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BEFORE THE

U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON OVERSIGHT AND ACCOUNTABILITY

ON

"DRIVING BAD POLICY: EXAMINING EPA'S TAILPIPE EMISSIONS RULES AND THE REALITIES OF A RAPID ELECTRIC VEHICLE TRANSITION"

MAY 17, 2023

Thank you for the opportunity to testify today. The National Association of Convenience Stores (NACS) is an international trade association representing the convenience and fuel retailing industry. The convenience and retail fuels industry employed approximately 2.44 million workers and generated more than $906 billion in total sales in 2022, representing more than 3.5 percent of U.S. gross domestic product. Of those sales, approximately $603 billion came from fuel sales alone. The industry, however, is truly an industry of small business. More than 60 percent of convenience stores are single-store operators. Less than 0.2 percent of convenience stores that sell gas are owned by a major oil company and about 4 percent are owned by a refining company. More than 95 percent of the industry, then, are independent businesses.

Members of the industry process more than 165 million transactions every single day. That is the equivalent of about half the U.S. population. In fact, ninety-three percent of Americans live within 10 minutes of one of our industry's locations. These businesses are particularly important in urban and rural areas of the country that might not have many large businesses. In these locations, the convenience store not only serves as the place to get fuel but is often the grocery store and center of a community.

We recognize the challenges that a changing climate presents to all of us – particularly those in the transportation sector. The retail fuel industry is an indispensable part of lowering the carbon footprint of transportation energy in the United States. On behalf of this diverse and forward-thinking industry, we are eager to work with you, the Environmental Protection Agency (EPA), and states to help improve the environmental characteristics of transportation energy in the United States.

One part of addressing carbon emissions in the transportation sector is electric vehicles (EVs). Our industry has made significant investments in EV charging to serve the motoring public operating EVs.[1] This is a key part of the future of the industry. To be successful, retailers must be attuned to consumer preferences and desires, and our industry believes that over the coming years, more of our consumers will demand electricity as a fuel. We want to be able to sell consumers whatever fuel they want long into the future. This is especially important for the smaller, family businesses who are looking at generational succession and transitions.

While we are supporters of the development of EVs and EV chargers, we have concerns with the approach taken by the EPA in its tailpipe rules. By focusing on tailpipe emissions rather than overall, lifecycle emissions and choosing EVs as the preferred technology rather than other technologies – including internal combustion engines and potentially additional innovations in engines or liquid fuels – the EPA has reached conclusions that are not as effective as they should be for the economy or for the

[1] See "Circle K expands fast EV charging footprint," Liz Dominguez, RIS News (May 5, 2023) (available at Circle K Expands Fast EV Charging Footprint | RIS News); "7Charge is the 7-Eleven of the future: Ambitious EV fast-charging network and new app," Peter Johnson, Electrek (March 16, 2023) (available at 7-Eleven reveals 7Charge EV fast-charging network and app (electrek.co)); "How Sheetz partnered with Tesla and brought EV charging to rural America," Bloomberg (July 14, 2022) (available at Sheetz, Tesla Teamed Up to Help You to Take an Electric Car Road Trip (bloomberg.com)); "GM, travel operator Pilot to develop EV charging network," David Shepardson, Reuters (July 14, 2022) (available at GM, travel operator Pilot to develop EV charging network | Reuters); "Wawa partners with EVgo to expand electric vehicle charging network," Convenience Store News (March 10, 2022) (available at Wawa Partners With EVgo to Expand Electric Vehicle Charging Network | Convenience Store News (csnews.com)); "Love's Travel Stops and Electrify America add road-trip charging waypoints," Stephen Edelstein, Green Car Reports (Aug. 19, 2020) (available at Love's Travel Stops and Electrify America add road-trip charging waypoints (greencarreports.com)).

environment. We need policies in place that take a clear-eyed look at all emissions related to the transportation sector and that lead to emissions reductions from all vehicle technologies.[2] Only by allowing different technologies to compete on emissions reductions as well as on their appeal to consumers will we get the best environmental and economic outcomes that we can achieve.

I. Principles to Guide Policy to Reduce Transportation Emissions

As the Committee examines EPA's tailpipe emissions proposals, we urge you to consider the following policy principles that have been developed by our association and guide our view of these issues. The most expeditious and economical way to achieve environmental advancements in transportation energy technology is through market-oriented, consumer-focused policies that encourage our membership to offer more alternatives. Fuel retailers have demonstrated in recent years that they are prepared to invest in any transportation energy technology that their customers desire. With the right alignment of policy incentives, the private sector is best equipped to facilitate a faster, more widespread, and cost-effective transition to alternatives – including electricity – in the coming years.

As discussed further below, policies that adhere to the following principles will create new jobs, accelerate the deployment of advanced alternative fuel infrastructure and vehicles, benefit consumers through a competitive and robust marketplace and drive massive economic investment and improvements in air quality:

- Science should be the foundation for transportation climate policies.
- Establish performance goals without mandating specific technologies to allow for the benefits of innovation and technology development.
- Develop competitive market incentives to ensure a level playing field and provide long-term consumer benefits.
- Harness existing infrastructure to help commercialize new technology, maximize diverse investments, and achieve near-term and long-term emission reduction goals.
- Set consistent, uniform national policy so that (i) the market has certainty to help it invest, and (ii) state policies do not create inconsistent or counterproductive measures.
- Ensure fair treatment so that all households are not forced to subsidize alternative energy users.

