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Joint Tariff On-Bill Proposal Assessment

Prepared for:

California Public Utilities Commission

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Energy + Climate

Executive Summary

Background and Introduction

The California Public Utilities Commission (CPUC) initiated Rulemaking (R.) 20-08-022 in August 2020 to explore efficiency financing strategies for clean energy improvements through a single program. This rulemaking process aims to enable broader investments into clean energy projects, and has led to the creation of a Joint Tariff-On Bill (TOB) Proposal filed by Pacific Gas and Electric Company (PG&E), Silicon Valley Clean Energy (SVCE), Southern California Edison (SCE), San Diego Gas & Electric (SDG&E), and Southern California Gas Company (SoCalGas). The Joint TOB Proposal, submitted in May 2024, is designed to address gaps identified by the Commission in previous similar proposals and to present a viable set of TOB two-year pilots for financing clean energy upgrades in California.

This assessment evaluates the feasibility, effectiveness, equity, and other key aspects of the proposed TOB program design as described in the Joint TOB Proposal and related individual proposals from the Joint Filers. The assessment examines the proposal's ability to meet expectations and criteria such as equitable access to financing, ensuring consumer protection, managing administrative cost and complexity, and securing sustainable, long-term capital. It also includes the potential challenges and recommendations for successful implementation and scalability.

To conduct the assessment, Dunsky Energy + Climate Advisors and Market Logics worked with the CPUC to determine nine (9) key criteria against which to assess the Joint TOB Proposal. The Joint TOB Proposal was also assessed against key topics and questions previously raised by the CPUC through the ongoing process to move forward with financing programs. This report provides an analysis of both of these assessments and includes recommendations for program design modifications should the CPUC wish to move forward with some or all of the proposed pilot programs.

TOB Program Overview

Tariff On-Bill (TOB) programs, sometimes also referred to as Inclusive Utility Investment (IUI) programs, are a sub-set of consumer financing programs that leverage utility bills as their repayment vehicle. Importantly, TOB programs are not considered a loan, because customers repay the investment through a utility tariff, which is a utility expenditure rather than a debt obligation, meaning it doesn't involve traditional loan terms or credit check. Other consumer financing programs for non-residential customers such as On-Bill Financing (OBF) utilize utility bills as their primary repayment vehicles and provide zero interest loans. Instead, TOB programs are structured as a cost-recovery charge tied to the utility meter where upgrades are made. The cost-recovery charge is applied to the utility bill until the cost of the measure has been recovered by the utility. This significantly broadens eligibility of clean energy financing or repayment programs, extending it to renters in most program designs, since the charge is associated with the meter rather than a specific homeowner.

TOB Proposal Assessments and Recommendations

The assessment scored the Joint TOB Proposal on various topics, including

- Equity;
- Consumer protection;
- Recourse for non-payment;
- Capital sourcing;
- Cost-effectiveness;
- Implementability;
- Inclusion of key technology types;
- Transferability; and
- Pilot Key Performance Indicators (KPIs).

Each topic was scored from 0 to 3, with 0 indicating that the topic was not addressed at all, and 3 indicating that it was fully and appropriately addressed. This scoring formed the basis for short-term recommendations and longer-term considerations.

Equity

Ensuring equitable access to the program, particularly amid rising energy and housing costs, is a key goal of the Proposal. To support this, a separate Equity Committee was convened to inform the Joint TOB Proposal's program design. In addition, Guiding Principles for Inclusive Utility Investment (IUI) programs are articulated by the Environmental Protection Agency.

To ensure that the proposed programs follow these principles as closely as possible, the proposals should,

- adopt and apply key definitions for Low-and Moderate-Income (LMI) customers. This will help to unlock future capital funding from sources that have strong equity requirements.
- ensure that renters are eligible across programs will create more equitable access to the program. Some of the proposed programs are open to renters, others are not.
- include means-tested energy assistance program (CARE, FERA, etc.)[1] eligibility for the pilot programs. The pilot should test the program applicability and market acceptance of these groups.

Consumer Protection

The Joint TOB Proposal puts forward a robust set of consumer protection measures to limit risk to participants and support broad access to the program. In some cases, however, the consumer protections may be redundant or onerous. These could impact other aspects of the program such as administrative complexity. The proposals could take some steps to better balance consumer protection with other program goals. These include:

- allowing approved contractors to co-market the program to participants, or
- removing the responsibility of program implementers to purchase costly extended warrantees.

[1] California Alternative Rates for Energy (CARE), and Family Electric Rate Assistance Program (FERA).

Recourse for Non-Repayment

The Joint TOB Proposal has assessed the risks for non-repayment when a customer's bill payment history and current standing comprise the credit eligibility requirements. There are no liens placed on the property or equipment, so disconnection is the only security to assure potential lenders of repayment. The proposal rightly concludes that, due to a strong adherence to bill neutrality, there is no added disconnection risk to program participants.

Capital Sourcing

The Joint Filers considered alternative, third-party sources of capital for their pilot phases, but determined that none were a fit due to timing and other issues. The Joint TOB Proposal should be appropriately set-up to attract sustainable, long-term sources of capital should programs move past a pilot phase. This could be from

- public sources (particularly from federal sources that have been set up to support these types of measures) or
- from traditional, private third-party lenders.

In addition, utilities should consider applying Investor-owned utility (IOU) capital as the investment funds instead of using ratepayer funds. As well, they should consider how to access additional capital should pilots be oversubscribed.

Cost-Effectiveness

Cost-effectiveness, both for individual measures as well as for the entirety of the California energy system, was not considered beyond adherence to bill neutrality for eligible technologies. The bill neutrality aspect of the program can also be challenging to ensure the inclusion of costlier technologies without relatively high upfront co-payments.

For better system cost-effectiveness, the Commission should prioritize models that demonstrate the lowest cost to ratepayers, relative to the participation and savings projections.

Implementability

Implementability assesses the ability of the proposed programs to overcome challenges related to administrative cost, complexity, timely service delivery, and scalability. In the case of TOB programs, one major aspect of administrative cost and complexity are necessary billing system functionalities. Currently none of the utilities have full TOB functionality, but some have existing on-bill functionality (SDG&E and SoCalGas). Others require major upgrades (SCE and PG&E). Utilities should be clear with the Commission regarding the costs and timelines associated with the needed upgrades.

Another major program design feature that will add to cost and complexity is the measurement and verification (M&V) process. Measurement is proposed to occur one year after the installation of each measure to verify expected savings. We recommend

simultaneously testing a lighter, less costly approach to compare whether the additional cost and complexity is warranted.

Key Technologies

The eligible technologies are mainly focused on weatherization measures. These include energy efficiency measures such as,

- Wall insulation and weather-stripping;
- Smart thermostats;
- Heat pump water heating; and
- Heat pump heating ventilation and air conditioning (HVAC) systems.

This is a comprehensive list of technologies for the pilot phase of the project, though there are some small differences between individual proposals. We recommend including electric heat pumps as part of the eligible equipment for a SoCalGas pilot.

Transferability

The ability to transfer the payment of the decarbonization charge to a new occupant (either a renter or owner) is a key aspect of TOB programs compared to other on-bill lending structures. As mandated in Senate Bill 1112, the charge will be recorded with the County Clerk in the appropriate location and the program design has detailed the notification process for new occupants. Overall, this aspect is well addressed in the Joint TOB Proposal.

Pilot KPIs

It is important that the two-year pilots are well set up to measure and assess key program elements needed to later inform next steps. The Joint TOB Proposal includes consideration for scaling, including key performance indicators (KPIs) to be assessed across programs. These are:

- Delinquency and participation rates;
- Transfer rates;
- Savings realizations; and
- Interventions required.

These are well aligned, but the pilots could benefit from testing a broader range of program settings and financing considerations to collect the evidence needed to attract sustainable sources of capital. Recommendations to improve in this area include:

- Establishing more detailed financial metrics (such as KPIs that indicate LMI customer access to the financing that are aligned with definitions used by other potential capital providers)[2],
- Precise tracking for all forms of default, delinquencies and non-payments.

[2] See Section 4.9 for more details.

The pilots could also benefit from a period lengthier than two years, as financing programs take a significant period to scale up and produce results.

Short-Term Recommendations

The Commission should consider approving a subset of the proposed pilots, prioritizing models that demonstrate the lowest cost to ratepayers, relative to the participation and savings projections, and offer the greatest opportunity to test aspects of the TOB model that could be featured in a longer term TOB program.

For proposals that are approved, we recommend making modifications to better align the pilots with key evaluation criteria. This includes including more robust evaluation metrics, aligning definitions with federal funding sources, and further consideration of long-term capital.

PG&E	**N/A** No program proposed provided
SVCE	**Encourage field trial, offer opportunity to submit a full application.** A future proposal should demonstrate work with PG&E for use of their upgraded billing system, a strategy to secure non-ratepayer funding, and an alternative M&V approach.
SCE	**Do not approve.** This proposal has high non-project costs relative to project financing, and SCE's service territory overlaps with that of SoCalGas, which could create redundancy.
SDG&E	**Do not approve.** This proposal has high non-project costs relative to project financing, and has excluded renters, a key component to test in the pilot phase of a TOB program.
SoCalGas	**Approve with modifications.** This proposal is a viable TOB pilot model, with a broad number of targeted participants and a relatively low capital request for non-project costs. Modifications should include provisions to test pilot acceptance with landlords and renters, and expansion of eligible equipment to include electrification equipment.

Discussion

The Joint TOB Proposal puts forward an overarching program design model for a two-year pilot. This also includes five proposals highlighting individual details. The purpose of these pilots is to assess if TOB is a viable model that fills gaps for accessing decarbonization and energy efficiency technologies in California. The pilots seek to remove barriers to widespread, cost-effective electrification and ensure equitable access that helps to reduce energy poverty. The pilots also need to be set up to inform the future of TOB in the State.

The Joint TOB Proposal responds to questions posed by the Commission in earlier documents. It fully addresses three of the key criteria considered in this assessment, namely:

- Recourse for non-repayment;
- Inclusion of key technologies; and
- Transferability.

The Joint TOB Proposal could be strengthened to better deliver on the following five criteria:

- Equitable access;
- Balanced consumer protections;
- Sustainable capital sourcing;
- Defining and measuring cost effectiveness;
- Smooth and timely implementation; and
- KPIs that provide a fuller picture of operational efficiencies and market acceptance.

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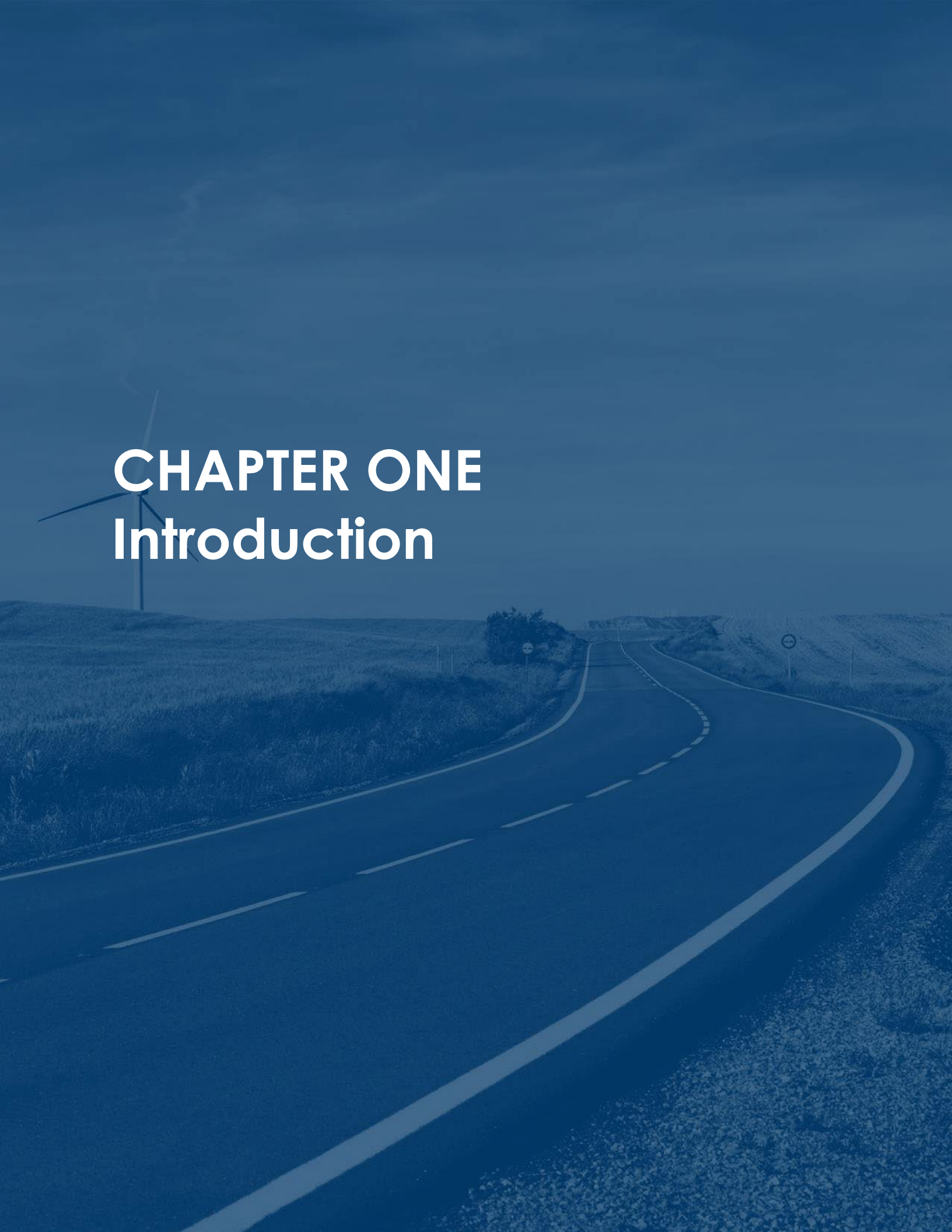


CHAPTER ONE
Introduction

1. Introduction

1.1 Background

The California Public Utilities Commission ("The Commission") instituted **Rulemaking (R.) 20-08-022** in August 2020, to evaluate the potential efficiencies of providing financing strategies that allow for larger or broader investments in multiple types of clean energy improvements through a single program.

The associated Scoping Memo, issued in March 2021, set forth the issues to be considered and a schedule along three tracks:

- Track 1 for issues related to existing California Alternative Energy and Advanced Transportation Financing Authority and California Hub for Energy Efficiency Financing programs;
- Track 2 for **scaling financing programs**; and
- Track 3 for **new financing proposals**.

Track 1 issues were resolved through a separate decision (D.21-08-006). Meanwhile, an Amended Scoping Memo and Ruling issued in November 2021 consolidated Tracks 2 and 3 into one track. This amended proceeding set a schedule and asked for proposals to develop an **Inclusive Utility Investment (IUI)** or **Tariff On-Bill (TOB)** program.

Clean energy financing proposals were received from a number of parties in April 2022. Some proposals received to expand on-bill financing programs were subsequently approved via **Decision (D.) 23-08-026**, however in the same decision, the Commission noted gaps in proposals received for the IUI program. To address these gaps, the Commission directed the Investor-Owned Utilities (IOUs) and Silicon Valley Clean Energy (SVCE) to convene a working group to answer remaining questions and to submit a joint proposal for the program.

Pacific Gas and Electric Company (PG&E), Silicon Valley Clean Energy (SVCE), Southern California Edison (SCE), San Diego Gas & Electric (SDG&E), and Southern California Gas Company (SoCalGas) submitted a Joint TOB Proposal with guiding concepts in May 2024. These entities included separate proposals with their budget details and operating characteristics. As part of drafting a Proposed Decision the Commission needs to approve, deny, or modify these individual proposed programs.

Dunsky Energy + Climate Advisors and Market Logics were contracted to review the proposal to support the Commission's work.

1.2 Approach

This evaluation assesses the Joint TOB Proposal via a Scoring Rubric encompassing criteria that are key to the success of existing TOB programs across other jurisdictions. This includes ensuring equitable access, consumer protection measures, capital sourcing, cost-

effectiveness, inclusion of key technology types, and more (see Chapter 3 for the full scoring rubric).

As well, this evaluation considers the questions and topics noted by the Commission in D. 23-08-026 and has analyzed the response(s) from the joint filers to these topics in the proposal (see Chapter 2).

1.3 TOB Overview

Tariff On-Bill (TOB) programs are a sub-set of **consumer financing programs** that leverage utility bills as their repayment vehicle. These types of programs are broadly known as **on-bill lending** programs. On-bill lending programs differ from their counterparts that might use traditional repayment methods (i.e. monthly bills) or from Property Assessed Clean Energy (PACE) programs, which leverage property bills as a repayment vehicle.

There are three categories of on-bill lending programs: **on-bill financing (OBF), on-bill repayment (OBR), and tariff on-bill (TOB)** – each with distinct characteristics defined by their source of capital, ownership of improvements, transferability of the loan, and criteria for eligibility and underwriting.

