

200 x 200: Fast Upgrades, Equitable Outcomes

Short description

Upgrade 200 homes in 200 days with hot water heat pumps and efficiency measures in and next to a San Francisco Disadvantaged Community.

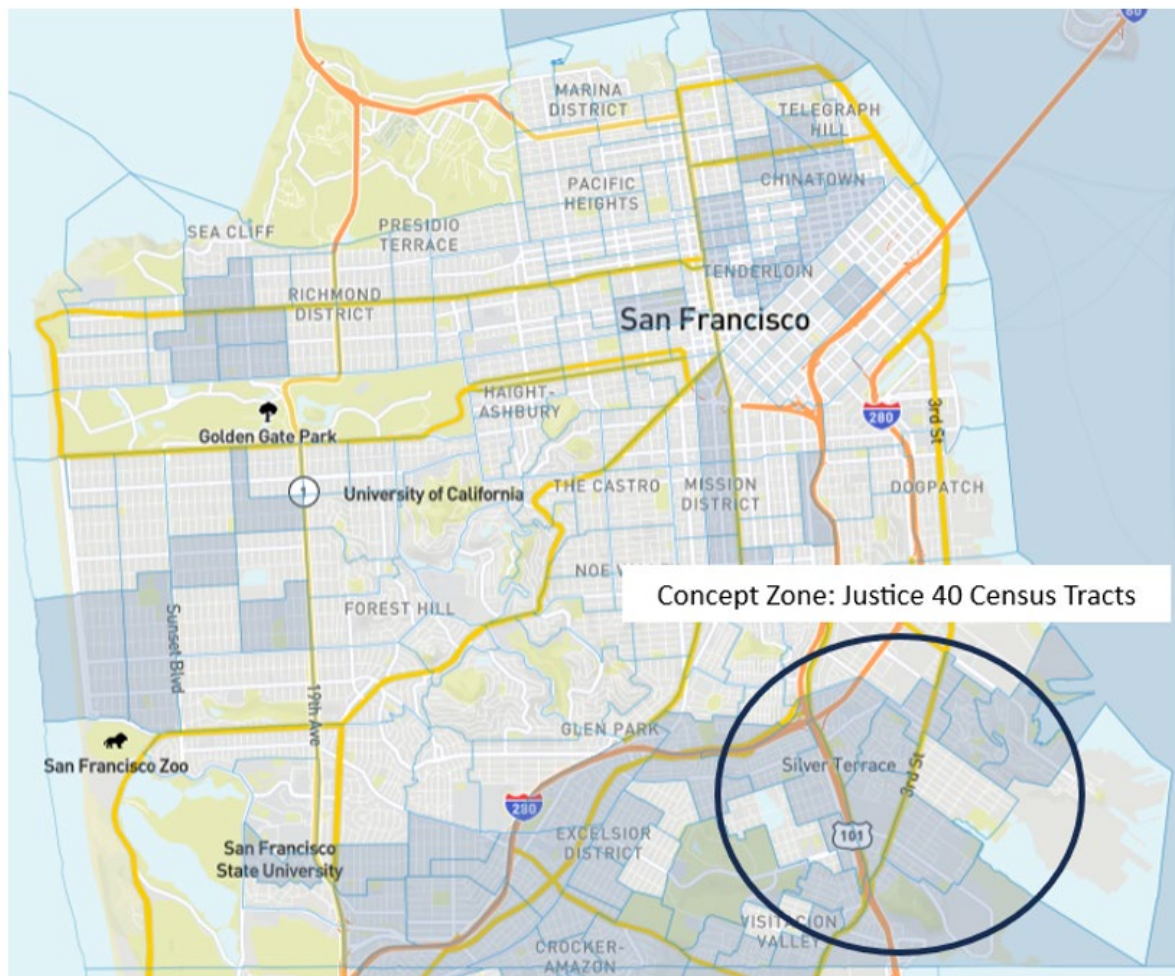
Team Name

SF HIPE (Hip)

Team Project Location(s)

Building upgrade initiative will take place in the Bayview Hunters-point and portions of Visitacion Valley of San Francisco.

