

# ***Taking / Charge***

**Supporting Small Fleets in the  
Transition to Zero Emission Trucks**

**April 2022**



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## Executive Summary

Trucks play a central role in the U.S. economy by moving more than 70% of the value of goods moved within the U.S.<sup>1</sup> However, these heavy duty vehicles pose a significant threat to public health and the climate by releasing toxic pollutants, like diesel particulate matter (PM) and nitrogen oxides (NOx), as well as greenhouse gas emissions at levels that are disproportionate to their share of vehicles on the road.<sup>2</sup> Pollution exposure and climate change create dire health, safety, and economic consequences that land most heavily on low income communities and communities of color.<sup>3</sup> In order to reduce pollution and meet climate goals, especially for frontline communities, the United States is marshaling policies and investments to catalyze the adoption of zero emission trucks (ZETs) that run on electricity instead of diesel. However, this forthcoming transition requires legislators, agency officials, and advocates alike to closely examine the impact that this transition will have on contract

truck drivers, small fleets, and minority owned fleets who face the greatest challenges in adopting ZETs. A successful and equitable transition to ZETs will require policies that effectively respond to the needs of these pivotal stakeholders in the freight system.

Green For All focuses this report primarily on small fleets with a keen interest in minority<sup>4</sup> owned fleets in order to address a critical gap in both the literature and the conversation about truck electrification. Through interviews, a digital survey, and a literature review, we set out to explore what perceptions and existing knowledge small fleets already have about ZETs, the barriers to electrification they anticipate, the solutions they find promising, and the best processes to intentionally engage them in shaping ZET policies and programs. The findings and recommendations that follow are based on this initial research and offer learnings that can help inform forthcoming programs and policies.

## Findings

### Widespread but surface level awareness of ZETs

Many small fleets have heard about ZETs but few have started to adopt them and many still lack deeper knowledge about the relevant costs, financing, and technology. Previous exposure to light duty zero emission vehicles and other technology that reduces truck pollution may shape, whether accurately or not, perceptions of ZETs.

### Large fleet advantage in ZET transition

Compared to larger fleets, small fleets face greater barriers adopting ZETs because they have less access to capital to purchase ZETs, staff capacity to apply for grants, and the resources and spare vehicles to adapt if they encounter technological issues.

### Successful ZET adoption must prioritize worker needs and training

A transition to ZETs must center the needs of small fleet owners, independent owner operators, and drivers. ZET policies and programs should also advance workforce development to train more drivers to enter the industry and retrain diesel mechanics to maintain zero emission technology.

### Financial concerns constrain adoption despite significant interest in ZETs

Small fleets are very interested in ZET adoption, however, they are concerned about the impact on the financial sustainability of their business. Lacking the safety net of extra funds or vehicles, small fleets are wary of adopting ZETs unless it will improve profitability.

### Small fleet owners seek assurance of ZET reliability and performance

Proof that ZETs can perform reliably and meet duty cycle needs may help small fleet owners feel more comfortable adopting ZETs. Small fleet owners also seek accessible maintenance networks to fix ZETs if technical problems occur.

### ZET charging presents another key barrier for small fleet owners

Small fleet owners want to see ubiquitous charging infrastructure on the road and may face challenges with depot charging if they either lack access to a yard or lease the yard where they currently park.

### Minority fleet owners face challenges adopting ZETs

Small fleet owners across demographics face the constraints listed above, however, our survey indicated that minority fleet stakeholders were more than twice as likely as white fleet stakeholders to have never heard about nor explored ZETs. Language barriers, limited access to information about ZET technology and support programs, and capital barriers create hurdles for minority fleet owners to adopt.

# Recommendations

## Invest in tailored solutions

Given the heterogeneous landscape of the trucking industry and the particular challenges that small and minority owned fleets face (such as limited staffing capacity to research the technology and apply for grants, access to capital, and exposure to information), policies and programs should be customized to their needs. Potential opportunities include targeted and robust funding, technical assistance, and tailored messaging.

## Reduce risk and enhance profitability for small fleets

Small fleets have little financial buffer or incentive to purchase ZETs. Therefore, supportive policies should strive to reduce technological and financial risk by promoting vehicle performance testing, accessible leasing options, performance guarantees, dedicated maintenance, and incentives.

## Promote small fleet autonomy

Craft programs and policies with the goal of helping small fleets to operate more independently over time. This might include increasing ZET affordability to reduce reliance on grant programs and expanding access to favorable financing and ZET maintenance information.

## Streamline and simplify support programs

Increase the accessibility of ZET incentive funding by dramatically streamlining the grant application and reporting process and removing cumbersome grant stipulations.

## Center the voices of truck drivers and small fleets

Lawmakers and agencies should conduct proactive and ample outreach directly to truck drivers and small fleet owners to meaningfully solicit and incorporate their perspectives when formulating policies and programs.

## Prioritize information accessibility

Ensure widespread access to information about ZETs and support programs by lowering language barriers and employing targeted outreach strategies, including hands-on learning opportunities, partnering with trusted messengers, and promoting trucker to trucker information exchange.





# Acknowledgements

## About Dream.Org Green For All

**D**ream.Org is a national advocacy organization that works to close prison doors and open doors of opportunity. We bring people together across racial, social, and partisan lines to create a future with greater freedom and dignity for all. Learn more at [dream.org](https://dream.org)

Green For All is a program of the national social justice nonprofit Dream.Org. Green For All works at the intersection of environmental, economic, and social justice movements to build a more equitable and greener economy strong enough to lift people out of poverty. Learn more about our work at [dream.org/green-for-all/](https://dream.org/green-for-all/)

Through the Fuel Change campaign, Green For All has advocated for years to advance the adoption of cleaner cars, trucks, and buses for communities

most disproportionately impacted by transportation pollution and limited access to quality mobility options. Through research, strategic storytelling, and policy advocacy, we work to ensure that clean transportation policies advance both pollution reduction and economic justice. In the context of trucks, equitable electrification must ensure health and economic benefits for truck drivers, communities living adjacent to ports, busy freeways, and distribution centers, and small and minority owned trucking businesses. This is one way we are working to ensure a future that is green for all and not just for some.

# Contributors

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## Advisors

Green For All would like to sincerely thank all individuals who helped review and meaningfully shape the development of our small fleet survey and / or report:

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- Deep Singh, Jakara Movement
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- Jay Grimes, Owner Operator Independent Drivers Association (OOIDA)
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- Kevin Hamilton, Central California Asthma Collaborative (CCAC)
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- Ms. Margaret Gordon, West Oakland Environmental Indicators Project (WOEIP)
- Michael King, Colorado Department of Transportation (CDOT)
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This report was funded by the California Air Resources Board (CARB) Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) and produced in collaboration with CALSTART. CALSTART works with its member companies and agencies to build a high-tech clean-transportation industry that creates jobs, cuts air pollution and oil imports, and curbs climate change. CALSTART works with the public and private sectors to overcome barriers to innovation, progress, and drive the transportation industry to a clean and prosperous future.





# Introduction

## Electrification in Motion

From the produce at your local grocery store to the delivery of your most recent online purchase, trucks play a vital role in the movement of goods in America, and freight transportation is likely to grow significantly within the next ten to twenty years.<sup>5</sup> Moving goods via truck, however, comes at a cost. Heavy duty vehicles, the largest and heaviest vehicles on the road, are often driven more miles than light duty vehicles and run mostly on diesel fuel. Therefore, although making up only ten percent of vehicles on US roads, heavy duty vehicles are primary culprits of pollution from road transportation: 45% of NO<sub>x</sub> (nitrogen oxides) and 57% of PM<sub>2.5</sub> (particulate matter).<sup>6</sup> This toxic pollution from diesel trucks is damaging and deadly to human health. For instance, exposure to ozone (i.e. smog), a product of NO<sub>x</sub> and volatile organic compounds, can lead to childhood

asthma, exacerbate symptoms for people with chronic obstructive pulmonary disease (COPD), and increase chances of developing reproductive issues.<sup>7</sup> Additionally, exposure to diesel particulate matter is correlated with asthma, cancer, and early death.<sup>8</sup> In the US alone, health impacts associated with vehicle pollution cut short 20,000 lives per year.<sup>9</sup>

In addition to air quality impacts, the freight sector contributes significantly to climate change. In the US, 29% of climate emissions come from the transportation system, a large percentage of which stems from heavy duty vehicles (28% of climate emissions from on-road transportation).<sup>10</sup> Climate change will disproportionately impact low income communities and communities of color. For instance, these communities are more likely to reside in areas expected to see the greatest flooding due to sea level rise and rises in premature deaths due to extreme heat induced by climate change,<sup>11</sup> and have access to less urban tree cover<sup>12</sup> and resources like air conditioning<sup>13</sup> to provide heat relief.

