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Ardenna Energyâ€™s Response

Additional submitted attachment is included below.

Ardenna Energy's Response to California Energy Commission's request for information submitted on behalf of the TECH Clean California Inclusive Utility Investment Pilot program team.

Docket Number: 23-DECARB-02

Subject: Inclusive Utility Investments Program

To the California Energy Commission:

Ardenna Energy respectfully submits comments in response to the California Energy Commission's request for information on Inclusive Utility Investments Program. Comments are submitted on behalf of the Technology and Equipment for Clean Heating initiative ("TECH Clean California" or "TECH") program's Inclusive Utility Investment (IUI) Pilot team. The IUI Pilot team includes Energy Solutions, Ardenna Energy, Vermont Energy Investment Corporation, Frontier Energy, Building Decarbonization Coalition and Silicon Valley Clean Energy.

TECH Clean California is a statewide market transformation program driving adoption of heat pump space and water heating technologies through incentives and regional pilots, including the TECH Inclusive Utility Investment Pilot. The following comments derive from the IUI Pilot team's over the past two years designing an IUI pilot in partnership with Silicon Valley Clean Energy (SVCE). That pilot proposal is currently undergoing regulatory review at the California Public Utility Commission.

1. What barriers (such as statutory, regulatory, or financial barriers) do electrical corporations, community choice aggregators, and other eligible entities face in accessing state and federal financing for IUI?

   Electrical corporations face multiple potential challenges:

   - **Tariff authority.** Approval of a tariff for inclusive utility investments is fundamental because it assures cost recovery on terms approved as reasonable and just by utility oversight authorities. In the CPUC's Clean Energy Finance Options (CEFO) proceeding (R.20-08-022), the CPUC issued a Proposed Decision on June 9, 2023, in which it directed the Investor-owned Utilities (IOUs) to develop a joint proposal for a Tariffed On-Bill (TOB; aka IUI) program modeled on the design proposed by Silicon Valley Clean Energy, submitted on June 15, 2022.[1] The proceeding remains open to further develop the record and consider the IOUs' TOB proposals at a later date. Until such proposals obtain regulatory approval, electrical corporations, community choice aggregators, and other eligible entities lack a clear path forward for accessing state and federal financing for IUI.
   - **Automatic application of tariff terms to successor customers.** An IUI tariff needs to apply automatically to successor customers. These terms currently require regulatory approval (which the CPUC appears poised to grant). Automatic application to successor customers is required to protect customers and allow affordable financing for long lived measures (especially space and water heating measures which cannot easily be removed when

[1] See https://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=486752275

occupancy changes). Automatic succession of the tariff is a core part of what makes IUI investments distinct from personal debt and allows IUI to serve rental households. On this issue, SCE has noted in the CEFO proceeding the need for coordination with state and local laws governing landlord / tenant issues and the rights of tenants and subsequent purchasers of the property with the meter with which the obligation is associated.

- **Ownership of the physical asset.** Under the default IUI model, as implemented under the Pay As You Save trademark, the utility would retain ownership of the physical asset until cost recovery is complete. This structure raises liability questions for the utilities stemming from owning assets behind the customer meter. It also raises potential complications with home resales related to how a home should be valued when certain core assets are under third party ownership. Ownership of the asset by the property owner is preferable but may require regulatory clarity on cost recovery (for example, treatment of the investment as "regulatory asset" as opposed to a physical asset).
- **Consumer lending laws.** IUI investments are explicitly structured to avoid imposing consumer debt. This is achieved by constraining the cost recovery charge to be less than the expected bill savings, plus a list of other customer protections (some recommended customer protections have been summarized below). The net result is that participating customers can expect a net reduction in their overall utility charges, even after accounting for the cost recovery charge. Despite these safeguards, there remain questions about whether the Department of Financial Protection and Innovation will recognize such programs as not being subject to California's consumer lending laws. The IOUs request an opinion from the DFPI that IUI, as a tariffed service, does not require compliance with California lending laws, including, but not limited to, the Debt Collection Act.
- **Utility rate of return.** There remain questions about whether utilities should earn their customary rate of return for IUI investments or whether the cost of third-party capital should be treated as a pass-through cost. The answer may depend on whether the capital comes from a private source akin to other utility capital or is provided or secured by a state or federal government. On the one hand, IUI investments should pose little or no financial risk to utility shareholders; on the other hand, the mere existence of IUI on the utility's balance sheet may pose constraints on the utility's ability to secure capital for other purposes.
- **Limitations on the exercise of utility disconnect authority on behalf of third parties.** Some of the barriers discussed above could potentially be addressed if a qualified third party (e.g, a state or local public agency, Joint Powers Authority, or Community Choice Aggregator) could be the borrower of record for any federal or privately-sourced capital and the same entity could record the investments at the customer location on its balance sheet. This solution would require the utility to exercise its tariff and disconnect authority on behalf of the qualified third party, which currently violates California Public Utilities Code 779.2a. That code reads: "No electrical, gas, heat, telephone, or water corporation may terminate residential service for nonpayment of any delinquent account or other indebtedness owed by the customer or subscriber to **any other person or corporation or when the obligation represented by the delinquent account or other indebtedness was incurred with a person**

