

A vibrant city street scene featuring tall skyscrapers, palm trees, and a busy pedestrian crosswalk. The scene is captured in bright daylight, with clear shadows cast on the pavement. The text '2021 BAYREN Annual Report' is overlaid in large, white, sans-serif font across the center of the image.

2021

BAYREN

Annual Report

Local Governments Empowering Our Communities

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EXECUTIVE SUMMARY

156 million tons of carbon avoided

60,695 housing units upgraded

ACHIEVEMENTS TO DATE

\$55.4 million incentives awarded

\$1 million in capital funding (non-ratepayer) for water & energy projects

The Bay Area Regional Energy Network (BayREN), a coalition of the Association of Bay Area Governments (ABAG) and the nine San Francisco Bay Area counties, has entered its 10th year as a program administrator. During 2021, BayREN's unique organizational structure continued to support local action to meet California's energy, water, and greenhouse gas reduction goals all while pushing greater integration of equity into program design to ensure the program portfolio reflects the diverse needs of the Bay Area's nine counties and 109 cities.

Notably, BayREN facilitated electrification efforts in a more pronounced and effective manner by offering increased rebate opportunities for heat pump water heaters, heat pumps, and induction cooktops, supporting educational and awareness campaigns, and decreasing rebates for natural gas appliances.

2021 was the third consecutive year of drought in California with six Bay Area counties in a state of "exceptional" drought, but the year also marked significant progress for local water efficiency through the enrollment of the cities of Sebastopol and Cloverdale in BayREN's Water Upgrades Save program, and BayREN's continued partnership with the Rising Sun Center for Opportunity (Rising Sun) which recruited local youth for "earn and learn" experiences resulting in the regional distribution of 2,500 efficient-flow showerheads, and nearly 7,000 kitchen and bathroom aerators. These offerings exemplify BayREN's innovative programs that enhance the typical incentive program model with

customer-focused technical assistance, creative financing, marketing and outreach, and capacity building services that improve the uptake, satisfaction, and effectiveness of our programs.

"We pride ourselves in supporting local governments to implement solutions that tackle climate change through building improvements."
— Jenny Berg
Portfolio Administrator

EQUITY IN ACTION

A significant effort throughout 2021 was the completion of BayREN's 2025 Strategic Plan¹ that sets forth the road map for integrating equity throughout both the program portfolio and BayREN operations. Through this process, BayREN created an equity definition:

*For BayREN, **equity** means addressing systemic barriers to energy efficiency and electrification, especially for, and in collaboration with, equity priority communities and those who disproportionately face energy burdens, climate impacts, and are underrepresented in policy and decision-making.*

Central to this effort is the understanding that achieving equity is not a simple task to be completed at a specific point in time, but rather an ongoing process requiring the organization to practice and continually improve. The Plan is a five-year action timeline and was created with the intention of integrating equity more intentionally throughout BayREN's portfolio, as demonstrated in BayREN's 2024-2031 Business Plan².

To meet the needs of all of the Bay Area jurisdictions we serve, BayREN also provides rebates for high efficiency gas appliances. While BayREN supports the shift to all electric buildings, we also recognize the need to balance and manage the tensions between moving customers to all-electric and serving homeowners and renters who cannot afford or easily implement electrification measures. For our customers who need to stay with

gas appliances due to cost or other technical barriers, we ensure that they have access to the most efficient gas appliances possible. Recognizing the importance of supporting these populations, we plan on phasing out natural gas rebates by 2026.

In 2021, BayREN worked to further integrate equity and accessibility practices into program offerings. Notably, online offerings were fine-tuned, and more in-language resources were provided to meet the needs of underserved residents, contractors, and stakeholders. In addition to program-specific changes, a revamped website was launched late in the year, culminating a year-long effort to increase language offerings and create a one-stop shop for all BayREN customers and partners.

Further, we jumpstarted our presence via multiple avenues, including a quarterly newsletter, a newly developed presence on social media channels, and streams of information for BayREN partner agencies and program implementers to use and share. Partner agencies were supported in the use of these materials through an established monthly office hours session for questions and brainstorming. Outreach efforts also aimed to further align messaging and promote cohesive and complementary program services to residents. Through social media, BayREN has been able to highlight workshops in multiple languages, provide updates on programs, and celebrate key partners, including Rising Sun, StopWaste, Kitchens to Life, and many others.



“Through BayREN, Bay Area communities can benefit from home improvements and address common health problems.”



*- Candis Mary-Dauphin,
Program Manager
StopWaste*

¹ <https://www.bayren.org/sites/default/files/2022-04/BayREN%20Strategic%20Plan%202025.pdf>

² <https://www.bayren.org/sites/default/files/2022-03/A2203XXX%20-%20BayREN%20-%20Application%20for%20Approval%20of%20Business%20Plan.pdf>

EXECUTIVE SUMMARY

RESULTS: ENERGY AND WATER SAVINGS, CODE COMPLIANCE, TECHNICAL ASSISTANCE, AND POLICY RESOURCES

This past year was a successful year with programs meeting or exceeding program goals. BayREN's residential programs served more than 6,000 single family households and over 2,300 multifamily units, resulting in 3.6 gross gigawatt-hours (GWh) and 305,689 gross therms saved with a third of the electricity savings (1.2 GWh) coming from fuel substitution measures. Significantly, our collaborative efforts with Community Choice Aggregators, participation in the Building Decarbonization Coalition's 'Switch is On' campaign, and the launch of the statewide Technology and Equipment for Clean Heating (TECH) initiative led to a four-fold increase in home electrification measures and subsequent doubling of electricity savings compared to 2020. Additionally, the Green Labeling program completed 379 electrification checklists, provided nearly 4,500 single family homes with Home Energy Scores and \$1.1 million in Assessor rebates, making it the most successful program year for both program participation and rebate disbursement. Additionally, the program trained 282 real estate professionals through 16 unique trainings.

The Water Upgrades Save program launched regional services, enrolled two municipal water utilities including the cities of Sebastopol and Cloverdale, and completed 42 single-family projects in seven months.

The Codes & Standards program provided 35 trainings and held four remote forums with 467 attendees.

BayREN's Commercial program prepared to launch while overcoming challenges due to COVID-19 such as finding a new implementer and navigating changing restrictions for small and medium businesses.

GAUGING OUR IMPACT

In 2012, the CPUC issued Decision (D.) 12-11-015 providing the criteria upon which REN programs are evaluated.³ As a regional energy network, BayREN also helps to make state policy objectives (i.e., reducing GHG emissions and increasing energy savings) practical at the local level by conducting three overarching services, also referred to as BayREN's Value Pillars:

1. BayREN builds human and organizational infrastructure within local jurisdictions so that Bay Area communities are better able to save energy and reduce greenhouse gas emissions.

EXECUTIVE SUMMARY

BayREN is suited to serve in this capacity because of the member's connections to local jurisdictions and their understanding of what is needed by local governments and their communities.

2. BayREN obtains energy savings locally while also supporting local difficult to serve populations.

Local governments have a deep understanding of the needs of their communities. Based on the member's (i.e., local government's) assessment of the needs in their communities, they have identified populations that are in need of additional support, and they are designing program activities to better target these populations.

3. BayREN tests innovative solutions that have the potential to help local jurisdictions increase energy savings and reduce greenhouse gas emissions.

The innovative solutions tested by BayREN have emerged from discussions with local governments and thus represent local needs. These innovative solutions are wholly designed and implemented by the BayREN members, which are themselves local governments, to fill gaps that the members (local governments) feel exist.

In 2020 as part of the Annual Budget Advice Letter, BayREN submitted value metrics and measurements within these Value Pillars that demonstrate BayREN's impacts in reducing GHG emissions and increasing energy savings, as well as many non-energy benefits. These metrics are focused measurements, intended to detail the value that BayREN provides to



the State. 2021 is the first year that BayREN is reporting on these metrics. BayREN was able to meet goals in all three pillars as described in the Value Metrics section of this report.

A key component of BayREN is that the organization is uniquely positioned to provide a multitude of benefits through local government levers - local relationships, communication channels, processes, data, and community members that can be tapped into by BayREN members. These levers, different for each program, are enabled because BayREN is organized around a representative agency from each of the nine Bay Area counties.

³ The criteria are: 1. Activities that utilities cannot or do not intend to undertake; 2. Pilot activities where there is no current utility program offering, and where there is potential for scalability to a broader geographic reach, if successful; and 3. Pilot activities in hard-to-reach markets, whether or not there is a current utility program that may overlap. Note this criterion was reiterated in D.19-12-021 and expanded the utility programs to also include CCA programs.

