

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



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Order Instituting Rulemaking to Investigate and
Design Clean Energy Financing Options for
Electricity and Natural Gas Customers.

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**SILICON VALLEY CLEAN ENERGY AUTHORITY
REVISED PROPOSAL FOR AN INCLUSIVE UTILITY INVESTMENT PILOT**

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June 15, 2022

For: Silicon Valley Clean Energy Authority

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OF THE STATE OF CALIFORNIA**

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Design Clean Energy Financing Options for
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In accordance with the schedule and requirements set forth in the California Public Utilities Commission's ("Commission") *Assigned Commissioner's Amended Scoping Memo and Ruling* ("Amended Scoping Memo"), issued on November 19, 2021 in the above-captioned proceeding, Silicon Valley Clean Energy Authority ("SVCE") hereby submits its Revised Proposal for an Inclusive Utility Investment Pilot ("Revised Proposal"). On April 15, 2022, SVCE submitted its original proposal for a clean energy financing pilot in this proceeding.¹ The Revised Proposal reflects changes made in response to stakeholder feedback. A summary of these changes is presented in Attachment A. The Revised Proposal is provided as Attachment B.

Dated: June 15, 2022

Respectfully submitted,

/s/ Marissa Nava

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For: Silicon Valley Clean Energy Authority

¹ See *Silicon Valley Clean Energy Authority Proposal for a Tariffed On-Bill Investment Pilot* (April 15, 2022).

ATTACHMENT A

June 15, 2022

Assigned Commissioner Genevieve Shiroma
Assigned Administrative Law Judge Sophia Park
Assigned Administrative Law Judge Garrett Toy

Re: Revised Clean Energy Financing Pilot Proposal – Silicon Valley Clean Energy
Rulemaking 20-08-022

Attached please find Silicon Valley Clean Energy's (SVCE) revised proposal for a clean energy financing pilot. The revisions reflect additional analysis and design work in response to feedback received from stakeholders since the original proposal was filed on April 15, 2022 (Original Proposal). SVCE continues to collaborate and partner with the TECH Clean California initiative (TECH) in the development of this proposal. Below, we provide a brief summary of our Revised Proposal, followed by a short description of changes and a summary of stakeholder feedback.

Summary

The core elements of our Original Proposal remain unchanged. That is, we propose a pilot for utility investment in residential heat pump technology for which the costs are recovered through a site-specific tariff that runs with the property, not the individual, for the life of measures. By leveraging tariffs as well-established mechanisms to recover utility costs and important consumer protections, the pilot seeks to demonstrate how to finance decarbonization in a more inclusive manner that does not exclude households based on income or credit scores. Below, we provide a short summary of all substantive changes, but the following changes bear additional description.

First, we added additional clarification about the differences between the program design and tariff elements proposed by SVCE and Pacific Gas and Electric Company's (PG&E) for its platform. This is done not to suggest one approach is superior to the other, but to make clear that SVCE is requesting distinct tariff terms and related policies than those sought by PG&E. We continue to request that the Commission direct PG&E to adopt a tariff and related elements in accordance with our proposal. That outcome would not be inconsistent with approval of PG&E's proposal, but approval of PG&E's platform alone will not enable the SVCE pilot to operate as designed.

Second, we provide some adjustments and clarification on program design elements, such as our approach to equipment maintenance/warranties, and the potential option to add efficient cooling to homes that lack cooling.

Third, we would like to draw attention to a change in the nomenclature used from the proposal title onward. The revised proposal uses the term "Inclusive Utility Investment" (IUI) pilot instead

of “Tariffed On-Bill” (TOB). This reflects what we believe will be more useful terminology, rather than any change in the pilot design or objectives. The term TOB is used in several proposals in this proceeding that differ from our proposal in important design criteria, which could lead to confusion. Our pilot proposal is consistent with the characteristics of the term IUI as put forth by the U.S. Environmental Protection Agency, including bill savings requirements and automatic succession of the cost recovery charge to successor occupants.

Changes from the Original Proposal

We made the following substantive changes:

Change	Notes on Rationale
Added clarifications around differences between our pilot proposal and PG&E’s TOB platform, including automatic application of service charge to successor customers; specifically making it clear that SVCE is requesting the California Public Utilities Commission (CPUC) direct PG&E to adopt tariff terms and related changes that enable our pilot independent of whatever the CPUC decides on PG&E’s proposal	Clarification about requested regulatory action
Added language signaling an intent to offer heat pumps with cooling capabilities to customers who currently lack air conditioning, subject to resolution of outstanding measurement and verification questions and questions about affordability impacts.	Responds to feedback during the community workshop that doing so would be the appropriate for advancing equity and resilience goals
Removed references to an annual maintenance plan and associated repair insurance	Responds to stakeholder feedback questioning the financial benefits of this program element. Subsequent financial analysis confirmed concern that the annual maintenance plan did not actually improve project affordability for customers
Clarified and expanded the definition of "equity targeted". The Original Proposal limited the definition to metrics available to the program sponsors prior to customer interactions (e.g., enrollment in CARE; Disadvantaged Community (DAC) census tract). For the Revised Proposal, the definition has been expanded to include metrics from information the program can expect to gain through direct interactions with prospective participants. Most importantly, the definition	

now incorporates moderate-income as well as low-income customers.	
Assigned Quality Assurance/Quality Control role to the TECH team (2.1.1.2) to provide for a more robust separation of duties between the program operator and the program sponsors	
Simplified the rationale for "ownership of the upgrade" (See 2.1.3)	Responds to stakeholder concerns that the rationale was unnecessarily speculative
Removed endorsement of PG&E earning return on debt at its approved long-term rate (5.13%)	More consistent with CCA preference
Deleted Section 2.2.0, Request for CPUC action to ensure cost neutrality. Excluded discussion of surplus revenue	Responds to comments from PG&E, urging us to apply the Ratepayer Impact Measure (RIM) test to consider the full costs and revenue impacts to both the electric and gas systems. The RIM analysis showed that the surplus revenue on the electric side is largely offset by reduced sales on the gas side
Revised Key Performance Indicators (KPI) to remove "market share of eligible technologies"	TECH is tracking this more broadly than on a pilot-by-pilot basis
Added KPI "Impacts of billing history screening criteria on customer eligibility, enrollment, and subsequent payment arrears".	Responds to stakeholder concerns that the application of billing history screening criteria may have an adverse effect on customer participation without delivering meaningful protection
Numerous copy edits to clarify explanations and address questions raised by stakeholders, most notably Clean Energy Works	

Stakeholder Feedback

Since filing the Original Proposal, SVCE and TECH engaged in multiple activities to solicit stakeholder feedback on the proposal, including:

- Participated in the CPUC's workshop on financing proposals on May 12
- Presented to the CPUC's Disadvantaged Communities (DAC) Advisory Group meeting on May 20
- Gave a second presentation to the TECH Clean California Low Income Ambassador's Panel on April 26

- Held a community workshop on our proposal on May 26, to which multiple stakeholders beyond the appropriate CPUC service lists were invited
- Conducted individual outreach to and meetings with stakeholders to seek feedback, including parties to the proceeding and non-parties who may have an interest in the design of our pilot

At our May 26 workshop, we answered questions and welcomed feedback on any aspect of our proposal. We also asked stakeholders to provide input on three specific questions (these questions were also brought up in other stakeholder engagement discussions as well).

1. How should we weigh considerations of (a) enabling residents in equity-targeted communities to "move to the front of the line" for clean energy investments, versus (b) shielding vulnerable households from program delivery models that have not yet been fully field tested in California?
2. How might we structure an appealing offer to landlords without enabling them to outsource their statutory obligations to provide heat and hot water to their tenants?
3. Should low-income customers be discouraged or prevented from installing air conditioning, knowing that their bills will probably go up as a result?

The most clear-cut response we heard was to the third question. Without exception, stakeholders felt it would be problematic to discourage or prohibit new air conditioning capacity as part of the pilot. As a result, we will work on certain measurement and verification protocols and other protocols that would allow for the addition of cooling load in a fair and responsible manner.

Regarding engagement with landlords, we received useful feedback about the value proposition that might motivate landlord participation, and we were also encouraged to hold a focus group or listening session with landlords as we develop our implementation plans, which we intend to do. (This may occur in parallel to the first year of the pilot, when most participants are expected to be owner-occupied.)

The first question, related to the balance between protecting and serving vulnerable populations, was the most open ended, and therefore did not result in a single, clear direction. We expect to continue to examine this trade-off, including with stakeholders, as we move closer to implementation. Broadly speaking—and in conversations outside of the May 26 workshop—the message we heard was that the pilot will ultimately need to serve low-income and DAC populations in order to demonstrate a fair and effective pathway to scale. We also heard that serving these populations will take extra care and additional time for meaningful engagement. This reinforced our approach to reserve targeting low-income households until year two after additional consultation and experience gained in year one.

Participants in the community workshop had many good questions about consumer protections and how the pilot would work to ensure that customers could afford upgrades. It is our sense that participating stakeholders find our approach on these matters to be relatively diligent. That said, we of course remain open to additional scrutiny, questions, and suggestions.

We look forward to the additional stages of this proceeding as well as ongoing engagement with stakeholders, all of which will help us refine the pilot design.

Respectfully,

Jessamyn Allen
Senior Programs Specialist
Silicon Valley Clean Energy

ATTACHMENT B

Proposal for an Inclusive Utility Investment Pilot

Proposal to the California Public Utilities Commission



June 15, 2022



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List of Abbreviations

TERM	DEFINITION
AC	Air conditioning
ACR	Assigned Commissioner’s Ruling (CPUC)
AFUE	Annual fuel utilization efficiency
AMI	Area median income
BDC	Building Decarbonization Coalition
CARE	California Alternative Rates for Energy
CBO	Community-based organization
CCA	Community Choice Aggregator
CEC	California Energy Commission
CEMs	Clean energy measures
COP	Coefficient of performance
CPUC	California Public Utilities Commission
DAC	Disadvantaged community
EF	Energy factor
ESA	Energy Savings Assistance (a utility program)
ESJ	Environmental and social justice
FERA	Family Energy Rate Assistance (a utility program)
GGRF	Greenhouse Gas Reduction Fund (a California program)
GHG	Greenhouse gas(s)
HP HVAC	Heat pump space heater
HPWH	Heat pump water heater
HSPF	Heating seasonal performance factor
HTR	Hard-to-reach
IOU	Investor-owned utility
IUI	Inclusive Utility Investment
KPI	Key performance indicator
LMI	Low- to moderate-income
MF	Multifamily
M&V	Measurement and verification (of installed measures)
ME&O	Marketing, education, and outreach
NEM	Net energy metering
NMEC	Normalized metered energy consumption
PG&E	Pacific Gas & Electric
PV	Photovoltaic (solar)
SCE	Southern California Edison
SEER	Seasonal energy efficiency ratio
SF	Single-family
SGIP	Self-Generation Incentive Program
SVCE	Silicon Valley Clean Energy (CCA)
TECH	Technology and Equipment for Clean Heat (program)
TOB	Tariffed on-bill
TOU	Time of use (utility billing rate)

Executive Summary

Introduction

Silicon Valley Clean Energy (SVCE) is pleased to collaborate with the TECH Clean California initiative¹ (TECH; collectively the Partners) to submit this proposal to the California Public Utilities Commission (Commission or CPUC) for an Inclusive Utility Investment (IUI) Pilot (Pilot) to be offered in SVCE's service territory. This proposal is submitted in accordance with the Assigned Commissioner's Amended Scoping Memo and Ruling (ACR), issued on November 19, 2021, as part of Rulemaking (R.) 20-08-022, and has been revised on June 15, 2022 in accordance with the schedule set forth in the ACR (Revised Proposal).

In submitting this proposal, SVCE is not seeking ratepayer funding for Pilot operations, nor is it requesting formal Commission approval of the Pilot. Rather, SVCE is requesting that the Commission order Pacific Gas and Electric Company (PG&E) to make certain changes to its tariffs and adopt certain IUI policies that are necessary to enable the Pilot, with ratepayer cost recovery only for PG&E's incremental costs associated with the Pilot. This proposal is being provided as support for approval of these important changes.

It is important to note, as described further below, that PG&E's proposal in this proceeding for a Tariffed On-Bill (TOB) platform differs in some essential ways from SVCE's IUI Pilot. While the SVCE Pilot may fit within PG&E's TOB platform, should PG&E's platform be approved, the tariff terms currently envisioned by PG&E will not allow the SVCE Pilot to operate as designed. Therefore, SVCE is asking the Commission to direct PG&E to adopt tariff changes and policies as described herein, regardless of whether the Commission approves PG&E's TOB platform.

The overarching goal of the Pilot is to demonstrate a pathway to expanded customer access to clean energy investments by offering an investment solution that does not necessitate financial means testing for participation. This innovation simplifies the customer enrollment process and expands eligibility to include those customers that are typically disqualified from conventional loan and incentive programs due to high debt-to-income ratios, poor credit, low income, low home equity, or renter status. In charting this pathway to expanded access, the Pilot will advance a financial solution that can accelerate decarbonization statewide. With that in mind, the Partners welcome opportunities for further community engagement envisioned in the scope of this proceeding, both to refine this draft solution and to involve communities beyond SVCE that may wish to pursue this approach.

¹ The TECH program was authorized by Senate Bill 1477 (Stern). This four-year, statewide market transformation program will spur electrification retrofits of existing space heating and water heating technologies for residential customers. The CPUC selected Energy Solutions to implement the program through a competitive RFP process administered by Southern California Edison Co. The CPUC exercises ongoing regulatory oversight via proceeding R.19-01-011.

The proposed mechanism for achieving this goal is adapted from the Pay As You Save® (PAYS®) system, as described in detail in the Building Decarbonization Coalition’s “Accessible Financing” white paper.² The PAYS® system leverages a utility’s existing mechanisms for making capital investments with cost recovery through monthly bills. In this case, the utility invests in decarbonization upgrades at a participating location under the terms of a special-purpose tariff and then recovers the investment costs and associated cost of capital via a monthly IUI cost recovery charge assigned to the customer that must be less than the customer’s expected savings. By assigning the investment role to the utility and linking project financial feasibility to the customer’s bill savings rather than income, this solution resolves multiple barriers to access for capital-intensive upgrades. By assigning investments to the metered location rather than as debt incurred by an individual, IUI allows the costs to be recovered over longer time periods than many traditional loans, which enhances affordability. IUI programs based on the PAYS® (Pay As You Save®)² system have been successfully implemented during the past 20 years in nine states by 20 utilities from Hawaii to New Hampshire, including investor owned, cooperative, and municipal utilities. Utilities have invested more than \$50 million in energy efficiency and renewable upgrades at more than 5,800 locations.²

Experience to-date with this model has largely derived from implementation of energy efficiency programs. For this proposal, the Partners will adapt the model to incorporate building decarbonization upgrades, which introduces new risks and uncertainties. For this reason, the Partners propose to first launch a Pilot to field test and demonstrate the viability of the IUI investment approach for funding residential building decarbonization investments in a way that shields vulnerable customers from financial risks they cannot afford to undertake. The Pilot will generate a wealth of lessons and experience to inform a subsequent market-scale program deployment.

Finally, it is noteworthy that the CPUC expressed strong interest in SVCE’s proposed form of clean energy investment in the Commission’s Rulemaking to Establish a Framework and Processes for Assessing the Affordability of Utility Service, R.18-07-006. In R.18-07-006, the Assigned Commissioner recently issued a ruling that identified several “promising proposals” to promote ratepayer affordability. Among the proposals related to cost allocation and rate design was “Authorize IOUs to deploy capital and recover costs for building decarbonization upgrades via tariffed on-bill structures that enable participation regardless of income, credit score, or renter status.”³

² Building Decarbonization Coalition (2020), *Towards an Accessible Financing Solution: A Policy Roadmap with Program Implementation Consideration for Tariffed On-Bill Programs in California*, https://www.buildingdecarb.org/uploads/3/0/7/3/30734489/bdc_whitepaper_final_small.pdf

³ *Assigned Commissioner’s Ruling Amending Ruling of May 20, 2022 and Further Updating Proceeding Schedule for Phase 3 of Proceeding*, issued in R. 18-07-006 on June 9, 2022, at p. 2 (Proposal 4). The proposal further notes that “Tariffed on-bill structures for decarbonization upgrades are currently under evaluation, among other financing proposals, in the Clean Energy Financing proceeding.”

Key Proposal Attributes

In developing this proposal, the Partners have adhered to the definition of IUI, also known as TOB Investment, as put forth by US Environmental Protection Agency (EPA).⁴ In adopting this nomenclature as part of the Revised Proposal, the Partners seek to draw a distinction with other proposals that apply the term TOB to program models that diverge from the certain essential attributes described by EPA.

SVCE's proposal incorporates the following key program attributes:

1. SVCE, in collaboration with PG&E, will originate site-specific investments in home decarbonization upgrades with site-specific cost recovery.
2. PG&E cost recovery for IUI investments will be achieved through a tariffed charge on the utility bill tied to the location rather than an individual. Participants are not burdened with a personal debt obligation.
3. The cost recovery charge will be constrained to be less than the estimated savings, thereby assuring both current and successor customers that they will be financially better off with the upgrades than in the counter-factual scenario of no upgrade.
4. Customer eligibility will be independent of income or credit standing (i.e., no financial means testing).
5. Locations will be pre-qualified for investments based on the bill savings opportunities they present.
6. Charges end for a participant when they move from an upgraded location, and successor customers at an upgraded site will be notified prior to occupancy that the cost recovery charge applies *automatically* to the bill until the investment costs are recovered.
7. Service offerings to renters and low- and moderate-income (LMI) households who are typically underserved by market-rate incentive and loan programs will adhere to the principle of "first, do no harm."
8. For tenant-occupied housing, the landlord has statutory responsibility to cover the like-for-like replacement costs for space conditioning and domestic hot water, while the tenant's financial responsibility is limited to the operational benefits the tenant enjoys.
9. The Program Sponsor is responsible for ensuring that upgrades continue to work for the duration of cost-recovery, subject to the site owner's responsibility to maintain and not damage or remove the upgrades.

PG&E's proposed TOB platform does not include attribute #6 (automatic succession) and may not necessarily adhere to attribute #3 (bill savings required). Both elements are essential to SVCE's Pilot, as explained further in the Revised Proposal.

In formulating the Revised Proposal, the Partners have adhered to the priorities and guidance provided in the ACR:

- **Comprehensive Decarbonization and Support of California's Clean Energy Goals.** The Pilot will expand beyond energy efficiency and leverage the full suite of commercially

⁴ See https://www.energystar.gov/products/inclusive_utility_investment

viable technologies to address California's economy-wide decarbonization and greenhouse gas reduction goals more broadly by lowering emissions, increasing the adoption of clean energy technologies, and reducing the use of fossil fueled energy.

- **Leverage.** The Pilot will attract third-party investment to expand and accelerate ratepayer-funded clean energy investments.
- **Scalability.** The Pilot will demonstrate a pathway to scale to serve millions of California households by combining capital access with advanced technical strategy.
- **Customer Protection.** The Pilot will protect against the potential for undue customer cost burdens, predatory lending, and default penalties.
- **Affordability.** The Pilot will only authorize upgrades estimated to reduce utility bills for participants after copayments, rebates, and incentives have been taken into account, and it will minimize cost shifts between participants and nonparticipant ratepayers.
- **Transparency.** The Pilot will ensure that customers are informed enough to determine which clean energy technologies are most beneficial to them, and it will track the cumulative effects of these benefits towards broader state clean energy policy and other ratepayer goals. The offer to the customer will be transparent and easy to understand.
- **Accountability.** The Pilot will incorporate metrics and evaluation strategies to ensure the investment solutions are meeting established goals and targets
- **Equity.** The Pilot will enable greater access to clean energy investments and associated benefits while protecting renters and customers with low or moderate income (LMI) and limited access to conventional financing options. The program will track and report its success in increasing access.