or corporation other than the electrical, gas, heat, telephone, or water corporation demanding payment therefor." *(Emphasis added)*

- **Successor customer notification requirements.** While Senate Bill 1112 addresses customer notification requirements, SCE has sought additional guidance from the CPUC and input from stakeholders regarding whether the notice protocol is sufficiently robust and enforceable to allow for automatic application of tariff terms to successor customers in compliance with all applicable laws.
- **Capital sources.** In the CEFO proceeding, SCE sought guidance as to whether it is prudent to pursue additional program funding options that utilize third-party debt, through securitization legislation, or public funding for IUI investments.
- **Achieving scale commensurate with funding opportunities.** Multiple pots of federal funding offer opportunities for capitalizing IUI investments in California. These include Greenhouse Gas Reduction funds, United States Department of Energy (U.S. DOE) Loan Program Office loan guarantees, Title 17, and others. The ability to offer a scalable mass-market solution poses a challenge to accessing large financing options, in particular the U.S. DOE Loan Programs Office (LPO) and commercial bank finance that LPO programs are intended to bridge toward. LPO itself has lending authority of $390 Billion, while global cleantech finance surpassed $1 Trillion in 2022 for the first time.[2] Such large capital flows require large deal sizes many orders of magnitude above individual IUI measures in individual homes. LPO has a minimum deal size of $100 million. Similar expectations exist in commercial bank finance. This deal size is not a fundamental blocker for a state as large as California with its 39 million people and 13 million homes but remains a difficult hurdle for any one electrical corporation (whether investor-owned or publicly owned), community choice aggregator (CCA), or other market actor within California. Although California's dynamic and diverse markets are normally a strength, in this case, fragmentation prevents sufficient aggregation to address the deal size challenge for IUI within California. A critical piece of the puzzle to address deal size already exists in the form of Virtual Power Plants (VPPs) which aggregate individual IUI measures, and are already well known to provide grid benefits, but the current VPP market has been unsuccessful so far in drawing in LPO financing for IUI measures in California. Specific examples are outlined below in response to Question 3.
- **Customer economics.** In many cases, customer bill savings from clean energy investments remain marginal. Field conditions that can include mild weather, high installed costs, and high retail electricity prices diminish the savings from distributed energy upgrades, resulting in low levels of IUI investment dependent on high upfront copayments at such locations unless there are other value streams, incentives, or assignable rebates that could buy down that copayment. Low IUI investment opportunities and high copayment requirements further exacerbate concerns about customer uptake rates and California's ability to scale IUI investments to a level that would unlock federal investment opportunities. Electric rate

[2] See https://about.bnef.com/blog/global-low-carbon-energy-technology-investment-surges-past-1-trillion-for-the-first-time/

reform and rate affordability will be key to the success of IUI programs in scaling electrification.

- **Regulatory patchwork.** Regulation of California's IOUs, POUs, and CCAs is currently fragmented in a way that does not lend itself to unified and consistent statewide program administration. This issue is particularly problematic in the case of program models that seek to deliver both gas and electric benefits to customers served by an IOU for one fuel and a POU for another.

Community Choice Aggregators face distinct barriers to adopting IUI investment models.

- **Limitations on tariff authority.** CCAs lack the authority to adopt a tariff that automatically applies to successor customers, as necessitated in the IUI investment model. As a work-around, CCAs can implement IUI financing in partnership with the IOU, provided the IOU is willing or directed by regulators to adopt and administer the tariff, and the IOU and CCA implementer develop billing system solutions.
- **CCA charges treated as third-party debt.** If the capital is provided by the CCA (either its own capital, or capital it secures separately from the IOU), it may face policy barriers. Under Public Utilities Code § 779.2(a), CCA charges are treated by the IOU as third-party debt rather than charges for essential services. This treatment forecloses the ability of the IOU to exercise its disconnection authority for nonpayment of delinquent CCA charges.