Table 1: Summary of on-bill program types

	Source of capital	Owner of asset	Eligibility	Charge on monthly bill	Transferability
OBF	Utility funds	Building owner or homeowner	Building owners and homeowners	Debt payment	Loan typically must be paid off before selling home
OBR	Third-party (private or public)	Building owner or homeowner	Building owners and homeowners	Debt payment	Loan typically must be paid off before selling home
TOB	Public, utility, private	Utility (cost recovery charge tied to meter)	Building owners, homeowners, and renters	Cost recovery fee	Transferred to the next occupant

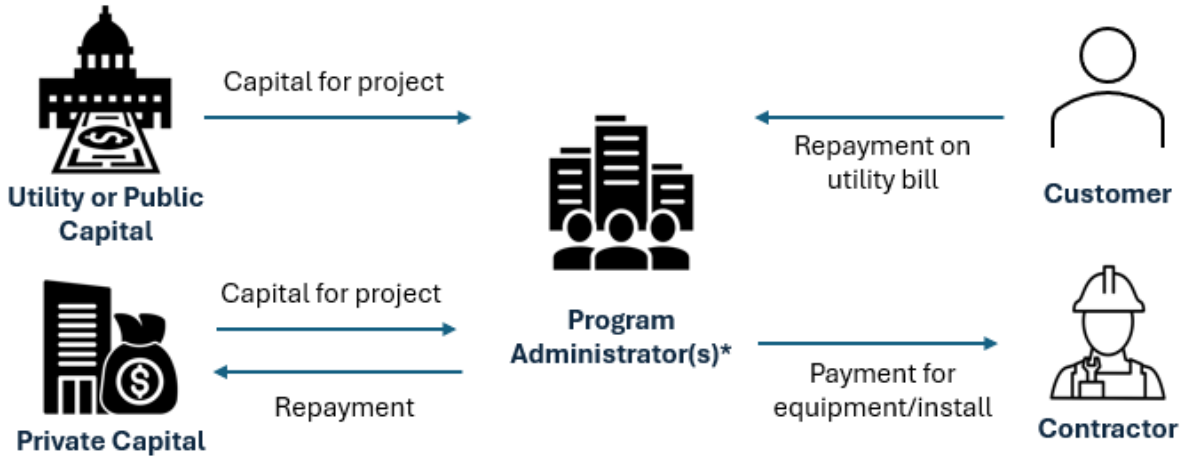
Importantly, TOB programs are **not considered a loan**, unlike OBR and OBF programs. Instead, they are structured as a cost recovery charge tied to the utility meter where upgrades are made. This significantly broadens eligibility, extending it to renters in most program designs, since the charge is associated with the meter rather than a specific homeowner.

In existing TOB programs, participation rates amongst renters vary; some programs see high uptake largely due to concerted efforts to engage with landlords and renters on the benefits of installing energy efficiency or electrification measures, while others see lower uptake. The success of TOB programs with renters largely depends on the design of the program and the effectiveness of its marketing strategies. The Environmental and Energy Study Institute (EESI)

has helped launch many TOB programs and notes that, of these programs, 80% of participants are homeowners and 20% are renters.[3]

In contrast, OBF and OBR programs are considered loans and are linked to an individual utility account holder who is responsible for repayment. As such, they are typically not transferable when a home is sold and not applicable to renters.

While **capital sources** vary across on-bill program types, customer repayment for all programs is done through the utility bill. When private lenders are used, the utility collects funds from the customer and then passes the payment directly back to the lender. All programs typically have an approved contractor network. Contractors are paid for the equipment and installation directly by the program administrator responsible (typically either the utility or loan originator). The figure below summarizes the flow of capital in on-bill programs.



*Utilities can be the single program administrator, but other parties may also be involved (e.g. a loan servicer, loan originator, or other third-party entity to do the administration)

There is a wide spectrum of ways that utilities can be involved in an on-bill program. At one end, utilities can choose to only serve as the payment pass-through to a private lender and have them manage all other aspects of the program. On the other end, utilities can choose to be the sole administrator and manage everything from underwriting loans, to setting up new loans and their payments, to working with contractors, and billing customers. The administrative functions associated with an on-bill programs include:

- **Loan origination**: Initial stages of loan process, including receiving loan applications, underwriting, closing loans, and paying contractors
- **Loan servicing**: Ongoing management of the loan after origination, including payment processing, and maintaining records of payments and defaults.
- **Program administration**: General oversight of the program, including managing contractors, third-party entities responsible for loan origination and loan servicing, and marketing. Typically, the utility or a government funded body.

[3]Most TOB programs the EESI has helped launch are administered by rural electric cooperatives. Proportionally, the number of renters in rural areas is typically lower than in urban areas.

1.4 Proposal Overview

The Joint TOB Proposal includes a proposal put together by the Joint Filers that provides an overview of the common elements of the TOB program concept, as well as individual proposals from each of the Joint Filers, outlining the specific details of the 2-year TOB pilot phase they propose to implement.[4] We found that the Joint TOB Proposal responded to D.23-08-16 for the most part (see Chapter 2), and a great deal of effort and attention was invested into developing a viable TOB model that can support decarbonization investments.

Each proposal lays out the program functioning, timelines, budgets, and key roles and responsibilities. Details are provided on all key program functions, such as how the decarbonization charge will be set, property owner and landlord co-pays, eligible technologies, participant eligibility criteria and alternative underwriting approach, as well as M&V approaches and program performance metrics.

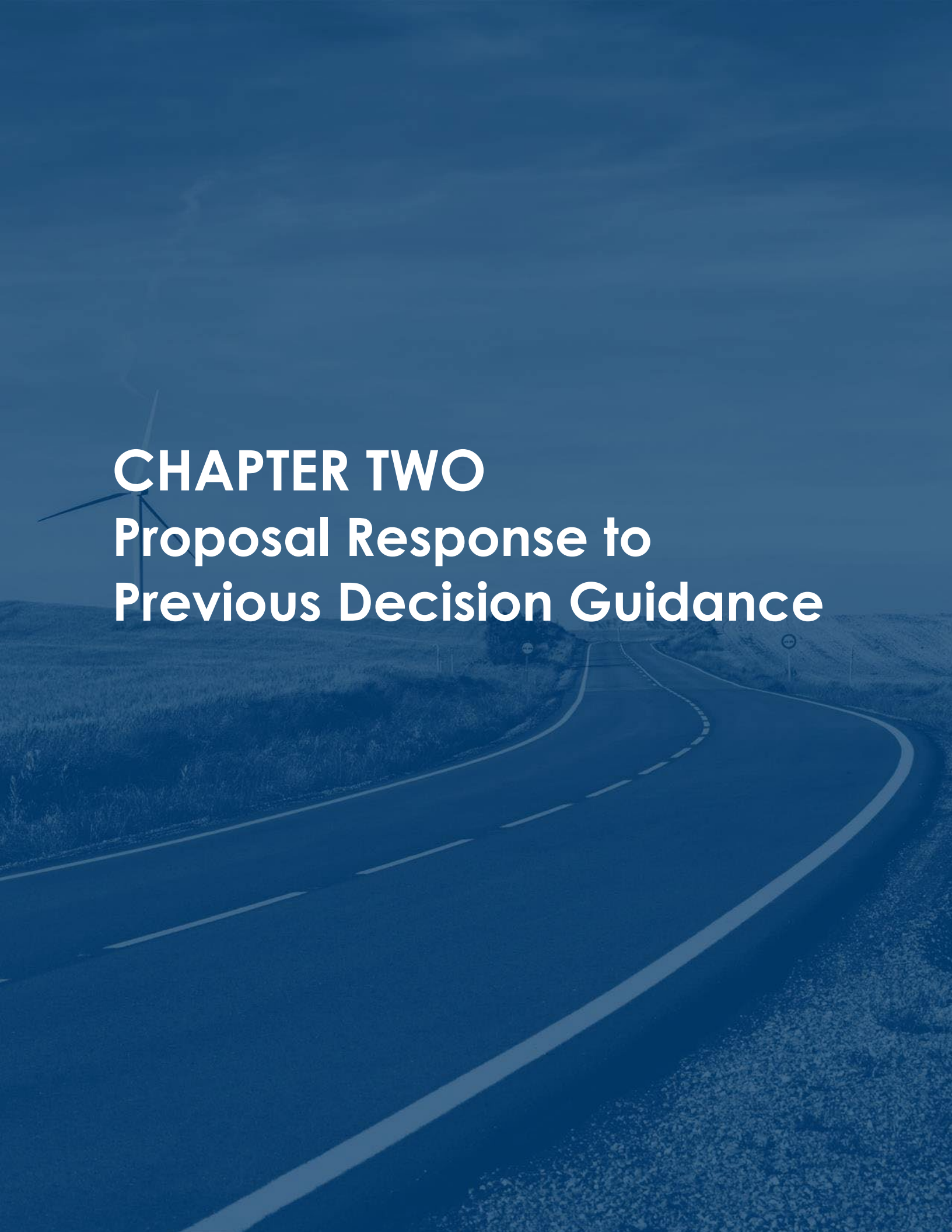
None of the programs were able to secure a sustainable third-party capital source, but the proposal did provide a rationale for why given the pilot timing and small size. The Joint TOB Proposal does include an in-depth discussion of potential third-party capital sources and how they can be accessed in the future for a scaled-up program.

The proposed program design includes extensive consumer protections, and how the decarbonization payments can be tailored so they are less than, or equal to, the projected energy bill savings (e.g. bill neutrality). The consumer protections are robust and avoid pitfalls experienced by other financing initiatives in the State.

Overall, the Joint TOB Proposal and individual proposals provide a clear and detailed description of the proposed TOB program design and are responsive to the Commission's requirements as laid out in past rulemaking, decisions, and scoping memos. This evaluation report dives deeper into the nature of the proposed program features and approaches to indicate where further refinement or additional details would aid the next steps toward implementing the proposed pilots.

We recognize that utility programs, and financing programs in particular, often require iteration and adjustment to arrive at a model that gains market traction and can fully deliver on the promised benefits. The proposed pilots are designed to test many TOB functionalities. Their success should be viewed not only through program uptake and impacts but also through the opportunity they offer to assess the various program features and approaches. Showing what works in the market is just as important as showing what does not work. Our assessment takes this view and aims to provide the Commission with recommendations that can help optimize the benefits from the pilot investments toward establishing a sustainable TOB program model over the longer term.

[4] SVCE considers this a field trial



CHAPTER TWO
Proposal Response to Previous Decision Guidance

2. Proposal Response to Previous Decision Guidance

On August 10, 2023, the Commission issued Decision 23-08-26, authorizing the expansion of a number of on-bill financing programs and creation of some new programs, declining to adopt some proposals and requests, and most relevant, directing the IOUs (PG&E, SCE, SDG&E and SoCalGas) and SVCE to establish a TOB Working Group within 45 days of the issuance of the decision and to return with a Joint TOB Proposal within 270 days of the decision.

Section 5 of D.23-08-26 reviews the TOB proposals brought forward by IOUs in various proposals. In this section, the Commission notes that TOB programs are most beneficial where:

- The utility finances the qualifying technologies through its own capital;
- The measures are seen as increasing the energy performance of buildings; and
- These lead to energy cost reduction to the customer greater than the cost of the repayment of the improvements.

The Commission notes its appreciation of the work that proposers and parties put into the development of the novel TOB proposals, but requested further development before proposals could be approved out of concern that aspects of the programs proposed could cause harm to ratepayers or program participants. Of all TOB program proposals, the Decision was most supportive of SCVE's proposal, suggesting that it may provide a useful starting point for many of the major design and policy choices to be considered in implementing a successful TOB program.

The Decision also adopted the following definition for TOB:

Tariffed On-Bill is a utility investment mechanism that provides up-front capital to pay for energy efficiency and electrification upgrades at a customer's premises and recovers its costs through a fixed tariff-based cost recovery charge on the participating customer's utility bill. TOB can pay the upfront costs for up to 100 percent of efficiency upgrades that are estimated to produce immediate net savings (and may include the option for participants to contribute a copayment for upgrades in addition to what the estimated savings alone would support). The tariffed cost recovery charge is tied to the location rather than an individual, and successor customers at an upgraded site are notified that the cost-recovery charge applies automatically to the bill until the utility's costs are recovered.

As well, the Decision directed the joint filers to implement the following design choices in the Joint TOB Proposal:

- The IUI principles laid out by the United States Environmental Protection Agency (EPA), especially those pertaining to customer protections;
- Savings estimates and affordability reviews to be conducted with all participants prior to official program sign up; and
- Automatic succession of the tariff charge.

Further, the Decision requested that the TOB Working Group should consider the following core principles in its deliberations:

- Providing benefits to disadvantaged communities;
- Promoting the goals of the Environmental and Social Justice Action Plan;
- Providing strong consumer protections;
- Drawing funding from non-ratepayer sources; and
- Leveraging simplicity and design in implementation.

Finally, the Commission posed several questions that the TOB Working Group should consider and respond to while developing the Joint Proposal. These questions were grouped into five major topics: **Technology Types, Customer Groups, Customer Protections, Implementation,** and **Funding.**

The tables below list the questions posed by the CPUC and detail to what extent the joint and individual TOB proposals have addressed the questions posed by the Commission.

2.1 Technology Types

Key Questions	TOB Proposal Response
What technologies are most likely to reliably provide savings to customers, and therefore reliably produce cash positivity (bill neutrality)?	Individual proposals varied somewhat regarding eligible technologies, and which were most likely to ensure bill neutrality. In general, weatherization and other energy efficiency measures (e.g. smart thermostats) and heat pump HVAC and water heaters were eligible across programs as technologies likely to produce positive cashflows under the program design.
For technologies for which the primary value is system related, do the current programs adequately share this value with the customer? Would the customer need to be on a peak time rewards or similar billing schedule to fully realize the benefits? What transportation electrification technologies could fit within the parameters of a TOB program? Could such technologies be made equitably available to all residential customers?	Other questions under this topic were generally not addressed. Transportation electrification was not discussed in the proposal.

How should technology benefits be calculated?	While the Joint TOB Proposal did note that a precondition for participation was that metered energy usage must satisfy conditions for measurement and verification, there is no detail or definition of how to calculate these technology benefits.

2.2 Customer Groups

Key Questions	TOB Proposal Response
Should the program initially be available to low-income or otherwise vulnerable customer classes, or should initial pilots focus on middle-income or high-income customers to lower the risk of charge-off or energy insecurity? Should a limit initially be established on low-income customer participation? If not initially available to low-income customers, what metrics should be evaluated to determine when and if the TOB programs should be made available to low-income customers?	Individual program proposals had different approaches to which customer groups to target. For example, SDG&E proposes to target owner-occupied single-family homes with moderate incomes, while SCE proposes to target residential electric customers most likely to have significant bill savings. All pilots exclude CARE, FERA, medical baseline, and other customers accessing assistance for energy bills. This may exclude many, if not most, low-income groups. The exclusion of CARE/FERA/other low-income groups is related to administrative complexity, and to customer cost-effectiveness challenges. Proposals do not discuss when and if the program could be extended to these customers.
Are there any incentives or protections that can be implemented to lower the risk for participating low-income customers?	A strong adherence to bill neutrality, combined with first-year verification of savings via M&V with potential bill adjustment are key protections that could lower risk for low-income customers.
How can TOB programs be designed for renter participation? What amount of co-pay balances would be sufficient to incentivize renter participation with landlord agreement to participate?	The Joint TOB Proposal has addressed a number of key considerations regarding renters, including landlord co-pays, notifications for future tenants, etc., though there is some variation between individual proposals. Landlord copay is discussed, and it is indicated that the copay should be sufficient

	to cover the cost of a like-for-like replacement (i.e. if a heat pump relaces a furnace as the counter factual), and also sufficient such that the decarbonization charges do not exceed the expected energy bill savings.
Should specific groups be targeted based on greatest potential for cost savings, as proposed by SVCE, and if so, how?	The Joint TOB Proposal notes the desire to target groups with the greatest potential for cost-savings, but the method for identifying these customers is not detailed in the proposal.

2.3 Customer Protections

Key Questions	TOB Proposal Response
What consumer protections would limit bill increases post upgrade and encourage bill savings?	The Joint TOB Proposal provides a robust overview of customer protections. In particular, the joint proposal calls for projecting energy savings in advance of measures, approving projects only with projected cash positivity (with a buffer), and ensuring these savings materialize via M&V after the first year of measure implementation.
How should notice of the presence of a tariff service charge on a property be provided? What options are available for renters to be notified, beyond requiring the landlord to provide notice? What language should be used in the notification to assuage the doubts of the new property owner/renter at the location? How should the notice requirements of State Bill (SB) 1112 (2022) be implemented?	Re: the presence of the tariff charge, IOUs will file with the County Recorder to note that a decarbonization charge exists and is tied to the property (as per SB 1112). There is additional direction to ensure early notification (i.e. pre-sale or pre-lease) to a new occupant, whether buyer or tenant.
What pre-approval disclosures should be provided to TOB program participants, beyond financing term length, potential savings, and non- or underpayment repercussions? In what manner should these disclosures be provided, balancing program cost?	Pre-approval disclosures were not detailed, apart from requiring customer approval before projects can move forward.

What steps should be implemented to ensure predatory practices, such as occurred under the PACE program, does not occur with TOB programs?	Significant steps have been taken in the proposal to ensure that predatory practices from contractors (such as those that occurred via the PACE program) do not occur via the proposed TOB programs. Chief among them, program administrators will manage the relationship with pre-approved contractors, eliminating direct negotiation re: measures with participants.
What is the most efficient, least-cost, and protective way to ensure continued operation and maintenance of upgrades? What are reasonable customer responsibilities given that past Pay as You Save (PAYS) programs keep participant responsibilities to a minimum?	While the Joint TOB Proposal has considered continued operation and maintenance of upgrades, efficiency and cost is of these areas is not addressed in the proposal. Customer responsibilities are unclear.
Should disconnection for underpayment be permitted? Should disconnection be permitted for non-payment of the TOB charge alone? Are there other types of disincentives that could be used?	Disconnection for under or non-repayment has been considered and is proposed to move forward as a feature of the program. The joint filers are confident that due to bill neutrality and other consumer protections, participation in the program will not increase a customer's likelihood of disconnection.