[2] It is worth noting that EPA's approach in its 2021 rule, which it has replicated in many ways in the proposed rules, are the subject of legal dispute. Nothing in this testimony takes a position regarding the current legal dispute or suggests that EPA has the legal authority under the Clean Air Act to take all the actions we suggest that could be beneficial to the economy and environment. This testimony is geared to discussing the best policy approaches whether those are achieved through regulation, legislation, or a combination of them.

Science should be the foundation for transportation climate policies

Any effort to improve transportation energy's emissions characteristics requires an accurate accounting of the lifecycle carbon intensity associated with particular fuels and technologies. This analysis should include everything from acquisition of natural resources, engine and battery manufacturing, tailpipe emissions, and vehicle end-of-life consequences. It should also be regularly updated so that policy is nimble enough to adjust to efforts to innovate and improve the environmental characteristics of different alternatives. Additionally, every sector of the economy should assume a burden of reducing carbon emissions that is proportionate to its share of nationwide emissions. Focus more on one source of emissions rather than others could lead to policies that are less effective than they would be if the entire lifecycle of a vehicle is taken into account.

Policy should set performance goals without mandating specific technologies to allow for the benefits of innovation and technology development

While it may be tempting to prematurely pick winners and losers from an energy technology standpoint, sound policy must be grounded in science and recognize that the state of technology can change rapidly. Incentives to invest in alternative fuel technologies should be tied to those technologies' lifecycle environmental attributes rather than the underlying technology itself.

No one solution will decarbonize transportation energy. Policies should incentivize multiple technologies. What policymakers think is the best solution today may be surpassed by subsequent ingenuity and innovation. Sound policy should not stifle innovation by mandating specific fuel solutions. Instead, policy should set performance goals and let the market – guided by consumers – innovate to find the best way to meet those goals.

Retailers' experience is valuable in this respect because they bring a technology-agnostic perspective with an underlying attention and loyalty to consumer preferences and low prices.

Develop competitive market incentives to ensure a level playing field and provide long-term consumer benefits

Fuel retailers today are best positioned to provide alternative sources of transportation energy because they have a keen understanding of consumer preferences and tendencies. Refueling stations are strategically located throughout the country where refueling demand is greatest, competing with one another on price, speed, and quality of service. Those sites include disability accessible restrooms and parking lots, food and beverage options, vehicle service and repair centers, and even showers and other amenities for professional drivers. Consumers demand all of this, regardless of the type of fuel their vehicle consumes.

Existing alternative fuel incentives – such as the Renewable Fuel Standard and biofuel blending and alternative fuel infrastructure tax credits – have allowed retailers to offer less expensive, lower carbon fuels to their customers, while also supporting investments in renewable fuel production. Regardless of how one may feel about ethanol and biodiesel, the incentives Congress established have caused the displacement of significant volumes of petroleum-based fuel with renewable fuels since 2005.

These benefits can be replicated for new technologies if policymakers adopt a market-oriented and consumer-focused perspective. Policy mechanisms worth considering include:

- Ensuring credit regimes and/or tax incentives make alternative fuel less expensive for the end user, thereby providing a stable economic case for upstream investment.

- Permitting all EV charging station owners to generate a profit by selling electricity to EV owners without being subject to regulation as a utility. This allowance is essential if fuel retailers are to have any incentive to invest in EV charging technology.

- Adopting uniform retail pricing measurements (e.g., dollars per kilowatt-hour) and requirements for consumer-friendly price disclosures.

Conversely, policies that at first blush appear to be quick and easy solutions tend to have the unintended consequence of undermining retailers' incentives to invest capital in alternative fuels. This inevitably hinders the growth and expansion of alternative transportation energy. For example, forcing ratepayers to underwrite electric utilities' investment in EV chargers or to subsidize the cost of electricity that charges electric vehicles actually depresses the development of charging infrastructure. Where this occurs, the utilities are operating in a guaranteed rate of return environment without putting a single dollar at risk. Retailers cannot compete with electric utilities in this environment. While there is good reason for ratepayers underwriting the cost of the grid and other upgrades, there is no public policy rationale why utilities should be given a leg up over private actors who wish to enter the market for chargers that consumers use to power their vehicles. Utilities' ongoing pursuit of this uncompetitive arrangement is a large deterrent to fuel retailers investing in EV charging infrastructure.

The electricity marketplace also needs modernization to create a competitive playing field that attracts private investment that would allow it to adapt to transportation needs. Utilities charge commercial users of electricity "demand" charges on their monthly bills based on the highest rate at which they pull power at a particular time. EV fast charging stations require a large amount of power to be dispensed quickly and result in large demand charges that cannot be passed onto individual drivers. But utilities don't have to pay demand charges themselves. A prohibition on such practices and other ways in which utilities favor their own EV charging stations on pricing is the only way to provide a level playing field and ensure competitive pricing for individual consumers. If utilities are able to use these practices to monopolize EV charging in their areas, they will be able to increase prices and overcharge consumers for the next generation. That classic monopolization behavior should be stopped before it gains too much momentum.

