

DRIVING *Equity*

Policy Solutions to Accelerate Electric
Vehicle Adoption in Lower-Income
Communities

MAY 2022
Policy Report

Climate Change
and Business
Research Initiative





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MAY 2022 | POLICY REPORT

DRIVING EQUITY

Policy Solutions to Accelerate Electric Vehicle Adoption
in Lower-Income Communities

ABOUT THIS REPORT

This policy report is part of a series on how specific sectors of the business community can drive key climate change solutions and how policymakers can facilitate those solutions. Each report results from workshop convenings that include expert representatives from the business, academic, policy, and environmental sectors. The convenings and resulting policy reports are sponsored by Bank of America and produced by a partnership of UC Berkeley School of Law's Center for Law, Energy & the Environment (CLEE) and UCLA School of Law's Emmett Institute on Climate Change and the Environment. The UC organizers select topics and participants based on outreach to both public- and private-sector experts for a small-group, facilitated discussion format.

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ABOUT THE CENTER FOR LAW, ENERGY & THE ENVIRONMENT

The Center for Law, Energy & the Environment (CLEE) channels the expertise and creativity of the Berkeley Law community into pragmatic policy solutions to environmental and energy challenges. CLEE works with government, business, and the nonprofit sector to help solve urgent problems requiring innovative, often interdisciplinary approaches. Drawing on the combined expertise of faculty, staff, and students across the University of California, Berkeley, CLEE strives to translate empirical findings into smart public policy solutions to better environmental and energy governance systems.

ABOUT THE EMMETT INSTITUTE ON CLIMATE CHANGE AND THE ENVIRONMENT

The Emmett Institute on Climate Change and the Environment is among the leading environmental law programs in the country, with faculty members renowned for their public service, teaching excellence, and scholarship in state, federal, and international law. Located in Los Angeles, a diverse city facing unique environmental justice and climate change challenges, the Emmett Institute provides J.D. and LL.M. students unmatched opportunities for mentoring, career placement, and experiential learning. Through groundbreaking research and public interest initiatives, the Emmett Institute helps shape climate change and environmental law and policy in California, the United States, and jurisdictions around the world.

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**ELECTRIC VEHICLE
CHARGING ONLY**

2 HOUR LIMIT

I. EXECUTIVE SUMMARY

Under Governor Gavin Newsom’s Executive Order N-79-20, California has adopted a statewide goal of ending the sale of internal combustion engine passenger vehicles by 2035, in favor of zero-emission vehicles like electric vehicles.¹ But even as battery costs fall and analysts predict long-term price parity with internal combustion engine vehicles,² too many electric vehicles remain unaffordable for lower-income Californians to purchase. Furthermore, charging can be inaccessible for some of these residents, undermining the prospects for success.

Without a rapid and ambitious transition to zero-emission vehicles, California will struggle to achieve its broader climate goals. Transportation represents half of California’s statewide greenhouse gas emissions when accounting for oil and gas production; the state will not be able to reduce emissions 40 percent below 1990 levels by 2030 and achieve statewide carbon neutrality by 2045 without this vehicle transition.

Sales of electric vehicles in California are promising but are not necessarily on pace to achieve these long-term goals. Annual sales of electric vehicles grew to nearly 250,000 in 2021, up by more than 250 percent since 2017. Californians cumulatively purchased more than one million electric vehicles by February 2022 and now account for over 40 percent of all electric vehicle sales nationwide. Yet in 2021, plug-in vehicles constituted approximately 13 percent of total vehicle sales in the state, underscoring the urgent need to expand the market to all Californians. In April 2022, the California Air Resources Board issued a proposal to accelerate zero-emission and electric vehicle sales in accordance with the 2035 target.

Even with significant state rebates and lower total ownership costs driven by cheaper fueling and maintenance, new electric vehicles often are out of reach for lower-income residents. Lower-income Californians are less likely to have access to the capital necessary to buy new electric vehicles (with higher upfront costs than conventional vehicles), as well as access to charging stations and information on zero-emission vehicle benefits and incentive programs.

ELECTRIC VEHICLES AND TRANSPORTATION DECARBONIZATION

California’s transportation decarbonization strategy covers a range of measures encompassing public transit and active transportation to reduce vehicle miles traveled while boosting zero-emission vehicle technologies (including battery electric and hydrogen power as well as transitional plug-in hybrids). This report considers one key element of that strategy—policies to promote battery electric vehicle adoption—while recognizing that these policies should embrace parallel strategies, in particular public transit and active transportation.

To address this challenge, UC Berkeley School of Law's Center for Law, Energy & the Environment (CLEE) and UCLA School of Law's Emmett Institute on Climate Change and the Environment convened experts in December 2021 to develop recommendations for policy action. Their ideas informed this report.

Participants first recommended a framework for **identifying lower-income communities** for prioritizing state investment, initially targeting disadvantaged communities (DACs) or low-income communities pursuant to existing environmental justice frameworks, then incorporating low-income households located in higher-income areas, and finally including moderate-income households.

For these communities, participants described a vision of a state approach to increase electric vehicle adoption that would include principles such as:

- **Recognizing that lower-income communities have the greatest opportunity to benefit** from the air quality improvements, fueling savings, and other advantages of the electric vehicle transition.
- **Ensuring rebate and incentive programs are structured around equity considerations**, such as designing subsidies for charging at public locations and promoting used electric vehicle purchases.
- **Addressing financing needs of lower-income communities** by ensuring access to affordable credit, excluding medical debt from eligibility assessments, and disallowing predatory rates.
- **Delivering adequate electrical grid capacity and supply** to support charging in rural, tribal, and low-income urban areas that have suffered from historical underinvestment.
- **Embracing state and local priorities for improved public transit and active transportation** and advancing overall connectivity between low-emission transportation modes.

Participants then cited the following three key barriers preventing realization of this vision, along with targeted solutions to address them, described below:

IDENTIFYING LOWER-INCOME COMMUNITIES

This report considers policies to accelerate electric vehicle adoption among lower-income Californians who have had limited access to vehicles and chargers in the first iterations of state vehicle electrification policy. This begins with, but is not limited to, state-defined disadvantaged communities and low-income communities. For more information see page 17.

