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State Vehicle Electrification Mandates

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Summary

Seventeen countries have announced plans to phase out sales of new gasoline-powered passenger vehicles. In the US, in the absence of a federal policy, state-level vehicle electrification mandates are a promising mechanism to achieve quantum leaps in EV sales volumes, and a critical step on the path to nationwide vehicle electrification. Federal preemption concerns have hindered introduction of state-level vehicle electrification mandates. However, recent Supreme Court precedent has opened a path for state mandates to withstand preemption challenges, provided the legislation is based on state interests *other than* vehicle emissions reduction and improved fuel economy standards.

Keywords: Electric Vehicles, Policy, Mandate, State Government, Gasoline Engine

1 Introduction

State mandates requiring all new passenger vehicles to be electric after a date certain would lead to large increases in the EV sales, set a policy framework supporting accelerated public and private investment in EV infrastructure and technology, and lay the groundwork for nationwide gasoline vehicle phaseout legislation. Four US states have already introduced such measures, and the concept is gaining momentum with key lawmakers.

However, concerns about federal preemption of state laws affecting vehicle emissions and fuel economy have limited state policy innovation in this area. Fortunately, new U.S. Supreme Court precedent creates a pathway for state vehicle electrification mandates to withstand federal pre-emption challenges.

This paper discusses global and federal-level US progress toward gasoline vehicle phaseouts. It covers the recent history of state vehicle electrification mandates, their predicted impact, and their legal status vis a vis federal pre-emption law. It concludes that appropriately-crafted state vehicle electrification mandates are a beneficial and promising policy mechanism for moving the country beyond gasoline.

2 Gasoline Vehicle Phaseout and Electrification Mandate Policies Defined

2.1 Gasoline Vehicle Phaseout

A gasoline or internal combustion engine vehicle phaseout (hereafter "phaseout") is a legal prohibition on the sale of new gasoline and diesel-powered (or non zero-emission) passenger vehicles after a date certain. For instance, a 2030 phaseout would prohibit sales of new gasoline-powered cars beginning with model year 2030. Such an approach is prospective – cars manufactured prior to the phaseout date are not affected.

2.2 Vehicle Electrification Mandate

A vehicle electrification mandate is a requirement that all new vehicles be electric vehicles starting with a certain model-year. It is closely analogous to a gasoline vehicle phaseout, with the exception that it requires the deployment of electric or hydrogen fuel cell technology rather than proscribing gasoline vehicles or requiring that cars be zero emissions. While the differences between the two policies may appear semantic, as discussed below there are important legal reasons for framing the policy as a vehicle electrification mandate at the state level.

3 Gasoline Vehicle Phaseout Policies Internationally and in the U.S.

3.1 International Policies

Seventeen countries have announced plans to phase out sales of new gasoline-powered vehicles after a certain date.[1] Phaseout dates range from 2025 in Norway to 2040 in France. In countries announcing plans to phase out gasoline vehicles, it is anticipated that zero-emission electric vehicles will take their place.[2]

3.2 U.S. Policies

3.2.1 Federal Policies

The federal Zero Emission Vehicles Act of 2019 ("Federal ZEV Act"), introduced in May 2019 in both the House (H.R. 2764) and the Senate (S.1487), would require auto manufacturers to sell a minimum of 50% zero emission vehicles by 2030, and 100% zero emission vehicles by 2040.[3] Under this proposal, it is anticipated that the majority of cars on the road would be zero emission vehicles by 2050.[4] Senators and 2020 election Democratic presidential candidates Harris, Gillibrand, Warren and Sanders endorsed the Federal ZEV Act.[5] As part of their presidential campaigns, Washington Governor Jay Inslee, Senators Sanders, Warren and Booker, and Andrew Yang supported a federal gasoline vehicle phaseout by 2030; Presidential candidates Pete Buttigieg and Michael Bloomberg supported a 2035 deadline.[6]