PORTFOLIO OVERVIEW

RESIDENTIAL SECTOR

BayREN's three residential programs seek to provide an affordable and feasible pathway for underserved communities to benefit from ratepayer programs, rebates and financing to make homes more energy-efficient, healthier, and resilient.

Single Family Home+

Through the Single Family Home+ (Home+) program, BayREN provides a variety of service offerings to Bay Area single family homeowners and renters including rebates for qualifying measures, an online energy evaluation, no-cost energy efficiency kits, in-home education, and direct install services. A central part of this program is free energy advising from accredited building performance professionals (Energy Advisors) that work hand-in-hand with customers through the entirety of their energy retrofit project. The Energy Advisors provide unbiased advice, education about the co-benefits of energy efficiency including health, support with contractor selection, and installation best practices. Program participants work with Home+ participating contractors who are trained in building science, and who are well versed in maximizing energy savings and non-energy benefits. Energy Advisors also refer customers to other Bay Area complementary programs that may be more appropriate. Apart from rebates, the Energy Advisor service continues to be our customers' most valued BayREN offering.

Green Labeling

The Green Labeling program builds on BayREN's work in the single-family market by focusing on additional market actors: real estate professionals and Assessors. Targeted trainings are provided to realtors, appraisers and lenders to increase their ability to understand, market and evaluate energy efficient and green homes. Through this

program, Assessors are provided training on the Department of Energy's Home Energy Score (HES) and are eligible for a rebate for each subsequent HES project. The goal of the program is to establish integrated and aligned green labeling to increase awareness and transparency of residential energy information, thereby supporting and increasing energy savings in the single family program.

Bay Area Multifamily Building Enhancements (BAMBE)

BAMBE's successful program design aims to engage multifamily property owners who are sensitive to the barriers of participating in a rebate program and helps them plan and undertake upgrades. BAMBE offers no-cost technical assistance and a per-unit flat rebate for multiple-measure energy upgrade scopes that save a minimum percentage of the whole building's energy usage. In 2021, to promote consistency across multifamily rebate programs in the Bay Area, program staff worked with PG&E to offer a participation pathway for smaller PG&E Multifamily Upgrade Program projects. In addition, the program continued to offer a Clean Heating Pathway, which launched in 2020 and provides incentive adders, technical assistance, and a phased gas



PORTFOLIO OVERVIEW

elimination plan for participants with scopes of work that include at least one electrification measure and no gas-to-gas measure improvements. Through the Clean Heating Pathway, the program seeks to address barriers to electrification in the multifamily sector which include insufficient electrical capacity, high material and labor costs, and contractor unfamiliarity with heat pump technology.

COMMERCIAL SECTOR

Small and Medium Business (SMB) Commercial

At the start of 2021, the small and medium business (SMB) program consisted of two subprograms: BayREN Business and BayREN Microloan. The pandemic had a devastating impact on the SMB sector. Not surprisingly, SMB decisionmakers prioritized operational aspects that aided economic recovery over energy efficiency. Both BayREN Business and BayREN Microloan struggled with acquiring program participants. By September, BayREN Microloan's lender, Mission Asset Fund, decided to withdraw from the partnership to focus resources on its own business microloan program. The BayREN Business program continued to deploy its innovative pay-for-performance approach but made adjustments along the way to increase uptake. Despite the setbacks, BayREN Commercial gained much insight into the SMB sector which will inform major program changes in 2022.

CROSS-CUTTING SECTOR

Codes and Standards

BayREN's Codes and Standards program seeks to assist local governments with energy policies and energy code compliance by providing support for Bay Area local governments to increase energy performance of buildings by improving energy code compliance and increasing adoption of local energy policies.



The program also serves as a bridge between local governments and the California Energy Commission to ensure that the voice of local governments is heard when state policies are developed.

Water Upgrades Save

This innovative water-energy nexus program provides turnkey utility investment and project installation service to Bay Area municipal water utilities seeking to offer their customers easy access to water-related utility bill savings. It is the first, and currently only, tariff on-bill program in California. In 2021, Water Upgrades Save launched its regional program, set up capital funding procedures and protocols, activated its operations team, and initiated a water utility recruitment campaign that resulted in enrollment by the cities of Sebastopol and Cloverdale. Designed to provide centralized utility investment capital and program administration to participating water utilities, this program has influence in multiple markets, including renters and low-income households, and offers customers a simple and attractive path to install water-saving technologies with little-to-no upfront cost.



2021 Programs

RESIDENTIAL

SINGLE FAMILY HOME +

The Home+ program contributes to the overall BayREN mission by reaching underserved populations, specifically moderate income single family households, defined as households that make between \$48,000 and \$125,000, and households whose primary language is not English. These households have been shown to be underserved in Pacific Gas and Electric Company's (PG&E) past Home Upgrade program and in statewide evaluations of residential programs.

The Home+ program also offers an electrification pathway that allows eligible customers to receive incentives for switching from natural gas fueled space heating, water heating, clothes dryers and cooking appliances to cleaner, highly efficient electric alternatives. Due to partnerships with local Community Choice Aggregators (CCAs) and the launch of the statewide Technology and Equipment for Clean Heating (TECH) the program has seen a four-fold increase in electrification measures and subsequent doubling of kWh savings compared to 2020. StopWaste (as the Alameda County BayREN member) continued to administer the Mid-Stream Heat Pump Water Heater project designed to increase the use of heat pump water heaters (HPWH) in the region.

This effort and the seamless coordination with Home+ for enrollment and rebate processing resulted in an increase in heat pump water heaters installed from 63 in 2020 to 373 in 2021.

Energy Benefits to Customers

In 2021, more than 6,000 unique customers completed improvements with Home+ participating contractors, resulting in incentive payments of \$3.85 million. Additionally, 2,685 single family homes were upgraded with direct install and energy efficiency kit measures such as faucet aerators, high efficiency showerheads, LEDs, and advanced power strips. Participants saved a total of 2.5 gross gigawatt-hours (GWh) and 198,428 gross therms, with 1.21 gross GWh attributed to fuel substitution measures.

Non-Energy Benefits to Customers

The Home+ program offers an Energy Advisor service, which operates as an impartial help line and directs residents to resources, whether Home+ or other complementary programs. Energy Advisors responded to 5,091 inquiries and made 1,538 referrals to complementary programs. The program's marketing and outreach

efforts included 46 homeowner workshops and direct mail campaigns to 86,000 recipients to promote the Home+ program and other relevant events.

Gaps Being Filled

Home+ continued to address local difficult to serve populations in the following ways:

1. Conducting a series of four webinars in October and November in English, Cantonese, Mandarin and Spanish, to provide information about available resources and rebates. Over 140 people registered and 82 attended. In addition,

2021 PROGRAM FOCUS

- Reached local difficult-to-serve customers
- Collaborated with local partners on regional outreach
- Prioritized engagement with Spanish and Chinese Media

2021 SINGLE FAMILY HOME+ ACHIEVEMENTS

\$3.85
million
incentives awarded

2,685
homes
were upgraded

6,000
customers
completed
improvements

2,255
Green House
Calls

several BayREN member agencies sent letters in Spanish and Chinese to households with information about BayREN programs.

2. Partnering with Rising Sun, a nonprofit organization that employs local youth to conduct basic home energy assessments and install energy and water saving fixtures, to complete 2,255 “Green House Calls”. This year, similar to 2020, the assessments were completed virtually via an online survey and follow-up call. Afterwards, a customized energy efficiency kit was mailed. The partnership focuses on underserved audiences, resulting in 38% (826/2,412) of respondents coming from households where a non-English language is spoken and 41% (893/2,412) of respondents identifying as moderate income.

Local Government Levers

The local governments that comprise BayREN have been utilizing their credibility, partnership building capacity and access to data to promote the program. For the Single Family program, our county member agencies were able to send letters on local government letterhead to the underserved audience (moderate income and in other languages) to inform them of program offerings. Often, these letters included mentions of complementary programs such as the Rising Sun Green House Calls, and promoted the webinars, including the Spanish language events. BayREN worked with the counties to engage workforce development training centers to bring appropriate

trainings to the underemployed and underserved. Individual counties also began to engage their workforce development boards to connect job seekers to opportunities in residential energy efficiency work.

