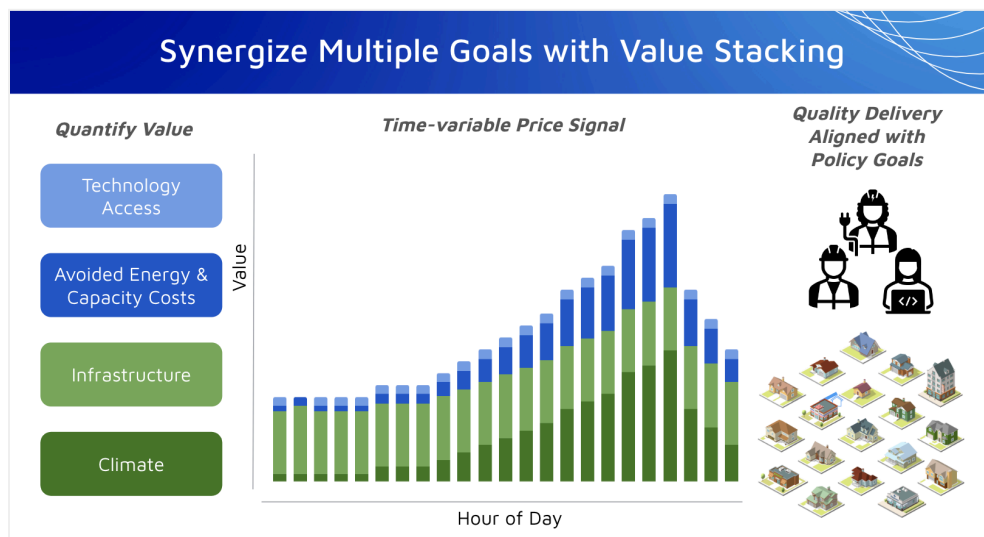
The HOMES rebates, in particular, will be more powerful if coupled with existing grid value offered through existing utility programs. Even as a stand-alone program, multi-family building owners would be able to incorporate performance-based incentives to offset the cost of upgrades and financing for their properties, and residents would capture the bill savings, comfort, and health benefits.

## **Incentive Structure**

*1. How should HOMES incentive structure related to kWh reduction be aligned with CPUC policy around the Total Systems Benefit (TSB) and Avoided Cost Calculator (ACC)?*

Aligning the HOMES incentive structure with the CPUC's policy surrounding the TSB and the ACC enables a comprehensive approach that can accelerate the impact of the federal incentives by allowing deeper projects or more projects via higher total incentives. The Total System Benefit represents the monetized value of each avoided kWh and therm used, just like the per-unit kWh and therms value available in the HOMES measured incentive. While these have different sources of value, they are both monetized and, therefore, can be simply added together to represent the combined total incentive available for a project from both sources.

The change in electric (kWh) and gas (therms) usage would be calculated for any given project and an entire portfolio based on energy usage before and after an intervention. The change in energy consumption is the "savings," and the per-unit value from each source (existing program TSB value and IRA-HOMES) would be multiplied by the number of units to calculate the total incentive. IRA-HOMES could have a time-valued incentive that tracks with the shape of the ACC or it could be a flat per-unit incentive that does not vary by time.



## 2. What is the best way to incentivize projects in grid-constrained locations?

The best way to incentivize projects in grid-constrained locations is to pay more for the tangible value of the benefits derived from alleviating those constraints and/or to conduct targeted marketing in those areas. Specifically, entities like IOUs or municipal utilities, both of which may experience load constraints, could financially recognize the advantages of projects that help mitigate these issues.

The value attributed to alleviating grid constraints can be quantified and then integrated into the project's financial incentives. This could involve calculating an additional dollar amount per unit of energy saved that directly addresses the grid constraint issue. This additional value can then be "stacked" with the avoided cost value traditionally used to calculate the project's total incentive. This method not only acknowledges the unique challenges faced by grid-constrained locations but also offers a compelling financial incentive for projects that contribute to resolving these challenges, thereby enhancing grid reliability and performance.

## 3. How can federal funding help navigate some of the constraints with Total Resource Cost (TRC) requirements for residential projects?

Federal funding can help overcome the constraints imposed by the TRC penalty on private investment<sup>1</sup> in residential energy projects. Another possibility to navigate the TRC constraint and ensure federal and local funds extend further would be for the CPUC to suspend the cost test for performance-based programs that already have embedded ratepayer protections (e.g., a cap on payments beyond the system benefit delivered), as was done for the summer reliability emergency.