Figure 1 – Screenshot of Justice 40 Census Tracts per the CEJST



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Phase 1 Concept Narratives

Criterion 1: Assessing and Prioritizing Challenges

In March 2023, air quality regulators in the San Francisco Bay Area mandated phasing out the sale of natural gas water heaters by 2027. While this move is commendable, ensuring equitable outcomes, particularly in terms of affordability, remains a priority to the City & County of San Francisco. To address affordability, the team proposes the San Francisco Home Improvement Program for Everyone (SF HIPE). SF HIPE will leverage public-private partnerships to upgrade 200 homes¹ in 200 days with heat pump water heaters (HPWH) and select energy efficiency measures in and adjacent to a state-designated Disadvantaged Community (DAC). SF HIPE will serve as both a testing ground and a catalyst for sustainable practices in San Francisco's residential sector.

The team is targeting two neighborhoods in southeastern San Francisco for full-scale implementation (Figures 1 & 2); Bayview Hunters-Point (BVHP) and Visitacion Valley. Both are low-income, historically marginalized communities and BVHP is a state-designated DAC. They are known for their high diversity and density, vibrancy, ongoing transformation, and strong sense of community.

- **BVHP:** Of the 13,488 residential units, 59% (7,948) are single-family homes and 15% (2,035) are buildings with 2 to 4 units. About 75% are owner-occupied, while the remainder are rentals. The median year built is 1965.
- **Visitacion Valley:** Of the 12,660 occupied residential units, about 62% are owner-occupied, while the remainder are rentals. The median year built is 1955.

Almost all of the homes use natural gas for water heating. Most use the same type of water heaters: 40-gallon capacity, natural gas, tank-type water heaters.

The team compiled a list of challenges to building upgrades and established criteria for evaluating and ranking them. This process considered challenges that have the greatest impact on affected residents. It was supported by the team's work to actively engage with various stakeholders. This three-month engagement effort placed particular emphasis on engaging the residents through a multilingual (Chinese, English, and Spanish) electronic survey sent to 390 residents. Respondents identified and prioritized their greatest challenges related to efficiency and electrification. Additionally, the survey sought to identify the most trusted sources of influence for residents considering building upgrades.

The survey results helped prioritize the challenges and shape the approach. The team also analyzed the potential effects of these challenges on equity, feasibility environmental outcomes, and the financial impacts. Using the established criteria and ranking system, the team prioritized the challenges to building upgrades in the targeted zone. In order of priority, they are:

- High costs and lack of financial resources
- Lack of awareness, knowledge of benefits, and trust in contractors
- Protracted permitting time
- Consumer inertia

The team also reached out to fifteen local residential energy efficiency and electrification contractors to gain insights into the challenges they faced. Contractors provided recommendations to overcome the prioritized challenges and assessed SF HIPE's potential for success. Eight interviewees provided useful background, information, and recommendations to help shape the approach.

Concurrently, the team had discussions with multiple community-based organizations (CBO) and another municipality managing a similar project. The team released a public solicitation – in accordance with city requirements – to recruit CBO to join the team. The two selected CBOs, PODER and Rising Sun Center for Opportunity (Rising Sun), assisted with identifying

potential risks and mitigation strategies and suggested opportunities for outreach and to leverage their existing workforce development programs. The team also exchanged ideas and experience with representatives from another Bay Area city that has launched a small-scale, equity-based residential electrification pilot program.

Finally, the team engaged with staff from the SF Climate Equity Hub to discuss the priority challenges, develop solution strategies, and assess program feasibility. Funded by the SF Environment Department and led by the BVHP Community Advocates, the SF Climate Equity Hub advances climate justice through development of a clearinghouse that will provide support to homeowners, renters, and workers through the transition to all-electric buildings. In sum, these engagements ensured a holistic and inclusive approach to address the specific needs of the targeted community.