BARRIER 1: LIMITED FINANCIAL RESOURCES RESTRICT LOWER-INCOME RESIDENTS' ABILITY TO PURCHASE VEHICLES

Solutions:

State agencies and regional air districts could prioritize high-mileage vehicles over older models in order to help lower-income drivers qualify for buyback programs

State agencies could bolster existing rebate incentives (such as the Clean Vehicle Rebate Project) for lower-income purchasers in high-polluting regions by an additional \$2,000

State agencies and regional air districts could simplify zero-emission vehicle incentive applications so under-resourced individuals and organizations could more easily apply

State agencies could expand financial assistance to lower-income drivers seeking loans for zero-emission vehicles, including through grants and affordable financing through Community Development Financial Institutions

State financial leaders and private lenders could reform underwriting criteria for zero-emission vehicle loans to allow more lower-income drivers to qualify

State agencies could regulate predatory lenders and enforce existing consumer protection laws to protect lower-income drivers

The California Air Resources Board could bolster the used electric vehicle market by requiring greater vehicle durability and developing incentives for faster fleet turnover of new vehicles to the secondary market

State regulators and regional air districts could expand mobility assistance to lower-income residents who choose electrified transit modes

BARRIER 2: LIMITED ACCESS TO AFFORDABLE, CONVENIENT AND RELIABLE CHARGING STATIONS IN LOWER-INCOME COMMUNITIES INHIBITS VEHICLE ADOPTION

Solutions:

The state legislature could create a subsidized charging payment card for lower-income residents to access public chargers

The California Energy Commission, electric load-serving entities (e.g., investor-owned utilities, municipal utilities, and community choice aggregators), and community-based organizations could provide charging technical assistance and turnkey solutions to property owners

Load-serving entities could develop granular local data and maps of charging needs and opportunities to target investment

State leaders could partner with charging providers and load-serving entities to create and advertise a single statewide charging app that allows drivers to locate the cheapest, most convenient charging options.

The California Public Utilities Commission could accelerate deployment of grid-supporting services such as microgrids and grid upgrades through speedier interconnection and greater financial returns.

BARRIER 3: LIMITED PUBLIC AWARENESS AND INFORMATION AMONG LOWER-INCOME COMMUNITIES SLOWS OUTREACH AND MARKETING

Solutions:

When crafting incentive programs, the California Air Resources Board, the California Public Utilities Commission, the California Energy Commission, load-serving entities, local public agencies, and the private sector could dedicate resources specifically for lower-income residents

The state legislature could devote funding for community-based organizations to conduct ground-level education and outreach programs

The California Air Resources Board and California Public Utilities Commission could ensure that funding program eligibility requirements are consistent, and that program success is measured and evaluated



II. INTRODUCTION: CALIFORNIA'S ELECTRIC VEHICLE PRIORITIES AND THE NEED FOR EQUITABLE DEPLOYMENT STRATEGIES

California has set ambitious electric vehicle targets and made significant progress to date. Increased focus on lower-income Californians is needed to ensure the transition is swift and equitable.

A. CALIFORNIA'S CLIMATE AND AIR QUALITY GOALS CALL FOR RAPID VEHICLE ELECTRIFICATION.

California's proactive approach to climate change is rooted in the legislative requirement to achieve at least a 40 percent reduction in statewide greenhouse emissions below 1990 levels by 2030 (Senate Bill 32, Pavley, 2016) and an executive order to achieve statewide carbon neutrality by 2045. The California Air Resources Board (CARB) has spearheaded implementation of these goals through regulatory programs developed pursuant to Assembly Bill 32 (Nuñez, 2006),³ including the second iteration of the Advanced Clean Cars Program regulations currently under development. Central to these efforts is a commitment to promoting zero-emission vehicle technology, including battery electric vehicles (EVs). (The state's vehicle decarbonization strategy also includes hydrogen fuel cell vehicles, though these have achieved less uptake to date). These vehicles are broadly lower emitting than conventional internal combustion engine vehicles and, because they rely on the electric grid, will become more so as California's electricity sector continues to decarbonize.⁴

With transportation representing half of statewide emissions when accounting for emissions from oil and gas production, successive governors set targets through executive orders to deploy 250,000 vehicle charging stations by 2025 and five million zero-emission vehicles on the road by 2030, with a goal of ending the sale of internal combustion engine passenger vehicles in the state by 2035.⁵ Pursuant to these goals, the state has developed a number of initiatives to advance the zero-emission and electric vehicle market in general. Some of the key programs include:

- **The Zero-Emission Vehicle Regulation**, which requires automakers to sell an increasing proportion of zero-emission vehicles, rising to at least 16 percent of new vehicle sales by 2025, as both a climate and air quality measure.^{6a} (In April 2022 the California Air Resources Board issued a proposed rule update to meet the state’s 2035 target of 100 percent ZEV sales.⁷)
- **The Low-Carbon Fuel Standard**, which uses a credit trading scheme to incentivize vehicle fuel sellers to reduce emissions and install vehicle charging infrastructure, thereby generating revenue that is made available to utility customers through zero-emission vehicle rebates.⁸
- **The Clean Vehicle Rebate Project**, which provides up to \$7,000 in financial incentives for consumers to buy or lease zero-emission vehicles.⁹

As described in Section C below, many of these programs include or have added equity-focused requirements and strategies. Central to these is Senate Bill 350, which required research on barriers to zero-emission transit in low-income communities,¹⁰ resulting in the Low-Income Barriers Report.¹¹

B. ELECTRIC VEHICLE SALES HAVE ACCELERATED, BUT GREATER GROWTH IS NEEDED.

In California, annual sales of electric vehicles grew to nearly 250,000 in 2021, up by more than 250 percent in the previous four years,¹² propelled, in part, by the above programs. Funding obtained through major legal settlements,¹³ utility investments, and the state budget have further expanded charging infrastructure. Meanwhile, at the federal level, the Biden Administration is dedicating \$7.5 billion to expand vehicle charging infrastructure while striving for net-zero emissions in the federal vehicle fleet.¹⁴

While California surpassed one million cumulative electric vehicle sales in February 2022 and accounts for over 40 percent of all electric vehicle sales nationwide, electric vehicles still represent a relatively small portion of total vehicles in the state.¹⁵ In 2021, plug-in vehicles constituted approximately 13 percent of total vehicle sales, while over 28 million light-duty internal combustion vehicles are still on the road.¹⁶ Although state leaders have made considerable progress on electric vehicle uptake and infrastructure deployment, charging stations remain relatively scarce outside single-family homes. Notably, total public and shared private chargers number fewer than 80,000,¹⁷ far short of the estimated 1.2 million needed by 2030.¹⁸ Where charging infrastructure is available, it tends to

a The ZEV Regulation is a part of CARB’s Advanced Clean Cars Program, together with low-emission vehicle (LEV) regulations for criteria pollutants and more recent GHG emission regulations, which focus on vehicle efficiency and GHG emissions respectively (rather than sales) and are issued pursuant to CARB’s Clean Air Act waiver of federal preemption, 42 U.S.C. § 7543(b). For more information, see <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/about>.

be concentrated in wealthier areas. (The Disadvantaged Communities Advisory Group, a joint advisory committee of the California Energy and Public Utilities Commissions, is one of many state efforts to assess and address this imbalance.¹⁹) Combined with high vehicle prices and other factors, this dynamic leaves many residents of lower-income communities unable to join California’s zero-emission vehicle transition.²⁰

C. EQUITY IN ELECTRIC VEHICLE EXPANSION IS AN ESSENTIAL GOAL, BUT PROGRESS LAGS.

To achieve the state’s goal of ending internal combustion engine passenger vehicle sales by 2035, all Californians must soon be able to adopt zero-emission vehicles for trips that cannot be achieved by transit or active transportation. This transition is especially critical in lower-income areas, which bear a disproportionate air pollution burden due in part to vehicle exhaust. Officials in California have developed a number of programs to promote electric vehicle uptake in these communities:

