Subject: Proposed EV Mandates
Date: Tuesday, May 2, 2023 at 8:33:09 AM Eastern Daylight Time
From: Peter Bradley
To: HearingComments, DNREC (MailBox Resources)
Attachments: EVdownside.pdf, evfalsepromise.pdf

To Theresa Newman -Hearing Officer

I offer the following comments regarding the proposed mandates along with attached supporting articles

DNREC is moving forward to promulgate/mirror California's regulations that would require by the fall of 2025, 35% of all new passenger cars, trucks and SUV's sold in Delaware be zero emission vehicles (primarily battery electric vehicles)

The proposed regulations, while well intended, are flawed in a myriad of reasons and will have significant local, national and international unintended negative consequences. It is naïve to promulgate mandates without assessing the full ramifications and impact of such mandates. We have seen time and time again - the success of our country is the core philosophy of free market determination of technology solutions compared to government mandates. If Electric vehicles are such a benefit to the consumer, makers will be rewarded in the marketplace which negates the need for mandates. It is that simple.

The following are some key negative consequences of this mandate:

Local Delaware Level

The mandate will have a significant negative economic/costly impact on the typical Delawarean. The average electric vehicle is far more costly at this point than a gas-powered vehicle. A cost which is simply out of reach for most Delawareans. Any proposed tax credits to offset the cost will be borne by the state and ultimately the taxpayer.

Electrical grid - The state and utilities will have to make major investments and upgrades to our electrical grid to handle this additional capacity. Any reasonable person knows electric rates will increase for businesses and the consumer. As such, Delaware will become a less business friendly state. Ironically, additional electrical power for the grid will have to come from Gas and coal fired plants.

Infrastructure - The state is going to have to make huge, significant infrastructure improvements - i.e. charging stations to handle the dramatic increase of electric vehicles. This cost will be passed on to the taxpayer.

Gas Tax - the state currently has a 23 cents per gallon gas tax which goes to support the DelDOT highway fund. There will be a significant decrease in revenue which will have to be made up somewhere else. Any proposed mileage based user fee approach (besides being administratively challenging to implement) would adversely impact rural drivers in our state.

Car Maintenance infrastructure – Electric vehicles require their own unique maintenance facilities and infrastructure. The likely reality is we will not have sufficient car repair facilities to handle this increased volume resulting in higher prices to maintain and repair an electric vehicle. In addition, existing car repair facilities (many owned by small business owners) will be challenged with potentially decreased business as well as costs to upgrade their facilities to handle EV's.

Hybrid Cars - The proposed regulations do not touch on the benefit of hybrid cars which are and could continue to be a valuable option for consumers and aid in green energy efforts.

Commercial Trucks. Vans – The current EV technology does not benefit commercial trucks and vans as the battery charge and power capability are lacking for these types of vehicles. Imposing this requirement on this class of vehicle will impact businesses and result in higher costs which will be passed onto the consumer.

Stifle new technology - You can make the argument that EV's are not transformational technology for a better green environment. Mandates like this can stifle break through transformational technologies such as hydrogen-based cars. EV's wind, solar cannot materially address our full energy needs and have high infrastructure costs.

National and International Level

Electric vehicles are harmful for the environment. Attached is an excellent article which details the typical electric vehicle requires **6 times** the mineral inputs compared to an internal combustible engine. The primary metals in EV batteries include Nickel, Lithium, Cobalt, Copper and rare earth metals. All th**ese metals require strip mining which is destructive to the environment. 80% of the world's supply of cobalt is in the Congo where it is mined under horrendous, well documented conditions with child slave labor.**

It is also noteworthy our adversaries **– China and Russia are in the top 3 in reserves for all these metals.** We will rely on China for these metals while they will continue to build coal fired power plants. Consumption of these materials have to increase in dramatic fashion which we will be beholden to our adversaries as well as be destructive to the environment via strip mining.

Electrical Grid - By all accounts, the nation's electrical grid is in need of major upgrades for continued reliability and protect against attacks such as Electromagnetic Pulse (EMG) attacks from an adversary, other cyber-attacks in addition to reliability concerns. Adding significant capacity to the grid will complicate and aggravate shortcomings of the grid.

Summary

While well intentioned, these unrealistic mandates will adversely impact Delawareans and our nation given the above. We should continue to let market forces, American ingenuity lead the way in addressing our energy goals.