This Pilot incorporates key customer protections, as recommended by EPA:

- **Method to accurately estimate savings:** Site-specific estimates based on actual billing data and existing conditions using field-tested software to ensure modeled energy savings.
- **Positive cash flow:** Constraint on the cost recovery charge to be lower than the estimated energy bill savings.
- **Customer choice:** Allowing participants to contribute upfront costs (referred to as a copayment), so they have the option of receiving upgrades in addition to what the estimated savings alone would support.
- **Equipment and labor warranties:** Require extended manufacturer warranties on equipment and labor warranties. Cost recovery ends if an upgrade fails through no fault of the occupant or owner and it is not repaired.
- **Verification after installation:** Program operator inspection and acceptance testing for installation quality and completeness of upgrades; program sponsor site inspections on a sampling basis for quality control of program operator results
- **Monitoring of energy savings:** Energy usage data monitoring at the end use and revenue meter to help ensure that upgrades deliver savings in alignment with ex ante estimates.
- **Avoiding trade ally conflicts of interest:** Contractual structure with program operator and installer contractors to avoid trade ally conflicts of interest. Trade allies only install

upgrades and cannot influence either energy savings estimates or the site-specific scope of work.

Requested CPUC Action

The Partners propose to implement this Pilot under a formal arrangement with PG&E, using PG&E's TOB platform, as proposed independently by PG&E in this proceeding or similarly structured arrangement. The Partners are also conferring with PG&E on procurement of third-party investment capital. SVCE proposes to fully fund Pilot operations through SVCE's own resources, combined with previously budgeted funding allocations from the TECH program. Thus, this proposal does *not* ask the CPUC to allocate ratepayer funds for program operations.

While the Partners have enjoyed a productive collaboration with PG&E on program design, leading to proposals that are directionally well aligned, SVCE's proposal differs in some key ways from PG&E's TOB platform, as described in PG&E's April 15, 2022 filing. SVCE is hopeful that differences between the proposals may be minimized or eliminated as part of this process. **However, regardless of what action the CPUC takes with regard to the PG&E proposal, SVCE respectfully requests that the CPUC *also* direct PG&E to take steps to accommodate this Pilot as proposed herein, with particular attention to the program attributes enumerated above.** Specifically, SVCE requests the CPUC to:

- Approve a new PG&E IUI tariff with substantially similar terms to those enumerated in this proposal, consistent with the Partners' supporting rationales
- Authorize the tariff to apply automatically to successor customers, as described in Sections 2.1.3 and 2.1.4, below
- If and to the extent that PG&E's adopted requirements for third parties to access its TOB platform do not already accommodate the Partners' proposal as described in this document, direct PG&E to establish a pathway to platform access that aligns with this proposal.
- Direct PG&E to undertake any billing system upgrades that may be necessary to support implementation of this IUI Pilot.
- Establish a maximum cost of capital of three percent *that can be charged to participants* as part of IUI cost recovery for the utility investment.
- Confirm that PG&E will handle uncollectible IUI cost recovery charges in the same way it handles other uncollectible utility charges and that it will pay the capital provider(s) the amount billed to participating IUI customers, regardless of the utility's collections.
- Confirm that the utility investment may be booked as a regulatory asset for accounting treatment, with no ownership claim or lien on the physical asset
- Confirm that any additional costs PG&E may incur as part of service delivery may be treated as a program expense chargeable to ratepayers, consistent with current practice for utility incentive and financing programs

SVCE also requests that the CPUC provide its enabling authorizations and direction on a timeline that will permit SVCE to fully benefit from TECH initiative resources. Specifically, the Partners aim for a Pilot launch in the first quarter of 2023, with a two-year project enrollment period and an

additional year of measurement and verification (M&V), followed by ongoing customer service over the full cost-recovery term.

The Partners believe it is reasonable and in keeping with past practice to charge certain costs to ratepayers, including:

- Uncollectible cost recovery charges for utility investments at the customer location under the program
- Incremental expenses to PG&E for service delivery
- Any cost of third-party capital in excess of the target threshold of three percent
- Any rate of return the CPUC might approve for utility investments (which the Partners do not recommend)

The Partners will take under advisement inquiries and interests expressed at the March 25 and May 12, 2022 workshops hosted by the CPUC for this proceeding, as well as the May 26 community workshop hosted by SVCE. In addition, the Partners seek stakeholder input on all aspects of this proposal with particular interest in views related to the appropriate balance to strike between customer protections, program simplicity and scalability, rate impacts, equity considerations, and cost shifts between customer segments.

1 Overall Goals and Principles

1.1 Program Goals, Objectives, and Market Barriers Addressed

ACR Guidance: Describe what this program is seeking to achieve, including which market barrier(s) is being addressed through the program.

1.1.1 Program Goal

The overarching goal of the Inclusive Utility Investment (IUI) Pilot is to demonstrate a pathway to expanded customer access to clean energy investments by offering an investment solution that can operate at a scale commensurate with state decarbonization goals and that does not necessitate financial means testing for participation. This innovation simplifies the customer enrollment process and expands eligibility to include those customers that are typically disqualified from conventional loan and incentive programs due to underwriting criteria for consumer credit risk. These factors can include high debt-to-income ratios, poor credit, low income, low home equity, or renter status. Full participation from these underserved customer segments will be necessary to meet state GHG goals in an equitable fashion. In particular, the Pilot will establish the scalability of an inclusive utility investment solution by demonstrating:

- Expanded ability to serve renters and low- and moderate-income households who are typically underserved by market-rate incentive and loan programs, while adhering to the principle of “first, do no harm”⁵
- Improved customer acceptance rates relative to market-rate incentive and loan programs, driven by an instantly compelling value proposition with minimum risk, uncertainty, and effort on the part of participants
- Expanded flexibility to support comprehensive project work scopes that maximize customer bill savings and GHG reductions
- Advanced customer targeting to directly engage those who would benefit most and incorporate innovative product and design strategies to lower costs
- Low financial risks to both customers and the utility, translating to low cost of capital
- Expanded third-party capital investment (both public and private) to complement ratepayer funding and accelerate overall adoption

In support of this goal, the Pilot proposal adopts as its design criteria the priorities and guidance provided in the ACR:

- **Comprehensive Decarbonization and Support of California’s Clean Energy Goals.** The Pilot will expand beyond energy efficiency and leverage the full suite of commercially viable technologies to address California’s economy-wide decarbonization more broadly

⁵ As a matter of program practice, low-income customers will first be encouraged or required to max out the benefits they can receive from grant-only direct install programs before making IUI investments.

and greenhouse gas reduction goals by lowering emissions, increasing the adoption of clean energy technologies, and reducing the use of fossil fueled energy.

- **Leverage.** The Pilot will attract third-party investment to expand and accelerate ratepayer-funded clean energy investments.
- **Scalability.** The Pilot will demonstrate a pathway to scale to serve millions of California households by combining capital access with advanced technical strategy.
- **Customer Protection.** The Pilot will protect against the potential for undue customer cost burdens, predatory lending, and default penalties.
- **Affordability.** The Pilot will only authorize upgrades estimated to reduce utility bills for participants after copayments, rebates, and incentives have been taken into account, and it will minimize cost shifts between participants and nonparticipant ratepayers.
- **Transparency.** The Pilot will ensure that customers are informed enough to determine which clean energy technologies are most beneficial to them, and it will track the cumulative effects of these benefits towards broader state clean energy policy and other ratepayer goals. The offer to the customer will be transparent and easy to understand.
- **Accountability.** The Pilot will incorporate metrics and evaluation strategies to ensure the investment solutions are meeting their established goals and targets
- **Equity.** The Pilot will enable greater access to clean energy investments and associated benefits while protecting renters and customers with low or moderate income (LMI) and limited access to conventional financing options. The program will track and report its success in increasing access.

The Inclusive Utility Investment approach offers multiple benefits that align directly with these design criteria:

- IUI is a technology-neutral inclusive investment solution for the full suite of customer-facing decarbonization upgrades that can include energy efficiency, building electrification, rooftop solar, and energy storage. Any improvement that contributes to lower customer bills and GHG emissions could be capitalized via IUI investments (Comprehensive Decarbonization).
- IUI investment can incorporate capital from a variety of third-party sources, including private equity and debt capital, state and federal grants, government-issued climate bonds, foundation grants, credit unions, Community Development Financial Institution (CDFI) loans, and other sources. (Leverage)
- The IUI approach incorporates a requirement that the IUI cost recovery charge assigned to the customer must be less than the customer's expected savings on an annual basis. Participants are not asked to take on any financial obligation that they have not already signed up for simply by subscribing to utility services at that location. This program requirement avoids the need for financial means testing such as consumer credit checks that would otherwise disqualify consumers based on income, credit score, or renter status. By applying the cost recovery charge to the location rather than to the customer, the IUI approach enables cost recovery to be spread over the life of the upgrade, rather than be constrained to the tenure of the current occupant (Equity, Affordability, Scalability)

- Leveraging a utility's existing mechanisms for making utility capital investments with cost recovery through monthly bills allows a single utility bill to combine service charges for decarbonizing improvements with the lower utility bills resulting from the improvements made. (Scalability, Transparency)
- In addition to the aim for upgrades to produce cash-positive outcomes for participants, the IUI approach incorporates an array of customer protections to minimize their financial risks and reduce their exposure to the threat of disconnection for nonpayment. Because the transaction is not a loan and the financial security is not linked to the property as collateral, this model imposes zero risk that the customer's home might be foreclosed on, or the improvements repossessed. (Customer Protection)

1.1.2 Market Barriers Addressed

Decarbonization of an existing home requires a substantial capital investment, and access to capital on acceptable terms remains a significant challenge to accelerated deployment. While financial incentives are helpful in lowering upfront investment costs, customers still need access to capital to fund the balance. While a limited number of customers have the financial means and motivation to pay cash or finance through conventional market-rate loan products, an accessible and affordable solution is needed to accelerate investment. Inclusive utility investment through a tariffed on-bill program also clears additional barriers by offering a turn-key solution to customers with a one-stop-shop for managing the installation and monitoring its performance.

Greenlining Institute, Energy Efficiency For All, Building Decarbonization Coalition, and other advocates have pointed out the particular challenges for accessing capital facing low- and moderate-income households and renters. BDC's white paper *Towards an Accessible Financing Solution* points out that "California is home to more than 4 million low-income households and more than 5.8 million households in rental housing, including 2 million moderate- and above moderate-income renter households."⁶ The impact of lower income on household energy use manifests itself in at least two tangible ways:

- **Energy burden.** In the *Needs Assessment for the Energy Savings Assistance and the California Alternate Rates for Energy Programs* report commissioned by the CPUC in 2016, one third of low-income households in California reached in the survey indicated that they struggle with energy bills either often or constantly. According to that survey data, households below 100 percent of the Federal Poverty Level (FPL) experienced energy burdens averaging 8.2 percent, whereas households with incomes exceeding 300 percent of FPL averaged less than 1.4 percent.⁷

⁶ See BDC White Paper at https://www.buildingdecarb.org/uploads/3/0/7/3/30734489/bdc_whitepaper_final_small.pdf

⁷ Evergreen Economics. *Needs Assessment for the Energy Savings Assistance and the California Alternate Rates for Energy Programs*, Vol. 1 of 2. Southern California Edison Co., CALMAC ID: SCE0396.01, 2016. www.calmac.org

- **Utility disconnections.** Low-income customers face a disproportionate risk of utility disconnections. Shutoff rates increased by more than 50 percent since 2010, culminating in 886,000 household shut offs in 2017. In 2017, the disconnection rate rose as high as 9.3 percent for customers in Southern California Edison territory.⁸ The threat of or actual utility disconnection can lead to a host of other issues. Levy and Sledge (2012) found that paying utility bills was the most common reason for high-cost payday loans, which can worsen the cycle of poverty.⁹ Other studies have found that shutting off utilities can contribute to homelessness.¹⁰

Low-income households contending with these impacts of poverty, as well as moderate-income households, some households above moderate-income, and renters at every income level together face an array of barriers to making investments in clean energy upgrades, including building decarbonization:

- **Tenant / landlord split incentives deterring investment.** A landlord may decline to participate in an energy program if the landlord must make the capital outlay, but the benefits largely flow to the tenant paying the utility bills. Likewise, tenants may decline to participate if they must pay the front-end improvement costs but are unable to reap the full financial benefits. One quarter of Californians are renters who are living on low or extremely low incomes, and the CEC's Barriers Study found this issue affects them most acutely.¹¹
- **Lack of access to capital and cash flow constraints.** Currently, one third of Californians lack sufficient income to meet their basic needs. Many competing demands facing LMI households, such as childcare or medical expenses, pose barriers to economic opportunities that are not immediately cash positive.
- **Credit score qualification criteria that limit access to consumer credit.** Access to financing is often limited to those who can demonstrate a credit history with a score above a minimum threshold. Research published by the Federal Reserve Board suggests that household income is only moderately correlated with consumers' credit scores. Thus, these challenges are not

⁸ Sandoval, Gabriela, MRP, Ph.D., and Mark Toney, Ph.D. Living Without Power: Health Impacts of Utility Shutoffs in California. The Utility Reform Network, 2018. http://www.turn.org/wp-content/uploads/2018/05/2018_TURN_Shut-Off-Report_FINAL.pdf, p. 18

⁹ Levy, Robert, and Joshua Sledge. *A Complex Portrait: An Examination of Small-Dollar Credit Consumers*. Center for Financial Services Innovation, 2012. http://policylinkcontent.s3.amazonaws.com/ComplexPortraitExaminationOfSmallDollarCreditConsumers_CFSI_0.pdf, p. 4

¹⁰ Vick, John, and Carol Norton. *State of Metropolitan Housing Report 2008*. Center for Environmental Policy and Management (CEPM) at the University of Louisville, on behalf of Metropolitan Housing Coalition, 2008. www.metropolitanhousing.org/wp-content/uploads/member_docs/2008_State_of_Metropolitan_Housing_Report.pdf, p. 13

¹¹ Scavo, Jordan, Suzanne Korosec, Esteban Guerrero, Bill Pennington, and Pamela Doughman. *Low-Income Barriers Study, Part A: Overcoming Barriers to Energy Efficiency and Renewables for Low-income Customers and Small Business Contracting Opportunities in Disadvantaged Communities*. California Energy Commission, Pub. no. CEC-300-2016-009-CMF, 2016. <https://efiling.energy.ca.gov/getdocument.aspx?tn=214830>

isolated to low-income households and can be expected to increase the size of the population needing an option for overcoming the upfront investment costs without depending on consumer credit.

Taken together, the BDC white paper found that approximately 6 million households, or more than 40 percent of all California households, lack ready access to private capital for upgrading their homes.

Given these financial barriers, California has historically relied preferentially on 100 percent grant programs to bring energy efficiency and renewable energy services to a limited number of lower income households each year. In addition, for households with moderate income and higher, California has sought to overcome the upfront cost barrier by offering rebate payments to reimburse customers who first must pay the full upfront cost for eligible upgrades.

Signatories to the Equitable Building Electrification Framework have raised concerns about the equity implications of such strategies in retrospect, citing studies that have found the majority of benefits flowed to higher income households.¹ They set forth a vision for an equitable approach to building electrification that prioritizes attention to constituents described by the CPUC as Environmental and Social Justice (ESJ) communities:

Clean energy movements of the past, including rooftop solar and energy efficiency, have benefited those on the higher end of the income scale far more than those on the lower end, and have been slow to gain traction in ESJ communities. This pattern of relying on a market-driven, trickle-down approach that largely fails to deliver has led to significant distrust among the communities that are still waiting for their share of benefits. Through building electrification, California can break out of this pattern and create a plan that actively centers environmental justice and equity from the start. This must begin by targeting what the California Public Utilities Commission has termed environmental and social justice communities, the communities that have been long left behind by the state's thriving green economy.

Going forward, relying on the same historic approaches would also appear insufficient to capitalize building decarbonization upgrades, given the number of households affected by the barriers above. Assuming financial assistance for 6 million LMI and renter decarbonization upgrades will be needed by 2045, a grant-only solution for electrification of space conditioning and water heating in the range of \$12,000–\$25,000 per household would require a cumulative public and ratepayer capital commitment on the order of \$72–150 billion. This level of spending on building decarbonization would dwarf any public expenditure the state of California has made for energy efficiency or renewable energy programs.

1.2 Financial Pro Forma, Expected Benefits and Costs

ACR Guidance: Provide a description of the proposed financing program, including a description of the expected benefits and costs of the program

The Pilot seeks to mobilize at least \$15 million in direct investments over two years in behind-the-meter clean energy technologies to abate GHG emissions in existing homes. Of that total, the IUI investment pilot will contribute at least \$5 million (33 percent) in capital, with the balance coming from previously budgeted incentives pools from TECH and other programs, monetization of transactable grid benefits, and customer or property owner co-payments, if necessary. The IUI investment is a savings-constrained model, in which no more than 80 percent of the customer's expected lifecycle bill savings is allocated to investment cost recovery, with the customer retaining the remaining 20 percent. The above financial goals thus translate into aggregate lifecycle bill savings for participating customers, net of program service charges, of at least \$1.3 million.

The following financial pro forma and benefit analysis was developed based on a hypothetical scenario of involving replacement of 500 furnaces and air conditioners with heat pumps, and replacement of 500 gas water heaters with heat pump water heaters, plus energy efficiency improvements to reduce HVAC loads by 30 percent. In practice, the program expects to service a range of projects with varying scopes of work, investment requirements, and project benefits.

Table 1. Program capital stack

Capital Source	Amount
Utility incentives	\$2,560,000
IUI capital commitment	\$5,807,736
Participants and/or ratepayers	\$5,966,883
Total Investment¹²	\$14,334,619

The expected lifecycle benefits associated with the programmatic investments are shown in Table 2. Customer bill savings would derive from (a) reductions in gas consumption; (b) shifting mechanical loads from peak periods to shoulder and off-peak hours; (c) applying cost-effective energy efficiency measures; and (d) transitioning customers to electrification rates with lower off-peak charges. The increase in electricity consumption due to new winter heating loads would be partially off-set by aggregated load control or demand response as well as summer cooling savings from improved equipment efficiencies and weatherization upgrades to building envelopes. Avoided equipment replacement costs derives from the expectation that most upgrades would replace existing equipment that is approaching the end of its useful life.

¹² Includes \$1,116,727 cost of capital at 3 percent

Table 2. Expected lifecycle benefits for the Pilot

Benefit	Total
GHG reductions (mt eCO ₂)	22,864
Electricity savings (MWh)	-27,727
Gas savings (MTherms)	4,806
Customer bill savings	\$7,259,670
Bill savings net of cost recovery charges	\$1,451,934
Avoided equipment replacement costs	\$10,087,000

Analysis inputs to derive the above results are as follows:

- Target the top 10-20 percent of customers, based on expected utility bill savings, as inferred from observed metered gas and electricity consumption
- Average baseline annual consumption:
 - o Space heating: 400 Therms per year
 - o Space cooling: 1,600 kWh per year
 - o Water heating: 361 Therms per year
- Replace 80 percent AFUE existing furnace and 10 SEER existing central AC with 10 HSPF (2.9 COP) / 18 SEER Heat Pump
- Replace 58 percent EF existing gas water heater with 3.5 COP Heat Pump Water Heater
- Energy Efficiency improvements to reduce heating and cooling loads by 30 percent
- Baseline gas price from PG&E G-1 at \$2.1225, Calculated as a 50 percent blend of Tier 1 baseline and Tier 2 Excess price
- Baseline summer cooling electricity price from PG&E TOU-C at \$0.4279, calculated as a blended rate of 5 percent Peak, 10 percent Partial Peak, and 85 percent Off-Peak
- Post-Retrofit summer cooling electricity price from PG&E EV2 Summer rate at \$0.2806, blended as above
- Post-retrofit winter space heating and water heating electricity price from PG&E EV2 Winter rate at \$0.2709, blended as above

The associated measure installation cost assumptions for the modeled upgrades are shown in Table 3.