Future Opportunities

Value Pillar 1: Building Organizational & Human Infrastructure

BayREN will continue to work with other program partners, especially the Mid-stream HPWH program and TECH initiative to conduct outreach to manufacturers and distributors. This coordination allows for unified messaging to contractors and potential integration into product training and communications. Engagement with community-based organizations also emphasized the need to enroll more contractors with ability to provide support and services in languages other than English. To accomplish this, Home+ began offering a \$500 enrollment bonus to contractors who provide additional language capability, and engaged with business organizations like the Hispanic Chamber of Commerce.

BayREN has also determined that there is a great need for a trained workforce as several participating contractors have indicated that they are unable to hire in order to grow their capacity. The program will focus on coordinating with training and workforce development organizations on the skills necessary and connecting the participating contractors to job seekers. There was also a great

2021 PROGRAMS

need expressed by the contractors for support trades, such as electricians and raters who do not officially enroll in the Home+ program but provide services necessary to complete projects, especially for electrification. BayREN will explore how to facilitate those connections through outreach to specialty trades.

Value Pillar 2: Serving Difficult to Serve Populations

BayREN recognized that the previous definition of moderate income, set at a static \$48,000 to \$125,000 per household per year, did not consider vast differences in the cost of living across different locations within the Bay Area, as well as size of the household. In 2022, we will redefine moderate income by setting the floor at the income guidelines per household by county for income-qualified weatherization programs and the ceiling at the median California Housing and Community Development income limits per household per county. This will allow BayREN to avoid duplication with any income-qualified programs while aligning with state standards. BayREN is also considering increasing the incentive levels for households that fall into this range as acknowledgement that additional capital may be necessary to overcome financial barriers.

This new definition and the potential increase in incentives will allow us to better coordinate with programs and agencies that offer services based on these income guidelines. BayREN initiated new relationships with several organizations that serve moderate income households in 2021 and will continue to ramp up efforts in 2022 such as Housing and Urban Development Counseling Agencies and home repair services like Habitat for Humanity and city rehabilitation programs. We have also started to engage property managers with portfolios of 1-4 unit buildings to discuss how energy efficiency and electrification upgrades can be incorporated when a unit is turned over.

During 2021, BayREN was able to connect with several community-based organizations that serve the Spanish, Chinese and Vietnamese communities as well as in-language media channels. The program will continue to cultivate these existing relationships and seek to build more through our county representatives. Based on the feedback from these organizations, the program will continue to engage and address the obstacles that are found in these communities, especially with regards to recruiting service providers with multilingual capabilities.

Value Pillar 3: Testing Innovative Solutions

BayREN will continue offering the decarbonization measures launched in March 2020 and expand on the collaborations with CCAs, the statewide TECH Program and the nascent PG&E WatterSaver program. The launch of these incentive programs and the subsequent consumer demand has necessitated responses to the rapid development of the market BayREN seeks to find innovative solutions to obstacles that have been discovered such as facilitating bulk purchase of heat pump water heaters and loaner gas water heaters to ease the transition in emergency replacement situations. Much of the need is addressing the workforce and contractor capacity issues outlined in Pillar 1 and BayREN is working to address capacity and supply chain issues as they arise.

BayREN has also been working with CCAs as they set up financing mechanisms and direct install programs that incorporate electrification measures into a project scope. Cooperation with these programs eliminates unnecessary paperwork, different qualifications and allows for a singular marketing message to the public so the program continues to respond and alter our processes to streamline these efforts.

CLIMATE CAREERS: YOUTH OPPORTUNITIES

In 2021, Rising Sun partnered with BayREN to implement the Climate Careers program, an innovative “earn and learn” program that has trained local youth in meaningful climate related work since 2000. Through the Climate Careers program, youth from low-income households provide residents with no-cost energy and water efficiency services called Green House Calls. Last year, 33 youth Energy Specialists helped to deliver 2,496 energy efficiency kits to residents in the nine Bay Area counties. Energy efficiency kits include LED lights and nightlights, efficient showerheads, kitchen and bathroom faucet aerators, and smart power strips. Assuming participants installed all the measures included in the kits, they will have prevented a total of greenhouse gases that equate to driving about 2.4 million miles.

As Rising Sun continues to excel in its mission to build career pathways for economic equity and climate resilience, BayREN is honored to continue an ongoing partnership with the organization and the opportunity to expand the program to address the intersecting needs to both grow the energy efficiency and electrification workforce and to provide high roads jobs for youth, as proposed in BayREN’s 2024-2031 Business Plan.



2021 PROGRAMS

GREEN LABELING

In California, improving the energy efficiency of existing residential buildings is an urgent priority for state, regional and local governments. Making significant and lasting reductions in residential energy use requires sustained, multifaceted interventions to motivate the public to invest in energy efficiency and other green home improvements. In support of goals to improve the energy efficiency of existing buildings, BayREN’s Green Labeling program is training real estate professionals to understand the benefits of an energy efficient home, and then be able to effectively market green homes at the time of sale. As such, this program is helping to build capacity. The program is also promoting and scaling mechanisms (e.g., the DOE’s Home Energy Score) that make home energy assets⁴ transparent.

This infrastructure within local communities encourages energy efficient investments at critical moments—the time of a home’s sale, before a major renovation, or as a starting point to a homeowner’s energy efficiency journey. Making these investments at critical points in time will have a long-term effect on both the buildings and the larger community.

Gaps Being Filled

While homeowners may know that their house is drafty or uncomfortable, they may not know exactly where to begin to make energy efficiency improvements, or how their home compares to similar ones. The Home Energy Score (HES) acts as a low-cost tool to close

this information gap. While full energy audits can provide a wealth of detailed information, the cost and length of time to complete can be a barrier to wide-scale adoption. Audit reports also do not provide for an easy to understand, direct comparison between homes like the HES offers with its 1 to 10 scale. The Score and report can be useful when buying or selling homes as a comparison tool or to identify improvements that can be made before embarking on a home renovation. Other than by BayREN, HES is not offered in the Bay Area. The Green Labeling program’s electrification

checklist fills a gap in training the current workforce on newer electrification technologies and what makes a house a good fit for the switch from gas to electric appliances. Collection of information both through the Score and the electrification checklist provides accurate information about the Bay Area’s housing stock that can help inform policy and how best to target homes for efficiency upgrades. Piloting of Activities

In August 2020, the Green Labeling program launched

an electrification checklist as an addendum to the HES. This pilot was developed in response to the State’s efforts to decarbonize buildings and Assessors’ interest in learning more about electrification. To complete the checklist, Assessors collect additional data points that relate to the home’s readiness for electrification such as electrical panel capacity, stove and dryer fuel types, and additional information about the location of the hot water heater. Based on this additional information, Assessors were trained on what makes a home a “good”

2021 PROGRAM FOCUS

Increased uptake of
HES

Incorporated
electrification into HES

Continued engagement
with real estate
professionals

⁴ HES evaluates the assets of a home (appliances, insulation, windows, etc.) that determine the efficiency of a home.

2021 GREEN LABELING ACHIEVEMENTS

34 assessors
4,362 homes scored
4,213 electrification checklists
\$1.09 million incentives paid

or a “great” fit for electrification recommendations. If the checklist was completed, the Assessor received a \$100 bonus incentive per home (until January 15, 2022 when the incentive was decreased to \$50). The City of Berkeley made the electrification checklist a mandatory part of its Building Emissions Savings Ordinance (BESO).

A report highlighting the first 17 months (August 2020 to December 2021) of the electrification checklist was published in March 2022. This report analyzed over 4,000 checklists. Highlighted trends include an overall increase in electrification and decrease in natural gas recommendations to homeowners and a greater likelihood of Assessors recommending electrification measures over natural gas when completing a checklist compared to those who did not. The report also gleaned helpful information on the housing stock, including panel sizes, locations of water heaters, and appliance fuel types to help Assessors understand when single-measure or whole-home electrification may be appropriate. The electrification checklist will continue to be offered as an optional addendum to the HES through BayREN.

Piloting of Activities

In August 2020, the Green Labeling program launched an electrification checklist as an addendum to the HES. This pilot was developed in response to the State’s efforts to decarbonize buildings and Assessors’ interest in learning more about electrification. To complete the checklist, Assessors collect additional data points that relate to the home’s readiness for electrification such as electrical panel capacity, stove and dryer fuel types, and additional information about the location of the hot water heater. Based on this additional information, Assessors were trained on what makes a home a “good” or a “great” fit for electrification recommendations. If the checklist was completed, the Assessor received a \$100 bonus incentive per home.⁵ The City of Berkeley made the electrification checklist a mandatory part of its Building Emissions Savings Ordinance (BESO).