[\[1\]](#) SF HIPE defines a home as a single-family dwelling or a building with 2-4 residential units; both owners and renters are eligible.

Criterion 2: Addressing Challenges Through Innovation: Initiative Scope and Impacts

SF HIPE will accelerate and advance energy efficiency and HPWH installations with the following approaches.

To eliminate high costs:

Standardize equipment offerings, such as low-voltage (120VAC) HPWH compatible with dedicated / shared circuits, LED lamps, low-flow showerheads and faucet aerators, air-sealing caulking, and blow-in insulation.

Negotiate pre-determined discounts by leveraging the San Francisco government's bulk purchasing power to secure discounts of up to 15% on retrofit project costs including labor, equipment, permitting, etc.

Optimize panel capacity, simplify installations with standardized, low-voltage HPWH to avoid costly electrical panel upgrades. A 2021 SF Budget Analysis Office report showed avoiding electrical panel upgrades could reduce total project cost by 50% and saves time. The team will evaluate electrical codes for optimization without compromising safety, and use load-shifting, shedding techniques, and demand suppression devices.

Enroll participants in eligible incentives and tax credit programs to drive down first costs.

To increase awareness, knowledge, and trust:

Host demonstration projects to showcase the benefits and impact of the upgrades. These projects will be tangible examples, demonstrating the value and effectiveness of the upgrades.

Evaluate services with SF Racial Equity Scan, which evaluates city programs for potentially unintended impacts. The team will adjustments to ensure equitable outcomes for impacted population and community.

Deploy trusted messengers to conduct in-language, targeted outreach and recruit participants through personalized messages, community events, online sign-up portals, and advertising.

Conduct optimal commissioning and on-going operations to ensure ongoing benefits. QuitCarbon will assist contractors by establishing the correct initial configuration, and its software will ensure that the HPWH operates optimally.

To simplify permitting and installation processes:

Simply the permitting process: The SF Department of Building Inspections (DBI) will identify and streamline unnecessary code restrictions, explore bulk and online permitting, and may assign a dedicated plan-checker for bulk reviews.

To overcome consumer inertia:

Showcase successes from neighbors and local influencers who have made significant improvements to inspire others and create a positive narrative around the upgrades via various media.

Simplify the decision-making process by offering standardized measures. When consumers are presented with a limited range of standardized options, they may find it easier to compare products, make choices, and complete purchases. This simplicity can help reduce decision fatigue and increase conversion rates.

Offer full transparency by providing findings that are accessible, simple to understand, and in-languages. The findings will use QuitCarbon's software to forecast utility impacts to facilitate decision-making.

Create a sense of urgency to help homes prepare for the discontinuation of natural gas hot water heaters in 2027 and assist residents and homeowners in taking preemptive action to avoid being left without hot water.

Benefits to residents and the city include:

Reduced in-home and city-wide environmental impacts: HPWH produce no on-site emissions and are more energy efficient than natural gas counterparts. Faucet and shower aerators installations further increase efficiency.

Enhanced safety and indoor air quality by eliminating risks associated with natural gas combustion, such as carbon monoxide poisoning and gas leaks.

The team will mitigate the following risks:

Increasing utility costs after HPWH installations by conducting air sealing and blowing-in loose-filled insulation, installing low-flow shower-heads and aerators, and enrolling participants in CleanPowerSF programs to dampen costs of increased electricity use.

Post-retrofit displacement & rent increases by requiring participating landlords to contractually commit to not engaging in such practices. Additionally, the team and stakeholders are investigating additional tenant protection measures.

Pre-existing conditions: During planning, the team will identify sample homes with hindering conditions and prepare estimate repair costs to allocate budget. Major issues will be referred to the Mayor's Office of Housing for financial assistance including grants, loans for code deficiencies, safety hazards, maintenance, lead-based paint, and accessibility modifications.

Unintended consequences by using SF's Racial Equity Scan Tool before and during implementation.

