Testimony of

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Good morning. I would like thank this committee for inviting me to testify today.

My name is Jeff Allen, and I am Executive Director of Forth. Forth works to accelerate the use of smart transportation to move people and goods in a more efficient, cleaner, and equitable way.

I want to take a moment to acknowledge that in addition to the climate crisis, we are now faced with a public health and economic crisis sparked by the global COVID-19 pandemic. The crisis of institutional racism has been with us far longer than either of those, but is one that our nation has been confronting in a more focused and intentional way these past weeks. I hope to illustrate how clean transportation technology can, to varying degrees, play a role in addressing all three of these crises.

I will also highlight a few key areas where federal policy support is most needed – specifically to **strengthen vehicle incentives, invest in charging, invest in the industry,** and **strengthen consumer engagement.**

Forth Advocates for Clean Transportation

Forth is a nonprofit 501(c)(6) trade association working to accelerate the use of smart transportation to move people and goods in a more efficient, cleaner, and equitable way. We have nearly 200 members, representing the breadth of the electric mobility ecosystem, including:

- Well-established global companies and small start-ups that manufacture battery electric and fuel cell electric vehicles of all sizes and classes;
- Companies that produce, install, operate, and manage charging stations and networks, also known as electric vehicle service equipment (EVSE);

- Electric utilities of diverse sizes and types;
- Micro-mobility and ride-hailing companies;
- Component suppliers,
- Consulting firms;
- Government agencies; and
- Nonprofit organizations.

Forth was founded in 2011 as Drive Oregon, with seed funding from Oregon's economic development department. We have since grown to a staff of 28, with programming nationwide and a proven track record in accelerating transportation electrification and smart mobility.

We are active in four main areas:

- **Accelerate Market Adoption.** We organize events and test drives to showcase the latest technologies and bring the fun, efficiency and money-saving benefits of electric and smart mobility to the public.
- **Advance Transportation Policy.** We advocate for smart laws and policies that strengthen emerging mobility solutions and ensure cutting-edge technologies benefit us all.
- **Demonstrate Smart Transportation.** We bring partners together to demonstrate new technologies in real-world projects that help improve our lives and expand mobility options.
- **Strengthen the Industry Network.** We bring together businesses, utilities and communities to support growth, create living-wage jobs and strengthen our economy.

Clean Transportation Can Help Advance Equity

The average American household spent USD $9,576 on transportation expenses annually in 2017. As the second highest expense for households - after housing - transportation sits at the crux of affordability for many families. Historically underserved communities – particularly low-income communities of color – face especially daunting mobility challenges. They are more likely to depend on vehicles that are cheap to purchase, but expensive to fuel and maintain, and unreliable, putting them at risk of missed work and job loss. They are less likely to have access to good transit service, safe bicycle facilities, or other transportation options. New mobility services like carsharing, bike sharing, scooters, etc., often bypass these neighborhoods altogether. Overall, the lack of access to affordable, reliable transportation options is a major factor inhibiting job opportunities and economic success. A Harvard study in 2015 found that commute time was the strongest factor in the odds of escaping poverty.

Let's be clear: this is not an accident, or a simple product of market forces. Transportation investments and planning in the United States have a long history of reinforcing patterns of inequality and exclusion, frequently on the basis of race. Urban renewal and highway projects destroyed many historically Black and community of color neighborhoods; redlining policies reduced the ability of people of color to move freely, buy homes, and build wealth; and

gentrification has pushed communities of color towards outlying areas with fewer transportation options.

Clean transportation technologies create an opportunity to disrupt these historic patterns. There are dozens of electric vehicles available today, with more coming every year. Many of these vehicles cost less than the average new gas-powered car, and a growing number of 2-3-year-old used electric vehicles are available for $10,000 to $15,000.

There are many promising examples of policies and projects that are using this new technology to promote equity at the state and local level, many of which are documented in reports and papers that Forth has published over the past few years. Here are just a few examples.

- Oregon's $2,500 state electric car rebate offers a double rebate of $5,000 to income qualifying buyers, or allows them to apply their $2,500 rebate to a used electric car.

- The California Air Resources Board has invested nearly $300 million in over a dozen electric vehicle equity programs, ranging from incentives to scrap and replace old cars to clean vanpools for agricultural workers in the central valley.

- Forth is working with drivers for Uber, Lyft, and similar services in several cities to help them better understand the potential advantages of driving electric vehicles on these platforms, and we recently began testing a pilot project to help drivers obtain affordable financing to allow them to purchase electric cars.

