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Accelerating to 100% Clean:

Zero Emitting Vehicles Save Lives, Advance Justice, Create Jobs

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Top cover picture: Drone photo of busy highways over Denver's Elyria-Swansea and Globeville neighborhoods and schools.
Credit: Chance Multimedia

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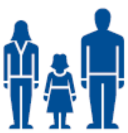
Introduction

Air pollution is the largest environmental cause of disease and early death in the world and is associated with more than 5 million global premature deaths every year.[1] In the United States, nearly half of all Americans live in communities with unhealthy levels of air pollution,[2] and recent satellite data indicate that could be a serious underestimate.[3] A transformative shift to electrification and zero emitting vehicles is one of the most important steps our nation can take to help alleviate the health burden on Americans due to air pollution.

Poor air quality results in serious and often deadly health outcomes, especially for those already at risk, including children, the elderly, Black, Indigenous and People of Color and people in disadvantaged communities. In 2017, approximately 107,500 people died prematurely in the U.S. due to health burdens from ground level ozone (smog) and fine particulate matter ($PM_{2.5}$).[4]



"A new study estimates more than **20,000** people die prematurely every year as a result of the health burden from the motor vehicle pollution on our roads and highways."

Much of this dangerous pollution is attributable to the cars, SUVs, trucks and buses that drive on our roadways. The transportation sector is the largest source of climate pollution in the U.S. and one of the biggest sources of harmful tailpipe pollutants, including ozone-forming oxides of nitrogen (NOx), $PM_{2.5}$, and hundreds of toxic contaminants. Hundreds of studies over multiple decades have found that exposure to vehicle pollution causes adverse health impacts in utero, in infants and children, and in adults, and those that live closest to our nation's roads and highways face the greatest harms.[5] A newly published study estimates that more than 20,000 people die prematurely every year as a result of the health burden from the motor vehicle pollution on our roads and highways. And millions more suffer from respiratory illnesses, lost work days and lost school days.[6]

Communities of color and disadvantaged populations shoulder the greatest health burden from vehicle pollution because these groups constitute a higher percentage of the population near our roads and highways.[7] And these communities already face health disparities, including higher rates of chronic disease and premature death.[8] Black people and lower income populations are at a greater risk for health impacts from fine particulates[9] and have a higher risk of premature death from ozone and particle pollution than Whites.[10, 11]

Addressing passenger vehicle and commercial truck pollution is one of the most important things we can do to save lives and arrest climate change. We must build on the leadership of states and communities and move expeditiously toward a zero emitting transportation future. A shift to zero emitting cars, SUVs, trucks and buses will achieve crucial tailpipe pollution reductions and save lives. It will also dramatically reduce our dependence on oil and mitigate climate pollution. And it will help our auto and manufacturing industries create urgently needed jobs and remain competitive with the rest of the world. The technology is available today. Electric vehicle prices continue to drop significantly as model

What is particulate matter?

Particulate matter (PM), or soot, can aggravate respiratory conditions such as asthma and chronic bronchitis and has been associated with cardiac arrhythmias, heart attacks and premature deaths. Fine particulates ($PM_{2.5}$) pose the greatest risk because they can get deep into the lungs and even the bloodstream.

What is ozone?

Ground-level ozone (O_3) pollution, often referred to as smog, is formed by the reaction of volatile organic chemicals (VOCs) and oxides of nitrogen (NOx) in the atmosphere in the presence of heat and sunlight. Ozone can cause heart disease, permanent lung damage, aggravation of asthma and premature death from respiratory causes.

availability surges in both the passenger vehicle and commercial sectors. Electrification of our nation's cars, trucks and buses will save vehicle and fleet owners money, create jobs and provide the nation with enormous health benefits and cost savings.

