



BAY AREA CLEAN HOMES INITIATIVE – WORKPLAN

SECTION 1: OVERALL PROJECT SUMMARY AND APPROACH

The Association of Bay Area Governments (ABAG), in coalition with the Bay Area Air Quality Management District (Air District), requests **\$98,195,472** to catalyze regional residential building decarbonization in low-income and disadvantaged communities (LIDACs) through the Bay Area Clean Homes Initiative (BACHI). This new project directly aligns with building decarbonization measures included two Priority Climate Action Plan's (PCAPs), and collectively referred to as the **"Holistic Building Decarbonization"** measure in the BACHI proposal. ABAG affirms its intent to submit a Memorandum of Agreement (MOA) signed by all coalition members by July 1, 2024.

Table 1. Metropolitan Statistical Areas (MSA's) targeted by BACHI

Metropolitan Statistical Area	Priority Climate Action Plan Measure	BACHI Measure
Bay Area Air Quality Management District (San Francisco - Oakland - Berkeley MSA)	Holistic Building Decarbonization for Clean, Healthy, and Secure Housing	Holistic Building Decarbonization
Santa Clara County (San Jose - Sunnyvale - Santa Clara MSA)	Regional Holistic Building Decarbonization Program for Low-and-Moderate Income Occupant Housing	

Through the PCAP development process, residential decarbonization rose to the top of local jurisdictions' priorities across the region. While funding directed to this sector is increasing, there is still a significant need to focus resources to address key barriers to scale. As this proposal shows, billions of dollars are required to fully decarbonize a region's housing stock. If regional decarbonization is the goal, incentive programs can no longer simply rely on incremental reductions to GHG emissions but must be coordinated with transformative policies.

The BACHI coalition is uniquely positioned to advance residential decarbonization and create replicable models for other regions due to key assets of its two coalition members: 1) ABAG leads a nine-county regional partnership called the Bay Area Regional Energy Network (BayREN) which has been administering residential energy efficiency programs since 2013, and 2) the Air District will be implementing a precedent-setting appliance rule that will affect all residential water and space heating appliances in the region. To leverage the core competencies of these two agencies, BACHI combines shovel-ready home retrofits (led by ABAG) with strategic interventions to unlock the region's ability to scale residential decarbonization (led by the Air District). This pairing will enable on-the-ground project implementation to directly inform effective and transformational systemic interventions. The BACHI approach is based on the understanding that with a total regional funding need of \$50 billion, government incentives alone cannot scale decarbonization; at the same time, regulations that could have significant impact can only be successful if supported with enabling conditions through interventions grounded and informed through direct implementation.

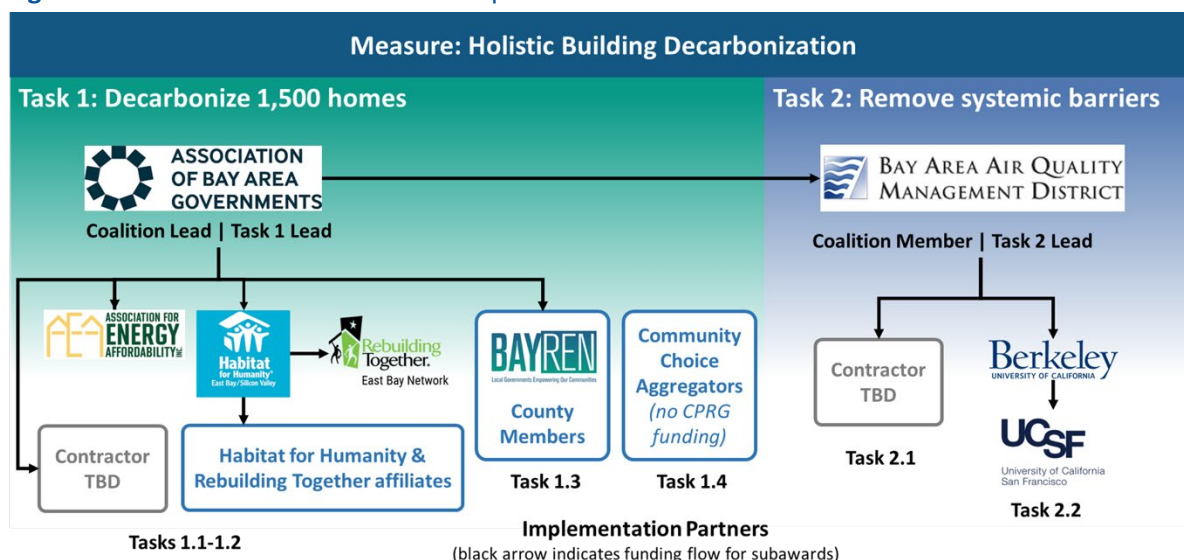
The BACHI proposal therefore contains two coordinated tasks: **Task 1: Decarbonize 1,500 homes in LIDACs through holistic retrofits** and **Task 2: Develop and deploy key interventions to remove systemic barriers to scaling decarbonization**. The BACHI proposal reflects the complexity of the challenge and the

diverse needs of the Bay Area's nine counties. It will provide services across jurisdictions that municipal-only programs cannot achieve and that most counties and cities do not have staff or funding to operate on their own. Since the BACHI partners have all necessary authorities to begin implementation, the initiatives can begin as soon as funding is awarded. Both Tasks 1 and 2 are timed for rapid deployment at an achievable rate based on the existing programmatic infrastructure and capacity of BACHI partners.

The BACHI proposal is a new model leveraging the Bay Area's unique assets and contributions. It is based on the latest understanding of the challenge and guided by the priorities of the Climate Pollution Reduction Grant (CPRG):

- **Coalition and partnerships:** BACHI leverages BayREN's existing nine County regional partnership structure, and partnerships with home rehabilitation and workforce nonprofits, academics, and the Community Choice Aggregators and the region's utility. The BACHI team, shown in Figure 1, reflects the diversity and strength of these partnerships.
- **Past performance and knowledge:** BACHI's program design is informed by a decade of local program administration through BayREN, extensive pilot project deployment and regional research, and direct experience and understanding of barriers to scale.
- **Transformative potential and replicability:** BACHI is designed to support the Air District's precedent-setting Zero NOx Appliance Rules, described in Section 1c, and to address systemic implementation barriers commonly experienced by regions across the U.S.
- **Reflects the needs of disadvantaged communities:** BACHI will exclusively serve households in the Bay Area's most disadvantaged communities with a program model based on past work with LIDAC communities.
- **Job quality and capacity:** BACHI will partner with local affiliates from Habitat for Humanity and Rebuilding Together to build their capacity to decarbonize homes. BACHI will also engage with Rising Sun Center for Opportunity to ensure lessons learned from the ongoing High Roads Training Partnership (H RTP) are integrated into BACHI implementation strategies.
- **Balances short- and long-term GHG reductions:** BACHI taps into existing project pipelines to deliver shovel ready short term decarbonization projects, while also validating the efficacy of key interventions to unlock long term scalable GHG reductions.

Figure 1. BACHI Coalition Members & Implementation Partners



BACHI Roles and Responsibilities

BACHI is composed of Coalition Members and Implementation Partners, as described below:

Coalition Members

- **ABAG, Bay Area Regional Energy Network (BayREN):** The BACHI coalition is led by ABAG's BayREN team. BayREN is a regional partnership led by ABAG serving the nine Bay Area counties. Since 2013, BayREN has implemented regional programs to increase energy efficiency and electrification in residential, commercial and municipal buildings. **ABAG** staff will oversee program management and the performance of subrecipients, contracted implementers and partners. **ABAG** will expand its convening of **CCA's** to support a robust coordinated effort to address bill impacts of electrification and will coordinate the BayREN **Counties** to advance neighborhood scale decarbonization engagement.
- **Bay Area Air Quality Management District ("Air District"):** **Air District** staff will lead Task 2. They will conduct inclusive engagement with community organizations, local governments and other stakeholders to develop strategic interventions including permitting, code enforcement practices and housing policies. They will oversee researchers at the **University of California (UC)** to conduct research on rental housing. The Air District will explore and identify long-term non-energy funding sources to support the expansion of residential decarbonization and develop resources for local governments to replicate and scale solutions to remove systemic barriers to residential decarbonization developed through the BACHI.

Implementation Partners¹

- **Habitat for Humanity and Rebuilding Together** affiliates across the Bay Area will install retrofits with their own teams and competitively bid sub-scopes to subcontractors. **Habitat for Humanity East Bay Silicon Valley** will be the lead affiliate, holding the primary subaward and coordinating the capacity building for the region. **Rebuilding Together East Bay Network** will serve on the BACHI Advisory Group to advise on program design for capacity building, project delivery, and workforce.
- **Association for Energy Affordability (AEA):** AEA will oversee assessments and retrofits in multifamily housing and support capacity building of **Habitat for Humanity** and **Rebuilding Together** affiliates. **AEA** has interacted with tens of thousands of multifamily units in the Bay Area and has extensive experience under BayREN since 2013 and other programs across the state.
- **UC Berkeley's** Department of City and Regional Planning and **UC San Francisco's** Department of Medicine researchers will build upon their existing field research on rental housing to identify and evaluate solutions to the challenges renters and landlords experience accessing decarbonization programs.
- **Bay Area counties**, through their role on neighborhood-scale engagement, will recruit projects into the BACHI pipeline and with regional coordination support from **ABAG**, will lead on-the-ground engagement of neighborhoods within their jurisdiction to advance neighborhood decarbonization.