We see increasing interest and engagement from equity centered organizations in these technologies, and we are pleased to partner closely with organizations like Verde, who is also testifying here today. To further this conversation, on November 12-13, Forth is presenting the country's first national conference on E-Mobility and Equity, where dozens of speakers and hundreds of participants will further explore and uplift best practices and policies. This event will be digital and fully free to community-based organizations and government staff, and we hope some of your staff will be able to join us there. More information and registration are at http://emobilityequityconference.com/.

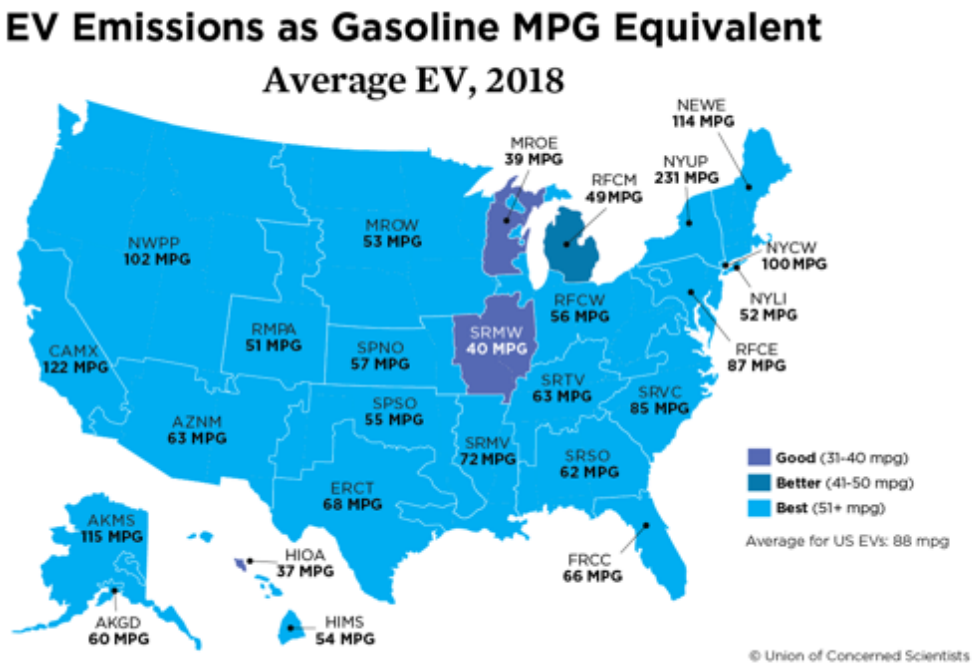
Clean Transportation is Critical to Fighting Climate Change

Transportation passed electricity generation a few years ago as the single largest source of carbon pollution in the United States. Personal vehicles account for most of these emissions, although heavy duty vehicles are a significant and growing source, and aviation and other sources are also important.

The transportation system is complex, and reducing its carbon pollution will take a diverse array of strategies. We absolutely need good local land use planning and development patterns; solid public transit; safe bike and pedestrian facilities; and value pricing and other tools to manage demand and encourage off-peak travel. However, every study I know of concludes that these

steps alone, even pushed quickly, will not get us far enough. We also need to move more quickly to apply electric, shared, and autonomous vehicle technology – what researchers at UC Davis refer to as the "3 Revolutions" - to help solve these problems.