Table 3. Measure installed costs

Technology	Specification	Measure Cost
Heat Pump	Package, split, mini/multi-split, 18 SEER, 10 HSPF	\$17,708
Heat Pump Water Heater	COP 3.5 or better, > 55 gal.	\$ 4,803
Energy-efficient upgrades	30% reduction in space heating & cooling loads	\$2,157
Internet-enabled Smart Thermostat	ecobee3 lite or equivalent	\$325
Pre-wiring for electric appliances & car charging		\$750
Service panel upgrade, as needed		\$3,575
Optional PV system	3 kW	\$8,775
Optional battery storage system	Lithium-ion battery, 13.5 kWh, 10 kW peak power, no sun	\$10,500

The modeled project-level pro forma is shown in Table 4.

Table 4. Project pro forma and input assumptions

Input Assumption	Heat Pump	Heat Pump Water Heater
Total Investment / Project	\$21,783	\$4,803
Project useful life	15	10
Annual bill savings	\$767	\$317
IUI capital commitment / Project	\$7,327	\$2,162
IUI monthly service charge	\$51.15	\$21.12
Customer's net annual savings	\$153	\$63

Input Assumption	Heat Pump	Heat Pump Water Heater
Utility incentive / project ¹³	\$5,556	\$1,895
Avoided like-for-like replacement cost	\$17,815	\$2,359

1.3 Alignment with Environmental and Social Justice Action (ESJ) Plan Goals

ACR Guidance: Describe with specificity how this proposal meets each of the nine goals of the CPUC's Environmental and Social Justice Action (ESJ) Plan. If it is unable to meet any of the nine goals, the proposal must explain why.

1.3.1 Goal 1: Consistently integrate equity and access considerations throughout CPUC proceedings and other efforts

As described above, this proposal offers the CPUC the opportunity to advance social and environmental justice objectives by approving this proposed Pilot program with the capacity to expand access to both publicly-funded and privately-funded clean energy investments while incorporating strong customer protections, without imposing financial means testing requirements.

The planning process associated with this proposal has offered at least three distinct opportunities to engage with ESJ communities, as described below under Goal 5.

1.3.2 Goal 2: Increase investment in clean energy resources to benefit ESJ communities, especially to improve local air quality and public health

This Inclusive Utility Investment Pilot prioritizes investment in the replacement of in-home fossil-fueled appliances with high performance alternatives powered by clean electricity, combined with supporting upgrades for energy efficiency and renewable generation and storage when cost-effective and appropriate. These upgrades will remove a major in-home source of carbon monoxide, nitrous oxides, and sulphur dioxide, with associated improvements in both indoor and ambient air quality. By eliminating financial means testing requirements, the IUI investment model expands access to distributed energy resources in ESJ communities in a way that incorporates robust customer protections. Because expanding access does not automatically produce increased investment, one of the keys to increasing investment in ESJ communities is starting with a plan for going to scale with a program design that imposes minimal financial risk and inconvenience on the participant.

¹³ Based on current published BayREN incentives, plus the value of GHG reductions at a social cost of carbon of \$50 per ton.

1.3.3 Goal 3: Strive to improve access to high-quality water, communications, and transportation services for ESJ communities

The Inclusive Utility Investment model for water districts is already codified in state law through the Water Bill Savings Act (Senate Bill 564, McGuire, 2017) and the mechanism has an established track record with California water utilities, as evidenced by the experiences in the cities of Windsor and Hayward and other Bay Area municipal utilities with the Association of Bay Area Governments¹⁴. As part of the implementation planning process, the TECH Team and SVCE will explore opportunities to collaborate with local water districts on the joint delivery of both energy and water measures.

1.3.4 Goal 4: Increase climate resiliency in ESJ communities

One of the electrification measures prioritized in the Inclusive Utility Investment Pilot is heat pump space conditioning, coupled with Internet-enabled thermostat controls and weatherization measures as needed. This measure package empowers occupants to concentrate energy usage during more affordable off-peak hours without sacrificing comfort.

There may be opportunities to offer heat pumps to customers who currently lack air conditioning. Feedback from community stakeholders clearly indicated that doing so would be the right thing to do from an equity and resiliency perspective. While adding new cooling load by itself would erode bill savings compared to an existing conditions baseline, it may still be justified if the counterfactual baseline were instead the case in which customers installed low-efficiency window air conditioners. This addition would shield occupants from the impacts of extreme heat events and would reduce dependency on centralized cooling centers. Mechanical air conditioning would also reduce vulnerability to extremely poor outside air quality, such as caused by severe forest fires. The ability to add air conditioning remains contingent on the Pilot's ability to incorporate appropriate affordability guardrails, along with M&V protocols that show meaningful measure savings for the customer.

Rooftop solar and battery storage may be feasible program measures if an investment solution can be devised that can monetize available tax credits. In combination, these measures could mitigate the risks associated with Public Safety Power Shutoff events while also minimizing grid electricity purchases during peak pricing periods. An alternative would be to facilitate EV charging installations with vehicle-to-grid capabilities.

1.3.5 Goal 5: Enhance outreach and public participation opportunities for ESJ communities to meaningfully participate in the CPUC's decision-making process and benefit from CPUC programs

This Pilot offers opportunities to engage with ESJ communities around issues that are of direct relevance to them. The planning process associated with this proposal has afforded at least three distinct opportunities to engage with ESJ communities:

¹⁴ The Bay Area Regional Energy Network's Water Upgrades \$ave program is a jointly implemented tariffed on bill initiative between the Association of Bay Area Governments and partner Bay Area municipal water utilities.

1. The TECH Team has engaged with ESJ community representatives in the course of developing this current proposal. Specifically, the Pilot Team has leveraged the Low-Income Ambassador Panel that has been established as an advisory committee to inform the TECH Low Income Pilot. Panel participants have provided constructive feedback on a range of topics, including customer economics, renter protections, and the importance of establishing trust within low-income and disadvantaged communities. Participants emphasized the need for simplicity and the importance of strong safeguards to prevent exploitative sales tactics that have accompanied some other programs in the past.
2. SVCE presented this proposal at a CPUC-hosted workshops on March 25 and May 12, 2022, as directed in the Assigned Commissioner's Amended Scoping Memo and Ruling in proceeding R.20-08-022, dated November 19, 2021. Questions and comments from participants emphasized the importance of (a) assuring that estimates of future bill savings fully translate into delivered savings; and (b) fully accounting for the interests of successor customers as well as current customers.
3. The Partners hosted a community workshop on May 26th and commit to further ESJ community engagement in support of implementation plan development. In particular, the Partners will engage community-based organizations in Santa Clara County that have an established track record of delivering services to and advocating on behalf of equity-targeted households and communities. Engagement is expected to address topics such as
 - a. Program design elements to maximize participant benefits and resolve barriers
 - b. Methods for delivering strong customer protections
 - c. Community engagement methods to foster trust and encourage participation
 - d. The role of community-based organizations as thought partners, outreach partners, and advocates on behalf of their constituents

1.3.6 Goal 6: Enhance enforcement to ensure safety and customer protection for ESJ communities

The Inclusive Utility Investment Pilot incorporates an array of customer protection mechanisms that shield participants from threat of home foreclosure or equipment repossession. By reducing customer energy burdens, the Pilot reduces customer exposure to the risk of disconnections for nonpayment that many residents in ESJ communities already face. The Pilot is able to achieve these outcomes while expanding access to clean energy investments and without imposing means testing requirements.

Because it is impossible to eliminate all risk, the responsible approach is to clearly identify the risks in order to first assign them to the party most able to handle them and then to mitigate them. The Pilot approaches customer protection with the philosophy that it is the program's responsibility to assure that Inclusive Utility Investments are scoped to be cash-positive for the occupant and that improvements perform as designed. The property owner and occupant are responsible for the proper operation and maintenance of improvements in keeping with manufacturer's recommendations. Finally, the occupant is solely responsible for any unrelated energy usage changes and retains the liberty to make those changes without interference or restriction by the program. Specific customer protections are discussed in detail in Section 2.2 and include:

- Assigning responsibility for participant recruitment and project scope development to an independent Program Operator that is not financially motivated to maximize sales
- Requiring installers to be fully licensed and bonded and all project installations to be fully permitted
- Adopting Program procedures for post-installation project quality control inspections and acceptance testing
- Establishing warranty requirements for equipment, parts, and labor
- Constraining the decarbonization service charge to be 20 percent less than the expected bill savings
- Incorporating a measure savings prediction guarantee to assure that actual measure energy savings are in alignment with predictions

Taken together, these protections effectively minimize opportunities for fraud and unfair business practices that have plagued debt-based clean energy financing approaches. Going further, they make clean energy investments accessible to a population of customers that can ill afford to take on any additional financial risks.

1.3.7 Goal 7: Promote high road career paths and economic opportunity for residents of ESJ communities

The Inclusive Utility Investment Pilot will expand and accelerate clean energy investments, thereby creating new economic opportunities. As a starting point, the Pilot will require installations to be performed by licensed professionals and require permit close outs to promote best practice and prioritize companies that are doing work the right way. Any incremental project costs associated with high road workforce requirements should be covered by supplementary public funding rather than get assigned to the participating customer. This outcome could be accomplished by co-funding the project investment with grant funds earmarked for economic development or social justice.

1.3.8 Goal 8: Improve training and staff development related to environmental and social justice issues within the CPUC's jurisdiction

The TECH Team and SVCE commit to monitor and report on Pilot performance relative to key equity metrics in a way that can inform and advance CPUC staff's understanding of environmental and social justice issues. Proposed metrics are listed under Goal 9.

1.3.9 Goal 9: Monitor the CPUC's environmental and social justice efforts to evaluate how they are achieving their objectives

The Inclusive Utility Investment Pilot will contribute directly to the following action items identified in Appendix A of the *CPUC ESJ Action Plan 2.0*¹⁵ Action item number follows the numbering system in the source document, omitting those items not addressed in this proposal.

¹⁵ See <https://www.cpuc.ca.gov/news-and-updates/newsroom/environmental-and-social-justice-action-plan>

- 2.1.1 **Alignment & Coordination Across Marketing, Education & Outreach (ME&O) Plans.** The Pilot will compare ME&O plans of utilities and adopt best practices when appropriate
- 2.1.2 **Improve Feedback Loop from Customers to Foster Iterative Process in Program Design.** The Pilot will conduct workshops with program, community, and customer stakeholders to help Pilot design. It will also track program performance relative to equity metrics.
- 2.3.2. **Consider Streamlined Application Processes and Enhance Coordination for Low Income and Clean Energy Programs.** The Pilot will leverage the TECH Iris platform for integrating multiple incentives.
- 2.3.3 **Leverage Scale of California Alternative Rates for Energy (CARE) and Energy Savings Assistance (ESA) Programs to Cross-Refer to Other CPUC Initiatives.** When possible, the Pilot will pursue opportunities to leverage CARE and ESA services and combine them with IUI investments.
- 2.5.2 **Continue Prioritization of ESJ Communities in Building Decarbonization Programs.** The IUI Pilot offers an opportunity to prioritize equity-targeted investments by field testing solutions for serving ESJ communities.
- 2.5.3 **Document Analysis of Investment in Electrification in San Joaquin Valley proceeding.** The Pilot will continue to monitor developments in the SJV proceeding and incorporate lessons learned.
- 5.2.1 **Engage CBOs Statewide** The Pilot will confer with the CPUC News and Outreach Office to identify opportunities to partner with CBOs.
- 9.1.2 **Data Collection: Standardizing Data Requests & Key ESJ Indicators.** The Pilot will track and report on key equity metrics, as adapted from Equity Metrics Working Group¹⁶ recommendations. The Pilot will monitor and report on the following Energy Equity Indicators
- Total number of residential equity-targeted households served
 - Expected and actual first-year energy, GHG, and utility bill savings for equity-targeted participants
 - Number of residential equity-targeted households receiving upgrades that are expected to improve home comfort, safety, and health outcomes
 - Health and safety issues abated for equity-targeted households
 - Number of residential equity-targeted households that could not be served due to the need for additional home repairs

¹⁶ The California Energy Efficiency Coordinating Committee sponsors working groups across several topics. For more information about the Equity Metrics Working Group, see <https://www.caeccc.org/equity-metrics-working-group-meeting>.

The Equity Metrics Working Group report defines the term “equity-targeted” broadly to include Disadvantaged Communities (DACs), Hard-to-Reach (HTR), and “underserved”. The Pilot adopts a definition that aligns with the CPUC’s definitions for “Environmental and Social Justice Communities” and “Hard-to-Reach.”¹⁷ The Pilot adopts a more inclusive income threshold tied to “moderate income,” consistent with the hypothesis that these customers remain underserved by conventional loan and incentive programs. For tracking and reporting purposes, the Pilot will rely on the following indicators to identify equity-targeted households and communities:

- Disadvantage communities,¹⁸ defined as census tracts located in the top 25 percent of census tracts identified by Cal EPA’s CalEnviroScreen 4.0, along with those that score within the highest five percent of CalEnviroScreen 4.0’s Pollution Burden but do not receive an overall CalEnviroScreen score
- Low- and moderate-income households, as indicated by self-reported household income less than 120 percent of the Area Median Income (AMI) or enrollment in the CARE or FERA programs¹⁹
- Multifamily housing residents
- Primary language spoken is other than English
- Households located in tribal lands
- Census tracts with median household income less than 80 percent of the area or state median income

9.2.1 Metrics to Measure Satisfaction, Comprehension, and Experience. The Pilot will conduct periodic assessments to measure issues such as comprehension, satisfaction, and effectiveness of program marketing, education, and outreach (ME&O). Results will inform enhancements to program delivery.

¹⁷ “Environmental and Social Justice Communities” is defined in the ESJ Action Plan; “Hard-to-Reach” is defined in CPUC Resolution G-3497.

¹⁸ As designated by SB 535 Disadvantaged Communities (updated June 2017) and described by the California Office of Environmental Health Hazard Assessment. See <https://oehha.ca.gov/calenviroscreen/sb535>.

¹⁹ Definition of “Moderate Income” follows California Department of Housing and Community Development. See <https://www.hcd.ca.gov/income-limits>

2 Financing Program Requirements

2.1 Financial Product Description and Program Development

2.1.1 Investment Mechanism Description

ACR Guidance: Describe the financing mechanism and/or proposed financial product offered through the program.

2.1.1.1 INVESTMENT MECHANISM ATTRIBUTES AND RATIONALE

The intent of the Pilot is to expand customer access to capital to include those customers that are typically disqualified from conventional loan and incentive programs due to underwriting criteria for consumer credit risk along with those customers who are unwilling to incur debt to finance upgrades. Pilot results will provide empirical proof of concept to inform planning and launch of statewide Inclusive Utility Investment mechanism(s).

The proposed investment mechanism is a special-purpose tariff with terms of service that allow the utility to invest in upgrades at a *specific site* in its service area and recover its cost for that investment from that site through a charge *on the bill* that is significantly less than the estimated savings. This mechanism allows a utility to deploy capital to cost-effective upgrades at the grid edge (i.e., at the customer's location) with an assurance that the utility will be able to recover its cost on terms that meet basic tenets of economic regulation in the utility sector: non-discriminatory, cost-based, just, reasonable, and fair.

SVCE is in the PG&E service territory. Because of the legal and regulatory relationship between California's Investor-owned Utilities (IOUs) and Community Choice Aggregators (CCAs), the lead utility in this instance is by necessity Pacific Gas & Electric Co. (PG&E), with the Partners supporting capital formation, leading implementation, and contributing financial resources. Further articulation of roles and responsibilities is provided below.

This plan proposes a tariff obligation for a site-specific decarbonization investment with a monthly Program Service Charge assigned to the meter location with automatic application to service provided to successor customers. The exact amount of the monthly obligation will be constrained by the expected bill savings and will be based on the scale of the investment made at the site, after accounting for any applicable incentives and co-payments.

The Program adopts the following design parameters:²⁰

- Customer eligibility may be subject to good utility bill payment history but will otherwise be independent of income, credit standing or status as a homeowner or renter (i.e., no financial means testing);

²⁰ Adapted from Cillo, Paul, 2021. "Updated PAYS® [Pay As You Save] Essential Elements and Minimum Program Requirements Effective December 31, 2020." Energy Efficiency Institute, Inc. <https://www.eeivt.com/updated-pays-essential-elements-and-minimum-program-requirements-effective-december-31-2020/>.

- A tariffed Program Service Charge shall be assigned to the location receiving the upgrades, not to an individual customer;
- The offer to the customer shall effectively shield the customer from installation and operating cost risks and equipment performance risks, including but not limited to the following provisions:
 - Program Service Charges shall be constrained to be less than 80 percent of the customer's predicted annual savings deriving from the investment;
 - The Program Service Charge shall be a fixed amount;
 - The Partners shall verify that products are appropriate, and that first-year measured and verified savings exceed Program Service Charges;
 - The Program Service Charge may be subject to a post-installation true-up process to support a measure savings prediction guarantee;
 - Duration of charges shall not exceed the project's estimated useful life, calculated as the average of measure use lives, weighted by their respective contributions to expected energy savings;
 - Mid-term increases in Program Service Charges are not permitted;
 - Charges shall be suspended if upgrades stop working until they are repaired and working again;
 - Charges shall also be suspended for vacancy if meter is shut off, and the cost recovery period commensurately extended;
 - Repairs or vacancy can extend the duration of charges but may not increase the monthly payment;
 - Upgrades belong to building owner, unless a third-party ownership mechanism is necessary to maximize available tax credits (e.g., solar investment tax credit);
 - In the case of third-party ownership, Program Service Charges cease when costs are fully recovered, and upgrades may not have end-of-lease charge or transfer of ownership financial obligation;
 - IUI upgrades shall be commercially proven technologies that meet program standards for energy efficiency, performance, and reliability;
- Successor customers at an upgraded site will be notified prior to occupancy that the cost recovery charge applies automatically to the bill until the investment costs are recovered;
- Current and successor customers shall be offered a mechanism for early payment of the remaining Program Service Charges necessary to achieve full cost recovery;
- PG&E shall pay the capital provider(s) the amount billed to IUI customers, regardless of the utility's collections, and to treat any uncollectible cost recovery for IUI measures the same way that it treats all other uncollectible charges.

2.1.1.2 PARTNER ROLES AND RESPONSIBILITIES

Successful delivery of this IUI Pilot will entail a constructive collaboration between SVCE, the TECH IUI Pilot team, and PG&E. SVCE will serve as Program Sponsors with accountability for program implementation. SVCE has executed a Memorandum of Understanding with Energy Solutions on

behalf of the TECH IUI Pilot team for TECH to contribute in-kind labor support and technical expertise through the planning phase for this Pilot. The Partners expect to execute an implementation contract at a later date that may include direct financial support from TECH.

PG&E's active participation is necessary because certain functions related to tariff adoption and cost recovery are reserved for public utilities under state law. SVCE thus lack unilateral authority to deploy an IUI program without CPUC approval for IOU participation.

