

# An Agenda for Equity-Centered Clean Transportation

**April 2021**



Dear Business and Community Leaders:

The Los Angeles Business Council Institute (LABCi) is pleased to share the findings from the new study entitled, *A California Agenda for Equity-Centered Clean Transportation* in partnership with the UCLA Luskin Center for Innovation. This research represents a new strategy to expand and identify how to measure household and community scale progress toward expanding equitable access to clean transportation and recommendations to develop a feasible agenda for near- and long-term equity-centered policies. The LABC Institute was founded in 2010 to support research and education dedicated to strengthening the region's economic and environmental sustainability, developing policies and programs that promote clean energy, local investment and equitable job growth.

The study was inspired by California Governor Gavin Newsom's Executive Order N-79-20 directing the state to require that, by 2035, all new cars and passenger trucks sold in California be zero-emissions vehicles, reinforcing California as the nation's leader in reducing our carbon output and advancing policies that lay the groundwork for a more vibrant, inclusive green economy. In partnership with the GO-Biz ZEV Team and the UCLA Luskin Center for Innovation, the LABC Institute partnered together to form a Working Group with environmental justice and equity advocates, business leaders and policymakers to develop and advance a new agenda of policies and strategies that can significantly expand equitable access to clean transportation in priority communities across California. We thank the Working Group members for their leadership in providing thoughtful and honest feedback in helping develop the equity-centered metrics and policy strategies presented in this report. This month, The GO-Biz Zero Emissions Vehicle (ZEV) team released a [Zero-Emission Vehicle Market Development Strategy](#) laying out "equity in every decision" as a core principle. However, past experiences remind us that relying solely upon new vehicle incentives and related policies has failed to achieve equitable access to the benefits of clean transportation among priority households and communities.

We would also like to thank UCLA Luskin Center's Director J.R. DeShazo the entire Luskin Center research team for this comprehensive report, which is critical to gaining a shared understanding of the equity challenges to develop solutions and to track measurable progress towards equity and growth over time. We are proud to be supporting this research and are hopeful that these findings will contribute to a healthier and prosperous Los Angeles for all Angelenos.

Sincerely,



Mary Leslie  
President, LABC



Brad Cox  
Chair, LABC Institute

# Working Group

**We want to thank our working group, consisting of experts from industry and leaders in the community who participated in several roundtable discussions for their contributions to developing important metrics and principals to help form policies and programs at the state level.** Please note, acknowledgement in working group does not imply endorsement of the recommendations in this study from the working group members or the LABC Institute.

## **Leslie Aguayo**

*Environmental Equity Program Manager,  
Greenlining Institute*

## **Ellie Casson**

*Head of Local Public Policy  
Waymo*

## **Carlo De La Cruz**

*Senior Campaign Representative  
Sierra Club*

## **Tyson Eckerle**

*Deputy Director, ZEV Market Development  
Go-Biz*

## **Bahram Fazeli**

*Director, Research & Policy  
Communities for a Better Environment*

## **Dave Gallon**

*Vice President, Strategy & Growth  
Mocean Lab*

## **David Libatique**

*Deputy Executive Director, Stakeholder Engagement  
Port of Los Angeles*

## **Chris Chavez**

*Deputy Policy Director,  
Coalition for Cleaner Air*

## **Veronica Padilla**

*Executive Director  
Pacoima Beautiful*

## **Ben Russak**

*Acting Director of Environmental Health & Justice  
Liberty Hill Foundation*

## **Michael Samulon**

*Senior Policy Analyst, Sustainability  
City of Los Angeles*

## Acknowledgments

The UCLA Luskin Center for Innovation gratefully acknowledges our partnership with the Los Angeles Business Council Institute and the support from the ClimateWorks Foundation and the California Strategic Growth Council. We also acknowledge the valuable research assistance and contributions of Sara Tohamy and Danielle Parnes. We benefited from suggestions from Leslie Aguayo, Chris Chavez, Carlo De La Cruz, Tyson Eckerle, Bahram Fazeli, David Libatique, Ben Russak, and Michael Samulon, Bernadette Austin, Jonathan London, and Juan C. Garcia Sanchez

# Authorship

This report was produced by the  
UCLA Luskin Center for Innovation (LCI)

The UCLA logo consists of the letters "UCLA" in white, bold, sans-serif font, centered within a solid blue rectangular background.

**Luskin Center  
for Innovation**

**J.R. DeShazo**

*Director*

**James Di Filippo**

*Researcher & Project Manager*

## Disclaimer

The analysis presented is that of the authors and does not necessarily reflect the views of UCLA, The University of California, the Los Angeles Business Council, the ClimateWorks Foundation, or the California Strategic Growth Council. LCI appreciates the contributions of partners and other staff; however, their contributions to and review of this work does not imply any endorsement of the report's content or conclusions. Any mistakes or errors are solely attributable to the authors.

## For more information

Contact James Di Filippo at [jdifilippo@luskin.ucla.edu](mailto:jdifilippo@luskin.ucla.edu) or at (310) 267-5435. Visit the Luskin Center for Innovation website at [innovation.luskin.ucla.edu](http://innovation.luskin.ucla.edu).

# An Agenda for Equity-Centered Clean Transportation

## 1. Introduction

As California transitions to a zero-emission transportation system, as required by Governor Gavin Newsom's Executive Order (N-79-20) in September 2020, it needs a robust agenda for equity-centered clean transportation policies. The past decade of clean transportation policy has shared neither health nor financial benefits equitably with all Californians. Low-income and BIPOC communities who face disproportionate pollution burdens — referred to in this study as *priority communities* — are most in need of clean transportation, but have been left behind in the transition. Furthermore, **California cannot achieve its goal of transitioning every vehicle to zero-emissions technologies — which is considered essential to meeting climate and clean air goals — without proactively creating policies that make clean transportation options truly accessible and practical for priority communities.** Finally, access to transportation options fundamentally impacts the quality of life of every Californian, determining their access to jobs, health care, healthy food, good schools, and other services. Without a stronger equity focus, clean transportation policies risk worsening broader structural inequalities faced by households in California's priority communities.

The need for reparative policy investments in transportation arises from structural factors that have produced and perpetuated inequality. Racism has deprived communities of color equal access to 1) public transportation, 2) vehicles due to discriminatory lending practices, and 3) equivalent commuting experiences to workplaces due to housing discrimination. Because transportation investments in local transit services, active transportation, street services, and shared mobility depend upon local government revenues, inequality in low-income communities is perpetuated intergenerationally. As a result of land use decisions, households in priority communities disproportionately bear the pollution burden of the transportation systems from which we all benefit. These households are more likely to live not only near freeways heavily used by large polluting trucks but also near polluting maritime ports, airports, warehouses, rail yards, and bus depots as well as refineries, storage facilities, and active oil and gas wells.<sup>i,ii,iii</sup>

**We propose a new agenda for equity-centered clean transportation policies. As described in section 2, our approach is guided by the following principles (and associated performance metrics) that should seek to:**

1. Reduce air pollution where the social and health benefits of doing so are greatest;
2. Minimize the costs of new policies and estimate their financial impact on priority households;
3. Enhance the availability and accessibility of clean transportation options within priority communities;
4. Engage priority communities in the policy development, planning, design, and implementation of place-based projects; and
5. Incentivize new technologies and transportation development as partnerships with the local communities affected, providing for a just transition for the local workforce during the zero-emission transportation transition.

We apply these principles when reviewing existing and potential clean transportation policies. In doing so we recognize past policy designs and pilot programs that have taken initial steps and made progress toward creating more equitable policies. Although a good start, the real work of engaging priority communities should be expanded and included in the policy and regulatory work underway to reach the goals laid out in the governor's Executive Order. We also urge that new policy ideas leverage public and private fleet transitions toward clean vehicle technologies to benefit priority communities.

