DRIVING CHANGE: A ROUTE TO MORE SENSIBLE VEHICLE EMISSIONS REGULATION

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INTRODUCTION

The winter can be particularly grueling for individuals who suffer from asthma, and Barbara Cory is no exception. Now over 70 years old, Cory has dealt with asthma symptoms all her life.[1] From her South Phoenix apartment, she can routinely see brown clouds of smog hug the city.[2] Before venturing out for the day, she typically checks the city's air index to determine if she can even safely step outside of her apartment.[3] On days when the smog is at an acceptable level, she heads out armed with an albuterol inhaler and facial tissues to volunteer at a downtown Central United Methodist Church.[4] Ironically, hundreds of gas-guzzling vehicles speed past Cory on her route, each with a tailpipe that incrementally adds to her chronic health problem.[5]

Asthma cases have increased dramatically in the United States over the past half-century.[6] Today, 1 in 12 Americans suffer from asthma and the numbers are increasing every year.[7] Asthma-related costs in the form of medical expenses, lost school days, lost work days, and early deaths total about $56 billion annually in the U.S.[8] Asthma also disproportionately affects minorities.[9] African Americans are two to three times more likely than their Caucasian counterparts to die from asthma and asthma-related health complications.[10]

The presence of particulate matter, nitrogen oxide, and resulting ground-level ozone in the air are primary contributors to increasing asthma rates

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1. Priscilla Totiyapungrasert, *For People with Asthma and Breathing Problems, Winter Air Pollution Can Feel Deadly*, ARIZ. REPUBLIC (Dec. 21, 2018), https://www.azcentral.com/story/news/local/arizona-environment/2018/12/21/phoenix-offers-wood-burning-alternatives-winter-air-pollution-affects-public-health/2219435002/.

2. *Id.*

3. *Id.*

4. *Id.*

5. *See id.* (noting vehicles as a producer of particulate matter (PM)).

6. *See* Disly Juarez, *Asthma and Allergies on the Rise in the U.S.* (Nov. 8, 2013), https://www.healthline.com/health-news/children-allergies-and-asthma-on-the-rise-110813#1 ("[T]he CDC says the number of Americans with asthma grew by 28 percent.").

7. *Asthma in the US*, CTR. FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/vitalsigns/asthma/index.html (last updated May 3, 2011).

8. *Id.*

9. AM. LUNG ASS'N IN ARIZ., ARIZ. DEP'T OF HEALTH SERV., THE 2016 ARIZONA ASTHMA BURDEN REPORT 8 (2016).

10. *Id.*; *Air Pollution: Current and Future Challenges*, https://www.epa.gov/clean-air-act-overview/air-pollution-current-and-future-challenges (last updated Sept. 17, 2019).

across the country.[11] Vehicle emissions contribute significantly to this air quality problem, which harms not only asthmatics but millions of others with respiratory and other health conditions.[12] As the U.S. persists in its heavy reliance on fossil-fuel-powered vehicles for transportation, poor air quality continues to plague major cities throughout the country.[13] For most of the past decade, oil use in the U.S. has steadily increased.[14] In addition to causing health problems, transportation accounts for a substantial portion of the nation's carbon dioxide (CO_2) emissions, which contribute to global warming and its increasingly tangible consequences.[15]

One of the most promising ways the U.S. could address its air quality challenges is through more cohesive and effective legislation aimed at regulating vehicle emissions. Unfortunately, the current presidential administration has sought to weaken vehicle emissions standards in ways that would increase health hazards and adversely impact millions of Americans.[16]

This article highlights the significant shortcomings in the existing federal regulatory structure for vehicle emissions. This article continues to discuss specific strategies to improve this structure and better promote the nation's transition to a cleaner and more sustainable transportation system. This article argues for replacing California's statutory waiver ("California Waiver") to the Clean Air Act (CAA) with new legislation designed to limit executive discretion, increase industry confidence in the regulatory system, and establish an improved federal vehicle emissions plan.[17]

Part I of this article describes the history of U.S. light-duty vehicle emissions regulations, manufacturers' responses to these regulations, and the Trump Administration's recent actions that have generated frustration among environmental advocates and uncertainty within the automotive industry. Part II highlights how externalities, executive discretion, the bounded rationality of consumers and policymakers, and rent-seeking behavior within the federal government have undermined vehicle emissions policymaking in the U.S. Part III then identifies specific strategies for overcoming regulatory

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11. *Air Pollution: Current and Future Challenges*, *supra* note 10.

