Findings from the Los Angeles Affordable Housing Decarbonization Summit

A Convening of the GREEN Network of the California Housing Partnership

California Housing Partnership

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CALIFORNIA HOUSING PARTNERSHIP

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The State created the California Housing Partnership (the Partnership) in 1988 as a private nonprofit organization with a public mission: to help preserve and expand California's supply of affordable homes and to provide leadership on affordable housing policy and resource issues. The Partnership is unique in combining on-the-ground technical assistance with applied research and policy leadership at the state and national level to increase the supply of affordable homes. Since 1988, the Partnership has helped more than a hundred California nonprofit and government housing agencies leverage more than $20 billion in public and private financing, resulting in the creation or preservation of more than 75,000 homes affordable to low-income Californians.

The Partnership's Sustainable Housing team works directly with nonprofit affordable housing providers and public housing authorities to help them evaluate and finance clean energy and water improvements. This involves educating owners about the programs and opportunities for incentives available to them, as well as developing innovative demonstration projects to explore new technologies, financing tools, and business models for affordable rental homes. The Partnership's Sustainable Housing team is leading efforts to ensure that nonprofit affordable housing providers and residents are able to participate in California's path towards equitable decarbonization.

ABOUT THE SUMMIT

The Los Angeles Affordable Housing Decarbonization Summit was hosted February 16, 2023. It was a follow-up to the first two decarbonization summits hosted by the California Housing Partnership in 2020 and 2021. Reports summarizing each summit are available on the Partnership's website (chpc.net).

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INTRODUCTION

The 2023 Los Angeles Affordable Housing Decarbonization Summit, held on February 18th, 2023, at the California Endowment in Los Angeles, California, marked a milestone in the city's efforts towards sustainable and energy-efficient affordable housing. Organized and hosted by the California Housing Partnership (the Partnership) and the Southern California Association of Non-Profit Housing (SCANPH), this event brought together key stakeholders from the affordable housing and clean energy sectors, policymakers, industry experts, and community leaders committed to ensuring that the decarbonization of the City's housing stock occurs in as equitable way as possible with respect to low-income renters.

The summit goal was to address the pressing challenges and opportunities in decarbonizing affordable housing in Los Angeles, with a focus on promoting equitable and innovative solutions. The Wells Fargo Foundation generously provided sponsorship, underscoring their commitment to supporting the decarbonization of affordable housing.

Ready for the Summit to begin.

This report encapsulates the insights, discussions, and recommendations generated at the summit, and is intended to serve as a roadmap for transforming affordable housing into resilient, low-carbon communities that foster social, economic, and environmental well-being. Several common themes emerged from the three panel discussions at the summit:

Cost and Funding

Cost is a significant challenge for nonprofit affordable housing providers in Los Angeles when it comes to decarbonizing buildings. The cost of installing renewable energy systems, energy-efficient appliances, and upgrading utility infrastructure is substantial. Operating on tight budgets, Nonprofit organizations struggle to find sufficient funding to cover the full cost of these initiatives. Retrofitting existing buildings with energy-efficient features, improving insulation, and incorporating renewable energy systems like solar panels is generally financially prohibitive without additional subsidies.
This is especially true for affordable housing properties with elevated operating costs, such as permanent supportive housing, which may already be operating at a loss and have limited to no budgets for fuel switching, especially when affordable energy storage technology is not yet available to offset rate increases. Consequently, affordable housing providers need greater access to available clean energy incentive programs now as well as assistance to be ready to access additional funding opportunities as the first parts of the $400 billion in federal funding authorized by the Inflation Reduction Act (IRA) of 2022 become available later in 2023 and 2024.

Insufficient Expertise

The process of decarbonizing buildings demands specialized expertise and skills in planning and installing new technologies as well as in training staff and residents to use them appropriately. Nonprofit organizations often lack the necessary in-house knowledge to undertake such initiatives, necessitating the engagement of external consultants and contractors to handle the work. However, this dependence on outside parties and lack of internal capacity can be costly and may lead to delays as organizations navigate the search for qualified professionals to fulfill the required tasks. Additionally, ensuring a positive tenant experience and obtaining their feedback during the decarbonization process is crucial. It requires effective communication and collaboration between the housing providers, contractors, and tenants. Educating and engaging tenants about the changes, benefits, and proper use of decarbonized systems and appliances is therefore essential to maximize energy savings and avoid tenant dissatisfaction.

Building Age and Condition

Building age and condition pose significant challenges for decarbonization efforts in affordable housing in Los Angeles. A substantial number of these buildings are older and were not originally designed with energy efficiency in mind. Retrofitting these older structures to reduce their carbon footprint can be a complex and demanding task, often requiring extensive structural changes and upgrades to the building envelope, including insulation improvements, window replacements, and sealing air leaks. Striking a balance between achieving energy savings and maintaining affordability is crucial when addressing the unique challenges posed by older and less energy-efficient buildings.

Policy and Regulatory Barriers

Policy and regulatory barriers present significant obstacles for nonprofit affordable housing providers seeking to decarbonize their buildings. These barriers manifest in various forms, such as policies that require affordable housing providers to bear the cost of utility infrastructure upgrades or utilize a utility allowance schedule that does not reflect the property's electrification measures and high efficiency measures. Overcoming these policy and regulatory challenges requires a collaborative approach involving stakeholders, policymakers, and advocacy organizations. By addressing these barriers and advocating for supportive policies, the path to decarbonization can be cleared, enabling affordable housing providers to more effectively pursue sustainable and energy-efficient building practices.

