

**Written Statement of Ben Prochazka
Vice President, Electrification Coalition
Before House Transportation & Infrastructure Committee
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Chairman DeFazio, Ranking Member Graves, and distinguished members of the Committee,

Thank you for the opportunity to testify on this important issue. My name is Ben Prochazka, and I am the Vice President of the Electrification Coalition, a nonpartisan, non-profit group of business leaders committed to promoting policies and actions that facilitate the deployment of electric vehicles on a mass scale in order to combat the economic and national security dangers caused by our nation's dependence on oil. The Electrification Coalition is comprised of leaders representing the entire value chain of the electrified transportation system. These leaders believe federal infrastructure policy can and must do much more to accelerate our economy's transition away from oil as the only transportation fuel which we believe is critical to providing choice to consumers and businesses and strengthening our economy and national security.

The Electrification Coalition is a sister organization of Securing America's Future Energy, or SAFE. For over a decade, SAFE has been committed to strengthening America's national and economic security by reducing U.S. oil dependence. While we are here today to talk about electric vehicles (EVs) and the EC's continued role in their adoption, SAFE supports efforts to bring greater fuel diversity to U.S. consumers and businesses attempting to remain fuel neutral when possible but assist certain fuel types as necessary. In 2006, SAFE formed the Energy Security Leadership Council (ESLC), a nonpartisan group of business and former military leaders in support of long-term policy toward this goal. The ESLC is co-chaired by Frederick W. Smith, Chairman and CEO of FedEx, and General James T. Conway, 34th Commandant of the U.S. Marine Corps (Ret.).

Today's timely hearing provides an opportunity for us to share some examples of early market successes of EVs and challenges to EV adoption, explain why EVs should have strong bipartisan support, and to encourage this committee to help accelerate EV adoption (including transit buses, passenger, and medium- and heavy-duty vehicles) and to increase the number of available charging station locations and signage across the country.

The Challenge of US Oil Dependence and Transportation

The United States is the single-largest oil consumer in the world. We consume, as a nation, approximately one-fifth of daily global supply, 70 percent of which is used to power our transportation system. Since 92 percent of the energy consumed in the U.S. transportation system comes from oil, businesses and consumers have no alternatives available at scale when oil prices spike. With the uniquely global nature of oil pricing, a supply disruption anywhere impacts prices everywhere. This is exacerbated by the opaque and unfree oil market dominated by the OPEC cartel, which controls 83 percent of the world's proven oil reserves.

Such market manipulation often leads to rapid fluctuations in oil prices—both upwards and downwards—and wreaks havoc on our businesses, our cities, and the average American's pocketbook, ultimately straining the entire U.S. economy. Although oil prices were comparatively low in 2018, the volatile nature of the oil markets means American household budgets will almost certainly be pressured by higher prices in the near-to-medium-term future—and likely with little warning – and that the tax cut given by President Trump just as tax cuts by Presidents Bush and Obama will be sent to OPEC members and to purchase higher cost oil than to the pockets of average Americans.

Additionally, higher oil prices significantly added to the U.S. federal debt between 2002 and 2012, and every U.S. recession over the past 40 years has been preceded by, or coincided with, an oil price spike. Despite the recent increase in domestic oil production, the United States sent more than \$133 billion abroad in 2018 to pay for oil, often to countries that neither share American strategic interests nor values. The economic importance of oil also creates adverse national security challenges. Notably, more than 50 percent of daily oil supplies pass through one of seven major chokepoints, many in unstable regions, particularly the Middle East. In addition, the U.S. military spends at least \$81 billion per year to protect global oil supplies—accounting for 16 percent of DoD base budgets. If this cost is spread over the roughly 19.8 million barrels of oil consumed daily in the U.S., the implicit subsidy for petroleum consumers comes out to \$11.25 per barrel of crude oil, or \$0.28 per gallon.