3.2.2 State Policies

3.2.2.1 California

California was the first state to consider legislation phasing out gasoline-powered vehicles. In 2018, Assemblymember Phil Ting (D-San Francisco) introduced A.B. 1745, the Clean Cars 2040 Act, a bill which would have banned the sale of new gasoline powered cars beginning in 2040.[7] In the face of opposition from the oil industry, the bill did not advance. However, in 2019, Asm. Ting was able to obtain a $1.5 million budget appropriation for the California Environmental Protection Agency (CalEPA) for a study to "identify strategies to achieve carbon neutrality [from vehicles], including the transition to zero-emissions . . . vehicles."[8]

Numerous groups are advocating to the CalEPA that it make a 2030 gasoline vehicle phaseout a cornerstone of the strategy to achieve carbon neutrality for vehicles. Further legislative efforts are pending completion of the study.

3.2.2.2 Hawaii

In the 2019 and 2020 legislative sessions, legislators in Hawaii introduced bills to ban the sale of new gasoline-powered cars. The 2020 bill, HB 2593[9], achieved nine co-sponsors in addition to the primary sponsor, Rep. Takashi Ohno.

In 2017, Hawaii's four county mayors announced a "shared goal of 100% renewable ground transportation by 2045," without specifics as to how such a goal would be achieved.[10]

3.2.2.3 Massachusetts

Also in 2019, the Massachusetts legislature introduced a bill that would have required all new vehicles registered in the state be zero emissions vehicles starting in 2038.[11] The zero emissions requirement would likely have subjected this bill to preemption under the Clean Air Act.[12]

3.2.2.4 Washington State

In January 2020, Rep. Nicole Macri introduced HB 2515, the Clean Cars 2030 bill,[13] requiring all passenger vehicles of model year 2030 and later sold in Washington state to be electric. The bill received the support of nine influential House members, including the chairs of the Environment and Energy Committee, the Finance Committee, and the Technology Committee, as well as EV industry players Proterra, Enel X and Clipper Creek. It advanced to a hearing in the House Transportation Committee -- the first-ever legislative hearing in the U.S. on a 100% vehicle electrification requirement. The bill did not pass beyond that committee in the short 2020 legislative session, but a 2021 version of the bill is anticipated.[14]

4 Benefits of State Vehicle Electrification Mandates

4.1 Market Certainty

A principal benefit of vehicle electrification mandates is that they provide certainty as to the size and direction of the EV market to stakeholders such as vehicle manufacturers, charging equipment providers, electric utilities, fleet owners, developers, landlords, local governments and investors. Requiring a state's entire new light-duty passenger vehicle market to be electric provides large, guaranteed markets for EVs. For example, in 2018, in the mid-size state of Virginia, 382,995 new passenger vehicles were sold—more than the total number of EVs sold in the entire U.S. that year.[15]

Merely selling more EVs isn't enough to sustain a robust electric vehicle-based transportation system. Huge public and private investments in vehicles, the electric grid, and charging infrastructure are also needed to provide the wide choice of vehicle models and fuelling convenience that drivers expect.

A vehicle electrification mandate ensures the critical mass of electric vehicles required for sufficient returns from EV-system investments. EVs and EV technology are subject to network effects[16]—an economic phenomenon in which the value of a particular good depends on the extent of adoption of that good by others. Network effects are particularly strong for goods that depend on an underlying infrastructure. For example, an EV owner might be able to install a private charging station at her home, but will not be able to take a road trip of a distance beyond her EV's range if there are no public charging stations available on her route. Likewise, it makes little economic sense for an owner of gas stations or parking lots to install charging stations on its properties without the certainty that there will be sufficient customers to make those investments profitable. Network effects explain why Tesla made the unconventional decision to allow other manufacturers to use its patented technology.[17] The advantages of owning a Tesla grow as the overall electric car market and associated charging infrastructure grows.