A few states still prohibit the sale of electricity (i.e., fuel) to individual consumers except by price-regulated utilities.[3] This discourages additional deployment of such infrastructure. EV charging station owners must be permitted to generate a profit by selling electricity to EV drivers if they are to have any incentive to invest in the technology.

EV charging infrastructure should not be built at Interstate rest areas. Not only would this discourage off-highway fuel retailers from investing in charging infrastructure, but it would signal to

[3] As of this writing, these states include Louisiana, Montana, Nebraska, Tennessee, and Wisconsin, although our understanding is that Louisiana is close to finalizing a change to its prohibition that would deal with this issue.

prospective EV drivers that they will need to refuel at often desolate, poorly maintained state-run rest areas rather than the off-highway travel centers, convenience and fuel retailers with all of the amenities that drivers have come to expect.

Harness existing infrastructure to help commercialize new technology, maximize diverse investments, and achieve near-term and long-term emission reduction goals.

So-called "range anxiety" is one of the leading reasons why consumers hesitate to purchase EVs. "Range anxiety" does not exist for drivers of internal combustion engine vehicles. Once we get to the point where consumers can "fill-up" their EVs at the local gas station or convenience store, then "range anxiety" will be over for EVs. Seeing the price of electricity on signs at gas stations right beside the prices of unleaded gasoline and diesel fuel will make clear to all Americans that they can purchase any vehicle they want without any concern about changing their driving habits.

To get there, we should leverage existing infrastructure. By harnessing existing infrastructure – including removing hurdles to bringing alternative fuels to market – customers will more seamlessly gravitate to new types of fuels and vehicles. American companies have spent more than sixty years building out a refueling infrastructure system that optimizes logistics and maximizes customer benefits. Deployment of new technology that complements this infrastructure will (all else being equal) be less expensive and thus more likely to generate consumer loyalty.

In just the past decade, there has been extraordinary growth in consumption of biofuels such as ethanol and biodiesel, as well as other low carbon fuels such as renewable natural gas, compressed natural gas, renewable diesel, and biobutanol. These are all liquid fuels that are mostly compatible with existing infrastructure that was originally developed for hydrocarbons. With all of these fuels, industry has responded to policy signals by allocating capital toward bringing the fuels to market. Retailers then sell the fuels to consumers for less money than the fuels that were being displaced. This has created enormous environmental benefits in a relatively short period of time. We can build upon current policies to leverage existing infrastructure and achieve meaningful environmental benefits as we work toward reaching our longer-term aspirations.

Set consistent, uniform national policy so that (i) the market has certainty to help it invest and (ii) state policies do not create inconsistent or counterproductive incentives

Federal policy should be designed to lower the cost of alternative fuels to make those sources of transportation energy more competitive with petroleum-based fuels. This is the only way to ensure that consumers will gravitate toward low carbon technologies. Although some state incentive programs adopt this approach, others have vacillated between different approaches in a way that does not allow private market participants to plan long-term investments in alternatives. Such inconsistent policies are ultimately self-defeating, and that approach should be avoided.

Ensure fair treatment so that all households are not forced to subsidize alternative energy users

Fundamental tenets of fairness dictate that users of transportation energy, including alternative energy sources, pay for that energy and related infrastructure. Unfortunately, this is not occurring today in two ways:

First, when utilities rate-base their EV infrastructure investments, it raises the monthly utility bills for all of a particular rate class, even though the benefits are confined to a small group of users. It is patently unfair and inequitable for policymakers to force most households to subsidize the refueling costs for EV drivers. Vehicle owners should pay the costs of powering their own vehicles in order to create a market system that will keep energy prices down and avoid regressive charges.

Second, it is imperative that highway infrastructure funding comes from all highway users, and not just those that rely on a particular technology. Any user fee to generate increased revenue for highways must capture all vehicles that use the roads.

Addressing transportation emissions and their contribution to climate change, we should all be aware that there are no perfect answers. All vehicles have emissions associated with their manufacture and use. Even "zero emission vehicles" have emissions from their operation because the production of the energy that they need to operate – such as electricity or hydrogen – produces emissions. In order to understand the policy benefits and costs of any action in this area, we need to examine the full, life-cycle emissions of all of these options.

II. EPA's Proposed Tailpipe Rules

We have concerns that EPA's tailpipe rules put a thumb on the scale of EV technology rather than harnessing the benefits of competition among different current and potential future vehicle technologies.[4] EPA estimates that its rules will result in 60 percent of new light duty vehicle sales being electric in 2030 and 67 percent of new sales being electric in 2032. In fact, those appear to be the only realistic ways for the regulated community to comply with EPA's rules.

EVs are the exclusive road to compliance with EPA's proposal in part because EPA looks more clearly at tailpipe emissions rather than the full lifecycle emissions from these vehicles. That is a flawed approach. The energy needed to power EVs, electricity, has emissions associated with it. The construction of EVs, particularly the batteries, also have associated emissions. EPA should fully account for all of these emissions. Such a full accounting of the relative advantages and disadvantages of the different vehicle technologies and the energy used to power them would lead to different policy choices than EPA has made in its proposal.