FEE Stories

The Environmental Downside of Electric Vehicles

An electric vehicle requires six times the mineral inputs of a comparable internal combustion engine vehicle, according to the International Energy Agency.

Thursday, April 7, 2022

Image Credit: iStock-Sven Loeffler

Michael Heberling

Politics EVs Environmentalism Minerals Cobalt Employment Clean Energy

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At one time, "Saving the Environment" and "Fighting Climate Change" were synonymous. That is no longer true. The quest for Clean Energy through electric vehicles (EVs) epitomizes "the end justifies the means."

According to the International Energy Agency (IEA), an electric vehicle requires six times the mineral inputs of a comparable internal combustion engine vehicle (ICE). EV batteries are very heavy and are made with some exotic, expensive, toxic, and flammable materials.

The primary metals in EV batteries include Nickel, Lithium, Cobalt, Copper and Rare Earth metals (Neodymium and Dysprosium). The mining of these materials, their use in manufacturing and their ultimate disposal all present significant environmental challenges. Ninety percent of the ICE lead-acid batteries are recycled while only five percent of the EV lithium-ion batteries are.

Oil has been so demonized that we tend to overlook some of its positive traits as a power source relative to the battery power of EVs. The power for an internal combustion engine, oil, is a homogeneous commodity found abundantly around the world (*especially in our own*

backyard). In 2019, the four top oil producing nations were the United States, Russia, Saudi Arabia, and Canada. In contrast, the power for EVs is dependent on a mixture of diverse commodities from just a handful of third world countries.

In spite of the environmental hysteria about oil drilling, the surface area disturbed is relatively small since the oil is extracted from under the ground. In contrast, many of the materials prominent in the clean energy revolution are obtained through open-pit horizontal mining which is extremely damaging to wide areas of the environment.

Nickel

Nickel, a major component of the EV batteries, is found just below the topsoil in the Rainforests of Indonesia and the Philippines. As a result, the nickel is extracted using horizontal surface mining that results in extensive environmental degradation: deforestation and removal of the top layer of soil. It should be noted that Rainforests play a major role in "fighting climate change" by removing Carbon Dioxide from the atmosphere through *photosynthesis*. The environmental battle cry *"Save the Rainforests"* needs to be replaced with a new slogan reminiscent of this one from the Vietnam War: *"It was necessary to destroy the village in order to save it."* Here is the new environmental bumper sticker for all Clean Energy EVs: *"It was necessary to destroy the rainforest in order to save the planet"*.

Lithium

Over half of the world's Lithium reserves are found in three South American countries that border the Andes Mountains: Chile, Argentina and Bolivia. These countries are collectively known as the "Lithium Triangle".

According to the Institute for Energy Research, Lithium is found in salt flats in very arid areas which complicates the mining process. A multi-mineral mixture containing Lithium is removed from beneath the salt flats. The Lithium extraction from the mixture is a lengthy, 12 to 18 months, evaporation process that is water intensive. Each ton of lithium produced requires 500,000 gallons of water. Besides the discarded mineral salt mixture, the process can result in water and soil contamination plus a depleted water table.

It should be noted that the United States is 4th in total Lithium reserves behind the Lithium Triangle countries. However, NIMBY (*Not In My Backyard*) environmental protests to "Save the Planet" have stymied efforts to develop the US Lithium market. It seems that our provincial "Earth-Firsters" want to maintain a pristine US, but have no problem turning a blind eye to the environmental exploitation of third world countries.

Cobalt

The Democratic Republic of the Congo (DRC) produces 70% of the world's Cobalt. While there is no shortage of environmental issues with its Cobalt mining, the overriding problem here is human rights: dangerous working conditions and the use of child labor. Cobalt is a toxic metal. Prolonged exposure and inhalation of Cobalt dust can lead to health issues of the eyes, skin, and lungs. Because Cobalt can be easily extracted from the ground by hand, small scale, bare-bones "artisanal" mines are common. The simplicity of the operation discourages/negates the need for occupational safety measures and encourages the use of child labor.

According to the Wilson Center, "small-scale mining in the DRC involves people of all ages, including children, obligated to work under harsh conditions. Of the 255,000 Congolese mining for cobalt, 40,000 are children, some as young as six years."

Amnesty International has also made similar comments. "Thousands of children mine cobalt in the Democratic Republic of the Congo. Despite the potentially fatal health effects of prolonged exposure to cobalt, adult and child miners work without even the most basic protective equipment."

