



No Californian Left Behind: Clean and affordable transportation options for all through vehicle replacement

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Next Generation

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Executive Summary

In recent years, California has secured its place as a national leader in advancing ambitious and forward-thinking transportation policies, including legislation for more efficient vehicle standards (Advanced Clean Cars); a major effort to bring down the carbon intensity of fuels (the Low Carbon Fuel Standard); and a state-wide focus on smart growth and transit-oriented development (Sustainable Communities legislation). These policies, along with complementary funding and incentives towards more efficient new vehicles, electric vehicles, and public transportation, are on track to significantly benefit California's air quality, reduce carbon emissions, and continue the state's leadership in energy and transit technology innovation.

As California focuses in on new, high-tech, best-in-class transportation strategies, however, it risks leaving behind an important subset of households and communities who could most benefit from the transition to a cleaner, cheaper, and more sustainable transportation future. Hundreds of thousands of low-income Californians, particularly those in rural parts of the state, live with some of the worst air pollution in the U.S. They also often drive relatively old, inefficient, unsafe, and highly polluting vehicles, and struggle to cover the costs of their basic transportation needs. For these Californians, getting into a relatively more efficient vehicle is more realistic than getting into a new electric vehicle, which is expensive, or onto public transit, which is often ineffective in serving rural and non-urban households.

A snapshot of the types of vehicles found among this subset of Californians tells a compelling story: typically dating from the mid-1990s or earlier, these cars and light trucks are often unable to pass emissions tests. Though they likely represent only 10–15% of all vehicles in the state, the highest emitters are responsible for more than half of the smog generated by passenger vehicles statewide. Many of the households that own these vehicles are low-income and located in car-dependent areas like the San Joaquin Valley, a region that suffers from some of the worst air pollution in the country.

The state has recognized this problem and attempted to address it by focusing on vehicle repair and retirement programs. However, by merely repairing and retiring vehicles and not replacing them with cleaner, more efficient ones, existing programs do not maximize long-term air benefits or lessen the financial burden these inefficient vehicles currently place on low-income Californians. To help address this issue, Senate Bill 459, signed by Governor Brown in September 2013, directs the California Air Resources Board (ARB) to rewrite the guidelines of California's Enhanced Fleet Modernization Program (EFMP). This program has been in place since 2010, and is designed to allow residents who own the highest-emitting vehicles in the state to retire and/or replace them.

With the right modifications and improvements, this program has the potential to help car-dependent Californians reduce their household transportation costs and improve their local air quality. It can also enable a new set of California residents to actively participate in achieving the state's long-term environmental and transportation goals.

In this report, we discuss the contribution made by these highly polluting vehicles to the state's air quality problems; we also discuss the serious drag that driving these vehicles can have on household budgets. After outlining these problems, we discuss the state's current policies aimed at promoting vehicle retirement and replacement and offer some recommendations for improving those programs. Specifically, we recommend the following to maximize the impact of the current Enhanced Fleet Modernization Program (EFMP):

- Set more aggressive vehicle efficiency baselines for replacement vehicles, helping households reduce fuel costs and emissions.
- Learn from the successes and failures of other replacement and retirement programs, in addition to California's own, in order to adopt best practices from around the U.S. and globe.

- Re-design EFMP implementation and outreach to garner greater public participation in the program.
- Commission research to better understand California's unregistered vehicle population, so that these vehicles can be targeted in any retirement and replacement program.
- Expand the impact of the existing program budget by exploring low-income auto loan opportunities.
- Once the foundation for a stronger and more effective retirement and replacement program is in place, consider funneling additional public dollars to the program.

California is already a leader in advanced and high-tech transportation and transit solutions. It is time we also became a leader in pragmatic solutions for a population that is sometimes left behind in these discussions: non-urban, low-income, car-dependent households. Bringing solutions to these communities will have a huge impact on our current air quality and family budgets; it will also widen the circle of Californians who play an active part in moving this state toward a cleaner, less oil-dependent future.

Introduction: An All-Inclusive Transportation Future

California is in the midst of a great energy transformation. The California Global Warming Solutions Act, or AB 32, requires that the state achieve significant reductions in greenhouse gas emissions by 2020, and enacts far-reaching policies to achieve that goal. The state is already making great strides in the electricity sector: renewables now provide 23 percent of California's electric power, and the cost of rooftop solar continues to drop.¹

But the state's transportation sector—responsible for 40 percent of California's overall greenhouse gas emissions and over 70 percent of smog-forming emissions—is still 96 percent dependent on petroleum.² This lack of transportation diversity impedes California's progress toward its climate goals, damages public health through vehicle pollution, and puts our pocketbooks at the mercy of volatile gas prices.

Statewide progress toward a cleaner transportation future is already underway, as evidenced by legislation for more efficient vehicle standards (Advanced Clean Cars), a major effort to bring down the carbon intensity of fuels (the Low Carbon Fuel Standard), and a focus on smart growth and transit-oriented development (Sustainable Communities legislation). Furthermore, in November 2013 a coalition of environmental, public health, science, and community groups launched the Charge Ahead California campaign, which aims to cut greenhouse gas emissions, reduce dependency on oil, and improve air quality by putting one million electric vehicles (EVs) on the road within the next ten years.³

For all households, the fuel savings offered by EVs can quickly make up for their up-front cost. Research also suggests that because about 95 percent of trips made in the U.S. are less than thirty miles, the range of most EVs currently on the market could cover most of our driving needs.⁴ However, these vehicles are not necessarily a realistic option for all California consumers, largely because a robust and affordable secondary market has yet to make them an option for low-income Californians with poor credit and little cash on hand.