Prior to its current rules, EPA set tailpipe standards that individual vehicles would need to meet in order to be sold. The agency's most recent proposals, however, depart from this traditional approach by setting rules for average across vehicle fleets. That is the mechanism used to move those fleets from ones that primarily consist of internal combustion engine vehicles to ones that primarily consist of electric vehicles. This approach tells automakers what types of vehicles to make and sell rather than ensuring the vehicles they sell meet a certain standard.

Engineering resources have already moved decidedly away from internal combustion engine vehicle work toward work on EVs. Some of that movement is market-driven, but EPA's rule risks zeroing out new innovations in emissions reductions for internal combustion engine vehicles. Because there is no way for manufacturers to comply based on internal combustion engine vehicles, they would not see

[4] As noted previously, there is existing litigation challenging EPA's statutory authority to factor EVs into these regulations and to use fleetwide averaging rather than requiring minimum standards for all vehicles in its rule. It is beyond the scope of this testimony to analyze those legal questions.

a return from making new investments in developing that technology. Finalizing regulations that push people to that conclusion would be a mistake that would risk all of us missing out on potentially large emissions reductions.

EPA's proposals for heavy duty vehicles raise similar concerns. EPA's proposal would result in electrifying 50 percent of vocational trucks, 35 percent of short-haul tractors, and 25 percent of long-haul tractors by 2032. But heavy duty trucks are far behind light duty vehicles in the move to electrification. The challenges to electrifying the sector are enormous. Heavy duty trucks cannot use light duty EV charging infrastructure and require two 8,000 pound batteries to operate. It could take 10 hours to charge those trucks and that would provide them with only a few hundred miles of range.[5] By contrast, a diesel truck can fuel in about 15 minutes and get 1,200 miles of range. The implications for the cost and efficiency of moving goods by truck based on those figures would create large cost increases for virtually all goods sold in the United States and challenge supply chains needed to get those goods to market at all.

III. Challenges for EPA's Proposed Tailpipe Rules

A. Consumers and the Market

EPA's proposed rules would force the market toward EVs regardless of how the market develops. Fighting market forces, and consumer sentiment, tends to be a losing battle. Our industry knows this well. With 165 million transactions each day, our industry stays very close to the pulse of American consumers. The industry must and does sell things that consumers want to buy. That is the only way to stay in business.

Consumers are not yet ready to buy EVs on the scale that EPA proposes. During the first quarter of this year, EVs were 6.91 percent of new car sales across the nation.[6] That put EVs on pace to sell about 1 million new vehicles in 2023. While that is a rapid increase in sales from past years, EVs are a long way away from rivaling internal combustion engine vehicle sales. For example, in 2022 alone, just three vehicles – the Ford F150, Dodge RAM, and Chevy Silverado – sold a combined 1.5 million new vehicles. There are wildly differing estimates on how quickly EV sales will increase. S&P Global Mobility estimates that by 2030, EVs will be 40 percent of new vehicle sales. The Energy Information Administration, on the other hand, estimates that EVs will be 17 percent of new vehicle sales by 2030. McKinsey has the highest estimate and projects that EVs will be 48 percent of new vehicle sales by 2030.

Given these varying estimates – all from highly respected sources – we should be cautious about how much we know about consumers' willingness to purchase, and manufacturers' ability to deliver, EVs at the rates required by EPA's proposed rules. EPA writing rules does not mean that challenges related to supply chains for making the vehicles or consumer sentiment will change. We need to deal with those realities.

Even without those challenges, combustion engines will not disappear from the U.S. landscape in the foreseeable future. For example, no matter how much we may like EVs, internal combustion engine vehicles stay on the road for a long time. There were 285 million cars in operation in the United

[5] "Trucking industry worries US EPA put 'cart before the horse' with emissions proposal," Jasmin Melvin, S&P Global (April 19, 2023) (available at Trucking industry worries US EPA put 'cart before the horse' with emissions proposal | S&P Global Commodity Insights (spglobal.com)).

[6] Data from WardsIntelligence.

States at the end of 2022.[7] About 3 million of those vehicles are electric.[8] And, there are more than double the number of used car sales in the United States each year than there are new car sales – more than 43 million used cars were sold in 2021 compared to 15 million-plus new cars.[9] The average age of a car in operation in the United States is 12.2 years.[10] Of course, that is just the average of those currently in operation. With sales of used cars, many vehicles remain in operation for years beyond that time period. The average full life of a vehicle in the United States is about 16 years – and that average means some vehicles are lasting more than 20 years.[11]

Given those realities, we need to get efficiency gains and emissions reductions from all vehicle technologies. Let's look at it another way. As noted previously, McKinsey estimates that by 2030, 48 percent of new vehicle sales in the United States will be EVs. Given the rate of turnover of the fleet, the number of used vehicle sales and other factors, they estimate that at that point in 2030, EVs will constitute just 17 percent of the vehicles in operation around the country. Importantly, they also looked at what those numbers will mean for gasoline demand. Based on those figures and the fact that many of the internal combustion engine vehicles on the road at that time will be less efficient than the vehicles that the new EVs replaced, McKinsey concludes that the reduction in gasoline demand based on the increased number of EVs on the road will be only 4 percent.