The "suspect" (bad) Cobalt is mixed in with the "legitimate" (good) Cobalt that comes from the large-scale mines that have the required safety standards and employ only adults. This co-mingling of "good" and "bad" Cobalt serves to mask the human rights abuses in the country's mining operations.

As it turns out, however, this charade is largely unnecessary since the majority of the DRC's cobalt mines are owned or financed by Chinese firms.

Eighty percent of the DRC's Cobalt ultimately ends up in China, a country not known for being a champion of human rights (the Uyghurs?). So, what is more important: *Fighting Human Rights Abuses or Fighting Climate Change?*

Copper

Chile is the leading producer of the world's Copper. The vast majority of Chile's Copper comes from open-pit/strip mines. This type of mining negatively affects vegetation, topsoil, wildlife habitats, and groundwater. The next three largest producers of copper are Peru, China, and the infamous Democratic Republic of the Congo. Number five happens to be the United States. Several states in particular, such as Minnesota and Arizona, show promise as new sources for domestic copper using underground mining instead of open-pit mining.

However, on January 26th, the Biden Administration canceled two copper mining leases in Minnesota. Commenting on the matter, Interior Secretary Deb Haaland said, "the Department of the Interior takes seriously our obligations to steward public lands and waters on behalf of all Americans." This decision was applauded by the strongest supporters of America's quest for Clean Energy: Environmentalists and Democrats.

It's Time to be Honest about Clean Energy

In December, President Biden issued an Executive Order saying the United States government will "provide a strong foundation for American businesses to compete and win globally in the clean energy economy while creating well paying, union jobs [except in mining] at home. Today's executive action further reinforces the President's directive to Buy American [except for clean energy raw materials] and ensure that equity [in the US, but not in Third World countries] and environmental justice [in the US, but nowhere else] are key considerations."

For all the "happy talk" about Clean Energy, our actions simply show a superficial commitment. We don't want to do the heavy lifting that it will take to make the transition to Clean Energy. Our role in the Clean Energy revolution will be limited to the final assembly of electric vehicles. But hey, that is good enough for our virtue signalling Earth First environmentalists and politicians.

What is needed, however, is an honest and comprehensive evaluation of the entire life cycle of clean energy from raw materials through disposition. There are pros and cons to all forms of energy. To date, all we have heard are the benefits of clean energy. It is now time to highlight the true costs of clean energy which must include the negative societal and environmental impact as well.

Join us in preserving the principles of economic freedom and individual liberty for the rising generation

Support FEE's Mission

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The False Promise of Electric Cars

(Roberto Parada)

By **ANDREW STUTTAFORD**
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Policy-makers should not push them harder than the market does

"The more the state 'plans,'" wrote Hayek, "the more difficult planning becomes for the individual." This may resonate with the driver of an electric vehicle (EV) who has pulled up at a charging station in the middle of nowhere, only to find it broken.

In January last year, Carlos Tavares, the CEO of Stellantis, the world's fifth-largest carmaker (it was formed by the merger of Fiat Chrysler and Peugeot), described electrification as "a technology chosen by politicians" and said it was "imposed" on the auto sector. By contrast, the triumph of the internal-combustion engine (ICE) over a century ago was organic. Human ingenuity and the power of markets led to a product that swept almost everything else off the road. EVs (which first had a moment around 1900) were not banned, and neither was the horse. In due course, ICE horseless carriages for the Astors were followed by the Model T and its kin. The automotive age had truly arrived.

The surge in demand for EVs (albeit from a low base) in Europe and the U.S. could be seen as evidence that, with the assistance of some taxpayer cash and nudges from government, EV technology could flourish without state interventions to either close down or hobble its wicked rival. But some policy-makers, faced with what they claim (and some may even believe) is a climate "crisis," have clearly not been persuaded that EVs, for all their loudly touted wonders, should be relied on to overtake conventional autos. That has left coercion, and with it the opportunity to redesign much of everyday life in ways more in keeping with the standards of those who know best. The switch to EVs will lead, in the end, to a shrunken role for the car, a machine long resented by a certain type of authoritarian for the untidiness it creates, for the space it takes up, and for the autonomy it offers.