Our recommendations build on the important transportation equity analysis and research conducted by policy advocates, policymakers, and academic researchers. These include important analyses produced by the Charge Ahead Coalition, especially the resources developed by the Greenlining Institute. The 2020 Zero-Emission (ZEV) Market Development Strategy also seeks to integrate equity into every policy and decision-making process related to clean transportation development.

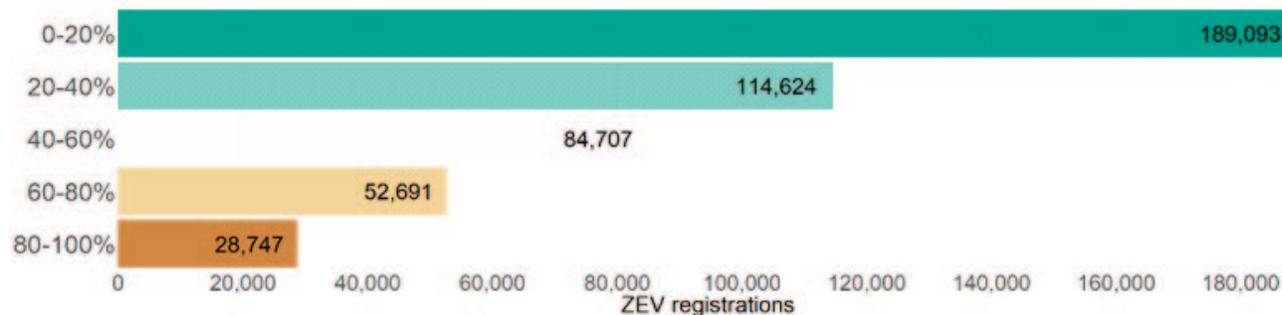
**In this report, we assess California’s opportunity to strengthen the equity focus by:**

1. Reforming zero-emission passenger vehicle adoption policies, including access to charging;
2. Investing in place-based access to active transportation, shared e-mobility, and e-transit; and
3. Leveraging the zero-emission transition in public and private fleets containing medium- and heavy-duty trucks and buses.

## 1.1 Reforming Vehicle Adoption Policies, Including Access to Charging

Air pollution from transportation emissions continues to be the greatest health threat in many priority communities. These households are also more likely to own and drive older, relatively more polluting, vehicles compared to those in wealthier communities. Yet, clean transportation policies that incentivize the adoption of new ZEVs have not been successful in reaching households in priority communities.

**Figure 1: Number of registered ZEVs in California (2019) by CalEnviroScreen score range. Higher CES score ranges indicate lower incomes and greater pollution burdens.**



Priority households have dramatically lower adoption rates of clean vehicles than households in wealthier communities. As of 2019, fewer than 6% of California ZEVs are registered in the upper 80th percentile of CalEnviroScreen score census tracts (Figure 1). This is largely because households in priority communities usually opt to purchase vehicles on the lower-cost used market. When they do purchase new vehicles, they purchase lower-cost gasoline models, rather than more expensive zero-emission options. Lower rates of adoption are likely also due, in part, to the fact that households in priority communities are more likely to live in apartments, condominiums, and other rental housing where it is more difficult and expensive to install charging stations than in single-family homes. Last, low adoption may be attributable to a lack of familiarity with zero-emission vehicle technologies and the funding opportunities that are available for them.

Reforming clean vehicle purchase incentives will also lead to more impactful and cost-effective public policies. Because lower-income households respond more to differences in price, a rebate or grant is more likely to influence their decision to purchase a clean vehicle, as compared to wealthier households.<sup>iv</sup> In other words, wealthier households who receive a grant or rebate are more likely than low-income households to have purchased the vehicle without that financial support, leading to spending that does not directly induce the purchase of clean vehicles. Therefore, stricter targeting and increased low-income household rebates can lead to a greater increase in the total number of zero-emission vehicles purchased compared to offering the same rebate amount to all households.<sup>v</sup>

While previous clean transportation policies focused on early-to-market buyers to jumpstart the EV market, that approach is being weakened by two emerging facts: automakers are increasingly committed to producing and selling zero-emission vehicles; and, historically, drivers have not adopted clean vehicles because of vehicle-related air pollution. The greatest challenge we now face in meeting our climate goals appears to be how to get clean vehicles into the hands of moderate- and low-income drivers, not early-to-market buyers.

Our review of the existing policy landscape reveals that significant reforms are needed if low-income drivers are to be brought into the zero-emission vehicle transition. **To engage priority communities, we need policies designed to (1) reduce the purchase price of new and used vehicles; (2) subsidize vehicle financing; (3) reduce the cost of refueling infrastructure, and (4) reduce the costs of electricity as a transportation fuel.**

Specifically, incentive policies for vehicle and infrastructure adoption should be tiered so that lower-income households are eligible for progressively larger incentives. Income caps for eligible households should be lowered. Additionally, incentives for the purchase of used clean vehicles for low-income households should be expanded. Locational decisions for charging infrastructure for multifamily, workplace, fleet, and publicly accessible charging should privilege priority communities wherever possible and be sensitive to perceptions that EV infrastructure might lead to neighborhood gentrification. Finally, organized community-level outreach directly to households, to lower barriers and enhance access to these policy incentives, should be expanded to all priority households.

## 1.2 Investing in Active Transportation, E-Shared Mobility, and E-Transit Options

An equity-centered clean transportation agenda cannot focus solely on private passenger vehicles. We also need to expand active transportation, e-shared mobility, and e-transit. Active transportation modes include enhanced opportunities for walking, biking, and micro-mobility (shared e-scooters, e-bikes). E-shared mobility includes e-car sharing, e-vanpools, ride-on-demand services, and innovative e-transit services including paratransit and medical transit.

To maximize the benefits of these place-based travel modes, they must be carefully integrated into the local built environment and transportation network, often with a focus on supporting travel from multifamily housing. These projects should be tailored to specific neighborhood needs and contexts and, wherever possible, integrate culturally competent professionals or CBOs who have experience working in those or similar neighborhoods. This may require significant resources for community engagement combined with professional transportation design and planning expertise. Yet priority communities frequently lack access to these resources and capacity.

We have learned over the last decade that priority communities need capacity-building grants focused on planning and design which, if successful, lead to implementation to create these place-based clean transportation projects. Our review of this policy landscape reveals the very recent emergence of state programs that take this approach such as the Sustainable Transportation Equity Program and the Clean Mobility Options Program. We recommend that these programs continue to allocate investments on a competitive demand-driven process in which communities identify benefits through a two-phase process supported by planning and then implementation grants. Further, the state should take advantage of the abundance of early pilots to identify how to manage and scale these programs.

## 1.3 Heavy Freight and Leveraging the Transition to Clean Public and Private Fleets

Finally, an equity-centered clean transportation agenda should seek to both accelerate the transition of California's heavy-duty freight operations to zero-emission and leverage early progress in the zero-emission transition within public and private fleets to ensure that benefits immediately accrue to communities that need them most. We propose a range of strategies that increase the likelihood that early-stage electric vehicles integrated into these fleets will be first deployed in priority communities. We focused on five major types of fleets:

1. Publicly owned fleets, including transit buses, school buses, sanitation, street services, utility trucks, police, and others.

2. Privately operated but publicly or government-influenced fleets that often operate under public contracts or licenses. These include car-sharing, micro-mobility (e-bikes and e-scooters), paratransit, medical transit, and vanpool fleets, as well as waste and recycling collection fleets.
3. Parcel delivery vehicle fleets such as those operated by Amazon, FedEx, UPS, and others.
4. Transportation network and courier fleets driven by independent contractors who deliver passengers, food, and groceries but are operated by Uber, Lyft, Postmates, Instacart, and others.
5. Retail and foodservice distribution fleets that service restaurants, big box, grocery, and convenience stores, among others.