SF HIPE offers many benefits to local contractors and equipment vendors. The team will recruit participants, allowing contractors to focus on their core competencies. With projects concentrated in a specific geographic area, they will have reduced travel time and fewer parking challenges. Contractors and vendors will benefit from increased sales and publicity exposure. Their growth will lead to workforce demand.

Criterion 3: Scaling and Replicating Innovation Through Community Engagement

SF HIPE is designed for *everyone*. All approaches outlined above may be scaled to realize widespread adoption, with community engagement being key. The following are built into the design and will support program scaling.

Engaging Additional Stakeholders, including District Supervisors, SF Public Library's city-wide environmental programs, community members and residents, contractors, and equipment vendors to support program design, roll-out and ongoing engagement.

Aggressive Outreach and Education to raise awareness about the benefits and incentives and tax credits, including workshops, info sessions, online resources, and collaborations with CBO.

Continue to promote successful upgrades and recognize participants.

Extend partnerships with contractors and vendors to create a trusted network and collaborate with industry associations and trade organizations to align efforts.

Engagement and education must be supported by solid and comprehensive program offerings and technical support that build program momentum including:

Eliminate customer costs by establishing pricing benchmarks. This involves gathering data on equipment and installation prices, analyzing aggregated demand to project potential discounts, considering all available incentives, and other relevant factors to gauge progress towards achieving zero customer costs. By leveraging aggregated demand, the team anticipates

reducing total project costs by approximately 10% to 15%, thus facilitating the realization of this goal.

Providing clear total upfront and ongoing costs by using QuitCarbon's software platform to provide clear information regarding any upfront project costs, as well as ongoing costs and savings after the project is completed.

Ongoing simplification and streamlining of processes such as permitting, financing, installation, and even contractor selection benefits everyone.

Continuous Improvement by monitoring and evaluating the effectiveness of the building upgrades and collecting feedback from participants, contractors, and other stakeholders to identify areas for improvement and new strategies.

SFE has decades of experience working with historically marginalized communities and other stakeholders in leadership and decision-making roles and integrating their ideas and concerns to support effective roll out of programs and policies related to EJ, energy, zero waste, and climate. It enlisted community leaders and others in crafting the 2021 SF Climate Action Plan (CAP) to ensure environmental benefits are equitably distributed and provide employment and business opportunities.

Organizations involved in the CAP are now part of the SF Climate Equity Hub advisory committee, which will play a vital role in SF HIPE. Members includes community members and leaders, government officials, and industry stakeholders. They will inform program decisions and support expanding SF HIPE into additional areas. Much of this work will be led by team members, PODER and Rising Sun, which each have deep community roots and are committed to environmental justice.

To address employment, the team member Rising Sun will engage contractors committed to job quality and High Road Training principles and will explore ways to encourage them to hire trainees from workforce development programs. Other employment opportunities include working with Rising Sun's youth Energy Specialists from its Climate Careers program to conduct the basic energy and water assessment, install LED lamps and water saving devices and provide conservation tips and education.

To replicate in other communities, the team will publish a "playbook" to provide best practices, lessons learned and other deployment strategies,

such as models for outreach campaigns. For example, SF HIPE's successful use of the recent phase-out of new natural gas WH to overcome consumer inertia may inspire regulators in other regions. The team will use its existing connections in organizations such as the Urban Sustainability Directors Network, Pacific Coast Collaborative, and other consortium to disseminate information. Other important stakeholders include:

Local Authorities can provide insights into local energy needs, infrastructure, and community dynamics. They can drive program implementation and their support can establish program credibility.

Local Sustainability Officials responsible for energy policies and air quality regulations are vital for obtaining necessary approvals, funding, and policy support.

Utilities, Community Choice Aggregators will facilitate access to existing incentive programs, energy consumption data, and provide resources and expertise in implementing energy efficiency.

CBO have on-the-ground insight into local needs and concerns, can help with education and outreach, and ensure that the program addresses specific challenges faced by their communities.