- **Senate Bill 1275** requires CARB to develop zero-emission vehicle programs that benefit low-income and disadvantaged residents.²¹
- **The 2017 CARB Scoping Plan** states that California should work to “overcome barriers to clean energy and clean transportation options for low-income residents”²² and CARB’s proposed **2022 ZEV Regulation update** specifically highlights the need for a “coordinated, collaborative, and cross-cutting approach” to ensure an equitable transition, including a focus on charging and grid infrastructure.²³
- **Executive Order B-44-18** from former Governor Jerry Brown declares that electric vehicle charging must be made “affordable and more accessible to all drivers.”²⁴
- **The CARB SB 350 Low-Income Barriers Study, Part B** acknowledges that for clean transportation, “barriers low-income residents and disadvantaged communities face are magnified.”²⁵
- **The Clean Vehicle Rebate Project** added income eligibility criteria in 2016, excluding high-income consumers from the program (the program reduced the income cap to \$200,000 for joint filers in February 2022) and providing an additional rebate of \$2,500 for middle- and low-income electric vehicle buyers.²⁶
- **The Clean Cars for/4 All Program**, a collaboration between CARB and local air districts, uses cap-and-trade revenues to provide grants of up to \$9,500 for low-income Californians to trade in old, high-emitting vehicles for newer hybrid or electric vehicles.²⁷
- **The Clean Transportation Incentives** program, which uses state revenue and cap-and-trade funds to invest in a range of equity-focused clean mobility programs and pilots, including financing assistance, rural school bus initiatives, and workforce training programs, as well as the Clean Vehicle Rebate and Clean Cars for All programs.²⁸

While the above efforts have directed significant resources toward lower-income drivers, these residents face unique challenges for electric vehicle uptake. Even with rebates, new electric vehicles generally remain more expensive in upfront cost than conventional vehicles—in part due to the high cost of technology packages, low availability of base models, and price volatility despite reduced battery costs—though total cost of ownership is often lower due to cheaper fuel prices and reduced maintenance needs with electric vehicles. Cost parity with internal combustion vehicles may be achieved in the coming years,²⁹ but high vehicle demand is also resulting in price-increasing “market adjustment” dealer fees. Lower-income Californians are less likely to have access to the capital necessary to buy new vehicles—especially pricier ones—or access to resources and information on zero-emission vehicle benefits and incentive opportunities.³⁰

Additionally, many lower-income communities feature lower home ownership rates and higher rates of tenancy in apartment buildings. This means that developers will need to place more charging stations in multifamily buildings and public parking areas, presenting barriers related to financing, permitting, and split incentives between landlords and tenants regarding building electrification upgrades. Finally, in lower-income areas, grid infrastructure is sometimes inadequate to support the electrical loads required for vehicle charging, although the California Public Utility Commission’s Integrated Resource Planning Process has placed an emphasis on disadvantaged communities.³¹ The cumulative effect of these factors is the widespread existence of “charging deserts” that are predominantly located in lower-income and disadvantaged populations, and communities of color.³² State leaders must swiftly address these conditions for California to expand zero-emission vehicle access and meet its climate goals equitably.



III. VISION FOR ACCELERATING ELECTRIC VEHICLE ADOPTION IN CALIFORNIA'S LOWER-INCOME COMMUNITIES

Participants at CLEE's December 2021 convening described a vision for accelerating EV adoption in lower-income communities that centered on locally based processes to identify best-fit investment areas, charging types and locations, and outreach strategies, backed by significant state and private sector investment.

As a first step in this vision, participants outlined a framework for **identifying lower-income residents and communities** for the purposes of crafting new and bolstering existing policy solutions and state investment:

- State leaders could initially direct programs and investments toward communities identified as disadvantaged communities (DAC) or low-income communities pursuant to the environmental justice frameworks established by Senate Bill 535, Assembly Bill 1550, and CalEnviroScreen.³³
- State leaders could then incorporate low-income households (typically those that earn below 80 percent of area median income) located in higher-income areas who may not meet SB 535/AB 1550 criteria but still lack electric vehicle and charging access, particularly residents of multifamily housing; and in areas that otherwise do not qualify under state frameworks, such as certain tribal communities and affordable multifamily properties not located in DACs or low-income census tracts.
- State leaders could then incorporate moderate-income households (typically those that earn between 80 percent and 120 percent of area median income) that typically do not qualify for most income or utility assistance programs but will not be able to transition to an electric vehicle without some support, as determined by individual needs assessments.³⁴

IDENTIFYING LOWER-INCOME COMMUNITIES

- **Senate Bill 535 (2012)** directed the California Environmental Protection Agency (CalEPA) to identify disadvantaged communities based on disproportionate exposure to environmental pollution and high concentrations of low-income residents (along with related socioeconomic factors) and required a minimum of 10 percent of funds generated by the state's cap-and-trade program to support projects located within these communities.

This framework would supplement and build on commitments to investment for lower-income residents and communities already underway such as the California Air Resources Board’s Funding Plan for Clean Transportation Incentives and Investment Plan for the Clean Transportation Program.³⁵

For these communities, participants described a vision of a state approach to increase electric vehicle adoption that would:

- **Recognize that lower-income communities have the greatest opportunity to benefit** from the air quality improvements, fueling savings, and other advantages of the electric vehicle transition.
- **Prioritize community-based organizations and local stakeholders** in investment and infrastructure decision-making as well as education and outreach efforts.
- **Make using and owning an electric vehicle more affordable, convenient, and reliable** than an internal combustion vehicle.
- **Structure rebate and incentive programs around equity considerations**, such as designing subsidies for charging at public locations and promoting used electric vehicle purchases.
- **Offer funds for charging infrastructure planning** specifically in lower-income communities.
- **Embrace state and local priorities for improved public transit and active transportation** and advance overall connectivity between low-emission transportation modes.
- **Incorporate alternatives to private vehicle ownership** (including shared ownership, ridesharing, and carpooling/van services) that meet community needs, reduce total vehicle costs, and reduce total vehicle miles traveled.
- **Provide abundant direct current (DC) fast charging in publicly accessible locations** and centralized charging hubs for residents of multifamily buildings who need rapid access to offsite charging.
- **Address financing needs of lower-income communities** by ensuring access to affordable credit, excluding medical debt from eligibility assessments, and limiting predatory rates.
- **Deliver adequate electrical grid capacity and supply** to support charging in tribal and low-income urban areas that have suffered from historical underinvestment.
- **Ensure the durability of electric vehicles and batteries** to support long-term vehicle ownership and a robust used vehicle market.

IDENTIFYING LOWER-INCOME COMMUNITIES (CONT.)