Planning Phase roles and responsibilities can be summarized as follows:

CCA	PG&E	TECH IUI Pilot team
<ul style="list-style-type: none"> • Approve & submit program proposal to CPUC • Conduct legal, regulatory, & financial due diligence • Develop Program Regulations and implementation plan • Secure program operating funds 	<ul style="list-style-type: none"> • Submit IUI Platform proposal to CPUC • Adopt IUI Tariff • Establish parameters for programs to access IUI platform • Conduct legal, regulatory, & financial due diligence • Billing system upgrades as needed 	<ul style="list-style-type: none"> • Prep program proposal • Provide technical, financial, and regulatory support • Support development of Program Regulations and implementation plan

Implementation Phase roles and responsibilities are expected to be allocated as follows:

CCA	PG&E	TECH IUI Pilot team	Program Operator
<ul style="list-style-type: none"> • Hire and oversee Program Operator • Meet PG&E requirements for Program Sponsorship • Lead community engagement • Support marketing & outreach • Transmit IUI Service Charge info to PG&E 	<ul style="list-style-type: none"> • Fund investments & recover costs • Remit revenues to capital providers 	<ul style="list-style-type: none"> • Support Program Operator recruitment & onboarding • Fund risk mitigation, startup costs • Contribute implementation resources TBD • Leverage complementary TECH efforts • Conduct QA/QC of improvements • Conduct M&V 	<ul style="list-style-type: none"> • Operational responsibility for customer acquisition, cost containment, & quality control • Hire & manage installer contractors • Handle marketing and customer acquisition • Conduct all phases of project origination, including site assessment, project scope & specifications development, permitting, financial

CCA	PG&E	TECH IUI Pilot team	Program Operator
<ul style="list-style-type: none"> • Manage financial & regulatory compliance 			analysis, determine IUI capital contribution <ul style="list-style-type: none"> • Manage O&M, customer service

2.1.2 Regulatory and Programmatic Precedents

ACR Guidance: Is there any precedent for a program of this type, and if so, what are the lessons learned from previous and similar programs? Please include any applicable program results from those other programs, such as forecast and actual participation by targeted customer group and describe, to the extent possible.

The proposed program incorporates both regulatory and programmatic precedent into its design.

2.1.2.1 PROGRAMMATIC AND REGULATORY PRECEDENTS NATIONWIDE

Inclusive Utility Investment programs based on the Pay As You Save® (PAYS®)²¹ system have been successfully implemented during the past 20 years in nine states by 20 utilities from Hawaii to New Hampshire, including investor owned, cooperative, and municipal utilities.²² These programs are illustrated in the following map compiled by LibertyHomes²³

²¹ Pay As You Save® and its acronym, PAYS® were trademarked by the US Patent and Trademark Office as a system with specific essential elements and minimum program requirements. Energy Efficiency Institute, Inc. (EEI), which holds the trademarks, has never charged any entity for using its marks. The trademarks ensure that “Pay As You Save” and “PAYS” may only be used to refer to programs that have PAYS’ essential elements and minimum program requirements.

²² Energy Efficiency Institute, Inc. *Status Report, March 31, 2022*.

²³ See <https://www.libertyhomes.org/pays-landscape>

Inclusive Utility Investment via Pay As You Save® as of 2022

Legend:

- Utility Regulatory Commission has approved or been ordered to approved a PAYS Tariff
- State Legislature, Utility Regulatory Commission, or Investor Owned Utility is due diligencing PAYS
- Active Utility PAYS Programs
- Completed Utility PAYS Programs

States with Utility Regulatory Commission approval (Dark Blue): ME, NH, VT, NJ, DE, MD, DC, VA, NC, TN, KY, IL, AR, MS, AL, GA, FL.

States with State Legislature, Utility Regulatory Commission, or Investor Owned Utility due diligence (Medium Blue): WA, OR, ID, MT, ND, SD, WY, NE, IA, WI, MI, IN, OH, PA, NY, CT, MA, RI, WV, PA, VA, NC, TN, KY, IL, MO, KS, CO, UT, AZ, NM, TX, LA, MS, AL, GA, FL, AK, HI.

States with Active Utility PAYS Programs (Green Dots): WA, OR, ID, MT, ND, SD, WY, NE, IA, WI, MI, IN, OH, PA, NY, CT, MA, RI, WV, PA, VA, NC, TN, KY, IL, MO, KS, CO, UT, AZ, NM, TX, LA, MS, AL, GA, FL, AK, HI.

States with Completed Utility PAYS Programs (Black Squares): WA, OR, ID, MT, ND, SD, WY, NE, IA, WI, MI, IN, OH, PA, NY, CT, MA, RI, WV, PA, VA, NC, TN, KY, IL, MO, KS, CO, UT, AZ, NM, TX, LA, MS, AL, GA, FL, AK, HI.

A recent paper on PAYS has documented relevant developments to this evolving system:²⁵

- In December 2019, the Missouri Public Service Commission approved Evergy’s energy efficiency plan contingent on using the PAYS system (MO 2019).
- In July of 2020, Ameren Missouri and staff of the Public Service Commission and other stakeholders announced a unanimous agreement to use the PAYS system for a two-year program with the intention to scale in subsequent years (GA PSC 2020, MO PSC 2020).
- Also, in July 2020, the City of Minneapolis filed a tariff for inclusive financing using the PAYS system (MN PSC 2020; EEI 2020). Additionally, in 2020, the Virginia Legislature unanimously passed SB 754 granting rural electric cooperatives State Corporation Commission conditional preapproval for on-bill tariff energy efficiency programs such as PAYS (VA 2020).
- In July 2020, Duke Energy reached a partial settlement with intervenors in its grid modernization rate case, agreeing to craft a tariffed on-bill program that could use the PAYS system, and that

²⁵ Bickel, Stephen, Jill Ferguson, and Daniel Kauffman, 2020. "Utility Value of a Pay As You Save® Energy Efficiency Program." Panel 2: Residential Buildings: Program Design, Implementation, & Evaluation. *Proceedings of the ACEEE 2020 Summer Study on Energy Efficiency in Buildings*. Washington, DC: American Council for an Energy-Efficient Economy: 2-15 to 2-29. https://www.aceee.org/files/proceedings/2020/event-data/pdf/catalyst_activity_10638/catalyst_activity_paper_20200812131023120_f3ae9c74_21aa_4f2d_ab9b_e70982627d24.

settlement has been submitted to the North Carolina Utilities Commission for consideration (NC 2020).

The enabling regulatory authority for these programs is summarized by the nonprofit LibertyHomes at <https://www.libertyhomes.org/post/6-25-21-policy-precedents-for-pay-as-you-save-and-inclusive-utility-investment>. Recent developments include adoption of the PAYS® system by all Missouri IOUs and legislation adopted in Illinois that requires all IOUs in the state to offer programs that meet the minimum requirements and essential elements of the PAYS® system as part of the Climate and Equity Jobs Act.

The Southeast Energy Efficiency Alliance (SEEA)²⁶ has compiled the following case studies:²⁷

- **Ouachita Electric Cooperative – HELP PAYS®.** Ouachita Electric Cooperative started its HELP PAYS® program in 2016 after recognizing its previous on-bill loan program, called HELP, posed higher financial risks, limited eligibility, and limited project size. Ouachita Electric worked with its Program Operator, EEtility, to make the transition from making consumer loans to making IUI investments. The tariff was approved by the state’s utility commission in approximately four months, accounting for half of the time in the transition from due diligence to field implementation, which was eight months. Ouachita EMC upgraded 198 homes during eight months of 2016, reaching 2 percent of the market in the utility’s service area. The utility prioritized attention to renters in multifamily homes, making an offer to capitalize upgrades in every rental unit assessed. Of eligible units, 100 percent opted to proceed with the upgrades. In addition, more than 80 percent of the residents in single-family homes who received an offer through the HELP PAYS® program accepted it. Comparing the best four months of the previous on-bill loan program to the first four months of the HELP PAYS® program, the project size and number of participants doubled. The average cost of an upgrade project was \$5,634, and the average estimated energy savings was 22 percent.
- **MACED – How\$mart®KY.** The Mountain Association for Community Economic Development (MACED) has administered the How\$mart®KY IUI program since 2011. At the time of publication, it is offered by six electric co-ops, all of which partner with MACED as the Program Operator. MACED worked with the co-ops to adapt its program design from intellectual property licensed from the Energy Efficiency Institute, as well as on precedents developed by Midwest Energy’s How\$mart® program in Kansas. Residential and small commercial customer classes are eligible, and most of the projects are residential. As of June 2019, the program had assessed 607 buildings, offered upgrades to 405 member-owners, and facilitated 320 energy efficiency retrofits. The average job cost is \$7,743, and the cost recovery rate is over 99.6 percent, with zero disconnections for non-payment. The average monthly projected savings is \$51.98, or 5492 kWh, while the average monthly charge is \$39.98.
- **Roanoke Electric Cooperative – Upgrade to \$ave.** Roanoke Electric Cooperative began Upgrade to \$ave in July 2015 after finding the vast majority of customers with the highest bills in its service

²⁶ SEEA is a 501(c)(3) nonprofit and Regional Energy Efficiency Organization (REEO) established in 2007 in Atlanta, Georgia.

²⁷ Holmes, Wesley, Cyrus Bhedwar, Kate Lee, and Emme Luck, 2020. “Utility Guide to Tariffed On-Bill Programs.” Atlanta, GA: Southeast Energy Efficiency Alliance. https://www.seealliance.org/wp-content/uploads/SEEA_TOBGuide_FINAL_UPDATED_2020_04_13.pdf

area would not qualify for or be willing to apply for a loan through its debt-based program. As of September 2017, the average Upgrade to \$ave job cost was \$7,200, and the average monthly tariffed charge for cost recovery was about \$60, with cost recovery ranging from 4-12 years, while the estimated monthly savings averaged over \$80 per month. Participants are estimated to keep an average of 25 percent of savings during the cost recovery period. As of June 30, 2019, the co-op has invested approximately \$3.4 million into energy efficient upgrades for member-owners through Upgrade to \$ave and still has nearly \$3.1 million left in federal financing to invest in the program with a capital cost less than 3 percent. 638 member-owners have already benefited from this high-impact program.

- **Appalachian Electric Cooperative – U-\$ave Advantage.** Appalachian Electric Cooperative was the third cooperative in the Southeast to implement a PAYS program and the first Tennessee Valley Authority local power company to do so. As of September 2019, the average job cost was \$6,414, while the estimated monthly savings averaged more than \$68 and 640 kWh per month. 37 member-owners have already benefited from this high-impact program, the result of an 82 percent conversion rate of eligible homeowners.

2.1.2.2 CALIFORNIA POLICY AND PROGRAM PRECEDENTS

In California, Senate Bill 350 (De León, Chapter 547, Statutes of 2015) directed the CEC to study barriers to low-income customers participating in the clean energy economy. After months of extensive stakeholder consultation and multiple rounds of public comments and draft review, the CEC concluded, as expected, that financing is a barrier to low-income customers. In its report, the CEC advanced recommendations for addressing barriers to financing, including the following:

The CPUC should consider developing a tariffed on-bill Pilot for investments in energy efficiency that targets low-income customers regardless of credit score or renter status, and that do not pass on a debt obligation to the customer. Utilities could use the program to make energy upgrade investments and recover the cost through the bill, so long as the recovery charge is less than the [total] estimated savings. The Energy Commission should encourage and provide technical assistance to publicly owned utilities (POUs) and other load-serving entities seeking to implement a tariffed on-bill Pilot.²⁸

Following the CEC's Barriers Study, the University of California Center for Law, Energy & Environment convened stakeholders who had expertise in multi-family housing to give closer attention to barriers uniquely affecting renters. The results of their deliberations were published in a report that identified recommendations to address key challenges, including lack of reliable, long-term funding that inhibits market transformation:

The California Public Utilities Commission and utilities could propose, and institute utility tariffed on-bill programs that capitalize energy efficiency retrofits without making [consumer] loans. ... This model is similar to on-bill financing in that the utility bears the upfront cost of efficiency measures and [the utility] recoups that cost via a Program Service Charge (known as the "tariffed charge") on the customer's monthly bill that is "tied to the meter" (i.e., is passed on to subsequent occupants). The significant difference is that the

²⁸ Scavo et al., *Low-Income Barriers Study*, p. 7

utility makes an investment rather than a loan. As a result, there are no limitations to eligibility related to income or credit history.²⁹

In a separate and subsequent process devoted specifically to building electrification, Greenlining Institute and Energy Efficiency For All convened stakeholders to develop a framework for equitable building electrification released in September 2019. The framework underscores the importance of ensuring funding for energy efficiency and clean energy programs. Its recommendations included “[finding] ways to support Environmental and Social Justice (ESJ) households through alternative financing such as tariffed on-bill financing.”³⁰

The CEC issues an Energy Efficiency Action Plan for the state every two years. The Plan, finalized in December 2019, contains a similar recommendation: “Implement tariffed on-bill repayment programs statewide to open new financing mechanisms for low-to-middle-income households and multifamily units, with eligibility not based on credit score or income.”³¹

Building on this body of policy recommendations, the Building Decarbonization Coalition launched the Accessible Financing Project in 2019 to develop a policy roadmap for implementing the above recommendations. The project produced a white paper, *Towards an Accessible Financing Solution: A Policy Roadmap with Program Implementation Considerations for Tariffed On-Bill Programs in California* in June of 2020.³² Consistent with the policy recommendations cited above, the BDC Accessible Financing Project research team prioritized attention to the potential to address the key design requirements with site-specific investment and cost recovery through inclusive utility investment programs. The white paper has sparked renewed interest in IUI solutions in California.

At the program level, TECH Pilot partner Frontier Energy has been the prime consultant to assist the Sonoma County Regional Climate Protection Authority and the BayREN to design, launch, and improve upon the program model at two Bay Area municipal water utilities (Windsor and Hayward) and is currently supporting the design of a region-wide on-bill initiative for Bay Area municipal water utilities. This innovative and inclusive investment model facilitates utility customers’ installation of efficiency improvements with no up-front cost. It provides customers in multiple markets a simple and attractive path to install energy- and water-saving technologies with little to no risk, including affordable and market rate residential rentals and small commercial.

²⁹ Elkind, Ethan N., and Ted Lamm. *Low-Income, High Efficiency: Policies to Expand Low-Income Multi-Family Energy Savings Retrofits*. University of California, Center for Law, Energy & Environment, 2019. <https://www.law.berkeley.edu/research/clee/research/climate/energy-efficiency/limf-energy-savings-retrofits/>

³⁰ Miller, Carmelita, Stephanie Chen, Lisa Hu, and Isaac Sevier. *Equitable Building Electrification: A Framework for Powering Resilient Communities*. Greenlining Institute and Energy Efficiency for All, 2019. http://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

³¹ Kenney, Michael, Heather Bird, and Heriberto Rosales, 2019. *2019 California Energy Efficiency Action Plan*. California Energy Commission. Publication Number: CEC-400-2019-010-SF: <https://www.energy.ca.gov/filebrowser/download/1900>

³² Mast, Bruce, Holmes Hummel, and Jeanne Clinton, 2020. *Towards an Accessible Financing Solution*. Building Decarbonization Coalition. https://www.buildingdecarb.org/uploads/3/0/7/3/30734489/bdc_whitepaper_final_small.pdf

During a nine-month PAYS® Pilot program in the Town of Windsor, 200 single family residences and 225 multifamily units signed up for the program. More people participated in this Pilot than any in any of the Windsor's other water conservation programs, and it was the first time that multifamily properties had participated in water conservation efforts. Multifamily participants achieved an average of 10 percent energy savings, 30 percent indoor water savings, and \$170 in net bill utility savings a year.

This work by BayREN encompasses strategies to evaluate the local built environment; engage with and research challenges and opportunities presented by various potential sources for program capital; quantify energy, water, embedded energy (in water), and overall GHG savings; geographic analysis of project potential based on building stock, utility rates, and project costs; analysis consistent with critical policies and regulations, drought regulations and restrictions, utility rate and tariff requirements associated with Prop 218, and real estate transactions and customer disclosure requirements and procedures.

2.1.3 Rationale for Key Tariff Provisions

ACR Guidance: For tariffed on-bill programs, please include draft tariff language. Also, provide a discussion of:

- a. The expected payment prioritization of the on-bill charge that discusses any potential legal, regulatory, and customer protection mechanisms included.*
- b. Whether the program will be implemented through modifications to an existing or a new tariff offering, and the anticipated costs associated with implementing the updated or new tariff.*

The Partners have met and conferred with PG&E on the appropriate tariff terms to support an Inclusive Utility Investment Pilot. The following proposed terms are informed by those discussions but are not necessarily endorsed by PG&E. Conversely, SVCE requests that PG&E be directed to adopt terms that allow the IUI pilot regardless of whether those terms differ from those needed for its proposed TOB platform.

The rationales for key tariff provisions are as follows.

- **Ownership of the Upgrade.** The Partners believe it is unnecessary to exert any ownership claim to the physical upgrades; rather, ownership of the upgrade should be assigned to the property owner at the outset. For accounting purposes, it would suffice for the utility to record a regulatory asset, if necessary. This treatment simplifies the offer and protects the customer and property owner. It is consistent with the program intent to offer upgrades free of any liens that a consumer loan might require in order to secure a personal debt obligation and it shields the customer from the threat of equipment repossession (not to

mention home foreclosure). It also avoids any risk that the Program Service Charge obligation might become entangled in a home resale.³³

- **Automatic Application to Successor Customers.** This provision is an essential element of the IUI investment approach and one that differentiates it from consumer debt. This feature enables the program to make substantial capital investments and recover those costs over a time frame that is comparable to the life of the improvements, without regard for the expected duration of a customer's occupancy. This element helps to make the service charges more affordable to customers, opens the door to serving renters in a meaningful way, and relieves homeowners from concerns about any future plans to sell their home. It is essential to define the tariff as automatically applicable to successor customers because the utility and program implementers otherwise lack any contractual ability to require or entice the successor customer to take on the Program Service Charge obligation.³⁴ If the tariff were defined as opt-in, successor customers would enjoy the benefits of the utility investment whether they voluntarily accepted the charges or not. As discussed in more detail below, automatic succession is just, reasonable, and fair to successor customers because the Program Service Charge is constrained to be less than the expected bill savings, so both current and successor customers are better off than they would have been in the absence of the investment. There is also ample regulatory precedent for this treatment, as exemplified programs based on the Pay As You Save system over the last two decades³⁵
- **Uncollectible Charges.** It is the Partners' understanding that the tariff provision for automatic application to successor customers can be specified for essential utility services, including recovery of investment costs, but could not be applied to the utility's collection of a third party debt. For this reason, Tariff paragraph 6.l specifies that the Service Charges will be considered as an essential part of the Customer's bill for electric service. The partners further understand that a key distinction between investment cost recovery and collection of third-party debt is the treatment of uncollectible charges. For these reasons, the Partners believe it is essential that the utility must handle uncollectible Program Service Charges in the same way it handles other uncollectible utility bills. The standard practice is to treat uncollectible charges as a cost of service and include them in the determination of utility

³³ For insight into how third-party ownership might complicate mortgage underwriting practices, see the *Fannie Mae Selling Guide* as it relates to properties with solar panels: <https://selling-guide.fanniemae.com/Selling-Guide/Origination-thru-Closing/Subpart-B2-Eligibility/Chapter-B2-3-Property-Eligibility/1032991541/B2-3-04-Special-Property-Eligibility-Considerations-12-16-2020.htm#Properties.20with.20Solar.20Panels>

See also Fannie Mae's guidance to appraisers for valuating energy efficiency improvements and solar panels: <https://selling-guide.fanniemae.com/Selling-Guide/Origination-thru-Closing/Subpart-B4-Underwriting-Property/Chapter-B4-1-Appraisal-Requirements/Section-B4-1-3-Appraisal-Report-Assessment/1032992541/B4-1-3-05-Improvements-Section-of-the-Appraisal-Report-09-02-2020.htm#Energy.20Efficient.20Improvements>

³⁴ We are unaware of any operating IUI or TOB programs that do not include automatic application to successor customers.