A report highlighting the first 17 months (August 2020 to December 2021) of the electrification checklist was published in March 2022.⁶ This report analyzed over 4,000 checklists. Highlighted trends include an overall increase in electrification and decrease in natural gas recommendations to homeowners and a greater likelihood of Assessors recommending electrification measures over natural gas when completing a checklist compared to those

⁵ On January 15, 2022, the incentive was decreased to \$50 per home.

⁶ https://www.bayren.org/sites/default/files/2022-03/BayREN%20Electrification%20Checklist%20Report_03.07.2022.pdf

Home Energy Score:

A Home Energy Score Assessor will collect information during a home inspection walk-through and score your home on a scale of 1-10.



A score of 1 indicates the home needs extensive energy improvements

A score of 10 indicates the home needs extensive energy improvements

who did not. The report also gleaned helpful information on the housing stock, including panel sizes, locations of water heaters, and appliance fuel types to help Assessors understand when single-measure or whole-home electrification may be appropriate. The electrification checklist will continue to be offered as an optional addendum to the HES through BayREN.

Local Government Levers

The Green Labeling program utilizes local governments for outreach and relationship building. As the audience for the HES largely overlaps with the Home+ program, local governments discuss the HES at homeowner workshops. The program also relies on local governments for communication and partnership with local associations of Realtors. This relationship building is useful in finding co-hosts for real estate trainings and helps to develop local realtors as BayREN stakeholders who may inform their clients about HES, Home+ rebates, or other BayREN programs.

Additionally, the Green Labeling program works closely with jurisdictions who have or are considering using HES as part of a mandatory ordinance, such as the City of Berkeley’s BESO and the City of Piedmont’s existing building reach code, on how the Score can help them achieve their goals. As such, there is ongoing collaboration with the BayREN Codes and Standards program.

Future Opportunities

Value Pillar 1: Building Organizational & Human Infrastructure

In 2021, the Green Labeling program continued to build the capacity of real estate professionals to accurately value and market energy efficiency in single family homes through trainings and partnerships. In addition to increasing the number of participating Assessors to 34, up from 25 in 2020, and conducting an increased number of trainings, 16 up from 12 in 2020, the program deepened its existing relationships – with both Assessors and home inspectors – to increase the number of HES and improve accessibility in all nine Bay Area counties. In 2022, enrollment will be targeted in counties with lower percentages of HES in comparison to their eligible housing stock.

Value Pillar 3: Testing Innovative Solutions

In 2021, the Green Labeling program continued to test the HES as an effective tool for increasing energy transparency in single family homes. BayREN’s program received a DOE HES Partner innovation award for successfully building and expanding a voluntary HES program in the nine-county San Francisco Bay Area, with over 12,000 scores performed since 2015. In 2022, the Green Labeling program intends to increase the uptake of the HES, as well as look for opportunities to improve the Score and HES Report to provide more value as a voluntary informational tool, but also potentially for building code applications.

HES CHECKLIST PILOT REPORT

In response to the growing importance of decarbonizing existing homes to meet State and local climate goals, the BayREN Green Labeling program launched the Electrification Checklist pilot in August 2020. The Checklist is an optional addendum to the U.S. Department of Energy's Home Energy Score, which is promoted through BayREN. In addition to the data points collected during a Home Energy Score, including home insulation, efficiency of space and water heating, and window types, the Electrification Checklist collects data points related to the home's electrification potential, such as panel size and cooking fuel source. The Checklist both helps train Assessors on what homes are potential candidates for home electrification and familiarizes homeowners with technology options like heat pumps. Since the pilot launched, over 4,000 Checklists have been collected throughout the Bay Area. The Checklists have provided helpful information on the existing housing stock and have shown an increase in Assessors recommending electrification measures and decrease in fossil fuel gas measures to homeowners.



RESIDENTIAL

BAY AREA MULTIFAMILY BUILDING ENHANCEMENTS (BAMBE)

The BAMBE program contributes to the overall BayREN mission by reaching multifamily communities that are often underserved by traditional programs such as those in small (less than 100 unit) or owner-occupied multifamily (MF) buildings. Since 2020, the program has used a set of targeting criteria to ensure the prioritization of multifamily property types that energy efficiency programs have in the past, unsuccessfully served. A property meets the targeting criteria if it:

- Contains less than 100 units
- Is a deed-restricted or naturally occurring affordable property
- Has a resident ownership structure such as a Homeowners Association (HOA) or co-op
- Is located within a disadvantaged community (determined by the AB 1550 Low-Income Communities map)

Properties that do not meet at least one of these criteria are put on a waitlist and admitted into the queue periodically if there is availability in the pipeline.

In addition, the program offers a zero net carbon (ZNC) pathway for multifamily buildings. Through the administration of an electrification pilot launched in 2019, the program developed insights on the technical assistance and design components that have the potential

to incentivize property owners to upgrade from gas to efficient electric water heating, space heating, and cooking technology. The program took the lessons learned from that pilot to develop the Clean Heating Pathway, which launched in 2020, and provides incentive adders, technical assistance, and a phased gas elimination plan for participants with scopes of work that include at least one electrification measure and no gas-to-gas measure improvements. Through the Clean Heating Pathway, the program seeks to address barriers to electrification in the multifamily sector which include insufficient electrical capacity, high material and labor costs, and contractor unfamiliarity with heat pump technology.

2021 PROGRAM FOCUS

Prioritized difficult to serve communities

Supported the launch of the Bay Area Healthy Homes Initiative

Assisted participants with cash flow issues through phased incentives

Launched NOAH stakeholder engagement

Energy Benefits to Customers

BAMBE has maintained its popularity since inception in 2013 and to-date 43,377 units, totaling 592 projects, have been upgraded. In 2021, 24 projects representing 2,302 units completed upgrades receiving more than \$1.75 million in incentives, leading to 1.1 gross GWh and 107,261 gross therms saved for traditional projects and 0.03 gross

GWh from electrification projects.

Non-Energy Benefits to Customers

BAMBE provides no-cost technical assistance and complimentary referrals for projects that do not meet our criteria. In 2021, the program provided technical assistance to more than 9,336 units and referrals totaling 390 units were made to other multifamily programs like MCE, PG&E or local energy watch programs.

24 projects
2,302 units upgraded
\$1.75 million incentives paid
87% of projects met local difficult-to-serve criteria



"It's a win-win-win: residents have lower energy bills and improved comfort; management saves money on common area utility costs; and the environment and broader community benefit from less pollution."

*- Deborah Vasquez,
Property Manager*

Referrals are also made to any interested participant that does not meet the program's targeting criteria. 44 prospective participants were referred out at intake and 14 participants were referred out during technical assistance. Additionally, nine participants received financing technical assistance.

Gaps Being Filled

BAMBE's targeting criteria, described above, ensures that outreach is prioritized to those multifamily communities that have struggled to access energy efficiency programs due to program design and delivery. In 2021, 87.5% of completed projects met at least one targeting criteria, and some met multiple LTDS criteria.

Local Government Levers

BayREN member agencies, viewed as trusted messengers, conducted program outreach using available data. In 2021, BayREN worked with two county public health agencies, and the Bay Area Air Quality Management District to secure a \$2 million grant that will be used to launch the Bay Area Healthy Homes Initiative (BAHHI). BAHHI will leverage the BAMBE program to improve indoor air quality for families over-burdened by air pollution as well as those with family members living with asthma.

Future Opportunities

Value Pillar 2: Serving Local Difficult to Serve Populations

Naturally Occurring Affordable Housing ("NOAH") buildings have not been well served by multifamily energy programs because programs have had difficulty identifying them, and owners have fewer resources to engage and pay out-of-pocket costs associated with upgrade projects. The issue of identification stems from the lack of a consistent definition and data. Through pilots with San Mateo and Alameda Counties, BAMBE proposes to address this issue by performing a gap analysis of publicly available census and assessor tax data to determine what information is missing that will help identify NOAH properties, their owners, their tenants, and the organizations interacting with all three groups. The program plans to engage NOAH stakeholders and gain insight that will help BayREN and other programs better identify and serve the owners and residents of NOAH.

BAMBE staff was part of a team that was selected along with only four other teams nationally to receive technical assistance on energy equity for renters from the American Council for an Energy Efficiency Economy (ACEEE). Using a combination of primary and secondary research, ACEEE will develop a toolkit containing customized policy recommendations on how to promote and retain affordability when upgrading and electrifying rental housing. The program intends to integrate learnings from this project and share the toolkit with local governments.