Electrifying medium and heavy duty vehicles is one promising way to address both the climate emissions and air pollution from the medium and heavy duty transportation sector. Unlike diesel trucks, zero emission trucks (ZETs) release zero tailpipe emissions from the vehicle<sup>14</sup> and have the potential to generate myriad benefits for public health, the environment, and the economy. For instance, a transition to 100% medium and heavy duty ZET sales by 2040 could prevent up to 57,214 premature deaths and 28,676 heart attacks through 2050, not to mention over three million missed work days.<sup>15</sup> As for environmental benefits, electric heavy duty trucks also deliver. Even when accounting for climate emissions from electricity generation to fuel ZETs, electric trucks still produce 44 - 79% lower total emissions than their diesel counterparts when charged on the average electricity mix in the United States,<sup>16</sup> and even greater reductions in states that are gradually decarbonizing their electric grid. Additionally, with strong policies in place, the transition to ZETs has the potential to generate good paying jobs. In 2020, 273,630 individuals were employed in the clean vehicle industry. Even amidst the economic impact of the COVID-19 pandemic, clean vehicle manufacturing jobs increased.<sup>17</sup> From assembling electric vehicle parts to installing charging infrastructure and maintaining ZETs, numerous job opportunities will arise and require accessible training programs, with a particular focus on cultivating electrical skills.<sup>18</sup>

Policy, market, and technology progress is building to support the roll out of ZETs to realize their potential health, environmental, and economic benefits. For instance, numerous states including New Jersey, Oregon, Washington,<sup>19</sup> New York<sup>20</sup>, and Massachusetts<sup>21</sup> are following California's lead in adopting the [Advanced Clean Trucks](#) (ACT) rule, a regulation that spurs ZET sales. Despite legitimate concern about the current upfront capital cost of ZETs, total cost of ownership will become more favorable as ZET production grows, battery prices drop, and owners reap the benefits of lower fuel and maintenance costs.<sup>22</sup> According to modeled estimates from UC Berkeley's "2035 Report," heavy

duty ZETs already lead non-ZETs in total cost of ownership and will achieve \$200,000 in total cost of ownership savings by 2030.<sup>23</sup>

Although lagging behind the progress of the electric transit bus sector, the availability of medium and heavy duty ZETs is also beginning to grow.<sup>24</sup> For instance, electric yard hostlers (i.e. terminal trucks) are already in active use<sup>25</sup> and medium duty applications like electric delivery vans and trucks are hitting the road. The majority of heavy duty trucks in the US travel fewer than 100 miles one way,<sup>26</sup> and battery electric trucks coming online between 2020 to 2023 will have an average range more than twice this number of miles.<sup>27</sup> However, heavy duty long haul trucks have yet to reach full commercialization<sup>28</sup> and range may continue to be a concern for fleets traveling longer distances. For small trucking businesses that cover different duty cycles, require range flexibility, and are unable to afford the cost of a ZET, leasing models can potentially offer a more accessible means to deploy ZETs for shorter runs as the technology progresses.



## Equity Considerations for Truck Electrification

ZETs have the potential to generate numerous benefits for public health and the environment. However, ZET adoption will require critical guardrails to prevent the deepening of existing disparities in pollution exposure and access to resources, fair

working conditions, and decision-making power. Amidst the growing momentum for ZETs, policy-makers and agencies must pay special attention to constituencies who already bear the greatest burdens of the existing freight system and who will face the greatest challenges in the forthcoming transition, namely, communities on the front lines of pollution, workers, and small and minority owned trucking businesses.

### Priority Constituencies In The Transition To Zero Emission Trucks



## Address Pollution Burden

Cleaning up the trucking sector is essential in order to advance environmental justice for communities on the front lines of pollution, including both truck drivers and residents living near areas with heavy truck flows. Truck drivers in particular bear the brunt of exposure to diesel pollution on the job. For instance, one study examining air quality inside trucks in the Port of Oakland found average black carbon concentrations that exceeded ambient concentrations by more than ten times.<sup>29</sup> Additionally, the negative impacts of truck pollution hit low income communities and communities of color the hardest, as these communities make up a higher percentage of those living close to highly trafficked roads,<sup>30</sup> ports, and railyards.<sup>31</sup> According to the 2021 “State of the Air” report from the American Lung Association, communities of color live in counties that scored a F for three measured pollutants (ozone, short term PM2.5, and yearly PM2.5) at triple the rate of white communities.<sup>32</sup>

Exposure to pollution from the freight sector has wide-ranging and detrimental effects on health and quality of life, including heart attack, cancer, asthma, missed time at work and school, healthcare costs, and lost lives.<sup>33</sup> Even more, rises in temperature due to climate change may exacerbate premature mortality and asthma rates associated with exposure to PM2.5, especially for African American or Black individuals.<sup>34</sup> Therefore, policies aimed at advancing the adoption of electric trucks must focus investments, vehicle deployment, and regulatory activity in a way that addresses the needs of pollution burdened communities.

## Promote Fair Labor Standards

The transition to ZETs has the potential to heighten existing patterns of labor exploitation in the trucking industry. In 1980, the Federal Motor Carrier Act deregulated the trucking industry and laid the groundwork for trucking companies to contract out labor needs in order to reduce costs, which ultimately depressed wages and reduced the quality of trucking jobs.<sup>35</sup> Although there are some legitimate independent contractors who drive for multiple clients, like operating their own business, and can obtain decent earnings, the past few decades have also seen the proliferation of misclassification (“the practice of treating employees as if they were ‘independent contractors’”)<sup>36</sup> especially in segments like the port drayage sector. Misclassification is harmful because it removes a driver’s access to safeguards like minimum wage and safe working conditions, while transferring vehicle, maintenance, and other costs from trucking companies to undercapitalized truck drivers. One analysis of port driver surveys found that in addition to stark disparities in access to benefits, the average income of employee drivers exceeded that of participating independent contractors by eighteen percent.<sup>37</sup> Misclassification not only diminishes the income of misclassified truck drivers, but also directly impacts the success of regulations to reduce pollution from diesel trucks. For instance, as of 2019, 44% of trucks that failed to comply with the California Truck and Bus Rule operate in small fleets with one to three trucks.<sup>38</sup> Addressing misclassification, therefore, is critical to improving conditions for drivers and achieving clean air and climate goals.

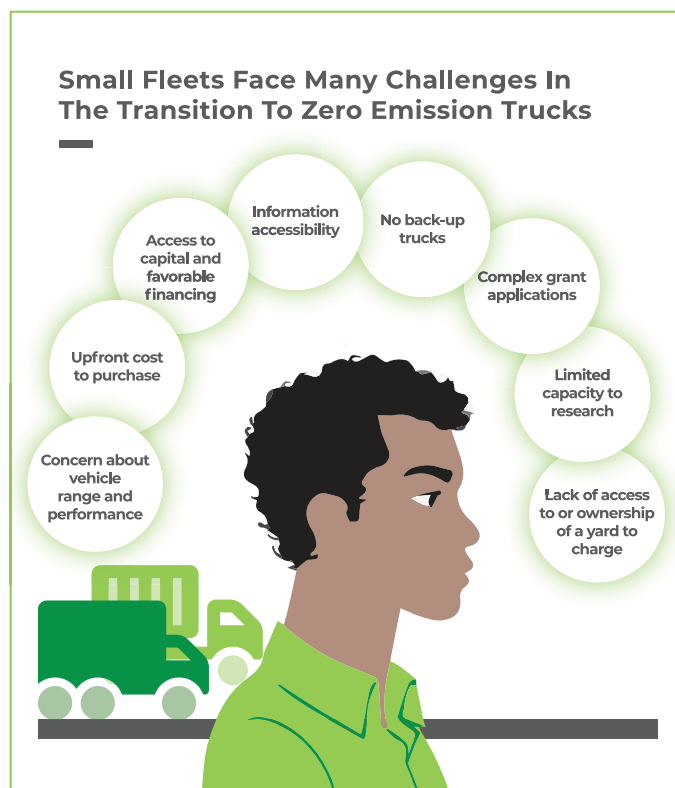
## Support Small and Minority Owned Trucking Businesses

The transition to ZETs may severely impact small fleets, which are the engines of the US freight system. According to the American Trucking Association's "American Trucking Trends 2020," 91.3% of American trucking fleets have one to six trucks and the vast majority fall in the twenty and under range.<sup>39</sup> Due to finite capital, small fleets will face major obstacles adopting new or cleaner vehicles,<sup>40</sup> especially since most small fleets buy used vehicles. The COVID-19 pandemic also recently revealed the vulnerability of small fleets to industry disruption as smaller fleets struggled to stay in business.<sup>41</sup>

ZET adoption may also be particularly challenging for minority owned trucking businesses. A lack of access to wealth acutely impacts the ability of minority entrepreneurs to open a business,<sup>42</sup> and based on the 2019 Survey of Consumer Finances, in the US "the typical White family has eight times the wealth of the typical Black family and five times the wealth of the typical Hispanic family."<sup>43</sup> Minority

businesses that do get off the ground receive smaller loans on average than non-minority firms and, for those making less than \$500,000, they are three times as likely to experience a loan application rejection than non-minority owned firms.<sup>44</sup> Within the trucking industry in particular, people of color own 25% of trucking firms, and Black or Asian-owned firms accrue on average half as much revenue as White-owned firms.<sup>45</sup> Given the exorbitant costs posed by the impending transition to ZETs and the capital barriers that small and minority owned businesses face, it is imperative that electrification policies and regulations create mechanisms to ease this transition.