Even as the vehicle fleet turns over and cleaner cars are phased into the California secondary marketplace, it is critical that our state vehicle policies also address those cars still on the road, particularly the outdated, inefficient, and high emitting vehicles owned by Californians with few choices when it comes to the cars they own or distances they drive.

In light of these challenges, the state needs to emphasize solutions that will bring the benefits of clean air and reduced fuel dependency to low-income* and rural Californians. While it may not yet be feasible for these groups to take full advantage of zero-emission transportation technology, it is both possible and critical to put clean, safe, and highly efficient solutions within reach for the considerable number of Californians who are still stuck in a previous generation of relatively old, inefficient, and dirty vehicles. Though a five-year-old economy car is not a cutting-edge transportation solution, it is still a choice that has the potential to improve environmental, economic, and safety outcomes, and one that should be within reach of working California families.

The California legislature's recent passage of Senate Bill 459, which directs the California Air Resources Board to make comprehensive updates to the state's Enhanced Fleet Modernization Program (EFMP), represents a key opportunity to build upon and expand the reach of the state's existing efforts to retire and replace high-emitting vehicles.⁵ Giving the owners of California's least reliable, least efficient, and highest-polluting vehicles better and more efficient options speaks not only to the state's overall energy and climate goals, but also to its deep commitment to providing a path toward those goals that is equitable and accessible to all Californians.

*Except where otherwise noted, this report defines "low-income" as households earning 225% or less of the federal poverty level—the same definition the California Air Resources Board uses in its Enhanced Fleet Modernization Program guidelines.

Background: California's Aging Fleet

Air pollution is a major problem in California. According to the American Lung Association, five of the ten most ozone-polluted cities in the country are located in California's Central Valley; Los Angeles has the dubious honor of topping the list.⁶ The U.S. EPA designates the San Joaquin Valley and South Coast air districts—the southern portion of the Central Valley and the greater Los Angeles area, depicted in Figure 1—as the only two areas nationwide that are in “extreme non-attainment” of federal air quality standards, ranking them as the most polluted in the United States.⁷

Transportation is the largest source of smog-forming emissions in California, and light-duty vehicles produce roughly a quarter of smog-forming emissions from transportation.⁸ The worst culprits come from a small subset of the oldest and dirtiest automobiles. While there is no universal set of criteria to identify these worst-offending vehicles, the general trends are stark. As shown by Figure 2, vehicles manufactured in the mid-1990s or earlier pollute at rates many times those of late-model vehicles. According to ARB, a typical 20-year-old vehicle emits 30 times more smog-forming pollutants per mile than a 5-year-old vehicle.⁹ This disparity is rooted in the fact that older vehicles lack the benefit of recent technological and regulatory advancements, and often include emissions control components that have deteriorated over time.¹⁰ Emissions control systems frequently do not last as long as a car's other parts, and the failure of these systems compounds the already high emissions impact of older vehicles.¹¹

California's temperate climate compounds this problem by increasing the average vehicle's lifespan, and ARB estimates that our state is home to five times more cars over 20 years old than the national average.¹² At present, at least two million cars in California—about 9 percent of the state's 23 million light- and medium-duty vehicles—are over 20 years old.¹³

Added together, these relatively old and highly polluting vehicles have a huge negative impact on California's air quality. In 2011, the nine percent of the fleet that was model year 1992 or older produced a full 40 percent of smog-forming emissions from passenger vehicles.¹⁴ Furthermore, according to state and local agency estimates, a mere 10 to 15 percent of California's motor vehicles—the subset known as “gross polluters”—are responsible for more than half of light duty vehicle smog in California.¹⁵ Though it is hard to know exactly how many vehicles fall into the category of highest-emitters, the above numbers suggest that perhaps 2–3.5 million of California's 23 million-light and medium-duty vehicles fit the description.¹⁶



Figure 1

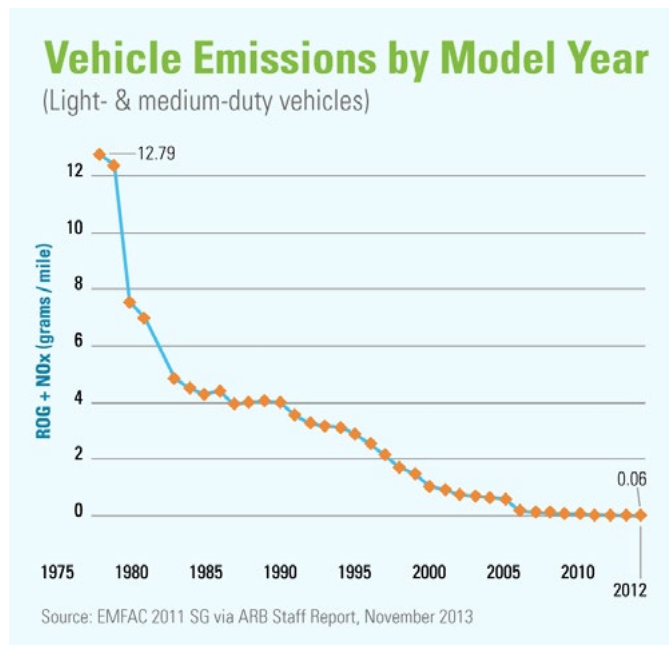


Figure 2

Unregistered Vehicles

Even these figures, however, may not accurately reflect the true extent and shape of the high-emitter problem. Emerging evidence suggests that unregistered vehicles—a population that is inherently difficult to monitor—could push the number of problem vehicles and their contribution to emissions even higher than state agencies’ existing estimates.