Tenant Education and Engagement

Tenant education and engagement pose notable challenges for nonprofit affordable housing providers when implementing decarbonization initiatives. Ensuring that tenants comprehend the purpose and material benefits from these initiatives can be difficult, leading to resistance or apathy towards adopting energy-efficient practices. To overcome this hurdle, it is crucial for affordable housing providers to prioritize tenant education and engagement and make tenants active participants in decarbonization efforts to the greatest extent possible. By effectively communicating the benefits, providing clear instructions, and fostering a sense of shared responsibility, tenants can actively participate in and support the decarbonization efforts, leading to improved energy efficiency and a more sustainable living environment.

SESSION 1: ADVANCING ALL-ELECTRIC NEW CONSTRUCTION

Session Summary

The objective of this session was to provide lessons learned from the housing provider's perspective, highlight operational economics, and discuss program incentive options to make all-electric projects pencil.

The start of 2023 brought big changes to the Los Angeles new construction building sector with the implementation of the city's all-electric new buildings requirement, which became effective April 1st for all buildings and June 1st for new affordable housing. While the California 2022 Energy Code establishes electric-ready requirements for new homes, effective January 1st. The housing provider panelists of the first session are early adopters of all-electric systems and technologies and did not wait for the state or city to impose electrification requirements.

Jesus Hernandez from Community Corporation of Santa Monica (CCSM) and Tim Kohut from National CORE are among the few organizations in Southern California having completed all-electric new affordable housing. Luca Costa from the Association of Energy Affordability (AEA) provided the technical and program perspectives with an overview of the states' Building Initiative for Low-Emissions Development (BUILD) Program. BUILD is one of the few state electrification programs aimed at new construction buildings.

Tim Kohut explains the economics of all-electric new construction.

Lessons on Electrification Design and Financing

While the Vista Ballona design began as a mixed-fuel project, it became CCSM's first venture into all-electric new construction. The development was completed in 2022 in the Mar Vista neighborhood on the Westside of the City of Los Angeles. National CORE has completed several all-electric properties under the 2016 Energy Code, and at least four properties featured in the panel are part of the organization's journey toward net zero affordable housing. Table 1.1 All-Electric Affordable Housing shows key elements of the completed developments highlighted in session one.

Table 1.1 All-Electric Affordable Housing

	VISTA BALLONA	SAN YSIDRO SENIOR VILLAGE	DAY CREEK SENIOR VILLAGE	VISTA VERDE	CRESTVIEW TERRACE
Owner	CCSM	National CORE			
Location	Los Angeles (Mar Vista)	San Diego	Rancho Cucamonga	Ontario	San Bernardino
Units	50	51	140	100	184
Tenant Population	Family	Homeless senior 55+	Seniors 65+	Family	Family
Income Level	<80% AMI	30% to 60%	30% to 60%	30% to 60%	30% to 60%
Solar PV Array Type/Size	flat for maximum PV	Flat for maximum PV	410 kW DC PV system	368 kW DC PV system (rooftop + carports)	PV system powers ⅓ of site energy
Hot water system	Centralized heat pump	Gas boilers	Individual heat pumps	Individual heat pumps	Individual heat pumps
Meter Type	Individually metered	Master metered	Individually metered	Individually metered	Individually metered
Energy Systems	All-electric	Resembles zero net energy (ZNE)	High efficiency building plus near ZNE	All-electric, ZNE	All-Electric
Funding Source[1]	LIHTC, BUILD	LIHTC	LIHTC	TCC, AHSC	AHSC

The following is a summary of the lessons learned from CCSM and National CORE for organizations embarking on an all-electric new construction affordable housing development:

1. Commit to electrification from the start of planning to avoid added costs related to switching mid-design. (See Table 1.2)
2. Enroll in state, utility and local decarbonization programs to access free technical assistance, get introduced to new technologies, be exposed to strong mechanical engineers, and get the design team on the same page. (See Appendix)
3. Bring an energy consultant onboard early in the development planning process to inform and assist with other phases.
4. Take ownership of the selection and hire of the mechanical, electrical, and plumbing (MEP) engineer instead of living it up to the architect and involve the energy consultant in the process.

1. The Transformative Climate Community (TCC) is a grant by the California Strategic Growth Council and the Affordable Housing and Sustainable Communities (AHSC) is a grant by the California Housing and Community Development Department.

5. Provide engineers and architects with clear performance criteria for an all-electric design, including:
    - designing the roof to maximize PV installation.
    - selecting the right hot water heat pump system type.
    - using efficient appliances to reduce CUAC.
6. Understand and be part of the selection of the hot water system as the choice of the system type should fit the building type and tenant population served as this is the key to making building decarbonization work and be cost effective.
7. Consider shifting from centralized to individual hot water heat pumps to reduce energy/water costs, lower CUAC, and increase net rents to leverage a larger permanent loan amount. (See Table 1.3)
8. Share CUAC calculations and common area energy assumptions with lenders and investors to demonstrate ability to cover a higher permanent loan.

Table 1.2 breaks down the differences and similarities between a mixed fuel building under the 2022 Energy Code and a fully all-eclectic building.

Table 1.2 Electric Ready Mixed Fuel Versus All-Electric

	ELECTRIC-READY WITH GAS (CA 2022 ENERGY CODE)	ALL-ELECTRIC (OPTIONAL OR LOCAL REACH CODES)
Gas Service	Gas connection & meter	No gas connection or meter
Electric Service & Wiring	Service & wiring for all-electric	Service & wiring for all electric
Electric Utility Infrastructure	Project may incur utility transformer impacts[2]	
Water Heater	Condensing gas water heaters	Heat pumps (individual or centralized)
HVAC	Gas furnace	Heat pump (ducted, ductless, PTHP[3])
Stoves	Gas stove + higher capacity range hood	Electric/Induction stove + lower capacity range hood
Clothes Dryers	Gas dryers	Electric dryers: resistance or heat pump
Renewables	Photovoltaic (PV) + thermal	PV only

2. A development may incur utility transformer costs when the existing utility infrastructure for the location may need upgrading to support the higher electrical load of a new building where none existed, or a larger building, or due to the electrification of an existing building. The need for a new transformer or upsizing existing transformers is concerning because this can make the development financially infeasible due to significant costs and also risk reducing the number of total affordable homes able to be built within the site. For more on this topic, see Prioritizing California's Affordable Housing in the Transition Towards Equitable Building Decarbonization, Summit Report 2021.