12. *Id.*

13. *See Most Polluted Cities*, AM. LUNG ASS'N, https://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/most-polluted-cities.html (last visited Nov. 20, 2019) (ranking most polluted U.S. cities).

14. *See Petroleum, Natural Gas, and Coal Continue to Dominate U.S. Energy Consumption* (July 1, 2019), https://www.eia.gov/todayinenergy/detail.php?id=40013 (graphing increase in U.S. petroleum use).

15. *Sources of Greenhouse Gas Emissions*, https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions (last updated Sept. 13, 2019).

16. *See* Anna M. Phillips, *Automakers Say Trump's Plan to Weaken Pollution Standards Would Hurt Their Bottom Line* (June 6, 2019), https://www.latimes.com/politics/la-na-pol-automakers-trump-vehicle-fuel-economy-20190606-story.html (explaining that the administration's plan would increase gas consumption in U.S. by 500,000 barrels daily thus worsening greenhouse gas emissions).

17. *See generally* 42 U.S.C. § 7543 (2018) (codifying the California Waiver to the CAA).

challenges in this area. In particular, Congress should remove the California Waiver from the CAA and replace it with new legislation that limits executive discretion over emissions standards, promotes long-term stability and predictability, and makes it significantly more difficult for future policy leaders to weaken emissions regulations. Through these measures, the U.S. could significantly reduce the automotive industry's contribution to the nation's greenhouse gas emissions, promote the long-term stability of its automotive industry, and protect the nation's air for generations to come.

THE ROAD TO HERE: BACKGROUND AND CURRENT DILEMMA

Over the past century, gas-powered vehicles have played an important role in everyday American life. Vehicles have long been a primary mode of transportation in the U.S., shaping the nation's cities, towns, and culture.[18] However, they have also become a major contributor to the air quality and CO_2 emissions challenges facing the country.[19] For decades, Congress has sought to mitigate these problems through legislation that empowers administrative agencies to regulate automobile emissions.[20] However, urban smog and other significant environmental harms from these emissions continue.[21] Growing concerns about climate change are increasing the importance of these issues as well. Unfortunately, even as the consequences of vehicle emissions become more apparent, the federal government's efforts to reduce emissions seem to be weakening under the pressures of powerful industry groups and short-sighted politics.[22] These developments suggest that major changes to the nation's vehicle emissions regulatory structure are needed to effectively transition the nation to a cleaner, more sustainable energy system.

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18. *Automobile History*, https://www.history.com/topics/inventions/automobiles (last updated Aug. 21, 2018).

19. Oliver Milman, *Vehicles are Not America's Biggest CO_2 Source but EPA is Tearing Up Regulations* (Jan. 1, 2018), https://www.theguardian.com/environment/2018/jan/01/vehicles-climate-change-emissions-trump-administration.

20. *See Mapping Current Events: Auto Emissions Regulations*, https://www.subscriptlaw.com/mapping-current-events-regulation-of-auto-emissions (last visited Oct. 23, 2019) (tracking vehicle emissions law and regulations).

21. *Smog, Soot, and Other Air Pollution from Transportation*, https://www.epa.gov/transportation-air-pollution-and-climate-change/smog-soot-and-local-air-pollution (last updated Mar. 18, 2019).

22. John Schwartz, *Major Climate Change Rules the Trump Administration is Reversing* (Aug. 29, 2019), https://www.nytimes.com/2019/08/29/climate/climate-rule-trump-reversing.html.