- **CalEnviroScreen**, the framework developed by CalEPA and the Office of Environmental Health Hazard Assessment to identify and map disadvantaged communities around the state, uses a set of pollution burden and population characteristics (such as air quality, proximity to cleanup sites and waste facilities, asthma rates, and educational attainment) to assign a cumulative impact score to each census in the district. The top 25 percent (i.e., most impacted) of census tracts are considered disadvantaged communities.
- **Assembly Bill 1550 (2016)** raised the minimum cap-and-trade investment requirement to 25 percent and required an additional minimum of 10 percent of funds to support projects that directly benefit low-income households in low-income communities around the state or near disadvantaged communities. “Low-income” households and communities are defined as households and census tracts with median incomes at or below 80 percent of statewide median income.³⁶

- **Include electrified heavy-duty and all-wheel-drive vehicles** for drivers in rural and tribal communities.
- **Promote workforce development and a just transition** in lower-income and fossil industry-reliant communities through partnerships with local workforce groups.

EV CHARGING
ONLY



IV. BARRIERS AND PRIORITY POLICY SOLUTIONS

Convening participants identified a range of barriers to achieving their vision for accelerating electric vehicle adoption in lower-income communities. This section describes those barriers and details the top-priority policy solutions participants identified to overcome them.

BARRIER 1: LIMITED FINANCIAL RESOURCES RESTRICT LOWER-INCOME RESIDENTS' ABILITY TO PURCHASE VEHICLES

For lower-income residents, battery electric vehicles are often unaffordable due to their higher purchase prices relative to comparable internal combustion engine models, even though they can be cheaper to operate over the life of the vehicle due to reduced fuel and maintenance costs.³⁷ Residents are often unable to take advantage of long-term savings due to the lack of affordable financing to manage upfront costs, and may also be deterred by the risks of predatory lending that can accompany automobile purchases.³⁸ Lower-income Californians may also lack the credit history to qualify for financing options or sufficiently steady income to allow them to reliably take advantage of financing opportunities. Participants noted that in the market for lower-emitting (and more fuel-efficient) vehicles, lower-income buyers seeking a more efficient vehicle may be most able to purchase a used hybrid vehicle, particularly given the lack of durable, used battery electric vehicles.

Government programs to accelerate electric vehicle adoption face hurdles when attempting to counter this inequity. Participants noted the overall lack of program funding for low-income communities in general, particularly those in the least dense but highest-need areas, given that many of these programs are not based on “needs first” but rather “first come, first served” to access rebates. (The inclusion of income caps for the Clean Cars for All and Clean Vehicle Rebate programs alleviates this challenge somewhat, although both programs still have waitlists.) In addition, the program applications can be complicated and onerous, requiring time and effort not readily available for

under-resourced communities and community-based organizations. Many programs require documentation to qualify that can be challenging to produce given that many lower-income residents do not regularly file tax returns or—as may be the case for ride-share drivers—cannot show net income if they have significant tax-deductible business expenses. At the same time, some state incentives may count as income on drivers' tax returns, potentially reducing the net value if they result in taxes owed. Finally, shared electric vehicle ownership models might be helpful to defray costs, but the state lacks sufficient funding to help jumpstart this model.

Solution: State agencies and regional air districts could prioritize high-mileage vehicles over older models in order to help lower-income drivers qualify for buyback programs.

California's Bureau of Automotive Repair's (BAR) Consumer Assistance Program (CAP) offers eligible consumers repair assistance and vehicle retirement options to help reduce air pollution. Consumers can receive either \$1,500 or \$1,000 to retire their vehicle, depending on their income and vehicle criteria, including whether they fail a smog check.³⁹ And in coordination with CARB's Clean Cars for/4 All program, regional air districts such as the Bay Area Air Quality Management District offer vehicle swapping programs with thousands of dollars in incentives for lower-income individuals who purchase low- or zero-emission vehicles (the program will soon expand statewide).⁴⁰ However, convening participants noted that vehicle eligibility criteria based on vehicle model year may reduce the applicability of the programs for some lower-income drivers who own newer vehicles with significant miles driven. As a result, participants recommended using odometer counts instead of or as an alternative to model years (although they noted that these counts can be much more difficult to check). Regulators could also develop a separate class of vehicles eligible for retirement that are used for commercial purposes like ride-share or otherwise have an outsized share of mileage and resulting emission abatement potential. The criteria could potentially be limited to or prioritized for vehicles in high-polluting regions.

Solution: State agencies could bolster existing rebate incentives for lower-income purchasers in high-polluting regions.

California's Clean Vehicle Rebate Project provides qualified consumers with up to \$2,000 rebates for purchases of new battery electric vehicles, with an income cap of \$200,000 for joint tax filers and \$135,000 for single filers. Consumers who meet a low- to moderate-income threshold (up to 400 percent of the federal poverty line, or approximately \$105,000 for a family of four) are eligible for an additional \$2,500.⁴¹ Convening participants advocated for increasing this rebate for lower-income purchasers by an impactful amount—such as an additional \$2,000—to increase these drivers' ability to afford new electric vehicles, potentially with prioritization for drivers in high-polluting regions.

Solution: State agencies and regional air districts could simplify zero-emission vehicle incentive applications so under-resourced individuals and organizations could more easily apply

State and regional rebate programs, such as California's Clean Vehicle Rebate and Clean Cars for All, feature relatively onerous paperwork and eligibility verification requests. As a result, participants felt that these programs created high barriers to entry for lower-income consumers with limited time and resources to navigate the forms. Programs like Access Clean California help lower-income Californians identify energy benefits for which they are eligible and process their income verifications in a centralized location.⁴² Leaders at the California Air Resources Board and utility rebate programs could direct all applications through a streamlined portal like Access Clean California to maximize ease of use for customers.

Solution: State agencies could expand financial assistance to lower-income drivers seeking loans for zero-emission vehicles, including through grants and affordable financing through Community Development Financial Institutions (CDFIs).

The California Air Resources Board offers grants and affordable financing for lower-income consumers in disadvantaged communities who purchase or lease a zero-emission vehicle.⁴³ Participants suggested that the state government provide loan guarantees and credit backstops for these programs to reduce borrowing costs and help lenders extend credit to a wider range of qualifying borrowers (including those with lower credit scores), similar to credit enhancement programs that have been established for home energy efficiency retrofits.⁴⁴ Participants also noted that Community Development Financial Institutions (CDFIs), which are private lending institutions dedicated to supporting economic growth and opportunity in the nation's most distressed communities, could support these zero-emission vehicle loans. The state legislature could authorize any CDFI getting money from the treasury to lend to lower-income residents in disadvantaged communities to help them purchase zero-emission vehicles. Finally, introduction of more grant-based (rather than financing-based) programs for lower-income residents would help those who have difficulty qualifying for even enhanced financing terms.

Solution: State financial leaders and private lenders could reform underwriting criteria for zero-emission vehicle loans to allow more lower-income drivers to qualify.