Simply put, that 4 percent reduction in gasoline demand alone is not a complete solution to our climate change challenges in the transportation sector. We need to focus on the entire picture including all vehicle technologies and liquid motor fuels as well as electricity.

B. Regional Differences

Regional differences add to these challenges. Today, EVs are very concentrated based on geography. Just 15 states account for more than 81 percent of all EVs on the road today and by 2030 the top 15 states are still projected to account for more than 75 percent of all EVs.[12]

Weather differences contribute to this picture. EVs lose significant range in cold weather. Consumer Reports has found that driving short trips with frequent stops in cold weather can reduce EV range by as much as 50 percent.[13] States with large rural areas can also present challenges for EVs today. Getting from one town to the next in some areas of the country can require driving more than one hundred miles. Current infrastructure limitations in some of those areas can affect drivers' interest in EVs.

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[7] "Number of vehicles in operation in the United States between 1st quarter 2018 and 4th quarter 2022," (available at U.S.: vehicles in operation 2022 | Statista).
[8] "How Many Electric Cars Are There in the United States? We Found Out," Georgette Kilgore (March 20, 2023) (available at How Many Electric Cars Are There in the United States? We Found Out (8billiontrees.com)).
[9] "U.S. new and used car sales 2010-2021," Mathilde Carlier (July 22, 2022) (available at https://www.statista.com/statistics/183713/value-of-us-passenger-cas-sales-and-leases-since-1990/).
[10] S&P Global Mobility, "Average Age of Vehicles in the US Increases to 12.2 years," (Apr. 17, 2023) (available at https://www.spglobal.com/mobility/en/research-analysis/average-age-of-vehicles-in-the-us-increases-to-122-years.html).
[11] Stillwater Associates, Oak Ridge National Laboratory
[12] S&P Global Mobility (as of July 2021)
[13] "How Temperature Affects Electric Vehicle Range," Jeff S. Bartlett and Gabe Shenhar, Consumer Reports (Aug. 22, 2022) (available at How Temperature Affects Electric Vehicle Range - Consumer Reports).

Some of the regional concentration of EVs might actually be helpful from an environmental perspective. The state in which a vehicle is operated can dramatically change the relative carbon emissions results of EVs compared to internal combustion engine vehicles. That is because the emissions picture of electricity generation varies quite a bit across the nation. A 2022 report from The Fuels Institute analyzing these differences is instructive.[14] The report noted that there are higher emissions associated with manufacturing an electric vehicle than an internal combustion engine vehicle due to the process of manufacturing the batteries. In states with relatively low carbon profiles for electricity generation, however, electric vehicles started to show an emissions advantage over internal combustion engine vehicles after about 19,000 miles of driving.[15] Over the lifetime of the vehicles, the emissions advantages of electric vehicles operated in those states were quite significant. In general, many western and northeastern states fell into this category based on the profile of electricity generation in those states which tracks to some extent the states that account for larger numbers of EVs than most other states.

In states with higher carbon emissions from electricity generation, it took about 82,000 miles of operation before EVs showed any life-cycle carbon emissions advantages over internal combustion engine vehicles.[16] And, over a 200,000-mile lifetime of the vehicles in those states, the electric vehicles showed emission advantages that were relatively modest. In fact, in those states, hybrid electric vehicles showed a greater carbon emissions advantage over 200,000 miles relative to fully electric vehicles than those fully electric vehicles did relative to internal combustion engines. Examples of the states used in that analysis were Iowa, Texas, and Tennessee.

The report also looked at states that generated very high carbon emissions to produce electricity. In those states, such as West Virginia, internal combustion engine vehicles showed a decided carbon emissions advantage relative to electric vehicles throughout the entire 200,000-mile life of the vehicles.[17] Here again, hybrid electric vehicles had a better emissions profile than either fully electric vehicles or internal combustion engines.

None of this should be read to diminish the fact that, overall, there are emissions advantages to EVs relative to other technologies on average. But, we should recognize that that is not true everywhere across the nation. EPA's rules envision a homogenized national system relying on one technology. While a national approach is necessary and called for by the law, that doesn't mean the same technology should be pushed everywhere and in every situation. In order to get the best results on emissions and fight climate change, we should ensure that policies are calculated to allow for and take advantage of all vehicle technologies and get them competing with one another to make improvements that will yield additional advantages to emissions and the climate. Focusing more on one technology (EVs) or source of emissions (the tailpipe) will have differential and negative impacts in some locations compared to others and lead to demonstrably worse results than policies that incorporate and contemplate the use of all technologies and take account of full lifecycle emissions.

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[14] "Life Cycle Analysis Comparison: Electric and Internal Combustion Engine Vehicles," The Fuels Institute (Jan. 2022)(available at FI_Report_Lifecycle_FINAL.pdf (fuelsinstitute.org)).
[15] "Life Cycle Analysis Comparison" at 42.
[16] Id. at 43.
[17] Id. at 43.