2.4 Implementation

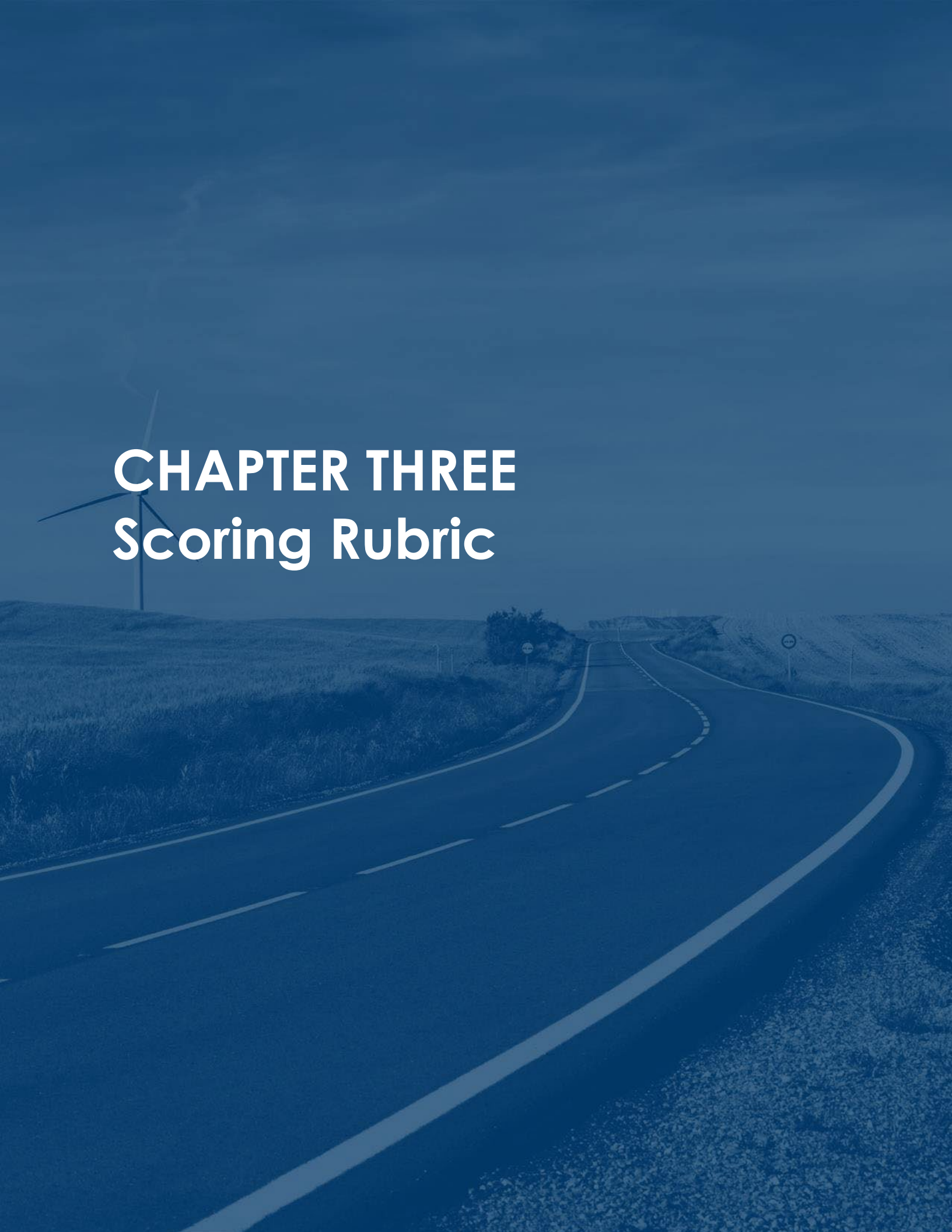
Key Questions	TOB Proposal Response
Is an examination of bill repayment history a sufficient or necessary participant eligibility check? Should this initial pilot phase initially not exclude participants based on bill repayment history, for testing purposes?	The Joint TOB Proposal suggests that examination of bill repayment history is a sufficient and necessary eligibility check, though there is no explanation as to how this conclusion was arrived at.
Should SCE's proposal that maintenance costs be accounted for in the tariff service charge, with maintenance responsibility then falling on the program implementer (or some entity other than the customer), be adopted? If not, how should maintenance costs be accounted for and who should be responsible?	The Joint TOB Proposal suggests that maintenance costs be accounted for *outside* of the tariff service charge, as this would increase the tariff and therefore make measures less likely to adhere to bill neutrality. As a result, these costs would be counted for under program administration costs (i.e. covered by ratepayers) and responsibility would remain

	with the program implementer. This may raise further challenges when accounting for cost-effectiveness and program scalability.
How should property/service meter vacancies be accounted for? If a vacancy extends past a certain time period, should the landlord become responsible for payment of the tariff service charge?	While the Joint TOB Proposal is clear that payments will be paused during property vacancies, time periods are not discussed, and it is unclear when – or if– a landlord may become responsible for payment of the tariff.
SVCE proposes a top-down TOB Program wherein contractor management, quality control, marketing, and project assessment are closely controlled. Is such a system preferable or does it restrict consumer choice unnecessarily? Should project estimates be conducted by a closed list of approved estimators/contractors? If unforeseen project costs emerge, who should bear the cost overrun?	The Joint TOB Proposal does suggest a top-down TOB program model where the management of contractors, individual projects, and other aspects are managed by a program administration, though other models are not considered in depth. Contractors will belong to a vetted/pre-approved list, though it is unclear the criteria through which they will be vetted.
Should a Pay As You Save-based program be implemented in California? Could a statewide TOB program be implemented? What barriers exist for IOU and CCA participation?	Joint Filers do not recommend implementation of a PAYS program or a statewide TOB program and discuss some of the barriers to a program at the State-wide level.

2.5 Funding

Key Questions	TOB Proposal Response
What funding options should be considered for each utility's respective TOB proposal, and what are the potential ratepayer impacts? How can ratepayer risk be limited if ratepayer funds are needed to initially capitalize the program? If ratepayer funds are required to capitalize the program into the future, what revenue streams could be utilized?	The IOUs considered some external (public) funding sources but concluded that these sources were not aligned (due to timing or other factors) with their programs. As a result, the pilot programs are proposed to be funded by ratepayers. There is little discussion on ratepayer risk for initial capitalization of the program and the difference between a "ratepayer investment" program vs. a "utility investment" program, as was the original intention. There are some measures in place to mitigate unnecessary costs to ratepayers, such

	as ensuring that participants first access available rebates and incentives, though use of this mechanism is unclear.
What KPIs will accurately track default rates and uncollectible costs, to ensure that non-participant ratepayers are not shouldering an undue burden?	There are no specific KPIs proposed related to burden to non-participant ratepayers.
Should a cap on project amount be instituted, to maximize the number of projects and limit service charge amounts? If so, what amount?	Bill neutrality is the de-facto measure cost cap, though there are some specific program measure cost estimates in individual proposals.
What other funding sources could be utilized, including government funds and private capital?	The Joint Filers note that other sources of funds could include Greenhouse Gas Reduction Funds (GGRF), Department of Energy (DOE) Loan Program Office, and United States Department of Agriculture (USDA) Rural Loans



CHAPTER THREE
Scoring Rubric

3. Scoring Rubric

3.1 Scoring Legend

The Joint TOB Proposal was evaluated on a number of topics (see below) and we assigned a score corresponding to the proposal's ability to address key questions and concerns related to each topic.

Topics include:

- Equity
- Consumer Protection
- Recourse for Non-Payment
- Capital Sourcing
- Cost-Effectiveness
- Implementability
- Inclusion of Key Technology Types
- Transferability
- Pilot KPIs

Scores of less than three (3) on any topic central to the proposed program's success will be accompanied by recommendations or analysis of where further details should be requested from the IOUs (See Chapters 4 and 5).

Score	Description
Not Addressed (0)	The proposal does not make an effort to demonstrate how it would address key questions and concerns related to the topic.
Not Adequately Addressed (1)	The proposal acknowledges key questions and concerns related to the topic, but the proposed approach does not adequately include appropriate answers and/or solutions.
Partially Addressed (2)	The proposal acknowledges key questions and concerns related to the topic, with some steps to include appropriate answers and/or solutions. However, the proposal does not fully address all questions and concerns related to the topic.
Fully and Appropriately Addressed (3)	The proposal acknowledges key questions and concerns related to the topic, and fully and appropriately addresses these questions and concerns throughout the proposal.

3.2 Inclusive Utility Investment Assessment

The Proposed Decision language (p. 74) and the Joint TOB Proposal (p. 3) reference the principles laid out by the EPA for Inclusive Utility Investments (IUI). Moreover, D. 23-08-026 instructed the proposals to follow "*The IUI principles laid out by the U.S. Environmental Protection Agency, especially those pertaining to customer protections*"

Thus, when assessing and scoring the proposals for each of the listed topics, their adherence to the IUI principles were considered, along with other factors relevant to the proposed TOB programs.

Specifically, the IUI principles are defined as:

- **Inclusive**: accessible to all independent of creditworthiness, unlike loans. Not a consumer debt or loan.
- **Utility:** an approved utility tariff; recovery tied to the meter, not an individual.
- **Investment**: upgrades are treated just like supply-side investments; utilities can earn a rate of return.[5]

According to the EPA a well-designed IUI program addresses IOU needs and customer barriers. These can include:

- Need for greater savings;
- Availability to access capital;
- High first cost;
- Mistrust & complexity;
- Split incentives; and
- Underserved sectors.

How the Joint Proposal addresses these design elements is discussed in Chapter 4.

One design element worth pointing out here is the source of investment funds. The EPA guidance suggests, and California Senate Bill 1112 legislates, that any IUI program be funded from federal, state, local, and/or private capital.[6] The EPA suggests municipal utilities may seek funding through the municipal bond market.[7] The intent is to leverage sources that do not affect ratepayers negatively through higher electricity rates.

The Joint TOB Proposal suggests using ratepayer funds, arguing that these are the only funds available for the pilot. This effectively changes the program structure from an "Inclusive Utility Investment" to an "Inclusive Ratepayer Investment" program and places all risk (project performance and payment default) on the ratepayers. The Joint TOB Proposal focuses on an initial two-year pilot or field test period and includes a discussion of third-party capital sources that could be explored further for longer-term programs. However, it also notes some of the challenges that the TOB model, as currently conceived, will face in accessing and investing third party capital, while simultaneously maintaining high levels of consumer protections and seeking participation inclusivity.

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[5] https://www.energystar.gov/products/inclusive_utility_investment

[6] "25235. (a) For purposes of this section, "financing or investment solutions" means financing or investment solutions that are consistent with the United States Environmental Protection Agency's inclusive utility investments policies or other industry best practices..."

[7] [2] https://www.epa.gov/statelocalenergy/inclusive-utility-investments-tariffed-bill-programs#examples

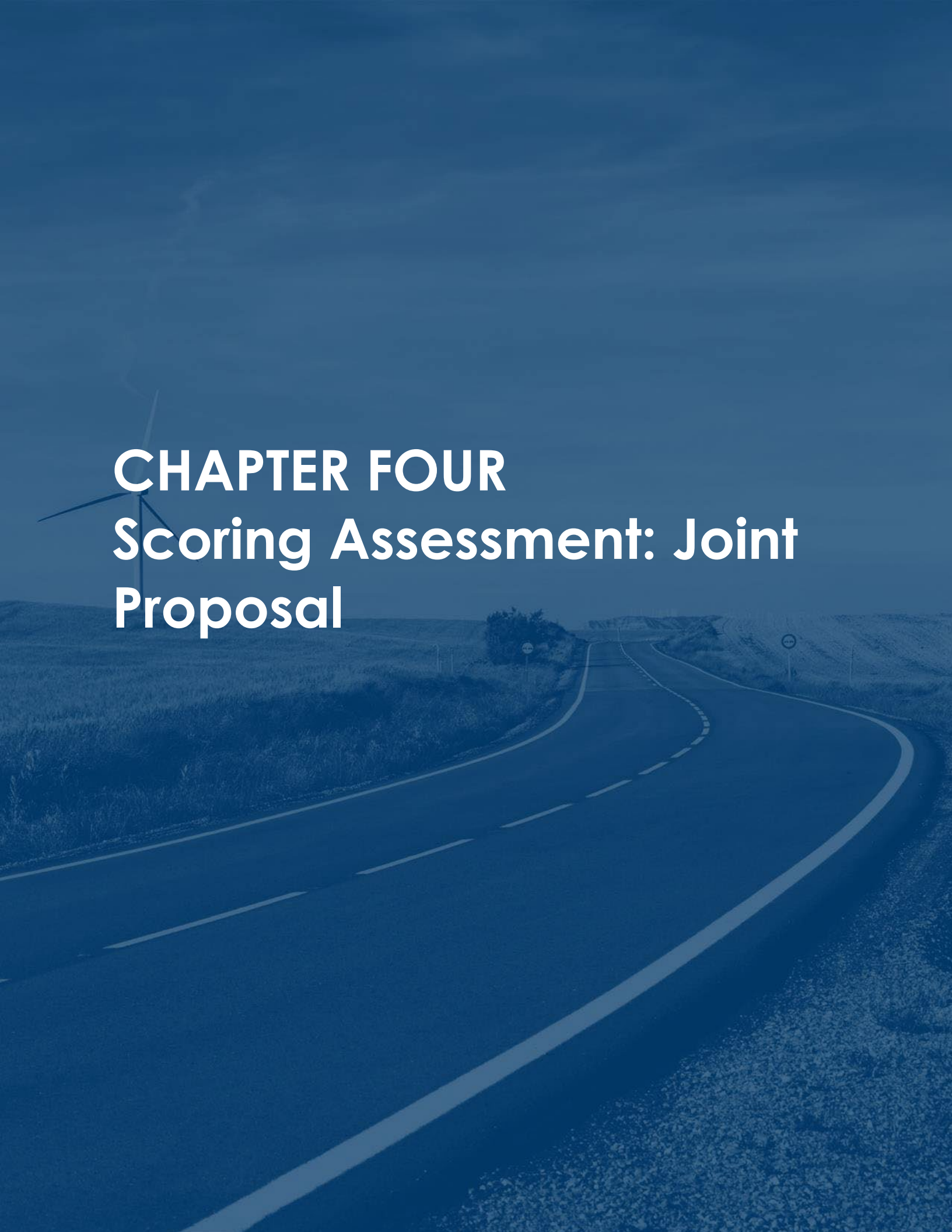
3.3 Mapping Joint Proposal to IUI Logic

Problem Statement	State wants to **reduce GHG emissions by eliminating gas appliances and replacing them with electric appliances** and simultaneously make homes more **energy efficient**				
IUI Program Goal	Reach a broader set of homes by providing access to capital for energy and GHG saving upgrades				
TOB Pilot Objective	Demonstrate a TOB approach, that can lead to an IUI model for investing in electrification across the state				
Barriers Addressed	Restrictive access to conventional financing for decarbonization	Decarbonization benefits and technologies are poorly understood	Renters and low-income face notable split incentive and first cost barriers	Homeowners and landlords are risk averse on efficiency+ electrification	Electrification has marginal / poor business case for utility customers
Activities	Affordable financing based on bill payment history	Marketing and outreach, along with co-pay structure Work with experienced 3rd party implementers, and Marketing and Outreach (M&O)	Tariff on bill ideally open to non-property owners, with permissions Transferable payments, and attachment to meter for renters to pay.	Assure bill neutrality – after co-pay and other incentives Pre-project audits + savings estimates Adjustment based on Y1 saving via M&V	Maximize access to incentives + offer low interest financing to maintain business case
Pilot Challenges	3rd party capital not available or tested in pilots. Capital sources other than ratepayer funds likely needed to scale program, but ratepayer support is needed to keep program affordable.	Contractor activities need to be proactively managed and monitored to avoid predatory marketing. Consumer protections in tension with keep program affordable	Properties must have individual meters to track usage and repayment. Pilots generally targeting higher consuming properties, less likely to be LMI	It is unclear how best to assess project performance between total bill amount, or equipment performance.	Large out-of-pocket co-pays may undermine TOB benefits, and limit LMI participation. Affordability can be poor when viewed purely from a bill savings perspective
Pilot Outcomes	Assess validity/risk of bill payment history as underwriting, defaults and delinquencies and program affordability	Test TOB M&O and consumer protection approach for effectiveness and customer satisfaction.	Demonstrate that TOB can achieve significant LMI participation such that it can be eligible for IRA funds	Field test of M&V approach, to determine accuracy, cost, and participant trust.	Assess business case and attractiveness among various customer profiles.

3.4 Scoring Topics

See Appendix (5.3) for a full description of each scoring topic.

Scoring Topic	Description
Equity	Program ability to address barriers faced by underserved groups (e.g. low-to-moderate income), including via outreach and marketing, underwriting and eligibility criteria, and other design elements
Consumer Protection	Program ability to ensure that potential participants are protected from unintended consequences, including from predatory sales practices, unexpected costs or complications, and other concerns
Recourse for Non-Payment	Program consideration for how to best address non-repayment (i.e. via disconnection or other methods)
Capital Sourcing	Program consideration for ensuring sustainable source(s) of capital, via ratepayers, utility investment, public sources (State, federal, or other public-sector opportunities) or private capital
Cost-Effectiveness	Program consideration for cost-effectiveness, both for consumers (i.e. bill neutrality) and the energy system, and how this impacts long-term sustainability for program users and the program overall
Implementability	Program ability to scale-up, respond to administrative challenges and complexity, and ensure efficiency
Inclusion of Key Technology Types	Program ability to include a wide range of greenhouse gas reducing technology types, including both energy efficiency (reducing consumption) and beneficial electrification
Transferability	Program consideration for transference of tariff in the case of a new occupant
Pilot KPIs	Pilot ability to measure and assess key indicators for later decision to scale-up, continue or discontinue



CHAPTER FOUR
Scoring Assessment: Joint Proposal

4. Scoring Assessment: Joint Proposal

This section scores the Joint TOB Proposal on the criteria in 3.4 based on how well each section was addressed (see legend in 3.1.1). The table below provides an overview of scoring, while this chapter provides further analysis.