3. Packaged terminal heat pump (PTHP) have all the necessary components in a single unit and are often used in individual apartments and hotel rooms.

As Table 1.3 Electric Hot Water System Comparison shows, the selection of the hot water heat pump system can have a major impact on the development's long-term operating costs.

Table 1.3 Electric Hot Water System Comparison

CENTRALIZED WATER HEAT PUMP	INDIVIDUAL WATER HEAT PUMP
Owner pays for the water	Owner pays for water while encouraging tenants to conserve water and energy
Takes common area space for utility room	Uses in-unit space for dedicated closet
Investment Tax Credit (ITC) & available rebates vary	ITC & available rebates vary
1-year system warranty	10-year system warranty
Higher long-term operating costs	Lower long-term operating costs
Higher common area operating costs and lower net rents results in lower cashflow limiting the amount of the permanent loan	Lower common areas utility and maintenance costs, and lower CUAC because of a highly efficient or ZNE all-electric building allows for a larger permanent loan

Economics Drive the Decarbonization Strategy

In many California cities, including the City of Los Angeles, affordable housing providers no longer have the choice of building with natural gas systems. Almost 70 jurisdictions have adopted building energy codes that reach beyond the state minimum requirements for energy use in building design and construction, also known as "reach codes." However, housing providers like National CORE chose to eliminate gas systems long before they were required to begin in 2016 for several reasons that are primarily economic and important to consider.

1. **The Cost of Solar PV.** The first economic consideration is that the cost of solar PV, currently, around two dollars per watt, is getting cheaper. National CORE has found that prioritizing the roof design to facilitate the installation of the optimal solar PV system size is key, in some instances leading them to add carports to accommodate additional solar PV.
2. **The Importance of Energy Analytics.** In striving to make building electrification cost neutral, National CORE leans heavily on solid energy analytics and hires an energy consultant early in the project planning process to inform decision making on MEP engineer selection, systems sizing, and develop solid CUAC calculations.
3. **Aligning Utility Costs and Incentives.** By using decentralized hot water heat pumps, directly under tenant control, National CORE encouraging conservation while reducing long-term utility costs for both landlord and tenant. This approach in combination with installing high efficiency appliances and using the latest in sustainable building techniques can significantly reduce utility costs for all. For example, the CUAC at San Isidro Village is down to just seven dollars per month.
4. **Tracking Water Consumption Too.** National CORE installs a water measurement tool in its projects to better understand tenant water usage and identify when things are not working properly. National CORE uses a

leak detection mechanism that automatically shuts off water in a catastrophic event or when there is excessive water use indicating a leak and notify property management to look out for spikes in tenant water bills due to system malfunction or inadvertently using excessive water.

National CORE points out that the combined utility savings from implementing best practice decarbonization measures like the ones above can result in substantial savings over time that can translate into more funding available for making major improvements to their communities and keeping rents low over time.

In terms of how to pay for these measures up front, National CORE's strategy includes tapping into every available incentive resource, including the California Energy Commission's new construction BUILD program and anticipated IRA decarbonization programs. BUILD incentives support development financing while the program's free technical assistance through AEA informs project design, electrification technology options, and cost-effective strategies. BUILD is helping early adapters like National CORE and CCSM as well as housing providers that are new to the decarbonization discussion and need support in understanding the basics. BUILD participation will speed up an organization's electrification learning curve, which ultimately supports better designed and financed all-electric affordable housing.

Educating Lenders and Investors

The rapid arrival of building decarbonization requirements and incentives is fundamentally changing how affordable housing is built, financed, and operated, requiring all stakeholders, including lenders and investors, to go through a learning curve. National CORE and CCSM have both experienced resistance from lenders and investors skeptical of their CUAC calculations and common area utility assumptions. They have found that sharing the property's energy analytics is helpful to these negotiations and the reason for bringing their energy consultant on board from the beginning. Their experience is that describing the importance and methods of achieving lower CUACs early in the underwriting process helps lenders and investors get used to the energy analytics and financing differences of all-electric buildings.

"There is strength in numbers — as more of us are doing this there will be more examples of how these buildings operate… We need to give folks like Wells Fargo the operating expenses, so they are true to how they are supposed to operate or very close to it."

JESUS HERNANDEZ, CCSM

SESSION 2: DEMYSTIFYING REHAB ELECTRIFICATION

Session Summary

The goal of this panel was to provide information and guidance to affordable housing providers looking to make the switch to all-electric systems for their existing building stock. The panelists included senior representatives from three affordable housing providers that have successfully electrified at least one affordable housing property: Tim Kohut from National CORE, Karen Krygier from Community Corporation of Santa Monica (CCSM), and Michael Rangel from Holos Communities, and Senior Associate Luca Costa from the Association of Energy Affordability (AEA), to talk about how clean energy incentive programs can offset the cost of all-electric rehabilitation work.

Motivations and Implementation Challenges to Electrification

Affordable housing providers have several reasons to electrify their existing portfolios. Electrification reduces operating costs, improves resident well-being, and helps mitigate climate change. The increasing fossil fuel costs also make electrification an attractive economic option for affordable housing providers already struggling with thin margins. Clean energy incentive programs provide essential financing options and technical assistance. While electrifying existing buildings is necessary to achieve our climate goals, doing this work in an affordable housing context leads to specific challenges, such as space constraints, high costs, inadequate electrical capacity, and limited funding.