1a. Description of GHG Reduction Measures

This proposal will reduce GHG emissions from residential buildings by providing funding for holistic home retrofits for 1,500 households while addressing permitting, rental dynamics, and funding barriers. ABAG and the Air District (the coalition) propose to undertake the GHG reduction measures outlined in this work plan. As the coalition lead, ABAG and its BayREN program will lead Task 1.

¹ All implementation partners have provided letters of commitment confirming their role and support of the BACHI.

Task 1: Decarbonize 1,500 homes in LIDACs through holistic retrofits

BACHI will fund and install holistic decarbonization scopes in single family homes and small multifamily buildings in LIDACs, throughout the nine-county region, while building capacity of nonprofit home rehabilitation partners, advancing neighborhood scale decarbonization, and solving for issues of potential utility bill increases as a result of electrification. Through close collaboration with Task 2, these projects will also serve as real-world applications of systemic interventions.

Task 1.1. Recruit and retrofit 1,500 homes

Homes will be recruited through existing BACHI partner channels. BayREN will recruit participants from existing program pipelines of past or current projects. This includes at least 3,000 units in small multifamily (under 20 units) in CEJST communities that have engaged with the BayREN team, including 750 units that have already had some energy efficiency measures installed. Habitat for Humanity and Rebuilding Together will recruit from their past and current rehabilitation projects funded by Community Development Block Grants and HUD programs. Additionally, the nine counties will also recruit projects through the neighborhood-based engagement described under Task 1.3. Additional outreach will be conducted as needed by BayREN, Habitat for Humanity, and Rebuilding Together.

The retrofits will be delivered through trusted partners, including the Association for Energy Affordability and the regional affiliates of Habitat for Humanity and Rebuilding Together. BayREN will also leverage its single family program infrastructure to competitively solicit a contracted implementer. Together, these recruitment channels and established implementation partners will readily deliver retrofits of 1,500 units. The focus of eligibility and engagement will be to deepen the coalition's understanding of the nuances of the range of building, appliance, and ownership scenarios in order to inform scalable solutions. A holistic decarbonization scope includes a combination of the following components as needed by each home:

- Addressing moderate deferred maintenance (e.g. mold, asbestos, and pest remediation) that is required for air quality and health before safely tightening the building envelope, or as encountered during the implementation of the energy scope. This is a barrier commonly encountered in LIDACs.
- Weatherization and energy efficiency for building envelope and heating distribution systems to minimize the increase in new electricity load.
- Electrical capacity upgrades to support the higher electricity load from decarbonization.
- Replacement of gas appliances with efficient electric (heat pump or induction) appliances.

Task 1.2. Build capacity of nonprofit home rehabilitation partners

BACHI will develop the capabilities of Habitat for Humanity and Rebuilding Together affiliates in the Bay Area to deliver energy assessments and retrofits through training and field experience. The Habitat for Humanity or Rebuilding Together affiliate of that geography will retrofit approximately 600 of the target 1,500 homes. The affiliates will undertake the construction work with their own staff and/or subcontract specific sub scopes as needed through competitive bidding. The goal of this task is to deliver high quality installations while building workforce knowledge and capacity. This task builds upon and expands the reach of existing pilots² in the region that advance high-road, family-sustaining workforce opportunities through aggregated residential building electrification retrofits.

² Home Electrification Equity Project led by Habitat for Humanity East Bay Silicon Valley, and the Just Transition Residential Electrification Pilot by the City of Berkeley and Rebuilding Together East Bay Network.

Task 1.3. Advance neighborhood decarbonization

To scale decarbonization and achieve deep GHG reductions equitably, programs need to take a systemic approach by neighborhoods rather than individual homes. The Bay Area is a leader in neighborhood-scale decarbonization, which aims to eventually decommission entire segments of gas pipelines. The Bay Area's gas utility, Pacific Gas & Electric (PG&E), has publicly committed to supporting this transition. The Bay Area has had a high concentration of neighborhood-scale pilot initiatives.³ The BACHI team has existing relationships with each of these pilot implementation teams and will build upon the lessons learned from these efforts and develop and assess new approaches, specifically tailored for homes in LIDACs. As a channel for recruiting projects for Tasks 1.1 and 1.2, the nine BayREN counties will conduct targeted engagement with LIDAC neighborhoods identified as candidates for gas pipeline decommissioning. This will be the largest deployment of neighborhood-scale engagement to date, coordinated across nine diverse counties. The findings and recommendations from this task will be shared widely for replicability.⁴

Task 1.4. Stabilize utility bills for residents in decarbonized homes

A key concern when electrifying appliances, particularly in low-income households, is a potential increase in utility bills. This can be the case even with the reduction in gas bills. The BACHI team will evaluate each project in the Task 1.1 pipeline to understand whether electrification may increase the homeowner or tenant's utility bill. Where available, projects will be referred to existing solar and storage programs to protect them from high electricity bills. Where such programs are not available, a portion of the retrofits, including those served by Habitat for Humanity, will include solar and storage paid for by CPRG funds if electrification of the home is likely to increase their utility bill. BayREN will also convene the seven Bay Area Community Choice Aggregators (CCAs) to identify rate structure and distributed energy resource (DER) program offerings as solutions for bill stabilization. CCAs are uniquely positioned to address potential bill increases resulting from appliance electrification. As agencies governed by publicly elected representatives, these joint powers authorities have a mission to keep rates low while delivering cleaner energy systems. Several of the CCAs have begun studying this challenge on their own. ABAG will compile a menu of solutions and document lessons learned and recommendations for local, regional, and state policies that could stabilize utility bills during the transition away from natural gas.

Task 2: Develop and deploy key interventions to remove systemic barriers to scaling decarbonization

The Air District plays key roles in regional policy coordination, development, and implementation to advance near- and long-term building decarbonization. As a BACHI coalition member, the Air District will lead Task 2 by convening key partners, policy research and development, and engaging stakeholders to gather input to shape systemic solutions.

Task 2.1. Engage LIDACs to guide development of local government interventions

An important component to facilitating adoption across the region is actively engaging policymakers, local government staff, key stakeholders, and communities early in the policy development process. Local governments with LIDACs in their jurisdictions need to be at the table with community organizations and members to be well-informed policy implementers. The Air District has developed

³ Pilots include Ava Community Energy and Gridworks analyzed the costs, benefits, and feasibility of eleven neighborhoods in Alameda County; the City of Albany will pilot neighborhood scale outreach and assessments in 2024-2025 through a Department of Energy competitive Energy Efficiency and Conservation Block Grant; UC Berkeley's EcoBlock project has been researching and deploying retrofits toward independence from the utility grid (gas and electric) in Oakland.

⁴ An example of a nationally prevalent obstacle is the "obligation to serve" as documented by the Building Decarbonization Coalition: <https://buildingdecarb.org/decarbation-obligation-to-serve>

strong relationships with subject matter experts and key stakeholders in the building decarbonization space through its work with the Zero NOx Appliance Rules Implementation Working Group and the Bay Area Healthy Homes Initiative (BAHHI). The Air District will leverage these efforts and relationships to inform the design and implementation of each of the subtasks in Task 2. Key LIDAC engagement activities include:

- Convene regional and local community-serving organizations to co-develop an engagement approach to equitably implement Task 2.
- Work with BACHH partners to implement the engagement approach to ensure recommendations for each subtask are guided by LIDAC priorities.
- Build on existing relationships and work with local governments and UC researchers to engage new community partners relevant to each task.
- Provide specific recommendations for local governments to equitably disseminate local government resources developed through Task 2.5.

Task 2.2. Streamline and simplify permitting processes

The Air District's Zero NOx Building Appliance Rules (as described in Section 1c) will play an important role in accelerating the transition away from fossil fuel-burning appliances. However, the rules are only as effective as local enforcement. Permitting standards and processes vary greatly within and across the Bay Area's nine counties, making permit compliance challenging and costly for contractors and installers, and ultimately, residents. Improving permit processes and requirements to be more efficient and consistent across jurisdictions can reduce significant barriers to installing zero emission appliances. Improvements may include simplifying and reducing the number of distinct forms, digitization of data collection and organization in electronic databases, and standardization across jurisdictions.⁵ This will ensure the equitable and successful implementation of these precedent-setting rules and accelerate compliance, leading to the installation of a greater number of clean appliances.