Without the market certainty created by an electrification mandate, participants are more likely to hedge their bets. Automakers might question the size of the EV market and whether the charging infrastructure buildout would be sufficient to power EVs. Landlords might hesitate to install charging infrastructure, concerned about whether there would be enough EV drivers to justify the cost. And utilities might delay grid upgrades for the same reason. This hedging could significantly delay growth of the EV industry, locking in decades of dependence on gasoline.[18]

With a vehicle electrification mandate in place, automakers are able to make multi-billion-dollar investments in the design of new electric vehicles with the confidence that the entire vehicle market will become electric. Landlords can make the substantial investments necessary to provide charging at apartment buildings, businesses, and shopping centers, knowing that all new vehicle owners will be potential customers. Utilities can invest in upgrading the grid knowing that enormous new demand from electric vehicles is coming.

In sum, market uncertainty delays the transition to an all-electric system. A vehicle electrification mandate would provide increased certainty to key market participants that a fully-electric new vehicle market would reward their investment.

4.2 Climate and Public Health

Vehicle electrification mandates advance climate objectives and public health by significantly lowering carbon emissions and air pollution.[19] Transportation is the largest source of carbon pollution in the United States,[20] most of it from burning gasoline in light duty vehicles.[21] The carbon budget available to maintain global warming under 1.5 degrees Celsius is rapidly shrinking.[22] Every gallon of gasoline burned uses up twenty pounds of that budget.[23] For the sake of human life on the planet, new vehicles that unnecessarily use gasoline should be proscribed. This is especially true given EVs are increasingly cleaner, cheaper, better-performing, and more reliable than fossil fuel vehicles.

Gasoline is also the largest source of air pollutants, particularly carbon monoxide and smog-forming nitrogen oxide (NOx).[24] More than 15,600 U.S. deaths were caused by gasoline vehicle emissions in 2015 alone.[25] Vehicle emissions have been linked to asthma, heart and lung disease, cancers and dementia, as well as adolescent anxiety, depression and academic performance.[26]

4.3 State Budget Savings

Vehicle electrification mandates require no government expenditures, unlike other electric vehicle incentive policies such as tax credits, subsidies, and government-funded infrastructure programs. Such policies can be difficult to implement in the face of tight government budgets, public resistance to new taxes, and equity concerns.[27]

EV sales incentives in particular, in which the government pays a portion of the vehicle purchase price, can burden a state's budget.[28] For instance, New Jersey recently launched a $5,000 rebate for EV leases and purchases in the state.[29] If one-third of the 581,000 new cars sold in New Jersey each year were electric, the cost to the state would be around $1 billion – nearly 3% of the state's total budget.

4.4 Consumer Savings

Critics of a vehicle electrification mandate may contend that it would increase vehicle costs by limiting consumer choice and mandating purchase of particular kinds of vehicles.[30] But electric vehicle selection is growing rapidly.[31] Some EV models are already at cost parity with comparable gasoline vehicles on a lifetime cost of ownership basis—that is, accounting not only for the purchase price but also savings in fuel costs and maintenance over the lifetime of the vehicle.[32]

Sticker prices for EVs are expected to reach cost parity with comparable gasoline vehicles by the mid-2020s,[33] and in several vehicle segments are already lower.[34] Economies of scale and network effects mean that such costs will drop further upon an electrification mandate going into effect. Also, electric vehicles are lasting longer than fossil fuel vehicles, with some approaching 500,000 miles[35] – giving drivers more value for the vehicle price, and better resale prices.

The cost of fueling a car with electricity is on average about one-half the cost of fueling it with gasoline.[36] The savings frees up household funds for other uses. Estimates are that an additional dollar of household spending creates 16 times more jobs than if that dollar were spent on fossil fuels.[37]

Lower income households would benefit the most from the fuel savings of EVs, as they spend almost 9% of their income on gas—twice as much as middle income households.[38] People suffering from diseases caused by fossil fuel vehicle emissions have decreased quality of life and earning potential, and higher medical expenses. Low-income families often have to pay out-of-pocket for a portion of the medical treatment they receive, and take time off from work to take their children to the doctor.[39]

4.5 Lower Electric Rates

Electric vehicles apply downward pressure on electric rates for all utility ratepayers, because they result in more electricity sales and revenue amortized over a largely pre-existing generation and distribution system.[40] The mass adoption of electric vehicles following a vehicle electrification mandate would significantly amplify these effects.