A study commissioned by ARB in 2004 estimates that between three and eight percent of all vehicles

statewide are unregistered at any given point in time.¹⁷ However, even this count may underestimate the scale of the unregistered vehicle problem in rural areas where vehicle registration is most difficult to monitor and enforce.

A sampling of vehicle registration rates at “Tune In & Tune Up” events hosted by Valley Clean Air Now (Valley CAN), a nonprofit organization that helps drivers in the San Joaquin Valley repair their vehicles to obtain smog certificates, suggests that unregistered vehicles make up a significant number of the Valley’s highest emitters. Valley CAN’s data show that roughly 40 percent of vehicles brought in by drivers seeking assistance at events in 2012 and 2013 were unregistered.¹⁸ Tom Knox, Valley CAN’s Executive Director, recognizes this as a widespread problem. “Due to the San Joaquin Valley’s demographics and its relatively lightly patrolled roads,” says Knox, “we see a steady stream of unregistered cars both in urban and rural areas. This is likely true of most of the less-visible low-income areas in California that lie outside of the heavily urbanized cores.” According to data analyzed by Valley CAN, eight million vehicles in California have fallen out of registration over the past 15 years, a large proportion of those after failing smog checks.¹⁹ While many of these vehicles are likely no longer on the road, this figure still provides some sense of the significant potential scale of the unregistered vehicle problem.

More Than an Environmental Hazard

California’s oldest and dirtiest cars are not just an environmental problem: they are a drain on the family budgets of millions of Californians. According to advocacy and consumer groups, many of these unreliable and high-emitting vehicles belong to low-income households.²⁰ This makes intuitive sense since many low-income families lack the cash or the credit history to purchase new or late-model used vehicles, and some—particularly in the state’s more rural counties—are too dependent on their vehicles to easily retire them. In addition, as will be detailed in the next section, older cars carry high fuel and maintenance

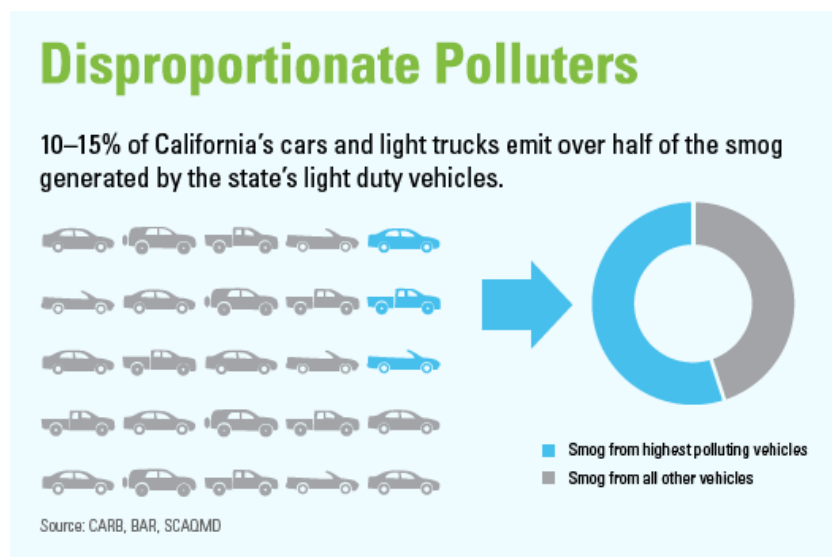


Figure 3

costs, and are more likely than newer vehicles to be sold by unethical car dealers using predatory lending practices.

In short, those California households that struggle most financially are also forced to depend on the vehicles that are the least dependable and most expensive to fuel and maintain. After observing large volumes of unregistered vehicles, Valley CAN also notes that smog checks can have the unintended side effect of forcing some low-income owners of high-emitting vehicles to allow their vehicles to fall out of registration. Because vehicles must pass a smog check in order to remain registered, many vehicle owners who fail smog checks and are unable to afford repairs simply continue to drive their now unregistered vehicles.

Unsafe at Any Speed

Along with their negative environmental and budget impacts, older vehicles also drastically underperform compared to newer vehicles in another key area: safety. Drivers of older model year vehicles are significantly more likely to die in the event of an accident than drivers of newer vehicles. The likelihood of severe injury in an accident progressively increases with vehicle age, and a driver of a model year 1985-1992 vehicle is 76 percent more likely to suffer fatal injuries in an accident compared to a driver of a vehicle made in 2008-2012.²¹ The Highway Loss Data Institute estimates that advances in automobile safety typically take three decades to spread throughout the entire fleet. Even a feature as basic as frontal airbags will not reach 95 percent penetration of the registered fleet until 2016, and less than half of registered vehicles in 2010 had side airbags.²² Cycling out the oldest, least safe vehicles in California's fleet could save many lives.

Car Dependency: A Reality for Many Californians

Despite the high economic and environmental costs of owning a vehicle, the overwhelming majority of Californians still use cars to get to work. According to the 2012 American Community Survey, a full 77 percent of Californian commuters drive alone to work, and 12 percent more carpool.²³

Even in the Bay Area, home to one of the best multimodal transportation systems in the U.S., only 16 percent of commuters take public transportation to work, while 76 percent drive alone or carpool. This trend remains fairly constant even for commuters making under \$25,000,* with 17 percent taking transit and 72 percent driving alone or carpooling to work.²⁴

In less densely developed and rural areas like California's San Joaquin Valley, commuters often have long distances to drive between home, school, work, and shopping; as a result, car ownership is often not a choice, but a necessity.** Fewer than 3 percent of commuters earning less than \$25,000 in Fresno County—a largely agricultural region that also includes the Fresno metropolitan area—take public transportation to work, and 90 percent drive alone to work or carpool. In adjacent Madera County, 95 percent of low-income commuters drive alone or carpool to work, and a mere 0.3 percent use public transit.²⁵ Comparable trends hold true for Kern County, Stanislaus County, and the rest of the San Joaquin Valley.