Value Pillar 3: Testing Innovative Solutions

BayREN established a partnership with Sonoma Clean Power (SCP) in 2021 intended to help overcome a substantial barrier to electrification - insufficient and aging electrical infrastructure. Through this partnership,

starting in 2022, Sonoma Clean Power will leverage BAMBE to provide panel upgrade incentives to MF projects pursuing electrification in SCP's service territory. This partnership is a pilot, and BAMBE hopes to continue to utilize similar partnerships to enable electrical upgrades throughout a wider service territory in the future.

COMMERCIAL

SMB COMMERCIAL

BayREN began 2021 with two commercial subprograms: BayREN Business and BayREN Microloan. Together, they contribute to the overall BayREN mission by providing energy efficiency rebates and services to SMB, with a focus on hard-to-reach (HTR) and SMB in disadvantaged communities (DAC). By definition, SMB are a local and difficult to serve (LDTS) population. BayREN defines SMBs as meeting one of three criteria:

- Less than 50,000 square feet in size
- Use less than 500,000 kWh per year
- Use less than 250,000 therms per year

A business is considered HTR if it is geographically located in a DAC and meets one of the criteria below:⁷

- Language – Primary language spoken is other than English
- Size – Less than ten employees and/or classified as “Very Small” (customers whose annual electric demand is less than 20 kW or whose annual gas consumption is less than 10,000 therms)
- Leased or rented facilities – Investments in improvements to a facility rented or leased by a participating business customer.

Alternately, if the business is located outside of a DAC, it must meet all three criteria above to be qualified as a HTR business.

BayREN Business is testing an innovative solution by using a performance-based model to engage SMBs. A performance-based model aligns rebate amounts with actual energy usage over 24 months and offers several benefits. First, a performance-based approach provides SMB participants with the ability to obtain energy savings with lower upfront costs. Next, SMB participants are offered flexible solutions that shield the customer (and rate-payers) from paying for expected savings that fail to materialize. Also, it encourages maximizing savings from a holistic set of measures.

Lastly, because the post-retrofit monitoring period is 24 months, this model leads to sustained energy savings. Overall, BayREN Business and its performance-based model overcome challenges SMB customers have, such as experiencing thin financial margins and/or not viewing energy efficiency as a direct business investment.

In 2021, BayREN Business tried a number of tactics to raise program awareness to increase participant uptake. For example, BayREN Business dramatically increased base-level incentives and provided

rebate kickers for DAC or HTR projects. Also, program staff conducted in-person outreach, such as street-level campaigns, whenever health conditions allowed. Finally, BayREN Business and its implementer used various data sets to identify businesses with high energy consumption to prioritize outreach.

Throughout the year, BayREN Microloan staff organized various virtual outreach workshops and sent emails drives to raise awareness.

2021 PROGRAM FOCUS

Offered rebate kickers to HTR and DAC Businesses

Targeted hard-to-reach disadvantaged communities

Continued to deploy a performance-based approach to serving

2021 SMB COMMERCIAL ACHIEVEMENTS

Testing innovative performance-based models to engage SMBs

14

Energy Efficiency Reports to SMBs

Developed a M&V Plan

Ultimately, the resurgence of the pandemic adversely impacted interests – and participant acquisition. By September, BayREN closed the Microloan program.

Energy Benefits to Customers

BayREN Business did not have any program participants that completed projects in 2021, thus there are no energy savings to report for 2021.

Non-Energy Benefits to Customers

BayREN Business did not have any program participants that completed projects in 2021. However, the former program implementer did send energy efficiency reports to approximately 14 SMBs. Each report details energy efficiency savings potential, resulting utility savings, simple payback analysis, and next steps.

Gaps Being Filled

Despite the unforeseen challenges, BayREN Business was able to fill gaps in 2021. Specifically, as many legacy direct-install programs closed in 2020, BayREN Business became the only SMB program remaining in the Bay Area, allowing for numerous referrals including from PG&E and CCAs.

Piloting of Activities

Notably, the BayREN Business continued to pilot two activities in 2021: 1) SMB-targeting with interval data to identify specific energy efficiency opportunities for PG&E and CCA accounts; and 2) fully developing a M&V plan that accommodates the pandemic-affected energy usage as a large non-routine event. Data-targeting is common with residential programs, but few have deployed it for the SMB sector. In 2021, BayREN Business, in collaboration with its implementer and a data-analytics firm, successfully identified and implemented the data-filters necessary to screen for ideal program participants. The data-filter also screened out past ratepayer program participants which simplified the “double-dip” check process. Finally, the data also served to provide the pool for the M&V comparison group.

Local Government Levers

BayREN Business conducted limited engagement with economic development councils to identify its potential roles in the pandemic recovery plan.

⁷ Definition per CPUC D.18-05-041 page 46.

COMMERCIAL

Future Opportunities

Value Pillar 2: Serving Local Difficult to Serve Populations

BayREN Business has a focus on HTR SMBs. In 2022, BayREN Business will join Recurve's FLEXMarket. Instead of relying on a single implementer, BayREN Business will have access to multiple aggregators, with various skillsets and sector-focus. Further, BayREN Business will design incentive rates, such as HTR kickers, to entice not only participants, but also new aggregators into the FLEXMarket by providing direct program assistance to them to ensure smooth onboarding.

Value Pillar 3: Testing Innovative Solutions

Common to large and industrial commercial sectors, the NMEC approach is novel to the SMB market. As such, in the future, BayREN Business will continue to test - and refine - the performance-based approach to this market segment. Relatedly, the targeting for energy efficiency opportunities and comparison group M&V will also be tested and refined over the course of program implementation.



REGIONAL COLLABORATION

2021 marked big strides for the "Mid-stream" HPWH Incentive program, which is geared towards contractors that install HPWHs. Managed by BayREN in collaboration with CCAs in the region, the program resulted in direct benefits: more efficient equipment, electric equipment replacing gas equipment, and reduced emissions. Four local energy providers - Marin Clean Energy, East Bay Community Energy, CleanPowerSF and Silicon Valley Power (City of Santa Clara) - joined the program and were directly involved with bringing it to their communities. Between these entities, the program covers nearly 1.5 million customer accounts.

The collaboration, funded by the Bay Area Air Quality Management District (BAAQMD), launched in 2020. As of December 2021, 80 HPWHs were installed in these territories, 79 of which were layered with other BayREN rebates; there are also 50 participating contractors enrolled in the program. Incentives of \$1,000 each are paid by participating energy providers to contractors, and those incentives can be layered with complementary regional programs for HPWHs, like Home+ and the TECH initiative. In fact, this program served as a model for the new statewide TECH initiative and will likely also inform future incentive programs.



CROSS-CUTTING SECTOR

CODES & STANDARDS

The Codes & Standards Program works directly with local governments and their staff. This program contributes to the overall BayREN goal of GHG reductions and energy savings by supporting Bay Area local governments to more effectively and efficiently develop and implement state and local energy codes and policies. As part of this work, the Codes and Standards program aims to increase the knowledge that local government building department staff have of the California Energy Code and relevant reach codes, and to improve their ability to enforce these codes by sharing best practices and providing resources. In addition, the Program supports and enables local government staff efforts to draft and adopt local energy policies and reach codes through a variety of mechanisms. Finally, the Codes Program works to connect local and state efforts, so that local staff are aware of work

occurring at the state level, and state staff are aware of challenges and opportunities at the local level. BayREN's relationships with local governments puts them in a unique position to work with local government building departments and energy policy staff.

Gaps Being Filled

BayREN's Codes and Standards Programs has a number of activities underway, all designed to fill gaps that our local government members have identified. For example, our trainings are almost exclusively for local building department staff and are designed to recognize and

address their constraints. Each training is relatively short (60-90 minutes) and focuses on best practices and approaches that attendees can use to make the most out of available time. Three new training curriculums were added in 2021: How the Energy Code Treats Electrification; Navigating the Energy Code; and Accessory Dwelling Units (developed in partnership with Energy Code Ace).