C. Electricity Market Challenges

One of the most-recognized factors limiting consumer adoption of EVs is referred to as "range anxiety." That may or may not be the best way to describe it, but many consumers have questions about whether they will be able to conveniently charge their vehicles when, where, and in a time period that works for their lives if they drive an EV. While some argue that should not be a large a concern because about 80 percent of EV charging takes place at home, that snapshot figure is misleading and does not take into account growth in the population of consumers who may want to consider EVs.

While the Department of Energy (DOE) reports that 63 percent of housing units have a garage or carport,[18] only 65.9 percent of Americans own their home.[19] The willingness and ability of renters to install charging equipment in a garage is questionable. In addition, many of the garages in DOE's figure are associated with multi-family housing. Those garages often do not have individual spaces for every vehicle driven by occupants of those buildings and many of them will not be willing to spend the funds to have large percentages of those vehicle spaces equipped with charging equipment.

It is also worth noting that many garages are not available for vehicle charging. Different surveys of homeowners have found that large numbers of people (37 percent and 75 percent in different surveys) use their garages for storage and do not park a single car in that space.[20]

Those realities also do not account for all the ways in which Americans use their vehicles. Many Americans drive for vacations, work trips, and road trips of all kinds. And, many of them do not want to have a car that works for them day-to-day but limits their ability to make periodic longer trips.

The bottom line is that we need more charging on-the-go. Our industry is providing that, but the infrastructure is not yet adequate and there are major impediments to it fully developing. One thing, however, is clear: drivers of internal combustion engine vehicles do not hesitate to purchase those vehicles due to "range anxiety." They refuel their vehicles on-the-go and have confidence that they can drive to virtually any corner of the nation and have access to the transportation energy they need. Our industry has addressed that issue for most drivers and can do so for EV drivers. When EV drivers routinely see price signs on the street that include not just pricing for gasoline and diesel fuel but also pricing for electricity, the "range anxiety" issue will be solved.

To reach that goal, however, we need change. First and foremost, electricity markets need to change. We need abundant private market investment in EV charging infrastructure to serve EV drivers. That will only happen if businesses are able to make a return on those investments.

Today, the business case for investing in EV charging does not exist because of the electricity markets. Electricity markets are dominated by local monopoly providers. These electric utilities routinely impose something called a demand charge on commercial users of electricity. A demand charge is an amount added to a monthly utility bill that is not based on the amount of electricity used by that business. Instead, the charge typically is based on the highest rate of usage the business has during the

[18] Fact #958: January 2, 2017 Sixty-three percent of all Housing Units have a Garage or Carport | Department of Energy

[19] U.S. homeownership rate 2022 | Statista

[20] "Why a Third of Garages Don't House Cars," Diana Ionescu, Planetizen News (May 5, 2022) (available at Why a Third of Private Garages Don't House Cars | Planetizen News)

two 15-minute periods in a month in which the business draws electricity from the grid at the highest pace. EV fast chargers must draw a lot of electricity from the grid quickly in order to charge a vehicle quickly. In fact, having just one fast charger in use essentially doubles the amount of electricity that a typical convenience store with fuel pumps uses at one time. If two fast chargers operate at the same time, the impact is even more dramatic. This can add thousands of dollars to a convenience store's monthly utility bill that it cannot possibly recover from drivers charging their cars.

The inability to recover those huge demand charges is not just because the amounts are too large, but also because some utilities own and operate chargers themselves – and they do not impose demand charges on themselves. The combination of demand charges and utility operation of fast chargers amounts to an unfair business practice that threatens to block many investments in EV charging infrastructure.

Businesses in our industry are making these investments today, but they are struggling to make a profitable return on those investments. Instead, they are using the opportunity to learn about the market – including how serving EV customers will impact in-store sales of food and other items. And, in part, these are bets on the future in the hopes that policies related to electricity sales to vehicles will change in time to make these investments worthwhile. No one should assume that the presence of EV chargers at these locations today means that market problems have been solved. We have a long way to go to ensure there is a business case for these investments such that the infrastructure can be built to the scale that is needed to support future EV drivers.

A second, related problem is that some utilities are charging all of their electricity customers more on their monthly bills in order to pay for the installation and operation of EV chargers. Private businesses do not have a guaranteed, uncompetitive pool of funds at hand to use to pay these expenses. This creates an unlevel playing field and keeps private investment on the sidelines. It also saddles utility customers with added costs that go to others in their community who use it to fuel their EVs. There are real equity issues in play here given the relative income levels of EV drivers today.

The last Congress made an effort to address these problems in the Infrastructure Investment and Jobs Act (IIJA). Section 40431 of that law requires states to consider electricity rate changes to incentivize private investment in EV charging infrastructure. Dealing with the problems associated with demand charges and the rate-basing of the cost of EV chargers would be needed to fulfill that part of the IIJA. Unfortunately, this has not led to changes that are necessary to facilitate more investment and development of this infrastructure. More is needed.

Georgia recently passed a new law[21] that can provide a blueprint for dealing with these challenges. It would limit utility rate-basing of the cost of EV charging stations to allow the private market to invest. But, if there are truly markets that are underserved by the private sector, it would allow utilities to meet those needs through rate-basing. The Georgia law implemented the recommendations of Georgia's Joint Legislative Study Committee on the Electrification of Transportation.