* Table C08519 of the American Community Survey reports per-earner income rather than household income. In citing these figures, we use per-earner incomes of less than \$25,000 as a substitute definition of low-income in order to demonstrate income effects on commute modes.

** For a more detailed analysis of the transportation challenges facing San Joaquin Valley residents and the range of potential solutions—including a redesigned Enhanced Fleet Modernization Program—see the forthcoming white paper on the topic from the New America Foundation's Lisa Margonelli.

Additional Focus: South Coast Air Quality Management District

While this report focuses primarily on the needs of the San Joaquin Valley, where large areas of low population density and lack of access to convenient transit for many make car-dependency a clear-cut issue, SB 459 also directs ARB to implement more robust and effective EFMP retirement and replacement in the South Coast Air Quality Management District. Composed of all or parts of Los Angeles, Orange, San Bernardino, and Riverside Counties, the South Coast also suffers from some of the worst smog pollution in the nation.²⁶ Although automobile dependency in the South Coast is perhaps not as severe as it is in the San Joaquin Valley, cars are still by far the dominant mode of transportation: in Los Angeles County, 79 percent of commuters earning \$25,000 or less drive or carpool to work.²⁷

As highlighted in a recent Next Generation report, Los Angeles is actively pursuing a cleaner transportation future through strong EV policies and public transit development—options that are less available in less urbanized areas of the state.²⁸ The South Coast Air Quality Management District also operates its own retirement-only program to target high-emitting vehicles.²⁹ A reformed EFMP vehicle replacement program that simultaneously provides immediate and affordable options to car-dependent households and helps to further turn over the lowest end of the district's fleet would serve as a strong complement to LA's electric vehicle and transit plans. Furthermore, it is easy to envision direct tie-ins between an improved EFMP and LA's existing efforts: current EFMP guidelines already offer transit vouchers as an alternative to a new vehicle, and with the proper financing and utilization of existing government subsidies, consumers could also potentially apply EFMP rebates to electric vehicles.

Local public transportation systems do provide some options to Valley residents, and counties are working hard to increase these options: for instance, multiple rural counties offer demand responsive transit options (like dial-a-ride), and the city of Fresno is debating a plan for a Bus Rapid Transit system.³⁰ Still, even the denser population centers of the Valley are heavily car-dependent. A 2003 case study of Fresno County illustrated that while job access among public aid recipients was greater in Fresno than in more densely urban areas, this was largely due to an “overwhelming reliance on personal vehicles—even among low-income adults.”³¹ This is in part because the densities of small to mid-size cities like Fresno are insufficient to support extensive transit services, necessitating car-based travel.³² The Council of Fresno County Governments’ 2011 Regional Transportation Plan makes a similar assessment, describing public transit service in both rural and urban areas of Fresno County as “little more than a safety net for transit dependent riders,” the travel times, routes, hours, and service frequency of which make it “a distant last choice for travel.”³³

The Cost of Cars: A Disproportionate Burden

In light of California’s prevailing transportation environment, car-dependent households spend a disproportionate amount of their income on transportation: according to the federal Bureau of Labor Statistics, the average U.S. household spent nearly 17 percent of its annual budget on transportation in 2011. Of these transportation costs, over 90 percent were vehicle purchases, gasoline, or other vehicle-related expenses.³⁴

These costs weigh particularly heavily on low-income and rural households. Because transportation costs are often non-optional expenses, they tend to consume an inflated proportion of low-income* household budgets. An analysis of 1999-2001 data by the Public Policy Institute of California (PPIC) found that low-income California households that owned vehicles spent an average of 19 percent of their household budgets on transportation.³⁵ Though PPIC has not repeated the study, this already-high cost has likely increased in the past decade: between 2000

*Defined by PPIC as the lowest income quartile.

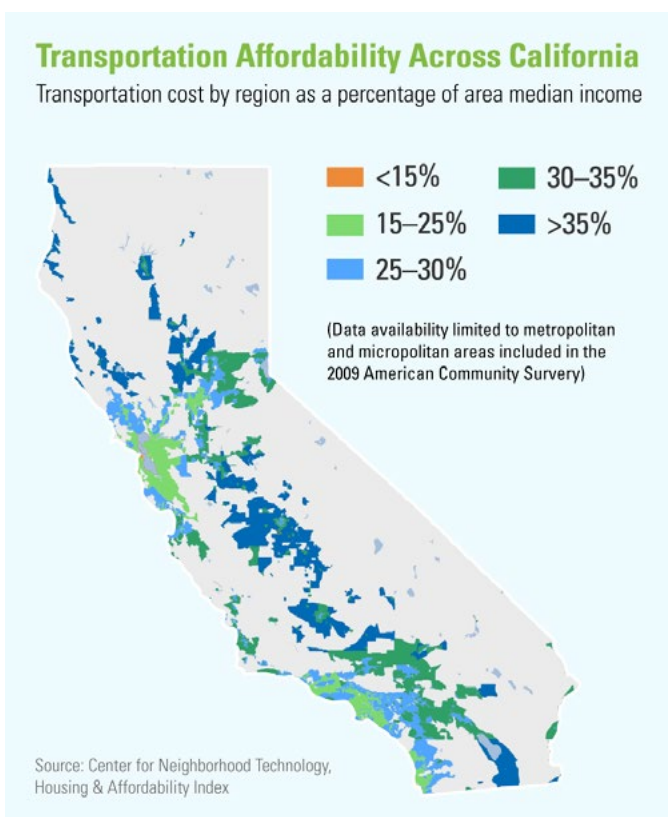


Figure 4

and 2010, transportation costs in the 25 largest U.S. metro areas increased by 33 percent, outpacing a 25 percent increase in income, and average household gasoline expenditures more than doubled.³⁶