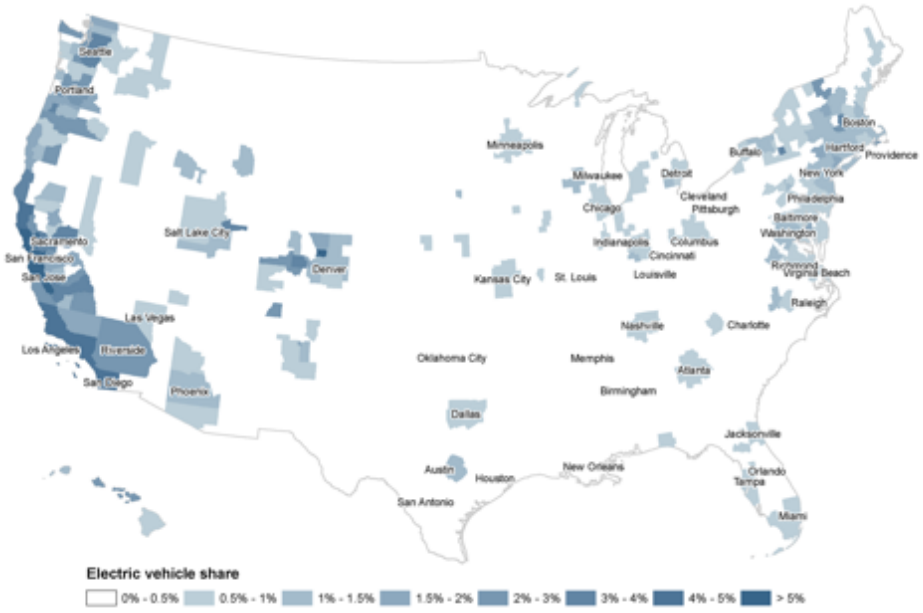
In particular, we need to electrify everything that moves, as quickly as possible. Electric vehicles are far more energy efficient than gasoline-powered vehicles, as illustrated in the figure below from the Union of Concerned Scientists. The Union of Concerned Scientists (UCS) has produced several "well to wheels" comparisons of electric vehicles and gasoline vehicles, most recently in February 2020 using 2018 data. UCS found that "driving on electricity produces significantly fewer emissions than using gasoline and is getting better over time... driving the average EV produces global warming pollution equal to a gasoline vehicle that gets 88 miles per gallon fuel economy." That is about four times better than the average current vehicle in the US – in other words, switching the average gas car for an electric would reduce emissions by about 75%. In Oregon, for example, the average gasoline powered vehicle on the roads today gets just over 20 miles per gallon; the average electric vehicle emits the equivalent of a 102-MPG car. Equally important, electric vehicles get cleaner every year, as the electricity grid gets cleaner. UCS notes that its most recent numbers are almost 10% lower than its numbers from just two years ago The figures for electric buses, trucks, and other equipment are even more impressive.



The electric vehicle market is growing rapidly – but not rapidly enough. Because passenger cars can last for 20 years or more, it is urgent to rapidly electrify all new vehicles sold. Most studies conclude we need to reach 100% of new cars sold being electric within the ten to twenty years to meet our carbon goals. Most current market projects show we are a long way from reaching those numbers.

The good news is that we know it is possible to move quickly. For example, Norway went from less than 5% of new cars sold being electric in 2012 to 56% of new cars electric in 2019. However, electrification of transportation is unevenly distributed around the world, and within countries. In the United States, most sales are concentrated on the coasts and in a few urban areas with aggressive policies and markets, as illustrated in the Figure below from the International Council on Clean Transportation.

Electric Vehicle Share of New Vehicle Registrations



We must move faster, and we can move faster. However, it will take a combination of smart public policies and business and technology innovations.

Clean Transportation Creates Jobs

Growing electric vehicle related manufacturing and deployment will accelerate job growth. In 2019, in the vehicle sector alone, there were more than 250,000 people employed in jobs related to hybrid and electric vehicles, and nearly 500,000 working in jobs focused on fuel efficient components. Since then, private companies have continued to announce plans to invest billions of dollars in electric vehicles, batteries, automation, and other clean transportation technology. According to the National Renewable Energy Laboratory, the growth of electric vehicles could lead to an average net employment gain of over 100,000 jobs per year through 2040.