³⁵ For a comprehensive review of regulatory and policy precedents for IUI investments, see Liberty Homes at <https://www.libertyhomes.org/post/6-25-21-policy-precedents-for-pay-as-you-save-and-inclusive-utility-investment>

rates. This practice must apply to IUI Service Charges to properly distinguish the Service Charges as cost recovery for a utility investment rather than a third-party debt.

- **Disconnection for Nonpayment.** As noted below in Tariff paragraph 6.I, the Service Charges will be considered as an essential part of the Customer's bill for electric service. It is the Partners' understanding that this provision automatically makes non-payment of Service Charges subject to disconnection under the same provisions as for any other electric service. The CPUC has taken a number of important steps in recent years to minimize customer exposure to disconnection risks, including the institution of arrears management plans and suspension of disconnections during the pandemic. Because disconnection for nonpayment is already a remedy of last resort and because IUI functions as a savings-constrained mechanism with no new financial obligations to the customer, the Partners believe this provision poses little or no risk to participants. Nevertheless, the Partners stress that they do not see disconnection as an essential remedy for nonpayment. If the CPUC wishes to adopt a more permissive approach to nonpayment of Service Charges, the Partners request only that the CPUC do so in a way that preserves the ability for the tariff to apply automatically to successor customers.

2.1.4 Draft Electric IUI Tariff

E-IUI is proposed as a new tariffed offering that would function as a rider to the customer's otherwise applicable tariff. All charges and provisions of the customer's otherwise applicable tariffs would continue to apply. The CPUC is hereby requested to approve a new PG&E E-IUI tariff with the following or substantially similar terms, consistent with the above-articulated rationales.

2.1.4.1 APPLICABILITY

1. This Rate Schedule is applicable to electric service at residential meters serving Customers that meet the eligibility criteria specified in Section 2.1.4.5, Participant Eligibility, below, and receive service under a PG&E Electric Rate Schedule or a Community Choice Aggregation Rate Schedule.
2. Schedule E-IUI is an inclusive utility investment (IUI) strategy to deliver IUI Program services for the purchase and installation of eligible Clean Energy Measures or equipment (CEMs) at the premises of qualified customers. Qualified customers are those customers who meet specified eligibility criteria and comply with IUI requirements in accordance with this Schedule.

2.1.4.2 TERRITORY

The entire PG&E electric service territory.

2.1.4.3 DEFINITIONS

The definitions of capitalized terms used in this Rate Schedule are either defined in this Rate Schedule or in Electric Rule 1 Definitions, or in E-IUI Regulations, as defined below. Unless otherwise stated, all references to "Customer" in this Rate Schedule will refer to Customers who have elected to participate in E-IUI.

1. **Clean Energy Measures (CEMs):** Improvements allowable under the IUI Program, as specified in the IUI Program Regulations available on the Program website (URL to be determined), and subject to change from time to time.
2. **Owner Agreement:** A written agreement between the Property Owner, PG&E, and (if applicable) the Program Sponsor, or a designated agent to install mutually agreed-upon CEMs on the Owner's premises, in addition to other terms as they may be specified in the IUI Program Regulations. This agreement is applicable in instances where the Property Owner is not also the Customer.
3. **Participation Agreement:** A written agreement between the Customer, PG&E, and (if applicable) the Program Sponsor to finance and install CEMs at a Customer Premise, subject to the terms of this tariff and associated IUI Program Regulations. The named person(s) on the Participation Agreement must also be the named person(s) on the Utility Bill on which the Program Service Charge will be collected.
4. **Program Service Charge:** Amount due during a billing period from a Customer on this E-IUI Schedule.
5. **Program Sponsor:** A third-party entity to whom the Utility may delegate some or all responsibilities for delivering customer services, subject to the terms of this tariff and any supplementary terms the Utility may require, as specified in an Advice Letter to the Commission.
6. **Inclusive Utility Investment (IUI):** A process whereby the Utility, or Program Sponsor if different, with the Customer's permission and the permission of the property owner, if different from the Customer, may make a site-specific investment in qualifying Clean Energy Measures at the Customer Premise and recover the investment via Program Service Charges included in a Customer's Bill, to be paid to the Utility with the Utility Charges.
7. **IUI Program Regulations:** Requirements for participation in IUI, to be developed by the Utility or Program Sponsor, if different from the Utility, and submitted to the CPUC.

2.1.4.4 RATES

All charges and provisions of the Customer's otherwise applicable tariffs shall apply. In addition, a fixed monthly Program Service Charge amount due will appear as a line item on the Customer's Utility Bill to facilitate the recovery of the Utility investment in the installed CEMs.

Customers receiving service under this Schedule will be charged the applicable rates under the E-ELEC tariff unless a financial analysis determines that an alternate tariff would be more financially beneficial to the Customer.

2.1.4.5 SPECIAL CONDITIONS

Investments under this IUI Schedule will only be available subject to the availability of funds for investment as authorized by the California Public Utilities Commission.

1. **Participant Eligibility.** Eligibility is subject to the following conditions:
 - a. Residential customers receiving electric service at a Premise with a meter served by the Utility

- b. Customers in rented or leased single housing units may participate with the written consent of the property owner in the form of an executed Owner Agreement.
 - c. Customer must be in good payment standing as defined by the Program Regulations.
- 2. **Opt-in Requirement:** Customers choosing to have upgrades installed in their homes must voluntarily opt to receive program services, after which point the services are automatically applicable to successor Customers at that location until the upgrade costs are recovered. The Program Regulations may impose additional eligibility constraints.
- 3. **Preconditions for Completing Program Services:** Program services and CEM installations may be completed once
 - a. the Customer has received a Clean Energy Site Plan (as defined below) demonstrating that program participation is likely to provide net savings to the Customer at the Customer's Premise based on documented site conditions and utility bill analysis;
 - b. the Customer at the site has signed a Participant Agreement; and
 - c. the Utility or Program Sponsor, or its designated agent operating the program has verified that Customer-requested program CEMs can be safely installed at the site and perform to effectively deliver net savings consistent with program requirements and Customer reported and observed site conditions.
- 4. **Ownership:** If the Customer is not the building owner, the building owner must sign an Owner Agreement, agreeing to pay any applicable copayment for replacement of space heating and domestic hot water systems; not to remove or damage the measures; to maintain them; and to provide notice of the benefits and obligations associated with the measures at the location to the next owner or Customer before the sale or rental of the property.
- 5. **Clean Energy Site Plan:** The Program Sponsor or its designated agent operating the program shall perform an assessment of eligibility and identify recommended eligible CEMs to install at the site.
 - a. Net Savings: Recommended measures will be limited to those where the annual Program Service Charge (Service Charges) as described in section 8.
 - b. Copay Option: To qualify a project for the Program that is not sufficiently cost effective, Customers or Owners, if different, may agree to pay the portion of a project's cost that prevents it from qualifying for the Program as an upfront payment to the Program Sponsor.
 - c. Existing Buildings: Projects that address measures to existing buildings deemed unlikely to be habitable or to serve their intended purpose for the duration of Service Charges will not be approved unless other funding can effect necessary repairs.
- 6. **Approved Program Contractors:** All CEMs must be installed by Contractors that have been approved by the Program Sponsor, subject to criteria specified in the IUI Program Regulations.
- 7. **Quality Assurance:** When the measures are completed, the installing Contractor(s) will be paid by the Program Sponsor, following verification and approval of the installation by the Program Sponsor.

8. **Program Service Charge:** The Utility will recover the costs for the CEM investments made under this E-IUI Schedule, including any fees as allowed in this tariff, through monthly Service Charges assigned to the premise where measures are installed and paid by Customers at that property until all Utility costs have been recovered. The annualized Service Charges will not exceed 80 percent of the estimated combined annual benefit from changes to Customers' energy charges based on current retail rates for electricity and natural gas, after accounting for any applicable incentives, tax credits, or customer copayments. The Service Charge term will not exceed the estimated life of the installed CEMs.
9. **Landlord Copayment Requirement:** For tenant-occupied Premises, the landlord will be required to pay a copayment for heat pumps and heat pump water heaters subject to calculation methods specified in the Program Regulations.
10. **Adjustments to the Program Service Charge to Incorporate Available Incentives:** The Utility, or Program Sponsor if different, may reduce the measure cost with an incentive payment for eligible measures that is less than or equal to the value of the measures to the Utility or Program Sponsor.
 - a. For owner-occupied homes, any available incentives will first be applied to reduce or eliminate the project installation costs and a Customer's copay requirement. Any additional available incentives will then be applied to reduce the IUI finance requirement.
 - b. For tenant-occupied homes, any available financial incentives shall first be applied to reduce or eliminate any tenant copayment requirement. The remaining balance of incentive funds shall then be applied to reduce both the tenant's contribution (via the Program Service Charge) and the landlord's copayment obligation in equal proportion.
11. **Participation Agreement Essential Terms:** The IUI Participant Agreement shall include the Service Charges and duration of cost recovery and shall incorporate provisions to address the following terms:
 - a. **Cost Recovery:** The Service Charge will be billed on the Customer's electric bill following a minimum of 45 calendar days after installation of measures and Utility or the Program Sponsor have approved of the completed work. The Customer will be billed the monthly Service Charge as determined by the Utility or Program Sponsor. The Utility will bill and collect Service Charges until the Utility has recovered all approved costs for installed CEMs except in cases discussed in "Repairs".
 - b. **Maintenance of Measures:** Participating Customers and building owners (if the Customer is not the building owner) must agree, when signing the IUI Participant Agreement or the Owner Agreement, to keep the measures in place for the duration of Service Charges, to maintain the measures per manufacturers' instructions, to properly maintain upgrades per manufacturer recommendations, and report the failure of any measures to the Program Sponsor as soon as possible. If a measure fails, the Program Sponsor is responsible for determining its cause and for repairing the equipment in a timely manner as long as the owner, Customer, or occupants

- properly maintained upgrades and did not damage or remove the measures, in which case they will reimburse the Utility, as described in "Repairs"
- c. **Termination of Service Charge:** Once the Utility's costs for measures at a location have been recovered, the monthly Service Charge will no longer be billed, except as described below in "Repairs".
 - d. **Vacancy:** If a location at which measures have been installed becomes vacant for any reason and electric service is disconnected, Service Charges will be suspended until a successor Customer takes occupancy. If a Property Owner maintains electric service at the location, the Property Owner will be billed Service Charges as part of any charges it incurs while electric service is turned on.
 - e. **Repairs:** If the Program Sponsor determines, during the cost recovery period, that the installed measure(s) are no longer functioning as intended and that the Customer, or building owner if different, did not damage or fail to maintain the measures in place, the Utility will reduce or suspend the Service Charges until the Program Sponsor can effectuate repairs to the measure(s). If the measure(s) cannot be repaired or replaced cost effectively, the Utility will waive remaining Service Charges. If the Program Sponsor determines the Customer, or building owner if different, did damage or fail to maintain the measure(s), it will seek to recover all costs associated with the installation from the Property Owner, including the balance of all unpaid and unbilled Service Charges and legal fees, which shall be due and payable immediately.
 - f. **Extension of Service Charge:** If the monthly Service Charge is reduced or suspended for Vacancy or Repairs, once repairs have been successfully effected or service reconnected, the number of total monthly payments will be extended by the number of Service Charge payments that were skipped during Vacancy or Repairs.
 - g. **Tied to the Premise:** Until cost recovery for measures at the Premise is complete or the measures fail and cannot be cost-effectively repaired as described in "Repairs", the terms of this tariff will be automatically binding on the Premise and any future Customer who will receive service at that Premise.
 - h. **Disconnection for Non-Payment:** Without regard to any other approved Utility rules or policies, the Service Charges will be considered as an essential part of the Customer's bill for electric service, and the Utility may disconnect the property for non-payment of Service Charges under the same provisions as for any other electric service. If service is disconnected for Customers on pre-paid payment plans, Service Charges will be pro-rated by the day.
 - i. **Paid to date and Sum of Future Program Service Charges:** Utility or Program Sponsor shall provide, upon the Property Owner's request, the value of Service Charges paid to date, the number of remaining billing cycles that will include Service Charges to achieve full cost recovery, and the sum of those future charges for full cost recovery.
 - j. **Prepayment of the Utility's Cost Recovery Interest in the CEMs:** The Customer may pay the remaining sum of future Program Service Charges in one lump sum

payment provided the Customer first notifies Utility and obtains Utility 's approval in advance of making the lump sum payment. Accelerated payments received from the Customer without prior Utility approval may, at Utility's sole discretion, be applied proportionally to subsequent energy charges and Program Service Charges and Utility shall have no obligation to credit accelerated payments exclusively to subsequent Program Service Charges.

- k. **Noticing.** The owner must agree as part of the IUI Participant Agreement (if the owner is the Customer) or Owners Agreement to have a Notice attached to their property records.³⁶ Failure to obtain the signature on the Notice Form of a successor Customer who is renting the premises or a purchaser, in jurisdictions in which the Utility, or Program Sponsor if different, cannot attach the Notice to the property records, indicating that the successor Customer received notice will constitute the owner's acceptance of consequential damages and permission for a tenant or purchaser to break their lease or sales agreement without penalty.
- 12. **Monitoring and Evaluation:** The Utility, or Program Sponsor if different, will compare each participant's post-installation actual annual savings to estimated annual savings at least once for each location. If any instances are identified where actual CEM savings are below 80 percent of the CEM's estimated savings, the Utility, or Program Sponsor if different, will investigate to identify the cause and take appropriate action including those described in the IUI Program Regulations and this E-IUI Schedule. Protocols for determining actual annual savings shall be specified in the Program Regulations.
- 13. **Applicable rate and rate time periods** are defined as E-ELEC.
- 14. **Other Applicable Terms.** Nothing in this rate schedule limits a Customer's ability to participate in California Alternate Rates for Energy (CARE), Family Electric Rate Assistance, Arrearage Management Plan, or any other Utility-sponsored program for which the Customer would otherwise be eligible.

2.1.5 Leveraging Private Capital

ACR Guidance: Describe if and how this program will attract private capital in entirety or in addition to using public funds.

- a. *If so, what portion of the program would be covered by private capital when the program launches?*
- b. *Does the program intend to ultimately transition to 100% private capital at a specific milestone? Why or why not?*

As noted above, the ability to leverage third-party capital (including private debt and equity investments, plus state- and federal-backed loans) hinges critically on the electricity price and thus the savings that customers can expect to realize via decarbonization investments. Under PG&E's proposed EV-2 rate, the program forecasts the opportunity to deploy up to \$15 million over a two-year implementation time frame, of which approximately \$4.6 million would derive from the program's Inclusive Utility Investments. The IUI mechanism would also recover an additional \$1.1

³⁶ Note: this is not strictly authorized today but would be authorized under SB 1112 (Becker, 2022)

million to cover the cost of IUI capital. In this scenario, third-party capital mobilized via IUI could cover approximately 30 percent of the principal investment, with public funds and customer contributions making up the balance.

In addition, the program estimates an operating revenue requirement of \$3.3 million over two years, of which \$3 million would come from previously budgeted TECH funds. This figure includes approximately \$1 million to test risk mitigation and customer protection mechanisms.

The Partners interpret the CPUC's question about transitioning to private capital as a desire to assign the full investment responsibility to the participating customer whenever feasible. The program does not intend to transition to 100 percent private capital for three reasons:

1. This IUI Pilot emphasizes decarbonization upgrades of existing homes, particularly replacement of fossil fueled equipment with high-performing electric versions. For many, if not most, California customers, savings from electrification upgrades are expected to be insufficient to cover the full investment cost; thus, ratepayer or publicly-funded incentives will remain necessary to avoid insurmountable customer copay requirements.
2. There are substantial public benefits associated with building decarbonization, including environmental, public health, grid, and other economic benefits. It is consistent with state policy to allocate public funds to co-fund these investments rather than assign the full investment responsibility to the customer.
3. The overarching goal of the IUI Pilot is to expand customer access to clean energy investments to include those customers that are typically disqualified from conventional loan and incentive programs due to underwriting criteria for consumer credit risk, whose participation is necessary to meet state GHG goals in an equitable fashion. The same barriers that have prevented customers from accessing conventional financing have also impeded their ability to benefit from utility incentive programs. The policy priority should thus focus on redressing this historical inequity rather than reducing ratepayer funding for clean energy investments. Incentive levels for historically underserved customer segments should be maintained or increased, at least for the foreseeable future.

SVCE and the TECH IUI Pilot team will collaborate with PG&E to secure investment capital from one or more of the following sources:

Option: Utility Capital. SVCE may seek access to debt-based capital acquired by PG&E for its TOB platform, subject to the provision that any cost of debt above 3 percent should be assigned to ratepayers rather than program participants.

Option: Climate Catalyst Fund (I-Bank). SVCE may seek access to capital via the State of California's Climate Catalyst Fund. This fund is a multi-purpose investment vehicle for climate and sustainability projects, offering low-interest loans, credit support, conduit bond financing and special-purpose vehicles for critical infrastructure initiatives. Catalyst Fund can support projects

sponsored by public, private and not-for-private entities, depending upon the nature of the technology and its application.³⁷

Option: US Department of Energy, Loan Programs Office. SVCE and PG&E (potentially with state agencies) may collaborate on an application for a loan guarantee through the US DOE Loan Program Office. The federal loan guarantee would reduce the cost of capital from sources. LPO has loan guarantee authority for Renewable Energy and Efficient Energy Projects under the Title 17 Innovative Energy Loan Guarantee Program (Title 17), authorized by the Energy Policy Act of 2005. The Infrastructure Investment and Jobs Act of 2021 includes a reform to Title 17 authority in Section 40401(c) to eliminate the requirement that restricts the technologies for deployment to those with pre-commercial status if a state financial entity is participating.³⁸ DOE guidance on the implementation path for that recent reform is pending and additional funds will need to be authorized by Congress.

In light of the low risk that this investment mechanism poses to capital providers, the Partners propose that the CPUC should set a target cost of capital of three percent, along with a firm cap of three percent on the cost of capital that can be charged to program participants. Furthermore, the Partners believe that neither participating nor nonparticipating ratepayers should be burdened with additional costs to fund an IOU rate of return on these investments.

Table 5. Funding contributions to capital stack and program operations

Source	Notes	Amount
Third Party Capital	Utility / third party debt or equity or government-backed loans to program	\$5,807,736
TECH Contribution	(not counting in-kind services)	\$3,000,000
Incentives	TECH + previously committed ratepayer funding	\$2,560,000
Funding gap	To be filled via monetization of transactable grid benefits, additional CCA or IOU incentives, other public funds, or Participant Co-Pay	\$5,966,883
CCA contribution	Start up + program operating - TECH contribution	\$314,024
Total		\$17,648,643

³⁷ For more information, see <https://ibank.ca.gov/climate-financing/climate-catalyst-program/>

³⁸ For more information, see <https://www.energy.gov/lpo/renewable-energy-efficient-energy-projects-loan-guarantees>

2.2 Customer Protections

2.2.1 Participating Customer Risks and Risk Mitigation Tactics

ACR Guidance: What are the potential financial, economic, or other risks to the participating customer in this program and what customer protections does this proposal provide to mitigate customer/participant risk?

- a. *Describe any penalties that may be imposed if the customer does not repay the loan (such as credit reporting, asset forfeiture, utility disconnection).*
- b. *Describe any non-financial terms and conditions customers must satisfy to stay in compliance with the program.*

Inclusive Utility Investments are not a loan.³⁹ IUI participants are never at risk of losing their home or having installed upgrades repossessed because the program does not rely on either the home or the installed upgrades as collateral. The program attaches no liens and there is no threat of foreclosure or equipment repossession. Charges end for a participant when they move from an upgraded location, and successor customers at an upgraded site will be notified prior to occupancy that the cost recovery charge applies *automatically* to the bill until the investment costs are recovered.

