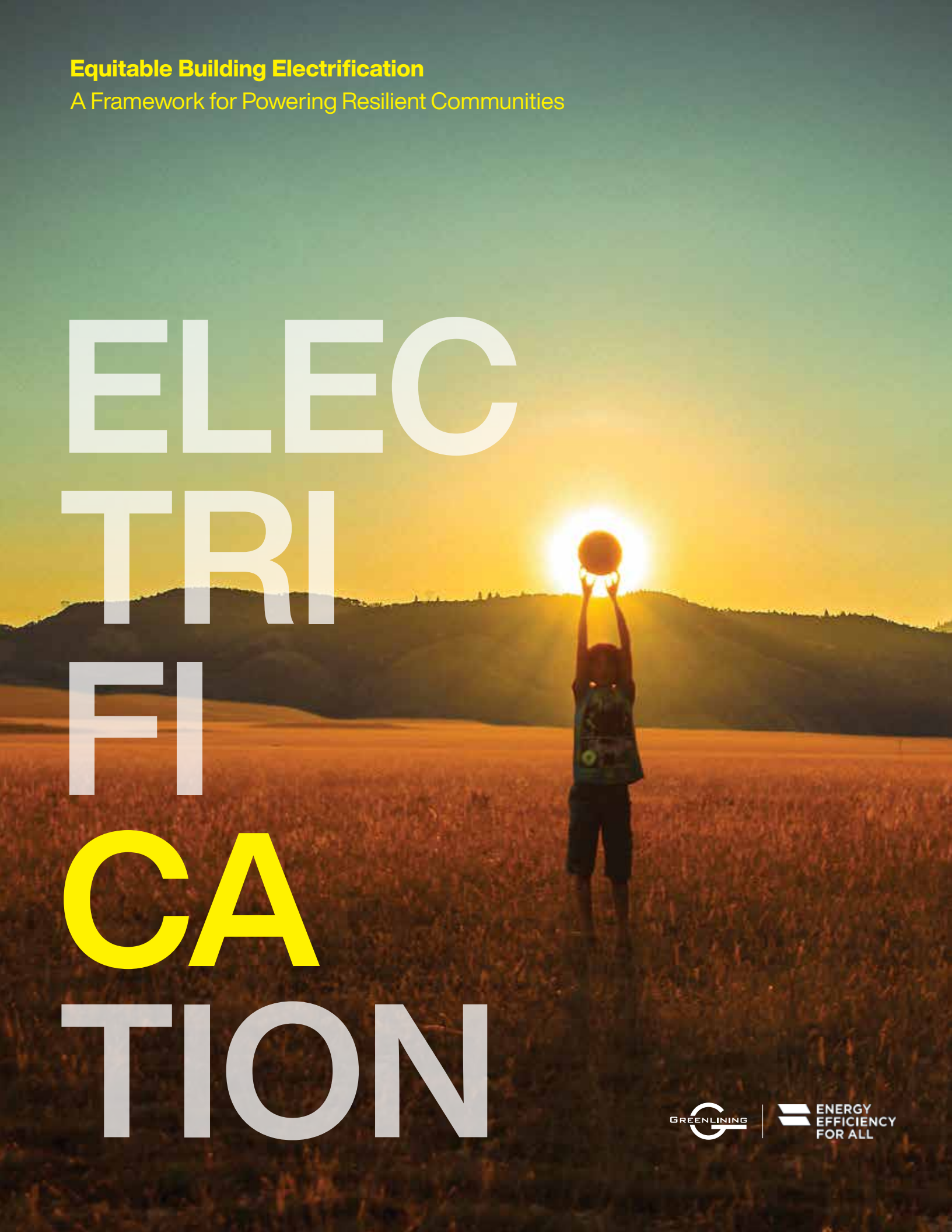
Equitable Building Electrification

A Framework for Powering Resilient Communities

ELECTRIFICATION



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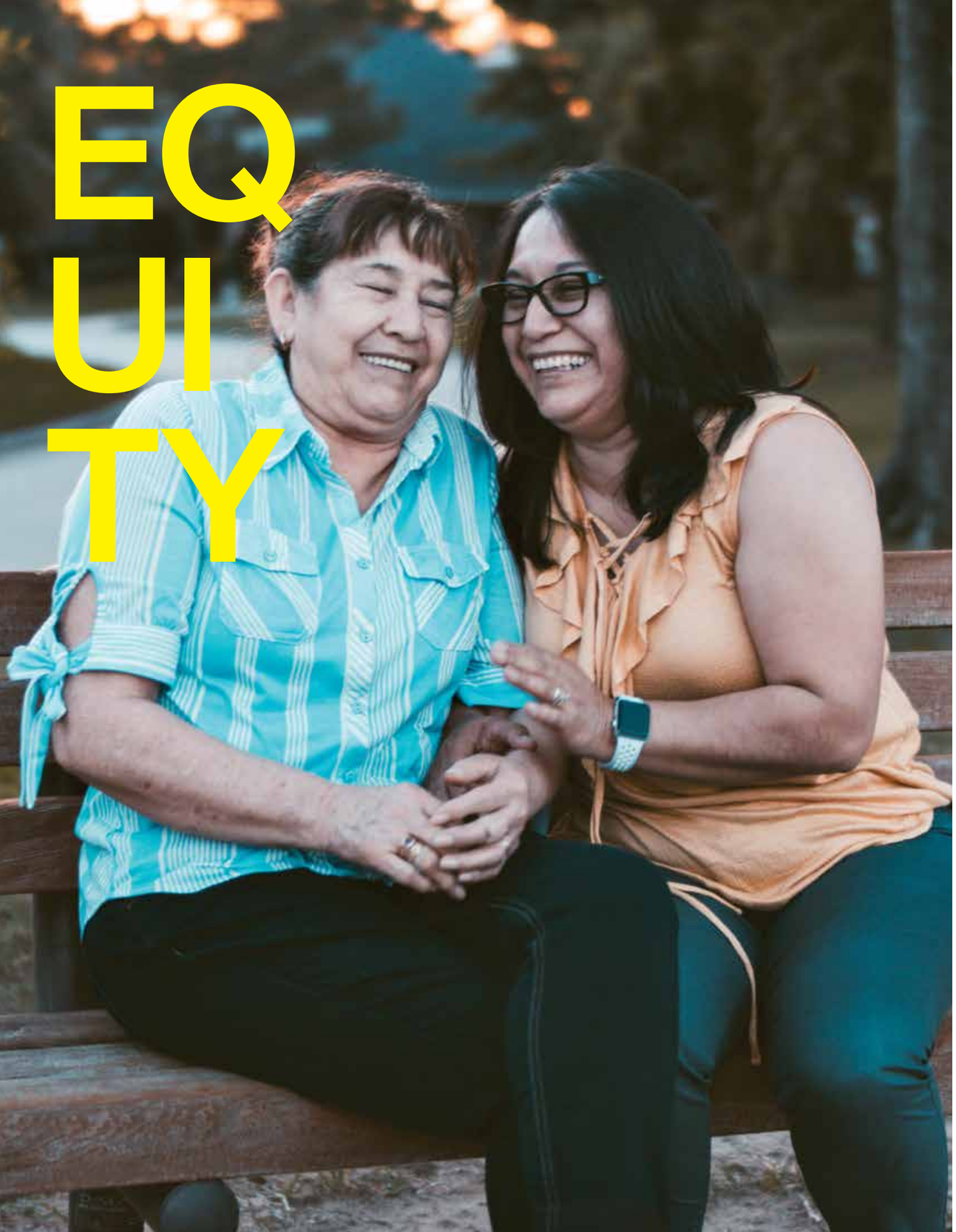