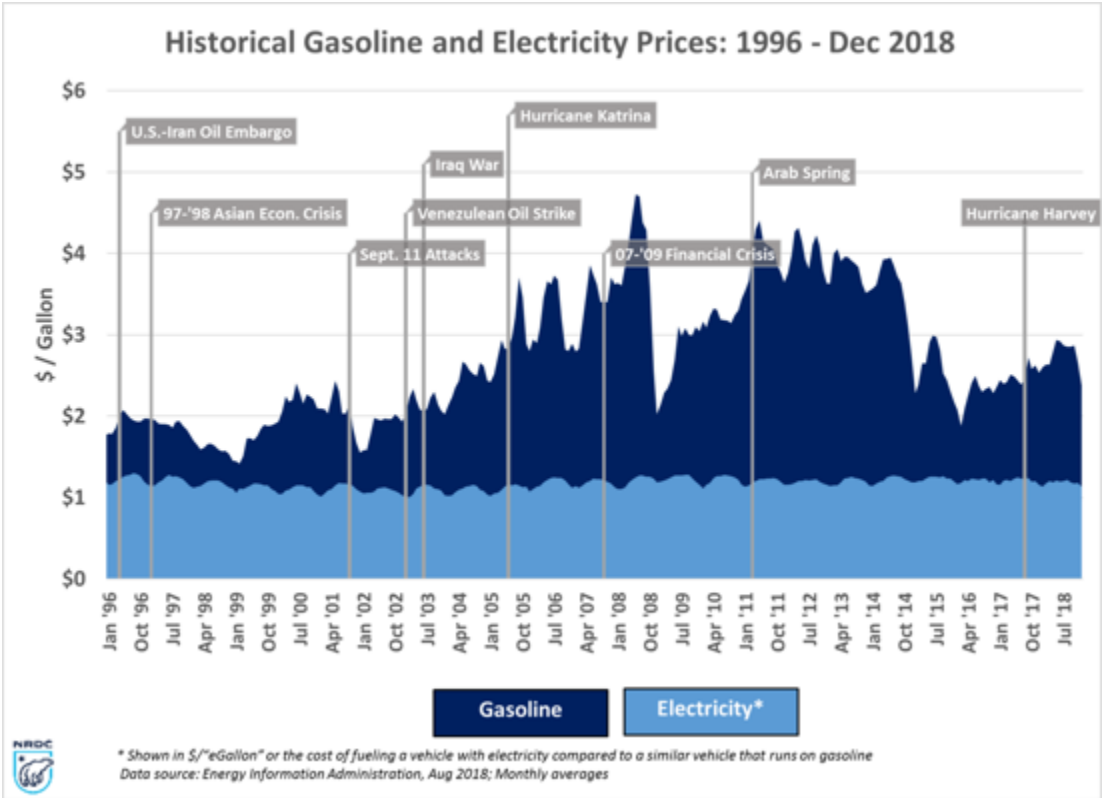
By contrast, under current policies, the United States is falling behind. Europe has adopted aggressive policies to increase electric vehicle use and production, and over half of all new cars sold in Norway are now electric. Current projections predict that China will have almost half the

global electric vehicle market by 2025. The United States cannot afford, either economically or from a public health standpoint, to be a dumping ground for yesterday's technology.

Manufacturing of electric vehicles, charging, and other components are just one piece of the picture. These vehicles also strengthen our economy as they are used. First, they have lower maintenance and operating costs. In much of the country, driving on electricity is equivalent to paying $1 per gallon for gasoline. Recent research by the U.S. Department of Energy's (DOE's) National Renewable Energy Laboratory (NREL) and Idaho National Laboratory (INL) found motorists could save $14,500 on fuel alone over 15 years, or roughly $1,000 per year. This "electric dividend" puts more money in the pockets of America's workers. As those savings circulate in the local economy, they also create more jobs. One California study found that every dollar shifted out of spending on oil into other spending created six times more jobs as that money circulated in the domestic economy.

I will also note that our current transportation system depends almost entirely on a single energy source - petroleum – which is often imported from countries that are hostile to us. That creates political and economic risks, and also just makes us very vulnerable to natural disasters, supply chain disruptions, and price spikes. Electricity as a fuel is domestic, can be generated from diverse and increasingly clean renewable sources, and is heavily price-regulated, protecting consumers from sudden price shocks.

The graphic below from our colleagues at the Natural Resources Defense Council (NRDC) shows this benefit graphically, for the period from 1996 through 2018. The gasoline price roller coaster is a major problem for working Americans.



Finally, it is worth noting that the COVID-19 pandemic has had a major impact on our industry, as with many others. While electric vehicle sales have not declined as much as sales of gasoline-powered vehicles, tens of thousands of clean transportation industry workers have still lost their jobs due to the COVID-19 crisis. Creating strong incentives for clean transportation will help put these and other Americans back to work.

Clean Transportation Needs Federal Policy Support

Clean transportation has many benefits, and the industry is growing rapidly. However, the industry is still young, and fragile. Nothing is inevitable, particularly when it comes to a system as complex as transportation, where powerful established interests and sheer inertia play powerful roles. Furthermore, as fast as the technology is developing, it is not becoming widespread fast enough to meet our climate goals. Nor is the newest technology going to reach the historically underserved communities that need it the most unless government policy steers it that way. In short, we need the Federal government to be a strong partner.

Congress has been presented with a number of strong proposals and agendas for investing in clean transportation over the past few months, many of which Forth has supported and endorsed:

- The Transportation Electrification Partnership, convened by the Los Angeles Cleantech Incubator (LACI), which proposed $150 billion investment that would create 2.3 million jobs.
- The Electrification Coalition's 15-point proposal to advance US competitiveness in clean transportation.
- Recommendations outlined in a letter spearheaded by the Sierra Club and endorsed by over 80 environmental, labor, health, and consumer organizations, including Forth.
- Proposals from the BlueGreen Alliance.
- The Electric Drive Transportation Association's recovery priorities.