End Users and Energy Consumers' input (households, businesses, and institutions) is crucial for program adoption and success.

Criterion 4: Demonstrating Capabilities and Team Characteristics Critical for Success

The team comprises a balance of community-based, for profit, and governmental entities. The names, entity type, and the skills they bring to ensure SF HIPE's success are listed below:

- SFE excels in marketing, education, and outreach efforts. As lead of the Climate Action Plan, SFE engages complex topics with diverse audiences in multiple languages. SFE has decades of expertise in designing, administering, and implementing energy programs, as well as effectively utilizing state and federal grants to advance energy policies. SFE has extensive knowledge of existing local and regional energy efficiency incentive and tax credit programs. Through SFE's work

in programming, policies, environmental justice, and grantmaking, SFE has established a strong presence in various communities.

- SF DBI is a vital city department responsible for ensuring the fire, life, and safety of buildings and construction projects. It plays a crucial role in implementing and expanding building and energy code adoption to enhance the overall standards of construction in the city. Additionally, SF DBI works towards streamlining permit intake and review processes to make them more efficient and accessible to the community.
- The SF Climate Equity Hub, led by BVHP Community Advocates, is a CBO that channels resources and support to owners and renters to increase the demand for electrification retrofits in an equitable manner, while supporting High Road jobs and the growth of the industry to ensure they can meet the rising demand. It informs permitting requirements and processes to help streamline and reduce barriers to electrification.
- PODER is a CBO that specializes in developing consensus among diverse groups. Their primary focus is on finding innovative solutions to address the needs of underrepresented groups. Through their work, PODER strives to ensure that the voices and concerns of marginalized communities are heard and taken into account in decision-making processes.
- Rising Sun is a CBO that leads a regional High Road Training Partnership focused on ensuring job quality in residential decarbonization. Its Climate Careers program has a 23-year history of hiring youths to conduct home energy efficiency retrofits. Rising Sun also implements a high-impact construction career training program for community members with barriers to employment. It is committed to developing consensus among diverse groups, ensuring that all voices are included.
- QuitCarbon is a private entity that serves as a software provider and technical consultant. It specializes in identifying low-voltage appliances and overcoming technical barriers associated with electrification. QuitCarbon has developed and operates a software that streamlines assessments, optimizes electrification roadmaps, right-sizes procurement, and predicts utility bill impacts. It has deep expertise in electrifying SF's residential sector, particularly through HPWH installations, cost-minimized electrical plans, rebate and incentive

stacking, equipment commissioning, and ongoing monitoring to ensure maximum bill savings.

Each member of the team has extensive experience accessing and combining multiple sources of funding to fully resource initiatives or activities. SFE leads and support various Bay Area Regional Energy Network (BayREN) programs locally. Therefore, SFE will access and use the BayREN Single-family Upgrade program to reduce first cost. The program provides up to \$2,000 in HPWH installation and up to \$5,000 in whole home retrofit. SFE works closely with CleanPowerSF and will assist participants with enrolling in electrification friendly rates. Through general city funds, SFE also funds the implementation of the SF Climate Equity Hub. Its steering committee will support the development of the SF HIPE implementation plan.

Rising Sun has workforce programs funded by various sources, include BayREN. Youth employed in its programs will provide installation of LED lamps, low-flow faucet aerators and shower-heads. PODER is currently implementing a small residential electrification project in another San Francisco neighborhood. PODER will bring the best practices and lessons learned from the project into SF HIPE.

Team member QuitCarbon will provide technical consulting services to the team, offering expertise in program design and the critical path to a successful soft launch. Notably, they have recently been awarded a Phase 1 Prize in the US Department of Energy's Equitable and Affordable Solutions to Electrification program.

The team anticipates technical expertise and support in the development and implementation as described in Table 1.