Criteria	Overview	Score
Equity	Some consideration regarding pilot roll-out to LMI consumers. Strong emphasis on bill neutrality. CARE/FERA/other LMI customers not included in pilot due to complexity concerns. Some pilots exclude renters.	1
Consumer Protection	Significant attention to consumer protection, including tenant consent, bill neutrality, disclosure process, and reduced opportunity for misleading marketing. However, may be overly onerous and add to unnecessary program complexity.	2
Recourse for Non-Payment	The Program will use disconnection as recourse for non-repayment. In considering this decision filers concluded that due to the bill neutrality commitment, this is unlikely to increase risk of disconnection for users.	3
Capital Sourcing	Programs to use ratepayer funding for pilot phase as a proof-of-concept to attract capital in potential later phases. Public capital was considered but was not a fit due to timing and other logistical issues. Some limitations to pilots which may pose challenges in attracting capital in later phases.	1
Cost-Effectiveness	Beyond adherence to bill neutrality for consumers, cost-effectiveness is not addressed in the proposal. Challenges include how to account for bill savings when multiple programs (incentives, rebates, financing) are accessed by participants.	0
Implement-ability	Pilot administrative costs are clearly laid out, although the specific tasks and expenses are not detailed. TOB billing systems will be crucial to success, with utilities in various states of readiness.	1
Inclusion of Key Technology Types	Due to the decision to adhere strictly to bill neutrality, key technology types outside of energy efficiency are essentially scoped out unless the consumer agrees to high upfront co-pay, which is antithetical to the nature of the program.	3
Transferability	Clear processes for transferability in the case of home sale or a new tenant, with process for notification in either case and notice given to property records at the county where the property resides.	3
Pilot Concept and KPIs	Specifics vary between pilots. Many of the KPIs listed will collect useful and measurable information, but additional metrics could provide further important information for future program design considerations. Missing key program logic information.	1

4.1 Equity

Not Adequately Addressed (1)

Several of the questions posed in D. 23-08-026 also related to equity, including program eligibility, encouraging Low and Middle Income (LMI) customer participation, and protections for these groups specifically (see 2.1.2). The decision instructed the Working Group to convene an Equity Committee to consider inclusion of underserved groups, including LMI customers. The Committee met regularly, and key points and findings were included in an appendix (Appendix D) to the Joint TOB Proposal.

Generally, TOB programs include program design features that support equitable access for LMI customers and other underserved groups. In particular, the nature of the transferable tariff being tied to the meter, rather than to the individual, usually helps to address two forms of the split incentive barrier that can limit equitable access. First it can allow renters to participate in the program, repaying the charges through their utility bill, while putting no obligation on the building owner. Second, it allows participants to only repay the portion of the obligation that comes due while they are resident at the property, with future owners or residents paying the remainder of the obligation as they receive the benefits from the energy saving equipment. Moreover, on-bill financing, including TOB models, offer an opportunity for the utility to apply alternative and accessible underwriting criteria (i.e. utility bill repayment history) instead of traditional underwriting criteria (i.e. debt-to-income ratio, credit score) which often restrict access for LMI groups.

The Joint TOB Proposal includes both of these equity supporting features (see section 4.8 Transferability). Some of the individual proposals however, limit eligibility to single-family owner-occupied dwellings (SDG&E, and SoCalGas). Limiting group eligibility removes a key equity-supporting element of the TOB programs.

In other instances, some proposals note that they will target customers with high bill savings potentials, which may imply that they will target TOB participants with larger, higher consuming properties, which are likely to skew toward more affluent participants. Moreover, in cases where rental properties are eligible, the proposal discusses landlord cost-shares for heating and cooling measures but does not detail how these cost-shares will be governed. While the proposal does reference including protections against rent increases or evictions for tenants via a participation agreement, it is unclear what the Joint TOB Proposal considers to be "reasonable limitations" on rent increases and tenant evictions.

Other design features in the Joint TOB Proposal should improve equitable access to the program. The bill neutrality requirement ensures that participants will not see an increase in their bill payments as a result of TOB participation. This is an attractive feature for LMI groups to help overcome fears that participation could lead to higher energy costs. This, along with the bill-payment-history based underwriting, could make the proposed programs attractive and beneficial to LMI customers.

In both the joint and individual proposals, it is noted that participants in the income-qualified CARE, FERA, Medical Baseline programs and other customers on discounted tariff schedules are excluded from TOB eligibility. This is justified in the Joint TOB Proposal in Section 4.2.2: "*The reason behind this approach is so that the Project Sponsors can test the model before*

offering it to more vulnerable customers"[8]. However, we note that customers would still be subject to the same bill neutrality protections and guarantees offered across the program, and the potential for these customers to benefit from the potential energy savings and/or increased comfort is highly relevant to the IUI principles. How this approach affects the CPUC's Environmental and Social Justice Action Plan (ESJ Plan) goals needs more discussion.[9]

Moreover, excluding income-qualified program participants from the TOB eligibility could impact the TOB programs' ability to access and invest Federal funds allocated under the Inflation Reduction Act (IRA). Specifically, funds awarded under the $27 billion Greenhouse Gas Reduction Fund (GGRF) which are subject to the Justice40[10]. Justice40 requires that 40% of the funds must be invested in low-income and disadvantaged communities (LIDAC). While the LIDAC definition is broader than the income-qualified programs mentioned in the proposal, excluding these participants would create a barrier to achieving the threshold needed to access the GGRF funds, which includes funding streams that have LIDAC targets significantly higher than 40%.

While the potential complexity of including income-qualified discounted tariff program participants in the TOB pilot phase is recognized, the proposal would benefit from planning a limited participation of income-qualified participants to test run their involvement in the program. Furthermore, the Pilot phase could offer an opportunity to plot a course to broad LMI customer participation. This should open the door to federal funds that are subject to Justice40 requirements to help scale the TOB programs after the Pilot phase is complete.

Overall, while the joint proposal does address some of the key concerns regarding equitable access, chiefly via adherence to bill neutrality and use of alternative underwriting criteria, the exclusion of key groups (i.e. those accessing means-tested programs for energy cost assistance) creates a major challenge for the program's approach to equity. Moreover, the strategies and outreach to LIDAC customers is not articulated in the proposals. Collectively, this could cause the programs to struggle to adhere to IUI principles, and to access Federal IRA funds that could help scale the programs.

The proposal also does not provide information regarding how administrators would identify, target, and undertake outreach to LMI groups to ensure participation and dispel concerns (such as risk of potential bill increases) that these groups may have.

4.2 Consumer Protection

Partially Addressed (2)

Consumer protection measures can widely vary among consumer financing programs. In California, consumer protection issues emerged during the implementation of PACE financing. These issues were primarily the result of unintentional misrepresentations or, in some case, unscrupulous marketing practices by home improvement salespeople or

[8] Joint TOB Proposal, pg. 24.
[9] California Public Utilities Commission, "Environmental & Social Justice Action Plan," cpuc.ca.gov, April 7, 2022 https://www.cpuc.ca.gov/-/media/cpucwebsite/divisions/news-and-outreach/documents/news-office/key-issues/esj/esj-action-plan-v2jw.pdf
[10] Justice40 Initiative.

contractors. As a result, extra attention should be paid to consumer protection measures to ensure that program participants are safeguarded from unfair or misleading practices.

Starting in 2016, to respond to consumer protection concerns with PACE financing across the state, California enacted various bills to protect PACE program participants, including the following measures:

- Contractors promoting the use of PACE financing are required to enroll with program administrators, and the Department of Financial Protection has set up and maintains a list of enrolled, and barred, PACE contractors.
- Program administrators must assess the participant's ability to pay as part of the PACE financing approval process (which typically means going beyond the property tax payment history underwriting).
- There is a requirement that contractors communicate PACE assessment terms in a manner that is understood to the homeowner.

The Commission expressed a clear desire to see sufficient consumer protections included in the TOB design from its launch, and many of the TOB program design features in the proposal can be considered to offer consumer protection. For example, adherence to bill neutrality – and measures to guarantee that program participation does not result in higher energy related costs – may be primarily designed to improve access, but also act as a consumer protection measure as it ensures consumer ability to pay.

The joint proposal pays significant attention to consumer protection measures and proposes a rigorous suite of actions to mitigate risk. Measures include:

- Suspension of the decarbonization charge due to upgrade failure or vacancy;
- Ensuring no lien is placed on the property related to the decarbonization charges;
- Directing consumers to all available rebate programs;
- Requiring that measures do not lead to an increase in energy bills, including a guarantee of measure energy savings via an M&V process and site-specific quality assurance and quality control process. This feature does not account for added load such as new HVAC or electric vehicle (EV) charging.
- Extended equipment warranties and administrator responsibility for maintenance and repairs in some cases (note that in the SCE proposal, the program user would be responsible for maintenance and purchasing any related equipment warranties; SoCalGas will also not offer equipment warranties);
- Removing potential aggressive sales tactics from contractors via a coordination role from the program administrator (contracting and service delivery model), which will work with a pre-approved contractor network only;
- Dispute resolutions process between program users and administrators;
- Various notification processes for existing program users as well as for prospective and new tenants and/or homeowners;
- Early pay-off option available to unencumber the property/meter during a potential home sale; and

- Development of customer agreement terms for clear communication between program users and administrators, including description of upgrades to be installed and implemented, cost-share and co-payment amount, decarbonization charge amount, expected bill savings, and other key items.

Overall, the consumer protections put forward are very robust and ensure that neither the current - nor future customer - is taking on additional costs that they are unlikely to be unable to pay via future energy savings. Customer protections against predatory sales practices for contractors are also substantial. We do note that the proposals do not include any "ability to pay" assessments, such as verifying debt to income ratios. Considering the bill neutrality feature, the proposed approach does appear appropriate. Overall, the consumer protections appear to meet or exceed those stipulated by the State for PACE financing.

It should be recognized however, that consumer protections come at a cost. This is true for both program administration and delivery, either of which can impact program access and implementability. The Joint TOB Proposal recognizes that, "*the cost of implementing the customer protections … further complicate the viability of project economics*."[11] It goes on to state that they propose applying a broad set of protections for the pilots, and to charge the warrantee and M&V costs as part of the administration of the program (i.e. to ratepayers) rather than participants to keep project costs attractive, but that a longer term TOB program may take a lighter approach.

In general, we agree with this perspective and approach. We note that there may be options to streamline the consumer protection and test some flexible approaches for less vulnerable customers, that would benefit the pilots.

For example, one consumer protection measure included in the Joint TOB Proposal and re-enforced in the individual proposals is the option for early repayment. This may be attractive to homeowners who are considering a sale during the length of the repayment term. However, early repayment is a potential risk factor for private sector capital providers that the pilot programs hope to attract. While it may be attractive to some potential participants, the measure should be scoped appropriately to reduce additional cost and risk (e.g. only allowing repayment in full, not in partial payments).

Other features, such as extended warrantees and M&V processes, may be intended to protect consumers, but are major cost drivers. These may be duplicative given the robust set of other consumer protections to ensure bill neutrality. These are discussed later in the section.

Taken in the balance, the consumer protection features presented in the proposal appear overly onerous, including some potential redundancies, and possibly introducing barriers to program participation. For example, the contracting and service delivery model proposed in the joint proposal may protect customers from predatory behavior, but may also limit consumer choice and flexibility in various aspects of the program – including equipment and technology types – which could hinder customer interest and participation. The proposed approach will eliminate most of the direct contact between applicants and contractors potentially adding administrative cost and complexity to operate the program, and may cause issues with scale. This method is generally uncommon practice within consumer financing programs. While many similar programs do take steps to reduce the risk of predatory practices – such as requiring program users select a pre-qualified and vetted

[11] Joint Proposal p. 20

contractor – many also report that contractor contact with potential program applicants can significantly contribute to program marketing and uptake with little to no added cost. With the existing strong protections to ensure bill neutrality for consumers, it may not be warranted to add the costs and complexity associated with the limited contracting and service delivery model.

A compromise to support maximize outreach and ensure customer protections could be to adopt an arrangement like the one used in the recent California Market Access Program pilot. The approved vendors (verified by the TOB implementor) could market the program to potential participants, but responsibility for customer eligibility, contractor oversite, project management, and quality control rests with the TOB implementor. The implementor may be the IOU or assigned to a third-party[12].

Other features that may be considered to add excessive process weight, participant barriers, and cost to the TOB program include:

- **Requiring bill neutrality for all customers:** This is an important feature for LMI customers and is common in the PAYS® program models that TOB programs are often modeled after. However, this requirement may be less relevant for more affluent participants, who may see the benefit of using the TOB program to finance the full cost of electrification upgrades that may not lower their overall bills, but offer additional property value, decarbonization, and comfort (including space cooling) benefits. Moreover, the proposals note that because electrification improvements do not always results in net bill savings, in some cases the co-pays and incentives will need to cover as much as 80% of the total project cost,[13] thus the amount that customers can actually apply TOB financing to may not be sufficient to significantly overcome the first-cost barrier, thereby limiting the ability to test program attractiveness during the Pilot phase. Removing the bill neutrality requirement for customers in owner-occupied properties who demonstrate the ability to pay higher energy bills may offer another valuable opportunity for the Pilot phase to test.
- **Extended warrantees:** Most heat pump manufacturers offer 5-year warrantees on their equipment, and the TOB programs aim for a 10-to-12 year pay back on the investments (variable between individual proposals). Thus, the extended warranties would only need to cover the 5-to-7 additional years of the equipment operation. We note that the California Electronic Technical Reference Manual[14] lists ductless and central heat pumps as having a 15-year expected useful life, suggesting that even at the end of the 10-year or 12-year TOB repayment, the equipment would still have a notable lifespan, and may not carry a high risk of failure in years 6-12. Moreover, the consumer protection benefits offered by these warrantees would be redundant when considering the TOB program feature whereby payment obligations cease if the equipment fails for reasons other than those caused by the user themselves. Thus, this feature comes with notable costs, but offers little to no additional consumer protection, other than possibly protecting the program administrator from some costs

[12] Opinion Dynamics, California Statewide Market Access Programs Process Evaluation Report Draft, May 16, 2024

[13] For example, in their June 15, 2022 proposal, SVCE/TECH highlighted that using current data, an electrification project costing $26,600 could only place about $4,000, or 15% of the project (p.19 of the SVCE proposal)

[14] Accessed at: www.caetrm.com

associated with replacing or fixing the equipment during years 6-10 of its lifecycle. This is a notably expensive hedge on what can be expected to be a relatively minimal risk. It should be noted that SoCalGas in their proposal do not propose to apply an extended warrantee, citing the sufficiency of existing warrantees on water heaters, and the required maintenance conditions as being sufficient.

- **Rigorous M&V process:** All proposals note that first-year bill savings will be measured to support the bill-neutrality guarantee and verify the effective operation of the financed equipment. The SVCE proposal outlines a detailed methodology for conducting M&V on the first-year energy savings, with the objective of protecting consumers from potential bill increases stemming from the TOB investments, noting that a key objective of the SVCE Pilot is to field test the M&V approach detailed in their proposal. The other proposals discuss applying this approach within their own delivery as well.
    - The M&V process described appears to carry notable cost, for example in SCE's proposal the Project M&V budget line is almost equivalent to the budget allocation for project financing ($1.12M for M&V and $1.16 for TOB financing). These costs could be unsustainable for a scaled TOB program, and the proposal does not articulate a clear rationale for requiring such a rigorous M&V process for each project.
    - The proposal also does not articulate how the M&V effectiveness, necessity, and cost/benefit will be assessed at the end of the Pilot phase, and what approaches will be considered to reduce M&V costs in a scaled program rollout.
    - The promise of the M&V process – and later, corrective action such as reduced decarbonization charge or equipment maintenance – could also create reputational risk for the program if it is not applied in a timely manner. Resources should be dedicated to ensure that the M&V process runs efficiently and to participant satisfaction.
    - Finally, the M&V and bill neutrality guarantees do not stipulate how the additional costs associated with adding cooling services via a heat pump in homes that do not have air conditioning.

The Joint TOB Proposal has taken great steps to include a robust set of consumer protection features., While the proposal does include consideration of how these protections may affect customer affordability, we do not believe that they sufficiently consider their impact on other important program goals, namely program cost-effectiveness and broad participation. The proposed consumer protection features may lead to substantial program costs to ratepayers, administrative complexity, and ultimately, lessened program impact. We recommend that the Joint TOB Proposal retune the consumer protections to remove redundancies, and to allow the pilots to test more flexible bill-neutrality and M&V approaches.

4.3 Recourse for Non-Payment

Fully and Appropriately Addressed (3)

Many on-bill programs apply the threat of utility service disconnection as recourse for non-payment from borrowers. However, programs that include the possibility for disconnection have not proven to experience significantly lower default rates than those without such threats. Further, the risk of disconnection introduces several potential risks for residents, utilities, and program administrators, particularly for programs that aim to make financing available for lower-income customers and underserved communities.

Although some programs view the consequence of disconnection as necessary to attract low-cost private capital, alternatives exist that can help reduce the cost of capital, and programs should consider these alternatives to ensure that the aforementioned risks do not materialize. These include including encouraging competition amongst private lenders to lower interest rates, requiring autopay on bills, and implementing credit enhancements like interest rate buy downs or loss reserves.[15]

California disconnection rules lean toward reducing the number of disconnections.[16] A basic 3-step process for disconnection is offered in Rule 11.

1. 15 day written notice for disconnection of non-payment mailed to the customer.
2. 48-hour written notice mailed to the customer. – In person visits for special needs customers e.g. those on life support, medical baseline – Door hangs if customer is not available
3. Final outbound call before disconnection (same day) to offer pay-plan.

Even so, the Joint Proposal does include the threat of utility service disconnection in the event of non-repayment from borrowers, and in our opinion the proposal has considered the issues associated with disconnection and adequately addressed them in the proposal. The Joint TOB Proposal discusses this in Section 4.2.2, in which the utilities acknowledge that the addition of the Decarbonization Charge does not alter the disconnection rules. Customers are still subject to potential disconnection of their utility service if they do not pay their bill. In this case, because there is no lien on the personal or real property, it is also the only security that can be used to assure cost recovery, which will be important for securing third-party capital in future phases of the program(s).

As the proposal notes, due to the guarantee of bill neutrality for all program users – including recourse to lower the decarbonization charge or replace equipment if the expected savings do not materialize – the risk of a consumer's bill increasing solely due to participation in the program is extremely low. As well, consumers are still able to access support from available programs (such as payment arrangements) if payment issues do arise while participating in the program.