In rural areas, longer driving times impose even higher costs. Rural vehicle owners drive an average of 48 percent more miles per day than urban vehicle owners, according to the 2009 National Household Travel Survey.³⁷ By the same token, rural households with vehicles also spent an average of 46 percent more on gasoline annually.³⁸

In California’s San Joaquin Valley, these two heavily burdened groups—low-income and rural households—overlap considerably: one in four residents of Merced County and Fresno County and one in five in Madera County live below the poverty line, compared to just below one in six across the state.³⁹ According to estimates by the Center for Neighborhood Technology (CNT), transportation costs in Fresno County are 31 percent of median area income. In some San Joaquin Valley census blocks, CNT estimates that transportation costs approach 40 percent of median area income.⁴⁰

There can be little doubt that such oppressive costs of transportation can crowd out other household necessities, and an informal survey conducted by Next Generation at a recent Valley CAN event in Porterville further supports this notion. **

Exacerbating these costs is the fact that low-income and rural drivers are more likely to drive relatively old and inefficient vehicles. Research from Texas A&M University has shown that low-income zip codes tend to have lower-than-average vehicle efficiencies, and the decrease in price that comes with vehicle age means that old cars are often low-income households' only option.⁴¹ Furthermore, old cars are frequently in need of repair, and mechanics' fees can become costly. Poor maintenance can also reduce fuel economy: a study conducted for the U.S. EPA found that repairing vehicles that had failed emissions tests improved fuel economy by an average of 4 percent. In several extreme cases, repairs improved fuel economy by as much as 40 percent.⁴²

In light of the high costs of vehicle ownership, one would expect low-income households to move towards more efficient vehicles, especially since an upgrade from 15 mpg to 30 mpg would save a typical California household over \$1,200 per year in gasoline expenditures.⁴³ But many of these households simply cannot afford to do so. A 2003 survey of Central Valley residents by the Public Policy Institute of California found that "79 percent of residents—and 77 percent of SUV owners—say they are willing to drive a more fuel-efficient, lower-emission automobile, even if it is not their preferred type of vehicle."⁴⁴ Notably, when PPIC conducted this survey eleven years ago, the average price of gasoline in California was a mere \$1.88 per gallon—less than half of the \$4.08 per gallon Californians paid at the pump in 2012.⁴⁵ Ironically, rising gas prices can end up putting efficient vehicles even further out of reach for low-income consumers as wealthier households switch to efficient cars and put their older, less efficient cars onto the secondary vehicle market.⁴⁶ The National Association of Auto Dealers estimated in 2008 that a \$1 increase in gas prices caused the price of used pickup trucks to drop by \$2,200, whereas the price of used economy cars increased by \$980.⁴⁷

Some EV advocates have noted that auto loans could help mitigate these upfront costs. But the

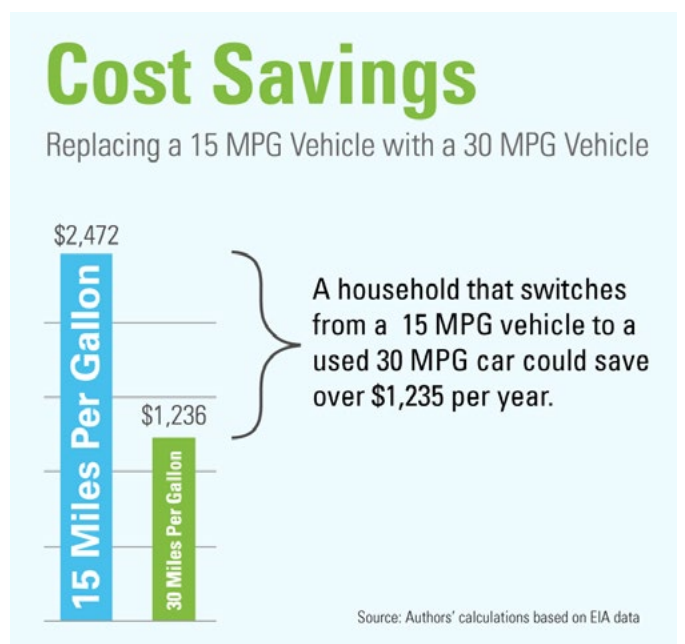


Figure 5

From authors' calculations based on EIA fuel price data and 10,000 miles traveled annually.

reality is not that simple. For many car buyers with low credit scores, predatory used-car dealers are sometimes the only available option. "Buy Here Pay Here" dealerships, which do their own lending in-house or with affiliated lenders, exploit consumers as a primary business strategy, selling low-quality vehicles with interest rates sometimes exceeding 30 percent.⁴⁸ In the first quarter of 2011, "Buy Here Pay Here" loans made up a full twenty percent of used car loans in the United States.⁴⁹ An award-winning series on the topic from the LATimes shows that many "Buy Here Pay Here" dealers and other predatory used car dealers base their business model on the repeated repossession and resale of the same poorly maintained car multiple times—sometimes over the course of a single year.⁵⁰ These shady business practices are not only a consumer rights issue; they are an environmental hazard: according to Consumers for Auto Reliability and Safety, car buyers frequently complain about used car dealers who sell them highly polluting vehicles that are in need of expensive repairs.⁵¹

** Next Generation distributed non-scientific questionnaires at Valley CAN's Tune In & Tune Up event in Porterville on January 25, 2014 and received 88 responses. The questions focused on transportation costs in the context of household budgets. Respondents consistently ranked transportation costs among the largest household expenses—in some cases the single largest—and indicated that they rarely, if ever, utilized public transportation.