Task 2.3. Address rental housing dynamics

Government retrofit programs can improve residents' health, comfort, and resilience. However, renters' access to publicly subsidized retrofits depends upon the willingness of their landlords to engage in these programs. Landlord unwillingness—driven by split incentives, lack of financing options, and fear of code violations—is a fundamental barrier to successfully implementing home retrofit and decarbonization programs. This barrier places an unjust burden on renters, who may also be reluctant to make an appeal to landlords due to concerns about retribution, rent increases, and eviction. This task addresses these barriers by bringing together stakeholders who have direct experience and knowledge to collaboratively design, test, and evaluate solutions in the Bay Area. University of California researchers will:

- Systematically document the barriers that tenants and landlords face in accessing home retrofit programs through surveys and interviews.
- Generate solutions that aim to improve messaging and engagement with trusted messengers to increase participation, enhance the financial feasibility of retrofits, and reduce the potential barriers related to concerns about code compliance.
- Work with Task 1 implementers to apply readily implementable solutions to BACHH retrofits.
- Evaluate the impacts of these solutions.

⁵ These types of improvements have been identified as significantly reducing time and cost. See for example *Energy Code Compliance Fact Sheet* from Institute for Market Transformation. https://imt.org/wp-content/uploads/2018/02/IMT_Using_Technology_to_Improve_Code_Enforcement.pdf

Research teams at UC Berkeley and UC San Francisco have recently conducted surveys and interviews to better understand these barriers and develop recommendations for local government policies addressing rentals. This BACHI task will expand the work done to date and planned for 2024 in three Bay Area counties to provide a more regional and complete understanding of barriers. It will also include engagement with the implementation partners and approximately 400 participants in Task 1 retrofits to evaluate the effectiveness of specific rental housing engagement solutions.

Task 2.4. Leverage and integrate non-energy funding sources

Through the process of engaging partners for the PCAP and in development of this proposal, the BACHI team gained insights into potential sources of funding beyond energy and climate programs that can fund weatherization and decarbonization work in homes. The Air District is conducting research on state and federal funding sources related to building decarbonization as part of its work on the CPRG CCAP. This research has not included investigating the potential role of health care programs as a source of funding. The Air District will coordinate discussions among UCB and UCSF, community partners and residents of LIDACs to understand the potential to unlock health care funding as a stable source for building decarbonization. Similarly, with support from BayREN, the Air District will coordinate with Habitat for Humanity and Rebuilding Together to assess the potential for local governments to leverage existing home rehabilitation funding to support the expansion of residential building decarbonization. This task explores the extent to which these funding sources can be integrated or aligned with decarbonization goals.

Task 2.5. Develop local government resources for replicability

Task 2 will advance policies and approaches that are replicable and scalable across the region and beyond. The Air District will compile the resulting resources in order to facilitate replicability for local and regional governments. Providing resources to support local governments to develop and prepare policies for adoption by their decision-making bodies is critical for successful replicability. Deliverables will include a range of local government policy support tools, specifically related to permitting, code enforcement, housing policies, and leveraging non-energy government funding sources.

Risks & Mitigation

BACHI coalition members and implementation partners bring extensive experience managing large-scale building decarbonization programs and federal grant awards. Small, multi-family buildings pose additional complexity, particularly as a result of potential variability of maintenance and upgrade needs. Specific risks and mitigation strategies are detailed in Table 2 below.

Table 2: Potential Risks and Mitigation Strategies

Risks	Mitigation
Need for capacity building	ABAG and Habitat for Humanity East Bay Silicon Valley will monitor the capacity of each affiliate closely as they work with each batch of homes. The contracts with affiliates will be annual to allow for adjusting allocations based on demonstrated capacity building and ability to serve the target number of units per affiliate. If any of the affiliates struggles to build the necessary capacity, the BACHI team reserves the ability to redirect funding to the other channels, including to the established channels through Association for Energy Affordability and the BayREN Single Family implementation contractor.
Variability of decarbonization scopes in the worst case, projects could fall short of the	BACHI's eligible measures and cost lists will be closely monitored and iterated to ensure retrofits in aggregate are delivering the needed savings. BayREN has experience doing this exact process of adjusting eligibility criteria to deliver

estimated GHG reduction for the amount of budget spent.	kWh and therm savings in its accountability to the California Public Utility Commission. See Appendix A: Budget Narrative for an example of a cost containment strategy.
Deferred Maintenance & Landlord Reluctance	BACHI eligible scopes include health and safety remediation in order to address deferred maintenance, which has been repeatedly identified as a need in LIDACs. Task 2.3 will address this barrier directly to design and evaluate intervention strategies targeting landlords.
Potential negative impact on utility bills	BACHI will ensure: 1) efficiency measures are installed before appliance electrification to optimize system sizing and reduce total electrical load; 2) participants are encouraged to enroll in preferable all-electric rates and where applicable, enroll in income-qualified rates; and 3) CCAs will convene to identify additional rate structure opportunities to further remove this risk and/or complement decarbonization scopes with their own solar and battery storage programs to reduce the amount of electricity purchased from the grid.
Delays due to need for electrical capacity upgrades	The BACHI team will coordinate closely with the region's investor-owned utility, Pacific Gas & Electric (PG&E) ⁶ and identify any panel upgrade needs early in each project's timeline.
Small (compared to large) multifamily buildings are more complex and have limited economies of scale	BACHI's program design eliminates these barriers by funding the full cost of the upgrades, providing access to environmental remediation and deferred maintenance services if needed and qualifying properties by CEJST geography as opposed to income.

Milestones

The timeline and milestones are described in greater detail in Section 3c. The general timeline and major milestones across the tasks are as follows:

- **Q2 2025:** contracts executed, contractors selected
- **Q2 2025 – Q4 2026:** recruitment for participating homes conducted
- **Q4 2025:** first 250 projects completed
- **Q3 2025 – Q2 2027:** stakeholder engagement conducted
- **Q4 2028:** 1,500 home retrofit target met
- **Q4 2028:** policy recommendations and toolkits delivered
- **Q3 2029:** final report and wrap-up

1b. Demonstration of Funding Need

ABAG has secured ratepayer funding through BayREN through 2027. This funding includes \$5 million per year for Home+ single family retrofits for moderate income Bay Area residents and \$5 million per year for Bay Area Multifamily Building Enhancements multifamily retrofit rebates. While these programs are able to fund partial decarbonization and energy efficiency work, they cannot fund holistic retrofits due to ratepayer funding source restrictions and therefore do not address deferred maintenance, environmental and health and remediation or electrical capacity needs that are critical prerequisites to electrification, especially in LIDAC communities. The BACHI will leverage BayREN's existing outreach channels and program implementation expertise.

⁶ PG&E has submitted a letter of commitment outlining their intent to participate and support BACHI.

The total amount of funding expected to flow to the Bay Area for residential decarbonization in the next few years is approximately \$500 million (see *Current and Anticipated Home Decarbonization Funding below*). While this is a significant and unprecedented amount of investment, **it is still less than 1 percent of the total investment required to cover the full cost of electrifying all homes in the Bay Area, estimated at over \$50 billion.**⁷ There is no risk of market saturation, or even to reach a tipping point on an adoption curve for new technologies with existing and anticipated funding alone. Market rate TECH rebates in the amount of \$1.5 million were fully subscribed in PG&E territory within three months, which further illustrates that market saturation has not been reached. At the same time, income-qualified TECH rebates have not been fully subscribed, pointing to the challenges of reaching LIDAC as well as the need to directly address up front cost barriers.

Current and Anticipated Home Decarbonization Funding⁸

\$500 million is secured and anticipated to be available to Bay Area homes for weatherization and decarbonization during the CPRG grant period. However, these programs, administered by implementers other than ABAG, will not saturate the market and are not all designed to serve LIDACs. BACHI's intentional design to pair a small pool of targeted upgrades with long-term solutions will deliver longer-term outcomes than the GHG reduction impact of upgrading 1,500 units by addressing common barriers, such as permit streamlining, which will also support the deployment of this non-CPRG funding. Additionally, findings from BACHI will be shared with these program implementers to inform future program design to better serve LIDACs.

Federal:

- Home Electrification and Appliance Rebates (HEEHRA) - \$46.4 million for 2024-2032 (\$290 million statewide, assume Bay Area region accounts for 16% of statewide households)
- Home Efficiency Rebates (HOMES) Program - \$46.72 million for 2024-2032 (\$292 million statewide, assume Bay Area region accounts for 16% of statewide households)
- LIHEAP - \$36.16 million for FY 23-24 (\$226 million statewide, assume Bay Area region accounts for 16% of statewide households)

State:

- California Energy Commission's Equitable Building Decarbonization Program - \$146.97 million over 4 years from start of program (\$639 million statewide, 23% allotted for Northern California (NorCal), assume all NorCal funding goes to Bay Area as a conservative estimate)
- TECH Clean CA – Single Family Residential Heat Pump HVAC - \$1.68 million until expended (\$11.2 million statewide, assume Bay Area region accounts for 15% of statewide single family households)
- TECH Clean CA - Residential Market Rate HPWH - \$5.232 million until expended (\$32.7 million statewide, assume Bay Area region accounts for 16% of statewide households)
- TECH Clean CA - Residential Equity HPWH - \$6.064 million until expended (\$37.9 million statewide, assume Bay Area region accounts for 16% of statewide households)

Regional:

- The seven Bay Area CCAs⁹ are estimated to collectively invest approximately \$200 million in residential decarbonization through various rebates and incentives

⁷ Various sources cite a range that includes \$50 billion, which is based on 2.5 million households at \$20,000 cost of decarbonization per home, which is on the low end (see Attachment A. Budget Narrative for more detail).