4.6 Electric Grid Benefits

EV batteries can serve as an important power balancing and storage resource for the electrical grid.[41] With controlled charging, EVs can charge at times when renewable power typically surges on the grid, avoiding curtailment or waste.[42]

Technology advances are enabling EVs to supply power to the grid when power demand is high, or when power outages occur[43], such that mass vehicle electrification can provide flexible load balancing[44] and resilience[45] to the grid.

4.7 Improved Competitiveness

The U.S. auto industry's two major crises both occurred after periods in which it failed to develop optimally fuel-efficient vehicles. In the 1970s and 1980s, the industry declined as fuel-efficient Japanese imports gained substantial market share.[46] In 2008-2009, the industry faced bankruptcy as its SUV-heavy, fuel-inefficient offerings poorly matched the rising gas prices and recession.[47]

China, India, and Europe, which combined constitute the majority of the world's automotive market, are adopting or signalling gasoline vehicle phaseouts and other aggressive policies to hasten the transition to EVs. If the U.S. auto industry resists this trend, it risks falling behind the rest of the world in EV technology. A state-level (and eventually federal-level) vehicle electrification policy will provide U.S. automakers with a large and guaranteed domestic market for their EVs, and enable them to stand up to their principal competitors.

5 The Need for Vehicle Electrification Mandates

Absent mandates, it is not at all clear when, whether or to what extent EVs will replace fossil fuel vehicles. The Edison Foundation, using projections from five independent forecasts, developed a consensus forecast that EV sales will account for about 22% of new car sales in the U.S. by 2030.[48] Given that there are about 256 million passenger vehicles on U.S. roads,[49] and that their average age is 11.5 years,[50] more than 90% of cars on the road would still be powered by gasoline in 2030 in the event that the consensus EV growth forecast is accurate.

EV adoption faces significant headwinds. Longstanding subsidies for oil and gasoline are much larger than temporary subsidies for electric vehicles,[51] and oil interests spend $200 million a year on misinformation campaigns to block climate progress.[52] And major automakers continue to focus marketing efforts on gasoline-powered vehicles while spending virtually nothing to advertise EVs.[53]

Given the scientific consensus that human carbon emissions must be slashed drastically within the next ten years to avoid the worst impacts of climate change, policy is needed to ensure a swift transition away from fossil fuel powered vehicles.

6 Avoiding Federal Preemption of State Vehicle Electrification Mandates

State governments are looking to enact strong policies reducing transportation emissions, especially given federal retrenchment in the area.[54] Federal law poses a potential obstacle to state laws mandating vehicle electrification. A state law can be invalidated under the legal doctrine of federal pre-emption if it conflicts with a federal law.[55]

Preemption concerns about state-level vehicle electrification mandates focus on the federal Clean Air Action (CAA) prohibition of state regulation "relating to the control of emissions" in motor vehicles and the federal Energy Policy and Conservation Act (EPCA) prohibition of state regulation "relating to" fuel economy.[56]

6.1 The Scope of Federal Preemption Clauses

6.1.1 Clean Air Act

Section 209(a) of the CAA provides that "[n]o State or any political subdivision thereof shall adopt or attempt to enforce any standard relating to the control of emissions from new motor vehicles or new motor vehicle engines subject to this part."[57]

The preemption provision is limited by a savings clause: "Nothing in this part shall preclude or deny to any State or political subdivision thereof the right otherwise to control, regulate, or restrict the use, operation, or movement of registered or licensed motor vehicles."[58] Moreover, the congressional findings and declaration of purpose set forth in the CAA suggest that Congress contemplated a far-reaching role for states in protecting air quality.[59]