A pollution free transportation system can and should stimulate access to good jobs, economic opportunity, and entrepreneurship for low income communities and communities of color. By listening to and uplifting the unique perspectives of small and minority owned trucking businesses, we hope to catalyze changes in both policy and program design so that these businesses can see themselves as part of the zero emissions future.





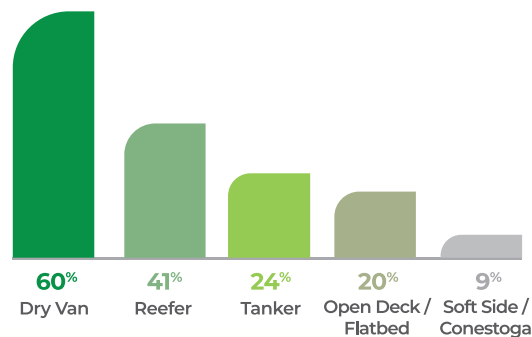


# Methodology

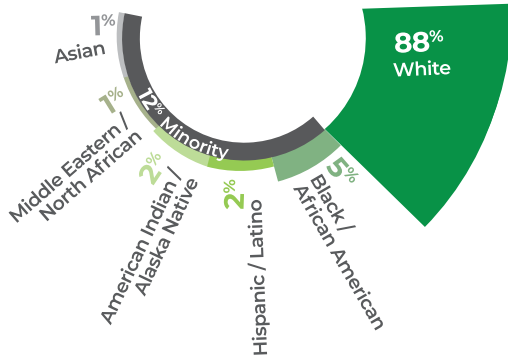
To carry out this research project, Green For All conducted a literature review, a digital survey, and in-depth interviews. We developed a national digital survey of small fleet stakeholders that we shared out through direct partner outreach, social media channels, and purchased fleet lists. We entered survey participants to receive an incentive for their participation and worked with the data analytics firm EMC Research to evaluate the survey responses for key themes. Following data clean-up, they analyzed a total of 446 digital survey responses. Below are select demographics of survey respondents. Note that due to rounding, percentages may not add up to 100%.

To build upon these survey findings, we interviewed a total of 41 stakeholders through 32 separate interviews and one small focus group. Of the 41 participants, we spoke with 24 fleet owners and seventeen non-fleet stakeholders. Of the 24 fleet owners we spoke to, fifteen identified as minority fleet owners, all either owned or leased medium and / or heavy duty vehicles, and all but three

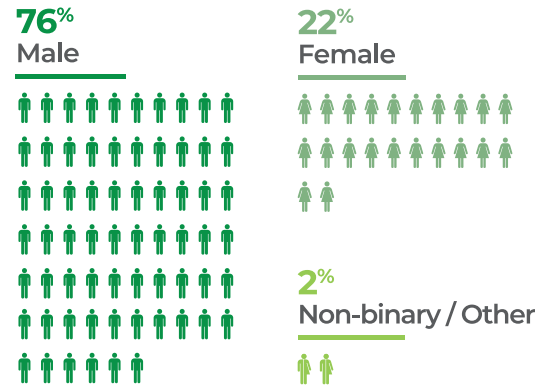
## Types of Trailers That Survey Respondents Operate



## Race of Small Fleet Survey Respondents



## Gender of Small Fleet Survey Respondents

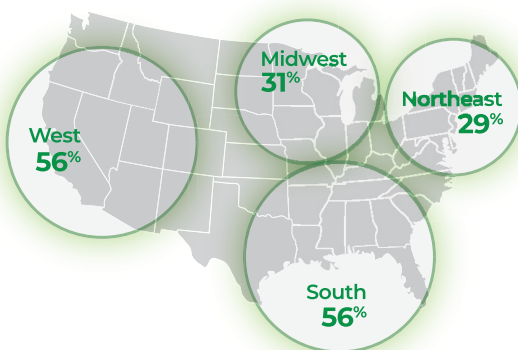


operated for-hire trucking businesses with twenty or fewer trucks. Fleet owner interviewees hailed from different segments of the trucking industry (port drayage, construction, etc.) and operated a range of distances from local to regional to long haul. Non-fleet stakeholders we interviewed consisted of environmental justice, trucking industry / association, environmental, and fleet electrification experts in addition to state agency staff involved in medium and heavy duty fleet electrification programs. Report recommendations are based on our literature review

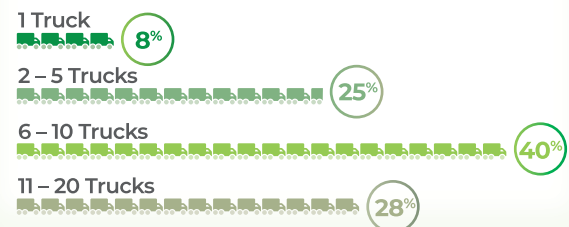
and the input of survey respondents, interviewees, and the advisor committee and are not necessarily endorsed by all individuals surveyed and / or interviewed

The impacts of COVID-19 have not been felt equally. The pandemic has further exposed the stark health and economic inequalities, particularly for Black, Latino and Indigenous communities. It is well documented in the public health field that a zip code, where a person lives, is the biggest predictor

## Geographic Regions of Operation



## Number of Trucks Owned / Leased

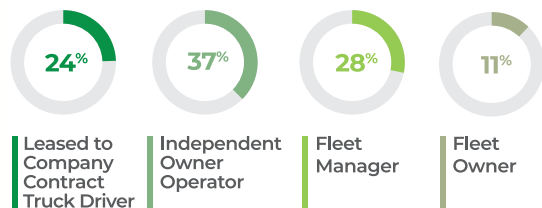


of an individual's health outcome. Past and present discriminatory policies and practices have resulted in neighborhood disinvestment that communities of color call home. Many of these same discriminatory regulations allowed for the concentration of polluting industries and highways in these same neighborhoods. Long-term air and water pollution exposure and health impacts make communities more vulnerable to respiratory illness such as COVID-19. It is therefore unsurprising that black and brown communities are bearing the brunt of the pandemic. Black, Latino and Indigenous people are unemployed at higher rates due to COVID-19 and are more likely to die from the disease than white people.

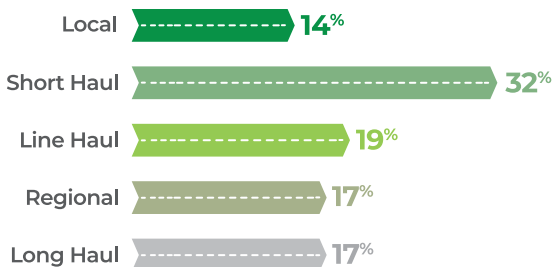
With millions of people still unemployed, households continue to spend an unprecedented amount of time at home, including those who live in dangerous housing. As cases in most parts of the country continue to rise, some experts are predicting a second wave of shutdowns as we head into the winter months.

Energy efficiency measures have the power to improve the quality of life for millions of Americans suffering from the impacts of energy insecurity. Energy efficiency is the process of reducing energy waste or using less energy to perform the same task (e.g. lighting, heating or cooling a home). Investment

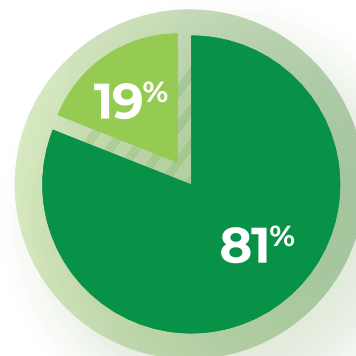
### Fleet Role



### Distance



### Load\*



\* The amount of space that freight takes up on a truck (the full truck or less than the full truck).

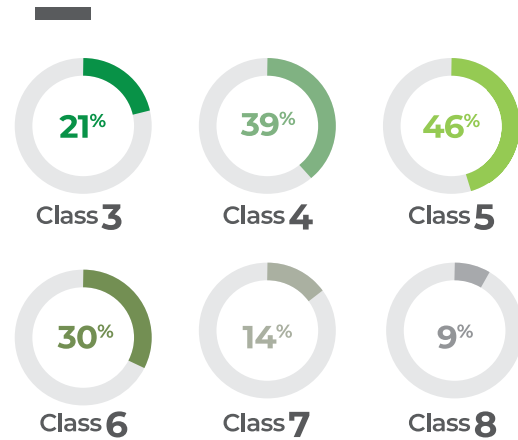


in the clean energy and energy efficiency industry can put hundreds of thousands of people back to work in good paying, blue-collar local jobs. Before the pandemic, the clean energy sector employed 3.3 million people; 2.3 million of those jobs were in the energy efficiency sector, employing more people than any other sector in the energy industry.

In light of the challenges and opportunities presented by the pandemic, Green For All set out to speak with anti-poverty experts, utility advocates, energy efficiency researchers and other policy experts to better understand the current challenges presented by COVID and the opportunities afforded by energy efficiency. Interview findings provide a helpful overview of some of the challenges facing low-income families with respect to utility affordability and indoor health and safety. Policy recommendations build off of a literature review of best practices and are informed by interview findings.