Rather than repeating a long list of specific policy recommendations here today, let me highlight a few high-level areas that we feel are most important, as well as a few important areas that may have received less attention.

Strengthen Incentives for Clean Vehicles

Electric vehicles are far cheaper to operate than their gas counterparts, but the cost of batteries has made their upfront purchase cost higher. Battery costs are dropping rapidly, but federal incentives still have an important role to play in accelerating sales and production to the scale where price parity can be reached. The current federal $7,500 tax credit has played an important role in building the electric vehicle market, but small changes will make it much more impactful. Specifically, we recommend:

- Extend the current credit for both light duty battery electric and hydrogen fuel cell electric vehicles, as proposed in the Driving America Forward Act.
- Make the incentive a point of sale rebate, which will increase its impact dramatically and ensure that low-and moderate-income Americans without large tax bills can still benefit.
- Expand incentives to heavy duty vehicles, particularly heavy-duty trucks, transit buses, and school buses.
- Extend incentives to other forms of transportation equipment, from electric assist bicycles and micro-mobility solutions to clean tractors and agricultural equipment.
- Create rebate programs for consumers to trade in higher polluting vehicles for clean electric vehicles.

This last point is particularly important. Since cars and other vehicles often last for decades, as previously mentioned, it's critically important that we stop investing money in yesterday's technology as quickly as possible. These policies will help steer investments in new vehicles to the cleanest technology available, and will pay dividends for decades to come. However, we also need to retire our aging fleet of high-polluting older vehicles as quickly as possible. We strongly support proposals such as those by Senator Schumer and Vice President Biden to provide rebates for consumers to trade in and destroy those old vehicles in exchange for cleaner electric vehicles. This kind of program, which has been operating on a small scale in California for several years, will also help ensure that lower income drivers and communities benefit from electric vehicle technology.

Invest in Charging Infrastructure

Early discussions of electric vehicles tended to focus on "range anxiety" or "range confidence" – the consumer's concern about whether their vehicle would be able to get them where they needed to go, and whether there would be charging available along the way. However, it's really a broader issue of "charging anxiety." Consumers do not understand how, where, and when to charge electric vehicles. The federal government should act to ensure that electric vehicle charging infrastructure is simpler, cheaper, more widespread, and better understood. Specifically, we recommend:

- Extend, simplify, and provide longer term certainty to current charging incentives such as the 30C tax credits, as proposed in the Securing America's Clean Fuels Infrastructure Act
- Support high speed charging along highway corridors, as proposed in the Clean Corridors Act (S. 674/H.R. 2616) or the EV Freedom Act (H.R. 5770)
- Provide focused support and investment to make charging equitably available to people who live in apartments and do not have access to a driveway or garage. Ensure that federal housing investments and incentives also encourage EV-readiness in new construction.
- Support infrastructure necessary for the deployment of electric freight trucks operating to and from ports, warehouses, and other logistic hubs with heavy-duty vehicle charging

infrastructure grants. Provisions for this are included in the No Exhaust Act (H.R. 5545) and Section 1402 of America's Transportation Infrastructure Act of 2019 (S. 2302).
- Use existing DOT programs to further deploy charging infrastructure, including the Congestion Mitigation and Air Quality (CMAQ) and Surface Transportation Block Grants (STBG) programs.
- Expand programs to assess barriers and charging needs for frontline communities of color, as proposed by the Electric Vehicles for Underserved Communities Act (H.R. 5751).
- Encourage and incentivize cities to invest in charging on the street and in the urban right of way, making charging an increasingly common element of urban street infrastructure.
- Invest in high speed charging in urban areas to support taxis, rideshare vehicles, food delivery, and other high-mileage vehicles.

Again, I want to emphasize this last point, which is often overlooked. As you may have seen, our member company Lyft recently announced their extremely ambitious goal of transitioning to an entirely electric fleet by 2030. Forth has been working with both Lyft and Uber for several years, and in several cities, to help more of their drivers transition to electric vehicles. We've also recently partnered with a local restaurant to use our own small fleet of electric vehicles to provide meals to those in need. We know first-hand that these high mileage services depend on fast charging. Someone driving for one of these services may need to use a fast charger two or three times a day; they need to be readily accessible and affordable. Federal investments to help electrify the vehicles that drive the most will have huge air quality and climate benefits, and will also help ensure that drivers benefit as well.