We are now in the midst of a global pandemic that early research indicates is exacerbated by our chronic air pollution.[12] As we center our efforts on minimizing loss of life and economic recovery from COVID-19, we must also focus on public health and rebuilding in ways that deliver cleaner healthier air and more just communities, especially to those hit hardest by the crisis. We have an opportunity to build a world healthier and more equitable than before the pandemic by investing in zero emission technology, improving public health, mitigating catastrophic climate change and creating jobs.

Air pollution remains a serious problem in the U.S.

The Clean Air Act has delivered dramatic improvements in air quality. Yet far too many communities remain exposed to harmful levels of air pollution. According to the American Lung Association's annual State of the Air report, 150 million people – nearly half of all Americans – live in counties with unhealthy levels of ozone or particle pollution, and more than 20.8 million people live in counties with harmful levels of ozone and both annual and daily particulate matter (PM).[13]

Los Angeles continues to have the worst ozone in the nation but other cities including Phoenix, Denver, Chicago and Milwaukee also fail to meet health-based ozone standards and have seen their air quality continue to degrade over the last few years. Similarly, cities across the nation from Bakersfield to Detroit to Shreveport have unhealthy levels of fine particulates that has increased over the last few years.[14] A recent analysis by researchers at Carnegie Mellon University found that harmful particulate pollution in the United States increased considerably between 2016-2018 – an increase that was associated with 9,700 additional premature deaths in 2018.[15]

- **California** remains home to the worst air in the nation. The South Coast and San Joaquin Valley are the only two areas in the U.S. designated as "extreme" nonattainment for the federal health-based ozone standard and the San Joaquin Valley has the highest $PM_{2.5}$ levels in the nation.[16] Southern California has the nation's worst smog and is falling farther out of compliance with national health-based standards as pollution levels have increased in recent years (before the COVID-19 pandemic).[17] As a result the area has seen a 10 percent increase in deaths attributable to ozone pollution from 2010 to 2017.[18]

While these numbers are staggering, they likely do not capture the full breadth of communities suffering from unhealthy air. The Clean Air Act's National Ambient Air Quality Standards (NAAQS) are determined using local air pollution monitors. However, many counties in the U.S. have zero or one monitor and, as a result, the nation's network of fixed-site air pollution monitors may not detect all areas with pollution levels that exceed the health-based NAAQS (or may not identify areas where exceedances are most severe). In 2018, a paper compared satellite-derived data on $PM_{2.5}$ concentrations to data from the nation's monitors and found that more than twice as many people in the U.S. – an additional 24 million people – are living in areas with unhealthy levels of $PM_{2.5}$ that were misclassified as in attainment.[19]

Motor vehicles are a significant and growing contributor to our national air pollution problem

There are many sources of air pollution in the U.S., but passenger vehicles and commercial trucks and buses that crisscross our nation's roads and highways are a substantial contributor. Even with historically successful tailpipe pollution and greenhouse gas emissions standards for both the light-duty and heavy-duty sectors, these vehicles continue to emit significant amounts of ozone-forming NOx, $PM_{2.5}$, climate pollution and numerous air toxics, all of which contribute to serious public health problems.

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In 2019, our motor vehicles were responsible for a third of the nation's total NOx emissions, emitting almost three million tons.[20] This contribution is even higher in some places – California's highway vehicles are responsible for 45 percent of the state's NOx emissions.[21] Our nation's cars, trucks and buses also emitted more than 1.4 million tons of ozone-forming volatile organic compounds (VOCs) and were responsible for more carbon monoxide and NOx pollution in 2019 than all of the nation's power plants combined.[22] The transportation sector is also the largest source of climate pollution in the nation, with vehicles on our roads emitting more than 1.5 billion tons of carbon dioxide in 2019.[23]

Passenger cars and light trucks are responsible for just over half of the NOx and almost all of the VOC pollution from motor vehicles.[24] And despite making up only about 4 percent of vehicles on the road,[25] the delivery trucks and tractor trailers that distribute our goods also deliver nearly half of the NOx emissions and nearly 60 percent of the fine particulates from all vehicles.[26] EPA estimates that NOx emissions from these diesel trucks are projected to be one of the largest contributors to national ozone pollution in 2025.[27] Last year, passenger vehicles emitted over 1.1 billion tons of climate pollution and heavy-duty vehicles were responsible for more than 400 million tons –totaling more than the greenhouse gas emissions from all power plants in the nation combined.[28]