An economic recovery plan that puts people first will require not just getting people back to work, but cultivating new kinds of critical work that addresses health and safety, and the environment. Energy efficiency jobs are also inherently local jobs, meaning investment within this sector will have a direct impact on local economies. Congress has the opportunity to design an economic stimulus and recovery package that addresses the pandemic, economic, racial and climate crises. We can put millions of people hit first and worst by the pandemic into good paying jobs by investing in critical energy efficiency and weatherization programs that benefit the low-income communities that have historically been underserved.

## Vehicle Weight Classes That Survey Respondents Operate





# Survey and Interview Findings

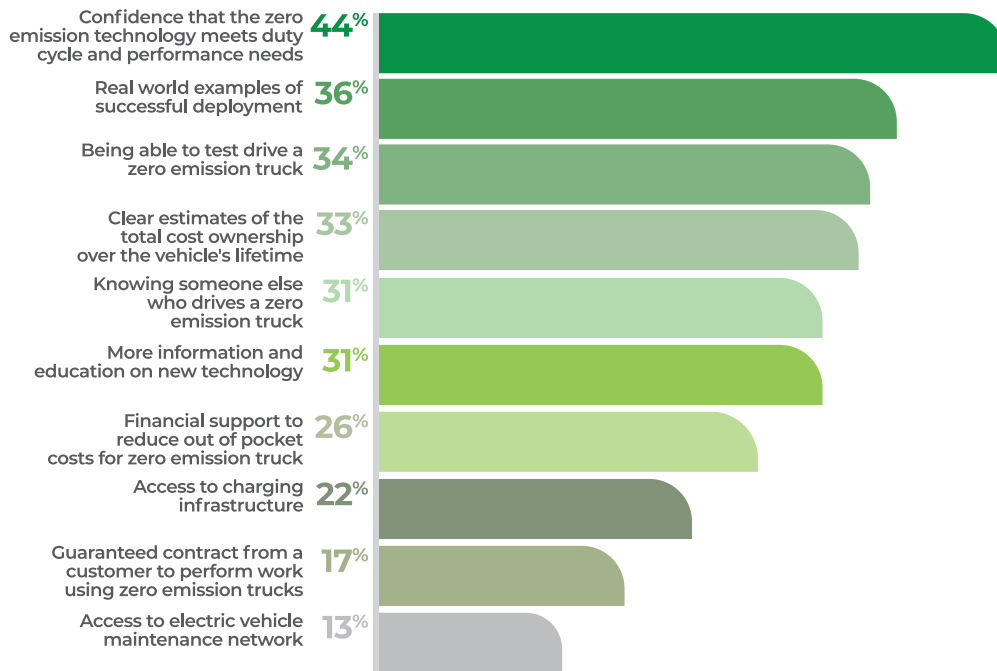
## Knowledge of Zero Emission Trucks is Widespread But Surface Level

**B**oth the survey and interview findings indicate that while many people have heard of zero emission trucks, both adoption and awareness regarding how this technology works, its benefits, and the ultimate impact on their business is still limited. For instance, only ten percent of respondents have not heard about nor explored ZETs, however, more than 25% have heard about this technology but still face barriers or have questions and concerns. Additionally, when respondents were asked to describe their interest in adopting zero emission technology, general interest

was the second most common response following environmental benefit.

For fleet owners who have not adopted ZETs, their knowledge was relatively surface level. A number of interviewees associated ZETs with fear of the unknown and of being pushed out of business. A few likened the technology to something far-fetched and unfamiliar by using the term “spaceship.” When asked about their experience transitioning to cleaner vehicle technology, many described what it was like to adopt exhaust system on-board controls for diesel engines such as diesel exhaust fluid (DEF) or diesel particulate filters (DPF). In particular, they cited these technologies as having catastrophic effects on small trucking businesses and causing some to exit the industry altogether. Due to limited parts availability, poor technology reliability, and high purchase and maintenance costs, many small fleet owners found this cleaner technology to be burdensome to

## Building Confidence to Adopt Zero Emission Trucks



**Question: Which of the following would help you feel more comfortable adopting a zero emission truck? Select all that apply.**

their business despite its environmental benefits. Therefore, past history with DPF and DEF may lead to real concerns about the risks of ZET adoption.

However, the interviewed small fleet owners who have adopted ZET technology shared mostly positive feedback about their experiences so far. Zero emission yard tractor owners highlighted lower maintenance needs and noise. Another fleet owner who adopted a zero emission truck reported the benefits of significantly lower fuel costs, regenerative braking, and satisfactory vehicle power.

Many small fleet owners and non-fleet experts also highlighted light duty electric vehicles as a common reference point to draw inferences

around the feasibility or mechanics of electric truck adoption. For instance, interviewees referenced Tesla's pathway toward market commercialization, placement of charging infrastructure, and reduced maintenance needs to make assumptions about electric medium and heavy duty vehicles. Similarly, when discussing programs to support ZET adoption, light duty electric vehicle passenger programs like California's Clean Cars For All and the Clean Vehicle Rebate Project were referenced as models. It's important to note that the success of light duty electric vehicles like Teslas may not reflect the performance and challenges associated with medium and heavy duty electric trucks due to uneven investments in development and testing. However,



we include these examples in order to highlight the reference points that small fleet owners are using to draw conclusions, whether accurate or not, about ZETs.

By and large, most survey and interview participants still lacked adequate knowledge to speak about adopting ZETs with specificity or beyond hypothetical consideration. For instance, many small fleet owners expressed openness to ZETs but said they need more information first. Surveyed fleet owners who indicated time and capacity to research impeded ZET adoption seek greater information about the technology and financing. Some areas that interviewed fleet owners wanted to learn more about include upfront cost of the vehicle, operational costs, and the technical feasibility of adopting (range, compatibility with duty cycle needs, and charging). For this reason, multiple interviewees said hands-on experience with ZETs via a test trial or pilot would especially inform their thinking about whether the vehicle could meet business needs. Lastly, many frequently commented on the need to increase information accessibility and transparency regarding ZETs, both as it relates to the technology and supportive grant programs.

## Larger Fleets Are Better Positioned to Weather the ZET Transition

Although a few small fleet owners indicated that both small and larger fleets would face similar challenges associated with ZET cost and adoption, many interview participants stated that larger fleets have significant adaptive advantages that allow them to “eternally mitigate risk.” Fleet owners expressed concern that because larger fleets have access to greater resources, capacity, and flexibility, the transition to ZETs may weed out smaller trucking businesses and lead to further consolidation in the industry. Interviewees indicated that large fleets can afford to prioritize environmental goals when making ZET purchases unlike smaller fleets that are more heavily constrained by their bottom line and tend to buy used vehicles.

Interviewees stated that larger fleets have significantly greater purchasing power and access to resources, benefits, and information to facilitate the ZET transition. This includes more money to cover the upfront cost of ZETs and increased staff capacity to monitor funding opportunities and successfully apply. According to our survey, hands-on coaching and assistance to apply for funds and research vehicles are highly ranked supports for accessing ZETs.<sup>46</sup> Furthermore, even slightly larger fleets in the under twenty trucks range with non-driving staff have greater bandwidth to stay up to date on the latest technology, read informational emails, attend meetings to learn about grant programs, and fill out necessary paperwork. Our survey findings indicated that fleets that own fewer trucks cited time and capacity to conduct research as a high barrier at a greater rate than fleets that own more trucks. Additionally, large fleets may have access to preferential treatment in the form of tax breaks, lower fees, better discounts when bulk purchasing ZETs, training from dealers, and greater customer and maintenance support from manufacturers.

Large fleets also tend to have greater flexibility to absorb ZET costs and adjust if challenges arise. For instance, large fleets may be better positioned to transfer ZET costs to the consumer or address them over multiple years or vehicles. National companies with very large fleets can also adjust geographically by concentrating funds for new vehicles in states that phase out combustion engine trucks first and moving older vehicles elsewhere. In addition to cost management measures, larger fleets also are more likely to have extra loaner trucks and the capital needed to pivot if breakdowns push electric trucks out of service. Overall, many small fleet stakeholders emphasized that larger fleets are better equipped to access ZETs and grants in the first place and stay in business if issues occur.

## Prioritizing Workers is Essential to a Successful ZET Transition

Small fleet owners emphasized the importance of humanizing and centering the needs of small fleet owners, independent owner operators, and drivers in the transition to ZETs. Interviewees expressed

that truckers have been maligned as opponents to environmental progress, when in fact they often live in environmental justice communities themselves and are facing financial pressure in a highly competitive industry. As one fleet owner put it: “[Regulatory agencies] think of us as the people that are polluting. No, we’re just human beings like you and we want to reduce pollution like everybody else ... Once ... we started communicating with the



***“If we’re going to make the investment, we have to be... assured that we’re going to take priority because we’re making these huge expenses in order to be able to work. It’s really hard when you see the guy in the old truck who has black smoke coming out of his truck working making the same amount as you are... The biggest challenge is making sure we are somehow rewarded for making this expense and able to continue working and maybe even being paid a higher rate because we are complying.”***

### Small Fleet Owner Spotlight:

#### **Sandra Alzate of SW Trucking**

**About the fleet:** Two “super 10” heavy duty dump trucks

**About the business:** For-hire minority owned fleet that transports construction material (dirt, sand, gravel, cement) locally out of Los Angeles County, California

**Top needs as a small fleet owner:** Seeking adequate work and pay

**ZET interest or experience:** Interested in ZETs because of environmental benefits if the transition can be made cost effective

**Top concerns about ZETs:** Concerned about the high upfront cost and whether ZET investment will lower their competitive edge with other non-ZET fleets

**Opportunities to ease the transition:** priority public contracts or rewards for adopting ZETs as well as carve outs and higher incentive amounts for small fleets

community, we were like we're in the same boat. You're talking about [how] proximity to pollution is the danger. We're sitting on top of the engine. We're with you. How can we reduce the pollution?" Interviewees stressed the importance of uplifting the human needs of drivers by emphasizing, "Don't just count us as trucks." For instance, interviewees highlighted times when stakeholders overseeing anti-idling measures or addressing congested port terminals did not take into account the need for drivers to access basic comforts like temperature control or bathrooms. Many comments reinforced this notion by highlighting the need to ensure a good quality of life for truck drivers (a reasonable schedule that allows drivers to go home, safety, good pay to cover expenses and take care of their family, etc.).