Foreclosure on a customer's home and repossession of the investment asset are both excluded as remedies for nonpayment within the IUI program. For a customer, disconnection of an essential service in accordance with a CPUC and State policy is the only consequence of non-payment, and it is only specified because it is the security used to assure cost recovery for regular utility services. The Program Service Charge is a utility service charge for essential services, and thus, existing customer protections relating to disconnections for nonpayment apply equally to the IUI tariff as to the rest of the customer's regular utility bill. To the extent that CPUC policies limit or prohibit disconnections for nonpayment as a collections method, such protections would apply equally to the IUI tariff. Because the IUI investment is structured to reduce customer energy burdens, it reduces the customer's risk of utility disconnection.

Customers, or owners in the case of tenant-occupied dwellings, are formally responsible for the proper operations and maintenance of installed equipment. The following terms are enumerated in the customer participation agreement for regular maintenance and care:

- Assignment to customer of financial liability for improperly maintaining, damaging, or removing installed improvements
- Requirements to notify the IUI program operator of non-functioning products

Customer protection protocols are crafted to avoid or mitigate the following customer-facing risk factors:

- Installation cost risks

³⁹ See U.S. Environmental Protection Agency resource center for inclusive utility investment: https://www.energystar.gov/products/inclusive_utility_investment

- Savings prediction risks; i.e., the risk that cost recovery charges based on estimated savings will exceed the ex-post measured bill savings attributable to the upgrades
- Equipment operating and maintenance risks
- Cost shifts from landlords to tenants
- Successor customer interests (See 2.2.3 Application to Successor Customers)

2.2.1.1 Installation COST RISK MANAGEMENT

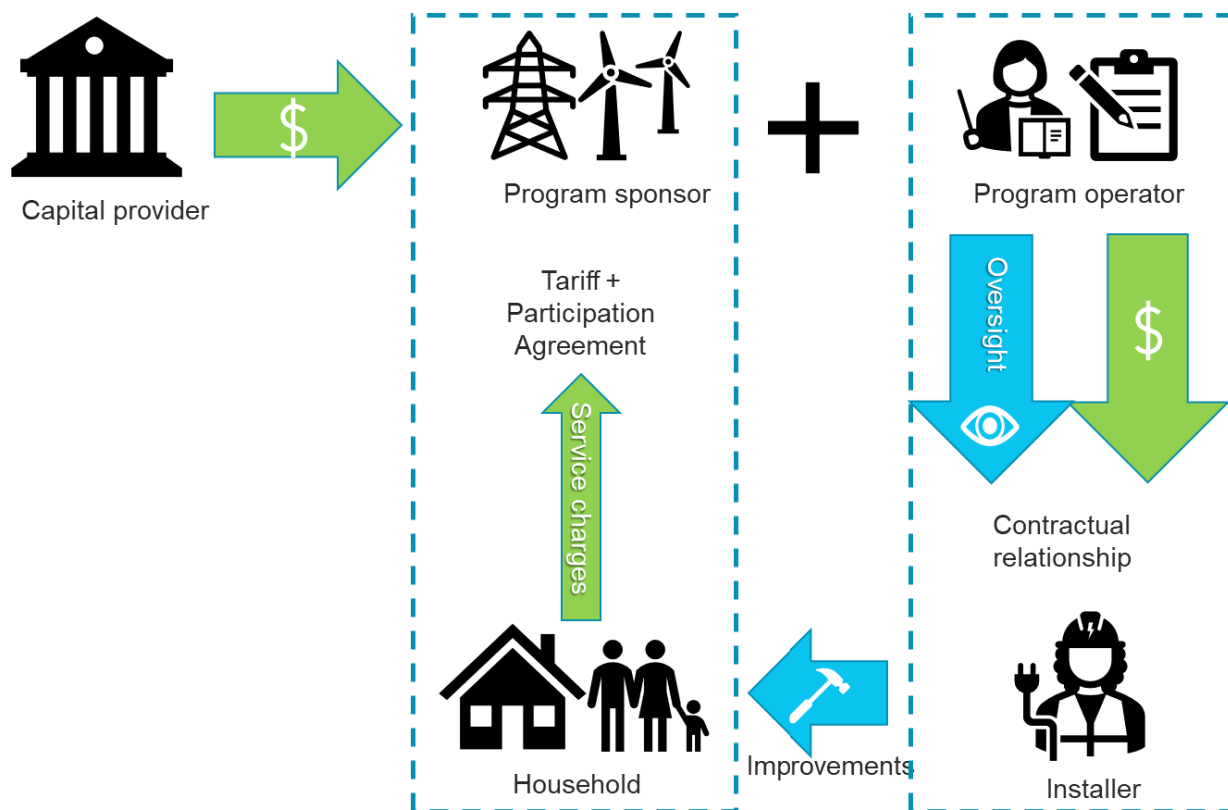
Unlike debt-based forms of capital finance, Inclusive Utility Investments incorporates an inherent throttle on capital costs because the IUI investment is limited to less than the Customer's expected lifecycle savings, after accounting for applicable incentives, tax credits, and customer copayments. In addition, the Program adopts a contracting and service delivery model that removes opportunities for abuse that could occur if the sales agent's compensation were linked to the scope and profitability of the project. Consider the following scenarios:

1. In cases where the combination of publicly funded incentives plus available IUI capital is more than sufficient to cover the full project installation cost with no customer copay, the sales agent might be inclined to mark up the installation bid price or propose unnecessary scope elements to capture the surplus available funds rather than return those funds to the customer in the form of lower IUI service charges.
2. In cases where a customer copay is required to cover the full installation costs, the sales agent might nevertheless be inclined to persuade the customer to accept a higher-than-necessary copayment to cover premium pricing and/or unnecessary scope.

These risks are inherent in the standard bilateral contractor-customer business relationship, and they are the bases for admonitions to customers to seek multiple bids. The Program avoids these risks by designating a Program Operator as the Program Sponsor's agent and assigning the Program Operator full responsibility for customer acquisition and project scope development. Installation costs are determined according to a fee schedule that is negotiated programmatically rather than project by project. The Pilot's sales agent compensation is decoupled from project work scopes.

The Pilot's contractual structure is illustrated in Figure 2. A key aspect is that the installing contractor's business relationship is with the Program Operator, not the customer.

Figure 2. Pilot Contractual Structure and Capital Flow



In this model, the Program Operator handles all aspects of customer acquisition and project planning, including site assessment, project scope and specifications development, site data collection, energy modeling, financial feasibility analysis, and determination of IUI capital contribution. The sales agent works for the Program Operator and the agent's compensation and performance metrics reward customer protection instead of maximizing sales volume or dollar value. The installation contractor's role is limited to installation services, based on the Program Operator's pre-determined project scope and specifications. Financial compensation to the installer will be determined by a negotiated fee schedule that reflects the elimination of installer marketing, scoping, and quoting expenses from the installers cost structure because the program is deliver sold jobs, not leads.

This delivery model also has implications for installation contractor participation. In this model, participation is not open to any and all contractors who meet minimum eligibility requirements. Instead, the Program Operator will seek out the best qualified and most price-competitive contractors via a competitive Request for Qualifications. Selected contractors, in turn, can expect to be assigned a substantial volume of work that rewards them for prioritizing the Program as a key client. This model also relieves contractors from a suite of soft costs, including customer acquisition costs, that otherwise drive up the retail prices customers face for measure installation.

2.2.1.2 SAVINGS PREDICTION RISK MANAGEMENT

An Inclusive Utility Investment is not a loan, but rather a utility investment for which cost recovery is tied to the location served by the utility according to terms set forth in a utility tariff. The program incorporates a cash-positive requirement as a central feature because it assures that the cost recovery charge functions as a savings-constrained mechanism rather than an additional financial obligation. Specifically, the Program will limit the annualized Program Service Charge to less than 80 percent of the expected annual utility bill savings and the cost recovery term will be limited to the expected useful life of the improvements.

In practice, the cash-positive requirement offers multiple benefits to program sponsors and participants.

- **Customer protection.** The cash positive requirement serves an important customer protection purpose by ensuring households do not incur higher energy burdens as a consequence of their energy service improvements. Customers are not asked to take on any new financial obligation beyond the commitments they accepted as part of their subscription to utility services.
- **Shared benefits.** Participants should share in the benefits of decarbonization, including joining in co-benefits that improve health, comfort, and safety. Low income and disadvantaged communities should not be precluded from participating in solutions just because of the barriers to utilizing traditional forms of consumer finance or home ownership.
- **Higher customer acceptance rates.** Based on prior program experience, assurance of positive cash flows is expected to support higher rates of customer acceptance of program offers, compared to conventional loan programs and market-rate incentives.
- **Risk management.** As discussed in more detail below, estimates of future energy savings are subject to a degree of uncertainty. Instituting a cash positive requirement thus provides a safety margin to households for performance risks.

IUI necessarily involves estimation of future energy savings to inform a project investment plan and savings proposal to the customer. There is an inherent degree of uncertainty in this exercise. At the same time, it is critical that IUI investments reduce rather than increase customer energy burdens so these risks must be borne by the Program Sponsor rather than the customer.

A review of published evaluation reports indicates that project and program realization rates (i.e., metered energy savings divided by ex-ante predictions) can be highly variable, with some published studies reporting realization rates below 50 percent. Thus, the 20 percent buffer described above, while necessary, may not be sufficient to provide the degree of assurance needed. The Pilot will field test the following risk mitigation strategies to determine the optimum mix of protection measures that balances customer protections and ratepayer financial burdens.

Table 6. Savings prediction risk factors and possible mitigation strategies

Risk Factor	Mitigation
Erratic baseline consumption may complicate efforts to calibrate engineering models and introduce unacceptable levels of uncertainty into savings predictions.	Apply standard CalTRACK protocols to screen candidates for baseline model stability (CVRMSE < 1.0).
Site data collection errors could lead to engineering model mis-specification.	<p>Assign data collection responsibility to the Program Operator and adopt site data collection protocols that incorporate industry best practices</p> <p>Establish minimum training and experience requirements for field technicians responsible for data collection</p> <p>Build error detection into data collection software applications that reject values outside of expected norms and require justifications for overrides</p>
Model mis-specification, including over-reliance on model default values, could lead to biased savings estimates.	<p>Assign data collection responsibility to the Program Operator and adopt physics-based modeling and simulation software tools that incorporate NREL's EnergyPlus™ whole building energy simulation engine</p> <p>Require models to be calibrated to baseline metered gas and electricity consumption, including calibration to disaggregated weather-sensitive loads</p> <p>Establish minimum training and experience requirements for personnel responsible for developing energy modeling</p>

Risk Factor	Mitigation
<p>Savings mispredictions or installation quality issues could result in a fraction of customers with realization rates below 0.8, which means their Program Service Charges would exceed their metered savings.</p> <p>At the whole building level, low realization rates could also be attributable to exogenous changes in the customer's energy usage patterns, which is outside of program control and responsibility.</p>	<p>Test methods for isolating end use consumption via disaggregation and weather normalization of whole building energy consumption via CalTRACK methods.</p> <p>Supplement whole-building analysis with end-use level M&V as needed to isolate program-impacted end uses from unaffected end uses.</p> <p>In cases where M&V shows probable cause to believe that energy savings from Program-installed improvements falls short of predictions, investigate root causes via phone interviews and site visits as needed.</p> <p>If under-performance or over-prediction is verified, the Program may repair or replace equipment and/or adjust customer's Program Service Charge for all future billing cycles to reflect the meter-based savings result for the improvements. Customer shall receive a bill credit for over-charges in prior months.</p>
<p>Some customers may experience take-back effects, particularly lower income customers who practice "voluntary curtailment" (i.e.; they under-utilize their heating equipment to save money); plus, all customers who currently lack AC</p>	<p>To the extent that low-income customers practicing "voluntary curtailment" can be identified during the planning phase, they should be steered towards direct install programs in lieu of IUI investments.</p>

For purposes of funding the savings prediction guarantees described above, the TECH program will allocate funds to indemnify SVCE up to \$3 million for program costs attributable to this guarantee. The Pilot will investigate opportunities and costs to outsource some portion of energy savings risk to an energy services company or the Program Operator.

As part of the Pilot's field research into scalable delivery models, the Partners will test the viability of less expensive guarantee strategies for a production-scale program. In particular, we will investigate alternatives that do not require phone interviews and site inspections, which would be challenging to perform at scale. For a range of different guarantee strategies, we will back cast what the results would have been had we applied them to the Pilot participants—What fraction of guarantee outcomes would have resulted in either false positive (i.e., customers would have received unmerited service charge discounts) or false negatives (customers would have merited

service charge discounts or other mitigations but failed to receive them). What would have been the cost to the program to provide the guarantee?

1. Option 1. Site-specific guarantee of weather-normalized end use consumption based on end use submetered results
2. Option 2. Site-specific guarantee of weather-normalized end use consumption based on end use disaggregation of whole building consumption, combined with performance data from smart thermostats and other Internet-enabled sensors.
3. Option 3. Site-specific guarantee of whole house consumption
4. Option 4. Population-level guarantee. If population realization rate after one year of performance is less than one, then apply discounts to service charges for the subset of participants with low project-level realization rates.
5. Option 5. No guarantee.

2.2.1.3 EQUIPMENT OPERATING AND MAINTENANCE RISK MANAGEMENT

The guiding principle adopted here is that the Pilot must be responsible for ensuring that improvements perform as designed, whereas the property owner and occupant must take responsibility for proper operations and maintenance in keeping with manufacturer's recommendations. Customer protection protocols for operationalizing this principle includes:

- Terms enumerated in the IUI tariff:
 - Charges stop if upgrades stop working until they are repaired and working again. Charges are also suspended for vacancy if meter is shut off.
 - Repairs or vacancy may extend the duration of charges but not increase the monthly payment amount.
- Program-sponsored quality-control inspections and acceptance testing of equipment installations on at least a sampled basis
- Requirements for minimum 10-year manufacturer warranties on installed mechanical equipment
- Requirement for the installing contractor to provide a one-year warranty on labor
- "Big data" analytics of metered energy consumption data, smart thermostat data (HVAC), and hot water controls to detect possible instances of equipment performing outside of design parameters

2.2.1.4 Tenant Protections

Landlords have a statutory duty to provide space heating and hot water services to their tenants. Providing program funds with tariffed cost recovery for the full replacement cost of old mechanical systems would unfairly shift that financial burden from landlords to tenants. For this reason, the Pilot will require participating landlords to contribute a co-payment for water heating and space conditioning upgrades. This co-pay is anticipated to be higher than an owner-occupied scenario to account for the landlord's responsibility to provide those services. At the same time the co-pay should be low enough to be attractive for the landlord as compared to reinstalling a conventional gas system.

Tenant savings overall must be material. In cases where the available IUI capital, as determined by the expected lifecycle savings, exceeds the tenant-share of the investment (i.e., the difference between the total project installed cost and the landlord's copayment), then the IUI contribution will be capped at the tenant's share.

Any available financial incentives shall first be applied to zero out any tenant copayment requirement. The remaining balance of incentive funds shall then be applied to reduce both the tenant's Program Service Charge and the landlord's copayment in equal proportion.

2.2.2 Customer Screening and Informed Customer Consent

ACR Guidance: What processes will be included to ensure that customers understand and can shoulder the full financial burden of participating in this proposed financing program?

The Inclusive Utility Investment model is a savings-constrained approach that reduces customers' future energy burdens rather than increase them. For this reason, financial means testing to screen customers for eligibility is unnecessary.

Although personal credit history is not a factor in program eligibility, the Pilot will use bill payment history as an indicator that an account is in good standing before capitalizing upgrades at that site. In short, a customer's track record of paying past utility bills will be taken as sufficient evidence that the customer can afford lower bills in the future.

While the IUI investment model does not require financial means testing, it does necessitate careful screening to identify those locations with the greatest prospects for meaningful bill savings attributable to Pilot investments. This screening process necessitates advance access to customer-specific energy consumption data from both gas and electric meters.

Customers who find themselves in temporary financial difficulty may request a hardship exemption from the Program Service Charges. The Pilot will establish clear criteria for granting such exemptions in the Program Regulations. Exemptions will generally for a limited term (e.g., six months) with an option to extend as needed. If granted, the Pilot will suspend Program Service Charges for the exemption period. These suspended charges will be treated as uncollectible, but SVCE will cover the costs rather than assign them to IOU ratepayers.

2.2.3 Application to Successor Customers

ACR Guidance: How will the repayment obligation transfer if the participating customer vacates a property they lease or own? How will repayment obligations be communicated to any new tenants or owners?

2.2.3.1 PROTECTION OF SUCCESSOR CUSTOMER INTERESTS

The key premise in the IUI investment approach is that successor customer interests are protected because they are consistently better off than they would have been in the absence of the utility investments. This feature allows the utility to apply the IUI tariff automatically to successor customers while adhering to the principle that rates must be just, reasonable, and fair.

As described in detail above, the Pilot will incorporate multiple safeguards to ensure that customers truly benefit from utility investments:

1. Adopt rigorous best practices for site-specific ex ante savings estimation, including model calibration to baseline energy consumption
2. Limit annualized Program Service Charges to less than 80 percent of estimated savings on an annual basis to provide a buffer for savings prediction uncertainty
3. Perform rigorous end-use M&V to confirm that upgrades are performing as designed and that measure-level net savings exceed the Program Service Charges on an annual basis
4. Conduct ongoing remote monitoring of energy using equipment to ensure that operating schedules take maximum advantage of off-peak pricing and that temperature set points are optimized for both occupant comfort and efficiency

The combination of these safeguards gives strong assurances that both current and successor customers will realize the full suite of promised energy savings and non-energy benefits over the life of the upgrades. In addition, the program will incorporate explicit requirements for current property owners to notify prospective tenants and home buyers about the program-sponsored improvements and associated bill savings and service charges. Nevertheless, there are two factors driving energy costs that remain outside of program control and thus pose at least a potential risk to current and successor customers alike: energy prices and customer occupancy.

- **Energy Price Risks.** The TECH team has carefully reviewed forecasts of future retail gas and electricity prices, including forecasts from the Energy Information Administration (EIA), the Energy Commission's Integrated Energy Policy Report, the CPUC's Senate Bill 695 Report, and PG&E's most recent General Rate Case proceeding. These sources all consistently forecast that retail gas prices will remain more volatile and will increase faster than electricity prices in the coming years. If these forecasts hold, then the bill savings from fuel switching from gas to electric heating will increase over time. The Partners will continue to monitor relative energy prices over the life of the Pilot and take appropriate action if the forecasts prove erroneous. The CPUC may also wish to consider a limit on the electricity price escalation rate for customers who fuel switch.
- **Occupancy Risks.** In general, higher occupancy should translate to higher energy usage intensity and thus greater savings from upgrades. The risk to successor customers, then, is that their occupancy would be less than current occupancy, leading to lower bills and lower savings than current occupants. If the Program Service Charge is constrained to be less than current customer savings, then successor customers could experience insufficient savings to cover the Program Service Charge. In practice, the primary scenario of concern is when current customers are living in overcrowded conditions, as illustrated by the following risk matrix.

Figure 3. Successor customer occupancy risk matrix

		Successor Customers		
		Low occupancy	Normal occupancy	Overcrowded
Current customers	Low occupancy	Low savings opportunity, no IUI investment, no successor customer risk		
	Normal occupancy	Lower than expected savings AND utility bills	Successor customer enjoys expected benefits	Actual successor customer savings exceed expectations
	Overcrowded	Current customer's savings do not accrue to successor customer		Successor customer enjoys expected benefits

There are any number of legitimate reasons why a successor customer might under-utilize a home, leading to lower-than-expected utility bills. In these instances, while savings would presumably be lower than expected savings (the yellow cell), the customer's total energy burden would also be lower than expected. Because customer occupancy is outside of program control and because overall utility bills are nevertheless lower than expected, the program can safely apply the tariff terms and Program Service Charge automatically to successor customers without imposing an undue burden on those customers.