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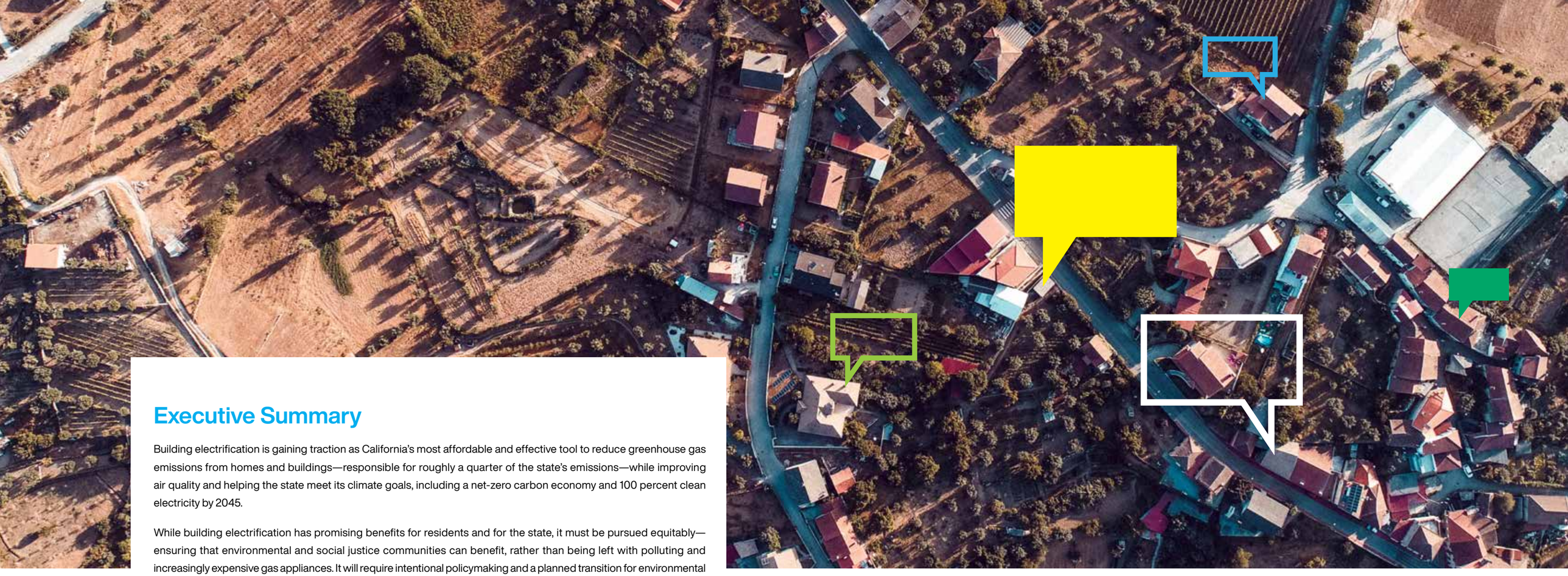


Executive Summary

Building electrification is gaining traction as California's most affordable and effective tool to reduce greenhouse gas emissions from homes and buildings—responsible for roughly a quarter of the state's emissions—while improving air quality and helping the state meet its climate goals, including a net-zero carbon economy and 100 percent clean electricity by 2045.

While building electrification has promising benefits for residents and for the state, it must be pursued equitably—ensuring that environmental and social justice communities can benefit, rather than being left with polluting and increasingly expensive gas appliances. It will require intentional policymaking and a planned transition for environmental and social justice communities to gain access to the major benefits of electrification, including cleaner air, healthier homes, good jobs and empowered workers, and greater access to affordable clean energy and energy efficiency to reduce monthly energy bills.

This Equitable Building Electrification Framework explains the steps the state must take to ensure that electrification helps close the clean energy gap in California and provides relief to millions of residents facing energy insecurity in the current system.

What Is Building Electrification?

- Building electrification means eliminating use of fossil fuels for functions like heating and cooking and replacing gas appliances with alternatives that use electricity. In California, 25 percent of our greenhouse gas emissions come from the buildings we live and work in. As our electric grid gets steadily cleaner, building electrification can play a big role in fighting climate change.
- Electrifying our homes also has major health benefits. Burning gas releases nitrogen oxides and particulates, which can have serious health consequences.

Environmental and Social Justice Communities

The California Public Utilities Commission defines Environmental and Social Justice (ESJ) Communities as communities where residents are:

- predominantly people of color or living on low incomes;
- underrepresented in the policy setting or decision-making process;
- subject to disproportionate impact from one or more environmental hazards;
- likely to experience disparate implementation of environmental regulations and socioeconomic investments; and
- living in disadvantaged communities, tribal lands, low-income households, and low-income census tracts.

These communities, often largely composed of renters, have been left out of California's push toward clean energy solutions.

Ensuring that this pattern of neglect is not repeated in building electrification will require conscious policies designed to make the electrification process equitable.

Equitable Building Electrification Framework

This five-step framework presents a start-to-finish recipe for how the current goals of building electrification can be align with producing healthy homes, creating high quality, local jobs that cannot be outsourced, and establishing stronger connections between everyday Californians and our climate change policies and goals.

- **Step 1: Assess the Communities' Needs.** This should include understanding barriers preventing community members from electrifying their homes, residents' knowledge levels regarding building electrification, and their specific needs, wishes and concerns.
- **Step 2: Establish Community-Led Decision-Making.** Rich community input and engagement strengthen the overall program design quality with stronger cultural competence, ensure local buy-in and investment, and deliver tangible local benefits rooted in the lived experiences of everyday people. Partner with community-based organizations to develop a decision-making process that ensures that decisions are based on community needs and priorities.
- **Step 3: Develop Metrics and a Plan for Tracking.** Metrics should include both clean energy benefits like greenhouse gas reductions and community benefits such as local hires and residents' ability to pay their energy bills without sacrificing other essential expenses.
- **Step 4: Ensure Funding and Program Leveraging.** Current low-income energy programs often fail to deliver maximum benefits to all qualifying households due to short and unpredictable funding cycles, poor program design that inadequately reaches qualifying customers, or lack of coordination and integration with complementary programs.
- **Step 5: Improve Outcomes.** Using the tracking and metrics plan described above, ensure that there is a continuous feedback loop to improve current and future programs' reach and impact in ESJ communities. Consider adjustments to ensure the program reaches the people it seeks to reach and delivers the intended benefits.

Together we can create the foundations needed for a just transition within the work to come on building electrification, but it will require deliberate and inclusive actions. This document can be used by anyone interested in solving problems with a fresh perspective, removing barriers to participation in the clean energy economy, and bringing communities together around shared goals.

Methodology

We conducted a literature review of existing equity frameworks, studies and reports on clean energy and energy efficiency programs to gain a robust understanding of socioeconomic issues that Californians face, gaps in existing policies and programs, and the benefits and risks of building electrification. On June 11, 2019, Greenlining hosted an Equitable Electrification workshop, convening representatives from environmental justice, public health, housing rights, community-based, and environmental organizations. Participants provided their insights regarding their values and vision for equitable electrification policies, current challenges that their communities face, and concerns they and their communities have about building electrification. These diverse sources and perspectives provided the basis for our analysis and recommendations.

What is Building Electrification?

Electrifying a building simply means removing fossil fuels from a building's energy use. Today, most homes use gas for space heating, water heating, cooking, and drying clothes. Switching these end uses to electricity will achieve significant greenhouse gas reductions, because California's electricity supply is among the cleanest in the country and steadily getting cleaner as we move toward our goal of 100 percent carbon-free generation. Importantly, modern electric appliances perform far better than electric appliances of the past. High efficiency electric heat pumps can provide heating, air conditioning, and water heating; induction ranges can provide the same performance as a gas stove without the combustion; and heat pump clothes dryers can replace their less-efficient, gas-powered counterparts.

Why building electrification?

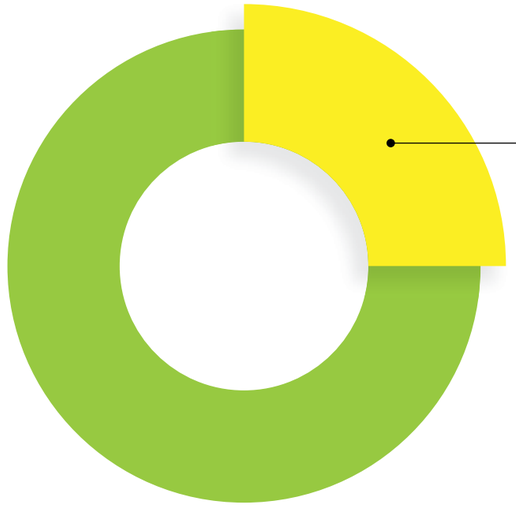
Gas System Expenditure is Increasing

While gas was once regarded as an affordable fuel source, the escalating cost of safely maintaining the system in a state as large as California is causing customer gas rates to rise, exacerbating economic pressures on the nearly one quarter of California residents already facing energy insecurity.

The investor-owned utilities collect around $7.5 billion per year to cover both ongoing operations and maintenance costs and pay for infrastructure replacement and expansion.[1] This figure is set to increase dramatically in the coming decade. Utilities are now asking for major rate increases to cover necessary safety upgrades to the state's aging gas infrastructure.

Southern California Gas, which provides gas to more than half of the state's population, has requested a near-term rate increase of 30 percent for 21.8 million people by 2022.[2] Pacific Gas & Electric is requesting a 15 percent increase over the same period.[3]

This inevitable spike in gas bills is expected to prompt an increasing number of households to convert to all-electric appliances simply for economic reasons—further exacerbating the cost increases for continuing gas customers, as the continued maintenance and upgrade costs will be spread amongst a shrinking pool of customers. As this trend continues, gas customers who face barriers to electrification will need assistance to move to cleaner, electric appliances to help shield them from the rising cost of gas.



Percentage of GHG Emissions in Building Sector

25%

Twenty-five percent of total greenhouse gas emissions come from building stock.