Bans on the sales of new ICE vehicles will be coming into force from 2035 in Europe and, with California having taken the lead, in parts of the United States. Europe's ban will also cover hybrids, one of the better, less disruptive pathways to lower greenhouse-gas (GHG) emissions. But like many of the religious cults it resembles, climate fundamentalism is characterized by a perpetual quest for purity. Tainted by gasoline, the hybrid had to go. Japan is taking a different course. Its hybrids have done well, and their manufacturers argue that their technology has more to offer. Like, for instance, the chairman of India's largest automaker, the Japanese tend to be skeptical that there is only one route to a more climate-friendly automotive future. Toyota, for example, sells a hydrogen-fuel-cell car. (BMW has also begun small-scale production of a hydrogen-fuel-cell SUV.) Hydrogen-fuel-cell vehicles have zero GHG tailpipe emissions and would be permitted under both European and Californian rules. Massive investments in EVs, though, will leave relatively little left over for hydrogen in Europe and the U.S.

Meanwhile, the West's turn to EVs has given Chinese car manufacturers a chance to penetrate markets where they have never done well. EVs, basically a battery and a computer housed in a four-wheeled box, are fairly easy to make. They have eliminated much of the edge that the ICE had given long-established Western incumbents.

Using success in their home base as a launchpad, Chinese manufacturers were the source of some 5 percent of the new EVs sold in Western Europe last year. It doesn't hurt that Chinese EVs typically cost €10,000 less than their European counterparts, although not all compete on price. Moreover, Chinese manufacturers account for perhaps 55 percent of global EV-battery production. (An EV's lithium-ion battery accounts for 30–40 percent of the car's value.) And China's domination of the EV supply chain includes production of battery-cell components such as anodes and cathodes, and it processes up to 75 percent of metals (such as lithium, cobalt, manganese, graphite, nickel, and various rare earths) used in

major customer unbothered by environmental concerns or human rights, an area of comparative advantage that Chinese firms can also exploit in their EV-related businesses at home. That's something that the ESG-investment community ought to remember more often than it does.

Battery factories are being built in the West, too. Billions are already committed to, and beginning to be spent on, their construction in the U.S. But it's worth paying attention to Volkswagen's warning that, unless contained, high energy costs will render such plants "unviable" in Europe. Building a battery plant is one thing, but getting hold of the raw materials it needs is quite another. Ideally, they should come from friendly or friendly-ish nations (expect a surge in resource nationalism) or even — the ghost of John Muir cocks an ear — from within our borders. New mines will be necessary but will take years to open. Environmentalist litigation, an appropriately paradoxical irritant, will doubtless contribute to the delay. The prices of a number of raw materials used in EV production have risen and could continue to rise. There have already been signs of supply squeezes (some due to dislocations arising out of Covid and the war in Ukraine). If these persist, would-be EV buyers may have to wait longer and pay more. Others may prefer to walk away.

Many of these difficulties flow from the speed of this transition, a gift to China with potentially serious industrial, economic, and geopolitical consequences. Chinese competition in the EV arena (which will be more of a challenge in Europe) is the last thing Western carmakers need as they wrestle with a change that will upend not only their business model but also those of their suppliers. In Germany, in particular, it could trigger a crisis: Auto manufacturing is the backbone of its giant industrial sector. A fear of job losses is one reason the Biden administration wants to base as much as possible of the EV supply chain in the U.S. But the hugely expensive incentives (thank you, taxpayers!) to encourage that result could lead to a trade war with Europe, where some political figures are starting to realize that another self-inflicted climate-policy disaster is on the way.

And there's more. The reckless pace at which vehicle electrification is being pushed through — a hallmark of central planning — will add to the pressure on electricity grids on both sides of the Atlantic, at a time when the grids are sinking deeper into the disorder brought on by *their* decarbonization. Europe's energy miseries are no secret, but there have been signs of trouble here too, including grimly amusing requests to EV owners not to charge their cars during a couple of extremely hot days in Texas and California.

The reluctance — that obsession with purity again — to invest enough in "dirty" sources of electricity (a category that, in the more progressive U.S. states, includes natural gas) to tide us over for now, together with the lengthy delays that are bound to accompany any expansion of nuclear power even in states where it is not rejected outright, will increase our reliance on wind and solar, technologies still unable to play the role that policy-makers have assigned to them. Once the necessary equipment has been manufactured and installed, electricity generated by the wind and the sun may be GHG-emission-free. But the wind doesn't always blow, and the sun doesn't always shine, so the energy they produce isn't as dependable as that generated by the technologies they're inadequately replacing.