Although often overlooked, we argue that these **fleets can play an early and important role in reducing transportation-related air pollution in priority communities**. First, many public and private fleets contain the most polluting diesel medium and heavy-duty trucks, buses, and vocational vehicles. Second, many of these fleets have begun their transition to zero-emission vehicles and thus have clean vehicles that could be deployed in priority communities. Third, fleet operators are deciding which neighborhoods to deploy newly acquired zero-emission vehicles. Policymakers need to articulate clear equity objectives for these fleet transitions, to avoid early adopted zero-emission fleet vehicles being directed disproportionately to relatively wealthy (and less polluted) neighborhoods.

We recommend that city, county, and state policymakers adopt clean vehicle deployment policies that prioritize priority communities for both publicly operated fleets as well as private fleets that can be influenced through public contracts and licenses.

We also recommend that governments and nonprofits work to create regulations and public-private partnerships that result in privately managed fleets deploying their clean vehicles within priority communities early in the zero-emissions transition.

**Roadmap.** Section 2 of this report presents the principles and performance metrics that will guide our equity-centered clean transportation agenda and enable us to measure success. Section 3 presents the existing array of passenger vehicle adoption policies before proposing several policy-design reforms. Section 4 assesses and proposes an expansion of community-centered investments in active transportation, shared e-mobility, and e-transit. Finally, in Section 5, we identify new policy objectives and designs focused on leveraging the public and private fleet progress in the zero-emission transition.

## 2. Equity-Motivated Principles and Performance Metrics for Clean Transportation

Several principles and performance metrics guide our equity-centered new clean transportation agenda. The principles are motivated by the identification of a set of disparate impacts across priority and nonpriority households. We then identify performance metrics that, if targeted for improvement, will begin to repair and reduce future inequities.

**Maximize air pollution reduction benefits.** Priority communities experience the highest level of transportation-related air pollution exposures. Households in these communities are more likely to live near freeways heavily used by large polluting trucks. They are also more likely to live near polluting transportation facilities and infrastructure such as maritime ports, airports, rail yards, and warehouses as well as refineries, storage facilities, and active oil and gas wells. Policies that deploy ZEVs in ways that reduce criteria and toxic air pollutants emissions where human exposure is the greatest can help reduce human exposure and ameliorate this unequal burden.

Relevant performance metrics include reductions in *emissions of*, or *exposures to*, fine particulate matter (PM<sub>2.5</sub>), diesel particulate matter (DPM), volatile organic compounds (VOC), and oxides of nitrogen (NO<sub>x</sub>).

Less direct performance metrics include increases in the *percentage* of zero-emissions vehicles or *zero-emissions vehicle miles traveled* by type of vehicle class (e.g., passenger vehicles, vocational vehicles, medium-duty delivery trucks, heavy-duty trucks, etc.)

**Strive for cost-effective policy designs.** Priority households spend a larger share of their income on transportation than do wealthier households—meaning that any increase in travel costs have a larger impact on priority household’s spending power. Policies that seek to reduce greenhouse gas emissions and other air pollutants often increase the costs of travel by raising the costs of vehicles, fuel, travel-on-demand services, and sometimes housing. Therefore, seeking the lowest cost means of achieving these policies’ objectives often disproportionately benefits priority households.

Performance metrics for vehicles and micro-mobility are cost per vehicle mile traveled. Performance metrics for transit and shared mobility are cost per passenger mile traveled.

**Enhance mobility and accessibility.** Households in priority communities often face fewer travel options, higher travel costs, and longer commutes to access important destinations like workplaces, health care facilities, schools, grocery stores, and day care. Clean transportation options that expand travel models and improve access can reduce these inequalities.

**Performance metrics include reduced travel time by frequently used modes, as well as the increased availability of transportation modes from residential and workplace locations.**

**Engage communities in the planning, design, and implementation phases.** Priority communities are served by less resourced municipal and county governments, populated by households facing greater barriers to civic engagement, and have fewer nonprofit community-based organizations than do wealthier communities. They also face historical legacies of racism that have systematically excluded them from decision-making on policies and programs that affect their lives. To address these inequalities, culturally relevant programs, capacity building and focused household engagement are often prerequisites to involving communities in the planning process. These investments and processes can amplify the voice of priority communities, actively engage them in the planning and design process, and enable them to influence project development and evaluations.

**Seek a just transition for the local workforce.** The transition to zero-emission vehicles and transportation modes may impact workers in priority communities in diverse ways. Some workers who depend on increasingly scarce fossil-fuel jobs will need retraining and new job opportunities. At the same time, new jobs may be created by growth in electric and hydrogen transportation fuels, the need to build new refueling infrastructures, as well as new vehicle and charging equipment manufacturing and repair services. Programs to ensure that the residents in priority communities receive the training to obtain these jobs, as well as preferential hiring policies are needed to build a just transition.

Performance metrics involve the share of local investments out of all investments made in the clean transportation sector as well as the share of local workers out of all workers who are hired as a result of that local investment.

### **3. Policy Reforms for Zero-Emission Passenger Vehicles and Charging Infrastructure**

Private passenger vehicles are the primary mode of travel for households at all income levels and pandemic-induced fear of shared transport will likely increase dependency on private vehicles at least in the short term. These factors makes access to clean cars for priority households an important component of this agenda. However, although new vehicle rebates are necessary to accelerate the development of a mature market for zero-emission vehicles, and zero-emission vehicle mandates provide strong signals to automakers to produce desirable and affordable vehicles, they are not sufficient to ensure equitable access.

Equitable access requires expanding rebate and financing programs to make both new and used clean vehicle purchases more affordable to priority households and attractive to car dealerships that serve priority

communities. Moreover, expanding zero-emission refueling infrastructure that can support low-income households is a critical component to expanding equitable access to clean vehicles. Additional crucial steps include wraparound services and outreach that can help households access those programs as well as others, like ratepayer assistance, which, combined with EV use, can lower households' fuel bills.

### 3.1 Policy Support for New Clean Vehicle Purchases

The most direct method of encouraging clean vehicle adoption is to offset some of the costs of acquiring a clean vehicle. California has a mix of rebate and grant programs with varying vehicle eligibility, geographic coverage, equity-based designs, and program budgets. Broadly, the state has two policy tracks. The first — examined in this section — focuses on incentivizing purchases of new vehicles, while the second (covered in section 3.2) is strictly income qualified and covers used and new vehicles. The following section outlines the programs that incentivize new vehicles and gives equity-informed recommendations for program reforms.

**Clean Vehicle Rebate Program:** The Clean Vehicle Rebate Project (CVRP), funded by the California Air Resources Board, is the state's flagship funding program for promoting clean passenger vehicle adoption. It offers up to \$7,000 for the purchase or lease of a new, eligible zero-emission vehicle, such as an electric or fuel cell vehicle. Households with incomes above the program's income cap — \$150,000 for single filers, \$204,000 for head of household, and \$300,000 for joint filers — are ineligible for rebates. A small portion of CVRP funding is reserved for low-income recipients (see Table 1) and additional rebate amounts up to \$2,500 are available to those who qualify as low income. The program has a budget of \$146 million in the 2020-2021 fiscal year.