The Case for Retirement and Replacement

Old and high-emitting vehicles are damaging Californians' health, safety, and pocketbooks, and a large number of these vehicles—registered or otherwise—still travel California's roads. Lifting this burden, especially for low-income and rural households and communities, is a crucial part of moving California toward a sustainable and equitable transportation future. Simply put, the fact that electric vehicles and transit are not currently viable solutions for specific segments of California's population does not mean that those households should remain saddled with old, unsafe vehicles that pollute heavily, drain their finances, and put them at the mercy of the oil market.

While repairs like those offered by Valley CAN and the California Bureau of Automotive Repair are the most cost-effective option for some vehicles, it makes more sense to remove other vehicles from the fleet for two reasons. First, repairs often represent only a partial and temporary fix: research on vehicles repaired by one statewide repair program shows that, on average, 41 percent of the emissions reductions that result from repairs are lost by the next inspection, typically two years later.⁵² Second, as noted above, even when adequately repaired, an average older car emits significantly more pollutants than a newer one. While repairs are an important part of California's vehicle emissions strategy, there is a point at which a high-emitting vehicle is no longer worth repairing and retirement becomes a preferable option.

In California and across the globe, policymakers have shown increasing interest in programs to accelerate the turnover of the lowest end of the fleet. Such programs have varied significantly in design and scope, with different programs attempting to address various goals, including improved air quality, reduced CO2 emissions, increased auto safety, and economic stimulus. Most Americans are familiar with the federal "Cash for Clunkers" program that was part of the American Reinvestment and Recovery Act of 2009; that program allowed vehicle owners to trade in older vehicles for more efficient

new cars and trucks through certified dealers. Aimed primarily at jump-starting the American auto industry, the program retired just under 700,000 vehicles and replaced them with comparatively more fuel-efficient models.⁵³

In contrast, California and other states have focused their programs on achieving air quality goals through a combination of vehicle retirement and replacement. These programs vary in their design and impact. In Texas, a vehicle replacement program operated by the Texas Commission on Environmental Quality offers incentives only to households below a certain income threshold.⁵⁴ A retirement program in British Columbia offers vehicle replacement, but also places a strong emphasis on alternative transportation options like public transit or bicycling.⁵⁵ Additional examples of vehicle retirement and replacement programs exist, but the variation among these different programs' goals and methods means that there is no single universally applicable program framework or recipe for success.

Although big questions still remain about the exact size and impact of California's high-emitting vehicle population and the ideal design for a revamped program to address it, the state would certainly benefit from a robust and well-targeted vehicle retirement and replacement strategy. In reforming its vehicle replacement programs, California has a unique opportunity to create a model that simultaneously improves air quality, benefits working families, and contributes to California's overall energy transformation.

California's Existing Vehicle Retirement Policies

Since the 1990s, various vehicle retirement programs have operated at both the local and state level in California.⁵⁶ Numerous local air districts operate accelerated vehicle retirement programs, the largest in the Bay Area and South Coast Air Quality Management Districts.⁵⁷ Beginning in 2009, the San Joaquin Valley Air Pollution Control District also operated a relatively small-scale program that offered replacement incentives, but that program has since been put on hold.⁵⁸

At the state level, California offers two overlapping programs, the Consumer Assistance Program (CAP) and the Enhanced Fleet Modernization Program (EFMP), for the repair, retirement, and replacement of high-emitting vehicles.⁵⁹ It is worth noting that the EFMP is a voluntary program aimed at vehicles that would otherwise continue to drive and pollute, while CAP is focused primarily on repairing or retiring vehicles that fail smog checks.⁶⁰ The budgets of these two state-level programs—approximately \$30 million per year for the EFMP and a comparable amount for CAP—are significantly larger than those of existing publicly funded local programs, which as of November 2013 had spent a total of approximately \$21 million.⁶¹ To most consumers, the distinction between CAP and the EFMP is nonexistent, as the Bureau of Automotive Repair uses the CAP name, application, and website in promoting and administering the retirement-only aspect of the EFMP.⁶² For more detail on California's existing programs, see ARB's November 2013 Staff Report.

Among all these programs to retire California's old and high-emitting vehicle stock, only the Enhanced Fleet Modernization Program includes any guidelines that incentivize replacement of an old car with a more fuel-efficient vehicle. Instead, these other programs focus solely on air quality, operating based on the theory that reducing the finite number of old and highly polluting vehicles on the state's roads provides an air quality benefit, as the average replacement vehicle (or the lack of any replacement) will inevitably be cleaner.

The Enhanced Fleet Modernization Program

Vehicle Retirement

Under existing rules, the EFMP offers vehicle owners across the state a fixed incentive of \$1,000 in exchange for retiring their light- or medium-duty vehicles, with an additional \$500 incentive available for low-income drivers.⁶³ The program includes relatively few eligibility requirements: an owner must show that her or his vehicle has been registered in California or has been primarily operated in California for at least two years; the vehicle must be driven under its own power to the dealership; and the vehicle must pass a basic operability test to ensure that it has remaining life.⁶⁴ Unlike some other local and state vehicle retirement programs, the EFMP does not require eligible vehicles to have failed a smog check or to be older than a given model year.⁶⁵

Over the EFMP's three years of existence, the vehicle retirement aspect of the program has been operating at its full budgetary capacity, with demand for retirement exceeding available funds.⁶⁶ The program has retired over 70,000 vehicles, over half of which belonged to low-income drivers.⁶⁷