Plugging In

In addition, it will be extremely tricky, certainly in the U.S., to build enough charging stations in time to cope with demand if EVs sell at the rate their boosters expect. On the other hand, by reinforcing the anxiety about the range of EVs that's now discouraging potential buyers (as it did in 1900), this problem may be partially self-correcting. But only partially. The median EV range (how far a fully charged EV can go without a recharge) in the U.S. is currently a little over 200 miles. That is, if the numbers can be trusted (not always) — and if it's not too cold outside. This should suffice (if not necessarily psychologically) for drivers with their own garage or private driveway, who use their EVs only for quick trips or commuting (the average American driver drives 40 miles a day). Urban car owners with access only to the curbside will have a tough time. That won't worry the city planners. They want those road hogs on public transport anyway. As for drivers traveling longer distances, read on.

Adding injury to insult: Public charging stations are not infrequently poorly maintained and out of order. Existing networks, such as Tesla's, account for more than 140,000 chargers today. It won't be easy to reach the total of 2 million chargers forecast to be needed by 2030. While the Biden administration has committed to allocating $5 billion to the states to create a "national network" of 500,000 public chargers nationwide by 2030, $5 billion will probably not — of course — be enough. That's partly because of the administration's stipulation that a certain (although still insufficient) number of the

home or office use or for a top-up while, say, on an errand, and not a lot else. It remains unclear who will be in a position to build and install the Biden chargers by 2030 (not least because of "Buy America" requirements).

Range anxiety does not seem to have been too much of an issue with existing EV owners, who have an estimated average household income of more than $100,000 a year. They needed it: The average new EV costs $66,000, over 40 percent more than the price of a new conventional car and a price level at which it would take the much-vaunted cost savings of EVs a long time to kick in, if ever. Based on some estimates, about 90 percent of EV owners own two cars or more, adding credibility to anecdata that they use ICE vehicles mainly for long-haul trips and EVs for driving locally.

Having had the patience to let market forces work would have been the best way of developing a cheaper EV (see the Model T). Instead, with time being, allegedly, of the essence as the climate clock ticks, governments are subsidizing buyers (and thus incentivizing manufacturers to keep prices up in the short term) while using varying degrees of bullying to force carmakers to produce cheap EVs — the latter an approach that made the Soviet refrigerator the marvel it was.

Meanwhile, auto companies are investing billions in EV production in the expectation that, whether compelled or otherwise, the demand will be there — a game of high stakes that they had little option other than to play. If, during a period of high capital expenditure, EV sales disappoint or ICE-vehicle sales drop off too soon (a recession could increase the chances of both), carmakers may find themselves in treacherous territory.

Making matters worse is that these billions — trailed and preceded by taxpayer money — are being invested in the development of a product that, at this point, is in some key respects inferior to what it is replacing, in ways that matter at several levels, ranging from the everyday to something grander. After all, EVs jeopardize the ability, so central to this country's idea of itself, however mythologized, to just get up and go.

And all of this is for what?

In terms of GHG emissions, EVs are undoubtedly cleaner than conventional cars, but by less of a margin than is often understood. While an EV won't release any tailpipe emissions (or indeed have a tailpipe), that should not be the end of the calculation. The fairest way to compare the two is to look at the emissions associated with each type of vehicle over its entire life cycle. That will include the emissions released to generate the electricity that powers an EV (which will vary from country to country; India is not the U.S.) and the emissions associated with the manufacture of the car and its components, including the mining of the metals used. According to the International Energy Agency, after adding in all these factors, a midsize traditional car is responsible for a bit more than twice as much emission as an EV. That's not the most precise of comparisons, but it highlights another reason why the war against cars will not end with the end of the internal-combustion engine.

According to the EPA, in 2019 (the last pre-Covid year) transportation accounted for around 33 percent of U.S. GHG emissions. Some 58 percent of that was from cars and light-duty trucks. They were thus the source of about 19 percent of U.S. GHG emissions. The U.S. accounted for 11 percent of global GHG emissions that year. That means that cars and light trucks in the U.S. accounted for approximately 2 percent of global GHG emissions in 2019. They contributed even less in the EU. These are not the highest of numbers.

It would have made no material difference to the climate (and it would have been considerably less disruptive) if those governments that decided to ban the sale of new ICE vehicles from 2035 had refrained from taking that step until 2055, buying an extra 20 years in which electrification or any other replacement technology could have been put through its paces — and, if possible, improved — by a reasonably free market.

But that would not have done. The die had to be cast. There is a "race" to decarbonize, you see. Sadly, when it comes to cars, it's one in which all the participants will lose.

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