Audience members asking lively questions about building rehabilitation.

Electrical Capacity. The most prominent challenge in electrification lies in the building's existing electrical capacity. When properties plan to switch from fossil fuels and introduce additional electrical loads, sufficient electrical capacity must be available to support these upgrades. Upgrading panels and transformers can be expensive, and unfortunately, such costs are often not incentivized through clean energy programs or utility initiatives.

Space Constraints. Additionally, the project scope can be impacted by site constraints, as new upgrades may not fit into the existing layout or building envelope. For example, properties with limited roof space or significant roof constraints may struggle to accommodate enough solar panels to fully offset the electrical load onsite. Furthermore, depending on the property's layout, providers may need to opt for centralized upgrades like heat pump water heaters instead of the preferred option of installing individual in-unit water heaters.

Incentive Timing. While incentive programs can alleviate some of the costs associated with electrification upgrades, incentives are typically disbursed at the end of construction, leaving developers and contractors to bear the upfront expenses. Furthermore, these programs often do not cover the entire project costs, placing the responsibility on developers to seek additional funding or cover the remaining expenses out of pocket. It is worth noting that the Solar on Multifamily Affordable Housing (SOMAH) Program does not offer incentives for energy efficiency or fuel switching, but it does allow for upsizing systems if providers are planning to increase their electric load.

Dealing with Increased Costs. Even as housing providers reduce their gas usage thanks to electrification upgrades, electricity costs are continuing to increase due to utility rate increases in part to pay for the lost revenue from gas sales as well as the increased costs of electricity production and transmission. Methods for mitigating rising electricity costs driven in part by utility companies switching to rates based on time of use (TOU) of electricity, include incorporating more solar panels and adjusting water heating times to leverage off-peak TOU rates. [Editorial note: The most powerful tool for combatting the impact of high peak TOU rates on affordable housing is installing energy storage; however, the panel did not spend time on this topic because there are currently no incentive programs designed to make energy storage affordable to housing providers at this scale in a practical way.]

Dealing with Increased Electrical Loads: Affordable housing providers have the ability to add or upsize their solar systems through clean energy incentive programs like the state's SOMAH and Low-Income Weatherization Program (LIWP), and the new Comprehensive Affordable Multifamily Retrofit (CAMR) program by the Los Angeles Department of Water and Power to account for the increased electrical load that results from transitioning mixed fuel properties to all-electric. While offsetting the increased electrical load with solar is a crucial strategy in supporting all-electric rehabilitation projects, affordable housing providers may face limited staff capacity and lack knowledge of emerging technologies like solar, making it challenging to effectively manage systems throughout the pre-installation and post-installation process. Moreover, developers may encounter difficulties in finding a qualified workforce due to the newness of electrification technologies, which require specialized knowledge and skills. One potential solution for solar energy is to adopt a third-party ownership model such as a power purchase agreement (PPA), where a solar developer assumes responsibility for maintaining the system throughout its lifecycle. This approach can alleviate the burden on housing providers and ensure the long-term success of their solar PV projects. [Editorial note: However, using a PPA structure makes it much more difficult to take advantage of tax credit tools such as the Investment Tax Credit and the Low-Income Housing Tax Credit. It also makes financing more complicated because the ownership of the solar array must be carved out of the property for collateral purposes.]

Planning a Successful Rehabilitation Project

To lead a successful electrification rehabilitation project, panelists discuss the importance of affordable housing providers following a comprehensive approach using the following steps:

1. Assemble internal staff to agree on organizational and property level goals with a focus on prioritizing properties with the highest pollution and/or utility costs.
2. Identify project partners, including those that provide technical assistance such as incentive program implementers and contractors.
3. Collect data on the property's electrical capacity and the utility infrastructure capacity for the location.
4. Investigate and corporate all funding opportunities to buy down the cost and develop a financing plan to deal with gaps and the need for a contingency fund.
5. Consider project phases for property upgrade timing (i.e., per unit, per building) with an eye towards relocation planning of residents if necessary.
6. Develop a comprehensive tenant engagement plan both to deal with temporary relocation and to ensure long-term savings through behavioral change by tenants and on-site staff.
7. Monitor property's energy usage pre- and post-renovation through platforms such as Energy Star Portfolio Manager, WegoWise, or Yardi after installation and consult with contractors if electrification technologies are underperforming.

Please refer to the California Housing Partnership's report on the Pathway Forward for Electrifying Existing Buildings for further insights into electrification rehabilitation projects.

Incentive Programs for Electrifying Existing Buildings

Clean energy incentive programs play a critical role in ensuring the success of all-electric rehabilitation projects in affordable housing where thin operating margins and tight capital reserves limit the ability to invest in new technologies. These incentive programs offer substantial rebates and free, comprehensive technical assistance to affordable housing providers to guide them through the process of completing a successful project. Technical assistance services are tailored to the varying levels of experience and needs of affordable housing providers and can cover a range of areas including project design, vendor research, project management, energy auditing, and solar feasibility. Clean energy programs typically cater to both new construction and

> "National CORE is in the midst of installing 15 megawatts (MW) of SOMAH funded solar PV on over 55 different projects. In total, we have leveraged more than $20 million in rebate funds. Without coming out of pocket, resident electricity bills will go to near zero and operational energy costs will be reduced by at least 40%"
>
> TIM KOHUT, NATIONAL CORE

existing buildings, incentivizing measures such as electrification, energy efficiency, solar, and battery storage. These programs are an important tool for addressing the challenges associated with electrification and achieving clean energy goals in affordable housing. Table 2.1 highlights the available clean energy incentive programs for existing affordable housing properties in California.