Participants noted that current underwriting criteria for zero-emission vehicle loans often exclude drivers who show no profit, leaving leasing as their only option. This issue is particularly acute for ride-sharing drivers, who may deduct expenses from their income that would then make them ineligible to meet the criteria. Participants advocated for drivers to qualify if they can document six months of driving at a profit. Ultimately, policy makers could expand the underwriting criteria to accept alternative forms of income from ride-share and other commercial driving platforms, such as trip history, as criteria to qualify for a loan or other assistance. The California Air Resources Board

has contemplated related changes in the agency’s most recent clean vehicle funding plan.⁴⁵

Solution: State agencies could regulate predatory lenders and enforce existing consumer protection laws to protect lower-income drivers.

Participants noted that low-income drivers were at particular risk of predatory loans, with unscrupulous or deceptive terms and repayment plans. As a solution, state agencies could ensure that federal and state consumer protection regulators, such as at the U.S. Consumer Financial Protection Bureau and California Attorney General’s Office, police loan quality and ensure proper enforcement, standards, and design for auto loans for zero-emission vehicles. Regulators could draw on examples from oversight of lending programs beyond vehicles, such as payday loan protections, and concerns with Property Assessed Clean Energy financing for homeowners.⁴⁶

Solution: The California Air Resources Board could bolster the used electric vehicle market by requiring greater vehicle durability and developing incentives for faster fleet turnover of new vehicles to the secondary market.

Used electric vehicles may offer lower-income purchasers the best opportunity for an affordable model. However, participants noted that many electric vehicles were not built to be durable or with batteries that have sufficient and dependable range. As a result, they recommended measures to ensure battery and vehicle durability in the used market. Specifically, the California Air Resources Board could include provisions on durability and battery warranty in its vehicle eligibility requirements under the Zero-Emission Vehicle Regulation. The state could also offer zero-emission vehicle sales credits to automakers who promote early rollover of new vehicles to the secondary market, or offer financial incentives to original leaseholders, automakers, and rental car companies that retire zero-emission vehicles early and offer them to lower-income residents first. CARB’s proposed Advanced Clean Cars II Regulations contemplate manufacturer incentives for the lease of used electric vehicles, among other environmental justice-focused credits.⁴⁷

The state could also update the Clean Vehicle Rebate Project to offer rebates for used electric vehicles (possibly with higher rebates for vehicles with extended battery warranties) and expand the program to automakers or dealers who issue the first lease on the vehicles in order to encourage them to turn newer models over to the secondary market (the Clean Cars for All program already includes used vehicles).

Solution: State regulators and regional air districts could expand mobility assistance to lower-income residents who choose electrified transit modes.

As a means of reducing overall congestion and driving miles, some municipalities and air districts, such as the South Los Angeles Universal Basic Mobility Pilot Program, offer “mobility wallet” programs to help lower-income participants defray the costs of using transit.⁴⁸ These programs are particularly needed

in high vehicle miles traveled (VMT) and low availability of parking markets. Participants suggested that these programs expand eligibility to include electrified transportation modalities such as e-bikes, e-transit and e-scooters, potentially building on the existing state Clean Mobility Options Voucher Program for shared and innovative transit services and Sustainable Transportation Equity Project for mobility in lower-income communities.⁴⁹

BARRIER 2: LIMITED ACCESS TO CHARGING INHIBITS VEHICLE ADOPTION

While many early adopters and higher-income Californians have been able to transition to electric vehicle ownership based on the ability to charge in private garages and driveways, often overnight via Level 1 or Level 2 chargers that run on existing electrical systems, many lower-income Californians have limited access to convenient charging options. This limitation manifests across multiple dimensions:

- **Charging infrastructure location:** Lower-income Californians are more likely to live in multifamily buildings than higher-income Californians, less likely to be employed at workplaces with charging installations, and less likely to live near public charging locations or hubs.⁵⁰ As a result, drivers in these communities are less likely to have access to charging near their homes, jobs, and other convenient locations.
- **Charging affordability:** Since lower-income Californians are less likely to be able to charge in a private driveway or garage, they are less likely to be able to access fuel cost savings by charging during overnight/off-peak hours, less likely to be able to apply subsidized electricity rates to vehicle charging, and more likely to rely on costlier DC Fast charging.⁵¹ As a result, drivers in these communities have limited charging-based financial incentives to make the electric vehicle transition.
- **Grid infrastructure adequacy:** Electrical grid components in lower-income California communities (including street-level distribution infrastructure, transformers, and total capacity) are less likely to be able to support the substantial (but intermittent) electrical loads demanded by the DC Fast chargers needed for adequate public charging, and residences in these communities are more likely to be older buildings with significant electrical upgrades needed for Level 2 charging.⁵² As a result, program managers and building owners in these areas face technical limitations and higher costs to install new chargers. This challenge can be especially acute in tribal communities that may lack access to the electrical grid altogether, severely limiting the ability to install and use electric vehicle charging infrastructure.⁵³

Participants noted that these structural, locational, and financial charging barriers can limit the practicality of electric vehicle adoption in lower-income communities, potentially even when barriers to vehicle acquisition have been

reduced – meaning that overcoming them is vital to a rapid and equitable electric vehicle transition. And since for-profit charging service providers are more likely to locate public chargers in areas with existing high electric vehicle adoption, alternative public and non-profit models may be necessary to achieve adequate charging networks.

Solution: The state legislature could create a subsidized charging payment card for lower-income residents to access public chargers.

To ensure lower-income California drivers can benefit from the cost advantage of electric vehicle fueling, the state legislature could fund and direct the California Air Resources Board and/or California Department of Social Services to administer a universal fueling payment card with subsidized rates for lower-income drivers. Such a program would help offset the higher costs these drivers may face when charging at public locations (which are often operated by for-profit service providers), at peak daytime hours, and at expensive fast charging rates, while compensating for the inability to access the discounted rates increasingly available to those who charge at home or at work.

Participants identified the CalFresh program (the state iteration of the federal Supplemental Nutrition Assistance Program), implemented through Electronic Benefit Transfer (EBT) cards,⁵⁴ as a potential model for subsidized charging payment. Beneficiaries could receive a set monthly charging balance (in miles or kilowatt-hours) and use the card at any public charger in the state, with a subsidy automatically applied to the charger's applicable base rate in accordance with the user's income qualification (potentially up to a full subsidy for the lowest-income residents). This would both increase lower-income drivers' ability to afford charging and incentivize the installation of chargers in lower-income communities with a higher concentration of cardholders.

Participants suggested the California Air Resources Board, Energy Commission, and/or Department of Social Services as implementing agencies given their respective institutional experience with electric vehicle incentive programs, infrastructure incentives, and social aid distribution, but in practice the program would likely require significant coordination with Load Serving Entities, electric vehicle supply equipment providers (EVSEs), local governments and other public agencies, and community-based organizations. The program could partner with vehicle dealers to distribute cards and set up accounts linked to vehicles (and other expanded incentives and rebates) at the point of purchase or lease.

Solution: The California Energy Commission, electric load-serving entities (e.g., investor-owned utilities, municipal utilities, and community choice aggregators), and community-based organizations could provide charging technical assistance and turnkey solutions to property owners.