The Program also continued to host quarterly forums, which provide information for local government staff on new or current topics of interest, as well as opportunities for different stakeholders to connect and share their perspectives. These fill a gap in that all forums are designed for local government staff. The events are free and open to all, and in addition to local government staff, attendees regularly include staff from state and regional agencies, building professionals, energy consultants, and others with an

interest in the topic, creating opportunities for connection and cross-education. Forums provide information about energy-related topics of interest to local government staff and help build their knowledge of these issues, the opportunities they provide, and their complexities. In 2021, the average number of attendees at each forum increased to over 150 participants. Forum topics this year were:

- Responding to Climate Challenges: Energy Efficient Homes in a Wildfire-Prone Region

2021 PROGRAM FOCUS

Updated the Program's Training Plan

Continued to provide trainings and quarterly forums online, and began development of a hybrid approach

Developed three new training curriculums, including one with Energy Code Ace

- Building Permits and Clean Technology: Innovations and Challenges
- Decarbonizing Bay Area Homes: Homeowner and Policymaker Perspectives
- Moving Towards 2022: What will the New Energy Code Mean for Reach Codes?

The Codes & Standards Program also provides the following resources and services, which are aimed at the gaps summarized below:

1. Municipal ZNE/ZNC Technical Assistance

This program provides free engineering technical assistance to local governments interested in completing a ZNE/ZNC municipal building project, helping them minimize energy use and find opportunities for renewables to provide that energy. The program is designed to inform local government staff about how to develop ZNE/ZNC projects in order to encourage adoption of ZNE/ZNC policies and provide opportunities for local governments to lead by example.

2. Energy Policy and Reach Code Working Group

Local government staff have the opportunity to come together every other month to hear about new resources related to energy policies and connect with each other to compare notes and learn from peers.

3. Permit Guides and Assistance Sheets

These are short guides which can be used as a handout at the counter (permit guides) or as a quick reference for building department staff (assistance sheets), on topics where a need has been identified.

4. Electronic Tools

The ePermit Tool educates project applicants about common types of projects such as re-roofing, water heater replacement, and window replacement. The CodeCycle Tool provides electronic plan-checking for commercial lighting projects as well as assistance for building inspectors.

2021 C&S ACHIEVEMENTS

636
participants
in quarterly forums

690
attendees
at 38 trainings

5
working
groups

11
jurisdictions
adopted reach codes

CROSS-CUTTING SECTOR



Local Government Levers

The main local government lever used in the Codes & Standards Program in 2021 was the relationships that county members have with local government Sustainability, Public Works, and Building Department staff. These relationships allow for two-way communication, so that local government needs can be communicated directly to BayREN, and staff can be informed of offerings relevant to them. Because of these relationships, BayREN had a response rate of about 50% to our survey of Bay Area building departments in 2021.

Future Opportunities

Value Pillar 1: Building Organizational & Human Infrastructure

As the public health response to the COVID-19 pandemic continues to evolve, the Codes & Standards Program is hoping to be able to add in-person options for both trainings and quarterly forums in 2022. Before the pandemic, trainings were offered only in-person, and they have been offered online now for two years.

Both have advantages: the online format has made our trainings available to more local government staff throughout the Bay Area, while our in-person trainings offered opportunities for connection and digging deeper into jurisdiction-specific issues which are difficult to provide online. In 2022, we are aiming to provide training both in-person and online. Quarterly Forums had an online component prior to the pandemic, and we are planning to offer at least one forum as a hybrid in-person/online event. With the technological advances and experience of the past couple of years, we are also working to improve the online experience.

Another opportunity anticipated for 2022 is continued collaboration with the statewide TECH (Technology and Equipment for Clean Heating) initiative authorized under Senate Bill (SB) 1477, and particularly the Permitting Pilot Program. BayREN and TECH have been collaborating with Bay Area local government staff and other stakeholders to develop resources intended to smooth and shorten the permitting process for HPWH. In 2022, those resources will be finalized, piloted with the Bay Area jurisdiction of Pleasant Hill, and made available to others for testing.

In 2022, BayREN will also be actively collaborating with the Statewide Investor-Owned Utilities' Reach Code Program to put together and offer a Reach Code Newcomer's Webinar Series. This will be a set of five 90-minute webinars scheduled in January, February, March, April, and September that helps local government staff who are new to reach codes gain greater understanding of the options, resources and timeframes involved.

CROSS-CUTTING SECTOR

WATER UPGRADES SAVE

In California, the pumping, heating, and treatment of water accounts for 20 percent of electricity and 30 percent of non-power-plant natural gas demand. Known as the water energy nexus, this combined resource opportunity is the subject of California Public Utilities Commission (CPUC) rulemakings designed to explore how energy savings can be captured through water conservation to inform efficiency program design.

Water Upgrades Save is a new regional water energy nexus program based on three pilots conducted over the past ten years. The Program facilitates utility investment in customer-side efficiency improvements by providing municipal water utilities with project capital and managing program funding, marketing, customer enrollment, project installation, and customer service while giving utilities the power to decide which customers to target and how much to reduce demand. The capital for this program is not ratepayer funds, but rather is pursuant to a loan agreement with the ABAG.

Water utilities can use the Program to meet state and local policy goals, support LDTS customers (e.g., low- and moderate-income customers and renters), and produce water and energy savings on the customer side of the meter. The program can be customized to supplement or replace current indoor and outdoor water conservation efforts to best meet each municipality's needs.

Water Upgrades Save helps water managers:

- Access low-cost capital and turnkey services
- Manage water supply and meet state regulations
- Improve affordability and reduce the risk of nonpayment and bad debt
- Give customers a water efficiency tool that does not rely on incentives or upfront costs.

2021 PROGRAM FOCUS

Established capital funding procedures and protocols

Initiated utility recruitment campaign

Enrolled two utilities and launched customer services

Gaps Being Filled

BayREN's Water Upgrades Save is designed to bridge the gap between current and future water efficiency targets mandated by state legislation, whose goal is to "make water conservation a California way of life." In 2021, the Program launched customer services with its first partner utility installing single-family indoor upgrades, providing the primary water conservation

service for the community. The Program also started its multifamily enrollment campaign, which enables property owners and managers to reduce operating costs while improving their property. The new regional program uses lessons learned from three pilots to address utility needs for a third-party finance service, a turnkey customer service that does not require utility administration, and the ability to scale water efficiency outcomes to meet new state and local targets.

Regional Program Activities

Using the authority granted in SB 564 — Water Bill Savings Act (2017), the Program established the funding, process, and agreements

CROSS-CUTTING SECTOR

needed to implement the regional project finance service with its fiscal partner, ABAG. The program's completed milestones include launching regional services, setting up capital funding procedures and protocols, activating its operations team, and initiating a water utility recruitment campaign that resulted in enrollment by the cities of Sebastopol and Cloverdale in Sonoma County. The Program, which started as a pilot, has now been scaled regionally and is poised to provide a model for a statewide approach.

Local Government Levers

In 2021, Water Upgrades Save used the following local government levers:

- Local government relationships with municipal and other water utilities to promote the program. Program presentations given to the Sonoma County Regional Climate Protection Authority Board of Directors, which is composed of elected representatives from nine cities and the County, generated interest from the City of Sebastopol (which enrolled in January 2021), City of Cloverdale (which enrolled in August 2021), and City of Petaluma.
- Access to regional water networks to outreach to water utilities and establish

the program. The Program presented to the following regional water conservation organizations: Santa Clara Valley Water, Sonoma-Marín Saving Water Partnership, and San Mateo Regional Climate Action Planning Suite (RICAPS) working group. The Program also contributed to the 2022 Estuary Blueprint report soon to be published by the San Francisco Estuary Partnership, in which the Program is featured in Task 17-2 under Water Conservation Actions.

Future Opportunities

Value Pillar 1: Building Organizational & Human Infrastructure

As utility enrollment grows, Water Upgrades Save will increase local government organizational and human infrastructure by providing a turnkey investment and project installation service that enables utilities to meet their increasing water conservation targets with minimal staff and budget, freeing utility resources for other important needs.

Value Pillar 2: Serving Local Difficult to Serve Populations

Because Water Upgrades Save is not a consumer loan program, it removes the upfront cost and debt barriers for participating water customers. Both property owners and renters



can participate. Single family, multifamily, and forthcoming commercial customers receive utility bill savings right away and use a portion of the savings to pay off the project costs over time, thus decreasing the customer's household or business utility costs while increasing the value of the property with new efficiency upgrades.

Future opportunities include establishing long-term strategies for scaling finance service capital to meet program demand.

Value Pillar: 3 Testing Innovative Solutions

Customer water conservation programs traditionally rely on incentives, are operated by water utility staff, and require participating customers to cover the remaining upfront cost. This makes water conservation results dependent on limited incentive funding, utility staff capacity, and the customer's ability to pay the remaining post-incentive costs to purchase and install an efficiency upgrade.