*Table 1: CVRP low-income recipient qualification*

Household size	Income maximum	Household size	Income maximum
1	\$51,040	5	\$122,172
2	\$68,960	6	\$140,640
3	\$86,880	7	\$158,560
4	\$104,800	8	\$176,480

However, the CVRP has not had significant success reaching residents in priority communities.<sup>vi</sup> Due to the higher relative cost of new vehicles compared to used vehicles, low-income households do not buy new vehicles with any regularity, even when those vehicles are subsidized. Although supporting new clean vehicle sales is critical to accelerating the clean vehicle market — which is a necessary precursor to broad availability of used clean vehicles — new vehicle subsidies on their own will not equitably deliver clean transportation benefits.

However, that is not to say that there are not reforms that could be made to CVRP that would improve program equity. Further constraining the income cap on which households are eligible for rebates could better target the incentive to those households for which the availability of purchase incentives is instrumental in their choice to buy a clean vehicle and limit the number of rebates received by higher-income households that do not need such inducements. That could in turn free up budgets that could further increase the incentive amounts available to low-income buyers. In addition to improving the equitability of the program, this reform may also improve its effectiveness by directing more of the program's budget toward incentives that are more likely to induce additional clean vehicle purchases.

**California Clean Fuel Reward:** California's newest incentive program is the California Clean Fuel Reward (CCFR). The program is funded by the sale of electric utility Low Carbon Fuel Standard (LCFS) credits, which are generated by the use of electricity as a transportation fuel. The program offers up to a \$1,500 rebate (depending on battery size) at the point of sale for the purchase of new plug-in hybrid and battery electric vehicles. All California residents are eligible to receive this funding regardless of income.

The current design of the California Clean Fuel Reward does not actively promote equity. While point-of-sale incentives can prove more accessible than post-purchase rebates, restricting the rebate to new vehicles excludes those households who would more easily afford a used vehicle.

### *Recommendations*

**Reduce income cap on CVRP:** Further constraining the rebate eligibility income cap could better target the program to those households for which rebates will most impact their choice to buy a clean vehicle and limit the number of rebates received by higher-income households that do not need such inducements.

**Explore making the California Clean Fuel Rewards Program income qualified:** As with the CVRP, placing an income cap on which households are eligible for the California Clean Fuel Rewards program would likely make the program more effective at encouraging clean vehicle sales.

**Increase low-income incentives for CVRP and CCFR:** Funds freed up by reducing the income cap could be used to increase the incentive amounts for low-income buyers. In addition to improving the equitability of these programs, this reform could also improve its effectiveness by directing more of the program's budget toward incentives that are more likely to induce additional clean vehicle purchases. Low-income qualification could be determined by eligibility for other low-income programs such as CalFresh or ratepayer assistance programs to reduce verification burdens.

**Allow for point-of-sale rebates for the CVRP program:** Post-purchase rebates can cause complications for low- and moderate-income buyers who may not be able to afford to wait as much as half a year to receive rebates. Immediate "cash on the hood" rebates would make the program more accessible to buyers of more limited means and could be implemented with a pre-qualified buyer voucher.

**Include rebates for used vehicles in the California Clean Fuel Rewards Program:** Offering smaller secondary incentives for used vehicle purchases would ensure that used vehicle owners directly benefit from clean fuel use value they provide.

## **3.2 Income-Qualified Grants for Clean Vehicle Purchases**

In recognition that additional programs are required to enable clean car adoption by priority households, California has devoted increasing funding to income-qualified grant programs that offer expanded grants for qualified low-income households. The following section outlines these programs and gives equity-informed recommendations for reforms, expansion, and restructuring.

**Clean Cars for All.** In contrast to the CVRP, the Clean Cars for All (CC4A, formerly EFMP Plus Up) program is specifically designed to get lower-income Californians into cleaner technology vehicles. The program provides qualifying individuals living in participating air districts (South Coast Area, San Joaquin Valley, Bay Area, and Sacramento Area) with up to \$9,500 toward the purchase of a new or used plug-in hybrid, electric, or fuel cell vehicle. Unlike the CVRP, these funds are made available only to those who retire an older polluting vehicle. Instead of a vehicle purchase, recipients may also choose alternative mobility funding such as transit passes or e-bikes in some program areas.

**Table 2: CC4A income eligibility and incentive levels by household size**

<i>Annual household income limits</i>			
<b>Household Size</b>	<b>\$9,500 (max grant)</b>	<b>\$7,500 (mid grant)</b>	<b>\$5,500 (base grant)</b>
<b>1</b>	\$28,710	\$38,280	\$51,040
<b>2</b>	\$38,790	\$51,720	\$68,960
<b>3</b>	\$48,870	\$65,160	\$86,880
<b>4</b>	\$58,950	\$58,950	\$104,800
<b>5</b>	\$69,030	\$69,030	\$122,720
<b>6</b>	\$79,110	\$105,480	\$140,640
<b>7</b>	\$89,190	\$118,920	\$158,560
<b>8</b>	\$99,270	\$132,360	\$176,480

The program’s budget is funded by proceeds of the California Cap and Trade program, with a current grant budget of \$102 million. Participant eligibility and grant amount are determined by household size and income, with the highest incentive amounts for very low-income households (Table 2). In addition to the vehicle grant, recipients can also receive up to an additional \$2,000 to install a home charging station. Notably, grants awarded by CC4A are paid directly to the car dealership, the value of which is then deducted from the selling price of the new vehicle. However, applying for the CC4A requires several approvals and can take several months to complete. By requiring that recipients retire an older polluting vehicle in order to access the grants, this program addresses concerns about the decommissioning of internal combustion engine vehicles. However, it does leave out first-time buyers or those who otherwise do not have a qualifying vehicle to retire.

The CC4A program resembles previous scrap and replace programs (often called cash for clunkers) in that participants must retire an older vehicle to be eligible for an incentive for a cleaner replacement. Those programs have faced criticism, notably because many recipients who use the program would have replaced their vehicle within a short time regardless of whether they received the replacement grant.<sup>vii</sup> However, because the CC4A program targets low-income recipients — who are likely to drive an older vehicle longer — and requires the replacement vehicle to be much cleaner than those recipients would likely choose without the program, the CC4A program avoids much of that concern. Recent research on the implementation of the CC4A program (then called EFMP plus up) finds that a large percentage of the vehicles purchased under the program would not have otherwise been purchased without the subsidy, suggesting that the CC4A program is well designed to encourage clean vehicle adoption.<sup>viii</sup>

The CC4A program is a promising one that offers low- and moderate-income households substantial resources to replace a polluting personal car with a clean vehicle or other clean transportation options. However, complex application processes, confined geographic scope, funding shortfalls, and lack of awareness limit the program’s reach.

**Clean Vehicle Assistance Program.** The statewide Clean Vehicle Assistance Program (CVAP) and the regional Driving Clean Assistance Program (DCAP) are pilot programs funded by proceeds of the California Cap and Trade program (California Climate Investments). Both programs provide grants of up to \$5,000 for low-income (defined as below 400% of the federal poverty line; [Table 3]) purchasers of new or used hybrids, electric vehicles, or fuel cell electric vehicles. Program recipients are encouraged to obtain financing with partner credit providers. Once an applicant has secured authorization for the grant, they may shop for a vehicle at a participating dealership that will receive the grant directly, reducing the cost of the vehicle at the point of sale.

Partnering credit providers offer loans up to \$20,000 at 8% APR or less, though the program does not guarantee the recipient's loans. Recipients may secure loans from an unaffiliated lender (though grants are contingent on finance terms that are less than 12%) or purchase the vehicle with cash. Recipients are eligible for an additional \$2,000 incentive for charging infrastructure. Notably, unlike the CC4A program, recipients do not have to scrap a vehicle to be eligible for this program.