⁸ Sources for federal and state funding estimates are included in the Bay Area Air Quality Management District's (BAAQMD's) PCAP.

⁹ Budget estimates based on interviews with CCA Program staff.

Gap in funding long-term transformational strategies

The work included in Task 1 and 2 as part of this proposal specifically requires CPRG funding in order to be implemented. The Air District has recently conducted, with the contractor HIP Investor, a comprehensive search effort to identify state and federal funding sources available for high priority PCAP implementation activities, including Task 2, assessing which funding possibilities prioritize funding for projects that benefit frontline, LIDACs, or Justice40 communities. This research included state and federal grants, tax incentives, fees, and other programs. The resulting catalog of available funding programs indicates that there is no funding source for the types of policy development and engagement activities included in Task 2. In addition to state and federal sources, there are no regional sources of funding to support these efforts. In particular, the Air District has no funding stream to support climate-related or community engagement work. State of California Proposition 26 prohibits using regional or local fees, such as those typically levied by the Air District, to be used for general climate protection or community engagement work. Therefore, a new funding source, such as the CPRG Implementation Grant, would be needed to implement Task 2.

1c. Transformative Impact

ABAG and the Air District have formed a committed coalition to leverage existing programs and previous experience to develop a model initiative that will deliver short term GHG reductions and develop solutions to address key barriers to scaling building decarbonization. Investment in the BACHI will achieve immediate GHG reductions in the short term while supporting long term transformational impact in a region that is ready to scale. The Bay Area's existing regional coalition structure through BayREN has enabled unprecedented coordination among local jurisdictions, the Air District, academic institutions, nonprofit organizations, Community Choice Aggregators, and PG&E. All of these stakeholders are committed to playing key roles, leveraging existing funding and programs and coordinating across jurisdictions to successfully implement the BACHI and share lessons learned with EPA and other regions nationwide. The Bay Area is home to innovative decarbonization pilots including those integrating home rehabilitation and neighborhood decarbonization. BACHI, as a regionally coordinated effort, will enable scaling of these pilots across the region, sharing the pilots' lessons learned.

First in the Nation Regulatory Approach

In 2022, the Air District amended their Rules 9-4 and 9-6 to prohibit the sale and installation of NO_x-emitting appliances for indoor space and water heating in the nine county Bay Area. The rules will go into effect in a phased approach beginning in 2027. While the purpose of the rules is to reduce NO_x emissions, they will also likely deliver important GHG emission reduction co-benefits, as currently the only compliant technologies are electric appliances.¹⁰ As a first of its kind regulation, their success will determine the direction of subsequent regulatory efforts across California and the nation. A critical component to success is ensuring that important market players - such as technology developers, manufacturers and distributors, installers, contractors, and builders - are ready to support and comply with the regulation. The rules amendments were adopted with a caveat that should the Air District determine that market players are not ready, implementation of the rules may be delayed. **BACHI will supplement the Air District's existing efforts to develop market readiness and would contribute to**

¹⁰ The regulation itself is technology neutral, and natural gas-fired zero-NO_x appliances may or may not be developed (https://www.baaqmd.gov/rules-and-compliance/rule-development/building-appliances#:~:text=2%2F6%2F2023,Description%3A,fired%20water%20heaters%20and%20boilers.)).

the rules' timely implementation.

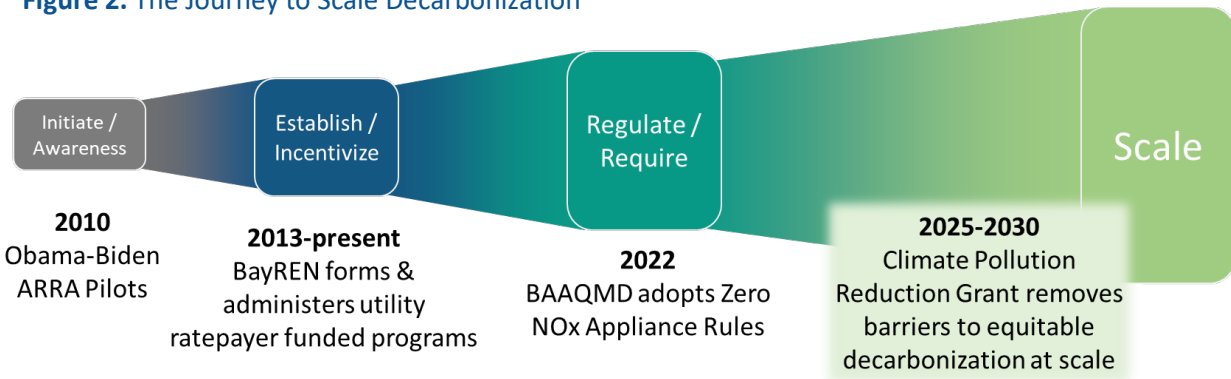
Another key to success is addressing concerns related to a potential inequitable burden of the rules on disadvantaged communities. As the rules become effective, homeowners, tenants and property managers may face barriers to compliance, including cost, significant levels of deferred maintenance, the need for environmental remediation, weatherization upgrades, and electrical capacity upgrades to precede appliance replacement. BACHI will address these key implementation barriers in Bay Area LIDAC communities and low-income rental housing where compliance with the rules poses a potential inequitable burden. Equitable implementation of the rules is critical to their ongoing effectiveness and replicability. This is a critical moment for the Bay Area, and the country, because equitable implementation of the Air District's NOx rules will deliver significant air quality benefits to the region and will set a precedent for other regions that this is possible to achieve these benefits equitably. **The NOx rules are a key enabler to scale that need to be supported by a diverse coalition of partners removing compliance barriers. BACHI brings together these partners.**

The Bay Area and this project are uniquely positioned to set a precedent for the rest of the nation in home decarbonization due to the following assets in its programmatic and regulatory landscape:

- The Air District has adopted precedent-setting rules to reduce health-damaging emissions of NOx from these appliances (see *First in the Nation Regulatory Approach call-out box*). These Rules could serve as a model for the rest of the nation if successfully implemented.
- BayREN, led by ABAG, has been administering and iterating on program design with direct feedback from project participants since 2013. BayREN was created as an outcome of the 2009 ARRA period's Retrofit Bay Area initiative (see *Figure 2 - The Journey to Scale Decarbonization*).
- The Bay Area's seven CCAs are leaders in decarbonization initiatives through clean energy procurement and rate setting.
- PG&E has publicly stated its participation in this project will assist with evaluation and selection of the most feasible sites for the project using their Geospatial Electrification Tool. PG&E will also support engineering review of the selected sites for electric and hydraulic feasibility of pipeline decommissioning. Should the project be successful in electrifying all affected customers on the pipeline, PG&E commits to decommissioning the selected gas pipeline.
- University of California Berkeley and UC San Francisco have community informed research initiatives dedicated to home weatherization, decarbonization, indoor air quality, climate resilience, and housing security and are eager to collaborate with BACHI partners.
- Bay Area nonprofits in the home rehabilitation and workforce development spaces have been engaged through pilot projects and the H RTP and are ready to support and scale home decarbonization by integrating electrification into the home rehabilitation process.

Figure 2 illustrates the key milestones on the region's journey toward energy efficiency and decarbonization, starting from the initial seeding of programs to ultimately scaling impacts. The Bay Area has been on this journey since the Obama-Biden administration's initial investment through the American Recovery and Reinvestment Act. The region has continued its journey through the successful launch and maturation of BayREN and the adoption of appliance regulations. Now it is poised to reach the tipping point to scale decarbonization with equitable community benefits. Investment in BACHI would enable the Bay Area to realize this potential and pave the path for other regions embarking on this journey. A key deliverable from Task 2.5 is a robust government policy toolkit designed to enable replicability and scale of the BACHI model.

Figure 2. The Journey to Scale Decarbonization



SECTION 2: IMPACT OF GHG REDUCTION MEASURES

2a. Magnitude of GHG Reductions from 2025-2030, 2b. Magnitude of GHG Reductions from 2025-2030 & 2c. Cost-Effectiveness of GHG Reductions

Table 3 depicts the cumulative short- and long-term GHG reduction potential and cost effectiveness of implementing the Holistic Building Decarbonization measure through BACHH. These emissions reductions are determined to be permanent and last the lifetime of the installed equipment.