In addition to adopting a human-centered lens for ZET policy decisions, another issue that arose from interviews was driver misclassification: the practice of misclassifying truck drivers as independent contractors rather than employees. Misclassification is prevalent in the short haul trucking sector and occurs in fleets of all sizes, including small fleets. This practice causes the cost of ZET adoption to land heavily on independent contract truck drivers, some of whom already experience highly exploitative working conditions within the cutthroat trucking industry. Other interviewees, however, stated that there are also a number of legitimate independent contractors who transport goods for multiple companies, earn decent wages, and choose to operate independently instead of as an employee driver.

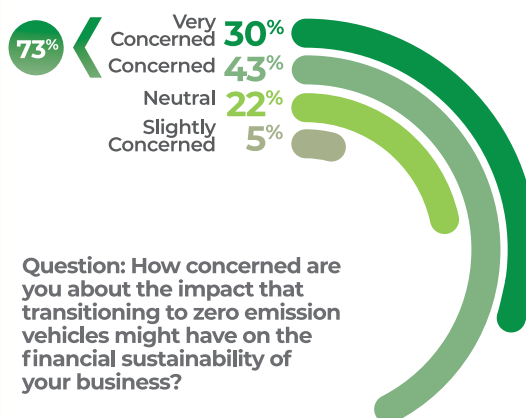
Many interview participants also expressed concern about existing trends of driver and mechanic shortages in the trucking industry. Attention toward hiring, training, and retaining both drivers and mechanics will be paramount to secure a sufficient and qualified workforce in the transition to ZETs. In addition to supporting the entrance of new workers into the industry, another challenge will be retraining existing diesel mechanics to fix ZETs and ensuring open access to information. One small fleet owner who also works as a technician expressed frustration around unsuccessful attempts to learn about DEF truck maintenance. For instance, when he asked

his truck parts supplier to connect him with an educational training program, the supplier refused in order to limit competition. As ZETs become more commercially available, it will be important for manufacturers to train independent maintenance shops rather than guard ZET maintenance information as proprietary in order to promote a smooth transition.

## Significant Interest in ZETs But Financial Concerns Reign Supreme

Both our interviews and survey demonstrated widespread interest in ZETs, but financial concerns continue to drive business decisions and constrain adoption. More than half of survey respondents indicated they were very interested in adopting ZETs and the majority of interviewees also expressed varying forms of interest in this technology. However, many interview participants caveated their interest by stating openness if costs are addressed and nearly three quarters of survey respondents indicated they were very concerned or concerned

### Financial Concerns with Zero Emission Vehicles

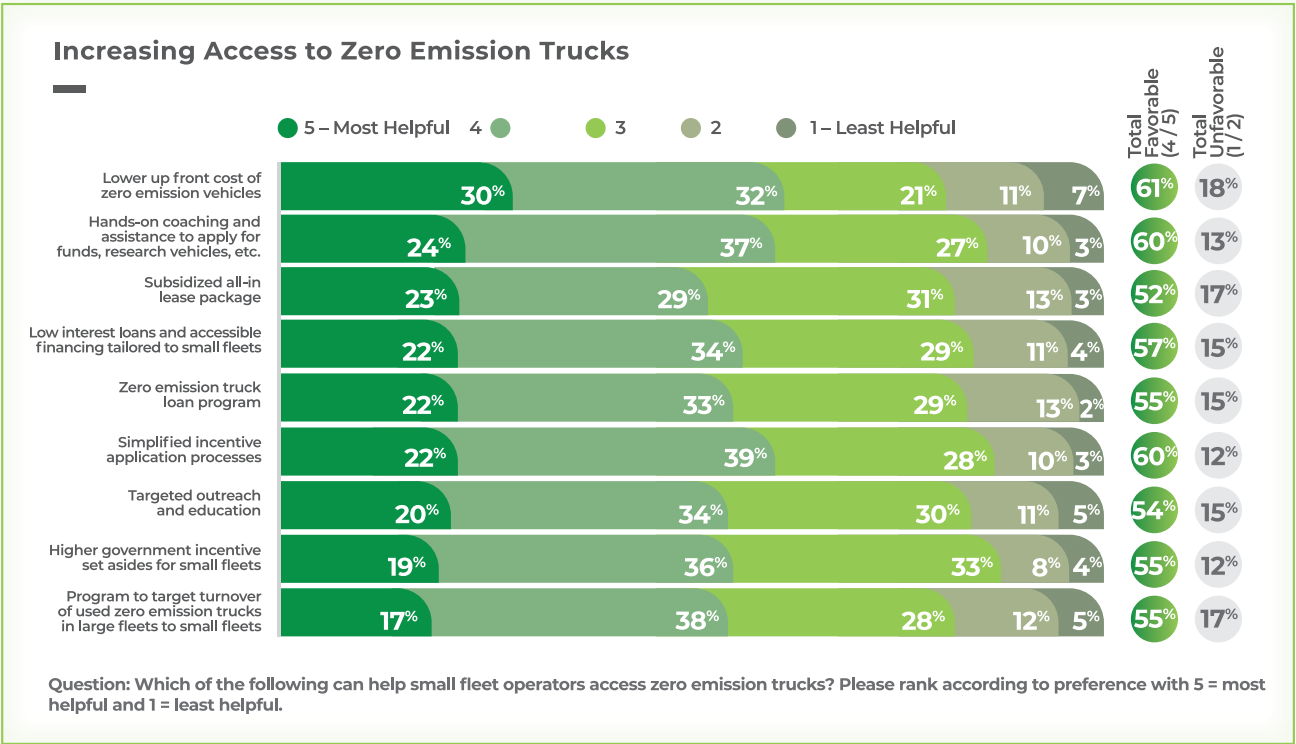


that ZETs would impact the financial sustainability of their business. Survey findings also indicate that the upfront purchase cost of ZETs is a significant barrier that impedes adoption and lowering this cost is one of the most highly ranked ways to increase access. For these reasons, efforts to support ZET adoption should increase ZET affordability and clearly demonstrate how they can work for the small trucking business model.

In general, an overriding focus on profitability shaped most stakeholders’ thinking about ZET adoption. Interviews revealed that many small trucking businesses, and especially contract drivers, face acutely thin margins within a highly precarious industry. Regulations requiring the purchase of an expensive ZET pose a survival threat to many small trucking operations, especially if early adopters encounter technical issues. As one interviewee put it: “One big problem is not having the capital available if your truck breaks down or if something happens where technology changes and then they make a

regulation...It can break a small company because you’ve invested everything you have in that truck and trailer and then they change the rules on you and you can’t compete ... [It’s] like telling them you need to buy a new house. Your house isn’t good enough and you have to have it in three months and pay for it and that is a huge burden for a small company.” Some small fleet owners expressed concern that purchasing a ZET would mean “taking a loss” on previous investments into trucks that they are still paying off. They may not recoup what they still owe if they try to sell their current diesel truck and would need to incur even greater debt to purchase a ZET with an uncertain resale value.

Additionally, interviewees emphasized that small fleets do not have the same safety net that larger fleets do. Investing in a ZET is extremely risky for fleet owners who rely on a small number of trucks to carry out their business operations, especially if they lack back-up vehicles. One small fleet owner described it this way: “If I have a personal car and it’s





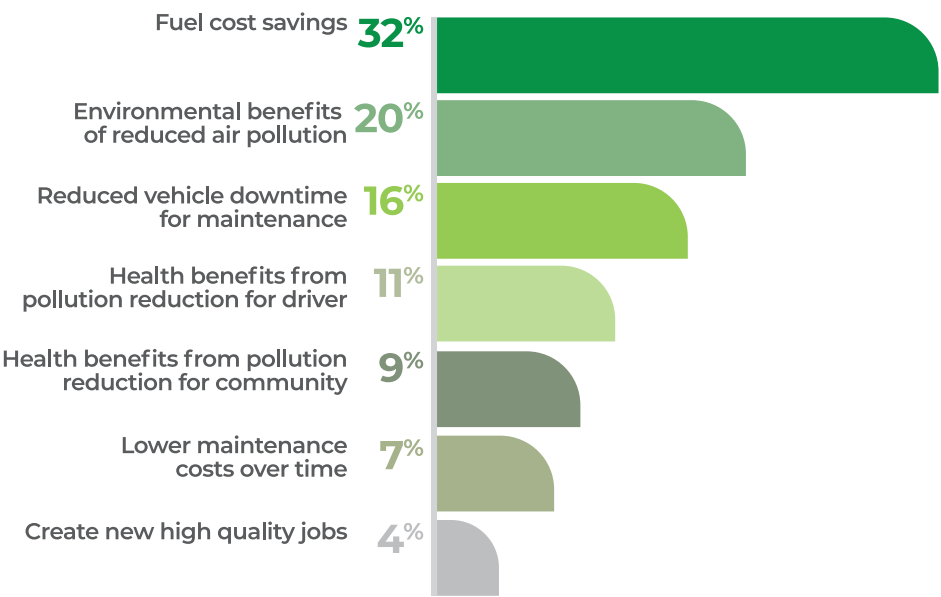
electric and something goes wrong with it, I can rent a car or I can have a secondary car that I can drive, but this is our livelihood. You can't have somebody put all his eggs in one basket into this new

technology that they haven't seen. It's almost like a Ponzi scheme." Small fleet owners indicated that maintenance and charging downtime for ZETs are particular concerns because any additional time spent off the road for fueling or service means less revenue for their business.