**Table 3: CVAP and DCAP income limits by household size**

Number of people	Maximum Annual Income	Number of people	Maximum Annual Income
1	\$51,040	5	\$122,172
2	\$68,960	6	\$140,640
3	\$86,880	7	\$158,560
4	\$104,800	8	\$176,480

The CVAP and DCAP pilots provide substantial assistance to low-income purchasers of clean vehicles. CVAP specifically fills a role as the only clean vehicle grant program for low-income purchasers that is available to residents statewide. However, the programs' budgets are small, meaning that only a small number of grants may be awarded.

### *Recommendations*

**Expand the scope of the CC4A program:** Although the current geographic scope covers much of California's population, the program should be expanded to encompass priority households and communities across the state.

**Provide adequate and stable funding:** Budget allocations that do not meet program demands lead to long waitlists that undermine the effectiveness of the program.

**Expand CVAP/DCAP budgets and consolidate with expanded CC4A program:** Having multiple overlapping programs can confuse those seeking clean vehicle grants, and redundant program administration increases overhead unnecessarily. A revised CC4A program could include lower-value grants for income-qualified buyers who are not scrapping an older polluting vehicle as a tier within its grant structure.

**Invest in awareness campaigns:** Priority communities often contain many hard-to-reach households who cannot benefit from the programs if they are unaware of their existence.

**Examine alternative fueling incentives:** Installing chargers is often impossible for renters, especially when they live in multifamily homes. Vouchers to cover charging at public charging stations could be offered instead of EVSE incentives.

**Examine alternative transportation vouchers:** Not all priority households are well served by transit. Vouchers to use on on-demand, zero-emission mobility as service options (as they become available) might offer more value to some households.

**Scale CVAP/DCAP financing partnerships to cover all CC4A recipients:** Financing partnerships could benefit all CC4A participants.

**Consider loosening financing criteria:** Not all potential program applicants are likely to be able to secure sub-12% auto loan terms. The provision that requires borrowers in the CVAP/DCAP programs to acquire loans at a less than 12% rate could exclude those with subprime credit from the program.

**Remove coverage for traditional hybrid vehicles:** Plug-in hybrids and used extended-range battery electric vehicles are cost-competitive with, and operate more cleanly than, traditional hybrids. Ongoing policy support should be reserved for the cleanest vehicle technologies.

### 3.3 Government-Backed Financing

Currently, policy support for clean vehicle purchases in California is focused on rebates and grants to buyers. However, low-interest, government-funded or guaranteed loans could play an important role in accelerating vehicle transitions. Clean vehicles (particularly EVs) are cheaper to fuel and maintain than gasoline cars, so their overall ownership costs can be lower even if the upfront cost of the vehicle is higher. Households who cannot access prime lending rates could see that cost of ownership advantage vanish due to high finance costs outweighing savings on fuel and maintenance.

#### *Recommendation*

**Investigate the feasibility of a clean vehicle loan program:** Investing risk-tolerant public capital toward making low- or no-interest loans for priority households might be a cost-effective alternative to public grants, particularly later in the transition period as costs for clean vehicles decline.

### 3.4 Refueling Infrastructure

Access to refueling infrastructure — both at home and publicly accessible — is a critical component to supporting clean vehicle adoption among priority communities. However, most priority neighborhoods have seen very little investment in local refueling infrastructure. Moreover, nonhome EV charging may have a larger role in priority communities, where residents often live in multifamily housing where installing home charging is not always an option. California has set high targets for infrastructure investment and has a number of programs dedicating public and ratepayer funds to expanding vehicle refueling across the state.

To date, hydrogen fuel cell electric vehicles have not enjoyed the same market acceptance as plug-in electric vehicles. However, developments in the hydrogen fuel cell heavy-duty sector could reduce cost and increase the availability of hydrogen fuel, which has been a key barrier to adoption. Notably, hydrogen has a refueling speed advantage over plug-in electric vehicles, which could prove beneficial in delivering clean transportation to those who live in apartments and other multifamily housing if hydrogen fueling becomes more cost-effective.

In this section, we highlight some of the larger infrastructure programs and make recommendations about how infrastructure investments can be made more equitable.

**Investor-Owned Utility Direct Install Programs.** The three major investor-owned utilities (PG&E, SCE, and SDG&E) have implemented California Public Utility Commission (CPUC) pilot programs that provided funding for the direct installation of charging infrastructure in multifamily housing and workplaces, and, in the case of SCE, other public spaces. Each pilot required that at least 10% of investments be directed to priority communities. In the coming years, each utility will scale those programs to full implementation. SCE secured approval for the second phase of its Charge Ready program in summer 2020, which dramatically increases funding and includes requirements that at least 50% of investment be situated in priority communities.

### *Recommendation*

**Ensure that a high proportion of investments occur in priority communities:** Future utility programs should follow the SCE program's lead by committing at least 30%–50% of ratepayer-funded infrastructure investments to priority communities. This would put such programs in harmony with the equity goals of California Clean Investments-funded projects.

**California Electric Vehicle Infrastructure Project.** The California Energy Commission (CEC) funds the California Electric Vehicle Infrastructure Project (CALeVIP) as part of its broader Clean Transportation Program. The CEC has committed \$124.9 million to the program to date. The program is meant to address gaps in charging availability by funding level 2 and direct current fast charger infrastructure. The program is distributed across regional incentive projects, with slightly varying qualifications and rebate amounts depending on the region. While reserve amounts vary across projects, most CALeVIP regions set aside at least 25% of their incentive budgets for priority communities. In addition, installations in priority communities are eligible for additional incentive funds (typically an additional \$500 for level 2 chargers and \$10,000 for DC fast chargers).

### *Recommendation*

**Expand planning grant programs for community electric vehicle infrastructure planning:** Priority communities may lack the resources to plan for EV infrastructure and compete for grant opportunities. A long-term funding program for planning grants and technical assistance to priority communities would build that capacity for communities that wish to develop local electric vehicle infrastructure plans and apply for state funding for infrastructure investments

## 3.5 Electricity as a Transportation Fuel

The expanded use of electricity as a transportation fuel brings new equity opportunities and challenges. Income-qualified recipients of electricity ratepayer assistance programs who charge an electric vehicle at home will in effect receive a transportation fuel subsidy, further increasing the affordability of clean transportation. However, priority households are also more likely to be at risk of service shut-offs due to account delinquency. For those who rely on electricity to fuel their vehicle, service interruptions will be an even larger disruption on their lives and could potentially impair their ability to travel to work and school or to access services.

The California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) programs offer discounted utility rates for income-qualified households. CARE provides a discount of 30%–35% to income-qualified customers and those that are enrolled in public assistance programs. FERA offers an 18% discount on utility rates for low-income households whose income slightly exceeds the CARE income caps.

### *Recommendation*

**Minimize electric service disconnections for priority households:** Many low-income households suffer service interruptions or disconnections due to nonpayment. These disruptions have more damaging implications when households rely on electricity to fuel their vehicle.

## 3.6 Programs That Facilitate Community Outreach

Due to the recency of clean vehicle technologies, public awareness of the availability and benefits of clean vehicles is low. Awareness of programs to assist low-income households in accessing clean vehicles is even less common. Thus, outreach programs are necessary to connect priority households with the resources needed to encourage widespread adoption of clean vehicles in priority communities. **Because priority households are often difficult to reach and may face trust, language, and digital access barriers, community-based organizations (CBOs) are a critical partner in facilitating outreach.**

In recognition of this need, California has implemented the Access Clean California program, which connects California residents with clean energy and transportation equity programs, such as grants and rebates for new and used hybrid and electric vehicles, transit vouchers, and shared mobility. Through their benefits finder, Access Clean California helps individuals find and apply to the programs they are eligible for. To make the program accessible to all, Access Clean California partners with CBOs across the state to reach lower-income and disadvantaged communities.