Table 2.1 Clean Energy Incentive Programs for Existing Affordable Housing Properties

INCENTIVE PROGRAM NAME	MEASURES COVERED			
	ELECTRIFICATION	ENERGY EFFICIENCY	SOLAR PV	BATTERY STORAGE
Low-Income Weatherization Program (LIWP)	X	X	X	
Comprehensive Affordable Multifamily Retrofit (CAMR)	X	X	X	
Solar on Multifamily Affordable Housing (SOMAH)			X	
TECH Clean California	X			
Energy Smart Homes	X			
Multifamily Affordable Housing Electrification Program (MAHEP)	X			
Self-Generation Incentive Program (SGIP)				X

SESSION 3: POLICIES FOR DECARBONIZING LOS ANGELES' AFFORDABLE HOUSING

Session Summary

The City of Los Angeles is committed to reducing its carbon footprint and improving energy efficiency. The LA Department of Water and Power (LADWP) is focused on helping customers decarbonize by deploying a mix of renewables and storage, while also emphasizing energy efficiency to avoid building more infrastructure. LADWP has seen consistent gains in energy efficiency over the last 10 years, which has bought the city headroom on transmission and distribution investments needed to be America's leading electric vehicle city.

The LA Department of Building and Safety (LADBS) has implemented an all-electric ordinance for new construction, which took effect in February 2023 for most projects, and June 2023 for affordable housing. LADBS hired a consultant to analyze the cost implications of going all-electric and found that while there may be a slight increase in utility bills in the first few years, there are savings when the full life cycle is considered. [Editorial comment: without disputing the study findings, experience has shown that access to affordable battery storage is essential for affordable housing providers to manage long-term utility and related maintenance cost, especially in the context of TOU rate structures.]

The LA Housing Department (LAHD) is responsible for funding new production and preservation of affordable housing in the city and is updating its architectural guidelines

City of Los Angeles representatives discuss how to support decarbonization goals.

to assist providers in complying with the new all-electric ordinance. The California Housing Partnership (the Partnership) provides assistance for providers to integrate decarbonization measures into new and existing affordable housing and connect providers with state and utility resources.

City of Los Angeles Ordinance No. 187714 requires new buildings of all types to be designed with all-electric systems. This initiative is being led by LADBS, which is responsible for ensuring that building plans comply with the ordinance. The department is working closely with LADWP to ensure that the city's electricity infrastructure can support the increased demand for electric power from new buildings.

LAHD is also involved in implementing the ordinance, as it affects affordable housing developments. The department is working to ensure that affordable housing developments comply with the ordinance. To assist with this effort, LAHD is partnering with LADBS to provide training and technical assistance to affordable housing providers. The goal is to ensure that new affordable housing is designed with all-electric systems that are cost-effective, energy-efficient, and support the City's goal of reducing greenhouse gas emissions.

Implementation Challenges

LADBS faces several challenges in implementing the ordinance for all-electric new construction. One of the main challenges is ensuring that all plans and permits comply with the new requirements. This means that the department must carefully review all construction plans to ensure that they do not include any gas infrastructure. The department must also ensure that contractors and developers are aware of the new requirements and that they are adhering to them. Another challenge is addressing any potential conflicts with other regulations, such as fire codes, that may require gas infrastructure for certain building types.

LADWP faces several challenges in implementing the ordinance as well. One of the main challenges is ensuring that the electrical infrastructure can support the increased demand from all-electric buildings. This means carefully assessing current electrical grid capacity and identifying any areas that need to be upgraded. Another challenge is ensuring that there is enough renewable energy capacity to support the increased demand from all-electric buildings. This may require investing in new renewable energy projects or increasing use of renewable energy credits.

LAHD also faces several challenges in implementing the ordinance for all-electric new construction. One of the main challenges is ensuring that the new requirements do not increase the cost of construction to the point that it becomes infeasible for housing providers to finance or unaffordable for low-income residents. This means that the department must carefully assess the economic impact of the new requirements and identify potential cost-saving measures. Another challenge is ensuring that developers are able to find financing for all-electric projects. This may require identifying incentives and working with lenders to create financing options specifically for all-electric new construction.

The panel also highlighted the importance of collaboration between the different departments and stakeholders involved in the implementation of the ordinance. The panelists emphasized the need for ongoing communication and coordination to ensure that all aspects of the ordinance, including design, permitting, inspection, and compliance, are integrated and effective. Overall, the panel discussion provided valuable insights into the challenges and opportunities of implementing the new building all-electric design ordinance and the importance of collaboration and education in achieving a successful transition to all-electric buildings.

Industry Concerns

Discussion focused on the challenges and potential solutions for decarbonizing existing affordable housing, particularly smaller properties, and how to ensure equitable access to decarbonization programs and resources for communities of color. LADWP is aware of the challenges in covering the costs of decarbonization upgrades and the need to allocate these costs fairly and is exploring ways to address the issue of electric vehicle charging infrastructure in areas without off-street parking.

LADBS highlighted the complexity of replacing gas-burning appliances in existing buildings and suggested that ordinances might be created to phase out gas appliances in favor of electricity. LADWP is committed to market transformation for decarbonization technologies such as heat pumps, and LAHD is studying ways to decarbonize smaller properties.

LADWP's CAMR program offers opportunities for decarbonization of multifamily properties, including small developments. CAMR offers multifamily property owners no-cost property assessments to identify efficiency opportunities to help owners and their residents to save energy and reduce costs. In addition, qualified property owners will receive aid with work scope development and the contractor procurement process. Property owners can receive financial incentives for reducing greenhouse gas emissions in both common areas and inside tenants' units.