Table 3: Benefits of Implementing Holistic Building Decarbonization

Measure	Short-term GHG Reductions (cumulative 2025-2030)	Long-term GHG Reductions (cumulative 2025-2050)
Holistic Building Decarbonization	12,560 metric tons CO ₂ e	3,422,000 metric tons CO ₂ e
	\$7,818 per metric tons CO ₂ e	\$29 per metric tons CO ₂ e

Factors affecting cost-effectiveness calculation: The primary driver of the high short-term cost per metric ton CO₂e is the cost of retrofits is estimated to cost \$40,000-45,000. The basis of this cost assumption is documented in Appendix A: Budget Narrative. The retrofits under Task 1 will enable long-term intervention strategies to be grounded in reality and therefore enable successful implementation of transformative regulations. Successful regulations are the mechanism that will deliver scaled GHG reductions. As described in Section 1b. Demonstration of Funding Need, with a total funding need of \$50 billion, incentives alone will not deliver deep and scaled decarbonization. On the other hand, policies that are not grounded in the experience of directly retrofitting homes will not succeed. The necessary pairing of short-term deep investment to enable scale results in the cost effectiveness distribution shown above. As BACHH removes barriers and builds capacity, it will reduce the average cost per retrofit and thereby improve cost effectiveness.

2b. Documentation of GHG Reduction Assumptions

Task 1 will deliver short-term GHG reductions from the 1,500 decarbonized homes. As detailed in Technical Appendix B, the short-term cumulative emissions reduction is the **sum of annual emissions** avoided by the gas eliminated from the decarbonized homes (less an incremental increase in electricity usage) = $(Gas_h \times EF_g - Elec_h \times EF_e) \times Homes$ where:

Gas_h = Avg eliminated gas (therms) per home	EF_g = Emissions factor for gas (tons/therm)	Elec_h = Avg Electricity (kWh) added per home	EF_e = Emissions factor for electricity (tons/kWh)	Homes = Number of homes served by BACHI to date since 2025
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Assuming Remaining Useful Life (RUL) of the appliances to be replaced is greater than 4 years, the emissions reductions would not have happened within this time period in a counterfactual scenario of Replace on Burnout (ROB).

Task 2 will remove systemic barriers to scaling decarbonization in order to realize the potential appliance replacement impact of the Air District's Zero NOx Appliance Rules. Long-term GHG reductions from removal of these barriers is based on increasing the Rules' reach by improving compliance rates by 10 percent. Unlocking this small piece of the whole regional scale would result in 3.4 million metric tons CO₂e cumulatively avoided by 2050. Technical Appendix B details the quantification method, assumptions, and data sources for GHG reductions.

SECTION 3: ENVIRONMENTAL RESULTS – OUTPUTS, OUTCOMES, AND PERFORMANCE MEASURES

3a. Expected Outputs and Outcomes

BACHI's outputs are designed to yield short term and long term GHG reductions and community benefits. Table 4 below outlines expected outputs and outcomes of Task 1 and Task 2.

Table 4: Outputs and Outcomes of the BACHI

Inputs	Outputs	Outcomes
Task 1: Decarbonize 1,500 homes in disadvantaged communities through holistic retrofits		
Invest an average of \$40,000-45,000 per home in retrofit costs	<ul style="list-style-type: none"> 1,500 homes decarbonized, including 4,000 appliances electrified 130 solar + storage systems installed Up to 20 neighborhoods engaged Recommendations for neighborhood scale decarbonization and utility bill stabilization 	<ul style="list-style-type: none"> 616,500 annual therms of gas combustion avoided 12,560 metric tons CO₂e reduced (2025-2030) 2,190 kg reduction in annual NOx emissions from appliances¹¹ 250,000+ high-quality job-hours for contractors 4 CCA's with bill stabilization strategies

¹¹ Based on regional total of residential NOx emissions (3,645 tons) divided by 2.5 million households = 1.46 kg/household x 1,500 BACHI homes. Source for regional total residential NOx emissions: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-9-rule-4-nitrogen-oxides-from-fan-type-residential-central-furnaces/2021-amendments/documents/20230307_fsr_rules0904and0906-pdf.pdf?rev=100de6caff2342e6b095b59acf2321d0&sc_lang=en

Task 2: Develop and deploy key interventions to remove systemic barriers to scaling decarbonization		
Invest \$4.5M in policy and government interventions	<ul style="list-style-type: none"> Engagement of at least 50 building departments, 400 landlords and tenants, and at least 12 community-based organizations. Local government toolkit of recommendations for improving permitting, addressing rental housing, and leveraging non-energy funding sources 	<ul style="list-style-type: none"> 20 building departments that improve permitting 50% increase in electrified appliances tracked in permitting systems At least 25% of homes served in Task 1 are rentals <p>Long-term Outcomes:</p> <ul style="list-style-type: none"> 20,000 appliances comply with NOx Rules per year after 2029 due to removal of barriers 3,422,000 metric tons CO₂e reduced (2030-2050)

3b. Performance Measures and Plan

Plan to track and measure progress of implementation

ABAG will measure performance by the outputs and outcomes listed in the table below. The data will be gathered from **quarterly reports from BACHI partners**. ABAG will aggregate the performance measures for the semi-annual and final reports to EPA. In addition to quantifiable metrics, ABAG will also evaluate overall progress and qualitative outcomes through quarterly convening of the BACHI partners.

Table 5: BACHI Performance Measures

	Performance Measures	Data Collection Method (and Responsible Partner)
Outputs	1,500 homes decarbonized	Reporting of activities from implementers, including number of homes decarbonized, their scopes, building size, and location (AEA, H4H, RT, consultants)
	4,000 appliances electrified	
	130 solar plus storage systems installed	
	50 building departments engaged	Reporting on engagement activities (Air District)
	400 landlords and tenants engaged	Reporting of engagement activities (UCB)
	Up to 20 neighborhoods engaged (and number of CBO's and homes)	Reporting on CBO and county neighborhood-scale engagement activities (counties)
Outcomes	616,500 therms of annual gas consumption avoided through Task 1 retrofits	BayREN CPUC quantification methodology and to extent feasible gather baseline gas usage data from each participant, and pre- and post-retrofit electricity data on aggregate for a sample of projects from relevant CCA's (AEA, H4H, RT, CCAs)
	12,560 cumulative tons CO ₂ e	Calculate therms avoided into emissions (ABAG)

	30 building departments with improved permitting systems	Direct engagement with building departments (Air District)
	4 CCA's that have bill stabilization strategies	Direct tracking through quarterly convenings (ABAG)
	Community Benefit: 1,500 homes improved in disadvantaged communities	Reporting of activities from implementers, including number of homes decarbonized, their scopes, building size, and location (AEA, H4H, RT, consultants) including feedback from residents of participating homes.
	Community Benefit: 130 homes with solar plus storage installed for bill and energy security	
	Community Benefit: 2,190 lbs annual NOx emissions avoided	Calculate appliances replaced into emissions (ABAG)
	Community Benefit: 250,000+ high-quality contractor job-hours worked	Reporting on prevailing wage compliance (AEA, H4H, RT)

3c. Authorities, Implementation Timeline, and Milestones

Authorities

As the Air District and Santa Clara County's PCAPs clarified, no additional legislation or policies would be required to be adopted and implemented in order to authorize implementation of the Holistic Building Decarbonization measure through a program like the BACHI. Implementation of this measure involves voluntary actions. Related to Task 1 to administer funding for retrofits, ABAG has existing authority from the California Public Utilities Commission to administer energy efficiency programs.¹² Task 2 will leverage an existing regulation that was passed by the Air District in 2022. Geographically, ABAG and the Air District have jurisdiction over the nine-county Bay Area.

Implementation Timeline & Milestones

BACHI will leverage existing activities that will pave the way for a rapid and seamless launch of the CPRG funded scope. Because of the pre-work of partner engagement done during the development of this funding proposal, ABAG and its partners are positioned to quickly execute funding agreements with each partner. This will allow for a faster and streamlined launch compared to if the procurement process including contractor bidding and selection were to occupy the first year of the grant period.

¹² ABAG is the administrator of BayREN, which is a Regional Energy Network (REN) that was authorized by California Public Utilities Commission D. 12-11-015. CPUC D. 12-11-015 authorized BayREN as a pilot to begin independently administering programs funded through ratepayers without oversight by an Investor-Owned Utility, such as PG&E, for the program year 2013-2014. Subsequent decisions continued to authorize BayREN to administer energy programs, and CPUC D.23-06-55 formalized the RENs as established program administrators, rather than pilots.