Private funding has also stepped in to fill gaps in outreach to priority communities. For example, the Liberty Hill Foundation-backed emPOWER program is an LA County initiative that funds eight CBOs to connect low-income and working-class communities of color to more than 60 programs focused on reducing demand for fossil fuels and generating household money- and energy-savings. Among the programs that eligible participants are connected with are those offering clean and affordable energy and transportation, such as the CVRP. Through the emPOWER program, CBOs help households navigate the numerous incentive and assistance programs and assist with enrollment in entitlement and discretionary programs.

#### **4. Expanding Community-Centered Investments in Active Transportation, Shared Mobility, Mobility as a Service, and E-transit.**

Active and shared transportation modes are less expensive and therefore more economically accessible than private automobile ownership for low-income households. It is no surprise that households in priority communities are more likely to be dependent on less expensive shared transportation modes. While public mass transit has historically played the primary role in shared transportation, new shared and transportation modes, such as car shares, vanpools, and ride-on-demand services (automated or human driven), can be instrumental in increasing first-mile access to transit or destinations and trip types that are not well served by existing transit operations. However, extant research shows that such shared modes have not adequately served priority populations.<sup>ix, x, xi</sup> Ensuring that these new modes are accessible to priority households and provided by clean vehicle technologies combines the benefits of expanded transportation access with the environmental and health benefits of clean transportation.

Moreover, despite the environmental, social, and health benefits that active transportation can provide for priority households, there are additional barriers to active transportation in low-income communities due to historic and continuing underinvestment in bike and pedestrian infrastructure in those areas.<sup>xii, xiii</sup> In addition to enabling safe pedestrian and cycling transportation for community members, low-speed transit infrastructure like protected bike lanes or dedicated bike paths also make shared electric micro-mobility options like e-bikes and scooters a safer and more viable transportation mode.

#### **The increasing availability of clean, shared, and active mobility options in priority communities is an important component of enhancing equitable access to clean transportation in California.**

However, such programs face their own equity challenges. Despite the lower cost of shared transportation modes, cost can still be a barrier for priority households. Moreover, digital divides and lack of access to banking services can make accessing technology-dependent new mobility modes difficult or impossible. Active and shared transportation modes also often exclude individuals with disabilities. Last, these programs must be implemented at relatively small scales to reflect community transportation needs that differ depending on locational attributes. However, priority communities often lack the resources to pursue the planning and outreach process necessary to realize those projects.

## 4.1 Examples of Active and Shared-mobility Pilots and Programs in California

Active and shared electric mobility pilots have successfully brought new clean mobility options to priority communities across California. Examples of such programs include:

**Electric Car Shares:** Car shares provide users with access to a vehicle that they can use just as they would a private vehicle, without the expense of long-term vehicle ownership. Cars are rented on an hourly or daily basis, usually from a number of set locations or docks. Car share members make a reservation to use a vehicle, and the car share operator handles vehicle maintenance, repair, and insurance. Fully electric car share fleets and targeted community partnership-based programs in both urban and rural locations are growing in popularity. Examples include:

- Our Community Car Share Sacramento, which provides free electric car shares for residents of nine public housing locations. Members are also given a \$100/month transit incentive card intended to help with first and last mile connections that can be used for ride hail, public transit, and bike shares.
- MioCar, San Joaquin Valley is a rural electric car share program, with a one-time membership cost of \$20 and rental costs of \$4 per hour or \$35 per day.
- BlueLA is a Los Angeles city-run electric car sharing program located in targeted low-income neighborhoods. It provides discounted membership for very low-income households and allows drivers to return cars to a different dock than they picked them up from for increased flexibility and cost savings.

**Vanpools:** Vanpools allow groups of employees to drive in one vehicle together to get to a shared job location, with the goal of increasing accessibility in areas without adequate transit and decreasing single-passenger vehicle use. A growing number of vanpools are starting to add electric vehicles to their fleets. Examples include:

- CalVans Agricultural Worker Vanpools, which have received California Climate Investments funding to acquire hybrid-electric vans for vanpools that serve agricultural worksites;
- Valley Air ZEV Mobility Green Commuter vanpools, which supply California Climate Investments-funded electric vehicles for use in San Joaquin Valley.

**Mobility Hubs:** Mobility hubs are central locations that provide connections between multiple forms of transit and usually also act as transportation resource centers. Examples include:

- The Green Tech Net Zero Transportation Hub in Sacramento is funded by the California Air Resources Board and supports an electric shuttle bus, electric vehicle charging, e-bikes, and scooters.
- Mobility Hubs in Affordable Housing Pilot Project, which serves three affordable housing sites in the San Francisco Bay area. It provides clean mobility options tailored to resident needs and offers services such as EV car shares, e-bike shares, and transit passes.

**Micro-mobility:** Micro-mobility services provide shared low-speed vehicles such as e-bikes and electric scooters. Vehicles may be available at specific locations or dockless, meaning they may be picked up and left anywhere within the service area. Examples include:

- Bay Wheels: Bike Share for All provides income-qualified residents low-cost access to shared bikes in the San Francisco Bay Area.
- Lime Access offers low-cost access for income-qualified customers to Lime Scooters and Jump bikes wherever those services are available in California.

**E-bike Incentives:** Electric bicycles make bicycling more accessible to people of varying skill and health levels and have relatively low operating costs, making them attractive mobility options. Examples of incentive programs designed to increase e-bike ownership among priority communities include:

- The Contra Costa Electric Bicycle Rebate Program provides \$300 rebates for the purchase of an e-bike to income-qualified residents of Contra Costa County.
- The Clean Cars for All program in the Bay Area offers rebates for electric bicycles to program recipients instead of a rebate for a replacement electric vehicle.

## 4.2 Statewide Grant Programs

While pilot programs have provided access to clean shared mobility for communities across California, their reach is limited. In recognition of the need to systematically scale opportunities for clean mobility in all priority communities, California has recently introduced two programs — Clean Mobility Options (CMO) and Sustainable Transportation Equity Project (STEP) —designed to further develop community-scale, clean mobility programs in priority communities. Both programs are funded by California Clean Investments, which disburses funds from California’s Cap and Trade program auctions.

**Clean Mobility Options:** CMO provides funding to pilot innovative shared and on-demand clean transportation projects in California’s historically underserved communities. Local governments, nonprofits, and Tribal Nations may apply for funding to support Community Transportation Needs Assessments or operate Clean Mobility Projects. Eligible projects include zero-emission car sharing, carpooling/vanpooling, bike sharing/scooter sharing, innovative transit services, and ride-on-demand services. In addition to funding, recipients also receive technical assistance.

All projects must meet one of the following geographic criteria: (1) Located in an SB 535 Disadvantaged Community (2) Located on tribal land or tribal property or (3) Serve an affordable housing facility in a low-income community. Before applying for a Clean Mobility Project, applicants must have studied transportation needs, which can be funded through the CMO program or be self-funded. CMO funds can be used for outreach and projects are required to include a community outreach plan. Up to 10% of funding can be used for complementary improvements, such as subsidizing connected transit rides or subsidies for homeless individuals. Within the amount designated for specific vehicles, additional allowances are made for ADA-compliant vehicles.

**Sustainable Transportation Equity Project:** STEP is a community-based approach to address barriers to clean transportation, reduce greenhouse gas emissions, and increase access to destinations without personal vehicles. Planning and Capacity Building Grants are available to assess transportation needs, build community support, and prepare for implementing clean transportation projects. Implementation Grants are available for projects such as zero-emission buses, new vanpool services, and bike and pedestrian paths.

Community-based organizations, federally recognized tribes, and local governments are eligible to apply, with priority put on priority or low-income communities. Both Planning and Implementation Grants require that at least 50% of the geographic project area be located in identified priority communities. For Implementation Grants, at least 50% of the budget must fund projects at least partially within the boundaries of the priority community.