The combination of these two issues currently necessitates that IUI investments must be an IOU investment, not a CCA investment.

2. What barriers do electrical corporations, community choice aggregators, and other eligible entities face in implementing and administering IUI programs?

- **Data access.** Single fuel utilities face data access issues in implementing and administering IUI programs that incorporate measures that impact multiple fuels (including but not limited to fuel switching). Because IUI constrains cost recovery charges to be less than the expected bill savings, multiple fuel measures require visibility into the combined impacts on the customers electric and gas bill. The current lack of data sharing protocols between utilities with shared customers poses an impediment in this context.
- **Billing system upgrades.** During the TECH team's early outreach to multiple IOUs and POUs about the prospects of partnering with TECH on an IUI pilot, a recurring concern was the cost and time required to upgrade billing systems to support IUI administrative processes. The large IOUs may have an advantage in this respect because they have already made substantial investments to support On-Bill Financing programs. It remains to be seen how far the utilities can go in repurposing those functions to support IUI tariff administration. Lingering uncertainties about customer acceptance rates and program scalability raise further concerns about making large upfront financial investments in supporting information systems.
- **Diversity of utility governance structures.** As noted above, statewide aggregation of IUI measure deployment through VPPs for LPO deal size purposes would be a challenge for a

single electrical corporation, CCA, or other market actor to administer as there is a significant diversity of governance and programmatic structures throughout the state.

3. Please provide information on available state and federal IUI programs and similar programs, if any. What are the lessons learned from these programs? What sources of funding do these programs use? Please provide relevant case studies, program results, reports, and participation data if possible.

    - **US EPA** maintains a current summary of Inclusive Utility Investment program information at https://www.energystar.gov/products/current_program_information.
    - **LibertyHomes** has compiled a summary of enabling regulatory authority for IUI programs as of June 25, 2021.[3]
    - **Southeast Energy Efficiency Alliance (SEEA)** has compiled a set of program case studies as part of its *Utility Guide to Tariffed On-Bill Programs* (2020).[4]
    - **SCE and PG&E VPPs.** Regarding VPPs and LPO deal size issues, it is of note that SCE and PG&E have successfully implemented VPPs in partnership with Tesla, proving out the grid support capabilities of the VPP technical model. However, even the state's two largest electric utilities and the global leader in home battery systems combined did not clear the LPO deal size threshold. While an impressive start, the combined deal size from these two programs would have been approximately $60,000,000. The only VPP deal announced thus far by LPO is a nationwide deal with Sunnova. These projects demonstrate both VPP market pull in California and LPO appetite for VPP deals, but at the same time point to the common thread of a deal size barrier to LPO financing for IUI within California.

4. What technical assistance would be most beneficial to electrical corporations, community choice aggregators, and other eligible entities to access state and federal financing for IUI?

    Any technical assistance that could address the barriers to electrical corporations and /or community choice aggregators, as described above in response to questions 1 and 2, would be beneficial and welcome. The TECH IUI pilot team stands ready to support the CEC in providing such technical assistance.

5. What decarbonization measures are most appropriate for existing IUI programs? Are measures required to be cost effective? Should programs that access state or federal financing be required to ensure participants realize utility bill savings? What, if any, consumer protections are required to improve access to financing or investment solutions?

Appropriate Measures

IUI is a technology-neutral inclusive investment solution for the full suite of customer-facing decarbonization upgrades that can include energy efficiency, building electrification, rooftop solar,

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[3] See https://www.libertyhomes.org/post/6-25-21-policy-precedents-for-pay-as-you-save-and-inclusive-utility-investment

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

and energy storage. Any improvement that contributes to lower customer bills and greenhouse gas (GHG) emissions could be capitalized via IUI investments.

Technology components of proposed measure packages for the TECH IUI pilot

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

Measure Cost Effectiveness and Customer Bill Savings

IUI decarbonization investments will almost always need to maximize incentive contributions from other sources to arrive at project financial plans that are accessible to a broad cross-section of customers without cost-prohibitive co-payments. Those incentive contributions are merited on policy grounds by the array of societal benefits decarbonization investments can produce, including but not limited to GHG mitigation, grid benefits, improved health and safety outcomes, climate resilience, social equity, workforce, and economic development. These different incentive mechanisms will generally come with pre-existing cost effectiveness requirements and other preconditions so there is no need to layer on additional requirements.