Table 6. Milestones and Partner Responsibilities

Milestone	Responsible Partner	2024	2025	2026	2027	2028	2029
Contracting							
Funding agreement executed with Air District (Task 2) and counties (Task 1.3)	ABAG	Q4					
Contracts executed with AEA, Habitat (H4H), Rebuilding Together (RT) (Tasks 1.1-1.2)	ABAG		Q1				
Complete competitive procurement for BayREN single-family implementer (Task 1.1)	ABAG		Q1				
Task 1: Decarbonize 1,500 Homes in Disadvantaged Communities with Holistic Retrofits							
Build pipeline for project recruitment (Task 1.1)	H4H, RT, BayREN	Q4					
Begin project enrollment and assessments (Task 1.1)	H4H, RT, AEA, BayREN		Q2				
H4H and RT affiliates prepared to conduct retrofits (Task 1.2)	H4H, RT		Q3				
Identify neighborhoods, engage CBOs, develop engagement plans (Task 1.3)	Counties		Q4				
Launch quarterly CCA convening on utility bill stabilization (Task 1.4)	ABAG		Q4				
Counties and CBOs conduct engagement in LIDAC communities (Task 1.3)	Counties			Q4			
Counties complete outreach process and share lessons learned (Task 1.3)	Counties				Q4		
CCA bill stabilization findings summarized into recommendations (Task 1.4)	ABAG					Q4	
Complete all home retrofits (Task 1.1)	H4H, RT, AEA, BayREN					Q4	
Task 2: Develop and deploy key interventions to remove systemic barriers to scaling decarbonization							
Develops and implements community engagement plan (Task 2.1)	Air District		Q2-Q4	Q1-Q4	Q1-Q4	Q1-Q2	
Building department engagement process launches (Task 2.2)	Air District		Q2				
Disseminate recommendations for permitting process improvements (Task 2.2)	Air District			Q3			
Building departments deploy permit process recommendations (Task 2.2)	Air District					Q1	
Landlord engagement process developed and interviews conducted (Task 2.3)	UCB, UCSF		Q3-Q4	Q1-Q4	Q1-Q4		
Landlord engagement strategies recommended and evaluated (Task 2.3)	UCB, UCSF					Q4	
Review, develop recommendations to leverage health/rehab funding (Task 2.4)	Air District, UC, RT		Q2-Q4				
Develop a policy toolkit for local governments compiling Task 2 findings (Task 2.5)	Air District					Q4	
Reporting							
Semi-annual reporting	ABAG		Q1, Q3	Q1, Q3	Q1, Q3	Q1, Q3	Q1, Q3
Final report	ABAG						Q3

SECTION 4: LOW-INCOME AND DISADVANTAGED COMMUNITIES

4a. Community Benefits

Local governments across the Bay Area region identified equitable residential building decarbonization as a priority during the PCAP development process. LIDACs have shared with their cities and counties that their key priorities related to home decarbonization include **1) housing security and affordability (including tenant protections), 2) health and safety upgrades, and 3) reduced energy costs (or at the very least no increased costs) and reliability.** Appendix C contains the full list of CEJST designated disadvantaged census tracts in the nine county Bay Area.

Communities of color and low-income communities regularly experience poor housing quality and disproportionate exposure to environmental hazards as the result of racist and discriminatory policies and practices. A recent analysis by the Air District found that NO_x and particulate matter emissions from home and water heating disproportionately impact Bay Area communities of color.¹³ Implementation of the Air District's Zero-NO_x Appliance rule is estimated to avoid up to \$890 million per year in health impacts by reducing exposure to NO_x and particulate matter.¹⁴ Although the median income in the Bay Area is higher than many metropolitan regions, the income disparity within the Bay Area is also higher than most regions. This disparity, more than the actual income levels, poses a threat to lower income households as the region shifts to decarbonization. Low-income residents will face higher natural gas prices if they fall behind as higher income households in California transition to all-electric appliances. Overall demand for natural gas will decrease while the costs to maintain the aging natural gas distribution system will hold steady or increase. The California Energy Commission estimates that without intervention, the cost of natural gas will increase 480 percent by 2050.¹⁵ Low-income residents, especially those who do not own their homes, are those most likely to be left behind on a shrinking gas system with increasing utility bills.

Benefits

The design of BACHI was guided by design principles generated by four PCAP working sessions¹⁶, led by the Air District in late 2023 with 80 local government and nonprofit participants, and further refined by an Equity Roundtable consisting of four Environmental Justice nongovernmental organizations based in the Bay Area and specializing in sustainability programs. These design principles include **Climate Equity, Genuine Affordability and Access, Health and Safety, Housing and Community Stability, Jobs, and Resilience**, which were developed with LIDACs as the focus. The list below describes the meaning of these principles and how they are operationalized through BACHI.

Climate Equity: Provide direct, meaningful, desired, and assured benefits to frontline communities, with a particular focus on Black, Indigenous, and People of Color (BIPOC) communities. No community's well-being is sacrificed for another community.

¹³ BAAQMD. *Assessing Ambient Air Quality and Health Impacts from Natural Gas Building Appliances in the Bay Area, Exposure and Equity Assessment of Natural Gas Appliances in the San Francisco Bay Area.*

¹⁴ BAAQMD. *Infographics – Proposed Amendments to Rules 9-4 and 9-6*

¹⁵ PG&E presentation at BayREN Codes & Standards Forum on March 21, 2023. Slide entitled *Building Electrification Impact on Long-Term Gas Rates* illustrated that without an effective transition strategy away from gas infrastructure, gas prices will increase 480% by 2050.

¹⁶ Working sessions were held in late 2023 on October 27th, on November 8th, November 30th and December 13th.

Benefits:

- Direct benefits to LIDAC communities: The suite of free services provided by BACHI in Task 1 to retrofit and upgrade homes is available only to residents of LIDACs to ensure these services benefit those most in need and least able to pay up front costs associated with decarbonization.
- Mitigate bill impacts for low-income ratepayers: BACHI Task 1.4 to stabilize utility bills for residents in decarbonized homes aims to mitigate the potential for low-income ratepayers to experience increased utility bills post electrification due to increased electricity loads by developing mechanisms to either lower rates or provide on-site solar and battery storage.

Genuine Affordability and Access: Increases access to housing, especially for frontline communities. Reduces, or at least does not increase, housing/energy costs and expands access and affordability.

Benefits:

- Increase access to energy retrofit programs: BACHI seeks to increase the accessibility of energy retrofit programs to LIDAC homes, including rental housing. Without support to decarbonize, these residents will face increasing gas bills in the future.
- Enable affordable energy: In addition to protecting residents from rising natural gas rates, Task 1.4 will identify solutions to also protect residents from unintentional increases in electricity bills as electric appliances are added to their homes.

Health and Safety: Improves living conditions (indoor and outdoor air quality), especially in frontline communities.

Benefits:

- Reducing pollutant exposures: The proposed BACHI measures are designed to optimize resident health and safety by removing health hazards and indoor air pollution (PM 2.5 and NOx) including asbestos, mold, combustion appliances; and to improve building envelopes to protect residents from outdoor pollution.

Housing and Community Stability: Supports people, especially renters and low-income homeowners, to remain in their homes by increasing healthy, resilient housing.

Benefits:

- Minimize displacement: BACHI partners with Habitat for Humanity and Rebuilding Together, nonprofits whose core mission is housing preservation to keep people in their homes.
- Improve housing conditions: Task 1 retrofits will improve housing conditions for LIDAC residents.
- Address barriers for renters: Task 2.3 to address rental housing dynamics will examine issues of rent increases and displacement risks.

Jobs: Creates lasting, high-quality, family-sustaining high-road jobs and other pathways to economic sovereignty in frontline communities.

Benefits:

- Provide quality jobs: BACHI Task 1.2 seeks to build capacity of affordable housing preservation nonprofits Habitat for Humanity and Rebuilding Together local affiliates. All of the construction work done under Task 1 will meet prevailing wage requirements and other job quality considerations discussed in Section 5.

Resilience: Builds resilience, especially for frontline communities, through changing climate conditions in the near and long term.

Benefits:

- Support climate resilience housing: Task 1 retrofits include a holistic approach to energy systems including envelope measures and heat pump space heating and cooling which will improve thermal comfort, indoor air quality in the face of climate impacts like wildfire smoke and air pollution.

Avoided Disbenefits

Decarbonization programs that serve housing in LIDACs must consider **three potential disbenefits as noted below**. However, the BACHI program has been intentionally **designed** to take into account potential disbenefits for LIDAC communities and integrate opportunities to mitigate these risks throughout Tasks 1 and 2.

- **Potential increased housing insecurity:** Rental property owners may pass-through costs to retrofit their properties to renters, thereby increasing their rents. Rental property owners may use construction projects to displace residents to evict tenants due to long remodels. To address this potential disbenefit, BACHI's Task 2.3. Address Rental Housing Dynamics specifically examines the intersection between decarbonization programs and housing stability, and the landlord-tenant dynamic. Any findings of this task will be integrated into Task 1 engagement strategies and will be documented to enable other regions to address this potential disbenefit as well.
- **Increased energy costs and energy insecurity:** Electrification upgrades can be expensive while an increased reliance on electricity may result in greater electricity costs. Additionally, increased reliance on electricity may result in greater energy insecurity, including during power outages. Reduced electricity rates for homes that are all-electric and energy efficiency retrofits that reduce energy demand can help address potential energy bill increases. Retrofits to improve energy resilience (e.g. distributed solar and storage) can increase energy security. BACHI's Task 1.4 to stabilize utility bills for residents of decarbonized homes seeks to ensure that energy costs do not increase.
- **Unanticipated health impacts:** Energy efficiency retrofits that tighten the building envelopes can improve indoor air quality if the surrounding outdoor air is highly polluted. However, it can conversely worsen indoor air quality by trapping indoor air pollutants in the building, if there are gas combustion appliances, mold, asbestos, pests, and other contaminants. To address this potential disbenefit, BACHI's eligible scope of retrofit measures in Task 1.1 include remediation of health hazards and removal of combustion appliances from homes while improving envelope efficiency.