A newly published study used source apportionment photochemical air quality modeling to estimate the health burden of $PM_{2.5}$ and ozone, including mortality, from mobile sources. Among the mobile sources modeled, the total premature mortality burden from vehicles on our roads and highways is the greatest. The study estimates up to 18,000 deaths per year in 2025 (and more today) from roadway related $PM_{2.5}$ and ozone, with California, the Midwest and the Northeast experiencing the greatest fraction of deaths.[29]

Pollution disproportionately harms communities near roadways

It is well documented that those living and working near heavily trafficked roadways suffer the greatest harms, and many are people of color and disadvantaged communities. Motor vehicles contribute significantly to elevated concentrations of many pollutants near major roadways, and the risks associated with roadside exposure to these pollutants are a serious public health concern.[30] Hundreds of studies over multiple decades have found that exposure to vehicle pollution causes adverse health impacts in utero, in infants and children, and in adults.[31]

"Over **6.4 million** children attend public school within 250 meters of a major roadway."

In 2010, the Health Effects Institute published a major review of this evidence.[32] A panel of expert scientists looked at more than 700 studies from around the world and concluded that traffic pollution causes asthma attacks in children and may cause a wide range of other effects including: the onset of childhood asthma, impaired lung function, premature death, death from cardiovascular diseases and cardiovascular morbidity. They concluded that the area most impacted is within 300 to 500 meters of the highway.[33] And the number of people living "next to a busy road" may include 30 to 45 percent of the urban population in North America.[34] Over 6.4 million children attend public school within 250 meters of a major roadway.[35] The risk to public health near roadways has been so well documented that the state of California recommends avoiding placing homes, schools, daycares, playgrounds or medical facilities within 500 feet of a freeway or high-traffic road.[36]

Impacts on children and pregnancy

Infants and children are especially vulnerable to near roadway air pollution. As children's lungs develop, they breathe in more air per unit of body weight than adults. Even a small deficit in lung growth during childhood can accumulate into substantial deficits in lung function in adulthood.[37] Dirty air contributes to and exacerbates upper and lower respiratory infections and asthma, and it may also affect pediatric cancer and infant mortality and weight.[38]

Children who live or go to school near major roadways are at considerable additional risk for significant deficits in lung function, even in areas with low regional pollution,[39] including increased incidence of asthma, even for those with no family history of asthma.[40] And larger deficits in lung development have been observed in children who spend more time outdoors.[41] A recent study also found that long-term school performance and test scores can be affected by attending school downwind of highways.[42]

"Traffic-related air pollution is also a risk factor for several pregnancy outcomes, including preterm birth and structural birth defects."

Traffic-related air pollution is also a risk factor for several pregnancy outcomes, including preterm birth and structural birth defects. Exposure to certain air pollutants appears to substantially increase the risk of early preterm birth (less than 37 weeks of gestation), particularly in lower income neighborhoods.[43] And a recent systematic review of literature found that exposure to traffic related $PM_{2.5}$ and NO_2 is associated with the development of hypertensive disorders in pregnancy.[44] For mothers who live near a freeway during pregnancy, the risk of having a child with Autism Spectrum Disorder (ASD) can more than double.[45] And children exposed to higher levels of traffic related air pollution in utero and in the first year of life are more likely to develop ASD.[46]

Impacts on adults

While children are among the most vulnerable, adults are also at risk from near roadway pollution. Cardiovascular disease accounts for about a third of all U.S. deaths[47] and studies show that living near major roadways increases the risk of disease.[48] Long-term exposure to traffic air pollution may increase the risk of developing chronic obstructive pulmonary disease (COPD).[49] Studies have also found increased risk of premature death from living near a major highway or an urban road,[50] increased risk of heart attacks from being in traffic, whether driving or taking public transportation[51] and decreased lung function in women associated with urban, traffic-related pollution.[52] Adults living close to the road—within 300 meters—may also risk dementia,[53] and long-term exposure to traffic pollution is associated with reduced cognition in older men.[54]