The operative cost effectiveness test that is new in an IUI context is the requirement for positive customer outcomes across all affected fuels. This is an essential feature. Customer bill savings is the source of value that generates the IUI cost recovery opportunity. Constraining the cost recovery charge to be less than the expected bill savings is an essential feature that differentiates IUI from consumer debt-based solutions, including On-Bill Financing. In the absence of positive bill savings, decarbonization investments should either be 100 percent publicly funded or should be offered only to customers with the financial means to take on new personal financial obligations (i.e., personal debt).

It is worth noting that due to limited incentives targeted to customers for participation in demand response programs, installation of controls required for demand management do not yield a large payback and can be difficult to incorporate into programs that require cost effectiveness thresholds or that constrain cost recovery to bill savings. However, these devices may be required to secure incentives from the CPUC Self-Generation Incentive Program, and some – such as thermostatic mixing valves – are best installed at installation or commissioning rather than as a retrofit. The Energy Commission should consider what role these devices have in an IUI program and where additional funding or support to customers may be required.

Customer Protections

Consistent with Silicon Valley Clean Energy's proposal to the CPUC on June 15, 2022, the TECH Team recommends the following set of customer protections:

- **Customer-focused solutions.** The Program adopts the operating principle of "First, do no harm." All projects must be shown to (1) save customers money over time; and (2) deliver comparable or improved levels of energy services. The Program will only authorize upgrades estimated to reduce utility bills for participants after copayments, rebates, and incentives have been taken into account.
- **Funding priorities.** The Program will assist the customer in maximizing access to eligible grants and subsidies to minimize Program Service Charges and maximize customer bill savings. Low-income customers will be preferentially directed to direct install services for which they may be eligible.
- **Cash positive outcomes.** Program Service Charges will be constrained to be less than 80 percent of the customer's predicted annual savings deriving from the investment.

- **No liens, foreclosures, or equipment repossession.** TOB participants are never at risk of losing their home or having installed upgrades repossessed.
- **Tariff Terms.** The tariff will incorporate the following customer protections:
    - The Program Service Charge will be a fixed amount.
    - Duration of charges will not exceed the project's estimated useful life, calculated as the average of measure use lives, weighted by their respective contributions to expected energy savings.
    - Mid-term increases in Program Service Charges are not permitted.
    - In the event of upgrade failure, charges are suspended until upgrades are repaired and returned to service. The Program will terminate Program Service Charges if an upgrade fails through no fault of the occupants and is not repaired.
    - Charges are suspended for vacancy if meter is shut off.
    - Repairs or vacancy may extend the duration of charges but not increase the monthly payment amount.
    - In the case of third-party ownership, Program Service Charges cease when costs are fully recovered, and upgrades may not have end-of-lease charge or transfer of ownership financial obligation.
    - Current and successor customers will be offered a mechanism for early payment of the remaining Program Service Charges necessary to achieve full cost recovery.
- **Disconnection for nonpayment.** For a customer, disconnection of an essential service in accordance with a CPUC and State policy is the only consequence of non-payment, and it is only specified because it is the security used to assure cost recovery for regular utility services. Because the **IUI** investment is structured to reduce customer energy burdens, it reduces the customer's risk of utility disconnection. The Program Service Charge is a utility service charge for essential services, and thus, existing customer protections relating to disconnections for nonpayment apply equally to the TOB tariff as to the rest of the customer's regular utility bill. To the extent that CPUC policies limit or prohibit disconnections for nonpayment as a collections method, such protections apply equally to the TOB tariff.
- **Equipment operations and maintenance.** The Program takes responsibility for ensuring that improvements perform as designed, whereas the property owner and occupant must take responsibility for proper operations and maintenance in keeping with manufacturer's recommendations. The Program will include extended equipment warranties to help ensure that customers realize benefits from the improvements throughout the cost-recovery period.
- **Site-specific energy savings estimate.** To ensure modeled energy savings provide an accurate estimate on which to base the cost-recovery charge, the Program will use field-tested software calibrated with at least twelve months of the site's historical billing data, the actual cost for identified upgrades, the existing equipment and other conditions of the building or home.