The team anticipates funding will be allocated between team members as follows:

- San Francisco Government = \$190,000
- End-users, residents, stakeholder engagement = \$10,000
- PODER = \$75,0000
- Rising Sun Center for Opportunity = \$75,000
- QuitCarbon = \$50,000

Criterion 5: Achieving Equitable Building Upgrade Strategies (to be completed only by teams submitting to the Equity-Centered Innovation Pathway)

The team complies with two criteria for equity innovation pathway. SF HIPE services will focus on homes in the city's Justice 40 census tracts and locally identified equity-eligible buildings. The targeted neighborhoods fall within the Justice 40 census tracts designated by the DOE and verified using the Climate and Environmental Justice Screening Tool. The team's definition of equity-eligible buildings consists of single-family buildings and residential buildings with 2 to 4 units, located in and within a mile of the DAC. ***100% of SF HIPE upgrades will take place in equity eligible buildings.***

The targeted zone comprises BVHP and a portion of Visitacion Valley. BVHP is a state-designated DAC due to its significant burden of environmental stressors and cumulative impacts. In close proximity to BVHP lies Visitacion Valley, which also experiences comparable levels of stressors and impacts. Specific indicators can be found in the supplemental materials. Both communities are vulnerable to multiple sources of pollution, including emissions from freeway traffic and industrial sources.

BVHP and adjacent neighborhoods have had a history of racial and ethnic segregation, particularly resulting from discrimination by government entities, which have historically enacted racist policies that have adversely affected them. These policies have resulted in systemic discrimination and disadvantages for the predominantly African American community and include:

Residential Segregation: Local government entities, such as housing agencies, have implemented policies such as restricted access to housing, loans, and resources based on race that facilitated racial segregation, leading to concentrated poverty and limited opportunities.

Environmental Injustice: BVHP has become burdened with high concentrations of industrial and hazardous waste due to the presence of the Naval shipyard.

Disinvestment: Local government disinvestment in essential services and infrastructure, such as healthcare facilities and transportation, has been

prevalent and perpetuated cycles of poverty and limited economic opportunities.

Gentrification: Increasing housing costs have displaced communities and disrupted their social fabric, leading to gentrification and pushing out longtime residents who could not afford the rising costs of living.

SFE has decades of experience providing energy efficiency work in multi-unit buildings. It has also done extensive residential outreach in the targeted neighborhood in zero waste and toxics reduction. As noted, the team includes two CBOs that will serve the occupants of the equity eligible buildings: Rising Sun and PODER.

- Rising Sun's mission is to build career pathways for economic equity and climate resilience. Its workforce development programs prepare youth, women, people of color for quality career in construction and climate-related fields. It provides no-cost energy and water efficiency services to thousands of Bay Area households. It also advocates for equity in local and state-level policies related to climate and jobs and leads the regional Residential Building Decarbonization High Road Training Partnership.
- PODER is a grassroots organization that creates people-powered solutions to the profound environmental and economic inequities facing Latinx immigrants and other communities of color in San Francisco. Since 1991, with participation from residents in the Mission, Excelsior and other southeast San Francisco neighborhoods, PODER has won important advances in public health and environmental justice, the availability of affordable housing, access to parks and open space and accountable government.

Currently, PODER is leading a small-scale residential pilot aimed at implementing an equitable, neighborhood-scale electrification project in another low-income SF neighborhood. The primary goal is to effectively reduce emissions and bring about positive changes that will benefit the low-income community.

To that end, PODER is facilitating community engagement and working with a coalition of stakeholders to ensure a just, safe, and healthy transition to

decarbonization in the neighborhood, aligning with the SF Climate Action Plan. This involves co-designing an approach that avoids negatively impacting communities by making upgrades affordable and preventing displacement and gentrification.

In addition to formal partnerships with PODER and Rising Sun, the team will leverage its long-standing partnership with the Emerald Cities Collaborative, which has worked with SF Environment on gauging the workforce development impacts and opportunities of its building electrification policies.

SF HIPE accelerates climate resilience investments in low-income communities, creating environmentally and economically sustainable neighborhoods. It will also create opportunities for workers and businesses and contribute to greenhouse gas emissions reduction.