Of greater concern is if the successor customer experiences normal occupancy but the annual savings and the associated service charges are based on overcrowded occupancy conditions. The successor customer would thus get saddled with a Program Service Charge that is too high relative to actual savings. To account for this risk and protect the interests of the successor customers, the Pilot will account for any overcrowded conditions it encounters when calculating the Program Service Charge for this location by reducing the savings estimate and the Program Service Charge to a level that reflects normal occupancy.

2.2.3.2 CUSTOMER NOTIFICATIONS

Because utility tariffs involve no assignment of a debt obligation, they do not impose a legal obligation on one person that then must be transferred to another person. As a result, the tariffed

charge applies automatically to successor customers, survives foreclosure proceedings, and can be floated through periods of vacancy. That said, it is essential to notify successor customers of their benefits and obligations at an upgraded location to ensure that customers know about the improvements made to the home and to avoid potential misunderstandings.

Prospective building purchasers need to know that the building has been upgraded through a utility program for which cost recovery is still underway. When a successor customer applies for new service, the utility shall send the new customer a letter explaining that the property has been improved for resource efficiency, outlining the benefits and obligations of the tariff that applies to the location until the utility's costs are recovered.⁴⁰ The disclosed information shall include:

- Types of upgrades made
- Upgrade in-service date
- Cost of the monthly charge or directions for obtaining cost information from the program sponsor
- Expected date of completion for cost recovery or directions for obtaining cost information from the program sponsor

For upgrades to rental properties, landlords shall be required to notify prospective tenants that the rental units under consideration have been upgraded for resource efficiency and lower operating costs. This requirement will be established as part of the Owner Agreement that the property owner signs.

If and when future changes in state law permit, the implementing utility will record a Notice of Decarbonization Charge on the property records maintained by the county recorder.⁴¹ When attached to the property record, the notice would be communicated to a prospective home buyer in the course of a title search.

2.2.3.3 EARLY PAYMENT OF FUTURE SERVICE CHARGES

As specified in the tariff terms, the Pilot will offer a pathway for either the current or the successor customer to pay the remaining sum of future Program Service Charges in one lump sum as a mechanism for buying out the utility's remaining cost recovery interest in the investment asset.

2.2.4 Customer Outreach

ACR Guidance: Describe the customer outreach component of the program. Will community-based organizations or groups support and facilitate customer outreach to ensure all participating customers are appropriately made aware of their obligations, and if so, how?

⁴⁰ In a home resale situation, the utility has no way of knowing who the buyer is until the buyer subscribes to utility services, which occurs after the purchase. Senate Bill 1112 (Becker) would remedy this situation by authorizing utilities to record a notice of the Program Service Charge with the County Recorder, thereby providing timely notification to the prospective buyer before the home purchase.

⁴¹ California requires that the only notices attached to property record be authorized by statute. The state legislature authorized such a notice in the Water Bill Savings Act of 2017 (Senate Bill 564). Senate Bill 1112 would extend this authorization to decarbonization upgrades.

Because energy savings is a critical determinant of project financial feasibility, the Pilot will direct its outreach activities to SVCE customers with the greatest energy savings opportunities. The general approach to savings-based targeting is to apply CalTRACK analysis methods to customers' historical energy usage. These methods disaggregate whole-house gas and electricity usage, as recorded at the revenue meter, into baseload, heating loads, and cooling loads. For each household, one can forecast the expected bill impacts from converting gas winter heating loads and gas base loads (typically dominated by DHW) to electric, plus any additional savings opportunities from improved electric cooling efficiency and reduced space conditioning loads from energy efficiency improvements. Applying these methods, the Partners will identify the top ten percent of customers with the greatest savings opportunities as primary prospects.

In Year 1, the Pilot will focus on moderate- and middle-income single-family customers with aging mechanical systems (furnaces, air conditioners, and water heaters). Customers may be either renters or homeowners. Since we lack household income data, we will filter on the following proxy variables:

- Households that are not on a CARE or FERA rate
- Home size less than 3,000 square feet
- No swimming pool
- Located in a census tract with average household income less than 200 percent of AMI

Similarly, because we lack data on equipment vintage, we will focus on homes built prior to 2005.

This micro-targeting approach requires a carefully targeted communication and outreach strategy, as opposed to broadcast methods that invite participation on a first come, first served basis. Toward that end, the Pilot will reach out to top prospects primarily via email and direct mail, possibly supplemented by phone calls when a phone number is known.

By Year 2 of program enrollment, the Pilot should be ready to expand eligibility to multifamily dwellings and to proactively reach out to low-income and other equity-targeted customers. For this expanded outreach, the Pilot will supplement the direct appeal methods outlined above with outreach to real estate investment trusts and other multifamily property owners. The Pilot will also enlist community-based organizations (CBOs) with an established track record of providing services to low-income and other equity-targeted households as partners in reaching their constituents.

The exact role and terms for CBOs will be crafted in consultation with CBO thought partners during the implementation planning process. At this stage, the Partners envision that CBOs will play an essential intermediary role between the program implementers and equity-targeted households, facilitating communication in both directions. In this respect, they would convey the benefits of program participation to their constituents and advocate for their constituent interests to the Partners. The CBOs would thus remain engaged in the process through the duration of the customer's financial relationship with the Pilot. The CBO would ensure that their constituents are receiving quality customer service, that charges and credits are calculated properly, that notifications are clearly communicated, and related services. The Partners believe this strategy will build on the trust relationships the CBOs have already developed within the community and it will give the CBOs agency to back up the promises they make on behalf of the Pilot.

3 Program Design and Delivery Details

ACR Guidance: What sector(s) will this program target (i.e., residential (Single Family/Multifamily), commercial, industrial, agricultural, public, disadvantaged, and hard-to-reach)?

3.1 Targeted Customer Sectors

ACR Guidance: How does the program propose to determine customer eligibility?

- a. *What are the credit score ranges used to determine customer eligibility?*
- b. *What criteria in addition to or in lieu of credit scores will be used to determine eligibility (such as bill payment history)?*
- c. *How will the program measure ability to repay loans?*
 - i. *What are the debt-to-income ratios used to determine customer eligibility?*
 - ii. *What are the estimated customer energy savings (IOU and Non-IOU) used to determine customer eligibility?*
 - iii. *How will energy savings be calculated and tracked? (IOU and non-IOU fuels).*

The Inclusive Utility program is open to all customers regardless of debt, income, credit score, or renter status. Financial means testing is not required. As enumerated in the proposed tariff, eligibility requirements for program participation involve:

1. Single-family and multifamily residential customers receiving electric service at a premise, with a meter served by the participating partner Utility
2. Customers in rented or leased housing units, participating with the written consent of the property owner
3. Customers in good payment standing, as defined by the Program Regulations

In lieu of financial means testing, the Pilot will focus on customer bill payment history as the primary indicator of the customer's financial capacity to participate. Because the IUI investment does not add any financial burden and in fact reduces the customer's financial burden, a successful track record of making utility bill payments provides sufficient evidence of the customer's ability to continue paying its utility bills going forward.

Because energy savings is such a critical determinant of project financial feasibility, the Pilot will direct its outreach activities to SVCE customers with the greatest energy savings opportunities, as determined by a disaggregation analysis of their baseline metered energy consumption, home size and age, projected panel capacity and potentially other factors. For heat pump water heater installations, the tentative screening criteria is customers with annual base load gas consumption (i.e., excluding weather-sensitive loads) greater than 360 Therms per year. For heat pump measures, the focus is on customers with a combination of high cooling savings and high heating savings opportunities, translating into baseline annual cooling loads exceeding 1,600 kWh and baseline annual heating loads exceeding 400 Therms.

At a minimum, energy savings will be calculated and tracked via CalTRACK hourly methods with a control group, in keeping with CPUC-approved NMEC protocols. Other M&V methods will also be tested.

While initially, the targeting for the Pilot will be narrow, to maximize favorable economics, beyond the Pilot it is expected that economics for the electrification approach will improve due to multiple factors, including lower product costs due to manufacturing scale, lower labor costs due to contractor familiarity, product innovation, possible policy reforms to address energy affordability and rates, identification of additional transactable grid benefits, and other factors. As the economics improve and the program model is refined, the applicable customer segments will expand.

3.2 Customer Eligibility

ACR Guidance: How are the criteria described in Question 1 of this section prioritized to determine customer eligibility?

As previously stated, the proposed tariff eligibility extends to all residential customers regardless of debt, income, credit score, or renter status. Nevertheless, the Pilot will, at least initially, be selective in who it invites to participate, in accordance with the principle of “first, do no harm”

For the first year of program enrollment, the Pilot will focus on moderate- and middle-income single-family customers with aging mechanical systems (furnaces, air conditioners, and water heaters). Customers may be either homeowners or renters, subject to landlord permissions under terms that fully protect tenants’ economic interests. Our hypothesis is that moderate- and middle-income customers are in greatest need for service because their income disqualifies them from participating in low-income direct install programs, yet they may lack the financial wherewithal to fully benefit from conventional loan and incentive programs. By seeking out customers with aging mechanical systems, we will prioritize customers who are already facing a substantial capital outlay to replace equipment and who will thus experience immediate and substantial capital savings from an IUI investment, even if it involves a copay.

Since we lack household income data, we will filter on the following proxy variables:

- Households that are not on a CARE or FERA rate
- Home size less than 3,000 square feet
- No swimming pool
- Located in a census tract with average household income less than 200 percent of AMI

Similarly, in order to focus on homes with older equipment, we will screen prospects based on home vintage.

This initial focus in Year 1 will enable the Pilot to establish its operational procedures and test ideas for effective program delivery. By Year 2 of program enrollment, the Pilot should be ready to expand eligibility to multifamily dwellings and to proactively reach out to low-income and other equity-targeted customers. The Partners believe this staged approach offers the best balance of putting forth an inclusive program offering as soon as possible without experimenting on the most vulnerable members of the community with untested delivery systems.

The Pilot will initially avoid marketing its services to low-income customers who are enrolled in CARE until service delivery systems have been field tested and the Partners can be confident of making offers that are truly no risk to the customer. Nevertheless, CARE customers remain eligible and may request to participate. In those instances, the Pilot will first seek to assist the customer in addressing home upgrade needs via direct install and related grant-only programs and only consider an IUI investment if and when those other resources have been exhausted.

By Year 2, the Partners anticipate the ability to expand outreach efforts to multifamily residents and property owners and to equity-targeted households, including customers enrolled in CARE and FERA and customers living in disadvantaged communities. This expansion is contingent on the Pilot's demonstrated ability to deliver measurable net benefits to participants with high confidence and minimal customer risk. Multifamily properties may be individually metered or master metered.

Also in Year 2, the Pilot team will confer with PG&E to identify additional transactable system benefits that could be delivered by exceeding certain thresholds of customer participation in certain geographies. For example, if zonal electrification in a specific neighborhood could delay or eliminate the need for gas distribution system upgrades or allow for a specific gas line to be de-commissioned, those cost savings could be used to incent or otherwise benefit IUI program participants.

3.3 Eligible Technologies

ACR Guidance: Which clean energy technologies or distributed energy resources will be supported by the program? If the program focuses on a limited or specific type of technology or technologies, explain why that specific type of technology or technologies should be prioritized for a new clean energy financing program.

At a minimum, eligible technologies will include conversion of gas space heating and/or water heating end uses to high-performance electric alternatives. Complementary energy efficiency measures will be included in cases where they improve the overall project economics for the customer. Other technologies that can lower customer bills and reduce GHG emissions may be included.

The included measures, technical design strategy and procurement approaches will be geared to minimizing costs while maximizing decarbonization. For example, while service panel upgrades may be warranted in some cases, the Pilot will target homes unlikely to need upgrades as well as emphasize cost-effective alternatives to minimize their need. Additional promising technologies will be considered for inclusion such as the new "retrofit-ready" heat pump water heaters that are being introduced into the market. These units appear appropriate for smaller households (up to two bedrooms) with service panel amperage constraints. Space and water heating combination systems will also be considered. These systems can reduce electrical capacity needs and increase the load shifted off-peak. Because of the turnkey structure, the program will also be able to engage manufacturers to provide preferential pricing through an RFQ process.

Table 7. Technology components of proposed measure packages

Technology	Rationale
Heat Pump HVAC, minimum 10 HSPF (2.9 COP), 18 SEER	Significant source of residential GHG emissions; specify the most cost-effective efficiency level commercially available.
Internet-enabled Smart Thermostat	Improves energy efficiency; facilitates demand response and load shifting; facilitates remote monitoring and detection of performance issues; may contribute to “virtual submetering”
Heat Pump Water Heater, 50 or 80 gal., minimum 3.5 COP, with Internet-enabled controls, consistent with SGIP specifications	Significant source of residential GHG emissions; specify the most cost-effective efficiency level commercially available.
Retrofit-ready Heat Pump Water Heater (120V)	Viable alternative to 240V HPWHs for smaller households with undersized service panels
Energy-efficiency upgrades as needed to optimize HP HVAC and HPWH performance, including upgrades to building shell, ducts, and hot water distribution systems	Include if cost-effective or if customer wishes to copay for non-energy benefits
Optional PV system sized, at minimum, to cover 100% of expected cooling load; Internet-enabled Inverter for remote data collection	Off-sets any load increases from new cooling loads or take-back effects; improves overall project financial performance
Optional battery storage system capable of meeting 4 hours of peak demand	Facilitates demand response and load shifting; ensures value of PV system against future changes to NEM tariffs; provides resiliency for customers who face PSPS events; may improve overall project financial performance
Pre-wiring for electric cooking, clothes drying (if gas clothes drying is present), and car charging	Pre-condition for whole-house electrification
Service panel upgrade, as needed	Pre-condition for whole-house electrification in some cases; upgrade only as a last resort

3.4 Combining Financing and Incentives

ACR Guidance: How will IOU or non-IOU program incentives be delivered to customers? How will program incentives be coordinated with existing incentives offered through other clean energy financing programs?

SVCE believe that costs for achieving societal benefits should be allocated broadly across customers. This general principle is already enshrined in CPUC policy, for example, in the methodology the Commission has adopted for linking ratepayer funding for energy efficiency investments to Total Systems Benefits, including grid benefits, GHG reductions, and related environmental benefits.

In pursuit of this principle, the Pilot will seek to maximize incentive contributions from TECH, BayREN Home+, Self-Generation Incentive Program (SGIP), and other programs where applicable. The Pilot will also investigate opportunities to monetize load shifting and demand response opportunities. Because the Program Operator pays the contractor for installing the improvements, these incentives will need to be assignable to the Program Operator.

Building electrification offers the opportunity to produce a suite of societal benefits, including GHG reductions, improved indoor and ambient air quality, and methane leakage reductions, that are not already accounted for in the Avoided Cost Calculator. The importance of these societal benefits is illustrated in the following figure from the *Societal Cost Test Impact Evaluation* (2022), which shows that the net present value of the societal benefits from electrifying a single-family home greatly outweigh the benefits that are accounted for in the Total Resource Cost Test.

Figure 4. Net present value of societal benefits

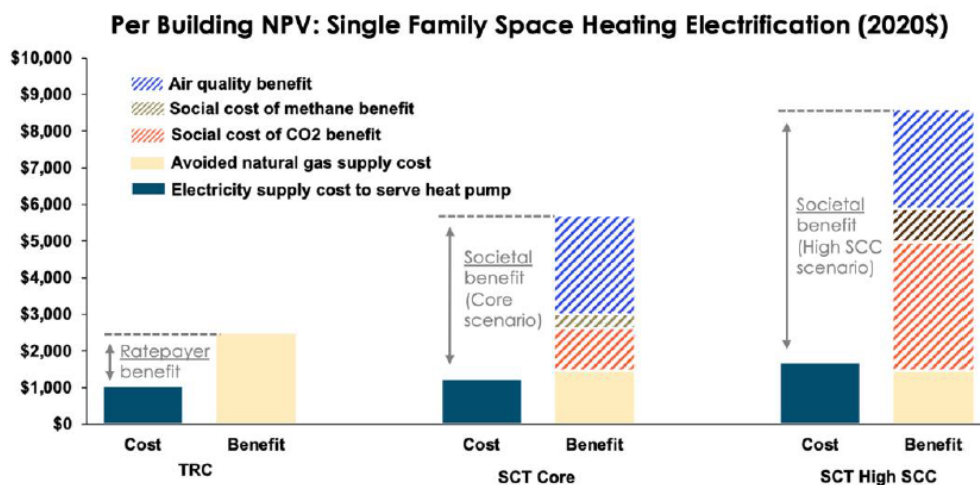


Figure 3. Cost effectiveness of a sample building electrification measure under a TRC vs the "Core" and "High SCC" SCT scenarios.

SVCE advocates that state policy-makers continue to apply this principle to address remaining gaps; for example:

- Either ratepayer funding, taxpayer funding, or both should be allocated to address the societal benefits not accounted for in the Avoided Cost Calculator.

- Supplementary public funds are needed to help address deferred maintenance issues in low-income customer homes that may preclude clean energy investments (e.g., mold and mildew, asbestos, substandard electrical wiring, water leaks). Remedying these issues not only puts the customer on a path to lower utility bills and reduced environmental impacts, it also improves public health and safety outcomes and helps retain vital affordable housing units.
- Health care revenues should be earmarked to support home upgrades that improve indoor environmental quality and occupant health outcomes. Additional public funds should be allocated to capture benefits from improvements to ambient air quality that are not fully reflected in the Avoided Cost Calculator.
- High road workforce requirements are an important tactic for expanding quality employment opportunities and economic development in disadvantaged communities. Any incremental project costs associated with these requirements should thus be publicly funded rather than passed through to participants. This outcome could be accomplished by co-funding the project investment with grant funds earmarked for economic development or social justice.

The Pilot will adhere to the Commission's four overarching guiding principles for incentive layering, as articulated in D.21-11-002, issued on November 9, 2021:

1. Ease of participation
 - Eligibility for single-family residential customers will be nearly universal, subject only to financial feasibility constraints. Program equity goals will be addressed through affirmative outreach and recruitment, rather than eligibility means testing. Eligibility will not be conditional upon participation (or non-participation) in another program. Project financial feasibility analysis will consider all incentive programs for which the customer is eligible.
 - Whenever possible, supporting financial incentives will be assigned to the Program Operator to enable a turn-key installation with no out-of-pocket costs to the participating customer.
2. Complementary incentives
 - For owner-occupied homes, all available incentives will first be applied to reduce or eliminate the customer's copay requirement. Any additional available incentives will then be applied to reduce the IUI finance requirement. An Inclusive Utility charge will only be applied to the balance and only if it meets the program's cash positive requirements.
 - For tenant-occupied homes, incentives will be applied to offset project installation costs in a manner that adheres to the principle that the landlord has statutory responsibility to cover the like-for-like replacement costs for space conditioning and domestic hot water, while the tenant's financial responsibility is limited to the incremental costs for the clean energy upgrade.
3. Non-duplicative attribution of program benefits

- Total Systems Benefits will be attributed preferentially to any energy efficiency program that provides incentives
- GHG benefits will be attributed to the TECH program
- 4. Ongoing coordination between program administrators and implementers
 - The Pilot will seek to leverage MOUs executed between the TECH program and Program Administrators of complementary incentive programs.
 - The Pilot will leverage the TECH program's Iris platform to facilitate implementation of the incentive layering guiding principles.

4 Costs and Benefits

4.1 Program Budget

ACR Guidance: What is the estimated budget for this program, broken down by estimated percentage and amount of rate-payer funds (including funding category, such as public purpose charge, distribution rates, generation rates), private capital, state, federal funds (e.g., DOE), IOU shareholder, public or private bonds, or other sources?