Participants noted that even property owners who wish to install charging for use by residents and employees often lack the technical expertise to install and operate the equipment, including the complex, high-capacity DC Fast chargers needed for convenient public charging as well as Level 2 charging which can often require electrical panel upgrades. The challenge can be particularly

acute for owners of affordable multiunit residential properties with limited or no energy-focused staff capacity.⁵⁵ Property owners may decline to take on beneficial or revenue-generating projects as a result and, when they do, may fail to notify their load-serving entities early enough in the process, leading to interconnection and infrastructure upgrade delays.

To address this capacity gap, the California Energy Commission (with funding allocated by the legislature) could facilitate access to free technical assistance for qualifying residential and commercial property owners in lower-income communities, working with electric load-serving entities and community-based organizations to connect owners with approved providers. The program could build on efforts begun under the One-Stop Shop Pilot Project led by the California Air Resources Board in partnership with GRID Alternatives and the Greenlining Institute, along with technical assistance programs developed by the electric utilities such as Southern California Edison's Charge Ready program.⁵⁶ In addition, participants emphasized the need for turnkey solutions—such as direct charger installation and management by community choice aggregators—to ensure that property owners with the least capacity have the opportunity to rapidly add charging infrastructure.

Solution: Load-serving entities could develop granular local data and maps of charging needs and opportunities to target investment.

Participants emphasized the need for more granular data on the particular charging needs of lower-income residents to inform the design of enhanced incentive programs and ensure the most strategic use of public funds. (While state agencies and load-serving entities have developed valuable statewide information such as the Energy Commission's AB 2127 Electric Vehicle Charging Infrastructure Assessment and electrical distribution utilities' Integrated Capacity Analysis maps, participants felt these analyses are a first step toward more detailed local data and mapping.⁵⁷) Load-serving entities could partner with local governments to create maps of locally appropriate charging need-related information and share the data with program administrators (to target direct investment and pilot programs) and electric vehicle supply equipment providers (to drive public charger installation to best-fit locations).

One example of such an effort is East Bay Community Energy's (EBCE) Multiunit Dwelling (MUD) Hotspot Map, which identifies square mile areas with greater density of MUDs than other areas in the community. The map informed development of incentive program requirements through the CALeVIP partnership, which EBCE and the California Energy Commission co-funded with a requirement that 50 percent of the DC Fast charger budget go to projects built in MUD Hotspots.⁵⁸ As a Community Choice Aggregator (CCA) and the default load-serving entity in Alameda County and the City of Tracy, EBCE is able to overlay this data with information on the total number of multifamily housing units, existing charging infrastructure, boundaries of disadvantaged communities and low-income communities, and DMV registration data on current electric vehicle ownership to identify areas of greatest need for support and greatest opportunity for electric vehicle adoption. Load-serving entities and electrical distribution utilities also have the greatest visibility into local

grid capacity, upgrade needs, and vulnerabilities, increasing the potential to beneficially site supporting services such as microgrids and vehicle-to-grid charging. Other Load-serving entities and local governments, potentially with funding support from the state legislature or the Greenhouse Gas Reduction Fund, could initiate similar mapping and data collection efforts.

Solution: State leaders could partner with charging providers and load-serving entities to create and advertise a single statewide charging app that allows drivers to locate the cheapest, most convenient charging options.

Because many drivers in lower-income communities lack access to at-home charging, they lack the ability to charge at preferential times and receive the full fueling cost benefit of driving an electric vehicle. As a complement to subsidized charging payment cards, leaders at the California Energy Commission and/or Public Utilities Commission could develop a charging app that incorporates user inputs on location, vehicle type, and total mileage needed to identify the lowest-cost accessible charger. The app could include an interface like those used by private sector electric vehicle supply equipment providers to help customers locate in-network chargers, but it would include all publicly accessible electric vehicle chargers throughout the state regardless of the owner (potentially drawing on the electric vehicle charging station data maintained by the US Department of Energy and California Energy Commission).⁵⁹ Advances in the ISO 15118 vehicle-to-grid communication protocol could facilitate identification of the lowest-cost local chargers (and potentially the charge card transactions described above).⁶⁰ For example, EVgo's location-based pricing pilot program, which offers discounted charging rates at locations identified as high priority by CalEnviroScreen (as well as those with lower congestion and lower electricity/property costs) in the Bay Area and Southern California, could provide valuable precedent—including the need for widespread public advertisement and outreach to help users take advantage of the preferential rates.⁶¹

Solution: The California Public Utilities Commission could accelerate deployment of grid-supporting services such as microgrids and grid upgrades through speedier interconnection and greater financial returns.

The combination of inadequate grid capacity, a lack of local capital to finance charger installation, and heightened interest in community-scale resilient grid infrastructure to reduce wildfire and power shutoff risks had led some electric vehicle supply equipment providers in lower-income communities to focus on the provision of grid-supporting services—such as microgrids, battery storage, and distribution grid upgrades—as key components of new charging installation projects. Adding supporting services to a project can boost return on investment (particularly in areas where usage may ramp up slowly over time due to limited electric vehicle penetration) and increase community support.⁶²

However, participants noted that these supporting service projects (as well as large charging installations in general) can face significant challenges when seeking utility approval to interconnect to the electricity grid. The California Public Utilities Commission's existing Rule 21 interconnection standards require electric utilities to review and approve applications for interconnection of

distributed energy resources but often result in delayed processes.⁶³ The commission has begun to address delays through an expedited interconnection dispute resolution process pursuant to Assembly Bill 2861 (Ting, 2016), but the process has been slow to kick off.⁶⁴ (In addition, in order to be eligible for dispute resolution, utility customers must demonstrate that they have made prior attempts to informally resolve the dispute.⁶⁵)

While grid-supporting services can increase the financial viability of charging installations, in many cases they still may not generate sufficient revenue to subsidize the cost of charging infrastructure in areas with lower electric vehicle ownership. To support these projects, the Public Utilities Commission could consider updating Rule 21 to require utilities to share the cost of supporting service installations in proportion to their grid benefits (and potentially allocate those costs among ratepayers) for electric vehicle infrastructure projects in lower-income communities.⁶⁶ The Commission and load-serving entities could also conduct outreach to ensure that electric vehicle supply equipment providers seeking to serve lower-income communities (such as those seeking to access any load-serving entity-sponsored infrastructure incentive programs) are aware of the expedited interconnection dispute resolution process.

BARRIER 3: LIMITED PUBLIC AWARENESS AND INFORMATION SLOWS OUTREACH AND MARKETING

A lack of access to information around electric vehicle incentive options, as well as limited interaction with the vehicles themselves, also inhibits electric vehicle adoption in lower-income communities. Residents in these communities throughout the state often can lack familiar, trusted sources of electric vehicle information and marketing. Inadequate funding and resources for community-based organizations prevents more robust community outreach and engagement efforts, which are critical in catalyzing electric vehicle adoption.⁶⁷ Targeted, inclusive outreach that accounts for unique community circumstances and reflects understanding of community concerns can accelerate uptake of cleaner vehicles, provided that financing and incentive options are available to defray costs for buyers who would otherwise not choose to purchase an electric vehicle. Advertising and informational campaigns by large organizations or corporations may fall flat if the community does not feel they can trust the source, or that the vehicles are not meant for them. In addition, local governments that are only just beginning to develop community charging programs can lack robust understanding of the particular electric vehicle adoption challenges facing lower-income communities—financial, infrastructural, and communications-based—and fail to plan adequately as a result.