Gas is Incompatible with California's Climate Goals

California has been on a steep and accelerating path towards a low-carbon future for well over a decade, propelled by a series of laws and executive actions. Among other goals, California has committed to a target of a carbon neutral economy, including 100 percent carbon-free electricity, by 2045. To meet these goals, California has begun to focus on the buildings in which we live and work, which are responsible for 25 percent of the state's greenhouse gas emissions. Decarbonization experts agree that electrifying our building stock represents one of the most viable and cost-effective decarbonization strategies for combating climate change. Moving from gas appliances to electric appliances powered by clean energy can help the state make measurable progress on our climate and environmental justice goals, as well as preserving and improving the quality and condition of homes across the state. Focusing on residents and their homes will create a huge impact on the people who live in communities that have long suffered the negative effects of climate change and the fluctuating prices of energy.

California has also taken significant steps to ensure that it reaches equitable outcomes by addressing the communities that have long been injured and/or left behind by its environmental and energy policies. Policies like SB 535 acknowledge that the benefits of the growing clean energy economy must reach those communities, largely low-income communities of color, that have disproportionately suffered the environmental and economic impacts of our long-term reliance on fossil fuels. A comprehensive strategy for addressing this disparity is still needed, but the patchwork of actions and policies in place have already begun to have a significant impact in environmental justice communities.

Two recent pieces of legislation, both signed into law in 2018, have started California on this path to decarbonizing our buildings. AB 3232 requires the state to assess options for reducing emissions from buildings to 40 percent below 1990 levels by 2030. SB 1477 provides incentives for innovative, near-zero emissions homes and aims to jumpstart the market for early-stage clean technologies. The bill sets aside a minimum of 30 percent of funding to bring these technologies to newly constructed residential housing.

Public Health Concerns

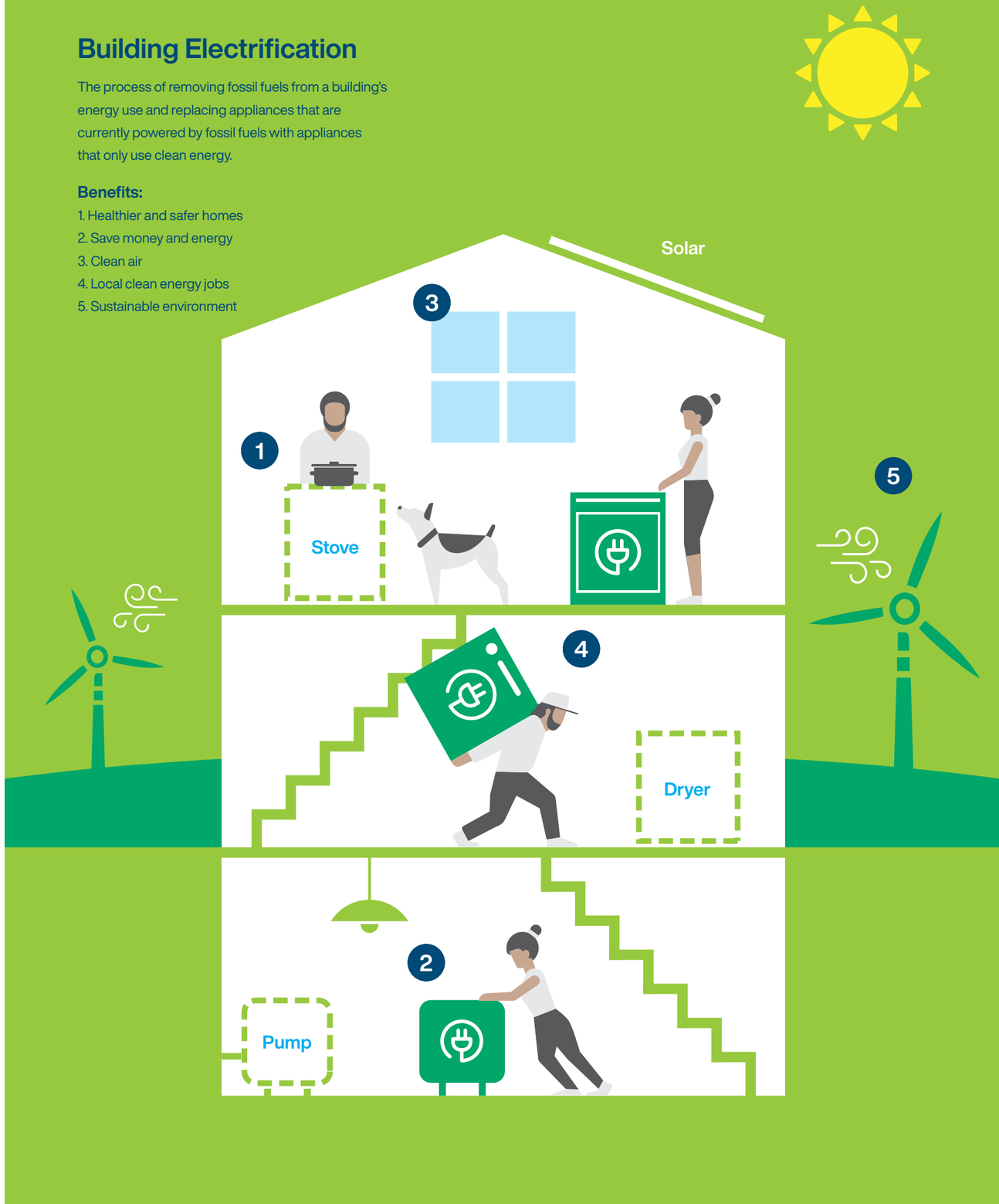
Layering electrification with deep energy efficiency improvements (and, ideally, renewable energy resources) has a tremendous potential to improve residents' health, safety and comfort within their homes. Burning gas releases nitrogen oxides and harmful particulate matter. Prolonged exposure to these combustion byproducts can have serious long-term health impacts, especially for children and the elderly, such as triggering asthma attacks, decreasing overall lung function, and increasing chances of serious respiratory illness. In addition to safer and healthier indoor air, new all-electric appliances are also more energy efficient, which increases energy savings and reduces energy bills.

Building Electrification

The process of removing fossil fuels from a building's energy use and replacing appliances that are currently powered by fossil fuels with appliances that only use clean energy.

Benefits:

1. Healthier and safer homes
2. Save money and energy
3. Clean air
4. Local clean energy jobs
5. Sustainable environment



Vision for an Equitable Approach to Building Electrification

Making measurable progress simultaneously on California's carbon and environmental justice goals will require an equitable, inclusive approach to building electrification. All communities must have the opportunity to shape and benefit from the policies, and policymakers and advocates must see affordable clean energy as a basic human right. In a state as economically and geographically diverse as California, we must create a diverse set of solutions tailored to meet the different needs of different communities and families.

An equitable transition will prioritize the environmental justice communities that need the benefits the most and provide the most assistance to those with the greatest need. Clean energy movements of the past, including rooftop solar and energy efficiency, have benefited those on the higher end of the income scale far more than those on the lower end, and have been slow to gain traction in ESJ communities.[4] This pattern of relying on a market-driven, trickle-down approach that largely fails to deliver has led to significant distrust among the communities that are still waiting for their share of benefits. Through building electrification, California can break out of this pattern and create a plan that actively centers environmental justice and equity from the start. This must begin by targeting what the California Public Utilities Commission has termed environmental and social justice communities, the communities that have been long left behind by the state's thriving green economy.

Health and Resilience

Building electrification must focus first and primarily on the goal of improving the health and resilience of the people rather than the goal of decarbonizing our building stock. To do so, programs that promote electrification must integrate with energy and non-energy programs alike. An equitable transition will meet people where they are. Instead of adding one more problem for families to solve, an equitable transition will position electrification as a solution to existing household problems—one that lowers bills, improves health, and makes homes more comfortable.

Building electrification must lead to more energy efficient homes, and, where it makes sense, should also lead to solar, storage, and electric vehicle ownership. Non-energy programs such as affordable housing and public health interventions that share the same target populations must also be leveraged in order to maximize the benefits to community members. With building electrification, we can begin this holistic solution by providing free appliance replacements, creating rules that protect against energy bill and rent increases, aggressively reducing energy use and improving health and safety within our homes, and targeting green workforce opportunities to workers who live in ESJ communities. Without coordination, programs will continue to miss out on significant health and safety improvements as well as emissions reduction opportunities while delaying progress towards our ambitious energy efforts.

Empowering Communities

The benefits of an equitable transition extend to creating high quality jobs and careers. This can and must include a just transition plan for workers and communities that currently depend on gas and other fossil fuels for their livelihoods, as well as the opportunity for people in impacted communities to build the necessary skills to enter the clean energy workforce.