Fleet owners also indicated that the most attractive aspects of ZETs relate to cost reductions. For instance, survey respondents selected fuel cost savings as the most important potential benefit of adopting ZETs. However, it is important to note that realizing these desired fuel cost savings depends

upon proactive planning to ensure charging occurs at the most optimal time. Additionally, when asked how governments might measure success for programs that support truck electrification for small and minority owned fleets, interviewees similarly cited metrics associated with cost: profitability, business viability, fuel and maintenance savings, number of loads possible with the new technology, cost of ownership, cost per mile, and access to contracts.

## Most Important Benefits of Adopting Zero Emission Vehicles



Question: Which of the following is the most important potential benefit of adopting zero emission vehicles?

## Small Fleet Owner Spotlight:

### Emmanuel Kibui of E & R Logistics

*“When you are a small minority [owned business], the financing depends very much on your personal credit. While using your personal credit for business, [it comes with] a lot of disadvantages. It’s just a maze. How long have you been employed? How much do you make? [You’re] trying to prove a point. It’s just a challenge by itself.”*

About the fleet: One heavy duty Freightliner truck

About the business: For-hire minority owned fleet that transports general freight regionally between Maine and Florida

Top needs as a small fleet owner: Access to financing to purchase equipment and staff capacity to run their business

ZET interest or experience: Interested if affordable

Top concerns about ZETs: Heavy duty ZET availability, cost of equipment, and access to charging infrastructure

Opportunities to ease the transition: Higher incentive set asides for small fleets, outreach to increase information accessibility, test drives, and universal simplified grant applications

## Small Fleet Owners Seek Assurance of ZET Reliability and Performance

Small fleet owners seek proof that ZETs can perform reliably and meet their duty cycle and operational needs. Our survey showed that vehicle range was the highest ranked barrier to ZET adoption for small fleet

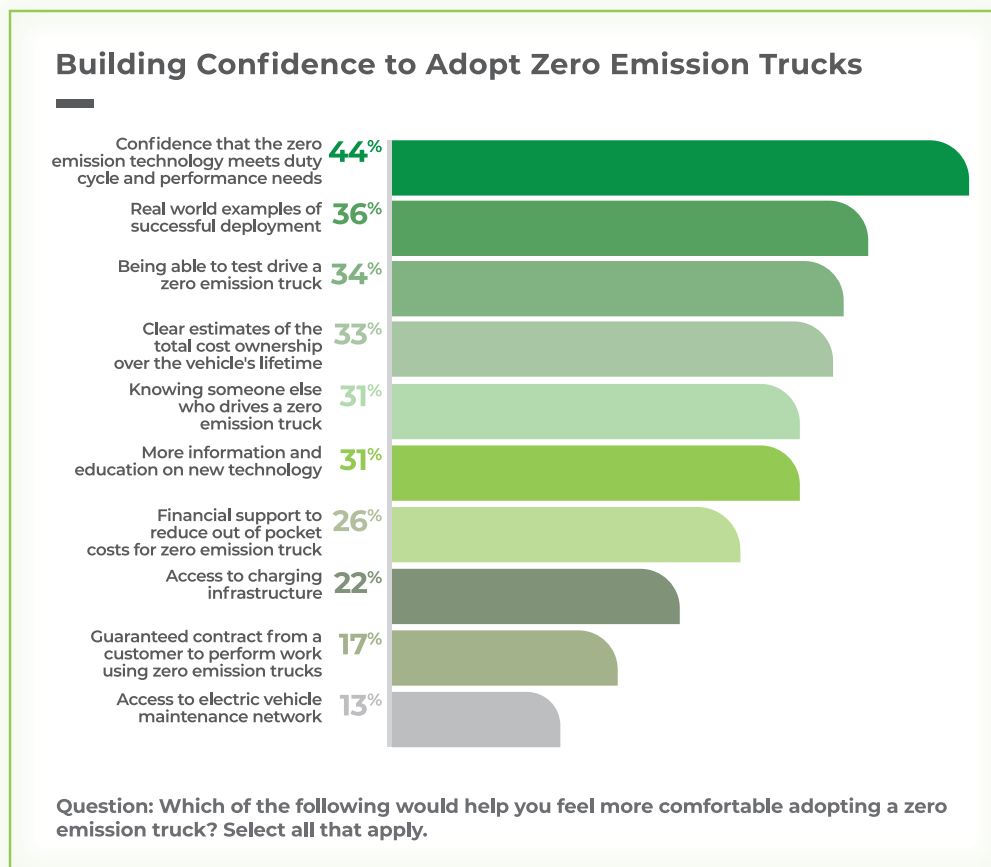
owners. Additionally, when asked what would help small fleet owners feel more comfortable adopting a ZET, confidence that the technology meets duty cycle and performance needs rose to the top with half of minority respondents citing this as a critical need. In particular, interviewees frequently expressed concerns about ZET range related to charging: how far can a ZET travel on a single charge and what will be the required charging frequency? Some fleet owners stated that they seek trucks that offer flexibility for multiple types of runs and distances and

do not want to be held back by the “leash” of a limited range. Small fleet stakeholders including those that drive in mountainous terrain also are looking for confirmation that ZETs can offer adequate power to move heavy loads up steep grades.

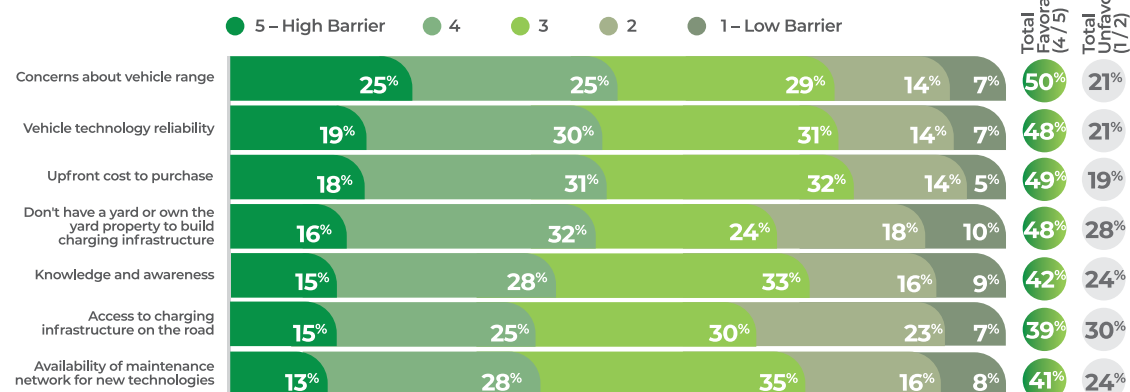
Additionally, some small fleet owners expressed frustration about trucks that fail to perform up to standard and highlighted the need for greater manufacturer accountability. Even with warranties in place, vehicle breakdowns hit small fleet owners especially hard. Unable to afford to deploy replacement vehicles, faulty technology can cost small fleets their contracts. One small fleet owner described the repercussions of DEF breakdowns: “I had three vehicles go down one right after another. One went down on a Tuesday, one went down on Thursday, and another by Monday... We need policies in place that prevent manufacturers

from doing negligence of that sort...Wanting to get mass production out quickly, sometimes people are like, ‘We’ll fix it as we go.’ Well, the problem is small fleets can’t handle that fix. We don’t have the financial support or backing that will put us in a position where we can get other vehicles on the road quickly enough, and then you’re jeopardizing the contract you have in place...There’s no way we can get the money back that we would lose.” Therefore, especially in light of past negative experiences with DEF trucks, small fleet owners are wary of being a “guinea pig” and adopting ZET technology until its performance has been fully vetted beforehand.