As a new regional water energy nexus program, BayREN's Water Upgrades Save facilitates utility investment in customer-side efficiency improvements by providing municipal water utilities with project capital and managing program funding, marketing, customer enrollment, project installation, and customer service while giving utilities the power to decide which customers to target and how much to reduce demand.

Water Upgrades Save utility customers install water efficiency improvements with little-to-no

upfront cost, using a utility-approved on-bill charge that is significantly lower than the estimated savings, so the customer begins saving right away.

New proactive state and local water goals in development through 2027 create an opportunity for additional water/energy savings from customer-side water efficiency projects. Water Upgrades Save provides an on-water-bill financing mechanism that addresses the traditional barriers to water conservation programs, helps utilities prepare for stricter state conservation goals, and enables water customers to reduce utility costs while improving their premises. Future opportunities include expanding eligible upgrades (such as leak detection/repair and HPWH projects) and coordinating services with other water and energy efficiency programs.

EVALUATION, MEASUREMENT, AND VERIFICATION

In 2021, process evaluations were conducted for both the Home+ program - with a particular focus on the Energy Advisor - and the BAMBE program. The focus shifted mid-year to participating with the California Energy Efficiency Coordinating Committee (CAEEC)-led Market Support and Equity metrics working groups, and the incorporation of these metrics into the BayREN Business Plan (2024-2031) and Portfolio Application (2024-2027).

2021 WATER UPGRADES SAVES ACHIEVEMENTS

2 enrolled utilities

Set up capital funding procedures and protocols

Launched customer services

Initiated utility recruitment campaigns



Savings & Expenditures

SAVINGS & EXPENDITURES

In 2021, BayREN administered two resource programs within the Residential Sector that have reported energy savings: The Home+ and BAMBE programs. The Home+ program is a deemed program utilizing approved Statewide (SW) workpapers for all savings values. The BAMBE program is a hybrid custom and deemed program utilizing EnergyPro Lite (EPL)

version 4.0 to model custom project energy savings and deemed values when applicable. Both residential programs reported fuel substitution savings as reported by the Commission-approved Cost Effectiveness Tool (CET). The SMB Commercial Program did not have any completed projects in 2021.

Table 1: Net Energy Savings

Electricity and Natural Gas Savings and Demand	Annual Energy Savings (kwh)	Lifecycle Energy Savings (kwh)	Annual Natural Gas Savings (therms)	Lifecycle Natural Gas Savings (therms)	Peak Demand Savings (kw)
Home +	1,863,523	19,307,356	89,036	1,355,242	198
BAMBE	742,884	10,386,302	72,373	977,589	118
BAMBE Clean Heating Pathway	149,177	1,569,596	242	4,327	(2)
SMB Commercial	-	-	-	-	-
Total Portfolio Savings	2,755,585	31,263,254	161,651	2,337,158	314

SAVINGS & EXPENDITURES

SAVINGS BY END-USE

Table 2: 2021 Annual Net Savings by End-Use

End-use Category	kWh	% of Total	kW	% of total	Therms	% of Total
Appliance or Plug Load	477,676.85	17%	5.35	2%	(1.62)	0%
Building Envelope	31,626.26	1%	75.00	24%	27,108.89	17%
HVAC	566,475.54	21%	112.35	36%	29,750.15	18%
Service and Domestic Hot Water	787,744.68	29%	5.06	2%	32,178.28	20%
Whole Building	892,061.23	32%	115.97	37%	72,614.95	45%
Total Portfolio Savings	2,755,584.56	100%	313.71	100%	161,650.66	100%

ENVIRONMENTAL IMPACTS

Environmental impacts⁸ are shown in Table 3. These results are generated by the CET. The CET is designed to calculate energy efficiency program cost-effectiveness. Although emissions data are available through the CET, D.12-11-015 does not direct BayREN to track emissions.

Table 3: Environmental Impacts (tons of avoided emissions)

Annual Results	Annual CO2 (tons)	Lifecycle CO2 (tons)	Annual NOx (tons)	Lifecycle NOx (tons)
Total Portfolio	1,541.09	20,548.33	1,877.74	24,553.46

SAVINGS & EXPENDITURES

EXPENDITURES

Note: Column or row totals may not sum exactly due to rounding to the nearest dollar.

Table 4: 2021 Program Expenditures

Program	Filing Program Budget	Operating Program Budget	Percent of portfolio budget	2021 Program Expenditures
Home+	\$9,176,252	\$9,534,384	39%	\$9,169,658
Green Labeling	\$1,079,750	\$1,845,843	8%	\$1,825,253
BAMBE	\$6,516,250	\$6,269,348	26%	\$4,045,069
SMB Commercial	\$3,692,226	\$2,680,812	11%	\$1,032,270
Codes & Standards	\$1,973,650	\$2,038,554	8%	\$1,644,460
Water Upgrades Save	\$1,473,420	\$1,542,607	6%	\$1,462,769
EM&V	\$260,065	\$260,065	1%	\$154,895
Total Portfolio	\$24,171,613	\$24,171,613	100%	\$19,334,374

Table 5: 2021 Program Expenditures by Category

Program	Admin	Marketing	DINI	Incentives	EM&V	Total Program Expenditures
Home+	\$575,650	\$1,344,386	\$3,352,870	\$3,896,752	\$0	\$9,169,658
Green Labeling	\$55,341	\$95,528	\$567,684	\$1,106,700	\$0	\$1,825,253
BAMBE	\$437,158	\$181,304	\$1,980,557	\$1,446,050	\$0	\$4,045,069
SMB Commercial	\$209,363	\$226,456	\$596,451	\$0	\$0	\$1,032,270
Codes & Standards	\$267,452	\$0	\$1,377,008	\$0	\$0	\$1,644,460
Water Upgrades Save	\$145,675	\$210,373	\$1,106,721	\$0	\$0	\$1,462,769
EM&V	\$0	\$0	\$0	\$0	\$154,895	\$154,895
Total Portfolio	\$1,690,639	\$2,058,047	\$8,981,291	\$6,449,502	\$145,675	\$19,334,374

⁸ Environmental Impacts are Net Annual and Lifecycle Tons of Avoided Emissions.



Metrics

METRICS

VALUE METRICS

As submitted in BayREN's 2021 Annual Budget Advice Letter⁹, BayREN proposed Value Metrics - based upon three overarching services referred to as BayREN's Value Pillars - to better track the unique value BayREN provides to the region and to the state. BayREN established its Value Metrics as indicators to establish a baseline for the first reporting year (2021). In future years, targets may be set based upon this baseline. The Value Pillars, Value Metrics, and 2021 achievements are provided by sector below.

BayREN Value Pillars

As a regional energy network, BayREN helps to make state policy objectives (i.e., reducing GHG emissions and increasing energy savings) practical at the local level by conducting three overarching services:

- BayREN builds human and organizational infrastructure¹⁰ within local jurisdictions so that Bay Area communities are better able to save energy and reduce greenhouse gas emissions.
- BayREN obtains energy savings locally while also supporting local difficult to serve populations.¹¹
- BayREN tests innovative solutions that have the potential to help local jurisdictions increase energy savings and reduce greenhouse gas emissions.



⁹ <https://www.bayren.org/sites/default/files/2022-05/BayREN%202021%20Advice%20Letter%2016-E-A.pdf>

¹⁰ The CPUC uses the term capacity building, which is similar to "building human and organizational infrastructure." BayREN uses this alternative term since we have been unable to identify a specific CPUC definition for capacity building, and therefore are unable to identify whether or not these activities align. Note that the utilities have conducted some capacity building activities in prior years under their local government partnerships, but these activities are currently limited (and are constrained by IOU directives).

¹¹ The term "underserved" is similar in nature to the phrase "local difficult to serve populations" used in this document. The CPUC is considering defining the term "underserved," and the ultimate definition may or may not align with the populations that are difficult to serve in BayREN's region. As such, BayREN uses an alternative term, local difficult to serve, to specifically define Bay Area populations that have been defined as underserved by the Bay Area local government members.