Finally, an equitable transition will respect people's and communities' right to self-determination and will seek to build trust among communities that may view clean energy as a false choice that is forced upon them without consideration of their wishes and needs. As is being demonstrated in the San Joaquin Valley pilot programs discussed in greater detail below, meaningful community engagement with intentional listening and authentic dialogue that supports community-led decision-making can turn skeptics into believers.

...policymakers and advocates must see affordable clean energy as a basic human right.

Environmental and Social Justice Communities

Barriers to Electrification for ESJ Communities

Economic Barriers

ESJ communities cannot be expected to prioritize the cost of electrifying their homes if they are barely staying afloat. Residents from these communities experience multiple and often compounding economic barriers that make electrification nearly impossible if they are expected to go it alone. However, they will also be the hardest hit if they wind up being the last customers served by the gas distribution system, because they can least afford the risk of significantly increased bills that will be needed to support aging and stranded infrastructure. Strategic, targeted, and sufficient investment in helping ESJ communities electrify will help ensure that the communities that need the benefits the most are not left behind or displaced from their homes.

ESJ community household budgets will be unable to cover the upfront costs of new technology and equipment required to electrify a home. One-third of California households do not have sufficient income to meet their basic costs of living.[5] As a result, people living in ESJ communities face energy insecurity—the inability to pay for energy bills without making a significant trade-off such as not paying for other basic needs such as food, medical care, transportation or rent. A report from The Utility Reform Network found that in 2016, between 19 and 25 percent of California families were energy insecure.[6] Many faced at least one 48-hour disconnection notice or were more than a month behind on their utility bills, and unfortunately, thousands of families were disconnected from utility services.[7] While the CPUC is trying to reduce the utility disconnection rate across the state and determine the affordability of its energy programs,[8] the price of energy is set to go up for all Californians. Customers face bill increases to pay for wildfire damages, and many will see higher bills simply due to the time at which they use energy. For households living with low incomes, the idea of a home with a higher electricity load and higher electricity rates, if the increase in electric bills is not offset by the elimination of gas bills, means they soon may not be able to afford their utility bills, risking disconnection or making potentially dangerous trade-offs.

In addition to the high upfront costs of electrification, ESJ community members often live in old houses or apartment buildings that face structural and maintenance issues, which require separate investment for home repairs before installing new energy equipment. Existing policy is not capable of addressing energy and housing interventions holistically, which could otherwise help bridge the gap between household budgets and the high cost to upgrading these older and under-maintained buildings. While the cost of new, electric appliances to replace old, burned-out gas appliances can often be the same as or lower than the gas option, the upfront cost still presents an obstacle. Many families do not currently have the money available to pay for new appliances, and installation of new electric appliances may require wiring, electrical panel, and other related upgrades that can cost thousands of dollars more.[9] A family that is living in an old home and struggling to keep their lights on simply cannot prioritize this expense, even if the long-term benefit of electrification eventually outweighs the upfront investment.

Renters Have Limited Choices

Today, 45 percent of Californians are renters,[10] and approximately 25 percent of Californians are renters living on low to extremely low incomes.[11] Even if they do not bear the direct cost of electrification, low-income renters nevertheless face barriers to electrification because they lack the property rights to make the decisions required to electrify their homes, such as switching out water heaters, stoves, or other appliances and upgrading the building's electrical lines and panels. Even if these Californians wish to live in healthier, cleaner homes, the decision to electrify their building is out of their control and is up to the property owner.

Owners have few incentives to invest when renters pay the utility bill.

Improvements to energy use, like solar, energy efficiency, and building electrification, primarily produce benefits for the person paying the bills even though the cost of improvement falls to the owner. This creates a split incentive which requires countervailing incentives to correct. This effect is exacerbated by California's ongoing housing crisis, in which the demand for housing outstrips the supply, giving landlords little incentive to make clean energy investments. And renters rightly fear that an upgrade will cause their landlords to increase their rent or evict them in order to rent the property to more affluent renters. Currently, no regulatory or statutory protections ensure that Californians who receive energy upgrades can remain in their homes with no increased rents after the upgrades are performed, or require that rent for upgraded properties remain at a price affordable to low-income residents.

Percentage of California's Renter Households Experiencing Rent Burden by Income

Extremely Low-Income or Below Poverty Line		Very Low-Income		Low-Income	
1.41M	total renter households	0.82M	total renter households	1.13M	total renter households
90.2%	rent burdened	85.4%	rent burdened	64.6%	rent burdened
76.9%	severely rent burdened	47.4%	severely rent burdened	16.9%	severely rent burdened
Subtotal: All Lower-Income Renter Households (80% AMI and below)					
3.36M	total renter households	80.4%	rent burdened	49.5%	severely rent burdened
Moderate-Income		Above Moderate-Income		Total: All Renter Households	
0.59M	total renter households	2.03M	total renter households	5.97M	total renter households
41.5%	rent burdened	12%	rent burdened	53.4%	rent burdened
5.3%	severely rent burdened	0.9%	severely rent burdened	28.7%	severely rent burdened

Source: 2017 National Low-Income Housing Coalition tabulations of 2015 American Community Survey Public Use Microdata Sample (PUMS) housing file.
From: California Housing and Community Development "California's Housing Future: Challenges and Opportunities"

Regulatory Barriers

While California invests billions of dollars in a wide array of customer-facing programs and incentives designed to help customers make environmentally friendly choices, these programs are often designed and implemented in ways that make using them complicated. Addressing some of these behind-the-scenes complications will make it easier for customers to access the benefits for which they are eligible. For example:

Limited funding and lack of program alignment create a confusing landscape.

Existing programs intended to help Californians reduce their energy bills need regular, steady investment and better alignment with each other in order to effectively reach ESJ communities. The Low-Income Weatherization Program (LIWP) is the state's first energy efficiency program that includes electrification designed specifically for Californians with low incomes living in disadvantaged communities. To date, 100 percent of program funds have been invested in disadvantaged communities. Residents of LIWP Multifamily participating properties are projected to save an average of 30 percent on their energy bills, and the program has reduced overall energy usage in participating multifamily buildings by an average of 40 percent.[12] LIWP has reduced GHG emissions by 102,887 metric tons of carbon through completed projects to date, equivalent to taking 21,844 vehicles off the road.[13] This program, which delivers both GHG reductions and health, safety, and comfort upgrades, has no guarantee of funding from the Greenhouse Gas Reduction Fund from year to year. In May 2019, despite uncertainty around funding, this program had over 1,000 multifamily properties on its waiting list.[14]

Currently, LIWP is not coordinated with the utility-administered Energy Savings Assistance Program (ESAP). Therefore, despite having tremendous potential to achieve deeper energy and bill savings, to date it has been almost impossible to combine both sources of funding on a single project.[15] ESJ communities have not been able to maximize the benefits of energy efficiency, renewable energy, and electrification because these separate programs do not align or coordinate.

Energy and health programs that treat homes are disconnected.

Most of the housing stock where low-income Californians live needs more than just energy upgrades. These buildings often need to be treated for mold, asbestos, or structural issues like damaged walls or leaky roofs. Existing incentive programs for energy upgrades require that homes be free of these problems before being treated, and have no requirement for referral or follow-up if the program finds one of these structural barriers. Similarly, programs designed for improving health or habitability are not connected to energy upgrade programs. California has a big opportunity to create healthier places to live by creating a referral loop among these types of programs at every point and providing a one-stop shop to help owners manage the complexity of project timelines and requirements.[16]

MCE Clean Energy's LIFT Pilot Program is a great example of how energy and health programs can be de-siloed and layered for low-income residents and the buildings where they live. This pilot leverages funding from ESAP, other energy efficiency incentives, and the Green and Healthy Homes Initiative.[17] The LIFT Pilot Program targets multifamily properties that are not currently benefiting from other low-income programs.[18] It provides comprehensive services to low-income properties and tenants including switching from gas furnaces to electric heat pumps. In addition to energy and weatherization services, this pilot also rehabilitates the home (pest management and roof/door repair, for example) to improve the residents' health.

Education and outreach do not engage all Californians.