Until the private investment penalty is resolved, additional federal funding resources for these projects will increase their value to aggregators and, in turn, reduce the cost to consumers. Essentially, federal funding plays a crucial role in making these projects more financially viable and attractive to aggregators by providing higher incentives that will translate into lower costs for participants and the state's costs to reach our climate goals. It will encourage broader participation and deeper investment in energy efficiency interventions.

#### *4. How does P4P work when interval meter data is not available?*

P4P programs are designed to be flexible and can adjust to the availability of interval meter data, whether hourly, daily, or monthly. The critical aspect is to define the units of measurement (i.e., per kWh, therm, BTU, etc.) clearly and align the measurement of savings impacts with the granularity of available data.

P4P programs have successfully utilized both monthly and hourly data to measure and reward energy savings.<sup>2</sup> This adaptability ensures that, regardless of the data resolution, P4P programs can effectively quantify energy savings and provide incentives, thus making them applicable and beneficial in a wide range of scenarios where different levels of data availability might otherwise be a barrier.

#### *5. How should the program control for the risk of contractors underestimating savings and retaining excess savings?*

To mitigate the risk of contractors underestimating savings and retaining excess benefits, the pay-for-performance programs offer a natural market equilibrium where both overestimating and underestimating savings are inherently discouraged. The safeguard against underestimation lies in the incentive structure designed to attract customer participation. Potential customers are unlikely to commit if the projected savings are insufficient to justify the investment in a project. Conversely, if savings are overly optimistic and contractors or

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<sup>1</sup> [Rethinking Cost Effectiveness to Meet the Needs of the Modern Grid](#)

<sup>2</sup> The OpenEEmeter has open-source methods and code to accommodate hourly, monthly, and daily data for electricity or gas usage. Delivered fuels are handled separately but can also be considered.

aggregators fail to meet these expectations, they risk not being compensated for the actual impacts achieved. This system ensures that savings projections are as close to actual outcomes as possible, offering customers the best possible value.

Past experience with the Market Access program model showed that realization rates hovered around 100% - demonstrating this natural market equilibrium. The highest value estimate for an aggregator is one that is predictable and accurate.<sup>3</sup>

## **Administration and Implementation**

### *1. What are the tradeoffs between a statewide and locally-administered HOMES program(s)?*

A statewide or locally administered HOMES program introduces a few trade-offs.

The California Energy Commission (CEC) has the authority to implement programs statewide, which can offer benefits in terms of efficiency by applying uniform rules and a single payment structure. This simplifies the process for aggregators and contractors involved in enhancing projects, as well as the reporting structures. Additionally, a statewide administered program can utilize the data infrastructure that is already available, allowing for participation throughout the state. However, there may be difficulties in coordinating with local entities responsible for performance measurements to avoid duplicative efforts in project evaluation, especially when considering performance-based programs already in operation within the market.

The locally administered program model offers a way for existing programs to leverage the networks of contractors and payment frameworks they've already developed. This can support speed to market, efficient completion, processing, and compensation of projects. Local programs are particularly good at directing incentives where they can help support grid benefits, reduce bill impacts, and deliver greenhouse gas (GHG) value because they're anchored with load-serving entities or local governments with these priorities top of mind.

To get rebates flowing more quickly, it may be a good idea to start with residential performance programs run by CCAs, RENs, and IOUs, who have already set up performance-based programs. They would need to adopt additional criteria to comply with DOE guidance such as audits, certification, and compliance with any other CEC-defined rules. Federal funds layered with system benefits of other funds designed to support grid impacts could drive deeper savings that will also support reliability in the state. The measured program model, in the form of Market Access programs, is required by the CPUC for all IOUs and allowed for any other energy efficiency program administrators and could be leveraged to enable residential efficiency with HOMES.

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<sup>3</sup> See [Performance Update](#)