A. The Tumultuous History of U.S. Vehicle Emissions Regulations

From the earliest days of the U.S. automotive industry, manufacturers have faced conflicting pressures from consumers and regulators related to vehicle emissions standards.[23] Bringing a vehicle design from the drawing board to factory production takes several years.[24] Accordingly, vehicle manufacturers must accurately anticipate shifts in consumer preferences years in advance to be profitable.[25] At the same time, manufacturers must anticipate and respond to shifting regulatory requirements affecting everything from mandatory safety features to fuel economy standards. Satisfying both sets of demands has long been critical to survival in the U.S. automotive industry.

Government regulation of vehicle emissions has evolved substantially over the past 60 years.[26] Air pollution from motor vehicles first reached national consciousness after a major smog event in Los Angeles in 1943.[27] During the event, the smog in the Los Angeles metropolitan area made the air almost unlivable.[28] The elderly and children flooded doctors' offices and hospitals complaining of breathing problems and headaches.[29] Public outrage and demand for a science-based investigation into the problem ultimately led Arie Haagen-Smit to develop an early technique for analyzing the potentially hazardous chemical composition of smog.[30] Los Angeles's unique topography, burgeoning population, and abundance of motor vehicles had

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23. *See* Martin V. Melosi, *The Automobile and the Environment in American History: Auto Emissions and Air Pollution*, http://www.autolife.umd.umich.edu/Environment/E_Overview/E_Overview.htm (last visited Oct. 24, 2019) (discussing how legislation started advocating for clean air while consumers preferred lower cost and higher quality automobiles to the available alternatives).

24. *See id*. (explaining that a large amount of materials must be gathered in order to assemble vehicles); Aaron Turpen, *How Car Design Works, Start to Finish* (Apr. 16, 2012), https://www.torquenews.com/1080/how-car-design-works-start-finish (noting it takes three to five years to reach a consumer-ready car).

25. Kristian Bannister, *Consumer Trends in the Auto Industry: Disruption, Millennials and Changing Buying Behavior* (Sept. 11, 2017), http://web.archive.org/web/20170928200049/https://www.brandwatch.com/blog/consumer-trends-auto-industry/.

26. *See generally* HUI HE & LINGZHI JIN, A HISTORICAL REVIEW OF THE U.S. VEHICLE EMISSION COMPLIANCE PROGRAM AND EMISSION RECALL CASES (2017) (explaining the milestones in government regulation of vehicle emissions from the 1960's to the 2010's.)

27. *History*, CAL. AIR RES. BD., https://ww2.arb.ca.gov/about/history (last visited Oct. 22, 2019).

28. *Id*.

29. *See* Amanda Fortini, *Cutting Through the Smog* (Dec. 22, 2008), https://slate.com/culture/2008/12/smogtown-an-l-a-story.html (explaining that residents suffered from headaches and nausea, children had trouble breathing, and doctors were finding that smog had adverse effects on health).

30. *See Dr. Arie Haagen-Smit*, CAL. AIR RES. BD., https://ww2.arb.ca.gov/about/leadership/dr-arie-haagen-smit (explaining how Dr. Haagen-Smit found that most of the smog in California was a result of photochemistry).

created an air-quality crisis that served as a troubling harbinger of future struggles the nation would face involving vehicle emissions.[31]

In 1947, just four years after Los Angeles's first major smog event, Los Angeles County established the nation's first Air Pollution Control District and began regulating stationary polluters.[32] By 1966, California had instituted the nation's first emissions standards for mobile sources.[33] Then, in 1967, the California legislature enacted the Mulford-Carrell Air Resources Act, which established the California Air Resources Board (CARB) and empowered it to regulate air pollution from stationary and mobile sources.[34]