6.1.1.1 Exception for California

California is in a unique position to impose stricter vehicle emission standards than those imposed by the federal government. The CAA authorizes California alone to apply for a waiver from the EPA of the CAA's preemption provision.[60] With an EPA waiver, California could pass a gasoline vehicle phaseout.[61] Other states can follow California's vehicle emission standards, provided their rules are identical to California's. If California required 100 percent of new vehicles to be zero emissions as part of its Zero Emissions Vehicle (ZEV) program, such regulations would apply to the ten other states that have adopted that program—about one-third of the U.S. vehicle market.[62]

California's authority under the CAA to set its own emissions standards (and the ability of other states to follow California's rules) is under attack by the Trump administration. The administration has issued an order revoking California's special status under the CAA and invalidating California's previously approved emissions regulations, despite the lack of precedent or legal basis for such an order. That order is now the subject of a court challenge joined by 23 states.[63]

6.1.2 Energy Policy and Conservation Act

The Energy Policy and Conservation Act (EPCA)[64] was passed in the midst of the 1970s oil crisis to secure U.S. energy independence. That statute authorized the National Highway Traffic Safety Administration to create fuel-efficiency standards, and preempted states from doing the same.

A purpose of the EPCA, set forth in Section 2(4) of the Act, is "to conserve energy supplies through energy conservation programs, and, where necessary, the regulation of certain energy uses." Another purpose, set forth in Section 2(5) of the Act, is "to provide for improved energy efficiency of motor vehicles."

The EPCA's preemption provision provides, in pertinent part, that

> [w]hen an average fuel economy standard prescribed under this chapter is in effect, a State or a political subdivision of a State may not adopt or enforce a law or regulation related to fuel economy standards or average fuel economy standards for automobiles covered by an average fuel economy standard under this chapter.[65]

6.2 Designing a State Law to Avoid Federal Preemption

To avoid federal preemption, states should base vehicle electrification legislation on benefits of vehicle electrification *other than* emissions reduction and fuel economy. Washington state legislation proposed for 2021, similar to the Clean Cars 2030 bill introduced in 2020, asserts numerous reasons for requiring only electric passenger vehicles be sold in the state starting with model year 2030, none of which relates to emissions or fuel economy standards. These reasons include: job creation; economic development; savings to Washington state consumers on vehicle maintenance and electric rates; power load balancing and energy

storage for the electric grid; protection of plants, fish and wildlife from polluted stormwater runoff; and avoidance of toxic vapor releases and soil and groundwater contamination.[64]

6.3 Leading Cases on CAA and EPCA Preemption

The US Supreme Court and federal courts have interpreted the CAA and EPCA pre-emption clauses in the context of cases involving state restrictions on vehicle emissions or fuel economy standards, but never specifically in the context of a state vehicle electrification mandate. For such a mandate to survive pre-emption challenges, it must be distinguished from these cases.

6.3.1 EMA v. South Coast Air Quality Management District ("EMA")

In EMA, the Supreme Court struck down California South Coast Air Quality Management District rules ("fleet rules") prohibiting fleet operators from purchasing new diesel vehicles, based on the pre-emption clause (Section 209(a)) of the CAA.[66] The stated purpose of the fleet rules in question was to reduce pollutant emissions from fleet vehicles.

The EMA Court stated that

> [t]he criteria referred to in [CAA] § 209(a) relate to the emission characteristics of a vehicle or engine. To meet them the vehicle or engine must not emit more than a certain amount of a given pollutant, must be equipped with a certain type of pollution-control device, or must have some other design feature related to the control of emissions.

The proposed Washington vehicle electrification mandate can be distinguished on grounds that, unlike the fleet rules in EMA, it does not have a stated purpose of regulating emissions. It also does not set emissions limits, mandate the use of a pollution-control device, nor require the use of a design feature related to the control of emissions. It does not reference nor directly regulate emissions, gasoline, or diesel. Rather, it is grounded in the economic and other non-emissions benefits of an all-electric vehicle fleet—rationales not covered by the CAA.