Disproportionate impact on people of color and disadvantaged communities

Transportation pollution does not impact people and communities equally. The health risks of near roadway pollution have a disparate impact on people of color and lower income households; these groups constitute a higher percentage of the population near major roadways.[55] A recent study by the Union of Concerned Scientists found that Asian American, Black, and Latino American residents in the Northeast and Mid-Atlantic region of the U.S. breathe an average of 66 percent more air pollution from cars and trucks than white residents. Almost a fifth of the 72 million people in the region live in areas where fine particulate pollution levels are more than 50 percent higher than their state's average—and 60 percent of those residents are people of color. At the same time, white residents make up 85 percent of the population that lives in areas where this pollution measures less than half the state's average.[56] UCS found similar disparities in California.[57]

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These elevated pollution levels add to the existing health disparities that racial and ethnic communities in the United States already face, including higher rates of chronic disease and premature death.[58] EPA's most recent literature review of the science related to the health and welfare effects of particle pollution concluded that Black people and lower income populations are at a greater risk for health impacts from fine particulates.[59] Blacks and Latino Americans tend to live in places where they are exposed to greater levels of air pollution, including near high

"Lower income consistently increased the risk of premature death from fine particulate pollution."

emitting facilities and major roadways.[60] Numerous studies have found that Blacks have a higher risk of premature death from ozone and particle pollution than Whites.[61, 62] And the risks associated with air pollution during pregnancy, including preterm birth and low birth weight, are highest in Black women.[63] A large examination of particle pollution-related mortality nationwide found that lower income consistently increased the risk of premature death from fine particulate pollution.[64] Lower neighborhood income has also been associated with an increase in emergency department visit rates in children due to air pollution-related asthma.[65] Additionally, the relationship between ozone level and mortality is stronger among populations with higher unemployment or higher use of public transportation.[66]

Near road monitors highlight the health burden of heavy truck pollution

Near roadway monitors are important in revealing the elevated air pollution levels along roads and highways. While passenger vehicles contribute significantly to near roadway pollution, recent studies have found commercial diesel trucks take an especially heavy toll on neighborhoods along their routes.

"County health data from 2016 shows that people who grow up near the I-880 freeway in Oakland live shorter lives than people who grow up near I-580, indicating that proximity to more heavy-duty truck pollution could impact health outcomes."

A 2017 study used Google street view vehicles equipped with fast-response measurement devices to repeatedly sample every street in a 30-km^2 area of Oakland, CA, developing the largest urban air quality data set of its type.[67] The collected data showed that transportation-related air pollution (black carbon and NOx) was much higher on a freeway that is a designated truck route (I-880) compared to another freeway in the same city where trucks are prohibited (I-580). According to the data, concentrations of black carbon along I-880 were roughly 60 percent higher than average concentrations along I-580, concentrations of nitrogen dioxide (NO2) were nearly 50 percent higher, and concentrations of nitric oxide (NO) were double. The study also reported higher pollutant concentrations on city-designated truck routes than on other surface streets.