Why Electric Vehicles are the Solution to Oil Dependence:

Electric vehicles have the potential to dramatically reduce our nation's oil dependence. By utilizing electricity to charge rapidly improving battery technology, we can power our transportation sector with a diverse, domestic, price stable, and fundamentally scalable energy supply. In addition, this

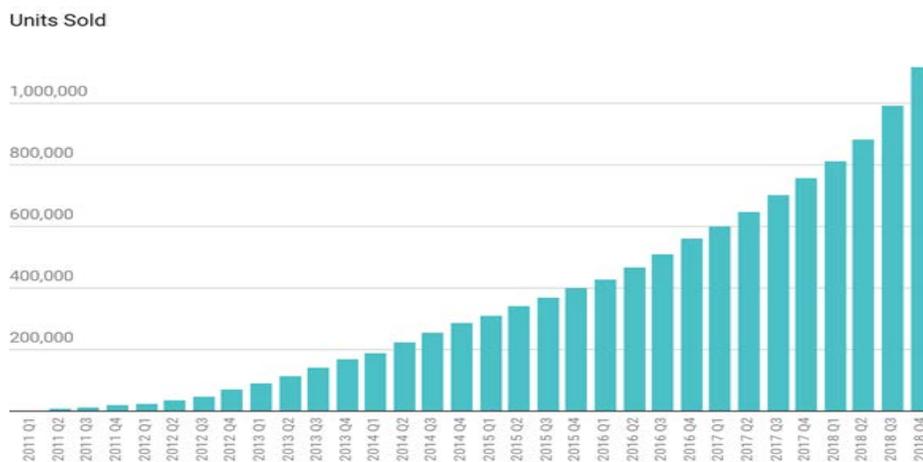
approach is fundamentally cleaner even when the electricity is generated by coal but as we have seen in the last few years the mix of fuels to power electricity continues to get cleaner.

Electric vehicles provide a range of other benefits, which are addressed in detail later in this testimony but can be briefly mentioned here. Fewer moving parts means there are lower maintenance costs for EVs, while also allowing local and state governments to meet air quality challenges like non-attainment zones. Additionally, thanks to the ubiquity of U.S. electricity infrastructure, much of the nationwide fuel delivery network for EVs is already in place.

State of the Electric Vehicle Market:

The vehicle manufacturing and charging infrastructure industry have seen important progress in recent years as investments have grown, with several OEMs committing billions more dollars to develop new models. Today, 50 light-duty EV models are already available to American consumers and cumulative light-duty EV sales growing quickly, as we recently surpassed 1 million units in the United States since January 2011. This is also being matched with increased investments from the private sector and utilities to expand the number of charging stations and speed of the chargers, reaching almost 50,000 chargers at the end of 2020.

Cumulative Units Sold Since 2011



Data shown quarterly. Includes plug-in hybrid electric vehicles, battery electric vehicles, and fuel-cell vehicles.

Chart: Electrification Coalition/Paul Ruiz

• Source: EC analysis based on data from Hybridcars, InsideEVs, and automotive industry press releases.

• Created with [Datawrapper](#)

Electrified transportation is rapidly expanding in the commercial and transit sectors as well, with plug-in hybrid and battery electric trucks ranging in size from Class 1 to Class 8 already operating on city streets around the country. Today there are electric delivery vehicles carrying packages for FedEx and UPS, plug-in electric garbage trucks operating in Seattle and Sacramento, a Class 8 yard truck in Buffalo, and 16 electric buses bringing commuters to work in Greensboro, NC. Those 16 buses in Greensboro alone are estimated to eliminate nearly 2 million gallons of diesel usage. Considering there are approximately 70,000 city buses and 400,000 school buses in the U.S., the potential for fuel savings and air quality improvements nationwide are tremendous. The commercial and transit sectors are increasingly driving electric—and Americans are increasingly seeing the shift happening on their daily commutes, as more than 13 percent of all transit agencies either have EV buses in service or on order.

We look forward to 2019 as a key transitional year when available light-duty EVs meet more consumer needs while approaching cost parity over the life of the vehicle with petroleum-powered vehicles. Additionally, there are exciting signs from industry of a growing list of vehicle options in almost every segment of the market, providing an electric vehicle solution for almost every lifestyle.

While growth in the EV market is promising, there is still significant work that must happen to ensure EVs can meaningfully improve the economic and national security of the United States by providing the needed fuel diversity in transportation. Transitions like this are difficult, there is no guarantee of success, and there is much to be done to make sure we accelerate these critical changes, but there are tremendous signs of hope and the stakes cannot be higher.