LIDACs Impacted by BACHI

For the purposes of CPRG funding, BACHI defines LIDACs by the EPA's Climate and Economic Justice Screening Tool (census tracts listed in Appendix C). Most of these census tracts overlap with communities that the Bay Area's regional agencies already engage in regularly due to regional and state priorities. These include frontline communities based on AB 617¹⁷ and the Metropolitan Transportation Commission's Equity Priority Communities.¹⁸

Measuring Impact

Measurement of community benefits is integrated into the performance measure plan in the previous section. ABAG will report out on BACHI partner progress on performance measures throughout the

¹⁷ Assembly Bill 617 (C. Garcia, Chapter 136, Statutes of 2017); https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB617

¹⁸ The Metropolitan Transportation Commission (MTC) identifies Equity Priority Communities as census tracts that have a significant concentration of underserved populations, such as households with low incomes and people of color. A combination of additional factors helps define these areas.

grant period. Specifically, the targets will enable BACHI to quantify community benefits and monitor potential community disbenefits:

- Target: 100 percent of homes served will be in LIDACs
- Target: 100 percent of homes served will be fully electrified and will have all health remediation needs addressed.
- Target: 130 homes in LIDACs will have solar plus storage installed
- Target: 250,000+ high-quality job-hours worked
- Target: Bay Area CCAs will adopt and provide bill stabilization strategies and resources to avoid increased utility bills post electrification

4b. Community Engagement

Each BACHI partner brings to the team extensive experience working with residents in LIDACs. By the nature of residential decarbonization, engaging with participants of retrofit programs affords intensive experience working directly with homeowners, landlords, and tenants on real-life projects. The teams also partner with community-based organizations (CBOs) which are able to speak to the broader needs of the communities they represent, beyond the programmatic interests of decarbonization.

Engagement to Date

Feedback received through the Air District's previous engagement work (to develop the PCAP and to inform the implementation of their Zero NOx building appliance rules) has been integrated into the design of the BACHI by developing specific subtasks focused on addressing concerns through development of solutions that will be tested through the implementation of both Tasks 1 and 2.

The Air District led the stakeholder engagement process for the development of the PCAP for the San Francisco Bay Area region. This process included reviewing recently completed low-income and disadvantaged community engagement efforts completed by local governments working on Climate Action Plans to identify common priorities and needs. The Air District then convened an Equity Roundtable composed of representatives from regional CBOs who work directly with LIDAC communities. The Roundtable met throughout the development of the PCAP process with a focus on distilling recent engagement efforts into common priorities most relevant to Bay Area LIDAC communities. These priorities helped guide discussions at four working sessions¹⁹ in late 2023 with local governments and other stakeholders to develop specific GHG reduction measures for the PCAP.

Task 2 also reflects input the Air District received through the Bay Area Healthy Homes Initiative (BAHHI), a program serving high-risk asthma patients and residents facing disproportionate exposure to air pollution. Input from both eligible participants and landlords is informing task 2.3. Address rental housing dynamics. BAHHI will conclude at the end of 2024 and any additional lessons learned will be integrated to inform the implementation of Task 2.

Plans for Continued Outreach

Throughout the implementation of Task 1, BayREN will leverage existing and new partnerships between county agencies and community-based organizations that are well positioned as trusted messengers to provide targeted outreach to equity households. In partnership with BayREN, CBOs will support the design of in-language and culturally appropriate campaigns and outreach methods to the parts of their base aligned with this project. CBOs will also play an essential role in developing and evaluating BayREN's residential energy concierge service, through participant surveys, and regular meetings with program staff to ensure that the programmatic offerings are delivered in equitable, inclusive, and

¹⁹ The Air District designed and facilitated four Working Sessions to develop the PCAP measures during October–December 2023. Specifically, these sessions took place on Oct. 27; Nov. 8; Nov. 30; and Dec. 13, 2023.

accessible ways. LIDAC residents will be directly engaged by Habitat and Rebuilding Together throughout the implementation of Task 1 to understand what specific suite of upgrades will provide the most valuable benefits for each homeowner or tenant. These interactions will be accessible and inclusive and guided by both of these organizations extensive experience serving these communities as well as their missions which are directly aligned with BACHIs goals. By coordinating this work across nine diverse counties, the BACHI will enable the identification of common challenges and opportunities in neighborhood scale engagement while also providing a forum for counties to share unique engagement challenges and strategies that will then be shared widely to support replicability in other regions nationwide.

Task 2.1 outlines specific activities that the Air District will lead to ensure key stakeholders are engaged early in the policy development process and that Bay Area governments benefit from the Air District's existing relationships with CBOs who work directly with LIDAC communities. The Air District will work with Task 2 partners to develop and implement an engagement approach that ensures each task is guided by LIDAC needs and priorities. BACHI Task 2.3 will enable Retrofits for Renters and other stakeholders to have a significantly expanded and deeper impact by scaling existing research and connecting it with BACHI retrofit projects. The policy toolkit that the Air District will develop in task 2.5 will integrate lessons learned from BACHI as well as strategies and best practices to equitably engage LIDAC communities.

SECTION 5: JOB QUALITY

The BACHI provides unprecedented opportunities for nonprofit partners Habitat for Humanity and Rebuilding Together to build internal capacity focused on integrating energy efficiency and electrification into their existing home rehabilitation processes. To fully optimize this inflection point, Habitat and Rebuilding Together will utilize BACHI programming to engage and train high-road contractors to ensure they can deliver quality upgrades offered through BACHI across the nine county Bay Area. The capacity gained through BACHI will enable implementers to aggregate work and supplement the current training and expertise of a diverse set of contractors. Specific strategies include:

- Contractors will respond to a Request for Qualifications (RFQ) which will **ensure prevailing wage compliance** through detailed labor standards and classifications and will also provide level-setting to **support the participation of BIPOC/women-owned contractors** including targeted educational workshops and training sessions designed to enhance their ability to meet RFQ requirements and access job opportunities.
- Projects will be aggregated to **facilitate economies of scale and efficient project management**, an approach that has proven to provide savings to support prevailing wage standards.
- **A Program Evaluation Plan will be developed to track job creation and economic impact metrics**, providing a framework for assessing the project's broader job quality benefits. The tracking process includes both qualitative and quantitative measurements for clients and contractors which calculates time on the job, job quality, and ease of participation that informs the program design and administration.

BayREN and Rebuilding Together are active members of the Bay Area Residential Decarbonization High Roads Training Partnership (H RTP), an initiative of Rising Sun Center for Opportunity. The H RTP, funded by the California Workforce Development Board, was created to ensure that efforts to decarbonize buildings generate high quality jobs as well as other economic and health benefits for Bay Area residents. H RTP has a specific focus on delivering these benefits to disadvantaged communities. Led by Rising Sun and the Construction Trades Workforce Initiative (CTWI), the H RTP creates a forum for local

governments, worker representatives, industry employers, labor representatives, community based organizations, and other key workforce stakeholders to come together to discuss workforce needs on an ongoing basis. H RTP members are working to collaboratively develop research and best practice resources to support stakeholders statewide in high road residential decarbonization policy design including a Public Programs Best Practices Guide, Industry Analysis, Labor Standards Best Practices Guide and Workforce Training & Access Guide. Rising Sun will participate in the BACHI Advisory Group, made up of ABAG, the Air District, subawardees and key partners, to ensure that the BACHI can integrate H RTP recommendations to expand the benefits of BACHI job creation beyond requiring prevailing wage.

A recent study²⁰ conducted by Inclusive Economics for the Bay Area High Roads Training Partnership estimated total job-hours that would be needed to achieve decarbonization of the Bay Area residential building stock. While the study assessed the total potential impact for decarbonizing all homes in the Bay Area, the project team applied this trade distribution to the BACHI scope of 1,500 homes and found the following work hour ranges would be needed:

- Efficiency: 62 – 90 hours per home = 93,000 – 135,000 work hours
- Electrical upgrades: 8 – 15 hours per home = 12,000 – 22,500 work hours
- Full electrification: 102 – 122 hours per home = 153,000 – 183,000 work hours
- **Total = 258,000 – 340,500 work hours**

The distribution of these work hours is estimated to be 33% HVAC installation contractors, 24% electricians, 19% general contractors, 4% plumbers, 5% engineers, and 16% project management. Based on the rates assumed by the Inclusive Economics analysis, the investment in these high-road jobs – the labor portion of job costs – would range from \$25,051 – 31,586 per home. These investments align with the cost BACHI proposes of \$40,000 – 45,000 per home when factoring materials costs.