Despite robust participation, the program has encountered considerable problems. A recent ARB program assessment of EFMP found that the retirement program has been attracting a large proportion of vehicles with little remaining life, i.e., vehicles that would have soon been retired without state funds. This is problematic, as it suggests that the air quality benefits of the retirement program have likely been significantly overestimated.⁶⁸ Recent academic research suggests that a similar phenomenon also reduced the cost-effectiveness of a Bay Area retirement program, and colloquially describes the problem as the difference between retiring "clunkers" and "junkers."⁶⁹

Vehicle Replacement

In addition to the retirement-only option, EFMP program regulations also direct BAR to offer additional incentives toward the purchase of lower-emission vehicles to replace particularly high-polluting vehicles in the South Coast and San Joaquin Valley air districts. Under existing regulations, consumers can either redeem these vouchers—valued at \$2,000 or \$2,500 depending on owner income—at car dealerships and put them either toward the purchase of a qualifying replacement vehicle or apply toward public transit fares. Combining the voucher with the retirement incentive, this means that low-income participants can potentially receive \$4,000 toward a new or used vehicle in exchange for surrendering an older vehicle. Current guidelines require replacement vehicles to be less than eight years old (four years for non-low-income participants) and to meet minimum fuel efficiency requirements, ranging from 20 mpg for model year 2002-2009 vehicles to 31 mpg for model year 2015.⁷⁰

Unfortunately, the Bureau of Automotive Repair and local air districts have yet to implement the vehicle replacement aspect of the EFMP at a significant scale. So far only the South Coast Air Quality Management District has offered replacements as an option under the EFMP, and despite contacting over 11,000 eligible vehicle owners by mail and telephone, as of late 2013 the district had issued only 21 vouchers, leaving the majority of the \$3 million in dedicated replacement funding unused.⁷¹

According to an ARB assessment, part of the reason for both the poor quality of retired vehicles and the lack of interest in replacement vouchers is that incentive amounts may be too low. ARB staff's examination of classified ads found that vehicles meeting the general characteristics targeted for retirement typically sold for a price greater than or equal to the maximum sum of retirement and replacement voucher values, or \$4,000.^{72 *}

*While increasing incentive amounts is a worthwhile consideration, policymakers should examine these numbers in more detail. ARB's analysis suggests that \$15,000 for a 2006 ULEV (ultra-low-emission vehicle) is at the low end of the expected price range. But the Kelley Blue Book value for a used 2009 Nissan Versa—a 29 mpg vehicle—with an odometer reading of 50,000 miles is a far more manageable \$7,453.

Senate Bill 459: Moving toward Reform

Senate Bill 459, signed by Governor Brown in September 2013, directs ARB to rewrite EFMP guidelines by June 2015, and touches upon many of the concerns addressed in this report. The bill encourages the EFMP to target low-income drivers, authorizes ARB to modify incentive amounts based on various factors, calls for more robust implementation of the vehicle replacement aspect of the program, and directs ARB to explore program design elements like community-based outreach and financing. SB 459 provides a good opening to a much-needed conversation on improving vehicle retirement programs in California; however, while the bill raises all of the key questions, it remains up to ARB regulators to provide the answers to those questions through reform. ARB's November 2013 assessment of the EFMP (referenced above) was the first step in an ongoing process of program analysis and revision.

Making SB 459 a Success

The legislature and ARB have already made significant strides toward improving the Enhanced Fleet Modernization Program. Many unknowns remain, however, and maximizing the potential of California's vehicle retirement and replacement programs will require continued diligence and effort throughout the process of updating EFMP regulations and beyond. To maximize SB 459's impact and set the stage for additional retirement and replacement programs in the future, we recommend the following:

Set more aggressive vehicle efficiency baselines for replacement vehicles

A higher minimum standard for replacement vehicle efficiency—independent of model year—would transform the program from one solely focused on air pollution into one that also reduces aggregate fuel consumption, mitigates greenhouse gas emissions, and reduces household budget sensitivity to gasoline prices. As currently designed,

the Enhanced Fleet Modernization Program aims primarily to reduce smog-forming emissions. Fuel efficiency is not a criterion for retirement eligibility, and efficiency requirements for eligible replacement vehicles are relatively modest. Under the existing guidelines described above, program participants can apply replacement vouchers to vehicles with efficiencies as low as 20 mpg for older model years.

Efficiency requirements in the reformed guidelines ought to be significantly more aggressive, and should differentiate based on vehicle type to encourage the greatest feasible efficiency gains for both cars and trucks. While appropriate baseline efficiencies will require further analysis, standards of 28-30 mpg for cars and 19-20 mpg for trucks represent efficiency levels that are both attainable and a significant step up from existing guidelines. Policymakers should also consider scaled incentive levels—as permitted by SB 459—to encourage further efficiency gains beyond the minimum standard.

Learn from the successes and failures of other replacement and retirement programs, as well as California's own

Regional, state, and national level governments have operated various forms of vehicle retirement and replacement programs. Though these programs have different goals and varying design principles, all represent potentially valuable sources of knowledge that policymakers should evaluate in search of best practices and pitfalls to avoid.

As noted above, the Federal CARS program, Texas's low-income oriented vehicle replacement program, and British Columbia's accelerated vehicle scrapping program all represent potentially worthwhile case studies. Numerous other programs currently exist or have existed in the past, from Japan to Germany to Russia—to say nothing of California's various local programs.⁷³ A comprehensive analysis of the successes and shortcomings of these programs could be valuable in informing an improved EFMP.

The state should also examine and learn from its own successes and failures. Current EFMP program guidelines and voucher amounts are based on limited knowledge of consumer demand. Onerous administrative requirements also prevent continuous program adjustment to match evolving automotive market conditions. Collecting more data on program efficacy and making room for experimentation and adaptation in program administration would create a more effective program.