The Electrification Coalition's Accelerator Programs

From coast to coast, the EC has worked with federal, state, and local policymakers to create scalable and replicable programs across the United States to accelerate the adoption of EVs.

Our work has included deep learning experiences in cities and through public and private sector partnerships in Colorado, Georgia, Ohio, Florida, North Carolina, Texas, Pennsylvania, and New York. Our efforts have expanded access to infrastructure, created an EV rental car program with Enterprise Rent-a-Car, launched regional and national bulk procurement initiatives that can reduce the administration and real costs of vehicle acquisition, and initiated the nation's first full ecosystem efforts that united diverse partners through "EV accelerator" communities that serve as

models for successfully driving EV adoption. These initiatives have provided us with the opportunity to develop a growing list of case studies and best practices that will make it easier for the next communities to drive adoption at even greater rates.

To realize these gains, the Electrification Coalition has worked tirelessly at the local and state levels to bolster EV adoption. In 2013, the Electrification Coalition created Drive Electric Northern Colorado, its first accelerator community. Accelerator communities are cities or regions where all of the necessary public and private stakeholder partnerships are combined with the appropriate business environment, regulatory support, and consumer education to achieve substantially higher EV sales. The first accelerator community achieved EV sales three times the national average by implementing this combined approach. The accelerator community model was later replicated in Rochester, NY, and its success has encouraged New York to launch similar communities across the state.

In addition, the Electrification Coalition worked with the Florida Energy Office and major private sector partners in Orlando such as Enterprise Rent-a-Car to create one of the nation's first EV rental programs, called Drive Electric Orlando. This program has already provided thousands of the state's visitors with first-hand experience in driving EVs, thereby building confidence in and comfort with the technology, dispelling myths, and allowing drivers to discover the overall benefits of EVs.

On a larger scale, the Electrification Coalition is acting as a technical and strategic advisor to Smart Columbus, the winner of the U.S. DOT's Smart City Challenge. This \$50 million endeavor—funded through \$40 million from U.S. DOT and \$10 million from the Paul G. Allen Family Foundation—is breaking down the barriers to EV adoption in the Midwest and working to significantly accelerate EV adoption by consumers and fleets. Smart Columbus is simultaneously sharing and implementing national best practices, leveraging over \$510 million in private-sector investment, and developing new innovations to achieve substantially increased EV adoption in the Columbus region.

Further demonstrating the local-level EV programs, the Electrification Coalition is engaged with several initiatives to spur collaboration and information sharing between and among U.S. and international cities. These include the Mobility Innovation Challenge and the Global Pilot EV Cities Initiative. Through these initiatives we have learned that cities are facing immense transportation challenges for which electrification provides an immediate and achievable solution.

The EC is also the technical advisor for the Climate Mayors EV Purchasing Collaborative, a nationwide bipartisan collaboration of mayors who are committing to electrify city fleets. This initiative is designed to reduce the barriers to electrification for our nation's municipal fleets, thereby accelerating the transition. Already, 19 founding cities and two counties have publicly committed to the purchase of 376 EVs, representing more than \$11 million in EV investment.

At the state level, the EC developed the Zero Emissions Vehicle (ZEV) State Scorecard to provide a single, comprehensive, and data-driven ranking of the key policies being implemented in ZEV MOU states to support increased EV adoption. As the ZEV MOU states are among the nation's leaders in policies that accelerate the adoption of EVs, the scorecard provides the ability to assess the policies and actions that most effectively impact EV adoption at the state level.

This is all necessary because while EV purchases have increased, they are yet to reach a tipping point. Perception issues continue to persist, as high numbers of consumers have neither driven an EV nor know about the lower fuel and maintenance costs they offer. Similarly, auto dealerships often don't prioritize EV sales with strong knowledge about the available EV models, meaning electric cars are not being integrated into showrooms. Attracting consumers to EVs will also help solve current infrastructure issues, as every vehicle sold will contribute to a developing value chain system that feeds into infrastructure investment, creating jobs and boosting local economies in the process.

Electricity is Diverse in Source and Domestically Produced:

There could not be a more domestic or bipartisan solution to the issue of oil dependence in our transportation sector than vehicle electrification.