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[15] Chris Kramer, Consultant to The Connecticut Energy Board. (2014). Disconnection and On-Bill Repayment.

[16] CPUC Rulemaking 18-07-005 (2018), DECISION ON PHASE II ISSUES: ADOPTION OF PRACTICES TO REDUCE THE NUMBER OF GAS AND ELECTRIC SERVICE DISCONNECTIONS

The joint proposal acknowledges that the Equity Committee noted concerned about using disconnection as a recourse for non-payment, but feels confident that the program will not increase likelihood of disconnection for users.

4.4 Capital Sourcing

Not Adequately Addressed (1)

Identifying a sustainable source of capital is key to ensuring that the TOB programs can scale through the pilot phase to serve larger customer groups.

In D. 23–06-026, the Commission was very clear in directing the utilities to seek out sources of funding, particularly from federal sources. Moreover, the proposal notes that SB1112 directed the California Energy Commission (CEC) to explore options to improve access to federal funding or financial provisions to support electrification in the state. In line with this, various sources of funding were considered while the Joint Filers were putting together the proposal, including GGRF, the DOE Loan Program Office, and USDA Rural Loans. The Joint Filers also engaged with the CEC to explore options to pursue federal funds.

Ultimately, the proposal notes that due to timing and other factors, they were unable to pursue funding from these sources. As a result, the Joint Proposal requests that ratepayers fund the pilot phase.

For IUI programs, using ratepayer funds changes the hallmark of IUI from a utility investment to a ratepayer investment and simultaneously shifts the performance and repayment risk from the IOU to the ratepayers.

Two individual proposals do limit the use of ratepayer funds: SVCE and SoCalGas.

SVCE proposes leveraging SVCE internal funds as well as TECH funds earmarked for pilot support for their field trial before the launch of their TOB pilot program supported by PG&E.

SoCalGas proposes using internal capital for the IUI project funding, coupled with ratepayer funds to cover program administrative and start-up costs.

SDG&E proposes reallocate existing Public Purpose Program (PPP) funds to the pilot.

SCE proposes collecting additional PPP funds for all pilot costs.

The Joint Filers note that the pilots should act as a "proof of concept" to attract third-party, private capital in potential later phases of the program. In the case of an on-bill financing program like TOB, ratepayer funds can be used as a source of capital. This approach gives the utility more flexibility and control of eligibility and underwriting terms, improving access to groups who would typically not qualify for a loan from private lenders.

The proposal includes a lengthy discussion of third-party capital sources that were considered, noting, "*they either were not available in time to support the pilots, were not a good fit for the small size of the pilots, or would be too costly.*"[17] This is likely a valid conclusion, however, for the proposed pilots to succeed, they will need to chart a path to a larger scale, sustainable program model, leveraging significant capital outlays for TOB

[17] Joint Proposal p. 46

investments. Unfortunately, the proposal does not include details on how the longer-term capital needs will be assessed or met, or how the Pilot phase will be used to lay the groundwork for obtaining the needed capital. Moreover, the Joint Proposal notes that "*no interest is assessed on charges associated with its TOB upgrade,*" which may limit the ability of the pilots to test conditions that would apply to third-party capital source.

There are many options for the TOB programs to recapitalize after the Pilot phase, but each carries specific requirements. These need to be reflected in the program design and demonstrated over the Pilot phase. Examples include:

- Using ratepayer funds will affect the IOU's overall energy efficiency (EE) portfolio cost-effectiveness. Some degree of cost-effectiveness and additionality assessment will likely need to be performed to justify the long-term use of ratepayer funds for TOB programs.
- Federal funds, such as the GGRF will require meeting Justice40 objectives, and accessing the Department of Energy (DOE) loans discussed in the proposal require demonstrating that the TOB programs could achieve $100M in investments over a reasonable time frame.
- Other private third-party funds will also require sufficient volume to attract investor interest. Any interest charges will need to be recovered from participants.
- Finally, while IOU capital is not fully explored in the proposal, if used it would need to be structured to be cost neutral to the utilities or receive Commission approval to add these investments to the IOU capital structure. However, this may have been excluded as an option due to IOU capital availability and concerns over debt-to-equity requirements. The exception of SoCalGas who does propose to apply $2M of internal capital for the TOB project investments.

Regardless of the potential source, the proposal does not address how these conditions are being assessed, or how the Pilot phase would point a direction to meeting these capital sourcing needs, examples include:

- **The need to cover interest costs for secured capital:** The proposal states that "*The additional risk of securing third-party capital for a Pilot is that such capital must be paid back, at the agreed-upon interest rate, even if there is not sufficient interest from customers participating in the Pilot.*" This statement can be true in some cases, but financial mechanisms, such as credit facilities, can be negotiated with third-party lenders that release funds on as needed basis. This could avoid substantial carry costs for the TOB programs more than the interest paid by participants.
- **Ratepayers must cover all program losses:** The proposal states that "*The IOUs would require ratepayer funding as the backstop to the repayment of the loans and would also require an explicit finding that the loan is a passthrough, so as not to affect the utilities' capital structures.*" Using limited amounts of ratepayer funds to backstop third-party capital that is used to support TOB program investments could be an efficient use of ratepayer funds over the long term to ensure broad accessibility to affordable financing.[18] However, ratepayer funds are not the only manner by which losses can be covered, other alternatives being the third-party capital funder accepting a portion of, or all, losses as part of the capital provision agreement, or Federal or State funds being applied in the capital stack in a first loss position.

[18] This is the case with California's statewide GoGreen program loss reserve funds

- **Confirm Impact of Pass-Through Financing on IOU Capital Structures:** The joint proposal notes that *"This means that obtaining third-party capital to upfront fund the clean energy equipment would only make sense if the terms are favorable and there is no impact on the utility's capital structure (which could violate Commission orders and cost ratepayers more in the long run)"* Given that the IUI principles focus on leveraging non-ratepayer money for the primary capital investments, it is important that the IOUs obtain clarity on the treatment of third-party capital for TOB financing within their debt-to-equity assessments.

In reviewing the proposal, we compared its capital sourcing to three existing TOB programs in other states (see Appendix 5.2 for details). The existing TOB programs identified source capital from various State and Federal funding sources, rather than ratepayer funds. Currently in California On-Bill Financing (OBF) programs are administered by the utilities and funded by ratepayers. These loans offer zero percent interest rates and no prepayment penalty, but the loans are not transferable. Currently in California these loans are available only to commercial customers.

Technically, OBF programs are different from On-Bill Repayment programs (OBR). Under OBR, financing is secured via a third-party lender - not the utility - but is repaid through the monthly utility bill. OBR for residential and commercial customers is offered through the California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA). As of 2024 there were eight credit unions in the program charging interest rates from 4% to 9% annually. Underwriting is treated similarly to other loans in the lender's portfolio. We recognize that OBR programs are more involved than OBF because it requires coordination between CAEFTFA, the lender, the customer, and the utility.

Overall, it is understandable that attracting third-party capital to fund the program in the pilot phase was not feasible. If the pilots are to generate a path toward scalable and sustainable TOB program offers however, they will benefit from including features and indicators that can lay the groundwork for attracting long term funding after the pilot phase. These could be as a cost-effective application of ratepayer funds, or an attractive investment vehicle for third-party capital providers. Specific features that should be considered in the pilot design to facilitate long-term capital provision include:

- Continue to explore third-party capital options during the pilot phase, including discussions with State, Federal and private lenders;
- Assess program losses through defaults, delinquencies, equipment failure, vacancies, and early repayments to establish a track record of financial performance to communicate with potential third-party capital providers;
- Demonstrate that the TOB program can achieve the level of uptake substantial enough to create the sufficient scale needed to attract private capital. This may entail testing various program options, such as waiving of the bill neutrality requirement to allow TOB financing of the full cost of upgrades for higher income participants;
- Assess participant's tolerance to interest rates, and conduct a financial analysis of the program to determine the interest rate charges;
- Demonstrate traction among LIDAC participants to meet GGRF funding requirements; and

- Outline pilot evaluation approach to assess pilot and scaled program cost-effectiveness such that they can apply ratepayer money, either as the primary capital, or for covering a portion of program costs and absorbing losses.

The TOB pilots offer a valuable opportunity to test the application of the IUI approach across a broad market. To leverage this opportunity the Joint Files will need a pilot evaluation plan and approach that assesses the performance metrics that can help attract third-party capital or support the use of internal capital and/or ratepayer funds. Currently these are not fully captured in the program KPIs, nor does the proposal include a clear indication of how the program scalability and financial viability will be assessed at the end of the Pilot phase. While a good deal of effort appears to have been expended to explore third-party capital sources, the current proposal does not indicate how the Pilot phase will be used to demonstrate TOB as a financing vehicle for 3rd-party capital, or how the Joint Filers will continue to explore third-party capital options, in line with the IUI principles.

4.5 Cost-Effectiveness

Not Addressed (0)

Cost effectiveness is not specifically discussed in the Joint TOB Proposal or the individual proposals. This section explores how cost-effectiveness applies to any potential TOB program.

The California Standard Practice Manual (SPM) states that "*…it is the policy of the state to exploit all practicable and cost-effective conservation and improvements in the efficiency of energy use and distribution…*". This policy helps ensure public purpose funds that serve as resource alternatives to supply-side options are responsibly allocated. At first glance (as of 2024) this implies a Total Resource Cost ratio (TRC) of at least 1.0.[19] Cost-effectiveness, however, is not applied in the same way for all activities.

The CPUC recognizes that Low-Income Energy Efficiency Programs also need to consider energy affordability and equity along with non-energy benefits such as improved health, safety, and comfort. This is because the goal of many programs targeting LMI customers is, "*…to assist income-qualified customers in reducing their energy consumption and costs while increasing their comfort, health and safety*."[20] Similarly, PAYS programs serve to overcome access and affordability barriers to energy efficiency improvements.[21] Finally, fuel substitution

[19] D.21-05-031 ASSESSMENT OF ENERGY EFFICIENCY POTENTIAL AND GOALS AND MODIFICATION OF PORTFOLIO APPROVAL AND OVERSIGHT PROCESS, May 20, 2021, https://www.caeecc.org/_files/ugd/849f65_ca536f44235647559e4210d1bc6fd520.pdf
[20] ENERGY SAVINGS ASSISTANCE PROGRAM AND CALIFORNIA ALTERNATE RATES FOR ENERGY PROGRAM, PG&E, July 2, 2019.
[21] Berkeley Lab reviews participant outcomes in Pay-As-You-Save® (PAYS®) programs, April 18, 2024, https://emp.lbl.gov/news/berkeley-lab-reviews-participant-outcomes-pay-you-saver-paysr-programs

activities in California (an implied activity of TOB) are subject to a separate Fuel Substitution Test.[22]

Combining these multiple objectives does not negate the importance of calculating cost-effectiveness. The TOB programs (if funded by ratepayers) still need to ensure program funds are directed to projects that yield positive net benefits. Given the Joint TOB Proposal's emphasis on bill neutrality, non-energy benefits that may play a larger role in determining the cost-effectiveness of the program, and may also provide value to participants, are generally not accounted for.[23]

Program success may depend on striking the right balance between ensuring accessibility to all and allowing eligibility for a wider set of measures. At the individual level, the proposal has made the decision to strictly adhere to bill neutrality for all participants as part of maximizing customer protections. Simultaneously they have elected to exclude the target audience for TOB programs, namely customers with subsidized rates. There is little consideration for how this affects other aspects of the program, such indoor air quality and comfort, ensuring maximum reduction in greenhouse gas emissions or adoption of beneficial electrification technologies, as discussed above.

The cost-effectiveness question(s) for the pilot is not, "What is the TRC ratio?", but should be:

1. Are more benefits than costs accrued to the customer? Are the estimated bill changes being realized (up, down, neutral) and what is the magnitude?
2. Are co-pay costs necessary or reasonable relative to project costs?
3. Is the program overcoming affordability barriers? Are LMI customers installing equipment they couldn't otherwise afford even with rebates?
4. Is TOB a complementary program or a substitute for existing rebate programs? In other words, to what degree are other EE programs or third-party funds being leveraged by TOB? Are existing rebate programs acquiring more participants but at a lower cost per participant?
5. In all cases, the Joint TOB Proposal indicates that TOB program implementers will aim to ensure that participants are maximizing their access to other available incentives, however, considering that many customers may be converting their heating systems from gas to electricity, no mention is made of informing the customers of their eligibility to access the E-ELEC tariffs (where relevant). This should be explicitly stated, and the proposals should address whether co-pays and decarbonization charges will be based on the customer's existing or E-ELEC rates.

Metrics for TOB performance cost-effectiveness should be geared toward program outcomes rather than program attribution. The Joint TOB Proposal does include eight Key Performance Indicators (KPI) for the pilot in Section 5[24]:

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[22] DECISION MODIFYING THE ENERGY EFFICIENCY THREE-PRONG TEST RELATED TO FUEL SUBSTITUTION, Decision 19-08-009 August 1, 2019, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M310/K159/310159146.PDF

[23] Assigning non-energy benefits technically changes the analysis from cost-effectiveness to benefit-cost.

[24] Joint Proposal, pg. 49

- Four of these focus on **financial indicators** such as, delinquency rates, uncollectible TOB costs, prepayments, and cost of decarbonization charge adjustments.
- Two focus on **program activity** including number of participants and number of transfers for TOB responsibility.
- The remaining two are **energy savings** related via M&V activities (statistical billing analysis).

While we encourage monitoring and reporting program activity as a good standard program management practice, several of these metrics need more explanation on how they are "key" to understanding the value of TOB:

- **Default Rate and Uncollectible Costs**: One of the arguments for implementing TOB is that the default rate for this type of offering has proven to be negligible. How will this information affect program design or implementation?
- **Transfer Rate or Prepayment Rate**: How do the number of transfers or prepayments affect the efficacy of the program or projects?
- **Savings Realization**: We agree that savings should be tracked on a per project basis. Rather than measure every project, can this metric be based on a sample? Can it be based on a less involved simple bill analysis (i.e. did the annual bill change as expected?)

In addition to offering financial performance metrics, we expect the proposal to properly address and consider how TOB contributes to portfolio cost-effectiveness in addition to the perspective of the individual consumer (i.e. the program participant) along with costs for the entire energy system (the utility, ratepayers as an entire group, and other vested stakeholders in the California energy system).

The individual proposals have not discussed how they would assess cost-effectiveness, and why or how they would use ratepayer funds beyond the Pilot phase. It is important that the Pilot phase provide findings that can help eliminate or minimize the continued use of ratepayer funds. Have other sources of funds become available? If ratepayer funds are to be used after the pilot, what is their best use – as credit enhancement, as investment capital, to cover administrative costs, other use(s)?

The individual proposals (except PG&E/SVCE) provide estimated budgets with a breakdown of costs. This section discusses those budgets provided by SCE, SCG, and SDG&E. Table 1 shows the budget detail. Table 2 provide a summary with metrics.

Table 1: Budget Detail

Budget Item	PG&E / SVCE	SCE	SoCalGas	SDG&E
Implementation	N/A	$2,150,000	$2,750,000	$2,000,000
IOU Admin	N/A	$1,550,000	$200,000	$1,100,000
IT Labor	N/A	$1,070,000		$2,000,000
EM&V	N/A	$1,120,000	$50,000	$281,830*
Project loss reserve	N/A	$140,000	N/A	$106,851
IUI project funding	N/A	$1,160,000	$2,000,000	$2,137,000
Total Budget	N/A	**$7,190,000**	**$5,000,000**	**$7,625,681**

Ratepayer funds Requested	N/A - Field Test costs.	**$7,190,000**	**$3,000,000**	**$7,625,681**

* SDG&E EM&V budget is indicated for overall pilot evaluation, and project M&V would be covered under the implementation budget line.

1. Program implementation accounts for one-third (35%) of the statewide budgets in aggregate but varies between IOUs. SDG&E allocates the least at 26% and SCG allocates the most of their budget to implementation at 55%.
2. IUI individual project funding is just over a quarter of the statewide budget at 27%. SCE allocates 16% and SCG allocates 40% of their budget to project funding.
3. Administration and information technology (IT) labor account for another third (30%) of the statewide program budget. SCG allocates the least at 4% and SDG&E allocates the most at 41%.
4. EM&V statewide is 7%. This cost ranges from 1% for SCG, 4% for SDG&E, and 16% for SCE even though pilot budgets are similar. This discrepancy needs to be explained.
5. Loan loss reserve supporting the projects accounts for 1% of the total program budget. The SoCalGas project loss reserve is zero because they are leveraging non-ratepayer funds for TOB project funding. SCE and SDG&E do allocate funds to a project loss reserve but do not specify where these funds originate. It is unclear if they are asking ratepayers to fund the projects and provide funds to cover their own losses.
6. Costs are extensive – warrantees, M&V, administration, especially relative to the size of the capital investments. pilots should streamline these and indicate how and when they plan to do so.
7. In addition, some project costs – such as maintenance and extended warranties – are not counted toward the cost of individual measures and are instead attributed to administrative costs in the pilot structure. This is an unusual structure and is likely to put additional pressure on ratepayers as these additional costs are not being recouped via the decarbonization charge. This makes it difficult for the pilot to accurately assess the cost-effectiveness of both individual measures as well as the program's overall impact on California's energy system. Requiring homeowners to be responsible for maintenance and extended warranties would reduce program cost and risk.
8. Considering the overall costs, it may be more effective to run fewer pilots. No rationale for all IOUs offering a TOB pilot is provided. While one or two pilot(s) are running, all IOUs could continue to explore non-ratepayer capital sources, along with continuing progress on the bill system upgrades. This approach allows for a more accurate accounting of what it would take to integrate TOB capabilities for each IOU.