The federal government followed California's lead and over the past several decades has gradually developed its own regulatory system for air pollution and emissions. In 1955, Congress passed its first air-quality legislation, the Air Pollution Control Act of 1955, aimed at funding research into the causes and scope of pollution.[35] In 1967, shortly after the creation of CARB, Congress enacted the Air Quality Act of 1967, which instituted the nation's first federal pollution control scheme.[36] Then, in 1970, the federal government expanded its reach into vehicle emissions regulations with Congress's enactment of the Clean Air Act of 1970 (CAA).[37] Since its inception, the CAA has required federal standards for emissions from both stationary and mobile sources, including light-duty vehicles.[38]

The federal government has had mixed success in its efforts to regulate automobile emissions. The National Highway Traffic Safety Administration (NHTSA) establishes federal Corporate Average Fuel Economy (CAFE) standards, which set the allowed miles-per-gallon averages for each automobile manufacturer's fleet of vehicles.[39] The Environmental Protection Agency (EPA) sets emissions standards for light-duty vehicles and tests

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31. *See* California State Motor Vehicle Pollution Control Standards; Notice of Decision Denying a California Waiver of Clean Air Act Preemption for California's 2009 and Subsequent Model Year Greenhouse Gas Emission Standards for New Motor Vehicles, 73 Fed. Reg. 12,156 (Mar. 6, 2008) (explaining that local air pollution problems are affected by local conditions in California, including motor vehicle emissions in respect to climate and topography, which affect California directly).

32. Jeremy Rosenberg, *How Los Angeles Began to Put Its Smoggy Days Behind* (Feb. 13, 2012), https://www.kcet.org/history-society/how-los-angeles-began-to-put-its-smoggy-days-behind.

33. *History*, *supra* note 27.

34. *Id.*

35. *Evolution of the Clean Air Act*, https://www.epa.gov/clean-air-act-overview/evolution-clean-air-act (last updated Jan. 3, 2017).

36. *Id.*

37. *Id.*

38. *Id.*

39. *See generally Corporate Average Fuel Economy*, U.S. DEP'T. OF TRANSP., https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy#corporate-average-fuel-economy-light-duty-vehicles (last visited Nov. 20, 2019) (explaining the CAFE standards regulate how far vehicles must travel on a gallon of fuel).

manufacturers' fleets for compliance.[40] However, through the California Waiver arrangement, the state of California possesses authority to set emissions standards for newly manufactured vehicles sold within its state boundaries.[41] The California Waiver allows California regulators to create vehicle emissions regulations for that state so long as they are "at least as protective of public health and welfare" as those of the federal government and meet several other specific criteria.[42] If those criteria are deemed to be met, the EPA allows California to enforce its own standards and allows other states to choose whether to adopt California's stricter standards or the federal standards.[43] This system has effectively created two sets of standards: the federal standard and the CARB's California standard.

For decades, the federal government and California have regulated new vehicle emissions under separate standards.[44] This two-standard system has arguably created a patchwork of rules that increase regulatory complexity. However, most automobile manufacturers have ultimately responded to the two-standard system by following California's more stringent standards, thus effectively making California's rules the true national standard.[45]

In 2012, in response to industry requests for more uniform standards, the EPA and NHTSA adopted a unified set of standards for new vehicle emissions (the Unified Standard).[46] The Unified Standard is a single set of standards for light-duty vehicle emissions regulations.[47] The standards grow increasingly stringent from 2017 to 2025, with midterm evaluations within that period.[48] During those midterm evaluations, the agencies cooperatively

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40. *See Overview of Certification and Compliance for Vehicles and Engines*, https://www.epa.gov/ve-certification/overview-certification-and-compliance-vehicles-and-engines (last updated Mar. 8, 2018) (discussing vehicle emissions testing); *Regulations for Greenhouse Gas Emissions from Passenger Cars and Trucks*, https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-passenger-cars-and (last updated Sept. 19, 2019) (discussing EPA regulations over light-duty vehicles).

41. 42 U.S.C. § 7543 (2018).