Another study near the Port of Oakland that used a web of black carbon monitors also found that black carbon levels measured along truck routes were higher compared to measurements at most other sites, including those near industrial facilities, other highways and on residential streets.[68] Similarly, a study in Houston found elevated black carbon and NOx pollution (tracers for diesel combustion) near 30 percent of metal recycling and concrete batch plant facilities within the sampled areas that were comparable to those measured within 200 meters of highways.[69]

These patterns point to a localized diesel-fueled mobile source influence associated with large diesel trucks, leading to potential cumulative exposure effects near roadways. And these elevated pollution levels have major health implications. County health data from 2016 shows that people who grow up near the I-880 freeway in Oakland live shorter lives than people who grow up near I-580, indicating that proximity to more heavy-duty truck pollution could impact health outcomes.[70]

There is also mounting evidence that as more trucks improve their emissions control, a smaller percentage of high-emitting trucks have become responsible for a larger percentage of total black carbon and fine particulate emissions from the heavy-duty fleet. Recent studies indicate that a failure of advanced aftertreatment technologies over time may cause some vehicles to pollute excessively. One study near the Port of Oakland showed that black carbon emissions from heavy-duty truck tailpipes initially declined as the use of diesel particle filters (DPFs) increased.[71] However, after a few years of use the average black carbon emission rates increased by 50–67 percent, indicating that some DPFs were no longer working well. At the Port, where DPFs were universal in 2015, high-emitting engines comprised 7 percent of the fleet but were responsible for 65 percent of the total black carbon emitted.[72] Similarly, at the Port of LA, trucks with DPFs that no longer worked were responsible for the majority of fine particulate emissions in 2015, with a single 2009 vehicle responsible for over 40 percent of the cumulative PM and 47 percent of black carbon.[73]

"As more trucks improve their emissions control, a smaller percentage of high-emitting trucks have become responsible for a larger percentage of total black carbon and fine particulate emissions from the heavy-duty fleet."

This evidence points to the need for additional measures to curb the health-harming air pollution from our nation's diesel trucks. The development of advanced after-treatment technologies has driven down harmful and toxic air pollution, but electric vehicle technology is required to lift the colossal health burden that remains.

Zero emission vehicles deliver vital multipollutant reductions for healthier, longer lives

In order to truly address the substantial tailpipe and climate pollution from motor vehicles, a fundamental shift to zero emission vehicles (ZEVs) is necessary. Electric vehicles are inherently cleaner than their conventional gasoline and diesel counterparts, emitting zero tailpipe pollution and less climate pollution even when accounting for upstream power plant emissions. And their carbon footprint will continue to decline as the electricity grid becomes cleaner – some estimates suggest that more than 75 percent of the incremental electricity production between 2020 and 2050 will come from renewable sources and the other quarter from gas-fired power plants, as more high-polluting coal plants are retired.[74] And many individual states and power companies have already committed to science-based greenhouse gas reduction targets that contemplate far swifter transitions to zero emitting power. We will urgently need to eliminate climate, particulate, NOx, sulfur dioxide and toxic air pollution from the power sector as we increasingly rely on electrification to mitigate harmful pollution from the transportation sector.

"Electric vehicles are inherently cleaner than their conventional gasoline and diesel counterparts, emitting zero tailpipe pollution and less climate pollution even when accounting for upstream power plant emissions."

In many parts of the country the shift to ZEVs is beginning to take place. Demand for ZEVs is growing as vehicle costs decline and as drivers realize overall cost savings when considering the total cost of owning a ZEV, which substantially reduces fuel and maintenance costs. Eleven states have adopted ZEV programs for passenger vehicles and California recently adopted the nation's first ZEV program for heavy-duty trucks and buses, while 15 other states are developing zero-emission truck and bus action plans. Collectively, these actions help drive the transition to cleaner vehicles. Making this shift is vital to reducing the health burden and the associated costs across the nation.

Passenger vehicles

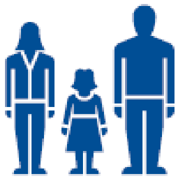
There has been rapid growth in the passenger electric vehicle market, including fully battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). Manufacturers have committed $225 billion to electrification in the next several years.[75] New models are being introduced as costs are falling dramatically. In the U.S., passenger electric vehicle sales increased by about 30 percent from 2016 to 2017[76] and then increased by over 80 percent the following year.[77] The number of electrified models available in the U.S. is projected to reach more than 100 by the end of 2023, with a wider variety of vehicles becoming available, including SUVs, cross-overs and pick-up trucks.[78] These newer models also boast substantially greater battery range – more than 3.5 times the range of earlier models.[79]