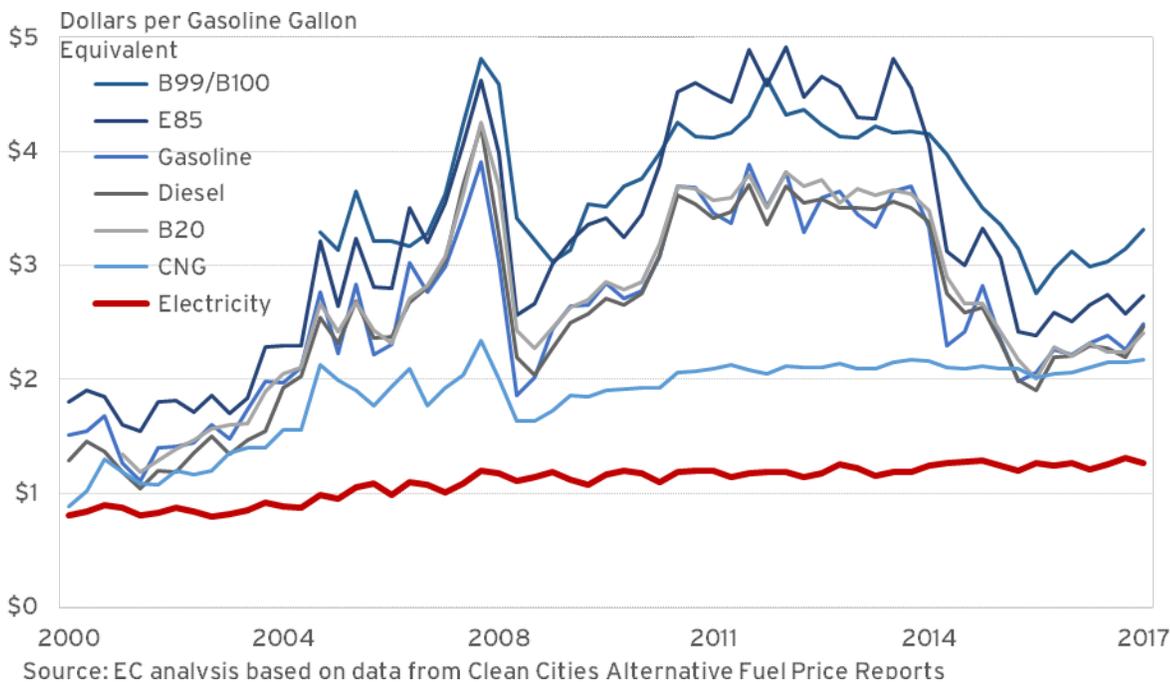
Electricity is generated from a diverse set of largely domestic sources. These sources include nuclear, coal, natural gas, and renewables such as wind, water, and solar. An electrified transportation sector can maximize the electric grid's diverse generation capacity and, when the availability of resources for generating electricity change, electricity generation can shift to power EVs with other alternatives. Moreover, whereas oil supplies are subject to a wide range of geopolitical risks, domestic and localized electricity production unquestionably benefits local economies while creating jobs for American workers.

Operating a vehicle on electricity is considerably less expensive and energy-intensive than operating a conventional internal combustion vehicle. In large part, this is due to the higher efficiency of electric motors. Conventional internal combustion engine (ICE) vehicles convert only approximately 20 percent of the energy stored in gasoline into power for the wheels. In contrast, EVs convert approximately 60 percent of the electrical energy from the grid into power for the wheels. Miles traveled by EVs also emit less CO₂ and other emissions than vehicles powered by petroleum fuels. As noted, this is true even with today's mix of electricity-generating resources in the U.S.—which will only get cleaner as alternative generation options are integrated into the grid.

Additionally, North Carolina is home to one of the world's largest deposits of lithium, a core component of EV battery technology. Millions of dollars have been raised and invested in recent months to further expand production of this strategic mineral in the state, and is an example of how effective policies have the potential to leverage emerging investments from the private sector.