STEP emphasizes the role of community engagement, including requiring a community vision, encouraging resident-led decision-making processes, and requiring partnerships between lead applicants and community organizations. Community engagement participants are required to receive appropriate incentives for their time and expertise. The program focuses on connecting projects to workforce development, anti-displacement, affordable housing, and climate adaptation and resiliency efforts when appropriate.

## Recommendations<sup>1</sup>

**Continue support for CMO and STEP programs:** These programs should continue to allocate investments on a competitive demand-driven process in which communities identify benefits through two-phase processes supported by planning and then implementation grants.

**Active and shared-mobility planning processes should be participatory and prioritize the voices of residents** of color, people living with disabilities, elders, and youth. Targeted outreach for programs should be done in partnership with compensated community-based organizations or paid residents. Pilot infrastructure projects should be carefully considered to determine how they can be done with an in-depth community engagement process.

**Shared-mobility service areas should prioritize neighborhoods** with the least access to transportation, should be rebalanced equitably and should prioritize connections to public transit. Investment in active transportation infrastructure should also follow these guidelines.

**Barriers to accessing shared mobility should be lowered** by efforts such as providing low-income discounts, providing payment options that do not require a bank account or smartphone, removing license requirements for micro-mobility, and ensuring communications and support services are available in languages used by the target communities.

Since many shared mobility programs are services run by private companies in contracts with local governments, many of these recommendations can be incorporated into RFPs and contracts. Further, these recommendations can be incorporated into active transportation infrastructure grants.

## 5. Heavy-duty Freight and Public and Private Urban Fleets

Passenger-centric travel in private or shared modes is only one part of the broader transportation system. Public and commercial transportation, such as public service and transit fleets, freight and goods movement, and other commercial operations generate significant vehicle traffic. Because of the common use of heavier vehicles among these modes, the transition to clean technology for these vehicles is particularly important for reducing pollution burdens.

### 5.1 Heavy-duty Freight

**Heavy freight operations have long been recognized as a priority target for equity-informed clean vehicle policy.** These freight operations use the heaviest and most polluting class 8 trucks and tend to have concentrated operations near intermodal facilities like maritime ports, train yards, and warehouse complexes, and along heavily trafficked freight corridors between freight facilities. Freight facilities and heavy freight corridors are almost universally located within (or close to) priority communities and are responsible for the large and disproportionate pollution burdens that they face. The unequal burden that low-income communities face from freight makes transitioning freight operations to clean, zero-emissions vehicle technologies a high priority.

**Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program:** California's primary incentive program that funds zero-emission medium and heavy-duty vehicles is the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program (HVIP). HVIP is meant to support the commercialization of emerging clean vehicle technologies and provides generous vouchers to support the purchase of eligible vehicles, including zero-emission trucks and buses. The program is funded by California Climate Investments and has a budget of

<sup>1</sup> Further details on some of these recommendations can be found at:

<https://www.cbfcinc.org/publication/new-routes-to-equity-the-future-of-transportation-in-the-black-community/>  
<https://betterbikeshare.org/wp-content/uploads/2020/08/2020bikesharesnapshot.pdf>  
<http://greenlining.org/wp-content/uploads/2015/01/Electric-Carsharing-in-Underserved-Communities-spreads.pdf>  
<https://www.bloomberg.com/news/articles/2020-06-08/-safe-streets-are-not-safe-for-black-lives>

\$25 million in the 2021-2022 fiscal year. The HVIP program is available to any commercial vehicle users in California, including, but not limited to municipalities, small businesses, and school districts. Recipients that purchase vehicles that will be domiciled within priority communities are eligible for additional rebate amounts. It should be noted that the HVIP program is not limited to freight vehicles and can be used to purchase vehicles for other fleet applications mentioned in the following sections.

### **Recommendation**

*Target incentives to transition vehicles most likely to operate heavily in priority communities: Rapid transition of freight vehicles is likely to require purchase incentives (like those applied to light-duty vehicles) to support adoption. Any new incentive programs should prioritize those vehicles that are used in operations that have the heaviest impact on priority communities.*

## **5.2 Opportunities to Benefit Priority Communities by Leveraging ZEV integration in Urban Public and Private Fleets**

While freight operations are clearly a priority target, fleet vehicles that operate within or near residential areas — such as those delivering goods to businesses and households, providing transportation, or public services — offer an underappreciated opportunity to deliver early benefits of the clean transportation transition directly to priority communities. Unlike heavy freight, where clean vehicle technologies still require significant advancements to be fully viable in most applications, technology solutions for vehicles that serve most of the fleets discussed in this section are either already widely available or close to full-scale commercialization.

The transition to clean transportation in this space has already begun. While freight operations are already concentrated in areas with existing pollution burdens making virtually any progress an improvement in equity, the fleets discussed in this section operate across all communities. Left to market forces and other decision-making processes that do not specifically advance equity goals, the initial rollout of these vehicles may deliver limited benefits for priority communities. Moreover, they might even exacerbate existing environmental inequities if systematically deployed in higher-income, less polluted areas. Ensuring that early deployments of clean fleet vehicles are targeted to benefit priority communities has the potential to reduce inequities by concentrating the benefits of early clean vehicle adoption in areas with historically high pollution burdens.

We focus on five major types of fleets that operate chiefly across urban and suburban areas throughout the state:

## **5.3 Publicly Owned Fleets**

**Public fleet vehicles such as transit buses, refuse trucks, and utility vehicles offer a clear opportunity for implementing equity objectives in vehicle deployment decisions because those decisions rest entirely with public officials.** The public sector maintains fleets of vehicles ranging from light-duty automobiles such as police vehicles to medium-duty work and utility trucks, to heavy-duty transit buses, school buses, sanitation, and street services vehicles. These public vehicles often work on defined routes or within defined service areas making targeted deployment to priority communities a relatively straightforward proposition.

**School Bus Replacement Program:** The California Energy Commission's School Bus Replacement Program is an early example of a program that is embracing a strategy of targeting early electrification of public fleet vehicles in low-income priority communities. The program is designed to assist school districts in replacing old polluting diesel buses with primarily zero-emission electric alternatives and prioritizes the replacement of school buses in priority communities or where the majority of students are from low-income families. By transitioning buses in priority communities first, this program ensures that students and residents in communities with historically high pollution burdens can realize the early benefits of clean school bus fleets.

**Innovative Clean Transit:** The transition of California’s transit buses to zero-emission alternatives is well underway, with many electric buses already in service. To further drive adoption, the California Air Resources Board has adopted the Innovative Clean Transit rule, a regulation that requires the transition to zero-emissions buses by 2040. As part of the rule, transit agencies are required to submit a transition plan that includes a timeline for when transit agencies will convert buses within priority communities. While the rule does not specifically require that agencies prioritize earlier rollouts in target communities, it is a promising step to require that determining the timing for priority communities be part of the planning process.

**Low Carbon Transit Operations Program:** Transit agencies serving priority communities may receive funding for electric transit buses from the California Department of Transportation’s (Caltrans) LCTOP program, which prioritizes and provides technical and capital assistance to transit agencies in priority communities. As part of the California Climate Investments (CCI), LCTOP receives 5% of annual auction proceeds, with total funding since its inception amounting to \$555.5 million and \$333.2 million implemented. With priority given to transit agencies in local disadvantaged communities, 50% of all funding received by projects through LCTOP is required to benefit disadvantaged communities.

### *Recommendations*

**Plan for early clean vehicle transitions in priority communities:** Public fleet operators who are planning for clean vehicle transitions should include equity goals with targeted early deployment in priority communities within their jurisdictions.

**Include equity goals in funding programs:** Following the School Bus Replacement Program’s lead, any state funding for public fleet transitions should allocate funding first to priority communities.