SECTION 6: PROGRAMMATIC CAPACITY AND PAST PERFORMANCE

6a. Past Performance

BACHI will be administered by ABAG, which has successfully implemented and is actively implementing other federal and non-federal grants. Of the five state and federally funded awards in Table 7 below, two have been successfully managed and completed and three are ongoing. See Table 7 for more detail on each award.

Table 7: ABAG Grant Management

Award name and agreement number	Funding agency, assistance listing number and contact	Description	Grant Management
Integrated Regional Water Management, Proposition 1, Round 1 Grant #4600013831	Department of Water Resources AL# N/A Victoria Rouse-Jones. victoria.rouse-jones@water.ca.gov	ABAG in partnership with SFEP manages over 20 projects implemented by local partners. Projects around the Bay will remove fish passage barriers, increase water recycling, build rain gardens, reduce flood risks,	Successfully managed all projects and project partners. Round 1 concluded in March of 2025.

²⁰ Inclusive Economics' model estimates market potential and required investment costs and then translates costs into jobs using IMPLAN multipliers customized by sector and technology and distributed into trade category.

		and more.	
Integrated Regional Water Management, Proposition 1, Round 2 Grant #4600015417	Department of Water Resources AL# N/A Victoria Rouse-Jones. victoria.rouse-jones@water.ca.gov	See description for Round 1 above.	Successfully managing all projects and partners. Round 2 will conclude in December of 2027.
Nature-Based Solutions for a Resilient Estuary Grant# W9-98T20401	US EPA 66.126 Luisa Valiela, valiela.luisa@epa.gov	This project implemented a first-of-its-kind horizontal levee, developed community-based monitoring and education programming, and advanced future designs in the process.	Successfully submitted all progress reports to date. Grant will conclude in December 2024.
Transforming Shorelines Grant #W9-99T87701	US EPA 66.126 Luisa Valiela, valiela.luisa@epa.gov	The Transforming Shorelines project will create critical linkages between wastewater treatment, resilience to sea level rise and water quality improvement.	Managed and completed the project successfully in December 2023.
Wetland Protection Development - Institutional Relations, Business Model, and Information Delivery Grant #CD-99T93501	US EPA 66.126 Luisa Valiela, valiela.luisa@epa.gov	The project will advance planning of the Wetlands Regional Monitoring Program (WRMP) as a regional model of the California Wetland Program Plan.	Successfully managed and submitted the final technical report at project completion in February 2023.

6b. Reporting Requirements

ABAG has a track record of meeting federal and state reporting requirements. For each of the grant agreements listed in Table 7 above, ABAG submitted regular progress reports and final reports for each completed grant. For both of the Integrated Regional Water Management grants (Rounds 1 and 2) ABAG completed all progress reports and final report for Round 1 and worked closely with the California Department of Water Resources to coordinate when any of the over 20 projects experienced delays. Round 1 was successfully completed and ABAG will continue to successfully manage Round 2 projects through the grant period of December 2027. Similarly, ABAG is working closely with US EPA to communicate any delays or revisions to the project workplan and budget for the Nature Based Solutions for a Resilient Estuary grant agreement and is on track to successfully complete this project when the grant concludes in December of 2024.

6c. Staff Expertise

Coalition partners ABAG and the Air District collectively have extensive expertise in administering residential energy efficiency and building decarbonization programs as well as convening, facilitation, community engagement and policy development. The BACHI's subawardee organization's staff also bring critical experience and skills that will enable successful implementation of all BACHI tasks. The following staff at each Coalition partner will play key roles in implementing the BACHI. Please see

attached resumes for more information on their backgrounds as well as the backgrounds of BACHI subawardee and partner key staff.

- **Jane Elias, Director, Energy Programs, ABAG** has 14 years of experience managing residential energy efficiency and building decarbonization programs at the county and regional level. As Energy Section Director at ABAG, she oversees BayREN’s \$157M budget and ten programs and coordinates closely with all nine Bay Area counties.
- **Jillian Du, BayREN Single Family Program Manager, ABAG** manages the BayREN Single Family program, including a recent restructure and improved program design and implementation that delivers a more deliberate equity focus and reaches more underserved households. She manages an annual \$8M+ budget of public funding to reach thousands of residents across the 9 Bay Area counties effectively and equitably.
- **Wendy Goodfriend, Director of Planning and Climate Protection, Air District** has over 10 years of experience in local and regional planning, public policy development and implementation, and inclusive stakeholder engagement. She has deep knowledge in air quality planning, climate mitigation and adaptation, land use and transportation planning, and implementation.
- **Abby Young, Manager, Climate Protection Program, Air District** has developed and overseen \$7+ million in local climate protection grant programs, developed CEQA greenhouse gas thresholds of significance and guidance, and produced technical guidance and assistance programs for local governments in developing and implementing climate action plans.

7a. Budget Detail

An explanation of costs associated with the measure and a consolidated budget are presented in figure 3 below. A breakdown of costs for each budget category is provided in the Grants Budget Spreadsheet included with this proposal.

Figure 3. Bay Area Clean Homes Initiative – Budget Summary

Holistic Building Decarbonization Measure							
BUDGET BY YEAR							
COST-TYPE	CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Direct Costs	TOTAL PERSONNEL	\$287,804	\$296,438	\$305,331	\$314,491	\$323,926	\$1,527,989
	TOTAL FRINGE BENEFITS	\$122,317	\$125,986	\$129,766	\$133,659	\$137,668	\$649,395
	TOTAL CONTRACTUAL	\$2,400,000	\$4,800,000	\$8,100,000	\$8,100,000	\$0	\$23,400,000
	TOTAL OTHER	\$4,805,739	\$18,232,590	\$22,657,889	\$23,783,382	\$1,921,982	\$71,401,583
	Sub: Bay Area Air Quality Management District	\$350,893	\$1,212,111	\$1,466,006	\$1,134,710	\$334,936	\$4,498,656
	Sub: Association for Energy Affordability	\$2,982,700	\$5,229,303	\$8,206,488	\$8,143,125	\$193,021	\$24,754,638
	Sub: Habitat for Humanity East Bay Silicon Valley	\$1,136,146	\$10,735,176	\$12,877,395	\$14,505,547	\$1,394,025	\$40,648,289
	Sub: BayREN County Representatives	\$336,000	\$1,056,000	\$108,000	\$0	\$0	\$1,500,000
	TOTAL DIRECT	\$7,615,859	\$23,455,014	\$31,192,986	\$32,331,532	\$2,383,576	\$96,978,968
	TOTAL INDIRECT	\$229,134	\$236,008	\$243,089	\$250,381	\$257,893	\$1,216,505
TOTAL FUNDING		\$7,844,993	\$23,691,023	\$31,436,074	\$32,581,913	\$2,641,469	\$98,195,472

- **Personnel:** ABAG will use grant funds to partially fund 3 staff positions to oversee Task 1, Tasks 1.1-1.4 including 1 Principal at .5 FTE with an annual salary of \$186,691, 1 Senior Program Manager at .5 FTE with an annual salary of \$160,198 and 1 Associate at .75 FTE with an annual salary of \$152,479. All staff will be engaged in implementing BACHI activities and tasks for the duration of the BACHI project timeline.
- **Fringe:** ABAG's fringe rate is 42.5 percent for salaried employees.
- **Contractual:** ABAG's contractual budget of \$23.4 million will engage an implementer, selected through a competitive bidding process compliant with ABAG's procurement policies and EPA regulations, to deliver at least 450 home retrofits at a cost of \$40,000 to \$45,000 per home.
- **Other:** Subawards issued to the Air District, Association for Energy Affordability, Habitat for Humanity affiliates (with subaward to Rebuilding Together affiliates), and BayREN county members will support implementation of Tasks 1 & 2 of this proposal. Additional detail can be referenced in Appendix A: Budget Narrative.
- **Indirect:** A copy of the Negotiated Indirect Cost Rate Agreement (NICRA) can be provided by the coalition lead upon award.

7b. Expenditure of Awarded Funds

ABAG's Finance Department tracks monthly revenues and expenditures for all fund sources throughout the organization. Staff provide monthly expenditure reports to the Energy Section and project managers have access to revenue and expenditure information through the organization's financial system. Project managers review and approve reports and invoices from subrecipients and retain their own budget tracking for each agreement and subcontract they manage. The organization undergoes an annual third-party single audit, which includes review of Energy's program revenues and expenditures. ABAG will comply with all federal, state, and local laws and the EPA subaward and contractor rules and policy and with the requirements of 2 CFR Part 200.

7c. Reasonableness of Costs

BACHI's proposed budget structure reflects the collaborative nature of this coalition initiative. The majority of funding is going to the identified BACHI partners through subawards to complete holistic decarbonization retrofits for LIDAC households. The staffing cost rates are commensurate for public sector and nonprofit employees in the Bay Area. Please see attached budget spreadsheet and Appendix A: Budget Narrative for additional detail and justification.