This desire for stronger guarantees around technology reliability is closely linked to ZET maintenance concerns. Multiple interviewees stated that beyond overcoming the hurdle of high upfront purchase costs, keeping a ZET operating smoothly



## Top Barriers to Adopting Zero Emission Trucks



Question: Rank the following barriers to adopting zero emission medium and heavy duty vehicles in terms of their importance with 5 = high barrier and 1 = low barrier.

over time will be another significant challenge. Despite the fact that ZETs have fewer moving parts and ostensibly reduced maintenance needs and costs over time,<sup>47</sup> small fleet owners frequently surfaced questions about how to maintain their ZET if breakdowns occur. Some fleet owners we interviewed have waited for specific parts to repair their diesel truck for weeks and even up to three months. Therefore, interviewees worry that existing mechanic and parts shortages for diesel trucks will translate to inadequate availability of maintenance networks for ZETs as well. One small fleet owner who has already adopted electric yard tractors described how a three year warranty and a dedicated technician enhanced their comfort with the transition. Small fleet owners want to know whether they can access timely maintenance support from a robust maintenance network so that they can go to their local mechanic and receive support if their truck breaks down in a remote rural area, preferably without having to resort to a dealer.

## Charging ZETs Is Another Major Barrier for Small Fleet Owners

Small fleet owners and non-fleet interviewees alike emphasized the need for adequate charging infrastructure (EVSE) to make ZET adoption feasible. Small fleet owners, especially those with over the road fleets, want to see charging infrastructure that is as widely available and convenient to access as existing gas stations. Charging concerns, however, may vary by demographic. When asked what would help them to feel more comfortable adopting ZETs, regional and long haul fleets selected access to EVSE at a higher rate than local fleets.

Small fleets that return regularly to a depot may face the extra challenge of lacking access to a yard where EVSE installation can occur. Many small fleets may park in the street or operate in areas with limited parking like the port. If small fleets do have reliable access to a yard, they are likely to rent rather than own that property. In these scenarios, it is unclear who is responsible for coordinating and paying for the installation of EVSE and how increased utility costs would be shared. Furthermore, small fleets that lease



their yard need to bring their landlord on board in order to successfully install EVSE. For instance, one interviewee who has successfully adopted a zero emission hostler stated that a supportive property manager was key to getting EVSE built at their site.

## Challenges for Small Minority Fleet Owners

Although some fleet stakeholders we interviewed asserted that minority owned trucking businesses face the same barriers to electrification as white owned ones, key themes arose regarding challenges that minority owned fleets face. Survey findings indicated that white fleet stakeholders were more than twice as likely as minority fleet stakeholders to have heard about or explored ZET options. Interviews with small minority fleet owners further supported this finding. Many interviewees commented on the high prevalence of minority and immigrant stakeholders in the trucking industry and small minority fleet owners frequently cited language barriers and exposure to information as a challenge. For instance, one interviewee noted the following dynamics in their community: “Oftentimes they feel a certain sort of left behind. More often where knowledge is power, oftentimes this sort of knowledge [about ZETs, grants, etc.] rarely gets to them. They rarely get to reap this benefit, even though they’re paying the same taxes that everyone else is to make these systems available.” Thus, incentive and grant programs are only useful to the degree that information about these programs is widely disseminated and potential recipients are aware of their availability and how to access them.

This concern closely relates to another significant hurdle that small minority fleet owners face: access

to financing and capital. One interviewee has faced rejection when applying for financing. Another shared how limited education and information penetration with regards to government support programs compounds existing wealth disparities. In particular, this minority fleet stakeholder described how they have been applying to become a certified minority small business for over a year to access targeted funding opportunities. In sum, intentional access to information and to financial resources will play a central role in facilitating the ZET transition for small minority fleet stakeholders.

## Small Fleet Owner Spotlight:

### Baris Akdis of Transworks

**About the fleet:** Twelve trucks including Class 8 heavy duty and Class B medium duty

**About the business:** For-hire regional fleet that operates in the Southwest (CO, UT, AZ, NV, CA, and NM)

**Top needs as a small fleet owner:** Affordable fuel prices and finding good employees

**ZET interest or experience:** Interested due to lower total cost of ownership and has placed an order for two Daimler Class 8 battery electric trucks

**Top concerns about ZETs:** Finding qualified mechanics, access to charging infrastructure, and ZET battery life and performance in cold weather

**Opportunities to ease the transition:** Tax credits, carve outs for small fleets, and lower ZET price from manufacturers

***“Eventually the operating cost is beneficial because you don’t have to do oil changes and you don’t have to get fueling for it. With the fuel prices right now it’s very beneficial. The biggest fear that I have is that you cannot already find good mechanics who can fix the trucks in the market right now. Then who is going to fix these trucks with electric problems?”***



# Policy Recommendations

## Invest in Tailored Solutions

**T**he trucking industry landscape is complex and highly heterogeneous. Even in the under twenty truck range, the needs of a one truck fleet can vary drastically from that of a five truck fleet. Geography, climate, duty cycle, type of truck, distance, and trucking sector are other factors that may shape the particular concerns of a small fleet. Similarly, the applicable regulations, decision-making bodies, supports, and approaches to community outreach will differ according to geographic scale, location, and context. Therefore, policies and programs that promote small fleet electrification in an equitable manner should strive to attune to the particular needs and contexts of constituent communities.

Whereas economies of scale, increased capacity, and access to capital and knowledge favor larger fleets in the transition to ZETs, small and minority owned fleets face particular obstacles. These challenges include minimal staffing, thin margins, limited access to capital and financing, lack of exposure to information, and language barriers. Since most small fleets acquire used vehicles, purchasing a new diesel vehicle, let alone a new electric truck can pose a heavy strain. Therefore, tailored support mechanisms, including dedicated, sufficient funding and technical assistance are crucial to help ensure this sizable portion of the trucking industry can successfully transition to ZETs.

## Opportunities

- **Create targeted funding programs:** public incentive programs to promote ZET adoption or charging infrastructure installation should carve out specific and higher funding set-asides for small fleets, minority owned fleets,<sup>48</sup> and drivers operating in communities disproportionately impacted by pollution.
- **Provide robust purchase incentives:** in order to promote economic feasibility, incentives that help defray the upfront price of ZETs should strive to cover a significant portion of the cost differential between ZETs and non-ZETs. Agencies should consult directly with small fleet owners to identify the right coverage amount.
- **Comprehensive technical assistance:** invest in and offer dedicated support to help small and minority owned fleets understand financing options, apply for incentives and grants, and successfully navigate ZET charging and maintenance. State agencies and entities like the U.S. Department of Energy [Clean Cities coalitions](#) can expand their capacity and focus to assist small and minority owned fleets.
- **Demonstrate small business benefits:** communication strategies that promote ZET adoption in small fleets must clearly state how the technology will benefit small trucking businesses directly and financially. They should highlight how ZET regulations will concretely center the needs of small fleets rather than what may be perceived as external agendas for the environment and community at large.

## Tailored Solutions at Work

### Innovative Small E-Fleet (ISeF) program:

The California Hybrid and Zero Emission Truck and Bus Voucher Incentive Project, otherwise known as HVIP, will allocate \$25 million of HVIP funds in fiscal year 2022 dedicated to helping small fleets transition to ZETs. Potential uses of the funds include lowering the upfront purchase cost of a ZET, flexible leases, truck as a service, planning assistance for individual owners, and more.

### Medium and Heavy Duty Zero Emission Vehicle Fleet Purchasing Assistance Program:

In 2021, California passed [SB 372](#) establishing the Medium and Heavy Duty Zero Emission Vehicle Fleet Purchasing Assistance Program, which aims to create financing tools and other forms of assistance for medium and heavy duty fleet owners to adopt ZETs. The program will specifically produce financing tools that are tailored to the needs of fleets of varying sizes: microfleet, small fleet, and large fleet. As of the time of publication, this program is still being developed to foster the creation of tools that will be important for small fleets making the choice to go electric. Tools that could become available include performance guarantees, asset residual value guarantees, and the creation of secondary markets. Furthermore, the program dedicates 75% of financing products to the electrification of fleets in “underserved” communities.



## Reduce Risk and Enhance Profitability for Small Fleets

Small fleets that choose to adopt ZETs have little room for error. Even if they have the capacity to purchase a ZET, they may lack a financial buffer or extra vehicles to continue operating if they encounter technical concerns. Small fleets are wary of taking the ZET leap and seek greater technology reliability and assurance that ZET adoption will work financially for their business. Therefore, policies that promote small fleet electrification should strive to reduce risk and promote increased likelihood of profitability.

### Opportunities

- **Prioritize contracts for ZET owners:** both government and private entities can offer small fleets preferential treatment for adopting ZETs by awarding extra points in competitive bidding and / or rewarding them with priority contracts.
- **Offer accessible truck leasing options:** for small fleets, especially those that operate heavy duty trucks across diverse duty cycles, ZET leasing can provide a lower risk and more affordable way to test out ZETs without needing to make an investment to purchase a ZET outright. A number of different leasing models are becoming available, including options to rent just the ZET and battery, lease this equipment as part of a larger package of services such as maintenance and charging (also

known as all inclusive leasing), or enter into lease purchase agreements, which are leasing contracts that lead to eventual ZET ownership.<sup>49</sup>

- **Create performance guarantees:** assist resource-strapped small fleet owners by developing publicly funded performance guarantees to cover costs associated with technology or battery failure for ZETs.
- **Promote other financial and non-financial incentives:** small fleet owners may benefit from a suite of other incentives in addition to lowering the upfront vehicle cost. This includes insurance discounts, tax credits, subsidized charging or financial support for charging infrastructure installation, free tolls, a ZET specific terminal or lane (especially at the port), and pairing charging stations with secure free or reduced price parking.
- **Advance robust vehicle testing and compliance:** develop state or federally funded programs that conduct rigorous testing of ZETs in order to promote greater performance reliability before new models hit the market. Consider requiring that ZETs receive satisfactory performance ratings before they become eligible for public incentive dollars.
- **Offer dedicated maintenance:** create programs in which manufacturers and other stakeholders offer small fleets accessible, dedicated maintenance support for an initial period of time in order to troubleshoot any technical issues. Manufacturers can send trained technicians directly to small fleet owners and offer replacement ZETs to maintain operations until service is complete.