Invest in the Domestic Clean Transportation Industry

It is not enough for us to put more charging stations and clean electric vehicles on the road – we want to ensure those technologies are developed and manufactured here in the United States as well. With your help, America can lead the world in clean transportation technology and innovation. In particular, America's automotive and vehicle manufacturing industry can be a global powerhouse. At least 40 manufacturers in the U.S. offer more than 100 different models of electric passenger vehicles, trucks, and school and transit buses. However, other nations worldwide are moving even faster to capture this rapidly growing global market. To ensure U.S. leadership, we recommend a robust investment in this sector, including:

- Expand and update the Advanced Technology Vehicles Manufacturing Program by allowing medium-and heavy-duty electric vehicle manufacturers and suppliers to apply for this revolving loan program, as outlined in the No EXHAUST Act (H.R. 5545) as well as in the ATVM Program Reform Act (H.R. 5860).
- Fund the Manufacturing Conversion Grants authorized in section 132 of the Energy Independence and Security Act, which would provide direct funding to manufacturers to retool plants that are closed or are at risk closing to help accelerate the manufacture of EVs and critical components.

- Expand investments in public transit and innovative forms of public transportation, encouraging partnerships between conventional transit services, micromobility, and other forms of shared mobility.
- Robustly fund the 48C tax credit that supports small and medium sized business.

Here I would like to highlight especially the importance of medium and heavy-duty vehicles. These vehicles make up only 5 percent of all vehicles on the road in the United States but emit 45 percent of the U.S. transportation sector's nitrogen oxide (NOx) pollution, 57 percent of its fine particulate matter pollution, and 25 percent of global warming emissions in the transportation sector. This exhaust disproportionately affects the health of people of color and low-income communities that live close to truck corridors and industrial areas. This is also an emerging high-growth segment of the clean transportation industry where the U.S. cannot afford to lose our competitiveness.

Increase Consumer Awareness

Since a car is usually the second largest purchase most households make, consumers are hesitant to try new and unfamiliar technology. This is an even larger challenge since electric vehicles are poorly understood by most consumers. Even in California, the leading electric vehicle market in America, research by UC Davis shows that roughly half of consumers are unfamiliar with electric vehicles. Furthermore, this figure has changed little over the past several years, even as dozens of new electric vehicles have been offered for sale and the state has offered increasingly generous incentives for their purchase. A study of Forth's US DOE-funded engagement work over the past several years found that 25% of those who participated in our test drives purchased an electric car within three months. We know that consumer engagement works, and we desperately need a coordinated national investment to make Americans more aware of clean electric vehicles and their benefits. Specifically, we recommend:

- Increase funding through the US DOE for Clean Cities coalitions across the country, which bring diverse stakeholders together at the regional level to advance clean transportation solutions.
- Provide increased funding for demonstration projects focused on brand-neutral deployment and consumer engagement, with a particular focus on projects that benefit essential workers and frontline communities (e.g. electric vehicle financing projects, efforts to provide mobility consulting as a wraparound service in affordable housing, shared electric vehicles in historically underserved communities, etc.)
- Fund a robust public-private partnership at the national level to implement an education and outreach campaign highlighting the benefits of clean electric transportation, and the many affordable American-made vehicles available today.
- Launch a national campaign to promote EV-friendly workplaces.

This last point is one I would like to emphasize, as we believe it does not receive enough attention. During the Obama administration, from 2014-2017, the U.S. Department of Energy Workplace Charging Challenge found that employees who could charge at work were six times

more likely to purchase electric vehicles. It also found that being able to charge at work was a promising solution for apartment dwellers. Forth was a lead partner in this effort, and our ongoing work with employers across the country and with charging companies has confirmed that one of the highest impact investments the federal government can make is to help ensure that charging your car at work is as common and easy as having a place to park your bicycle there, or as recycling. This does not have to be expensive – the main barrier is not the cost of charging equipment, but rather the perceived complexity of the process. A renewed national campaign to educate, inspire, and assist private employers will have a major impact.

Conclusion

The clean transportation industry is new, dynamic, exciting, and disruptive. When I began work in this space back in 2011, there were only two electric car models available; few people had ever heard of Uber; and certainly, nobody was predicting the explosion of electric scooters on our streets.

This industry is poised to provide major benefits to our country. Clean transportation technology is critical to addressing climate change and making our air healthier; it can strengthen our economy while supporting millions of high-quality jobs; and it can help unravel many decades of inequitable transportation investments and policy.

With your support, America's clean transportation industry can help us move forward.

Thank you.