With increased model availability and range, there has also been a steady decrease in vehicle prices, primarily as a result of declining battery prices.[80] According to automakers, by 2021 there will be at least five electric vehicle (EV) models available for under $30,000 (manufacturer suggested retail price excluding tax incentives) with a range of up to 250 miles.[81] Purchase price parity between EVs and internal combustion vehicles is expected by the mid-2020s across most segments.[82] And first-owner, 5-year total cost of ownership parity will come earlier (in the 2022-2026 time frame depending on the vehicle class and range) as a result of fuel cost savings.[83]

"In 2019, there were more than **240,000** people employed in jobs related to hybrid and electric vehicles, and **nearly 500,000** working in jobs focused on fuel efficient components."

Growing electric vehicle demand and related manufacturing and infrastructure will also create jobs. In 2019, there were more than 240,000 people employed in jobs related to hybrid and electric vehicles, and nearly 500,000 working in jobs focused on fuel efficient components.[84]

States are helping drive the shift to ZEVs. Under the Clean Air Act, eleven states have adopted a light-duty ZEV program (California, Colorado, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, and Vermont), and together represent more than 30 percent of the new car sales market in the United States.[85] These ZEV states are helping support many of the other factors that lead to higher uptake of zero emission vehicles, including charging infrastructure, model availability and consumer awareness.[86] And four more states are considering adopting similar programs (Minnesota, New Mexico, Nevada and Washington).



10 leading states could save an estimated **$18 billion** and **1,429** premature deaths by 2030 through expansive adoption of ZEV vehicles.

A shift to electric passenger vehicles is essential to save lives and reduce the public health cost burden. An American Lung Association study looked at the economic impact of ZEVs in the 10 states that had adopted programs by 2015. At the time, the damage attributed to passenger vehicles in the 10 states totaled $37 billion in health and climate costs combined, including 2,580 premature deaths.[87] The same states could save an estimated $18 billion and 1,429 premature deaths by 2030 through expansive adoption of ZEV vehicles.[88] A national shift to an all-electric passenger fleet would provide extensive public health benefits nationwide.

While the U.S. has been an early leader in EV development and sales, it is expected to fall behind Europe and China without additional policy drivers.[89] China is considering a target for 60 percent of all passenger vehicles sold in the country to run on electric motors by 2035.[90] Many European countries and cities have made commitments to fully phase out the combustion engine and others have set ambitious ZEV targets.[91] Alongside important state actions, protective federal standards in the U.S. are critical to hasten the transition to a fully electric passenger fleet, protect public health and remain competitive with other EV markets.

Trucks and Buses

Zero emitting commercial trucks and buses are also important to significantly reduce NOx, $PM_{2.5}$ and climate pollution. They emit no tailpipe emissions and they are two to five times more energy efficient than diesel vehicles, reducing dependence on petroleum, and substantially reducing greenhouse gas emissions.[92]

Much of the harmful air pollution from heavy-duty trucks and buses is concentrated in urban areas. There are nearly half a million school buses in the United States, traveling a total of 3.4 billion miles per year to transport 25 million children every school day.[93] And there are thousands more public transit buses that collectively travel more than 2 billion miles annually.[94] Lower income households and communities of color disproportionately rely on these school and public transit buses. Electrification of this sector will help reduce the health burden on these communities. It is also cost-effective – E-buses in most charging configurations cost less than comparable diesel buses on a total-cost-of-ownership basis.[95] The number of E-buses in the U.S. is expected to grow 15-fold over the next five years, but numbers still remain low compared to Europe and China.[96] Much of the U.S. growth will be driven by E-bus targets adopted in California and cities like Los Angeles, New York City and Seattle. California will require 100 percent of all public bus procurement to be zero emission by 2029.[97] Similar federal targets are needed to drive a faster transition to electric school and transit buses.