METRICS

Portfolio Level - All Sectors

Metric	2021 Achievements
Number of water utilities offering programs with BayREN on-bill mechanism	3
Amount of regional funds allocated to support water/energy projects	\$1,000,000 in capital funding approved
Number of realtors and appraisers green certified (e.g., "National Green Certified Real Estate Professionals")	Realtors certified: 130 Appraisers certified: 22
Number of local lenders trained	0
Percent of local lenders trained who report an increase in knowledge about energy efficiency financing options	0
Water Energy Nexus Program Pilot used regionally to meet State water goals	N/A - metric expected to be met in five years (2025). Mid-pilot evaluation to assess implementation and share lessons learned planned for 2023 or 2024
Water Energy Nexus Program Pilot able to report energy and water program metrics data using agreed upon protocols	N/A - metric expected to be met in five years (2025). Mid-pilot evaluation to assess implementation and share lessons learned planned for 2023 or 2024

Commercial Sector

Metric	2021 Achievements
Small-to-medium business (SMB) customers served	0
SMB kWh saved	0
SMB kW saved	0
SMB therms saved	0
SMB Pay-for-performance (P4P) pilot ready to scale	N/A - metric expected to be met in five years (2025). Mid-pilot evaluation to assess implementation and share lessons learned planned for 2022 or 2023

Residential Sector

Metric	2021 Achievements
# of trained contractors who have performed 3+ projects of decarbonization measures	35
# of single family moderate income (SFMI) households served	305
SFMI kWh saved	248,465.88
SFMI kW saved	17.57
SFMI therms saved	8,575.61
Multifamily small and/or owned-occupied buildings served (i.e., LDTS)	84 (All) 45 (LDTS)
Multifamily small and/or owned-occupied tenants units served (i.e., LDTS)	2,302 (All) 815 (LDTS)
MF Small and/or owner occupied (i.e., LDTS), kWh saved	218,560.62 (In Unit) 183,551.19 (Common Area)
MF small and/or owner occupied (i.e., LDTS) kW saved	15.22429475 (In Unit) 12.78564025 (Common Area)
MF small and/or owner occupied (i.e., LDTS) therms saved	8.419.99 (In Unit) 7,071.26 (Common Area)
Zero Net Carbon (ZNC)/Clean Heating Pathway innovative solution pilot ready to scale	N/A - Metric expected to be met in three years (2023). Mid-pilot evaluation to assess implementation and share lessons learned for 2023
Regional pilot mechanism(s) to make energy assets transparent at time of sale are institutionalized	Green Building Registry (GBR) launched in Q1 2020, and the HES program is still feeding information to the website. The GBR shows the location of all HES in BayREN territory and within the City of Berkeley, the HES reports are downloadable, public information

METRICS

Codes & Standards Sector

Metric	2021 Achievements
# of jurisdictions that adopt and implement reach codes or energy policies	11
# of jurisdictions that use BayREN guides and tools for code compliance	5
# of jurisdictions with staff who attend a BayREN energy code training	49
# of local government staff who indicate an increase of energy code requirements and best practices for code compliance	323
% of local government staff who indicate an increase in energy code requirements and best practices for code compliance	96%
# of jurisdictions with staff who attend a BayREN forum	59
# of respondents who indicate they increased their energy policy knowledge	144
% of respondents who indicate they increased their energy policy knowledge	79%
# of respondents who indicate forum expanded their energy efficiency networks (helping to build relationships that will enable future energy policy work)	95
% of respondents who indicate forum expanded their energy efficiency networks (helping to build relationships that will enable future energy policy work)	51%

D.18.05.041 METRICS

2021 BayREN metrics are provided in the Annual Report Excel Template. This section discusses some of the approaches and assumptions used to develop the metrics by sector.

Residential Sector

For the following residential metrics, BayREN used data provided by PG&E:

Home+:

- Percent of participation relative to eligible population.
- Average energy use intensity of single family homes.

BAMBE:

- Percent of participation relative to eligible population (by unit).
- Average energy use intensity of multi-family units; kWh and Therms.
- Percent of benchmarked multifamily properties relative to the eligible population.
- Percent of benchmarking by properties defined as “hard-to-reach.”

PG&E does not have a process for collecting total number of eligible multifamily properties, therefore BAMBE used CoStar data to determine the eligible population by property. All other data are derived from BAMBE’s internal

METRICS

tracking database(s) and outputs from the 2021 Annual Claims submission submitted on California Energy Data and Reporting System (CEDARS).

Commercial Sector

The SMB Commercial Program launch was postponed until 2021 due to contracting delays and impacts of COVID-19. The program had no installed projects or claimed savings in 2021.

Codes and Standards Sector

Several metrics from D.18-05-041 are assigned to REN Codes and Standards Programs, and are reported below, along with additional metrics. BayREN, together with the Tri-County Regional Energy Network (3C-REN), proposed new and modified metrics and indicators for Codes and Standards in the September 2020 ABAL, as allowed by D.18-05-041. These revised metrics are in the Annual Report Excel Template and are detailed below.

Reach Code Adoption

The Decision states that the number of local government reach codes implemented is a joint IOU and REN effort. As such, the IOUs will be reporting on adoption of reach codes throughout the state in their metrics filings, which includes BayREN’s numbers. We highlight the adoption of reach codes within the Bay Area during each building code cycle:

- Bay Area jurisdictions that adopted one or more reach codes during the 2016 code cycle.
- Bay Area jurisdictions that adopted one or more reach codes for the 2019 code cycle.

Participation in Forums

In addition to the approved metric of the number and percentage of jurisdictions with staff participating in an Energy Policy Forum, we also use the metric of the total number of attendees. In 2021, there were:

- Number of organizations with staff participating in an Energy Policy Forum.
- Percent of jurisdictions with staff participating in an Energy Policy Forum.
- Total number of attendees participating in an Energy Policy Forum.

Jurisdictions Receiving Energy Policy Technical Assistance

This metric calls for the number and percent of jurisdictions receiving energy policy technical assistance. BayREN offers this type of assistance through the compliance and policy support activities described above. (Note that this number does not include additional types of assistance such as answering questions and providing information to jurisdiction staff.)

- Number of organizations directly engaged in Codes & Standards activities.
- Percent of jurisdictions engaged in Codes & Standards activities.

Buildings Receiving Enhanced Compliance Support

Several BayREN Codes activities support code compliance for individual buildings.

- Buildings in the Bay Area receiving enhanced compliance support.

Increase in Closed Permits

BayREN in collaboration with 3C-REN proposed to remove this metric in the 2020 ABAL Filing(s). This is due in-part to the difficulty of obtaining and tracking permit data across hundreds of jurisdictions. In 2019, the program explored how we might structure a project designed to address permit closure rates and concluded: 1) this would be very difficult to do in a measurable way, and 2) would not be an efficient way to achieve the mission of increasing building energy savings through improved code compliance and energy policies.



Appendix

APPENDIX

APPENDIX A: BAYREN PROGRAMS FOR 2021¹²

CEDARS ID	Program Name	Date Added	Date Removed
BayREN02	Multifamily Building Enhancements Program	1/1/2013	
BAYREN02-A	Multifamily Building Enhancements Program - Clean Heating Pathway	1/1/2020	
BayREN03	Codes and Standards Program	1/1/2013	
BayREN04	Water Upgrades Save	1/1/2013	
BayREN05-A	Evaluation, Measurement & Verification (EM&V)	1/1/2017	
BayREN06	SMB Commercial Program	1/1/2019	
BayREN07	Green Labeling Program	1/1/2019	
BayREN08	Single Family Home+ Program	1/1/2019	
BayREN01	Single Family Home Upgrade	1/1/2013	12/31/2018
BayREN04-1	Multifamily Capital Advance	1/1/2013	12/31/2018
BayREN04-2	Commercial PACE	1/1/2013	12/31/2018

¹² In 2019, BayREN updated program offerings to align with BayREN's Business Plan.

APPENDIX

APPENDIX B: JOINT COOPERATION MEMORANDUMS

D.18-05-041 directed program administrators with overlapping territories to file an annual Joint Cooperation Memorandum (JCM) with a compliance date of June 15th. In D.21-05-031 the Commission maintained the JCM requirement but directed that they be included as an attachment in each Annual Report.¹³

Included as Attachment 1 is the 2023 PG&E - BayREN JCM and attached as Attachment 2 is the 2023 MCE-BayREN JCM. For convenience, the JCMs are also available online as stand-alone files, accessible through the following hyperlinks:

Attachment 1:

https://www.bayren.org/sites/default/files/2022-05/2023%20BayREN%20PGE%20JCM%20Final_0.pdf

Attachment 2:

https://www.bayren.org/sites/default/files/2022-05/2023%20BayREN%20MCE%20JCM%20Final_0.pdf

¹³ D.21-05-031 Conclusion of Law 17, page 76.