Electricity Prices are Low and Stable:

Electricity prices are substantially less volatile than gasoline or diesel prices, increasing by an average of less than 2 percent per year in nominal terms since 2000. The electric power system is designed to meet peak demand at any time from existing generation sources—meaning throughout most of the day, and particularly at night, consumers demand significantly less electricity than the system can deliver. Assuming that charging patterns are well-managed, the system has substantial spare capacity to meet new demand from EVs parked at homes and other locations during nighttime hours.



This low cost and price stability, which stands in sharp contrast to the price volatility of oil or gasoline, exists for at least two reasons.

First, the retail price of electricity reflects a wide range of costs, only a small portion of which arise from the underlying cost of the source. The remaining costs are largely fixed. This is significantly different from gasoline, where the cost of crude represents a significant percentage of the cost of retail gasoline.

Second, although real-time electricity prices can be volatile (sometimes highly volatile on an hour-to-hour or day-to-day basis), they are nevertheless relatively stable over the medium and long term. Therefore, in setting retail rates, utilities use formulas that will allow them to recover their costs, including occasionally high peak demand prices for electricity, but which effectively insulate the retail consumer from the hour-to-hour and day-to-day volatility of the real-time power markets.

By isolating the consumer from price volatility, electric utilities are providing EV drivers the very stability that oil companies cannot provide to consumers of gasoline.

The Power Sector has Substantial Spare Capacity:

Because large-scale storage of electricity has historically been impractical, the U.S. electric power sector is effectively designed as an ‘on-demand system.’ In practical terms, this has meant that the system is constructed to be able to meet peak demand from existing generation sources at any time. However, throughout most of a 24-hour day—particularly at night—consumers require significantly less electricity than the system is capable of delivering. Therefore, assuming charging patterns are appropriately managed, the U.S. electric power sector has substantial spare capacity that could be used to power electric vehicles without constructing additional power generation facilities. In fact, the Department of Energy’s Pacific Northwest National Laboratory found that the existing grid has enough capacity to accommodate more than 150 million EVs without significant system upgrades.

Unlike many proposed alternatives to petroleum-based fuels, the nation already has a ubiquitous network of electricity infrastructure. No doubt, electrification will require the expansion of charging infrastructure, additional functionality, and increased investment in grid reliability, but the power sector’s infrastructural backbone—generation, transmission, and distribution—is already in place.

Challenges to Electric Vehicle Transition:

We have yet to reach a tipping point in EV adoption due to a number of persisting barriers to widespread consumer uptake. EV adoption rates are influenced by many factors, including the training and enthusiasm of automotive dealers, low vehicle availability in certain markets and vehicle classes, consumer knowledge, and low gasoline prices. Electrifying our transportation sector is an immense and urgent challenge. And while cities and states around the country are intensifying efforts to rapidly increase EV adoption, there are significant opportunities for federal infrastructure policy make an even greater impact.

This hearing provides a great opportunity to share some policy recommendations that we believe can help accelerate the EV market. Below we have identified the current barriers to adoption and key policy recommendations to address them.

Initial Purchase Price:

The upfront costs of EVs have long acted as a deterrent to EV purchases. Although prices of electric models have traditionally been higher than their ICE counterparts, prices are rapidly dropping as battery technology becomes cheaper. In 2008, battery prices were as high as \$1,000/kWh and there were relatively large production inefficiencies due to lack of scale. Greater battery production is now underway, driving battery prices below \$150/kWh today. Many experts believe that once battery prices reach \$100/kWh, EVs will become completely cost competitive with internal combustion engines.

Incentives like the 30D federal tax credit for purchasing EVs remain critical to fostering greater adoption at this early stage, and improvements to the 30D tax credit can make it even more effective. The current cap of 200,000 vehicles per manufacturer does not align industry incentives with factors such as early adoption or rapid technological advancement – first movers should be rewarded, not penalized. In order to enjoy the significant energy security benefits of widespread transportation electrification, it is vital that we reform 30D by raising the cap—and establish a sunset date—in order to continue incentivizing increased EV production and ultimately widespread EV adoption.