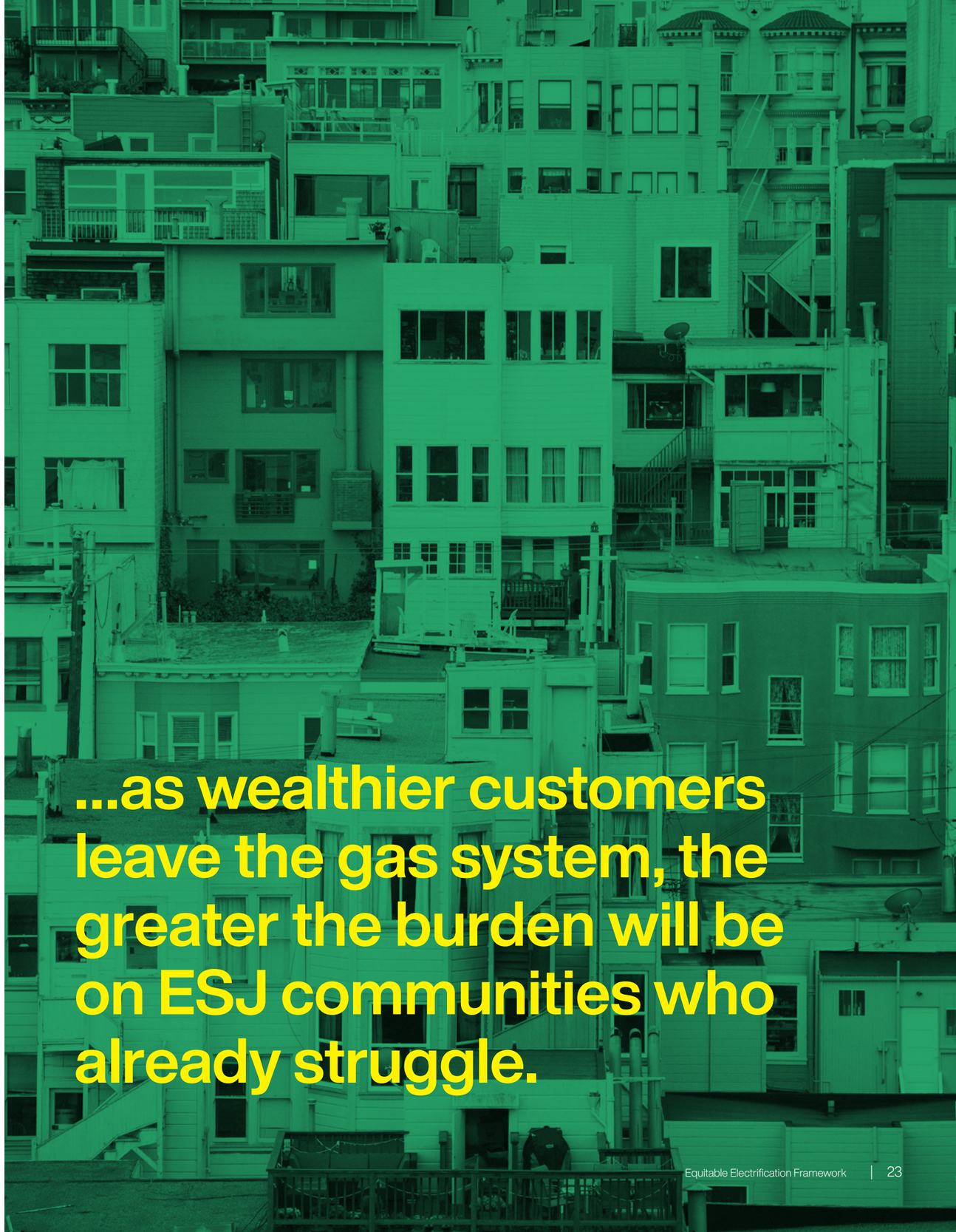
Challenges aside, Californians living in environmental and social justice communities have shown that they are strongly invested in helping California clean up its air quality and reduce its carbon emissions. Many residents are very interested in understanding the indoor air quality benefits from electrification as well as the connection between gas use and climate change. A culturally appropriate education and awareness campaign about the topic of building electrification, delivered by trusted messengers from the community such as community-based organizations, could increase awareness of the fossil fuel ecosystem and its presence in California's homes, leading to more engagement from communities. The California Public Utilities Commission has an opportunity to require robust marketing, education, and outreach to and by these communities to drive demand among both renters and owners.

Risks to ESJ Communities Remaining on Gas

The consequences for ESJ communities remaining on gas while the rest of the state electrifies will be immense. Without policy and regulatory intervention, hardships and challenges such as energy insecurity and inability to afford basic household expenses will only increase. Energy and Environmental Economics (E3) estimated in a "high building electrification" scenario that at least two million people will still be left on gas.[19] Because of the multiple barriers discussed above, ESJ communities are likely to be left using gas if market forces are the primary driver of electrification. They will be least able to afford the upfront costs of electrification and are most likely to live in rental housing where they have little to no say on whether to electrify.

Energy bills for customers who remain on electric and gas service are currently set to increase due to safety-driven expenditures caused by previous gas leaks, the San Bruno explosion, and wildfire liability and risks.[20] This current projection will further be accelerated when more people electrify their homes, because having substantially fewer customers paying for system repairs and upgrades will amplify rate increases for the remaining gas customers. Thus, as wealthier customers leave the gas system, the greater the burden will be on ESJ communities who already struggle.

Safety and reliability of gas service might also become a major concern. As people reduce their energy use through energy efficiency as well as electrify their homes, the demand for gas will decline. As demand declines, gas utilities must either raise their rates or reduce the amount of money they invest in their systems. Reductions in system operations and maintenance could jeopardize safety and reliability. We will need policy and regulatory intervention to protect ESJ community residents from unaffordable gas bill increases and possible safety and reliability risks.



Impacts on Environmental and Social Justice Workforce

Equity opportunities through electrification arise not only for customers but for the workforce side as well. On the pathway to creating healthier, carbon-free homes we have an opportunity to center equity in who carries out the work. Workforce standards and opportunities must be included in electrification policy from the start. Doing so is essential to a just transition for workers in fossil fuel industries and also to ensure that the clean economy offers real opportunities to those seeking employment in ESJ communities.

Just Transition for Fossil Fuel Workers

Electrification policy must contend with the reality that fossil fuel jobs have generally been better paying, longer-term, and provide better benefits than many green jobs. California's transition to a cleaner economy must not force today's fossil fuel workers to choose between a good job and a green job.

In 2016, the average fossil fuel salary was $87,785, substantially higher than the average annual workforce salary of $50,014. Further, between 2012 and 2016, 84 percent of fossil fuel workers were full time, compared to 61 percent of the overall workforce[21]. High-road jobs that provide family-sustaining wages and benefits are critical for lifting families and communities out of poverty, and the workers with good jobs in the fossil fuel industry today must be treated with dignity by all stakeholders in the electrification movement. Building electrification must include policies, systems, and funding to support a just transition to a low-carbon economy that supports workers and communities reliant on fossil fuel industries.

A Rising Tide for Low-Income Communities

While California is among the world's largest economies, it also has the country's highest poverty rate. This gaping disparity in income and wealth has serious social and economic implications. In addition to the very high cost of living in California, low wages and underemployment are significant drivers of income inequality. Since 1980, wages at the middle-income level in California have risen only 5 percent, and incomes at the 10th percentile actually have fallen 18.6 percent.[22] Underemployment also fuels California's income inequality. While our unemployment rate is just above four percent, our real unemployment rate—once those who have given up on finding work and part-time workers who would prefer to be working full-time are included—is 8.6 percent.

While jobs in building electrification will not solve income inequality in California, they can make a strong contribution toward closing the gap and must be designed at least in part to do so. The inherently local nature of work in the built environment means that, with the right policies and programs, there can be good jobs in communities all across the state. In addition to ensuring that fossil fuel workers have access to good jobs, equitable electrification policies should include support for and partnership with workforce development programs that create pathways for people with barriers to employment, so that they too can access high-road electrification jobs.

Workforce Considerations

- Ensure that labor and workforce development agencies and organizations are at the table from the start as electrification policies and programs are being designed.
- Build workforce transition into program budgets as well as program design for both new and existing programs that promote electrification.
- Ensure that electrification jobs are good jobs that pay family-sustaining wages, offer reliable hours and good benefits, and afford workers the opportunity to gain new skills and advance their careers.
- Be intentional about access—ensure that today's fossil fuel workers and workers in low-income communities have access to, and are well-prepared for, electrification job opportunities.

The Power of Community-driven Decision-making: San Joaquin Valley Case Study

Why Community-Driven Decision-Making?

Community members are the experts regarding their lived experiences, a form of expertise sorely lacking in most decision-making spaces. Community members know the challenges and barriers facing their families, friends, and neighbors. Working as partners, community members and policymakers can determine together the exact issues that building electrification should address in a particular region or even neighborhood. The San Joaquin Valley Disadvantaged Communities Pilot Projects demonstrate that, when offered technical support, time, and access, community members can decide the best ways to overcome the challenges they see.

"These are immigrant, farm-working, hard-working communities with residents who work in the fields, pick grapes in 110 degrees or 40 degrees because they want to provide for a better life in their communities."

– Abigail Solis, Self-Help Enterprises

Zooming In: Creating the San Joaquin Valley Disadvantaged Communities Proceeding

Stretching from Modesto to Bakersfield and beyond, California's Central Valley encompasses a wide range of different communities, largely rural and agricultural, that together comprise about one-third of the entire state's land area. Long overlooked and under-resourced, the Central Valley bears a challenging set of compounding burdens: extractive sites leading to high pollution levels, terrible air quality, lack of access to high quality jobs, lack of investment, and uneven (sometimes nonexistent) infrastructure and access to basic needs. Many Valley communities have experienced what is essentially infrastructure redlining—conscious public policy decisions to withhold or fail to upgrade essential infrastructure needed by low-income communities of color deemed less worthy of investment.