42. *Id.*

43. *Id.*

44. Felicity Barringer, *California's Vehicle Emissions Fight Continues a 50-Year Struggle,* STANFORD EARTH (Oct. 3, 2018), https://earth.stanford.edu/news/californias-vehicle-emissions-fight-continues-50-year-struggle#gs.p9jkd1.

45. *See id.* (discussing the history of California's resistance to federal intervention and regulation of fuel standards for vehicles, which has influenced their success in their control and mitigation of particulates).

46. *See* Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, Final Rule, 75 Fed. Reg. 25,324, 25,326 (May 7, 2010) (to be codified at 49 C.F.R. pts. 531-538) (discussing purpose of harmonizing standards).

47. *Id.*

48. *NHTSA Plan 54.5 MPG Fuel Economy and GHG Standards in 2025; California, Auto Manufacturers Support Plan,* GEO. CLIMATE CTR. (Aug. 1, 2011), https://www.georgetownclimate.org/articles/epa-nhtsa-plan-54-5-mpg-fuel-economy-and-ghg-standards-in-2025-california-auto-manufacturers-support-plan.html.

evaluate the manufacturers' ability to meet the regulations and amend the standards if necessary.[49]

Since the creation of the first federal vehicle emissions standards more than a half century ago, the environmental impacts of vehicle emissions have grown more apparent as climate change concerns have intensified. In 2018, the Intergovernmental Panel on Climate Change (IPCC) issued a report finding that global temperatures will increase by 1.5 degrees Celsius between the years 2030 and 2052 if human activity stays the same.[50] The IPCC also estimated that human activities have already caused approximately 1.0 degree of global warming from pre-industrial temperatures.[51] Avoiding a global increase of more than 1.5 degrees Celsius would require the slashing of greenhouse gas emissions by 45% by 2030 and reaching a net zero by 2050.[52] Substantial reductions in vehicle emissions throughout the world are needed to achieve that goal. In the U.S., vehicle emissions constitute 30% of total energy-related CO_2 emissions.[53] A typical passenger vehicle emits roughly 4.6 metric tons of CO_2 per year.[54] Transportation is also a major contributor to the presence of particulates and other harmful substances in the nation's air.[55] Smog and other pollutants are a particular nuisance in city centers where there are more vehicles at higher concentrations than in less populated areas.[56]

B. EVs and the Evolving Menu of Car Energy Options

Today, car manufacturers are offering more fueling options than ever to satisfy existing federal standards and evolving consumer demands.[57]

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49. *Id.*

50. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, SPECIAL REPORT: GLOBAL WARMING OF 1.5° C: SUMMARY FOR POLICYMAKERS 4 (2018).

51. *Id.*

52. *Id.* at 12.

53. *How Much Carbon Dioxide is Produced from U.S. Gasoline and Diesel Fuel Consumption*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/tools/faqs/faq.php?id=307&t=11 (last visited Oct. 10, 2019).

54. *Greenhouse Gas Emissions from a Typical Passenger Vehicle*, https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle (last updated May 10, 2018).

55. *See Air Pollution: Current and Future Challenges*, *supra* note 10 (noting that air pollution is worse where there is a high vehicle density).

56. *Id.*; *see also* Ann E. Carlson, *The Clean Air Act's Blind Spot: Microclimates and Hotspot Pollution*, 65 UCLA L. REV. 1036, 1036 (2018) (explaining how more populated areas have higher levels of pollution).

57. *See, e.g.*, Jeff Plungis, *Automakers Sell Performance, but Consumers Want Fuel Economy and Safety* (Oct. 19, 2018), https://www.consumerreports.org/cro/buying-a-car/automakers-sell-performance-consumers-want-fuel-economy-and-safe (noting that consumer demand may drive future advertising and development).

Vehicles with traditional gasoline-powered engines still dominate the vehicle industry but are gradually losing ground to cleaner designs.[58] First, this section contains a brief explanation of consumer options available for hybrid and electric vehicles (EVs). Subsequently, there is a discussion of the role of hybrid and EVs in manufacturers' ability to meet vehicle emissions regulations.