Challengers of the proposed Washington legislation would likely argue that an electric motor mandate is a "design feature related to the control of emissions," prohibited by the CAA. But that argument is overly simplistic. An electric motor is not simply a lower-emission or more efficient internal combustion engine: it is an entirely different propulsion mechanism. And the primary purpose of an electric motor is propelling the vehicle forward, not controlling emissions. It is unlike a diesel engine (which still generates emissions, but a different amount) or a catalytic converter (a design feature whose sole purpose is emissions reduction).

6.3.2 Metropolitan Taxicab v. City of New York

In Metropolitan Taxicab Board of Trade v. City of New York,[67] the Second Circuit Court of Appeals held that New York City rules requiring taxicab owners to charge lower lease rates for conventionally powered taxis relative to hybrid taxis were preempted by the federal Energy Policy and Conservation Act (EPCA), which governs fuel economy standards. It found that the sole purpose of the rules requiring hybrids was to regulate fuel economy, [68] and that, for the City's regulatory purposes, "hybrid" meant "greater fuel efficiency." The court rejected the City's argument that the rule also addressed fuel cost risk to taxi drivers, finding that any such cost savings were derivative of the fuel economy benefits.[69]

The proposed Washington bill can be distinguished from the ordinance the Second Circuit held preempted in Metropolitan Taxicab. First, the Washington bill does not contain a reference to fuel economy standards or make fuel economy standards essential to its operation, which was the basis for the ruling in Metropolitan Taxicab. Second, the Washington bill has powerful non-emissions, non-fuel economy justifications, unlike Metropolitan Taxicab, where the court based its holding on the premise that there are no advantages to hybrids other than their better fuel economy. Finally, the stated benefits of the Washington legislation, such as job growth and economic development, improved electric grid load balancing, storage and resilience, less contaminated water runoff and the like, are not derivative of fuel economy benefits, as cost savings to taxi drivers were found to be in Metropolitan Taxicab—they are independently valuable.

6.4 The Legal Path for State Vehicle Electrification Mandate Opened by The Supreme Court

The U.S. Supreme Court's June 2019 decision in *Virginia Uranium v. Warren* strengthens the case for a state vehicle electrification mandate avoiding federal preemption.[70] That decision limited the ability of courts to scrutinize state motives in enacting vehicle electrification statutes. It also held that a state law regulating a product or process "upstream" that had an effect on a "downstream" area covered by federal law was not preempted by the federal law.[71]

The federal law at issue in that case was the Atomic Energy Act, or AEA. The AEA regulates uranium milling and tailing – the processing of uranium once it is removed from the earth, involving toxic chemicals and radioactive waste. The state law in question banned uranium mining.

The state law was challenged on grounds that it was likely enacted for public health and safety reasons. It was claimed that the law was therefore pre-empted by the federal uranium milling and tailing law, which dealt with public health and safety in processing uranium.

The Court refused to look beyond the plain text of the state law to examine whether in fact it intruded into a pre-empted area. Rather, the Court found the state law only related to mining, whereas the federal law on its face only applies once uranium is removed from the earth.[72] Additionally, Justice Ginsburg wrote that "[a] state law regulating an upstream activity within the State's authority is not preempted simply because a downstream activity falls within a federally occupied field."[73]

Applying this holding, it could be argued that if a vehicle electrification mandate is not *based on* the pre-empted areas of reducing vehicle emissions or improving fuel economy, but merely happens to have an effect on those areas, it is not pre-empted.

7 Conclusion

State vehicle electrification mandates are a powerful policy option to drive mass electrification of private vehicles. Recent Supreme Court precedent suggests that state vehicle electrification mandates, if properly crafted, have a pathway to avoiding preemption. The EV industry should come together to support state vehicle electrification mandates.

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[69] *Id.*
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