Consumer Preferences:

As oil prices fell in 2015, sales of less fuel-efficient light trucks dramatically increased. By the end of 2018, light trucks represented nearly 70 percent of all new vehicles sold in the United States on an annualized basis. In terms of the early EV market, consumer preferences have also largely been ignored, as the vast majority of EVs available have been light-duty sedans. However, a wider range of models is now becoming available, with offerings at all points across the consumer market including SUVs and trucks. As an example, Ford recently announced plans to release an all-electric version of its highly popular F-150 truck.

Infrastructure Needs:

Similarly, infrastructure needs must be expanded along with the availability of models. Range anxiety is decreasing as battery capacity improves, but this concern must be addressed with incentives, policies, and pilot programs to continue the build-out of EV chargers and, more broadly, charging corridors spanning the United States. To this end, one key policy lever is the 30C federal tax credit, which covers one-third of the cost to purchase and install charging infrastructure (valued up to \$1,000 in homes and up to \$30,000 in commercial applications).

Encouraging Faster EV Bus Adoption:

Beyond the private passenger vehicle market, electric buses are already beginning to meet some of the demands of transit systems in the U.S. However, we believe policymakers have the opportunity to accelerate the adoption of EV buses by addressing some of the barriers that transit agencies currently face. We should encourage the adoption of EV buses through federal financing mechanisms such as low-interest or zero-interest loans to public entities. This will help to address the realities of state and city budgeting, which often prioritize the lowest upfront capital expenditures (e.g., purchasing buses with internal combustion engines) with a tradeoff of higher overall lifetime operational costs versus electric buses. As a result, long-term fuel and maintenance costs are not factored into initial purchasing decisions—which overlooks the key long-term benefits of electric buses.

Supporting Community Engagement Efforts:

Besides federal support, there are a number of impactful policy options at the state and local levels. These include both monetary incentives, most commonly in the form of vehicle purchase incentives, and other non-financial incentives. It is incredibly important to ensure consumers are aware of the programs that are available to them, as they are unlikely to purchase EVs if they are unaware of the technology, how it can fit their lifestyle, and the potential savings.

In order to combat consumer misunderstanding of the technology, industry and advocates such as the EC have used several strategies to raise consumer awareness. These include campaigns to increase awareness of charging infrastructure (e.g., adequate and highly-visible signage) and to convey to consumers the value benefit of electrification, such as the money that can be saved on fuel over time.

Change at the Federal Level

These initiatives described previously have proven to be very effective at the local level, with the promise of further success. However, improvements in infrastructure policy at the federal level can have a multiplier effect on such initiatives, allowing not only the nationwide replication of these projects but also a meaningful expansion in both their scope and scale.

Congress and the Administration should continue to support the 30C and 30D federal tax credits, which support critical R&D efforts and incentivize consumer adoption respectively at this nascent stage of the industry's development. Retention of the \$7,500 federal purchase incentive is vital to

continuing to build momentum because some automakers have entered the tax credit's phase-out stage. We support lifting the cap on the total number of vehicles covered by the tax credit, and then a sunset to be negotiated by the stakeholders. Affordability should form a major part of these negotiations.

As mentioned earlier in this testimony, electrifying city and municipal bus fleets would be a vital step forward in reducing oil dependence and enhancing U.S. energy security. To encourage this transition, we recommend prioritizing low-cost loans as an attractive financing solution to EV bus purchases, as city budgets implicitly penalize electric options by prioritizing upfront costs in their purchasing processes. In addition, further expanding the U.S. Department of Transportation's Federal Transit Administration Low or No-Emission Bus Competitive Grant Program, and other related initiatives, would act as a critical deciding factor for municipalities considering the switch to electric buses. Finally, the Federal Highway Administration's continued support of bus programs through the FAST Act must also be maintained. We are encouraged to hear the FAST Act received full funding in recent spending bills.

Very importantly, federal policy is required to expand our nation's network of charging infrastructure, and allay persistent consumer fears over range and charging anxiety. Expanding the FHWA Alternative Fuel Corridors program should be integral to this effort. In addition, greatly improving signage directing drivers to EV chargers would also prove highly beneficial. The presence of such signage would not only be helpful to current EV drivers, but also demonstrate to other drivers considering the switch to an EV that the requisite charging infrastructure is available.

Thank you again for the opportunity to testify before this committee. I look forward to your questions.