Table 2 provides a budget summary along with program metrics. Based on the pilot program's anticipated budgets and target number of projects, the cost per project varies between pilots as does the amount applied to the Decarbonization Charge. The implication is that SCE will require a customer co-pay of $17,583 and SCG will require a customer co-pay of $2,400. Based on information in the proposals, SDG&E does not provide estimated project costs or anticipated project funding levels in its proposal but does state that over sources will be needed to qualify projects for TOB (see Table 2).

Table 2: Budget Summary and Metrics

	PG&E / SVCE	SCE	SCG	SDG&E
Program Budget	N/A	$7,190,000	$5,000,000	$7,625,681
Project Count	150-250	200	500	100
Program Cost / Project*	N/A	$35,950	$10,000	$76,257
Project Costs	N/A	$23,383	$6,400	$21,370
TOB Funding	N/A	$5,800	$4,000	< $21,370
Co-Pay	N/A	$17,583	$2,400	$21,370 less TOB

'* Program Cost / Project is Program Budget divided by number of projects.
** Project Cost for SCG and SDG&E are IUI Project Funding divided by number of projects. SCE Project Cost is a weighted average for single and multi-family projects as presented in their individual proposal.

Overall, the proposal has not addressed questions about what to measure, how to measure it, or potential risks to ratepayers or participants regarding cost-effectiveness. The actual calculation may not be an issue for the pilot, but expressing the primary and secondary objectives of TOB will be critical when considering cost-effectiveness next steps beyond the pilot phase. Based on this we recommend that:

1. Consider running a **subset of the proposed pilots**, prioritizing models that demonstrate the lowest cost and highest value to ratepayers.
2. As noted in Section 4.2, proposals should **consider lifting bill neutrality restrictions** for customers who are not financially vulnerable.
3. The pilots should include an **assessment of program cost-effectiveness from a TRC perspective**, showing how they can contribute to overall DSM portfolio cost-effectiveness by leveraging third-party capital, increasing participation in energy saving incentive programs, and using ratepayer funds in the most efficient manner.

4.6 Implementability

Not Adequately Addressed (1)

A pilot program's implementability is related both to its start-up cost, its administrative cost, and its complexity of design and operation. These aspects directly affect the ability of the program to scale-up should it continue beyond the pilot phase. While the proposal does consider elements of implementability, ultimately there are few considerations or actions taken to reduce the administrative burden that elements of the program design create for program administrators.

To varying degrees of detail, each proposal identifies the key roles and responsibilities that need to be fulfilled to deliver the TOB programs. Key roles outlined in the Joint Proposal include the Program Sponsor (the IOU or a load serving entity), the Program Implementer (can be the same as the sponsor or a third party) and the Installation Contractor (hired to perform the work by the Implementer and/or Sponsor). The role and expectation for the program implementer is to ensure quality work is performed, and to maintain and repair

installed equipment as laid out in the Joint Proposal. Moreover, the proposals stipulates that any implementers or contractors will need to be approved under the TOB program, and a website will be maintained so that participants can confirm the legitimacy of program representatives.

Marketing and Outreach (M&O) will be the sole responsibility of the Program Implementor, and the Joint Proposal states that, "*Program will not allow contractors to perform marketing or outreach; the Implementer will develop projects and then direct contractors to perform the installation.*"[25] This differs from many other financing initiatives that engage contractors as co-marketing partners. The proposed TOB approach may limit customer choice and awareness of the TOB program, but reduces the risk of irresponsible marketing practices on behalf of contractors. Alternative approaches could be considered to ensure contractors market the program in good faith, thereby expanding the M&O effectiveness of the programs.

In order to implement a TOB financing program, utilities need to ensure that billing systems are able to add and display the decarbonization charge onto consumer bills, can handle partial payments, ensure funds are allocated to correct accounts, work with existing bill practices, and many other functions. Certain design features of the proposed program (e.g. early repayment) must also be accounted for in the billing system. This is a common challenge that utilities face when implementing any type of on-bill financing program (including TOB) and can often be a bottleneck to timely program launch.

Based on the information provided in the joint proposal, the IOUs are in various stages of billing system upgrades.

PG&E is in the process of a billing modernization effort, but it is unclear if this effort will encompass the needed functionality required by the TOB program. PG&E notes that this will not be completed until 2027. This is offered as the reason why PG&E did not submit its own TOB proposal, and instead will work with SVCE to assess TOB feasibility based on the SVCE proposal.

SVCE appears to be the furthest along in its field test planning and preparations. They propose not waiting for the Commission's approval to launch, as they do not require ratepayer money to run the pilot (TECH funds are approved already) and plan to use existing billing system capabilities.

They do not indicate who will be the program implementer, but do mention that the TECH program will be providing implementation support and coordination for the field trial. This will take place in advance of a TOB pilot launched that is supported by PG&E.

SVCE notes that they are ready to run a field trial of TOB, but excluding the automatic transferability component of the program, due to system constraints. No further details are provided on how SVCE will implement TOB billing, given that SVCE customers are currently invoiced for energy charges by PG&E billing system. While transferability is a key component of TOB, not including this element should not prevent testing many other aspects of the TOB model, such as M&O and establishing attractive TOB financing packages when taking incentives, co-pays, and consumer protections into account. The field test to support pilot development by incorporating aspects such as

- assessing cost-effectiveness,

[25] Joint Proposal p. 28

- continuing to explore and test conditions that could attract third-party capital to the TOB program,
- right sizing the consumer protections to reduce TOB program costs,
- eliminating redundancies, and
- expanding program attractiveness and coverage.

SoCalGas' proposal notes that they will be able to add the TOB decarbonization charges manually to participants' bills, leveraging existing billing system functionality from its on-bill lending systems. They do note that modifications will be necessary, with redesign to their billing system set to begin in 2025. As with PG&E, they do not indicate if the billing system redesign includes all TOB capabilities, or how much that would cost. This manual approach may be a key reason why SoCalGas' administrative charges, relative to the project investments, are much lower than the other individual proposal budgets.

SDG&E proposal notes that they will leverage existing OBF/OBR functionality, adding some modifications to handle the TOB program. These are not specified, and SDG&E does not indicate the timing or need to upgrade their billing system, or if TOB functionality would be part of such an effort should it be pursued.

SCE notes that "the Pilot will require upfront development of billing functionalities, conducting solicitations, reporting, and Program Sponsor oversight of Program Implementers." Their proposal includes a $1.07M budget line item for the billing system upgrades. No further details are provided on what modifications will be made to the SCE billing system, whether these align with any potential plans to update their overall billing system (as other IOUs are currently planning), or whether this investment would be sufficient to meet the needs of a scaled TOB program over the long run. The proposal does note that "SCE's view is that it would not propose to scale the Pilot to a larger Program if the long-term economics do not improve." which may indicate that the TOB pilot IT adjustments are designed to focus just on the immediate pilot scale needs.

Each proposal presents its own timeline for setting up and delivering the 2-year Pilot. See Table 3 that compares the proposed timelines for each of the pilot programs.

Table 3: Pilot Timing

	PG&E / SVCE	SCE	SCG	SDG&E
Proposed Implementation of Pilot	PG&E billing system upgrades not expected until 2027, pilot launch would follow. A field test with TECH could be launched prior to these upgrades.	Two-year pilot to launch within 18 months of the CPUC decision.	Two-year pilot to "ramp-up" within 3-6 months of a CPUC decision.	Two-year pilot to begin based on direction from the CPUC decision.

Overall, the joint filers have considered the administrative cost and complexity associated with implementing the TOB billing system for the pilot phase, but it is largely unclear how these investments of ratepayer money would carryover into a scaled program. Moreover, PG&E and SCE have indicated that their overall billing system updates are planned to occur after the planned pilot and field test periods. Ideally all the pilots would launch within a reasonably similar time period and aim to provide results and recommendations on a scaled TOB program in a timely manner.

Other program design decisions also add significant program administration complexity that could make it challenging to implement and scale smoothly. As discussed above in 4.2, the proposal to require M&V processes for each project after a year following the implementation of each measure, and the proposed service delivery model that would see the program administrator take on management of contractor agreements, could be onerous and add significant administrative burden.

The Joint Proposal and all individual proposals, aside from the SCE proposal, indicate that the program administrator/implementer will be responsible for arranging equipment maintenance. The SCE proposal takes a different approach, wherein the property owner is responsible for scheduled maintenance of equipment.

Given the expected high degree of co-pays and that the TOB financed equipment will in many cases replace a significant piece of existing equipment (space heating and or cooling and water heating), this approach appears to be a viable implementation option that the other programs could benefit from considering. It is consistent with many other equipment financing agreements, such as leases, and thus could be accepted in the market. Moreover, it will notably reduce the administrative burden on the programs by not having to ensure the capacity is present to schedule equipment maintenance for 10 years beyond the end of the pilots and would reduce loss risks to the programs.

The administrative costs are substantial in all individual proposals, and vary widely, from 85% (SCE) to 40% (SoCalGas) of the total ratepayer funds requested. SVCE did not provide a budget breakdown for its field trial but should be required to do so if permission is granted for them to file a Tier 2 advice letter requesting cost-recovery for the field trial. Overall, these budget breakdowns point to the substantial cost of these programs to ratepayers, and while the projected participation and savings levels are low in each case, the value of these investments should be considered with regards to their long-term outcomes. These can be grouped into three categories:

1. Testing the **logistics and attractiveness** of the TOB model.
2. Establishing **billing systems processes** that can support a TOB program.
3. Answering key questions related to TOB pilot **scalability and sustainability**.

The pilot proposals appear to provide a good deal of detail related to the first outcome, but are unclear on the how the billing system investments will increase capacities for the longer term TOB program. The Commission should request a specific response to how these billing systems investments will contribute to longer term TOB capabilities in each IOU. The ability of the pilots to demonstrate scalability and sustainability is addressed further in the Pilot KPI scoring section.

4.7 Inclusion of Key Technology Types

Fully and Appropriately Addressed (3)

Ensuring inclusion of a wide range of key technology types (weatherization, fuel switching, demand reduction, energy efficiency, etc.) is key to ensure that proposed programs work to reduce greenhouse gas emissions and ultimately move California's electrification goals forward. As discussed in 4.1.5, strict adherence to bill neutrality may exclude a wide variety of beneficial electrification technologies. Several have been identified for the program but may be excluded due to a high co-pay requirement or by the fact that they do not produce energy savings directly (i.e. electrical panel upgrades, EV charges, rooftop solar or battery backup).

In D. 23-08-026, the Commission asked a number of questions related to inclusion of technologies, including which could most reliably provide savings to customers and how benefits could be calculated. While not all of these questions have been addressed (see 2.1.2), the joint proposal and individual proposals have clearly taken steps to ensure that eligible technologies are geared toward bill savings (as directed). While individual proposals varied somewhat, weatherization and other energy efficiency measures (e.g. thermostats) and heat pump HVAC and water heaters were eligible across programs. SoCalGas has also included their willingness to consider including heat pumps as eligible measures in their pilot program, which would follow other gas utilities successfully including heat pumps in financing programs in other jurisdictions.

4.8 Transferability

Fully and Appropriately Addressed (3)

A key feature of TOB programs that differentiates them from other on-bill consumer financing programs is that the loan is tied to the meter, rather than the individual. This allows for the repayment obligation of the decarbonization charges to be automatically transferred to the next resident's utility bill in the case of a home sale or a new tenant.

The proposal has considered the transfer process (per SB 1112), including,

- ensuring that potential home buyers and new tenants are notified in advance of sale or lease agreement;
- that the charge is appropriately registered with the County; and
- that the new bill payer receives all the information about the charge in a timely manner.

There is detailed discussion in the proposal regarding the way the prospective new tenant/homeowner will receive notification regarding the inclusion of the program. As well, there is a clear "early payment" mechanism for homeowners who may wish to pay the remaining balance of the measures in a lump sum - for whatever reason. The Joint TOB Proposal has fully and appropriately addressed the issue of transferability.

While this aspect of the Proposal is well articulated, there are a few details that should be further stipulated, such as:

- The Joint TOB Proposal does not detail how pausing payments due to vacancy or equipment malfunction will be treated. Instead, it defers to deciding a on a case-by-case basis. We recognize not all situations can be anticipated. Still there should be basic guidelines stating how long until these payments will be added to the overall payment term, if they can be extended beyond 10 years, or when the program sponsor will count these as program losses.
- The pilots do not indicate how they will treat disputes where a landlord may fail to inform a future tenant about the decarbonization charge, and they do not indicate how the effectiveness of the landlord responsibility will be assessed, such as determining if this should be included in new leases.
- SB1112 applies to the electric serving entities, and the SoCalGas notes that they believe they need a similar legislation to proceed with TOB. However, SB 1112 does not mention Tariff On-Bill financing specifically, and SoCalGas is proposing only to finance energy efficiency improvement measures, not fuel-switching decarbonization measures. SoCalGas should indicate what currently prevents them from proceeding with a TOB program in the absence of treatment under SB 1112.

4.9 Pilot KPIs

Not Adequately Addressed (1)

This joint proposal is for a set of two-year pilot programs to inform a decision on expanding, modifying, or denying one or more programs. As such it is critical that the pilots are well set up to measure key program elements that will be needed to make informed decisions. The proposal does dedicate a section to scaling and includes KPIs to assess programs.

KPIs proposed in the pilot phase include:

- **Delinquency rates** (those who fail to pay their decarbonization charge on time) and related uncollectible costs;
- **Participation rates**;
- **Transfers between bill payers and users who opt for prepayment**;
- **Savings realization** (i.e. customers that realize savings at or above the predicted first year of savings);
- **Interventions** (such as equipment adjustment, equipment repair, or decarbonization charge adjustment) following M&V, and cost of charge adjustments that do occur.

Generally, the KPIs are aligned with the state program objectives and have clear measurements. However, there are other aspects of these TOB financing proposals that could benefit from additional tracking.

At a higher level, we do note a misalignment between the design of the pilot(s) and the objectives of the TOB financing. These include:

- The pilots aim to assess TOB model with extensive **consumer protections** that typically are applied to LMI groups. The pilot's focus on high-consuming properties is likely to target more affluent and larger homes.
- The pilots state that they aim to test scalability, but fail to **test features that may increase or actually be necessary for scalability.** These features include being flexible on bill neutrality, and expanding the set of measures to include items like EV chargers, heat pumps for SoCalGas customers[26]. Pilot evaluations could benefit from assessment of key scalability metrics and features (i.e. removing upfront cost via co-pays, extensive measures etc.)
- The Joint Filers were instructed to assess third-party capital based TOB models. While the challenge of **attracting these funds into the pilots** is recognized, the pilot evaluation metrics do not appear to include metrics that could facilitate third-party capital sourcing in the future.

The Joint TOB Proposal provides significant thought on scaling up, including elements that may require additional evaluation. Utilities should ensure that KPIs address these questions, particularly when elements differ between proposals. Examples include:

- **More detailed financial metrics to be used in discussion with potential third-party capital sources**. One example is to expand the program's LMI monitoring to align with the GGRF LIDAC definitions. Track participation using these definitions to demonstrate the effectiveness of these programs to meet GGRF requirements. This approach would benefit the pilots by inclusion of reduced tariff customers (CARE, FERA etc.). Other metrics valuable for attracting capital would be to assess the participant's tolerance of sustainable interest charges. That aligns with mixing private-public borrowing costs. Finally, reductions in GHG emissions should be tracked as accurately as possible to ensure that the program is working toward its intended goal, and to communicate the program benefits for third-party capital sources who seek to invest in reducing their financed emissions.
- While the joint filers have provided good rationale for using disconnection as a resource for non-payment, utilities should track **the rate of disconnections in the program user group against the rate throughout the customer base to ensure that this measure is appropriate for a larger-scale program**. This should be accompanied by tracking losses from other forms of delinquency (such as vacancies and equipment malfunctions, as well as early repayments that result in lost interest charges).
- **Effectiveness and benefit of the proposed M&V process for the SVCE field test** (and other pilots). If the pilot is testing M&V methods as part of TOB, what will this approach add and how does it differ from traditional weather-normalized year over year billing data analysis - excluding the need to assess upgrade savings?
- **Consider a longer pilot period**, or an approach to extend the pilots when running. Financing programs often take a significant amount of time to set up, and to gain recognition in the market before they achieve notable participation. For example, California's GoGreen Statewide financing pilots were originally approved in 2013 but did not pass through their pilot phase (known at the time as the Residential Energy Efficiency Loan Assistance program) and transition to a full program until 2020. The proposals

[26] Examples exist of Gas utilities offering incentives for heat pumps: https://energir.com/en/residential/dual-energy/customers

should indicate the feasibility, cost, and key metrics associated with a potential decision to extend the pilots in order that they can achieve their objectives.

- Finally, the SVCE field trial should be recognized as being tantamount to the pilots proposed by the other Joint Filers. The Commission should consider approving their request to file a Tier 2 advice letter, requesting ratepayer support for the field trials, and outlining a plan to establish a full program starting in 2027 when PG&E billing system is updated, and using the Pilot phase to put in place other program components.

Overall, the pilots offer an opportunity to test TOB financing for accessible investment in decarbonization activities, progress toward a sustainable model that accesses various capital sources and is broadly accessible. Unfortunately, in their current form the pilots appear to focus mostly on the mechanics of TOB delivery, at great cost to ratepayers. By focussing on the most viable pilots proposed and expanding the set of conditions tested within the pilots, we believe that the TOB proposal would better answer the key questions facing TOB financing at this time.

CHAPTER FIVE
Recommendations

5. Recommendations

Overall, the joint proposal responds to several of the questions posed by the Commission in Decision (D.) 23-08-026, and addresses some of the key criteria identified in the scoring rubric (transferability, recourse for payment, consumer protection) to a high degree, while other criteria (cost effectiveness, equity) are not adequately addressed.

In addition, funding projects with Public Purpose Program funds changes the pilot characteristics from a utility investment program to a ratepayer investment program. This may be acceptable for a short-term pilot but runs counter to TOB guidelines for a fully scaled program that adheres to the IUI principles.

California is facing two critical challenges in the **energy transition:**

1. Removing barriers to widespread, cost-effective electrification; and
2. Ensuring equitable access that helps to reduce energy poverty.