Re-design EFMP implementation and outreach to garner greater public participation in the program

Increasing participation in the EFMP's combined retirement-and-replacement program will be critical to ensure that the program offers maximum benefits to low-income and rural households, and ARB's staff report identifies this goal as a key priority.⁷⁴ To increase these vehicle replacement numbers, ARB will need to conduct further study of optimal incentive amounts and outreach strategies.

More specifically, the EFMP is in need of outreach strategies that will reach low-income drivers and owners of unregistered vehicles. Channeling program outreach through local networks such as newsletters and papers, churches, and job centers may be an effective means of reaching drivers who might not otherwise consider parting with their vehicle.

Additionally, under existing EFMP program guidelines, local air districts may not spend more than five percent of program funds on administrative costs, including outreach.⁷⁵ The state may want to consider increasing this amount in order to improve program outreach opportunities.

Commission research in order to better understand California's unregistered vehicle population, so that these vehicles can be targeted in any retirement and replacement program

As noted previously, researchers do not currently know the true prevalence of unregistered vehicles in California's on-road fleet and the emissions contributions of those vehicles. ARB's assessment of the EFMP asserts that unregistered vehicles are not a significant proportion of long-lived high-emitters, as "enforcement of registration and Smog Check requirements is effective, particularly in urban areas."⁷⁶ Indeed, ARB argues that the fact that 60 percent of retired vehicles examined by its assessment were unregistered is a strong indication that those vehicles were unlikely to have been driven had they not been retired.⁷⁷

While this logic may be true for some vehicles or regions of California, it contrasts notably with Valley CAN's data and anecdotal observations of the significant populations of low-income drivers of unregistered vehicles in the rural San Joaquin Valley. Tom Knox of Valley CAN speculates that many cars are "born on California's coast and go inland to die" — in other words, that there may be a flow of vehicles that were originally purchased on California's coast as new cars and travel many years later into the San Joaquin Valley, where many are driven without current registration. Better knowledge of the numbers of unregistered vehicles, and the driving patterns of their owners, is crucial to understanding both the scope of the problem and the emissions impacts of vehicle retirements.

Expand the impact of the existing program budget by exploring low-income auto loan opportunities

SB 459 dictates that ARB “study and consider [...] methods of financial assistance other than vouchers” for vehicle replacement. For many families, access to credit represents a major barrier to ownership of a reliable and efficient car, often forcing buyers into low-quality vehicles and/or predatory loans. Facilitating fair loans for credit-challenged vehicle owners could enable low-income individuals to purchase newer, more efficient vehicles than would be possible with vouchers alone. Financing could also improve the overall cost-effectiveness of the program by leveraging state money to access a larger pool of private funds. California already offers several similar programs for non-auto lending, including a newly authorized pilot program providing responsible alternatives to payday loans and a loan-loss reserve program aimed at financing residential energy efficiency and distributed generation.⁷⁸

A loan guarantee program for automobiles could significantly expand the reach of existing vehicle replacement funds. In a 2009 article in *Issues in Science and Technology*, the New America Foundation’s Lisa Margonelli argues that by using public funds to reduce lenders’ risk in extending low-interest auto loans for high-efficiency vehicles to low-income and credit-challenged families, policymakers could address the challenges described in this report and facilitate consumers’ investment in their own vehicles.⁷⁹ Such a program could also reduce the per-vehicle cost to the state, allowing for a more cost-efficient and expansive vehicle replacement program.

Nonprofit organizations such as Ways to Work, which operates nationwide, and More than Wheels, which operates in New England, have shown that providing low-income, credit-challenged families with financial education and low-interest auto loans can be financially transformative for families. According to an evaluation of Ways to Work’s results by ICF International, 47 percent of loan recipients reported an increase in income after receiving assistance in purchasing a new vehicle, 26 percent reported an increase in educational attainment, and nearly all reported that their new vehicles helped them provide improved care for their children.⁸⁰

Once the foundation for a stronger and more effective retirement and replacement program is in place, consider funneling additional public dollars to the program

If the reformed vehicle retirement and replacement program is successful, EFMP may require increased funding to meet the scale of California’s need as the \$3 million allocated last year for vehicle replacement would only be enough to replace about 750 vehicles from income-qualifying households. Even the program’s full \$30 million budget, if applied solely to income-eligible replacement at current incentive amounts, would allow for the turnover of only 7,500 vehicles annually. While there is no question that the state’s first priority should be to implement a highly functioning pilot at a small-scale, the number of vehicles worth replacing is likely in the tens of thousands, if not more. Alternatively, a well-designed program to leverage private capital could supplement or even eliminate the need for increases in funding.

Conclusion

California has long been a leader in energy and transportation policy, and is becoming even more aggressive in its efforts as the state begins to deal with the long-term effects of climate change. In the transportation arena, California has ambitious policies in place to promote electric vehicles, expand public transportation, and encourage long-term smart-growth oriented development. These low-carbon, future-directed strategies all have their part to play in transforming California's transportation system; however, we believe they leave out a critical slice of the California population: those in car-dependent, low-income, mostly rural households.

These households should not be left behind in California's push toward a cleaner transportation future. Giving them the means to retire old vehicles and replace them, if necessary, with lower-emitting vehicles will make a world of difference to California households, communities, and air quality. Senate Bill 459 presents a perfect opportunity to put in place a strong vehicle retirement and replacement program that is informed by past experience and tailored to meet present needs. Such a program would slash smog-forming emissions, reduce oil use, decrease transportation costs, and improve safety, bringing the benefits of California's ongoing energy and transportation revolution to all

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