Another, related impediment to EV charging is maintenance of those chargers. A number of studies have found that large percentages of the chargers deployed around the nation are inoperable at

[21] GA Senate bill 146.

any given time.[22] A major reason for this is because there is no business case for operating EV chargers. When the electricity market problems noted above are addressed and private market investors are able to make a profit selling drivers electricity, the maintenance problem largely will be solved. Businesses simply will not allow equipment that makes them money to stay broken for long. Unfortunately, utilities and businesses that do not make a profit on EV chargers do not have the financial incentives to ensure they are operating. EV drivers are facing challenges finding chargers that work as a result.

D. Electricity Grid Challenges

Large increases in the numbers of EVs will present challenges for the generation and transmission of electricity. How much of a challenge this will present varies significantly based on who is doing the analysis. One estimate, from the Electric Power Research Institute (EPRI), is that EVs will require 8 to 13 percent more electricity in 2030 than we had in 2021.[23] EPRI also projects the need for a 10 percent expansion of high voltage transmission capacity to get that power to the places that need to use it. But EPRI's analysis assumed far fewer EVs on the road than does EPA's proposed rules. A number of other studies include other estimates of the need for more generation and transmission of electricity, but we are not aware of any of them to date that have contemplated the full impact of EPA's proposed rules. Having 67 percent of new car sales EVs by 2032 is an order of magnitude more than most aggressive estimates assumed prior to publication of EPA's proposal. This puts us in new territory and we would be well advised to study it carefully.

In addition, many studies of the grid in this context assume large numbers of EV drivers charging at off-peak hours – through a combination of choice and policy changes. But there is reason to doubt whether this can happen. As noted, home charging is likely to be a much smaller part of the picture of charging EVs in the future than it is today. And, consumer behavior is notoriously difficult to change. The evening rush hour is a time of peak energy usage today. We don't see a policy change that is going to convince drivers that need to charge their cars to get home from work that they should wait and charge them at another time. If people were amenable to waiting to drive home, traffic in many cities would have been sufficient to change their behavior already.

And, many of the studies of the grid challenges presented by EVs have not taken into account other ways in which the nation is adding to those challenges. For example, the Department of Energy estimates that a large data centers requires the same amount of power as about 80,000 households.[24] Data centers already consume about 3 percent of the world's electricity,[25] and the number of those

[22] See "Why America's EV chargers keep breaking," David Ferris, Politico (April 12, 2023) (available at Why America's EV chargers keep breaking - POLITICO); "EV charging stations in the US are plagued by reliability issues: study," Iulian Dnistran, InsideEVs (Feb. 13, 2023) (available at EV Charging Stations In The US Are Plagued By Reliability Issues: Study (insideevs.com)); "The EV charging experience: Why it's broken and how to fix it," Jon Asmussen, the EV Report (Dec. 29, 2022) (available at The EV Charging Experience: Why It's Broken and How to Fix It - The EV Report).

[23] "Can the Power Grid Handle a Wave of New Electric Vehicles," Bart Ziegler, Wall Street Journal (Feb. 5, 2022)(available at Can the Power Grid Handle a Wave of New Electric Vehicles? - WSJ).

[24] "Understanding Data Center Energy Consumption," Josh Mahan, C&C Technology Group (April 20, 2023) (available at Understanding Data Center Energy Consumption - C&C Technology Group (cc-techgroup.com)).

[25] Id.

centers is likely to grow. U.S. businesses and consumers are using data and connected devices (including EVs) more than in the past and that will increase in the future. These facilities will require more power.

We are also expanding electricity use in other ways. Many places are pushing changes that move homes and businesses away from heat pumps and gas stoves toward electric heat and appliances. These changes will increase the need for generating capacity and transmission.

E. Other Challenges

EPA's proposals fail to provide a vision to meet a number of other challenges as well. For example, EV batteries require large amounts of rare earth minerals that are not produced in sufficient quantities in the United States to satisfy current, let alone future, demand. According to the Congressional Research Service, manufacturing EV batteries depends "on five critical minerals whose domestic supply is potentially at risk for disruption: lithium, cobalt, manganese, nickel, and graphite."[26] Manganese and graphite are not currently mined in the United States at all.[27] Ensuring that sufficient quantities of these minerals are available to meet the increased production needs contemplated by EPA's proposed rules will present ongoing challenges.

EVs also require far more microchips than internal combustion engine vehicles – about twice as many.[28] The nation has already had problems meeting the microchip needs of manufacturing vehicles during the past couple of years. Unless production of those chips increases substantially, a large upsurge in electric vehicle production could put new strains on those supply chains.

Road maintenance presents another obstacle to EV use. EVs are much heavier than similar internal combustion engine vehicles due to the weight of their batteries. EV trucks in particular will take a large toll on U.S. roads. Currently, however, highway funding comes from motor fuel taxes. There is no policy plan to make up for shortfalls in highway funding if EVs dramatically increase in market share. Such a plan is needed.