To respond to community needs, organizations like Self-Help Enterprises have worked for decades in these communities by focusing on improving people's access to affordable housing and improving the health of Central Valley residents and communities.[23] Through direct work with families and community members, Self-Help identified over 170 communities across the Valley that were never connected to the gas distribution grid, instead left to burn wood or propane for heating, water heating, and cooking.

Noting the high costs of propane and the tremendous health impacts of burning wood indoors, community members and activists successfully advocated for the creation and passage of AB 2672 in 2014. AB 2672 required the CPUC to identify ways to decrease utility costs, increase overall financial health, and provide safer energy sources for low-income residents in the San Joaquin Valley.

Community organizing and trust building between residents and community-based organizations began in the San Joaquin Valley as early as the 1960s. Attracting the attention of decision-makers proved to be hard for residents of rural and unincorporated areas in the Valley. It took over a decade of advocating for access to a clean source of energy before AB 2762 passed.

Working Together for Community Wins

Local organizations that serve the community and have established trust among residents are key to effectively reaching and centering communities in public processes. Within the San Joaquin Valley proceeding, Self-Help Enterprises, the Center for Race, Poverty, and the Environment, and Leadership Counsel for Justice and Accountability (together, the Pilot team) helped the CPUC understand different communities' characteristics, identify good pilot locations (later known as the pilot host communities), organize community workshops, and conduct outreach to local residents.

Alongside trusted community partners, key decision-makers leading with an equity lens helped ensure that institutions with more power and resources checked their blind spots and worked harder at opportunities for collaboration. CPUC Commissioner Martha Guzman Aceves and her staff, who were assigned to lead the proceeding, championed community perspectives, stronger engagement, deeper trust-building between parties, and more creative ideas. Understanding the importance of hearing from people directly, Commissioner Guzman Aceves and her staff hosted at least two workshops in each community. By meeting in the target communities, more residents could attend and speak directly with and alongside professional advocates, utility representatives, commission staffers, and other decision-makers.

Selection of pilot host communities mostly focused on criteria like average household income, percentage of households lacking access to gas, and strong community buy-in. All parties agreed that host communities must demonstrate "community buy-in" and trust in the Pilot Team. As a result of this collaborative work and specific calls for local community input, the Commission held 12 Community Assessment Workshops, one in each of the proposed pilot host communities, in summer 2018. These community workshops were closely spaced in time across the entire geographic area and scheduled to accommodate community members' time after work. These workshops created strong, consistent channels for input from residents and the proceeding's parties, and pushed all stakeholders to identify innovative solutions.

Lessons Learned from Community Decision-Making in Action

In the end, the Commission approved 11 pilot host communities: Allensworth, Alpaugh, California City, Cantua Creek, Ducor, Fairmead, Lanare, La Vina, Le Grand, Seville, and West Goshen. Only one approved pilot currently involves extending gas lines: a joint gas and electrification approach by Southern California Gas and Southern California Edison in California City to offer learnings about barriers to electrification. These pilots offer a variety of ways to switch homes to cleaner energy through electrification. As a result of the local residents' input on these pilots, all will provide extended warranties for customers; workforce development, education, and training opportunities; energy storage options; local siting of community solar; co-benefits like access to home broadband; and consistent community engagement.

Perhaps the most important takeaway from this case study is that the primary concerns of San Joaquin Valley residents center around energy affordability and reliability, and the health and safety of their homes—not about innovative energy technologies or even about gas vs. renewable energy. Their underlying question was: how will these pilots ultimately improve our daily lives? Their voices, rooted in lived experiences, helped the Commission and the parties in the proceeding refocus the conversation on the people instead of the infrastructure or technology.

This proceeding shows that building electrification policy and program implementation can and should be facilitated and structured to include community decision-making. It also shows us that, more often than not, when offered community choice, communities opt for a cleaner energy option, and that empowering communities to make decisions leads to stronger outcomes across the board. While this example was the result of decades of organizing, we recognize that not all planning efforts can incorporate such timelines into their work. We therefore offer key takeaways that decision-makers can incorporate into their equitable building electrification efforts in Step 2 of the Framework.

Equitable Building Electrification Framework

Equity should be at the forefront of our state's efforts to electrify our homes. Equity begins by recognizing that not all communities have the same social and economic starting point. African Americans, Native Americans, immigrant communities of color, low-income communities, and others have long suffered systemic exclusion from opportunities such as homeownership, educational attainment, high-road jobs, and the ability to live in a clean and healthy environment. These inequities continue to get worse as the result of the country's widening income and wealth inequality and the Trump administration's callous political agenda. California is attempting to address some of these harms by committing to more equitable environmental and energy policies. We therefore propose the following framework to function as a roadmap for various stakeholders who focus on achieving equitable outcomes.

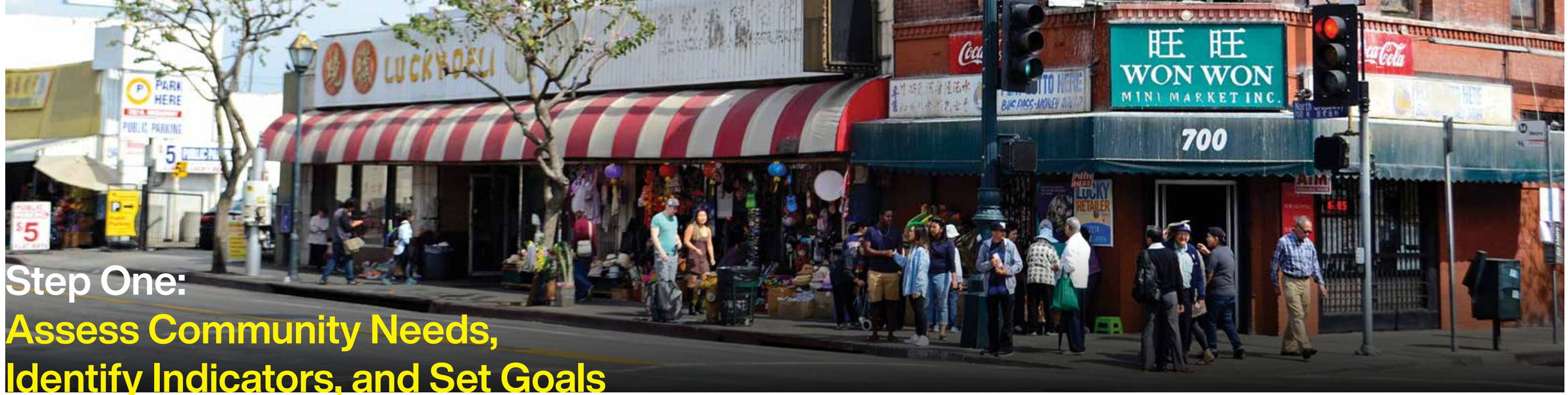
Our five-step framework for an equitable building electrification transition is guided by the USC Program for Environmental and Regional Equity's three-dimensional approach to equitable implementation of programs that help close the equity gap.[24] The three dimensions are:

1. Prioritize investments that close historic racialized gaps in a way that will improve access to jobs and economic and health opportunities for underinvested communities.

2. Create authentic partnerships that center the perspectives of vulnerable communities, support community-based participation and power, and result in shared decision-making, while also strengthening the health and well-being of the entire region.

3. Mitigate disparities likely to emerge in the future by leveraging funding for long-term community health and organizational capacity, anticipating and addressing future harm that may result from new investments in a place, and incorporating metrics and evaluation to promote adaptable and effective implementation.

Operationalizing these dimensions requires an unwavering, long-term commitment from all interested stakeholders in order to achieve equitable results from building electrification.



Step One:
Assess Community Needs, Identify Indicators, and Set Goals

Prior to designing policies or creating implementation plans that advance building electrification, stakeholders must conduct community needs assessments to identify communities' unique needs, the underlying reasons or causes of these issues, existing barriers, and the types of resources that are already available to address these issues. Keeping in mind that various communities, even neighborhoods, should not be treated the same as they have different characteristics and needs, a community needs assessment is necessary so that stakeholders can conduct a meaningful inquiry into the possible benefits that electrification can deliver to ESJ communities and the challenges that residents will face in switching from fossil fuels to clean energy. In 2016, the California Energy Commission released the SB 350 Barriers Study, which is a statewide exploration of the barriers to and opportunities for expanding low-income customers' access to energy efficiency, weatherization, and renewable energy investments in disadvantaged communities. The Barriers Study is a good example of a first step in conducting a needs assessment.