A significant portion of heavy-duty truck pollution is concentrated in urban areas as a result of slow speeds, idling and stop and go traffic. Zero emission freight trucks can accomplish most local and regional operational needs. Studies show that most freight trucks used in local delivery applications do not travel more than 100 miles per day, and there is a broad variety of zero-emission trucks and buses commercially available today that exceed 100 miles of available range.[98] Furthermore, several battery-electric and fuel cell models are being demonstrated that exceed 200 miles.[99] Other vocational trucks have similar operating characteristics and are well suited for electrification. And there are a number of zero emission regional haul trucks being commercialized over the next few years that industry leaders are anticipating will comprise a significant percentage of the market over the next decade.[100]

"As zero emission technology has developed rapidly the costs have also come down considerably."

There are more than 70 models of electric trucks and buses from 27 manufacturers currently available or with production announced for the next two years.[101] And as zero emission technology has developed rapidly the costs have also come down considerably. Numerous studies show that the total cost of ownership of a few battery electric trucks (transit and some urban delivery) are competitive with their diesel counterparts today. And in nearly every case examined, including long-haul semi-trucks, battery-electric trucks and buses are projected to have similar or lower total cost of ownership than diesel vehicles when purchased within the next 5 to 10 years.[102] The largest savings comes from lower fuel costs: heavy-duty vehicles consume significant quantities of fuel because of their low fuel economy (transit buses average 4 mpg and semi-trucks average 6 mpg) and, for some, high mileage. Compared with diesel, electricity reduces fuel costs an estimated 30 to 75 percent, depending on vehicle efficiency and fuel prices.[103]

A multi-state coalition with a target of 30% of new medium-and heavy-duty sales being ZEV by 2030 and 100% sales by 2050 is expected to result in up to **740 million** fewer barrels of oil used by 2045.

Increasing model availability and decreasing costs make zero emitting trucks a compelling path toward cleaner freight. However, policy support is critical to hasten their deployment. California recently adopted the nation's first Advanced Clean Truck regulation as part of a holistic approach to accelerate a large-scale deployment of zero emission medium-and heavy-duty vehicles. By 2045, every new truck sold in California will be zero emitting.[104] The State of California is leading much of the technical and policy work that is driving down the costs of these vehicles and encouraging manufacturers to invest in technology. Fifteen other states and the District of Columbia recently launched a multi-state initiative to advance and accelerate the market for electric medium- and heavy-duty vehicles including large pickup trucks and vans, delivery trucks, box trucks, school and transit buses, and long-haul delivery trucks. The voluntary initiative set a target of 30 percent of new medium-and heavy-duty sales being ZEV by 2030 and 100 percent ZEV sales by 2050.[105] The agreement will result in an estimated reduction of up to 740 million barrels of oil by 2045.[106] If the agreement was expanded nationally, cumulative oil demand would fall by up to 4.9 billion barrels by 2045 and greenhouse gas emissions would fall by almost 2 billion tons by 2045.[107] A federal program would also help ensure that communities across the country benefit from the enormous pollution reductions.

Accelerating to 100% clean vehicles

"We have a once in a generation opportunity."

Eliminating the dangerous air pollution from our cars, trucks and buses through electrification is one of the **most important actions we can take to address U.S. climate pollution and provide healthier and longer lives for millions of people afflicted by air pollution** – especially Black, Indigenous and People of Color who are disproportionately harmed.

We have a once in a generation opportunity to boldly transform the transportation sector and eliminate greenhouse gases, smog-forming pollution, lethal particulates, and air toxics – saving more than 20,000 lives each year.

We must work together to achieve these life-saving protections while **strengthening our economy** and creating jobs for all. Our nation's acceleration to zero emissions can and must be anchored in the creation of numerous jobs through innovation and large-scale manufacturing of advanced technologies, far-reaching infrastructure jobs, and strengthening American economic competitiveness.

The result will be healthier communities and inclusive shared prosperity.

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