Another effort to help lower-income households take advantage of decarbonization technology is LADWP's pilot Shared Solar Program that allows affordable housing properties to install solar banks on top of apartment buildings. Under this program both owners and tenants' benefit from selling electricity back to Southern California Edison. Overall, speakers acknowledged that due to the complexity of decarbonizing existing buildings, a range of retrofit similar solutions will be needed to achieve the City's goals.

Finally, there were audience questions about how to open up private financing for decarbonization and whether a green bank could be created. The panelists did not have specific answers but indicated that conversations about developing a bank have taken place. A major barrier is the cost in both time and funding. It was also pointed out that an effort to create a public bank was rejected by voters in the recent past. Nevertheless, this is a topic of interest, and it was suggested that the Chief Legislative Office should look into similar programs that have been implemented across the country.

On-Bill Financing

On-bill financing is a financing mechanism that enables utility customers to finance energy efficiency and renewable energy upgrades through their utility bills. With on-bill financing, the upfront cost of energy upgrades is paid by the utility or a third-party lender, and the customer repays the loan through a monthly charge on their utility bill. The monthly charge is designed to be less than the savings generated by the upgrades, so the customer should see a net reduction in their energy bill. On-bill financing is typically structured as a long-term loan with low interest rates, making it an affordable option for many customers.

With on-bill financing, the debt is attached to the property owner and not the property itself. This means that if the property owner were to sell the property, they would still be responsible for paying off the debt, even if the new owner did not use the upgrades. This can be a disadvantage for property owners who may not want to take on additional debt or who may not plan on owning the property for an extended period of time.

In contrast, tariff-on-bill financing attaches the debt to the property itself rather than the property owner. This means that the debt is transferred to the new owner when the property is sold, which can be an advantage for property owners who may not want to take on additional debt or who may plan on selling the property in the future. Tariff-on-bill financing can also be beneficial for renters, who may not be property owners but can still benefit from energy upgrades through lower utility bills.

However, the feasibility of implementing on-bill financing for decarbonization at a larger scale was discussed during a panel discussion. According to LADWP, on-bill financing works well on small accounts but is not viable to decarbonize the entire city due to the scale. The gas company has on-bill financing, but the debt is on the unit, which is a non-starter for affordable housing because a new tenant moving in would have to assume the debt. Instead, utilities should take the lead on retrofits, making financing on-meter instead of on the unit.

Tim Kohut added that on-bill financing will never work for affordable housing as it requires the utility to record the repayment obligation on the title, which can only be done if all of the other lenders and investors with claims on the property provide their written permission, which would be unlikely to occur in a reasonable amount of time. That's why the key to unlocking the potential of on-bill financing is through tariff-on-bill financing because the debt is then serviced as a fee on the utility bill, not on the property, thus avoiding the issue of obtaining permissions from all senior debt holders.

AFFORDABLE HOUSING PROVIDER RECOMMENDATIONS

This section outlines key recommendations aimed at empowering affordable housing providers to successfully decarbonize their properties in Los Angeles while ensuring financial and operational sustainability. By implementing these recommendations, affordable housing developers can play a pivotal role in advancing the City's decarbonization goals, improving energy efficiency, and providing healthier and more sustainable housing options for low-income communities.

Build Staff Capacity

To ensure the successful implementation of electrification initiatives, it is imperative for owners to prioritize the development of their organization's capacity. This involves making a conscious effort to enhance their knowledge and understanding of electrification practices, thereby minimizing the likelihood of costly errors and delays. To achieve this, owners should consider investing in comprehensive training programs that focus on the intricacies of electrification and its associated technologies.

One effective strategy is to engage experienced design and mechanical, electrical, and plumbing (MEP) professionals who possess a deep understanding of electrification systems. By contracting with these knowledgeable experts, owners can leverage their expertise to navigate the complexities of electrification projects, ultimately streamlining the process and ensuring the best possible outcomes.

Additionally, owners can take advantage of resources like the BUILD program, which offers free technical assistance and incentives to support the adoption of electrification. By committing to build staff capacity through training initiatives, engaging experienced professionals, and leveraging available resources, owners can position themselves at the forefront of electrification practices. This proactive approach not only minimizes the risk of costly mistakes but also empowers organizations to embrace electrification as a strategic opportunity for long-term sustainability and success.

Improve the Use of Data and Analytics

As more housing providers embark on the journey of constructing all-electric buildings, it becomes imperative for them to gather and analyze data more consistently and at a higher level. By presenting robust data and analytics on energy consumption, cost savings, and environmental impact, providers can make a compelling case for higher permanent loans and secure the necessary funding to continue advancing affordable housing.

Data collection should include monitoring energy usage patterns, indoor air quality, temperature control, and other performance indicators. By systematically collecting this data, developers can analyze the performance of their buildings, identify areas for improvement, and optimize energy efficiency. These insights can be instrumental in refining design strategies, selecting appropriate equipment and systems, and implementing measures to further reduce energy consumption and carbon emissions.

Lenders and investors often rely on data-driven assessments to evaluate the financial viability and long-term sustainability of projects. By providing comprehensive and reliable data on the performance of all-electric buildings, affordable housing providers can help funders better understand the benefits and risks associated with such investments. This, in turn, can increase the flow of funding to affordable housing projects and attract more financial support for decarbonization initiatives.

Providers should proactively engage with lenders, sharing success stories and case studies that highlight the positive outcomes of all-electric projects. Participating in industry forums, conferences, and workshops provides opportunities to showcase data and exchange best practices with peers and financial institutions. By fostering an environment of collaboration and mutual learning, providers can collectively advance the understanding and appreciation of all-electric building performance, leading to increased funding opportunities for affordable housing.