Consumers today have many choices when shopping for energy-efficient hybrid vehicles or EVs. Conventional hybrid vehicles utilize an electric motor with an engine powered by gasoline, recharging the electric motor by recapturing kinetic energy when the driver brakes.[59] Similarly, plug-in hybrid electric vehicles (PHEVs) have an internal combustion engine and hybrid braking features but also allow a driver to physically charge their vehicle by plugging it into a charging unit.[60] PHEVs allow drivers to go a farther distance than a fully electric vehicle, making them a more attractive option to consumers.[61] Popularity for PHEVs is on the rise, with over 113,000 sold in the U.S. in the first 11 months of 2018, making up 36% of the total plug-in vehicle sales in that period.[62] Battery electric vehicles (BEVs) obtain energy exclusively from an on-board battery charged via a plug or charging station while the vehicle is not in use.[63] Over the past few years, advancements in the ranges of these vehicles, and improvements in charging station availability, have increased consumer interest in BEV technology.[64]

Federal government incentives, including a generous federal tax credit, play a critical role in promoting consumer demand for EVs.[65] The goal of the federal tax credit is to lower the up-front cost of EVs, making them more

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58. Camila Domonoske, *As More Electric Cars Arrive, What's the Future for Gas-Powered Engines?* (Feb. 16, 2019), https://www.npr.org/2019/02/16/694303169/as-more-electric-cars-arrive-whats-the-future-for-gas-powered-engines (discussing how most automobiles in the U.S. have internal combustion engines, but auto companies are investing millions of dollars in preparation for a shift to simpler and improved electric vehicles).

59. Josh Goldman, *Comparing Electric Vehicles: Hybrid vs. BEV vs. PHEC vs. FCEV*, UNION OF CONCERNED SCIENTISTS (Feb. 12, 2014), https://blog.ucsusa.org/josh-goldman/comparing-electric-vehicles-hybrid-vs-bev-vs-phev-vs-fcev-411.

60. *Id.*

61. *Id.*

62. Mark Kane, *US Plug-In Hybrid Car Sales Charted: November 2018* (Dec. 29, 2018), https://insideevs.com/us-plug-in-hybrid-car-sales-charted-november-2018.

63. Goldman, *supra* note 59.

64. *See* Jeremy Deaton, *Everybody Wants EV Charging Stations, but Barely Anyone is Building Them* (Mar. 25, 2019), https://www.fastcompany.com/90321889/everybody-wants-ev-charging-stations-but-barely-anyone-is-building-them (noting consumers worry about a lack of charging stations on longer trips).

65. INT'L COUNCIL ON CLEAN TRANSP., THE SURGE OF ELECTRIC VEHICLES IN UNITED STATES CITIES 15 (2019).

appealing to consumers.[66] To benefit from the federal tax credit, consumers must purchase an eligible new EV and report the purchase on their federal tax return.[67] The current federal tax credit for the purchase of an EV ranges from $2,500 to $7,500.[68] The tax credit amount depends on the size and battery capacity of the vehicle purchased.[69] Although the federal tax credit is generous, it is only available for the first 200,000 qualified EVs sold per manufacturer in the U.S.[70] After a manufacturer sells its first 200,000 EVs, the credit begins to "phase-out" or decrease.[71] As of June 2019, Tesla Motors and General Motors were the only vehicle manufacturers being "phased-out" of the Federal EV tax credit, both having sold more than 200,000 vehicles.[72]

Improvements in quality and availability of EVs, in addition to federal incentives to invest, make the transition to lower emitting vehicle options more attractive and feasible for consumers. EVs will play a significant role in reducing vehicle emissions as concern for climate change and the human impact on the environment become more salient. By offering federal tax incentives, the government is encouraging manufacturers to further invest in this technology. Manufacturers are responding by offering an increasing variety of lower emitting vehicle options.