## ZET Certification

### Zero-Emission Powertrain Certification

(ZEP Cert): Adopted in 2019 by the California Air Resources Board, the ZEP Cert regulation adds a set of stricter standards to existing [Heavy-Duty Phase 2 Greenhouse Gas Standards](#). Manufacturers can choose to voluntarily participate in the ZEP Cert program, which aims to promote improved ZET performance and transparency by creating new emission standards for zero emission powertrains and

standardizing information sharing about ZETs. For instance, manufacturers who go through the certification process must commit to offering a three year warranty for zero emission powertrains, share their service manual, and provide potential consumers helpful information about vehicle performance like range and speed to assist them in making informed purchasing decisions.<sup>52</sup>

## Promote Small Fleet Autonomy

Small fleets expressed a strong interest in running their businesses as independently as possible. This includes reducing reliance on short term incentives in favor of more sustainable methods of support and increasing accessibility of ZET maintenance knowledge so that small fleets can manage repairs in-house without having to depend heavily on dealers. Below are some opportunities to expand access to knowledge, vehicles, and financing solutions to promote small fleet self-reliance for the long haul.

### Opportunities

- **Improve ZET affordability:** lowering the upfront cost of ZETs via temporary, time bound manufacturer subsidies is one way to ensure that fleets of all sizes, small or large, can have a higher chance of affording this technology.
- **Expand the ZET secondary market:** given the fact that most small fleets purchase used rather than new trucks, create robust secondary markets and support the turnover of ZETs from larger fleets to small and minority owned fleets.
- **Grow financial literacy:** offer accessible educational resources and opportunities to support the financial literacy of small fleet owners and successful money management for small trucking businesses.
- **Promote favorable financing:** help small and minority owned fleets move beyond temporary supports like grants by providing access to loans with favorable terms like a low or even zero interest rate and a longer repayment period.
- **Open access to ZET maintenance information:** require manufacturers and dealers to openly and widely share ZET maintenance information with any independent maintenance shops or workers interested in learning.

## Financing to Support Small Fleets

### CalCAP Heavy Duty Vehicle Air Quality Loan

**Program:** Operated by the California Pollution Control Financing Authority, this loan loss reserve program insures lenders that offer loans to small businesses purchasing cleaner heavy duty vehicles. By reducing risk, the program may encourage lenders to offer better financing

terms to small businesses. The program specifically targets small fleets by requiring that eligible fleets have fewer than ten trucks to participate. More than 36,000 cleaner trucks have been deployed through the program, which continues to be in high demand.

## Streamline and Simplify Support Programs

Application processes to receive incentive funding for ZETs should neither require small fleets to hire consultants to navigate the process nor be marathon endeavors. According to our survey, alongside reduced upfront costs of ZETs and technical assistance, simplified incentive processes are one of the most helpful supports for small fleets when adopting ZETs. Especially in light of the limited capacity of small fleets, both incentive application processes and grant reporting requirements should be quick, accessible, and convenient.

### **Opportunities**

- **Streamline incentive application processes:** offer a universal application for small fleets to apply for ZET incentive funding, clarify all required application information upfront, reduce excessive paperwork, and ensure timely processing.
- **Remove grant stipulations:** to the extent possible, remove cumbersome grant restrictions that might bar otherwise eligible and legally compliant small and minority owned fleets from participation in grant programs. For instance, reduce the number of criteria that old diesel trucks must meet in order to qualify for turn-in programs that can help small fleets afford ZET adoption.
- **Simplify reporting requirements:** pare down grant reporting requirements for small fleets that receive public funding to purchase electric trucks or charging infrastructure.

## Center the Voices of Truck Drivers and Small Fleets

Lawmakers and agencies must make a concerted effort to listen to, uplift, and incorporate the needs of small fleet stakeholders when developing ZET policies. Especially given past negative experiences with regulations, some small fleets may be wary of new rules that will impact their business expenses. Echoing what leading voices in the environmental justice movement, like the [Moving Forward Network](#), have emphasized, disproportionately impacted communities have both the insights and experience to elucidate the path forward toward a cleaner and more equitable freight system.<sup>50</sup> Small fleet owners and drivers live and breathe the ins and outs of the trucking industry daily and therefore understand intimately what will work for their business model. Bringing in their perspective early, applying intentional engagement strategies,<sup>51</sup> and compensating them for their time can lead to more effective solutions to ZET adoption barriers and increase receptivity to the policies once they pass.

### **Opportunities**

- **Proactive and continuous engagement:** agencies and policymakers should consult truck drivers and small fleet owners as early as possible and long before final stages of policy development. Legislators and agency officials in particular should prioritize meeting with small fleets directly where they are (i.e. at the port, truck depot, or on the road) to understand the challenges they face, and their engagement should extend beyond a single interaction. Due to limited capacity and the nontraditional schedules of small fleet stakeholders, persistent follow-up and extensive lead time may be necessary in order to schedule opportunities to hear their perspective.

- **Seat at the table:** Black and Brown truck drivers and small fleet owners should have ample opportunities to directly communicate their own needs and priorities to legislators and agency officials. This might look like town halls, advisory councils, round tables, forums, and / or listening sessions. These fleet stakeholders should be compensated for their time and expertise in shaping ZET policies and programs.

## Prioritize Information Accessibility

Access to information about ZETs and support programs remains a key barrier to adoption, especially for minority fleet owners. Agencies, manufacturers, and advocates must ensure information is accessible for those with limited formal education or who primarily speak non-English languages. Building greater ZET awareness, especially about funding opportunities and how ZET technology works, will require strategic outreach approaches that leverage trusted messengers and increase opportunities for small fleets to experience ZETs firsthand.

### Opportunities

- **Simple and translated language:** information about ZETs and grant programs should reduce technical jargon, define terms, and use highly accessible language. Additionally, agencies should strive to appropriately translate information into the most commonly spoken languages in their relevant jurisdictions (county or state).
- **Hands on learning opportunities:** create opportunities for small fleet owners to experience ZETs in person through test drives, demos, and pilots in order to build confidence and understanding.

- **Trusted messengers and channels:** prioritize working with trusted messengers and platforms to publicize information and meaningfully engage small fleet stakeholders. Examples might include healthcare providers, mechanics, community based organizations, and trucking association newsletters or listservs. When reaching out to immigrant communities in particular, agencies should actively focus on publicizing information through ethnic media outlets.
- **Trucker to trucker:** word of mouth is a promising way to share information about ZET technology and programs. Agencies should consider working directly with and compensating small fleet ambassadors to actively share information with their peers.

Following the progress of the light duty vehicle market, medium and heavy duty vehicles are the next major frontier to clean up the American transportation system. Truck electrification will be essential to address the outsized impact that medium and heavy duty vehicles have on air quality and the climate crisis. With robust standards in place, electric trucks also have the potential to usher in good jobs across the transportation supply chain. However, in order to ensure this transition brings better health and wealth to low income communities and communities of color, decision-makers must prioritize the stakeholders who are most disproportionately impacted by our current freight system, including communities on the front lines of pollution, truck drivers, and small and minority owned trucking businesses.





## Conclusion

Not all trucking businesses are equally equipped for a smooth transition. Many small fleets have heard of ZETs and are highly interested in adopting but face an uphill battle accessing grants and vehicles and have limited knowledge about ZETs. Given their low profit margins, small fleets are looking for assurance that they can make the transition to ZETs without jeopardizing their business. A primary barrier they face is access to capital to afford ZET adoption. Small fleets are also concerned about whether ZETs can reliably meet their duty cycle needs and if they will be able to access adequate charging and maintenance networks when they do. Minority fleet owners face the particular challenge of language and information accessibility barriers. Future research should explore in greater depth the challenges that independent owner operators and small minority owned trucking businesses face in the ZET transition.

Addressing these obstacles will require a mix of strategies. Agencies and lawmakers should strive to make information about ZET technology and programs as widely accessible as possible, listen closely to small and minority fleet stakeholders, and meaningfully bring them into the process to develop ZET policies. Technical assistance and simplified application processes for grant programs will be key to help equitably assist these fleets. Additionally, policies aimed at catalyzing the transition to ZETs should strive to provide tailored support to small fleets in a way that reduces financial risk and helps small fleet owners operate independently. Adopting targeted strategies to help small and minority owned fleets take this leap is fundamental to ensuring the freight sector can successfully move beyond diesel and embrace trucks that run on clean electricity.

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