IV. Potential Gains from Combustion Engines and Liquid Fuels

As noted previously, one of the concerns with EPA's proposed tailpipe rules is that it will stunt additional gains that could be made in curbing emissions from internal combustion engine vehicles. Those gains could come both from advances in vehicle technology and advances in liquid motor fuels. Specifically, higher octane fuels that use more renewables can help improve engine efficiency and reduce emissions. These and other improvements could be integral components of a comprehensive strategy to reduce lifecycle transportation emissions, but EPA's proposals discourage any pursuit of these types of innovations in vehicle engines and in liquid fuels because compliance can only be achieve by abandoning those technologies in favor of EVs.

One straightforward path to improvement is presented by increased use of renewable fuels. Renewable diesel fuel, biodiesel, ethanol, and other renewables have lower carbon intensities and emissions than the petroleum products they can displace in the liquid fuel supply. Estimates are that

[26] "Critical Minerals in Electric Vehicle Batteries," Congressional Research Service (Aug. 29, 2022) (available at R47227 (congress.gov)).
[27] Id.
[28] "How many chips are in our cars?" Electronics Sourcing (May 4, 2022) (available atHow many chips are in our cars? | Latest Articles News (electronics-sourcing.com)).

renewable diesel[29] reduces carbon intensity by 65 percent compared to petroleum-based diesel,[30] and ethanol has 44 to 52 percent lower greenhouse gas emissions than gasoline.[31] Other advanced fuels such as renewable gasoline could produce significant emissions improvements as could changes in the production processes for traditional petroleum-based fuels.

These changes could improve the emissions profiles not just of new vehicles but of existing vehicles as well. Those vehicles will be on the road for many years and we should not ignore the chances we have to improve their emissions. Just like a disproportionate focus on tailpipe emissions is limiting, a focus on new vehicles is too narrow to get the best outcomes.

The industry has demonstrated consistent reductions in emissions and gains in efficiency through focus on the internal combustion engine. DOE's Office of Energy Efficiency and Renewable Energy has estimated that over the past 30 years, advances in internal combustion engines has reduced emissions of criteria pollutants by more than 99 percent.[32] Since model year 2004, carbon dioxide emissions have fallen 25 percent and improved in fourteen of seventeen years while fuel efficiency has increased by 32 percent.[33] Similarly, data from the Bureau of Transportation Statistics from 2011 to 2018 shows that engine efficiency has reduced light duty fuel consumption.[34] While light duty vehicle miles traveled increased by 9 percent during that time period, fuel consumption only grew 3.65 percent. The miles these vehicles were able to drive per gallon increased by about 5 percent. Given that McKinsey projects the increase in EV sales through 2030 will only reduce gasoline consumption by 4 percent, the improvements we have already seen from internal combustion engines are eye-opening. We simply cannot afford to be dismissive of the benefits that additional improvements in internal combustion engines and liquid fuels may provide if we give those the industry a reason to invest in advances in the efficiency of those technologies.

Unfortunately, EPA's proposal sends a clear message to the market that investments in these liquid fuel alternatives would result in stranded investments.[35] If government policy is going to pick another technology as the preferred technology, there is little reason for businesses to invest in other solutions even though those solutions could deliver important emissions reduction benefits.

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[29] It is worth noting that other government policy, specifically, tax credits for sustainable aviation fuel (SAF) are pulling feedstocks away from the production of renewable diesel in a way that is harmful to the environment. The same volume of feedstock produces more renewable diesel than SAF and therefore displaces more petroleum-based fuel. These policies too should be changed to allow the market to pursue the best environmental and economic uses of these feedstocks to help us achieve more of our desired policy goals.

[30] See Alternative Fuels Data Center: Renewable Diesel (energy.gov).

[31] See Ethanol vs. Petroleum-Based Fuel Carbon Emissions | Department of Energy.

[32] See Internal Combustion Engine Basics | Department of Energy.

[33] "Highlights of the Automotive Trends Report," EPA (updated Dec. 12, 2022) (available at Highlights of the Automotive Trends Report | US EPA).

[34] "Vehicle Miles Traveled by Highway Category and Vehicle Type," Bureau of Transportation Statistics (available at Vehicle Miles Traveled by Highway Category and Vehicle Type | Bureau of Transportation Statistics (bts.gov)).

[35] It is also worth noting that EPA's proposal conflicts with Congress' policy decisions in enacting the renewable fuels standard (RFS). The RFS calls for billions of gallons of renewable fuels to be part of the mix of fuels sold into the market each year. But compliance with EPA's proposed rule would of necessity reduce the volume of renewable fuels that could be sold.

Recognizing the history and the potential of different approaches, it is clear that using policy to give all existing and new technologies the chance to compete for market share and emissions reductions will yield better results than focusing on a single approach.

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We appreciate the opportunity to provide our views on EPA's tailpipe proposals. EPA and policymakers throughout the Administration and Congress face real challenges in addressing climate change and other environmental issues. If we are to be successful in meeting those challenges in the transportation sector, however, we must take a holistic approach and seek improvements everywhere we can. EPA's tailpipe proposals take too narrow a focus and therefore will not lead to the outcomes we need for the climate or the economy. We look forward to working with the Congress and EPA to try to get to policies that will chart the best path forward.