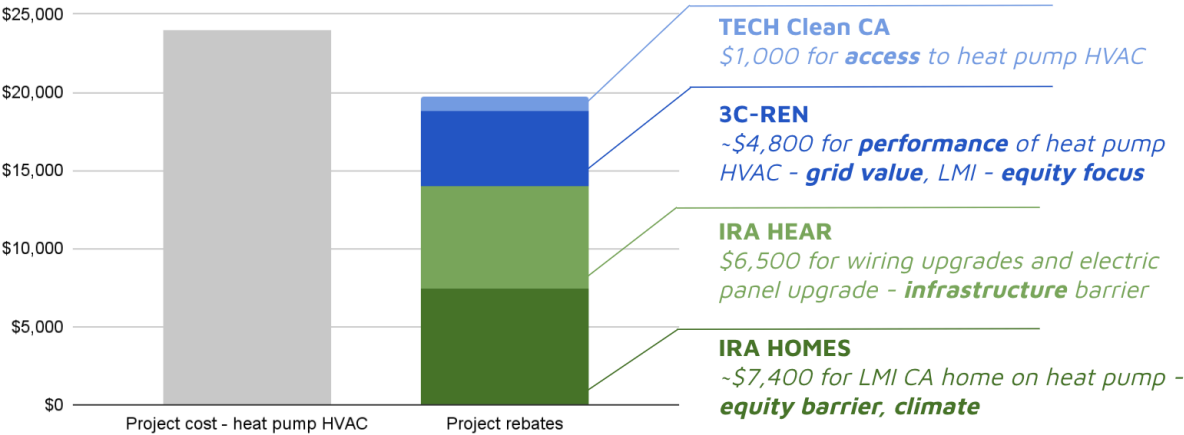
The main limitation of a local approach is its universal coverage. While it can extend to about 80% of electric customers through investor-owned utilities or community choice aggregators, it does not offer universal state coverage. Small municipal utilities and cooperatives may need a centralized alternative. Moreover, the diversity of local programs might lead to inconsistencies in incentive availability and project implementation across different regions.

2. What does the layering of incentives look like with multiple P4P funding streams?

As demonstrated in the workshop, each layer of incentives for a project is designed to deliver a particular value or benefit. Each incentive or value stream targets a distinct aspect of the project, such as providing direct benefits to the customer, supporting grid efficiency, or contributing to carbon reduction efforts. This approach ensures that compensation is allocated appropriately, without resulting in overcompensation or double-dipping. Each stream adds value by addressing a different component or barrier to get the project completed.

### Synergize Multiple Goals with Value Stacking

Cost vs. rebates - heat pump project



Average project cost based on historical data for heat pump projects in 3C-REN plus amount for wiring and electric panel upgrades covered by HEAR. IRA HOMES rebate of \$7,400 based on Sealed modeling here for CA LMI home switching from natural gas in measured pathway, using 150% of average home energy use in baseline. \$6,500 HEAR rebate is for amount coverable for auxiliary upgrades. 3C-REN rebate shown is the 50% that goes to homeowner for a hard-to-reach customer based on historical tracked by Sealed. TECH Clean CA is a flat rebate amount for HVAC. ©2024 Recurve Analytics Inc. | 8

For example, in the context of an IOU program that utilizes the ACC, per-unit incentives from HOMES —whether based on time valuation or a flat rate—can be layered on top of the ACC-derived value. This cumulative approach to incentives effectively completes the financial framework needed for the project. This method acknowledges and compensates for



the multifaceted value projects bring to both customers and the broader energy system, thereby fostering a comprehensive incentive structure that promotes energy efficiency and sustainability.

*3. Which entities are best poised to fill the various HOMES requirements that are not currently part of Market Access Programs?*

Several entities are well-positioned to address the varied requirements of HOMES programs, filling gaps not currently covered by Market Access Programs. California built a network of energy auditors over the past several decades. In addition, there are established certifications like that offered by Pearl, that can be seamlessly integrated into project workflows to ensure compliance and quality standards.

Measurement and verification tasks can be managed in a couple of ways: They could be carried out by vendors already doing the work in the Market Access programs, with the California Energy Commission (CEC) providing validation, or they could be entirely handled by the CEC itself, using its own data infrastructure. Alternatively, a commercial entity equipped to implement an open-source advanced measurement and verification process could be engaged, offering a blend of operational efficiency and transparency.

*4. What are the best options to minimize and allocate financing costs during the 9 to 12-month M&V period prior to when the HOMES rebate can be paid?*

To effectively manage and minimize financing costs during the critical 9 to 12-month M&V period preceding the disbursement of HOMES rebates, the most viable strategy involves allowing for partial upfront payments. This approach, coupled with a final reconciliation at the end of the performance period, helps mitigate the financial burden on participating entities, meaning they won't have to wait the full 9-12 months to receive any payment. Financing costs can then be absorbed by companies willing to assume such risks, potentially facilitated by making interim payments. This structure not only provides financial flexibility but also ensures continued engagement and commitment throughout the duration of the M&V period, ultimately aligning with the overarching goals of HOMES programs to promote energy efficiency and sustainability.