The TOB Pilots were initially conceived to address both challenges, but in their current form they do not demonstrate a viable model to address either. Even if the Pilots cannot fully deliver on these objectives in the short-term, their design should ideally aim to test TOB approaches and features that could, in future, deliver on these.

5.1 Short-Term Recommendations

The Commission should consider approving a **subset of the proposed pilots**, prioritizing models that demonstrate the lowest cost to ratepayers, relative to the participation and savings projections, and offer the greatest opportunity to test aspects of the TOB model that could be featured in a longer term TOB program.

For whichever proposal or proposals are approved, we recommend that the pilots include **evaluation metrics** and further study to address how longer term TOB programs can deliver on the IUI principles. More detailed financial metrics should be established under the pilots to address key questions related to the viability of a longer term TOB program. These relate specifically to how the pilot(s) can demonstrate the TOB program's fit with various capital sources (third-party private capital, public funds, ratepayer funds, and/or internal capital), how to best be inclusive of major LIM customer segments, assessing the effectiveness of the various consumer protections, proposed M&V processes and administrative investments with a view of identifying opportunities to reduce the TOB program costs to ratepayers.

Thus, we propose the following modifications to **any pilot(s)** that the Commission may chose to approve:

- Align with the GGRF LIDAC definitions for LMI groups, and track participation accordingly. This can help establish meaningful equity targets and communicate the TOB model suitability for GGRF funding and other public funding sources in the future. In addition, the pilot(s) should include a plan to study the implications of allowing CARE,

FERA etc. customers into the TOB program. While it may not be feasible at this stage to include these customers in the pilot(s), some efforts should be made to assess their potential involvement in a longer-term program, to extend the benefits of the TOB program to more LMI customers, and avoid undue risk to these customers and the program if expanded.

- Any approved pilot should include further study and evaluation of capital sourcing options. This includes detailed tracking of all forms of default, delinquencies, and non-payments to generate robust financial analysis and risk profiles for the pilot(s). Other opportunities include assessing the impact of interest rates on customer participation (either through testing or evaluation surveys) and accurately tracking GHG impacts. This data is useful to demonstrate the value of the TOB program to third-party investors in the event of an expanded program following the pilot period.
- Finally, the pilot(s) should also explore the implications of applying internal capital and/or ratepayer funds in the longer-term TOB programs. This should include a plan to assess the pilot(s)' cost effectiveness when using ratepayer funds to pay for non-project related costs within the TOB program. It should also assess the implications of using internal capital to provide the project financing, such as the impact of TOB investments on the IOU debt-to-equity requirements.

5.1.1 PG&E

Recommendation: N/A

- No program proposal is provided.
- PG&E should discuss how TOB functionality will be incorporated into their billing system and keep the Commission apprised of status. This should include a cost estimate to achieve a billing system that represents the minimum viable product for TOB automation.
- If PG&E wishes to submit a proposal in the future, it should continue to seek third-party funding sources that could provide project capital to a TOB program and report findings to the Commission.

5.1.2 SVCE

Recommendation: Encourage the field trial, and offer SVCE the opportunity to submit a full pilot proposal based on the field trial structure in the near future.

- Recognizing that the SVCE/TECH field trial shares many elements with the other individual proposals, in that it aims to test market acceptance, energy savings and repayment risk, the Commission should encourage them to proceed with the field trial.
- Further, the Commission should allow SVCE to submit its own proposal for TOB pilot program based on the proposed field trial model, understanding that a Tier 2 Advice letter requesting funding can only be submitted for an approved program or pilot.
- If SVCE elects to submit a pilot proposal, the Commission should require the following:
  - The proposal should include cost-recovery for field trial non-project costs only.
  - Because an eventual SVCE TOB program is dependent on the PG&E billing system's capability, the proposal should chart a path toward establishing a full program

starting in or soon after 2027 and demonstrate work with PG&E for how this will be incorporated into the updated PG&E billing system.

- The proposal should include a strategy to assess and secure non-ratepayer funding and/or an analysis of program cost effectiveness that could justify long term application of ratepayer funds for an eventual TOB program.
- The proposal should test a simpler M&V approach (such as weather normalized annual bill comparison) to determine the relative merits of the Joint Proposal's M&V process against a less-costly option for a longer term TOB program.

5.1.3 SCE

Recommendation: Do not approve this proposal.

- Given the high cost of administration and implementation relative to project financing investments (over 84% of the funds requested are for program administration and delivery), the lack of clarity on how some of the requested funds would be used to support a longer term TOB program, and considering that SCE and SoCalGas' territories overlap (i.e. only one IOU is needed to test program mechanics and market acceptance those customers), we do not recommend that the Commission approve this proposal.
- However, SCE's proposal includes several unique elements that are worth testing in a pilot phase. This includes their proposal to exclude extended warranties and requirement that building owners to be responsible for the financed equipment maintenance, as well as high-level discussion of the pilot cost-effectiveness considerations.
- If the Commission choses to approve the SCE proposal, the following modifications should be requested:
  - If ratepayer funds are to be used, they should be reallocated from un-committed PPP funds rather than adding a new incremental collection of funds to minimize ratepayer burden. Program source to be determined.
  - SCE should explain the reasoning behind having a project loss reserve funded by ratepayers, for loans funded by ratepayers.
  - SCE should articulate the M&V approach and the billing systems upgrades that are planned for the pilot. For the Billing System Upgrade, the specific system improvements should be described, and SCE should clearly state if these investments will enable TOB functionality in its billing system over the long term, or if it is just for the pilot period.

5.1.4 SDG&E

Recommendation: Do not approve this proposal.

- Given the high cost of administration and implementation relative to project financing investments (72% of the funds requested are for program administration and delivery), the lack of clarity on how some of the requested funds would be used to support a longer term TOB program, the relatively low participation targets, exclusion of renters from the eligibility and focus on higher-consuming participants, we do not recommend that this pilot be approved.

- However, the SDG&E proposal includes several unique elements that are worth testing in a pilot phase. SDG&E is the only entity that could offer a TOB program within a combine gas and electric utility service territory, and its allocation for project financing is notably larger than SCE's.
- If the Commission decides to approve this proposal, the following modifications should be requested:
  - Include a provision to test pilot acceptance with renters and landlords (single and multi-family where possible), and include specific metrics and targets for LMI customer participation.
  - Allow reallocation of unspent uncommitted PPP funds from balancing accounts (as proposed), rather than allocating new PPP funds.
  - SDG&E should explain the rationale behind project loss reserve funded by ratepayers, for loans funded by ratepayers.
  - For the billing system upgrades required, the specific system improvements should be described, and an SDG&E should clearly state if these investments will enable TOB functionality in its billing system over the long term, or if it is just for the pilot period.
  - Remove consideration of extended warranties on the financed equipment to keep pilot costs reasonable.

5.1.5 SoCalGas

Recommendation: Approve with modifications.

- The SoCalGas proposal appears to present a viable TOB pilot model. It has the advantages of delivering the pilot to a broader number of customers (500 targeted participants), and it applies internal capital to fund the project costs, requesting $3,000,000 in ratepayer funds to cover the non-project (administration and implementation costs), which most directly adheres to and tests the IUI principles.
- We also recommend that the Commission approve the two-way interest-bearing account as per the proposal.
- Finally, we recommend that the Commission Authorize SoCalGas to issue a Tier 1 Advice Letter authorizing the establishment of the SoCalGas TOB Pilot Balancing Account.
- If the Commission approves this proposal, it should request the following modifications and clarifications:
  - Clarify the statement under item j. on page 10 of the SoCalGas "SoCalGas' funding approach utilizes the utility investment model for project costs and ratepayer funding for non-project costs." As written, this statement implies that SoCalGas will use internal funds to provide the Decarbonization Investment Capital line item in Budget Table 1.1 in their proposal. If so, the Commission should allow self-funding for purchase of EE equipment and treat it as a regulatory asset.
  - The proposal should be modified to cover non-project costs by reallocating un-committed PPP funds rather than adding a new incremental collection of funds to minimize ratepayer burden. Program source to be determined, if available.
  - SoCalGas notes that renters will not initially be eligible for TOB, but they aim eventually to open it to the full residential market. The proposal should be modified

to include a provision to test pilot acceptance with renters and landlords (single and multi-family where possible).

- The proposal should be modified to test a simplified alternative (such as weather normalized annual bill comparison) to the Joint Proposal's suggested M&V process, to determine the relative merits of each approach in a longer term TOB program.
- The Commission should approve SoCalGas' list proposed eligible equipment, but request a plan to test electrification equipment options in their pilot. These can be either as part of gas-hybrid heating systems, or as a fully electrified heating and cooling solution.
- The proposal should be modified to specify how the "manual" elements of customer billing will be handled and verify that the schedule for issuing bills does not change.
- SoCalGas should remove their requirement for additional legislation gas utility-specific legislation, similar to SB 1112, as this is outside of the scope of the Commission.

5.2 Long-Term Considerations

In the long term, when considering or soliciting future proposals for TOB programs, the Commission may consider directing the parties to consider various modifications in line with the findings detailed in Chapter 4.

A few specific challenges with the Joint TOB Proposal and the individual proposals put forward include:

- The proposals are focused on the technical aspects of the program, yet many of these are already well understood. The proposals spend less time focusing on the conceptual challenge of how to deliver electrification financing via TOB when in most cases there may not be bill savings.
- The proposed programs are designed to maximize consumer protections, particularly to shelter lower-income participants from potential bill increases. However, a substantial portion of these customers are also made ineligible by omitting CARE, FERA, and other means-tested assistance program users, which will make it difficult for the pilots to demonstrate inclusive access. It is understood that the Equity Committee suggested that these financially vulnerable customers should be omitted from the pilot to reduce the risk of increased energy costs as a result of pilot participation. However, by not including these customers in the pilots, these customers may be exposed to greater long-term risks should the program be expanded without a pilot period that accurately assessed the impacts of their participation. Moreover, the proposed programs offer such extensive consumer protections that this could be a missed opportunity to test the ability of TOB to reduce energy costs by financing higher efficiency and electrified heating equipment for subsidized tariff customers, with little to no risk of the customers incurring any bill increases, since the use of ratepayer money would allow the pilots to write off any losses without penalty to the program sponsor or a third-party lender.
- The value of the proposed M&V process for all participants at the one-year mark, and the need for this level of rigor and cost to TOB financing is unclear and likely unnecessary. Alternative, less costly approaches should be tested for better ratepayer value.

- The value of testing the TOB model in multiple IOU territories, given the notable cost to ratepayers, is unclear. There may be greater value in testing the TOB model in one or two territories, but for a longer period. The Commission will have more information on market acceptance, operational challenges, and other forms of capital may become available to fund a scaled-up program.
- The ability of the pilots to demonstrate attractiveness of TOB to third-party capital is uncertain. The design of the program(s) as well as the metrics collected may not provide the information needed to secure long-term third-party capital, whether private or public.

In the long-term, as the Joint Filers consider sustainable TOB program models, and/or develop new TOB Pilot proposals, we provide the following recommendations that may help future program designs to better align with the IUI principles, corresponding with the scoring received by topic in Chapter 4.

1

Equity: The IUI principles behind the request for a TOB program aim to make access to decarbonization financing available as broadly as possible. To that end, we recommend consideration of the following:

- Align and apply LMI definitions that are consistent with GGRF LIDAC definitions. Attempt to maximize participation for this group in the pilots to show potential to access GGRF capital. As well, articulate the strategy to increase LIDAC participation in the TOB programs.
- Explore the implications of allowing CARE, FERA, and all means-tested energy program participating customers into the program, and determine if TOB can be applied to reduce their energy bills without exposing them to undue risk.
- Consider requiring all potential TOB programs to be eligible for all renters where a dedicated meter is attached to the project (i.e. not a master meter unless all units participate). Renter inclusion is a key aspect of TOB programs, and their non-eligibility raises questions about the need for a TOB program over other types of on-bill financing.

2

Consumer Protections: The Joint TOB Proposal included a robust set of consumer protections to limit risks to participants and support broad access to the program. In some cases, the consumer protections appear to be redundant, overly onerous, and could add unnecessary cost or even dissuade participation. In the future, streamlining is recommended to improve program efficiency:

- Program proposals should consider allowing approved contractors to co-market the program to increase uptake, as per the model applied in the California Market Access Program (CMAP).
- Do not require the purchase of extended warrantees to reduce program costs across all pilots.
- Remove the bill-neutrality requirement for owner-occupied dwellings. Allow for full financing of the upgrades in cases where the participant has a verified ability to pay the decarbonization charges, even when there is an increase to their overall bill payments.

- Longer-term TOB programs will need an M&V approach that balances reliability and customer trust in the guaranteed savings assessment but is also practicable and cost effective to implement. The detailed M&V approach described in the Joint TOB Proposal should be compared to less complex and costly alternatives such as weather-normalized annual bill comparisons, to determine the optimal approach for a broader TOB program.
- Future pilots and field tests should articulate precisely how they will assess the value/benefits of the proposed M&V process against lower-cost alternatives and should outline how additional benefits and services – such as added space cooling – will be treated in the M&V and bill neutrality approach.

3 **Recourse for Non-Repayment:** The Joint TOB Proposal adequately assessed the subject of disconnection as a security against repayment, and we do not have any recommendations for updates to this topic.

4 **Capital Sourcing:** While the proposed pilots use ratepayer money and internal capital in place of third-party capital, any proposed pilot program should include analysis and features that facilitate access to third-party capital following the pilot period. At the very least they should support the use of ratepayer funds, if those are to be used for a full program:

- Future proposals should include capital sourcing considerations within each pilot/program assessment. This includes assessing the impact of - and customer reaction to,
    - Charging interest rates;
    - Identifying how various TOB features and outcomes may match potential third-party capital sourcing requirements (such as Justice40); and
    - Assessing the nature and extent of default and delinquency losses from all sources (including vacancies and equipment malfunction).
- Future proposals should consider the impact of using internal capital on total cost-recovery and customer rates versus using ratepayer money. At the same time, determining the impact of TOB investments on the IOU debt-to-equity requirements, whether with IOU or third-party capital, should be assessed and reported on to provide direction for future capital sourcing.
- If ratepayer funds are to be used, where possible, they should be accessed by reallocating existing PPP funds from other underperforming programs rather than increasing the current PPP charge.
- Finally, the investment capital budgets, and projected participation levels of the individual pilot programs as part of the Join TOB Proposal are relatively low. It is possible that, if approved, these pilots could be more attractive than anticipated, and/or that participants will finance larger than expected upgrades. Future proposals should indicate if/how they intend to access more investment capital if this is the case.

5

Cost-Effectiveness: The proposal notes that the measures included in the pilots will struggle to meet a cost-effectiveness threshold, particularly if savings are the sole consideration of the benefits. Moreover, no indication is provided as to how the pilots will assess their impact on EE portfolio cost-effectiveness to justify the long-term use of ratepayer funds.

- To address the first challenge, we recommend removing the "bill neutrality for all" direction for future program proposals. This would allow participants with a demonstrated ability to pay an opportunity to finance a greater portion of the upgrade on their bill, even if bill neutrality is not met. Bill neutrality should however be maintained for LMI participants, and other vulnerable groups as appropriate.
- We recommend that future proposals consider their ability to support EE portfolio cost-effectiveness by demonstrating TOB's ability to expand uptake of existing incentive programs or support new savings. The evaluation plan should also assess the cost-effectiveness of the program itself from a TRC perspective, as well as accounting for non-energy impacts, GHG and societal benefits.

6

Implementability: The Joint TOB Proposal outlines most key functions and processes needed to run the TOB pilots. Some areas are not entirely clear however, and potential alterations that could improve the pilot implementation and impact.

- The SVCE[27] and SoCalGas proposals do not include significant budget lines to upgrade their billing system IT, while SCE and SDG&E both note that there would be significant billing system IT upgrade costs associated with the TOB pilots. None of the proposals give specific details on what aspects of their billing systems needs to be updated, and whether these updates would be sufficient to support a long-term TOB program. Future proposals that include a request to recover costs associated with adding TOB functionality to the billing system, should clarify the nature of these investments and their long-term viability to support a TOB program.
- SVCE will field test an M&V system via their field test with TECH. Rather than waiting for SVCE to provide the results of its field test, future proposals should test a lighter, less costly M&V approach (such as weather normalized annual billing comparisons). This will compare the relative merits associated with the M&V costs, and their impact on participant trust in the program.
- Future proposals should require that the property owner is responsible for equipment maintenance (as is outlined in the current SCE proposal) and for purchasing their own extended warrantee (if they so desire) rather than encumbering the TOB programs with these costs and long-running

[27] SVCE customers are billed for energy services from PG&E, who notes that they are currently starting a bulling system upgrade and will prepare a cost-estimate for including TOB automation in its updated system.

complexities. The TOB financing agreement can stipulate the maintenance requirements that must be upheld to maintain the bill savings guarantee. This can be as simple as following manufacturer guidelines on the relevant equipment.

7 **Key Technologies:** In addition to energy savings equipment, future programs should actively look to include other electrification equipment such as panel upgrades, EV charging, batteries, and solar PV.

8 **Transferability:** Overall, the question of decarbonization charge transferability to future property owners or tenants is well articulated in the Joint TOB Proposal. However, there is room for further precision that may improve the pilot designs. Future proposals should provide:

- Details on how payment pauses will be treated. The current proposal determines these on a case-by-case basis during the pilot. While all disruption scenarios can not be forecast, there can be more discussion on how long to extend the repayment period, and the duration before claiming a loss. Each option could have an impact on the TOB program implementation.
- Further details on how disputes will be handled related to transfers at rental properties, specifically in cases where the new tenant claims to have not been informed of the decarbonization charges.

9 **Pilot KPIs:** Overall, the pilots are a valuable opportunity to test various TOB program design features. The current design focuses largely on a range of technical and logistical aspects of the TOB pilots, but future proposals could benefit from testing a broader range of program settings and financial considerations to collect the evidence needed to attract sustainable sources of capital. Moreover, broadening the TOB assessment could also test customer reaction and willingness under various financial features.