Questions that should be considered in this step includes:

- What kind of resources does this community have (this includes community-based or faith-based organizations that serve the community, free or low-cost social services programs, after-school programs for kids, energy-related programs for low-income or disadvantaged communities, or workforce development programs for unemployed adults)?
- What barriers prevent residents in this community from fully electrifying a home?
- What do people care about and which issues do they want to prioritize?
- How much do people already know about electrification? Who has access to this information and who does not?
- Who do people in this community trust? Where do they get their information? Where do they go when they have questions?
- Who has participated in other energy programs, like energy efficiency, and who has not? Of those who have not, why haven't they?
- Which communities should be prioritized and what would it take to ensure that they benefit from a building electrification project or policy?
- Which data must be collected and considered for this assessment?

Equity indicators must also be established to ensure that investments that close historic wealth and environmental gaps[25] are targeted to ESJ residents. Equity indicators can be used in two ways: First, they can be used to identify specific communities where electrification investments should be prioritized. CalEnviroScreen is an important tool to target climate investments in the state's most impacted communities. It identifies "disadvantaged communities," by using equity indicators such as exposure to pollutants, environmental effects, health, and socio-economic factors. The list of indicators is not exhaustive, but the CalEnviroScreen is a great example of how to use equity indicators to identify and prioritize investments in ESJ communities. The second way that equity indicators can be used is to measure the impacts of investment in ESJ communities. For example, the CEC's Energy Equity Indicators report identifies a set of equity indicators that the agency will use to track and measure investment, access, and resilience resulting from clean energy programs.[26]

The community assessment will lead to a greater understanding and creation of equity-driven goals. The goals must be broad enough to encompass an issue or address a need within a community but also narrow enough to help determine the appropriate equity indicators, timing and level of funding, and metrics needed to track impacts. Use SMARTIE goals in order produce tangible outcomes that include marginalized communities.[27]

Step One:
Assess Community Needs, Identify Indicators, and Set Goals

1

SMARTIE Goals

Strategic	It reflects an important dimension of what your organization seeks to accomplish (programmatic or capacity-building priorities)
Measurable	It includes standards by which reasonable people can agree on whether the goal has been met (by numbers or defined qualities).
Ambitious	It's challenging enough that achievement would mean significant progress; a "stretch" for the organization.
Realistic	It's not so challenging as to indicate lack of thought about resources or execution; possible to track and worth the time and energy to do so.
Time-bound	It includes a clear deadline.
Inclusive	It brings traditionally marginalized people—particularly those most impacted—into processes, activities, and decision/policy-making in a way that shares power.
Equitable	It includes an element of fairness or justice that seeks to address systemic injustice, inequity, or oppression.

Broad goal:
Affordability

Specific goal:
Reduce energy disconnections rate in ESJ communities by 50 percent by 2020[28]

Broad goal:
Health Improvements

Specific goal:
Collaborating with county Public Health agencies to cut the number of asthma-induced ER visits in half by 2020

Recommendations

1. Partner with local community-based organizations and local government to create a community outreach plan. The plan should aim to engage residents of ESJ communities and to make engagement opportunities as accessible as possible.
2. Identify the most pressing community needs, including determining the residents' fuel source, access to clean energy and energy efficiency programs, and non-energy issues such as housing, health, food, and transportation needs.
3. Identify unique structural, economic, and logistical barriers to electrifying the homes.
4. Establish equity-driven goals that are directly tied to communities' needs.

Step Two: Establish Community-led Decision Making

Community leaders and advocates face an exceptional challenge to get the attention of key decision-makers and help them understand the unique needs of their families or communities. As shown by the San Joaquin Valley experience, persuading decision-makers that these needs require additional funding and resources could take decades and even generations to accomplish. At the same time, decision-makers create new policies and programs that directly affect the lives of impacted communities without their voices. At the heart of community-driven decision-making lies the key environmental justice principle that those closest to the problem are those closest to the solution.

We urge decision-makers to proactively incorporate community design and community-driven decision-making into processes from the beginning. Rich community input and engagement improves local buy-in and makes programs and policies better at reaching the communities they intend to reach. Further, inviting community voices to the table helps to demystify the linkages between energy bills, indoor air quality, health, local jobs, and community resilience.

Decision-makers should recognize that in order to confront an intersectional challenge like climate change, we must pursue intersectional solutions. Just as the SB 350 Barriers Study knits together compounding barriers facing low-income communities of color, the CPUC and other agencies should proactively leverage their work and collaborate to ensure initiatives and resources align across issue areas to best improve lives for the most marginalized Californians. Policymakers should aim to improve people's ability to live, breathe, play, and afford a home—not merely to test appliances in low-income neighborhoods.

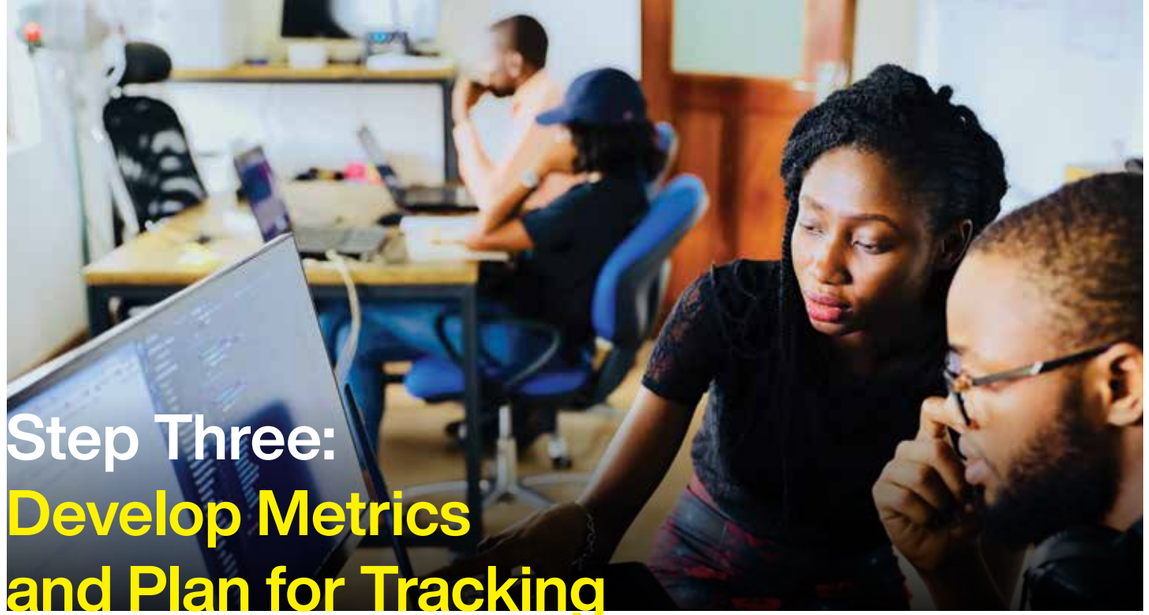
2

Questions that should be considered in this step includes:

- Which CBOs that have been serving the residents should be contacted to support this effort (this may include social services organizations, energy efficiency providers, and workforce development organizations)? What kind of resources or support do they need (this includes financial support for CBOs to pay their staff to prioritize this issue and for residents to help with travel, lodging, and childcare)?
- When, where, and in what context should we engage residents on the issue of equitable electrification?
- Are all the relevant stakeholders at the table?
- What level of technical assistance do the CBO reps and residents need in order to fully engage in electrification topics?
- What should decision-making processes look like?

Recommendations

1. Make time and talk to people early and often. Effective and rooted community organizing is very slow work.
2. Meet communities where they are, literally. Hold meetings, workshops, and opportunities for engagement in accessible places, at convenient times, and with appropriate accommodations.
3. Partner with trusted local community workers, especially community-based organizations. Stretch and work with new players, and foster unexpected partnerships.
4. Trust that community members are experts on their stories, histories, challenges, and priority solutions.
5. Make improving people's actual lives (air, health, home, family, community) the central priority. Technical expertise should respond to community needs and priorities.
6. Develop a decision-making process with community members.



Step Three: Develop Metrics and Plan for Tracking

Metrics are essential for assessing the effectiveness of equitable building electrification efforts in meeting established policy and program goals. Metrics should be used for all three activities involved in advancing building electrification:

- Policy adoption: Metrics should articulate the principles being embraced and set target benchmarks or expectations for what progress is desired.
- Program Design: Metrics should help specify program objectives, decide program parameters and target audiences, and determine the necessary data collection schemes to inform evaluation.
- Post-implementation: Metrics should largely support program evaluation, execution effectiveness, and expenditure value—as feedback to policy and program oversight.

Because equitable electrification efforts focus on reducing energy and non-energy hardships that affect ESJ communities, metrics cannot just measure energy savings. Stakeholders must also be open to both quantitative and qualitative metrics. Without qualitative measures there will be no consideration of quality of life type of improvements in policy adoption or program design.