In addition to project-specific analytics, providers should also contribute to broader research and data collection efforts aimed at quantifying the benefits of all-electric properties. By participating in research studies and data-sharing initiatives, providers can contribute valuable insights to the growing body of knowledge on decarbonization and energy-efficient building practices. This collective data can inform policy decisions, shape industry standards, and ultimately facilitate the transition to a more sustainable and carbon-neutral built environment.

Prioritize Tenant Engagement and Education

To ensure the successful adoption and utilization of all-electric appliances and systems, affordable housing providers should prioritize tenant engagement and education as an integral part of their decarbonization efforts. It is just as crucial for residents to understand the impacts of electrification, including the potential energy and financial savings as well as how to effectively use the new equipment and systems, as it is for maintenance staff. By empowering tenants with the knowledge and skills to optimize their use of all-electric technologies and systems, providers can enhance tenant satisfaction and comfort while meeting decarbonization energy targets.

Summit participants shared valuable experiences highlighting the importance of tenant education. Many instances arose where tenants attempted to operate new technology in the same manner as conventional appliances, leading to dissatisfaction and poor energy usage leading to disappointment by all parties. This scenario is particularly relevant when it comes to centralized heat pump water heater systems, which require specific usage and maintenance practices for optimal performance.

To address these challenges, affordable housing providers and landlords should employ various channels to engage and educate tenants effectively. Workshops and training sessions can be organized to familiarize residents with the features, functionalities, and benefits of all-electric appliances and systems. These sessions can provide practical demonstrations, hands-on activities, and opportunities for tenants to ask questions and seek clarification.

Distributing informative pamphlets or user manuals can serve as valuable resources for tenants to refer to when using the new equipment. These materials should provide clear instructions on proper usage, energy-saving tips, and troubleshooting guidance. Visual aids, such as infographics or diagrams, can also enhance understanding and engagement.

Providers should also consider offering one-on-one consultations with tenants to provide guidance and support based on each tenant's actual conditions, their specific appliances, and questions, and concerns or challenges. This direct interaction allows for tailored advice and ensures that tenants feel supported in their transition to all-electric systems.

Furthermore, leveraging technology can enhance tenant engagement and education efforts. Affordable housing providers should consider developing mobile applications or making available online platforms that provide accessible resources and interactive modules. These platforms can include virtual walkthroughs of appliances, interactive tutorials, and real-time energy monitoring features to help tenants track their consumption and understand the impact of their actions.

By prioritizing tenant engagement and education through these diverse channels, affordable housing providers can empower residents to embrace and optimize all-electric appliances and systems. Effective education not only improves tenant satisfaction but also helps achieve energy targets by maximizing energy efficiency and minimizing wasteful practices. It creates a positive feedback loop where informed tenants contribute to overall energy reduction and the success of decarbonization initiatives in affordable housing.

STAKEHOLDER RECOMMENDATIONS

This report section offers recommendations to stakeholders and policymakers engaged in promoting the decarbonization of affordable housing in Los Angeles consistent with City goals, laws, and regulations.

Address Utility Infrastructure Barriers

Utility infrastructure costs pose a significant barrier to decarbonization and electrification for affordable housing developers. When transitioning to electrified systems, affordable housing developers often need to upgrade existing utility infrastructure or install new infrastructure to accommodate the increased electrical demand. These infrastructure upgrades can be costly, requiring significant investments in equipment, wiring, transformers, and other components. These costs can quickly add up, straining the budgets of affordable housing developers and making electrification projects financially unfeasible.

Electrification infrastructure costs can eat into the scarce funds budgeted for constructing, maintaining, and operating affordable housing or result in higher rents for tenants, creating an untenable equation. As a result, most providers find it challenging to undertake electrification projects without external support or financial incentives.

The responsibility for upgrading utility infrastructure costs is often placed on the affordable housing provider rather than the electric utility providers. Ensuring that electrification infrastructure upgrade costs are borne by the electric utility providers not affordable housing providers would help level the playing field and make electrification more accessible and economically viable, enabling widespread adoption of decarbonization measures. Electric utility providers have the necessary resources, expertise, and financial capacity to manage and upgrade the grid infrastructure to support electrified systems. They can leverage economies of scale and investment strategies to effectively allocate the costs associated with infrastructure improvements.

Wells Fargo Foundation and the Partnership celebrate a successful Summit.

Additionally, ensuring that electric utility providers bear the costs of infrastructure upgrades necessary to achieve decarbonization recognizes that the benefits of electrification contribute to broader societal goals and mandates imposed by the state such as reducing greenhouse gas emissions. By taking on these costs, electric utility providers play a pivotal role in facilitating the widespread adoption of electrification in affordable housing, removing a significant financial barrier, and promoting a more equitable transition to sustainable and energy-efficient housing solutions.

By advocating for this shift, affordable housing providers can create a more favorable environment for electrification projects, making it more economically viable and accessible for all. Additionally, engaging with other stakeholders, such as community organizations, policymakers, and utility companies themselves, can help build coalitions that amplify the message and increase the likelihood of successful outcomes.

Offer Greater Incentives for Retrofitting Existing Buildings

Existing buildings often require extensive retrofitting and system upgrades to transition to all electric. These upgrades come with significant costs, including the replacement of outdated utility infrastructure such as panels and in some instances adding or upsizing transformers. Stakeholders should consider offering appropriately scaled incentives to address these expenses to make electrification financially and operationally feasible.

Understanding that affordable housing providers ability to pay for upgrades is generally contingent upon increasing rents, which is counter to the mission, these incentives should fully cover the expenses associated with infrastructure upgrades, reducing the financial strain on affordable housing. This requires conducting thorough assessments of the cost implications and potential barriers associated with decarbonization in affordable housing settings.