4.1.1 Budget Summary

An itemized program budget, including capital requirements, start-up, risk mitigation, and operating requirements, is shown in Table 8.

Table 8. Program budget

Line Item	Amount	Notes
Capital Requirement		
Total project investments	\$13,217,892	Covers installation
Participant Cost of IUI capital	\$1,116,727	Cost of capital for the IUI capital commitment only. Include in customer IUI service charge
Total Capital Requirement	\$14,334,619	
Start-Up Costs	\$500,000	Billing system and program IT setup, legal and other costs
Risk Mitigation		
Customer performance reserves	\$580,774	5% of IUI capital
Submetering	\$500,000	\$1,000 per project to support end use M&V
Total Risk Mitigation	\$1,080,774	
Program operating costs		

Line Item	Amount	Notes
Administration	\$171,600	cap at 10% of program operating costs
Marketing and outreach	\$102,900	cap at 6% of program operating costs
Project assessments	\$700,000	\$700 / home @ 50% close rate
Desk-top review	\$50,000	100% of projects @ \$100
QA/QC field inspections	\$8,750	5% of projects @ \$350
CRM / program tracking	\$100,000	2 years of license fees
Other implementation costs	\$600,000	2 FTEs for 2 years
Total Program operating costs	\$1,733,250	
M&V	\$0	TECH in-kind contribution
Total Capital and Operating Budget	\$17,648,643	

4.1.2 Project Cost Management

A key objective of the Pilot is to figure out how to narrow or eliminate the funding gap between the project installed cost and the IUI investment plus incentives. A key strategy will be to aggressively control installation costs. The Partners have identified the following cost management tactics:

- Program Operator will have full responsibility for customer acquisition and project scope development. Customer acquisition costs are normally embedded in contractor prices, but these costs will instead be treated as program operating costs and borne by the Partners.
- Installation contractors will be selected via a Request for Qualifications that selects for contractors that are the best qualified and most price-competitive. Contractors will be incentivized to offer competitive bids by the opportunity to be awarded a large bloc of projects with no associated customer acquisition costs.
- Installation costs will be determined according to a detailed fee schedule that is negotiated programmatically rather than project by project.

- Where possible, the Partners will establish standardized equipment specifications and seek competitive equipment pricing for bulk purchases.
- By standardizing equipment lists and working with a short list of installers, the Pilot can provide advanced training to minimize installation times while maintaining high quality control standards.
- The Pilot will pursue an array of tactics to minimize service panel upgrade and pre-wiring costs, including adoption of “retrofit ready” heat pump water heaters and other low-amperage appliances, circuit consolidation, smart circuit splitters, and programmable subpanels.
- When feasible, the Pilot will specify combination systems that can deliver both space conditioning and domestic hot water, plus active load management services.

4.1.3 Funding Sources

Funding sources for the budgeted line items are proposed as shown in Table 9. TECH programs reflect a \$3 million budget line item allocated to the IUI pilot. The proposed funding allocations do not include in-kind contributions from TECH subcontractor labor budgets.

Table 9. Proposed funding sources

Line Item	Budget Amount	Explanatory Notes
IUI capital contribution	\$5,807,736	Public or private bonds or other debt financing, secured by ratepayer revenues and possibly US DOE guarantees
Utility incentives	\$2,560,000	Previously budgeted public purpose charge funds; possible state & federal funds, including tax credits
Funding gap / Customer copay	\$5,966,883	SVCE, ratepayers (via monetization of grid benefits and/or separately authorized incentives), taxpayers, participating customers, or other sources
Cost of IUI capital	\$1,116,727	Participants
Start-up costs	\$500,000	GGRF funds allocated to TECH program
Risk Mitigation	\$1,080,774	GGRF funds allocated to TECH program
Program operating costs (partial)	\$1,419,226	GGRF funds allocated to TECH program
Program operating costs (balance)	\$314,024	SVCE

4.2 Forecasted Benefits

ACR Guidance: What are the forecasted benefits, energy and/or GHG savings, if any, from this program at the sector, customer type (SF, MF, DAC, HTR, etc.), and measure/technology/project levels?

As previously noted, the benefit analysis was developed based on a hypothetical scenario involving replacement of 500 furnaces and air conditioners with heat pumps, and replacement of 500 gas water heaters with heat pump water heaters, plus energy efficiency improvements to reduce HVAC loads by 30 percent. In practice, the program expects to service a range of projects with varying scopes of work, investment requirements, and project benefits.

Table 10. Expected lifecycle benefits for the Pilot

Benefit	Heat Pump + energy efficiency	HPWH	Total
GHG reductions (mt eCO ₂)	14,362	8,501	22,864
Electricity savings (MWh)	-19,715	-8,012	-27,727
Gas savings (MTherms)	3,000	1,806	4,806
Customer bill savings	\$5,753,963	\$1,505,707	\$7,259,670
Bill savings net of cost recovery charges	\$1,150,793	\$301,141	\$1,451,934
Avoided equipment replacement costs	\$8,907,500	\$1,179,500	\$10,087,000

4.3 Projected Participation

ACR Guidance: What number of loans is this program expected to support?

An Inclusive Utility Investment is not a loan, but rather a utility investment for which cost recovery is tied to the location served by the utility according to terms set forth in a utility tariff. The Pilot intends to sponsor upgrade investments for somewhere between 500 and 2,500 residences between January 1, 2023, and December 31, 2024. The lower bound reflects a scenario in which \$5 million in IUI capital is deployed to co-fund projects that all involve comprehensive work scopes, including heat pump and heat pump water heater installations plus energy efficiency improvements. The upper bound reflects the opposite extreme, in which the same \$5 million is deployed exclusively for heat pump water heater installations.

4.4 Program Time Frame

ACR Guidance: How many years will the program run?

Planning for the Pilot will occur in 2022, concurrently with Commission review and approval. The Pilot will launch its marketing and outreach campaign by December 7, 2022. Project enrollment will extend two years—2023 and 2024—and M&V activities will continue for an additional year in 2025. The ability of the Partners to enter into binding contracts and launch the Pilot is contingent on receiving the necessary CPUC approvals and directions to PG&E.

Table 11. Pilot work plan and timeline

Task Name	Duration	Start	Finish
Implementation Planning Phase	413d	06/17/22	10/31/22
Program Implementation Plan, Policies & Procedures, M&V Plan	45d	06/17/22	10/31/22
Community workshops to present implementation plan	20d	06/17/22	09/15/22
Secure Program Operator services	403d	06/17/22	10/31/22
Secure sources of capital	120d	06/17/22	09/29/22
Revise plan as needed in response to proceeding comments and community feedback	20d	07/11/22	10/31/22
Negotiate contract terms between Energy Solutions (TECH) and SVCE	20d	07/11/22	08/05/22
Submit draft plan to SVCE executive leadership for review and approval	45d	08/08/22	10/07/22
Recruit installer contractors	332d	09/16/22	12/23/22
Proposed Decision from CPUC		09/30/22	
Finalize plan	15d	10/10/22	10/28/22
Execute contract between TECH and SVCE		10/28/22	
Commission Decision		10/31/22	
Program Implementation Phase	1120d	09/16/22	12/31/25
Perform meter-based customer targeting analysis	20d	10/31/22	11/25/22

Utility establish cost recovery mechanisms on billing system	90d	10/31/22	03/03/23
TECH Deliverable: IUI Pilot Launch		1/02/23	
Conduct installer onboarding	20d	01/02/23	01/27/23
Conduct first site assessments	10d	01/30/23	02/10/23
Execute first customer participation agreements	5d	02/13/23	02/17/23
Conduct first project installations	5d	02/20/23	02/24/23
Initiate QA/QC activities	5d	02/27/23	03/03/23
Collect first month's cost recovery charge	20d	04/03/23	04/28/23
Ongoing project assessments, installation, QA/QC	482d	02/27/23	12/31/24
Program M&V	698d	05/01/23	12/31/25
TECH Deliverable: Implementation Tools and Templates		01/02/25	
TECH Deliverable: Pilot Progress Report		01/02/25	

5 Reporting and Metrics

5.1 Metrics and Key Performance Indicators

ACR Guidance: Describe the key performance indicators (KPI) that will be developed for the program in order to determine:

- a. whether the program is successful in delivering benefits and addressing specific market barriers.*
- b. Whether the program aligns with local and regional clean energy goals.*
- c. whether/when the program needs to be reconfigured or closed.*
- d. any other KPI.*

The TECH team will take the lead on reporting metrics and KPIs on behalf of the Partners. Development of Program metrics is informed by the statutory metrics the Commission has endorsed in its adopted Decision for TECH:⁴²

- Cost per metric ton of avoided GHG emissions (using meter-based data whenever appropriate and feasible)
- Projected annual and lifetime utility bill savings (using meter-based data whenever appropriate and feasible)

Further, the Commission decision directs that evaluation of savings and cost-effectiveness “to ensure that customer utility bills do not increase, and that a full range of costs and benefits to the customer (e.g., non-energy impacts and improvements in energy services) is evaluated.”

Additionally, the Commission decision directs staff and the program evaluator to consider a number of possible additional metrics including

1. market share data (i.e., demographic factors) for technology adoption,
2. customer outreach and customer satisfaction, benchmarked relative to customer awareness and satisfaction of customer incentive and direct install programs; and
3. contractor performance, as measured by program quality control outcomes.

The Program will incorporate the above guidance into its routine tracking and reporting activities, process evaluation, and M&V plans. In addition, these plans will incorporate procedures for tracking the equity indicators identified in Goal 9 of the Environmental and Social Justice Action Plan; specifically:

- Total number of residential equity-targeted households served
- Expected first-year energy, GHG, and utility bill savings for equity-targeted participants
- Number of residential equity-targeted households receiving upgrades that are expected to improve home comfort, safety, and health outcomes

⁴² CPUC Proceeding R.19-01-011, Decision D.20-03-027, adopted March 26, 2020. See: <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M330/K031/330031291.PDF>

- Health and safety issues abated for equity-targeted households
- Number of residential equity-targeted households that could not be served due to the need for additional home repairs
- Customer comprehension of Program offers and satisfaction with Program outcomes
- Effectiveness of marketing and outreach campaigns
- Impacts of billing history screening criteria on customer eligibility, enrollment, and subsequent payment arrears

In addition to the metrics described above, the Program adopts a set of key performance indicators (KPI) to determine:

- whether the program is successful in delivering benefits and addressing specific market barriers;
- whether the program aligns with local and regional clean energy goals; or
- whether/when the program needs to be reconfigured or closed.

In developing these KPIs, the Program first articulated a set of theory-of-change hypotheses for each program design criterion. For each hypothesis, the Program then described a set of outcomes that would provide empirical evidence supporting the hypothesis. These outcomes will serve as the Program KPIs and are described in Table 12, below.

Table 12. Theory of change hypotheses and associated KPIs, grouped by design criteria

Theory-of-Change Hypothesis	Key Performance Indicators
Affordability	
An Inclusive Utility Investment model can deploy a savings-constrained methodology that attracts capital investments while reducing customer energy burdens.	Occupant retains least 20 percent of the expected annual energy savings and first-year measured savings exceed program service charge
Maximum impact and uptake	
By adopting a savings-constrained mechanism with the participating customer, an Inclusive Utility Investment model can offer customers clean energy upgrades with little or no customer copayments.	Average IUI private capital investment plus available incentives and revenues from transactable grid benefits sufficient to cover installation costs
Within four years of launch, an IUI program, combined with aggressive and complementary incentives and market transformation investments, can achieve a participation rate equivalent to 50 percent	Within two years, demonstrate pathway for production-scale program(s) with SVCE, other CCAs, IOUs, and/or POUs, to serve 50 percent of annual equipment replacements among population of

Theory-of-Change Hypothesis	Key Performance Indicators
of the annual replacement rate for furnaces and water heaters in the target market.	customers that meet filter criteria based on annual bill savings opportunities.
Reduced complexity	
Inclusive Utility Investments can be structured as a simple, transparent, and low-risk offer that facilitates high customer acceptance	50% of IUI customer offers are accepted
Minimizing risk	
An Inclusive Utility Investment model can incorporate customer protections that offer participants a 99 percent probability of cash-positive outcomes as shown by M&V of program-sponsored improvements, excluding utility bill impacts from participants' exogenous lifestyle choices.	Measured savings exceeds 80 percent of predicted savings on a kWh and Therm basis for at least 99 percent of participants. Savings guarantees assure that all participants realize at least 80% of predicted measure-level savings.
An Inclusive Utility program can incorporate safeguards that maintain or strengthen utility procedures for deferring or forgiving cost recovery obligations for customers experiencing job loss, high medical bills, etc., without thereby creating a moral hazard.	Program participants experience reduced arrears compared to sponsoring utility's rates for the source population
Equity and inclusion	
By adopting a savings-constrained mechanism with the participating customer, minimizing program complexity, and incorporating strong customer protections, IUI can facilitate investments benefiting low- and moderate-income households	Compared to the source population of customers that meet filter criteria, Program achieves participation rates among LMI households that exceed observed rates for comparable market-rate incentive and loan programs
By linking the investment to the site rather than the customer and enabling the Program Service Charge to apply automatically to successor customers, IUI	Program upgrades housing units occupied by renters at a rate that meets or exceeds

Theory-of-Change Hypothesis	Key Performance Indicators
can facilitate investments benefiting renters	the observed rate comparable market-rate incentive and loan programs

5.2 Schedule and Process for Tracking and Evaluating KPIs

ACR Guidance: Describe the proposed schedule and process for tracking and evaluating these KPIs.

Data collection protocols for tracking and reporting KPIs will be integrated into Program Operating Procedures. The status of Program performance relative to KPIs will thus be reportable on an ongoing basis. Evaluation of KPI outcomes relative to pre-established benchmarks will occur at the two-year anniversary of program launch.

6 Proposal Response to ACR Issues and Topics

ACR Topics and Issues	Proposal Response
Topic 1: Programmatic Goals and Coordination	
1. What are the benefits and costs of financing strategies that could apply to a suite of behind-the-meter clean energy resources including, but not limited to, energy efficiency, solar and storage, electric vehicle infrastructure, single customer microgrids, and other distributed energy resources?	See 1.2 Financial Pro Forma, Expected Benefits and Costs
2. What baseline or benchmarks should be adopted to measure success of new programs in meeting their established goals and targets?	See 5.1 Metrics and Key Performance Indicators
3. Should separate financing programs be developed for different customer segments, including renters, lessees, and property owners?	The IUI Pilot will be accessible to all residential customer segments
4. What should happen if a customer that has enrolled in a financing program moves out of the property it rents or owns before fully repaying the financier? What protections need to be put in place to disclose loan payments to subsequent utility account holders?	See 2.2 Customer Protections
5. What parameters, metrics, and requirements should be adopted to allow stacking of different financing tools to support a single customer's energy investment(s) while still ensuring a simple repayment structure?	See 3.4 Combining Financing and Incentives
Topic 2: Marketing, Education, Outreach, and Evaluation	
1. Who should be responsible for developing and implementing marketing, education, and outreach (ME&O) and evaluation associated with any new clean energy financing programs? Which ME&O and evaluation costs should be recoverable from IOU ratepayers, and which should be recovered from program partners, such as lenders and implementers?	The Partners, as Program Sponsors, will develop and implement ME&O and evaluation. PG&E should recover its operating costs from IOU ratepayers. The CCA and TECH will fund their own operating costs. No operating costs

ACR Topics and Issues	Proposal Response
	will be recovered from lenders or implementers.
2. What program design and evaluation strategies should be adopted, with special consideration given to ensuring new financing options are reaching specific hard-to-reach and low- and moderate-income communities, technology adoption goals, and financing repayment targets?	The Partners have modeled their design and evaluation strategies on successful IUI programs nationally that have demonstrated an ability to serve hard-to-reach and LMI communities that are underserved by conventional loan and incentive programs.
3. What metrics, key performance indicators, and/or evaluation strategies best ensure any approved financing offerings align with the nine goals of the Commission's Environmental and Social Justice (ESJ) Action Plan?	See 1.3 Alignment with Environmental and Social Justice Action (ESJ) Plan Goals, Goal 9
Topic 3: Designing Scalable Financing Options	
1. Which specific types of customer-side clean energy financing programs or lending mechanisms are most likely to attract third-party vendors and program administrators, and what advantages and disadvantages would these financing programs provide in comparison to programs or lending mechanisms administered by existing administrators, the IOUs, or other implementers?	The IUI Pilot offers unique business opportunities to vendors and program implementers capable of delivering turn-key solutions for project development, installation, and customer service through the life of the improvements.
2. How can on-bill repayment (OBR) mechanisms be leveraged to repay multiple lenders without putting a customer at risk of utility disconnection if they are unable to make loan payments?	While the IUI cost recovery charge appears on the customer bill, it is not a loan. Capital from multiple providers can be pooled to fund investments. IUI investments, because they are cash positive for the customer, do not increase the customer's risk of utility disconnection. See 2.2 Customer Protections.
3. How can we deploy outreach to ensure consumers considering clean energy financing are aware of their	The Partners will confer with local CBOs to explore possible CBO roles

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rights and the pros and cons of the various available financing options?	as advocates for their constituent interests.
4. Which financing and consumer protection mechanisms best protect customers from potential disconnection, interruption of service, loss of lease or mortgage, or liens, in instances of non-payment of utility bills?	See 2.2 Customer Protections
5. Should any existing cost effectiveness thresholds apply to new energy financing programs, or should energy financing programs be treated differently from energy efficiency financing programs in terms of their cost effectiveness?	The IUI system considers cost effectiveness from the customer perspective as an inherent design feature. Further cost effectiveness considerations should focus on ensuring that ratepayer expenditures are commensurate with ratepayer benefits, including the value of added electricity sales.
Topic 4: Alignment With Other Programs Already Offered by the IOUs, The California Treasurer's Office, The State's Infrastructure and Economic Development Bank, and Other Local and Regional Clean Energy Financing Options	
1. How can new IOU financing programs be designed to address technology gaps for comprehensive customer financing packages and to better leverage existing state, regional, and local clean energy investment programs with both ratepayer and non-ratepayer funds?	See 2.1.5 Leveraging Private Capital
2. What metrics or parameters should be included to ensure new financing options directly align with local and regional clean energy targets, including those set by tribal governments?	See 5.1 Metrics and Key Performance Indicators
3. How can we leverage the expertise of sister agencies such as the Department of Financial Protection and Innovation (DFPI) to both develop and scale new financing options and protect consumers' rights?	Because IUI investments are not consumer loans, they should not be subject to DFPI oversight. The IOUs will need written confirmation from DFPI on this point. SVCE and TECH will confer with the CPUC and the IOUs to ensure that the request to DFPI for written

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	confirmation also addresses the IUI use case. Robust consumer protections are built into the Pilot, as described in 2.2 Customer Protections. These protections remain subject to CPUC regulatory oversight.
Topic 5: Rate Impacts of New Financing Programs	
1. What are the comparative potential customer rate impacts of tariffed on-bill finance (TOB), on-bill finance (OBF), and OBR, and other potential financing programs, for both participating and non-participating customers, based on currently authorized utility rate recovery designs?	IUI (aka TOB) incorporates a cash-positive requirement to lower participant energy costs for the upgraded energy services. As proposed, nonparticipating ratepayers would remain liable for IOU operating expenses, any cost of capital exceeding 3%, and any uncollectible cost recovery charges.
2. What metrics should be tracked to quantify the potential cost shift between participating and non-participating customers?	The <i>California Standard Practice Manual</i> specifies procedures for calculating the Ratepayer Impact Measure Test that are applicable to load building programs.
3. Should the IOUs be authorized to hire additional full-time staff to better target and engage underserved customers to participate in new financing programs?	This function will be handled by the Partners. No ratepayer funds are requested for these activities.