Efforts to overcome this gap can help to engage would-be electric vehicle owners across all communities. However, while public-private collaborations such as Veloz are building effective state-level outreach efforts, a lack of state support for community-based organizations or tribal liaisons to engage with their communities poses a barrier to sharing information. Participants emphasized that a perception exists in some lower-income households and communities of color that the electric vehicle market is not designed for them since they are rarely represented as “typical” electric vehicle drivers. While

early electric vehicle adopters may tend to self-identify as environmentalists or technology innovators, communication efforts should broaden the scope of who identifies as a potential electric vehicle driver, focusing on a more diverse pool of individuals.⁶⁸ Participants encouraged support for community-based programs to help overcome these perceptions and allow all people to see themselves as the type of person who can drive an electric vehicle. Hands-on outreach like test drive events are critical in empowering people to see themselves as potential electric vehicle drivers and building testimonials from a more diverse audience.

Participants also identified a need for more technology-focused educational efforts, such as programs that help potential buyers understand the differences between battery electric vehicles and plug-in hybrid electric vehicles, including the varying charging and maintenance requirements. Such efforts would help buyers identify which options are best for them, while also building understanding and trust of the technology.

Solution: When crafting incentive programs, the California Air Resources Board, the California Public Utilities Commission, the California Energy Commission, load-serving entities, local public agencies, and the private sector could dedicate resources specifically for lower-income residents.

California's existing electric vehicle funding programs helped to position it as the number one state in the nation for electric vehicle registrations; however, the state could devote more funding towards ensuring that electric vehicle adoption is equitable and attainable for all Californians.⁶⁹ (Governor Newsom's proposed 2022-2023 budget includes hundreds of millions of dollars in electric vehicle and charging infrastructure investment programs with low-income focuses.⁷⁰) Additional focus on infrastructure and upgrades, rather than simply funding the vehicles themselves, could unlock adoption. Participants called for additional funding and resources earmarked specifically for high-priority populations, including Black, Indigenous, and people of color (BIPOC) communities, unbanked individuals, individuals with low credit scores or without a credit account, gig drivers, renters, tribal communities, state-identified disadvantaged communities, and low- to middle-income households, among others. Private investment, if approached with equity in mind, also can play a significant role in addressing resource constraints in these communities.

While existing first-come-first-served incentive programs provide some support, these programs typically fail to serve the populations identified above, as determining program eligibility and completing program applications pose additional burdens for those with severely limited financial and time resources. Participants urged the state to embrace a needs-based funding and incentive model, building on equity-focused programs like Clean Cars for/4 All, specifically suggesting that separate funds are devoted solely to electric vehicle uptake and education in high-priority communities.

In addition to direct funding for electric vehicle adoption, lower-income communities will need additional support for high-voltage infrastructure upgrades in older buildings. For example, funding could support upgrades and

installation of charging stations, electrical wiring and panels, and electricity infrastructure like utility poles. Similarly, private sector and state funding for unexpected upgrades would alleviate challenges faced by project developers in underserved areas where infrastructure capacity is inadequate after decades of underinvestment. The costs of unanticipated upgrades can derail a project. Participants requested that this support be distinct from incentives intended for middle-income or affluent areas (i.e., policy makers should earmark funds specifically for lower-income and other priority communities).

MAPPING INFRASTRUCTURE NEEDS

Some communities face infrastructure constraints and investment barriers that prevent project success. For example, inadequate electricity infrastructure (e.g., utility poles or adequate wiring) may make it impossible to install and use electric vehicle chargers. It can take months or years to get the appropriate infrastructure in place for charger installation. Participants suggested that the California Public Utilities Commission, working with electrical distribution utilities and the California Energy Commission, could map power grid infrastructure for each neighborhood to inform communities about the scale of upgrades needed before electric vehicle infrastructure installation can occur. Mapping existing infrastructure could also help community groups determine where to prioritize charging infrastructure, when combined with other factors like equity and workplace or residential use. State and private sector actors could then direct investments towards infrastructure improvements in the communities with the highest need. These efforts could build on investor-owned electrical distribution utilities' existing Integration Capacity Analysis maps, which are available for stakeholder use in planning new infrastructure but are often outdated or may not contain information most useful to communities attempting to install chargers.⁷¹ Participants stated that maps similar to those developed by New York's utilities would be useful in planning and installation efforts in California.⁷²

Furthermore, existing incentives may fail to address an appropriately broad range of community needs, potential users, or household structures. For example, programs that limit incentive eligibility to one vehicle per household may neglect the needs of multi-generational households, particularly in lower-income communities and communities of color, where families' mobility depends on access to more than one car. Expanding and redesigning eligibility to encompass a wider range of households or drivers would enable more households to benefit from existing support programs. As another method of expanding funding eligibility, state and private sector investors could fund workplace chargers at major regional employers outside of low-income or disadvantaged areas, as low-income individuals are commuting to these locations for work and would benefit from charging opportunities at their place of employment.

Solution: The state legislature could devote funding for community-based organizations to conduct ground-level education and outreach programs.

Reducing financial barriers to electric vehicle ownership is a necessary step, but financial support alone may be insufficient in cultivating consumers' understanding of and demand for electric vehicles. Local, hands-on education and outreach efforts are critical components of overcoming barriers in lower-income and disadvantaged communities. Example outreach efforts include test drives or workshops describing vehicle technology and maintenance requirements. However, the source of electric vehicle information influences the effectiveness of education and outreach programs. Information should come from trusted sources with ties to the community whenever possible. Community-based organizations already have built trust among local residents and understand the specific circumstances of a community and are therefore well-positioned to share information about electric vehicles. Even if organizations have not made electric vehicles as their primary focus, if they have earned the community's trust, they will be able to message information and address concerns appropriately. For example, a public health-focused organization may present electric vehicle information in the context of reduced local air pollution.

Community-based organizations are often under-resourced in terms of funding and staff capacity. The state could help address this barrier by allocating funding towards community-based organizations that are well-positioned to conduct electric vehicle education and outreach in priority communities. Community-based organizations could use these funds to hire additional staff, broaden their outreach efforts, strengthen organizational capacity, and extend staff positions for longer periods of time, among many other uses. Although the California Air Resources Board offers funding towards education and outreach efforts, participants called for more direct support and an increase in the total proportion of funds earmarked for education and outreach versus financial incentives.

Direct allocation of resources has a greater potential for positive impact than money passed through various organizations, eventually trickling down to the community organization. The passthrough approach tends to dilute the amount of funding available, causing eventual recipient organizations to fall short of their goals. Although direct funding for community-based organizations will allow for more targeted and trustworthy outreach, requiring communication with local agencies could ensure stronger coordination. For example, if community-based organizations coordinate through a local government agency (such as a tribal government, city department, or community choice aggregator staff), organizations could avoid duplicating each other's efforts and could share resources more strategically.