In addition to financial incentives, stakeholders should also explore providing technical assistance, training, and capacity-building programs to enhance the knowledge and skills of affordable housing providers in implementing all-electric solutions.

By providing higher incentives for existing buildings and addressing the unique financial challenges faced by affordable housing providers, stakeholders can accelerate the adoption of decarbonization measures in the affordable housing sector. These incentives should be tailored to specifically target the expenses associated with upgrading utility infrastructure, enabling providers to undertake necessary improvements without compromising the affordability or operational reserves of their existing buildings. Through strategic and targeted support, stakeholders can foster an environment conducive to widespread decarbonization and create a more sustainable and resilient affordable housing sector.

Enhance City Departmental Capacity

City departments should prioritize building the expertise of their staff in electrification strategies. Providing specialized training programs and resources for staff can ensure they have the knowledge and skills necessary to help affordable housing providers and their low-income tenants navigate the complexities of electrification projects.

Embrace Inter Departmental Collaboration. Collaboration and knowledge sharing among city departments are crucial for successful electrification efforts. Departments should foster a culture of interdisciplinary teamwork, establish cross-departmental task forces, and promote regular meetings and workshops to facilitate the sharing of best practices and lessons learned. By leveraging the collective expertise within the departments, cities can develop comprehensive and effective electrification strategies tailored to their communities' unique challenges.

Engage External Partners. City departments should actively engage with external partners, such as industry experts, research institutions, and advocacy organizations. Collaborating with these partners can provide valuable insights, innovative solutions, and access to funding opportunities. By forging strong partnerships, city departments can tap into a broader network of expertise, leverage external resources, and stay informed about emerging trends and technologies in electrification. This collaborative approach will enable them to make informed decisions, overcome obstacles, and drive successful electrification initiatives within their jurisdictions.

By focusing on enhancing departmental capacity, embracing collaboration, and engaging external partners, city departments can position themselves as leaders in the electrification movement and effectively implement sustainable initiatives for the benefit of their communities.

APPENDIX: DECARBONIZATION RESOURCES

Building decarbonization refers to the process of reducing the carbon footprint of buildings through various strategies such as energy-efficient building design, use of renewable energy sources, and implementation of sustainable building materials. Here are some resources that can help you learn more about building decarbonization:

Regulatory Documents

Los Angeles Ordinance No. 187714: New Building All-Electric Design

California Energy Codes & Standards: Low-Rise Residential New Construction

City of Los Angeles Reports

Los Angeles Housing Department Report Relative to Implementation of Carbon Emission Elimination Strategies in New and Existing Buildings in Accordance with Energy and Housing Justice Principles and Related Matters CF 21-1463

Los Angeles Department of Building and Safety Report from the Department of Building and Safety Relative to the Implementation of Building Decarbonization Strategies in New Buildings CF 22-015

Climate Emergency Mobilization Office Report on Equitable Building Decarbonization

California Housing Partnership Reports

Affordable Housing Building Decarbonization Summit II Findings

Prioritizing California's Affordable Housing in the Transition Towards Equitable Building Decarbonization | Summit Report 2021

Facilitating Building Decarbonization through Utility Allowances

Affordable Homes First: Advancing a Green New Deal for Los Angeles Renters

Other Media

AIA Webinar: Decarbonization and Affordable Housing

Shelterforce Article: The Shift to Using More Electricity Will Change How Affordable Housing Is Built

ARUP Report on Building Decarbonization & Affordable Housing: Los Angeles Affordable Housing Decarbonization Study Phase 2

Table of Programs

MULTIFAMILY PROGRAMS		BUILD	SOMAH	LIWP	CAMR
Project Type	New Construction	X	TBD		
	Substantial Rehab	X	X	X	X
	Energy Retrofit		X	X	X
Eligibility Criteria	Affordability	80% of units @ 60% AMI	66% of units @ 80% AMI	66% of units @ 80% AMI	66% of units @ 80% AMI
	Location	SoCal Gas, PG&E, SDG&E, Southwest Gas territories	PG&E, SCE, SDG&E, Liberty Utilities, Pacific Corp	All utilities	LADWP Territory
Eligible Uses	Solar for Common Areas	Optional	Optional	Optional	Optional
	Solar for Tenants	Optional	Required	Optional	Optional
	Electrification	Required	N/A	Optional	Optional
	Energy Efficiency	Required	N/A	Required	Required
Requirements	Construction Deadlines	48 months	18-24 months	Varies by funding cycle	24 months
	Prevailing Wage	Yes	2023: No 2024: Yes	No	Required for 65+ units
	EE & Solar Thresholds	5% reduction of modeled energy savings in the 1st year of building occupancy	At Least 51% of the PV system must directly benefit residents	Achieve at least 15% EE savings or 25% if leveraging other funds	Achieve at least 5% EE savings or 25% if leveraging other funds
Additional Information	Incentive Structure	$2M cap per program applicant	Tenant: Up to $3.50/AC Watt Owner: Up to $1.19/AC Watt	Tenant: $4,500 per MT GHG Owner: $3,000 per MT GHG	Tenant: $7,750/mt CO^2e Owner: $6,200/mt CO^2e
	CHPC Team Lead	Ian Sharples isharples@chpc.net	Rachael Diaz rdiaz@chpc.net	Angel Rodriguez arodriguez@chpc.net	Angel Rodriguez arodriguez@chpc.net
	Website	https://www.energy.ca.gov/programs-and-topics/programs/building-initiative-low-emissions-development-program	https://calsomah.org/	https://camultifamilyenergyefficiency.org/	https://ladwpcamr.com/

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