- **Customer choice.** Participants are allowed to contribute a copayment for upgrades so they have the option of receiving upgades in addition to what the estimated savings alone would support.
- **Site specific quality assurance, quality control, and measurement and verification.**
    - TOB upgrades will be commercially proven technologies that meet program standards for energy efficiency, performance, and reliability.
    - The Program will conduct quality-control inspections and acceptance testing of equipment installations on at least a sampled basis.
    - With permission of the occupant, energy usage for all affected metered fuels will be monitored to help ensure consumption is in line with expectations and to identify anomalies.
- **Customer protections against performance risks.** In cases where project monitoring shows probable cause to believe that energy savings from Program-installed improvements falls short of predictions, the Program will offer appropriate remedies for financial relief, which may include repair or replacement of equipment, bill credit for over-charges in prior months, and/or discounted Program Service Charges for future billing cycles. Program initiation of corrective actions will be both proactive and responsive to customer complaints.
- **No sales agent conflicts of interest.** The Program adopts a contracting and service delivery model that removes opportunities for abuse that could occur if the sales agent's compensation were linked to the scope and profitability of the project. The Program avoids these risks by designating a Program Operator as the Program Sponsor's agent and assigning the Program Operator full responsibility for customer acquisition and project scope development. Installation costs are determined according to a fee schedule that is negotiated programmatically rather than project by project. The Program's sales agent compensation is decoupled from project work scopes.
- **Tenant protection.** Program will require participating landlords to contribute a co-payment for water heating and space conditioning upgrades to reflect the landlord's ongoing responsibility to provide those services.
- **Tenant savings must be material.** In cases where the available TOB capital, as determined by the expected lifecycle savings, exceeds the tenant-share of the investment (i.e., the difference between the total project installed cost and the landlord's copayment), then the TOB contribution will be capped at the tenant's share.
- **Hardship exemptions.** Customers with pre-existing Program Service Charges who find themselves in temporary financial difficulty may request a hardship exemption from the Program Service Charges. The Program will establish clear criteria for granting such exemptions in the Program Regulations. Exemptions will generally for a limited term with an option to extend as needed. If granted, the Program will suspend Program Service Charges for the exemption period. These suspended charges will be treated as uncollectible.

- **Customer notifications at time of home resale.** In keeping with notification provisions in Senate Bill 1112 (Becker) prospective building purchasers will be notified via a notice recorded with the County Clerk that the building has been upgraded through a utility program for which cost recovery is still underway. When a successor customer applies for new service, the Program will send the new customer a letter explaining that the property has been improved for resource efficiency, outlining the benefits and obligations of the tariff that applies to the location until the utility's costs are recovered. The disclosed information will include:
    - Types of upgrades made;
    - Upgrade in-service date;
    - Cost of the monthly charge or directions for obtaining cost information from the program sponsor;
    - Expected annual bill savings or directions for obtaining savings information from the program sponsor;
    - Expected date of completion for cost recovery or directions for obtaining cost information from the program sponsor.
- **Notifications for Rental Units.** For upgrades to rental properties, landlords will be required to notify prospective tenants that the rental units under consideration have been upgraded for resource efficiency and lower operating costs. This requirement will be established as part of the Owner Agreement that the property owner signs.

6. What statutory changes are necessary to improve access to federal funding for financing or investment solutions?

- **An amendment to Public Utilities Code 779.2a** could potentially enable electrical corporations to exercise their tariff and disconnect authority to enable IUI investments on behalf of qualified third parties without requiring the utilities to:
    - Assert ownership of the physical asset behind the customer meter;
    - Maintain an asset on their balance sheet that impedes their ability to raise capital for other mission-critical investments; or
    - Require a rate of return on those IUI investments that aligns with earnings on other utility investments but exceeds the cost of capital from third parties, based on the exceptionally low risk these investments pose to capital providers.
- **Statutory changes to establish a unified statewide regulatory structure** would likely be needed to service an integrated IUI program for both IOU and POU customers. As noted above, statewide consistency would be an important enabling step to unlock large-scale capital from LPO and other sources. It would also simplify program participation for joint IOU / POU customers, thereby removing important barriers to participation.

7. Input on other topics welcomed.

Thank you for the opportunity to contribute this information. For more information about the TECH program's involvement with Inclusive Utility Investments, please contact Bruce Mast, Ardenna Energy, 510-435-1371 or bruce@ardenna-energy.com.