Lastly, tracking the metrics' progress is a significant policy and programmatic tool that must be designed and planned at this early stage. Tracking will allow stakeholders to reach a deeper understanding of the challenges and successes of building electrification policies or projects. Tracking also identifies areas for improvement and allows for regular and transparent reporting to the public to improve accountability.

3

Examples of Metrics

Quantitative	Qualitative
Energy savings	Increased comfort during extreme weather days
Long-term GHG emission reduction	Confidence in ability to pay for energy bills without sacrificing other household expenses
Short- and long-term bill impacts	Ease in operating and maintaining equipment
Number of local hires used per project	Customer education/understanding of program benefits

Questions that should be considered in developing metrics and a tracking plan include:

- What quantitative and qualitative benefits can electrification deliver to ESJ communities?
- What kind of baseline data is needed to compare against our metrics?
- Who should conduct tracking?
- How and how often should data be collected? Are certain communities or individuals excluded by the data collection method you have chosen?

Recommendations

1. Identify metrics that will be tracked and measured based on the goals and indicators.
2. Identify and establish both quantitative and qualitative metrics.
3. Develop a plan to track metrics. Ensure that this plan maximizes the best feedback loop to improve current and future electrification efforts and provides transparency.

Step Four:
Ensure Funding and Program Leveraging

Funding for energy efficiency and clean energy programs must be directed to ESJ communities. Low-income energy programs struggle to maximize benefits to all qualifying households, either due to short and unpredictable funding cycles (as with LIWP, discussed above) or due to poor program design that inadequately reaches qualifying customers. Additionally, barriers to program integration and lack of information on how to leverage funding limit opportunities to streamline services and lock complementary funding sources into silos. We must encourage coordination similar to the MCE LIFT pilot, which coordinates low-income and non-low-income energy programs along with public health and climate programs California needs to incentivize building owners to invest in energy efficiency and electrification, without the risk of displacing ESJ renters. We also need to determine how many ESJ residents do not qualify for low-income energy programs like ESAP and LIWP and identify ways to meet their needs.

In addition to the numerous siloed or uncoordinated energy programs for ESJ communities, California also has various regulatory agencies and state and local jurisdictions that all work on some form of building electrification strategy. Along with these energy efforts, the state will need to figure out a way to integrate inter-agency electrification efforts with investments in clean energy, affordable housing, public health, and workforce development. As an example we can look to the Transformative Climate Communities program. Established in 2016 by AB 2722, authored by Assemblywoman Autumn Burke, Transformative Climate Communities is administered by the Strategic Growth Council and funds the development and implementation of neighborhood-level transformative climate community plans that include multiple GHG emissions reduction projects that provide local economic, environmental, and health benefits and are directly connected to communities most impacted by pollution and vulnerable to climate change. TCC has pioneered an innovative vision for investing in the most impacted communities through a multi-outcome approach and shows that there are ways to overcome the barriers to program coordination and deliver maximum benefits to ESJ communities.

4

Questions to consider in this step:

- What other programs or funds exist to serve the same community and meet similar needs?
- Will a new program align with other programs and make leveraging easy, or will it become yet another silo?
- How can non-low-income programs expand their reach and services to low-income populations?
- What other kinds of programs similar to MCE's LIFT pilot and the TCC exist that leverage various programs and agencies?
- What role does financing have in increasing building electrification in ESJ communities, especially for households that do not qualify for free upgrades?

Recommendations

1. Identify various sources of funding for energy-related or building-related programs.
2. Identify gaps in funding for needs that need to be addressed.
3. Create a new program that integrates new and current energy, climate, and health programs available to ESJ communities to maximize benefits.
4. Direct more building electrification research and development (through programs like Electric Program Investment Charge) towards ESJ communities.
5. Find ways to support ESJ households through alternative financing such as tariffed on-bill financing.

Step Five:
Improve Outcomes

Performance of any given program must be measured to ensure that it is delivering the intended impact. The current standardized evaluation framework for CPUC-administered energy efficiency programs is meant to provide a "consistent, systemized, cyclic approach for planning and conducting evaluations of California's energy efficiency and resource acquisition programs."[29] The stated purpose of this evaluation framework is twofold: 1) to reliably document program effects, and 2) to improve program designs and operations to be more cost-effective at obtaining energy resources[30]. While this energy efficiency evaluation framework, and others like it, might be the most familiar option for energy efficiency and clean energy stakeholders, we propose an alteration in order to add an equitable lens and ensure that the primary beneficiaries of electrification policies and programs are ESJ communities.

To determine the equitable impacts of electrification policies and programs, measurement and evaluation efforts must be based on three principles: 1) document and assess the energy and non-energy impacts of the program on ESJ communities; 2) provide programmatic transparency to hold both programs and program administrators accountable to achieving the goals the program was set to meet, using equity metrics; and 3) ensure that there is a continuous feedback loop to improve current and future programs' reach and impact in ESJ communities.

Earlier in this document, we proposed that a reporting plan should also be created along with the tracking plan. Reporting plays a critical role in achieving the second and third evaluation and measurement principles. Reporting is an effective tool to use for getting ongoing stakeholder and financial support for the policy or program. More importantly, reporting will help improve the strategies employed to achieve the goals of electrification policies and programs.

5

Questions to consider in this step:

- Are there improvements post-electrification? How much progress has been made between the baseline data and the post-implementation data?
- Are the results on track for achieving short and long-term goals? What factors could have influenced the change between the baseline and post-implementation metrics?
- Has the program/policy reached all the communities it was intended to reach? If not, what adjustments need to be made so that the next program cycle is more effective?
- Has the program/policy delivered all the benefits it was intended to deliver? If not, why not, and what can be improved?
- How should the evaluation results be framed in order to reach important stakeholders?

Recommendations

1. Create a public calendar of scheduled updates on tracking and evaluation.
2. Ensure that the right people receive the evaluation results. Provide time to solicit the audience's input because they may lead to further clarity and improvement in the tracking, evaluation, and reporting process.
3. Develop an immediate feedback loop for lessons learned and make adjustments to existing programs and a longer and more comprehensive feedback process to change and inform the implementation and evaluation of future programs.
4. Highlight important data relevant for strategic and budget planning processes.

Conclusion

Building electrification can provide comprehensive solutions that improve the lives of ESJ communities. Eliminating of fossil fuels from our homes can lead to healthier, safer, and thriving communities. As important as it is to remove gas and other fossil fuels from our homes, we must not repeat our early experience in energy efficiency and renewable energy programs that failed to effectively prioritize underserved communities. Failing to center equity in building electrification policies will result in insufficient investment in the communities that need the help the most, leaving ESJ communities behind once again.

This equitable electrification framework provides step-by-step guidance on how to approach the creation of an equitable and just transition of our buildings away from fossil fuels. By assessing the communities' needs, establishing meaningful community decision-making, developing equitable metrics and tracking, leveraging program benefits, and creating a process that allows for improvements, stakeholders can ensure that the benefits of electrification policies and programs prioritize people who could benefit from them the most.

Acknowledgments

About the Greenlining Institute

Founded in 1993, The Greenlining Institute envisions a nation where communities of color thrive and race is never a barrier to economic opportunity. Because people of color will be the majority of our population by 2044, America will prosper only if communities of color prosper. Greenlining advances economic opportunity and empowerment for people of color through advocacy, community and coalition building, research, and leadership development. We work on a variety of major policy issues, from the economy to environmental policy, civic engagement and many others, because economic opportunity doesn't operate in a vacuum. Rather than seeing these issues as being in separate silos, Greenlining views them as interconnected threads in a web of opportunity. Greenlining's Energy Equity team addresses the electric and gas services upon which homes and businesses depend, seeking to ensure that low-income ratepayers are protected, and that race, language or income are never barriers to these essential services.

About Energy Efficiency for All

In California, Energy Efficiency for All is committed to an equitable clean energy future. We currently work to advance healthy, affordable energy solutions at state, regional, and city levels for millions of our neighbors, especially those who are underserved renters. Our priority is to expand energy efficiency and renewable energy investment within our frontline communities already bearing the worst impacts of climate change, particularly in the Central Valley, Los Angeles, and disadvantaged communities. We work with The Greenlining Institute, the California Environmental Justice Alliance, the Natural Resources Defense Council, the California Housing Partnership, the Association for Energy Affordability, National Housing Law Project, the Los Angeles Alliance for a New Economy, and the National Consumer Law Center, among others. We are part of a multistate initiative that works to make multifamily housing healthy and affordable through energy and water efficiency. EEFA provides technical expertise and coordination support to a national network and 12 state-based coalitions to increase investments in energy and water efficiency, and to support EEFA partners in their efforts to make the strongest possible case for efficiency investments in affordable housing. EEFA is cofounded by Elevate Energy, Energy Foundation, National Housing Trust, and the Natural Resources Defense Council, with funding support from The JPB Foundation.

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Endnotes

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