- More detailed financial metrics should be established to be used in discussion with third-party capital sources. One example would be to expand the program's LMI monitoring to align with the GGRF LIDAC definitions, and track participation on these bases. Testing participation of means-qualified subsidized tariff customers (CARE, FERA etc.) would also help to this end.
- Detailed tracking of all forms of default, delinquencies, and non-payments should be required to generate robust financial analysis and risk profiles for the pilots. Other opportunities include testing the impact of interest rates on customer adoption in the program and accurately tracking GHG impacts. Both of these are useful to demonstrate the value of the TOB program to third-party investors.
- Effectiveness and benefit of the robust M&V process as described in the Joint TOB Proposal, when compared to simpler, and less costly processes to assess first year bill savings, should be considered.

- Consider a longer pilot period, or an approach to extend the pilots when running. Financing programs often take a significant amount of time to set up, and to gain recognition in the market before they achieve notable participation. The proposals should indicate the feasibility, cost, and key metrics associated with a potential decision to extend the pilots in order that they can fully demonstrate the potential of TOB financing in the state.

APPENDIX

Appendix

Comparison Among Individual Proposals

SVCE / PG&E Proposal

Participant Eligibility	The proposed program targets moderate-income, single-family households with high bill savings potential. Renters would be eligible, with specific tenant protections to avoid financial burden or eviction risk.
Technology Eligibility	Heat pump water heaters, heat pump space heating and cooling, and comprehensive weatherization.
Budget	Not stated
Number of Projects Expected	125-250 projects
Timeline	Launch planned in Q1 2027, though is contingent on the readiness of PG&E's billing system. SVCE to launch a field trial with TECH in advance of this.
Billing Upgrades Required	PG&E is currently undergoing a multi-year billing system modernization process, which must be completed before program launch. Timing and scoping updates expected in late 2027. SVCE is able to begin a field trial, as a precursor, ahead of the PG&E billing upgrades.
Measurement and Verification (M&V) process	Proposal notes a desire to establish an M&V process for validating, one year after installation of upgrades, that the measure installed performs as designed and produces savings consistent with estimates. The proposal does not detail the proposed process.
Other	Collaboration with TECH team can add expertise in TOB financing models and other relevant areas, and may lead to financial contribution.

SCE Proposal

Participant Eligibility	The proposed program targets residential customers (renters and homeowners) in their service territory. Both single-family and multifamily residences eligible.
Technology Eligibility	Heat pump water heating, heat pump space cooling/heating, duct sealing, attic insultation and smart connected thermostats.
Budget	$7,190,000
Number of Projects Expected	Up to 200
Timeline	To become available for customers within 18 months from the date of a Commission decision authorizing the pilot.
Billing Upgrades Required	On-bill functionality to be build into SCE's billing system. Part of required budget ($1M).
Measurement and Verification (M&V) process	Testing SCE's proposed M&V model for measuring estimated and actual savings is a goal of the pilot. SCE is requesting that SVCE, as part of its field trial, explore a combination calculated/normalized meter energy consumption (NMEC)-site specific approach in order to inform the most cost-effective process and finalize their own M&V protocols. If SVCE does not do this, SCE will test the NMEC approach.
Other	Notably, the Property Owner would be responsible for purchasing optional extended warranties and for maintenance, unlike the other proposed pilots.

SoCalGas Proposal

Participant Eligibility	Single-family, owner-occupied residential homes. Renters not included.
Technology Eligibility	Weatherization (wall insulation, ceiling insulation, weather-stripping) and high-efficiency tankless water heaters. Note that there seems to be openness to including heat pumps as part of the eligibility measures.
Budget	$5,000,000
Number of Projects Expected	500
Timeline	SoCalGas to hire an Implementer immediately following the Commission's decision, and plans to ramp up efforts for 3-6 months before beginning the two-year pilot program.
Billing Upgrades Required	Existing billing system functionality exists via OMF and OBR programs, though some elements will need to be updated. For the interim, additional functions can be performed manually. Redesign of the billing system begins in Q1 2025.
Measurement and Verification (M&V) process	Proposal notes that they will follow the M&V process as proposed in the joint proposal (Appendix B of the Joint TOB Proposal).
Other	As a natural gas utility, SoCalGas is not covered under SB 1112, and may need additional legal clarification to be able to proceed in a timely manner.

SDG&E Proposal

Participant Eligibility	Owner-occupied, single-family homes, focusing on moderate-income households experiencing high energy usage. Renters not included.
Technology Eligibility	Residential heat pump and HVAC technology, as well as energy efficiency measures (air sealing, insulation, duct sealing, and smart thermostats).
Budget	$7,625,681
Number of Projects Expected	50-100 projects
Timeline	To be determined following the Commission's decision.
Billing Upgrades Required	Existing billing system functionality exists via OMF and OBR programs, though some elements will need to be updated.
Measurement and Verification (M&V) process	In addition to the joint proposal's M&V process (Appendix B of the Joint TOB Proposal), participating customers would also be enrolled in a "Residential Behavioural Program" to receive monthly home energy reports, to aid in monitoring of energy usage. Their proposal notes a desire to solicit, evaluate and field test other M&V methods to analyze usage and address variances in energy savings.
Other	Significant emphasis on customer education and protection.

TOB Programs in Other Jurisdictions

This section summarizes three existing TOB programs outside of California.

Program: Hawaii Green Energy Money $aver (GEM$)

Hawaii's GEM$ TOB program was launched in 2019 and provides long-term financing for up to 20 years. The program targets LMI households and does not use any underwriting criteria to determine eligibility. To date, they have not experienced any program defaults and have issues over 2,500 loans.

Table 4: Hawaii Green Energy Summary

Capital source	Various sources including state green infrastructure bonds, state general funds, and federal funding
Repayment mechanism	Tariff On-Bill
Origination and underwriting	Must be current customer of participating utilities Have minimum 6 months of history with the utility Households must be Low and Moderate-Income (LMI), defined as <140% Area Median Income (AMI)
Application to rural and low-to-moderate income groups	Only LMI households are eligible to participate in the program
Application of credit enhancements	None
Customer protection features	Borrowers must use approved contractors who are verified for compliance. Contractors are capped in the rates they charge for installed measures and must conduct post-installation energy monitoring.
Cost-effectiveness requirements and assessments	Estimated bill savings must be between 5%-15% depending on number of disconnection notices borrower has received.

Program: Vermont Weatherization Repayment Assistance

Vermont's Weatherization Repayment Assistance program was recently launched as a pilot program, capitalized with $9M from the State. The program targets LMI households with a specific threshold of 120% Area Median Income (AMI) or less. There has been relatively limited participation to date, with program administrator noting that many of the proposed measures/technologies could not be included as part of the program due to cost-effectiveness targets.

Table 5: Vermont Weatherization Repayment Assistance Summary

Capital source	State funding
Repayment mechanism	Tariff On-Bill
Origination and underwriting	Look at bill repayment history to ensure no more than one missed payment within last 12 months
Application to rural and low-to-moderate income groups	75% of program funding must go towards households under 120% AMI. Households under 80% AMI are eligible to participate but are encouraged to use state program that offers free weatherization services.
Application of credit enhancements	None
Customer protection features	Energy audit must be done to identify potential weatherization measures and potential savings. Only approved contractors can be used.
Cost-effectiveness requirements and assessments	Monthly charge for financing new measure must be no more than 90% of the savings (must be cash flow positive).

Program: Orcas Power & Light Cooperative (OPALCO) Switch it Up!

The OPALCO program was launched in 2019, offering TOB to both residential households and businesses. The program does not require credit checks or traditional underwriting criteria. To date, the program has financed over $13M in projects, primarily in the residential sector. As part of the requirement to access RESP capital, the program has set up a loan less reserve.

Table 6: Orcas Power & Light Cooperative Summary

Capital source	USDA Rural Energy Savings Program (RESP)
Repayment mechanism	Tariff On-Bill
Origination and underwriting	Look at payment history and delinquencies with OPALCO and calculates internal credit score based on it
Application to rural and low-to-moderate income groups	No special considerations. May require autopay if calculated internal credit score is low.
Application of credit enhancements	Loan loss reserve
Customer protection features	Includes list of recommended contractors for customers to use but does not specifically endorse them. Ensures contractors that are installing measures are licensed.
Cost-effectiveness requirements and assessments	No specific requirement but only qualifying measures are eligible for the program.

Full Scoring Rubric

Equity

To meaningfully address equity, a proposed program will consider how to best reach consumers in underserved communities, such as low-to-moderate income households (LMI), disadvantage communities and rural customers.

There may be a variety of ways that programs address questions of equity, though one key way to encourage participation of underserved groups is to ensure that program marketing and outreach has considered strategies to engage with underserved communities, and that the underwriting and eligibility criteria is flexible enough to allow their participation. For example, accounting for how individuals with lower-than-average credit scores can be successful in their applications (e.g. through alternative underwriting criteria such as bill payment history). As well, programs that guarantee or provide high certainty regarding monthly energy savings may be more attractive to underserved groups.

A proposal that has fully and appropriately addressed equity will have considered the barriers that underserved groups face in accessing consumer financing programs, ideally particularly looking at their own customer base (i.e. renters, LMI customers, other underserved groups). The proposal should consider eligibility criteria, consumer protection measures, internal targets, and other design elements and speak to how these elements will encourage participation of equity-seeking groups.

Consumer Protection

Consumer protection features are designed to safeguard customers from fraudulent or unfair practices in the marketplace. For example, many consumer financing programs in the U.S. require consumers to install pre-approved eligible measures (e.g. high efficiency HVAC or DHW) and some require energy savings-to-investment ratios of greater than 1. This creates certainty for the consumer that the increased cost of paying for the measure over time will be outweighed by the cost savings brought by decreased energy use.

Another widespread consumer protection practice is the requirement for borrowers to use contractors from a pre-approved network in order to ensure that contractors are educated about the program, properly trained to install and maintain equipment, and not involved in fraudulent schemes or misleading advertisement about the available measures or financing.

Program administrators may also choose to set caps on what the contractors can charge for installation and the cost of the equipment. Some programs may also require that the contractor is responsible for maintenance and repairs over the financing term for further consumer protection.

A proposal that has fully and appropriately addressed consumer protection measures will consider ensuring the consumer's ability to pay, that they have access to accurate and up-to-date information, and that contractors or other stakeholders involved in administering the program are not put in a position to take advantage of the consumer.

Recourse for Non-Payment

Many on-bill programs include the threat of utility service disconnection to encourage repayment from borrowers. However, programs that include the possibility for disconnection do not experience significantly different default rates than those without such threats. This raises questions on their effectiveness in program design. Further, the risk of disconnection introduces several potential risks for residents, utilities, and program administrators.

Although some may view including disconnection as necessary to attract low-cost private capital, several alternatives exist that can help reduce the cost of capital. These include encouraging competition amongst private lenders to lower interest rates, requiring autopay on bills, and implementing credit enhancements like interest rate buy downs or loss reserves.

A proposal that has fully and appropriately addressed consequences for non-payment will have considered the benefits and risks to requiring shut-offs, and will have considered alternative methods to encourage repayment and/or reduce risk for lenders. It will also have considered how partial bill payments will be allocated between energy charges, and equipment repayment, and will account for how the recourse, potential disconnection, and payment flexibility may vary by customer group (i.e. low income vs. higher income customers).

Capital Sourcing

To provide financing, programs need to source capital that can then be lent out to program users for beneficial electrification projects. As we understand, the project proposal is currently interested in using ratepayer funds for capital sourcing, with some interest in seeking third-party private capital following the pilot phase of the project.

Private capital would typically come from a traditional financial institution, credit union or other lender. Using private capital may add challenges, as the program administrator may need to take on the risk of paying back the funds to the lender and take on additional costs to do so, depending on the terms of the agreement. Public capital may be available for beneficial electrification financing programs at the state, regional or federal level.

In the case of an on-bill lending program like TOB, ratepayer or shareholder funds may also be used as a source of capital. This model can give the utility more flexibility and control of eligibility and underwriting terms, which can help improve access to groups who would typically not qualify for a loan from private lenders.

Depending on the source(s) of capital used, there may be additional requirements – for example, ratepayer funds would likely require the program to adhere to California's cost-effectiveness requirements (see below).

A proposal that has fully and appropriately addressed capital sourcing will have considered potential sources of capital, the benefits and risks of their proposed capital source, and actions they may take to reduce identified risks or adhere to requirements associated with the capital source.

Cost-Effectiveness

Cost-effectiveness is important in ensuring ratepayer funds are directed to projects that yield the most energy savings relative to their costs, but it's crucial to strike the right balance to ensure accessibility and encourage wider eligibility of beneficial electrification measures. Strict adherence to a cost-effectiveness target, particularly over a short loan period, may significantly reduce the number of eligible measures that a program is able to offer to participants.

Not all consumer financing programs include cost-effectiveness tests for individual customer projects, but many have internal standards for cost-effectiveness which affects their lists of eligible measures.

Programs also may consider cost-effectiveness from the perspective of the energy system. This is guided by state-wide tests for cost-effectiveness. Note that cost-effectiveness may not be required for a pilot program, but programs should provide a pathway to meeting cost-effectiveness criteria should the program be adopted beyond the pilot phase.

Cost-effectiveness tests can be important to ensure consumer affordability and to guide ratepayer funds to their most valuable uses. A bigger challenge is offering a variety of measures and maintaining bill neutrality. This is a key differentiator between programs that strictly focus on energy efficiency (e.g. programs that aim to reduce energy use) and programs that seek to include a wide suite of beneficial electrification measures. Energy efficiency measures, by definition, will reduce household or building energy use, corresponding to lower electricity supply charges. However, beneficial electrification measures outside of energy efficiency –such as installation of an electric vehicle charger – can create additional energy usage and demand, which can lead to higher monthly utility supply charges. To design a program that meaningfully includes beneficial electrification measures outside of energy conservation, can be challenged to achieve bill neutrality. For TOB, bill neutrality requires that the value of energy savings be at least equal to the monthly cost of loan payments.

A proposal that has fully and appropriately addressed cost-effectiveness will have considered the trade-offs associated with:

- strict adherence to bill neutrality,
- implications for beneficial electrification technologies, and
- solutions to mitigate any unintended consequences of design decisions on cost-effectiveness (i.e. stronger consumer protections, longer borrowing periods, etc.).

It also would consider pathways to meeting system-wide cost-effectiveness tests. For example, balancing the use of rate-payer funds with 3rd-party sources, and assessing the cost-effectiveness of the financed upgrades considering the full range of system and societal benefits.

Implementability

A program's implementability may relate to administrative cost and complexity associated with the set-up and operation of the program, as well as its scalability and other potential bottlenecks, such as required legislative or regulatory changes.

Administrative cost and complexity in a TOB/IUI proposal may arise if IOUs need to create new billing systems or add internal capacity to assess and decide on consumer program applications. Depending on existing capacity and expertise, this burden can be alleviated by partnering with experienced consumer financing program administrators.

A proposal that has fully and appropriately addressed implementability will have considered the internal requirements for IOUs and SVCE to offer the new program, including any potential bottlenecks and how they can be overcome to ensure timely roll-out of the proposed program. The proposal should also consider scalability and projected growth of the program, and whether this will create a need for additional capacity internally. Moreover, if the TOB is presented as a Pilot, the proposal will need to address how the Pilot will result in information and conclusions that can allow the Pilot to effectively to convert to a program, if successful. Finally, proposals should consider and address any potential legislative and regulatory changes that may be required to implement the proposed program.

Inclusion of Key Technology Types

Program design decisions related to cost-effectiveness, loan terms (particularly lengths of loan periods) and other eligibility measures can greatly influence the technology that is offered through beneficial electrification consumer financing programs.

Unintended consequences of strict adherence to cost-effectiveness may result in the scoping out of measures outside of energy efficiency. For example, installation of a zero-emissions vehicle charger is likely to increase monthly energy use – and therefore monthly energy costs – so would not be eligible for a program with strict adherence to cost-effectiveness.

A proposal that has fully and appropriately addressed inclusion of key technology types will have considered how program design decisions will impact the list of eligible measures that will be available through the program, and if there are important measures that will be missing as a result of those decisions. If key measures are scoped out, the program should propose alternative mechanisms to provide a pathway to offering these measures to consumers.

Transferability

A key feature of TOB programs that differentiates them from other on-bill consumer financing programs is that the loan is tied to the meter, rather than the individual. This can impact many aspects of the program positively – for example, it allows renters to be eligible, rather than just homeowners.

However, this aspect of the program can also raise questions related to transferability of the loan: for example, the procedure for when a homeowner sells the home, or a new tenant moves in.

A proposal that has fully and appropriately addressed transferability will have considered the process for transferability of the loan upon sale or new occupancy of the home, and will address key concerns that homeowners may have when applying for a TOB program (i.e. additional complexity at the time of sale).

Pilot KPIs

In order to be effective as pilots, program should be set up to measure key performance indicators (KPIs) that will produce data for evaluation at the conclusion of the pilot period (two years). The pilot activities should clearly test the ability of TOB to address specific barriers to efficiency and electrification. KPIs should reflect the success of those activities.

KPIs should be adequately measurable, relevant to the program's continuation, and should be able to provide helpful data within the two-year pilot period. The KPIs should be structured to inform the future of the program: whether it should continue past the two-year pilot period, if key program design changes are necessary, and what challenges may be faced in scale-up of a larger program or a replicated program in other jurisdictions.

A proposal that has fully and appropriately addressed the pilot concept and KPIs will have considered the key information required to make a future decision on the pilot's operation and will be prepared to collect measurable information to that end.

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This report was prepared by Dunsky Energy + Climate Advisors, an independent firm focused on the clean energy transition and committed to quality, integrity and unbiased analysis and counsel. Our findings and recommendations are based on the best information available at the time the work was conducted as well as our experts' professional judgment.
Dunsky is proud to stand by our work.

(END ATTACHMENT A)