## **5.4 Private Fleets With Public Contracts or Licenses**

Many private fleets operate with public contracts or licenses. Governments that contract or license those fleets can influence how those fleets make the transition to clean vehicle technologies. These fleets include everything from car sharing fleets and paratransit services to contracted waste and recycling collection fleets. Like with publicly owned fleets, these fleets also typically serve defined areas or routes that make them well suited for targeted deployment in priority communities.

### *Recommendation*

**Include provisions for targeted rollouts of clean vehicles in contracts and licenses:** Governments contracting with vendors or licensing local operations should include requirements for clean vehicle transitions that include equity-centered deployment schedules.

## **5.5 Parcel Delivery Fleets**

With the ever-increasing rise of e-commerce, parcel deliveries are growing rapidly, putting more delivery vehicles from companies such as FedEx, UPS, and Amazon on the road across California. Parcel delivery vehicles encompass mostly cargo and step vans, which are prime candidates for electrification. In fact, all of the major parcel carriers are planning for transitions to clean vehicle fleets. While parcel delivery companies operate with a mixture of company-owned and franchised vehicles, those vehicles are usually identified by brand, meaning that those companies have a public relations incentive to adopt clean vehicle technology and participate in public-private partnerships that target early deployment in priority communities.

### ***Recommendation***

***Develop public-private partnerships with parcel delivery fleets:*** Local and regional governments should pursue public-private partnerships with parcel delivery operators to encourage voluntary commitments by parcel companies to target early deployment of clean vehicles to priority communities.

## **5.6 Transportation Network and Courier Company Fleets**

Transport network and courier companies field fleets of light-duty vehicles to provide on-demand passenger travel and deliveries of prepared food and groceries. Nearly all drivers for these services act as independent contractors who make individual decisions about vehicle choice and, to some extent, where they work. This decentralization makes the targeted deployment of specific vehicles essentially impossible. However, drivers for these services are deployed by algorithm, which could be tuned to allocate clean vehicles operating for the service to priority communities.

### ***Recommendation***

***Leverage local authority to encourage targeted deployment of clean vehicles:*** Local governments should examine whether their authority over various levers like curb space management can be used to incentivize equity-driven deployment.

## **5.7 Retail and Food Service Delivery Fleets**

Retailers, grocers, convenience stores, restaurants, and other businesses generate significant amounts of traffic from vendors and distributors that deliver products and materials. Depending on the type of product and the size of the retailer, deliveries are made with vehicles as small as a cargo van or as big as a class 8 tractor. The fragmentation of different delivery operators makes targeted deployment difficult to coordinate. However, larger companies like regional grocery chains or national retailers have significant distribution footprints and public relations incentives to enter into public-private partnerships that promote the equitable transition to clean transportation.

### ***Recommendation***

***Develop public-private partnerships with large regional distributors:*** Local and regional governments should pursue public-private partnerships with larger distributors to encourage voluntary commitments to target early deployment of clean vehicles to priority communities.

## **6. Conclusion**

As California transitions to a zero-emission transportation system, it needs a robust and multifaceted agenda for equity-centered clean transportation policies. Our recommendations build upon and synthesize research and advocacy by a variety of stakeholders working across passenger vehicles, shared mobility, active transportation, medium- and heavy-duty vehicles as well as public and private fleets. Pursuing this agenda of recommendations elevates and builds equity into the next generation of California's clean transportation policies. Doing so will more equitably share the health and financial benefits of these policies with all Californians. This will help address historical and systemic inequities that have disadvantaged low-income people and people of color. They also represent the only ways to achieve the transition of all Californians to zero-emission travel modes, without which the state cannot achieve its climate and air quality goals.

- i Hricko, Andrea, Glovioell Rowland, Sandrah Eckel, Angelo Logan, Maryam Taher, and John Wilson. "Global Trade, Local Impacts: Lessons from California on Health Impacts and Environmental Justice Concerns for Residents Living near Freight Rail Yards." *International Journal of Environmental Research and Public Health* 11, no. 2 (2014): 1914–41. <https://doi.org/10.3390/ijerph110201914>.
- ii Yuan, Quan. "Does context matter in environmental justice patterns? Evidence on warehousing location from four metro areas in California." *Land Use Policy* 82 (2019): 328–38. <https://doi.org/10.1016/j.landusepol.2018.12.011>.
- iii Reichmuth, David. *Inequitable Exposure to Air Pollution from Vehicles in California*. Cambridge, MA: Union of Concerned Scientists, 2019. <https://www.ucsusa.org/resources/inequitable-exposure-air-pollution-vehicles-california-2019>
- iv Muehlegger, E. J., & Rapson, D. S. (2018). *Subsidizing Mass Adoption of Electric Vehicles: Quasi-Experimental Evidence from California*. UC Office of the President: University of California Institute of Transportation Studies. Retrieved from <https://escholarship.org/uc/item/00j7f0t8>
- v DeShazo, J.R., Tamara L. Sheldon, and Richard T. Carson. "Designing Policy Incentives for Cleaner Technologies: Lessons from California's Plug-in Electric Vehicle Rebate Program." *Journal of Environmental Economics and Management*. Academic Press, February 7, 2017. <https://www.sciencedirect.com/science/article/abs/pii/S0095069617300049>
- vi Rubin, Dana and Evelyne St-Louis. 2016. "Evaluating the Economic and Social Implications of Participation in Clean Vehicle Rebate Programs: Who's In, Who's Out?" *Journal of the Transportation Research Board* 2598(2598):67-74. <https://journals.sagepub.com/doi/abs/10.3141/2598-08>
- vii Li, Shanjun, Joshua Linn, and Elisheba Spiller. "Evaluating 'Cash-for-Clunkers': Program effects on auto sales and the environment." *Journal of Environmental Economics and Management* 65, no. 2 (2013): 175–93. <https://doi.org/10.1016/j.jeem.2012.07.004>.
- viii Sheldon, Tamara L., and Rubal Dua. "Assessing the effectiveness of California's 'Replace Your Ride.'" *Energy Policy* 132 (2019): 318–23. <https://doi.org/10.1016/j.enpol.2019.05.023>.
- ix Junfeng Jiao & Fangru Wang (2021) Shared mobility and transit-dependent population: A new equity opportunity or issue?, *International Journal of Sustainable Transportation*, 15:4, 294-305, DOI: 10.1080/15568318.2020.1747578 <https://www.tandfonline.com/doi/abs/10.1080/15568318.2020.1747578?journalCode=ujst20>
- x McNeil, N., Dill, J., MacArthur, J., Broach, J., and Howland, S. *Breaking Barriers to Bike Share: Insights from Residents of Traditionally Underserved Neighborhoods*. NITC-RR-884b. Portland, OR: Transportation Research and Education Center (TREC), 2017. <https://doi.org/10.15760/trec.176>
- xi Dill, Jennifer, and Nathan McNeil. "Are Shared Vehicles Shared by All? A Review of Equity and Vehicle Sharing." *Journal of Planning Literature* 36, no. 1 (February 2021): 5–30. <https://doi.org/10.1177/0885412220966732>.
- xii Braun, Lindsay Maurer. "Geographies of (Dis)Advantage in Walking and Cycling: Perspectives on Equity and Social Justice in Planning for Active Transportation in U.S. Cities." Order No. 10790674, The University of North Carolina at Chapel Hill, 2018. <https://cdr.lib.unc.edu/concern/dissertations/7m01bn318>
- xiii Barajas, Jesus M. 2018. "Not all crashes are created equal: Associations between the built environment and disparities in bicycle collisions." *Journal of Transport and Land Use* 11 (1). <https://doi.org/10.5198/jtlu.2018.1145>