California's Transformative Climate Communities (TCC) program funds locally driven projects and prioritizes investment in disadvantaged communities. The program requires that applicants (or co-applicants)

CENTERING EQUITY IN INCENTIVE PROGRAMS

The Alameda County Incentive Project, part of the state CALeVIP program co-funded by East Bay Community Energy and the California Energy Commission, dedicated incentive funding to publicly accessible DC Fast and Level 2 chargers. The program required that 50 percent of its \$17.3 million budget is spent in disadvantaged and low-income communities. The program also allocated funds for both DC Fast and Level 2 chargers specifically to enable renters in multifamily housing to access to the benefits of EVs in the near term.⁷³ These equity-focused requirements were not mandatory in the CALeVIP program, demonstrating the ability of local agencies to direct state resources to high-priority communities.

include a public agency.⁷⁴ While a similar requirement may or may not be desirable for electric vehicle education and outreach funds, in the case of the Transformative Climate Communities program the collaborative model allows community-based organizations to execute their vision for a project while collaborating with a local agency to advance broader local goals. Requirements for interagency and multi-organizational collaboration can accelerate electric vehicle efforts while opening up more funding opportunities for priority communities.

Targeted funding can ensure that organizations' efforts are maintained over time rather than creating several shorter-lived programs. Sustained, lasting programs allow communities to build trust in the information source, which is especially important because vehicle purchases are relatively infrequent, occurring once every several years. A household may not be planning an immediate purchase, but may receive information years before deciding about an electric vehicle. Multi-year information programs are made possible by sustained funding and capacity building.

The San Joaquin Valley Clean Vehicle Empowerment Collaborative (CVEC) offers an example of a successful community-driven effort. CVEC is part of the Clean Vehicle Rebate Project Community Partner Network, which funds community-based organizations to conduct electric vehicle outreach and education events in lower-income communities with a focus on locally appropriate marketing, training, and partnerships.⁷⁵ CVEC is a coalition of multiple community-based organizations—especially local environmental and social justice organizations—committed to expanding awareness of and access to electric vehicle incentive programs. CVEC also engages communities with electric vehicle technology through ride and drive events, contests, and education about electric vehicle operation and maintenance.⁷⁶ Example organizations in the collaborative include the Central California Environmental Justice Network, the Catholic Charities Diocese of Stockton, Little Manila Rising, and the Central California Asthma Collaborative, among many others. CVEC's efforts expand electric vehicle adoption opportunities for residents of eight counties in the San Joaquin Valley: San Joaquin County, Stanislaus County, Merced County, Madera County, Fresno County, Kings County, Tulare County, and Kern County.⁷⁷ Eligible applicants must also fall within a specified income threshold depending on their household size. The program's focus on equity and its collaborative structure could be replicated in other California regions, potentially through increased state funding for the Community Partner Network program.

Solution: The California Air Resources Board and California Public Utilities Commission could ensure that funding program eligibility requirements are consistent, and that program success is measured and evaluated.

Some participants noted that rebate and incentive programs have inconsistent criteria regarding eligibility, for example using different definitions of “low-income,” making it confusing for individuals to complete applications. For example, while state programs such as Clean Cars for All and the Clean Vehicle Rebate Program base eligibility on Federal Poverty Guidelines, utility programs may base eligibility on Area Median Income. Inconsistent program requirements

can make it burdensome and confusing for individuals to determine their eligibility or stack multiple programs to maximize all funding sources. Program applications often involve complex, time-consuming paperwork or research, preventing many individuals from participating in a program even if doing so might benefit them. State entities administering or setting requirements for rebate programs—including the Air Resources Board and Public Utilities Commission—could coordinate to ensure consistent requirements wherever practical, and where different requirements are necessary (such as when one program intentionally targets a different income bracket than another), could make such thresholds clearer to save participants time and effort in completing the application.

Additionally, state and local entities administering funding could coordinate to evaluate program performance. Agency leaders could establish a set of suggested metrics and processes for collecting data around how many cars are purchased as a result of the program, how many individuals are seeking information and resources about electric vehicle purchases, which information sources are having the greatest impact, and which sources people rely on for new information (e.g., radio, print, in-person workshops). The Clean Vehicle Rebate Project maintains a wealth of data on program effectiveness, participation, and consumer trends, which could form the backbone of such an effort.⁷⁸ This information would help direct appropriate funding to the sources generating the most impact, or alert program managers to issues so that they may implement a different strategy to achieve the desired program outcome.



V. CONCLUSION

When all communities can participate equally in electric vehicle adoption, all Californians can experience cleaner air quality and associated public health improvements, cost savings, and climate benefits.

Barriers to equitable electric vehicle adoption include limited financial resources and high upfront costs, limited access to charging, and limited public awareness about EV ownership opportunities and benefits. To realize a vision of equitable electric vehicle adoption in California, state agencies and private sector partners could allocate funding specifically for disadvantaged communities—including lower-income communities, communities of color, disadvantaged communities, and other underinvested areas—through expanded incentive programs and targeted education and outreach based in local knowledge. With additional support, the communities that stand to benefit the most from electric vehicle ownership will be able to participate fully in the electric vehicle transition, offering them economic and public health improvements as well as contributing to the broader effort to combat climate change.

A close-up photograph of a dark grey sign. The sign features two columns of horizontal ventilation slats at the top. Below the slats, the word "FREE" is printed in large, white, sans-serif capital letters. Underneath "FREE", the words "EV CHARGING" are printed in smaller, white, sans-serif capital letters. The sign is mounted on a light grey vertical pole. In the background, a building with a brown roof and a window is visible against a clear blue sky.

FREE
EV CHARGING

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- (b) The investment plan shall allocate a minimum of 5 percent of the available moneys in the fund to projects that benefit low-income households or to projects located within the boundaries of, and benefiting individuals living in, low-income communities located anywhere in the state.
- (c) The investment plan shall allocate a minimum of 5 percent of the available moneys in the fund either to projects that benefit low-income households that are outside of, but within a $\frac{1}{2}$ mile of, communities described in Section 39711, or to projects located within the boundaries of, and benefiting individuals living in, low-income communities that are outside of, but within a $\frac{1}{2}$ mile of, communities described in Section 39711.
- (d) For purposes of this subdivision, the following definitions shall apply:
- ‘Low-income households’ are those with household incomes at or below 80 percent of the statewide median income or with household incomes at or below the threshold designated as low income by the Department of Housing and Community Development’s list of state income limits adopted pursuant to Section 50093 [defining low- and moderate-income limits].
- ‘Low-income communities’ are census tracts with median household incomes at or below 80 percent of the statewide median income or with median household incomes at or below the threshold designated as low income by the Department of Housing and Community Development’s list of state income limits adopted pursuant to Section 50093.”
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