C. Spinning Out: Vehicle Emissions Regulation under President Trump

Shortcomings in the U.S. vehicle emissions regulatory structure have drawn renewed attention since President Trump took office. As evidenced by President Trump's Executive Order 13783, "Promoting Energy Independence and Economic Growth," his Administration has sought to refocus the nation's energy and environmental priorities on maximizing private economic gains.[73] Of the 33 executive orders President Trump made within the first 100 days of his presidency, six reduced environmental

66. *Electric Vehicles: Tax Credits and Other Incentives*, OFF. OF ENERGY EFFICIENCY & RENEWABLE ENERGY, https://www.energy.gov/eere/electricvehicles/electric-vehicles-tax-credits-and-other-incentives (last visited Oct. 23, 2019).

67. *Id.*

68. *Id.*

69. *Id.*

70. John M. Vincent, *How Does the Electric Car Tax Credit Work?* (Aug. 27,2018) https://cars.usnews.com/cars-trucks/how-does-the-electric-car-tax-credit-work.

71. *Electric Vehicles: Tax Credits and Other Incentives*, *supra* note 66.

72. *Federal EV Tax Credit Phase Out Tracker by Automaker*, https://evadoption.com/ev-sales/federal-ev-tax-credit-phase-out-tracker-by-automaker/ (last visited Nov. 6, 2019).

73. Exec. Order No. 13,783, 82 Fed. Reg. 16,093, 16,093 (Mar. 28, 2017); *see also* Carol J. Miller, *For a Lump of Coal & a Drop of Oil: An Environmentalist's Critique of the Trump Administration's First Year of Energy Policies,* 36 VA. ENVTL. L.J. 185, 200 (2018) (commenting on the Trump Administration's focus on economic growth in the energy sector).

protections.[74] President Trump's two appointed EPA administrators also showed relatively low regard for environmental protection. Trump's first appointee, Scott Pruitt, had previously sued the EPA while serving as Oklahoma Attorney General and ultimately stepped down from his EPA post after media outlets uncovered evidence of his lavish spending and unethical conduct.[75] Trump then appointed Andrew Wheeler, a coal lobbyist, to serve as the EPA's acting Administrator.[76] During Wheeler's confirmation hearings, he repeatedly downplayed the severity of the climate crisis and emphasized President Trump's focus on environmental deregulation for short-term economic gains.[77]

Under Trump, the EPA has sought to challenge its own prior analyses regarding the automotive industry's ability to meet emissions regulations. In January 2017, shortly before President Trump's inauguration, the EPA and NHTSA completed their most recent midterm evaluation.[78] According to those reports, the agencies found that the standards applicable for model years (MY) 2022-2025 were reasonably on track to be met with no changes necessary.[79] However, shortly after Scott Pruitt began his term at the EPA, the agency announced the intention to revisit that recent midterm evaluation.[80] Specifically, the EPA claimed that it and other earlier evaluations had not fully considered the economic impacts of the regulations or the hardships private industry stakeholders would suffer under them.[81] In the proposed rulemaking that followed, the EPA significantly loosened its

74. Miller, *supra* note 73, at 200–201.

75. Chris Mooney et al., *Trump Names Scott Pruitt, Oklahoma Attorney General Suing EPA on Climate Change, the Head the EPA* (Dec. 8, 2016), https://www.washingtonpost.com/news/energy-environment/wp/2016/12/07/trump-names-scott-pruitt-oklahoma-attorney-general-suing-epa-on-climate-change-to-head-the-epa/; Jeremy Diamond et al., *EPA Chief Scott Pruitt Resigns Amid Scandals, Citing 'Unrelenting Attacks'* (July 5, 2018), https://www.cnn.com/2018/07/05/politics/scott-pruitt-epa-resigns/index.html.

76. Alexander C. Kaufman, *EPA Nominee Andrew Wheeler Downplays Climate Threat at Testy Confirmation Hearing* (Jan. 16, 2019), https://www.huffpost.com/entry/epa-andrew-wheeler-climate-change_n_5c3f5a1ce4b0922a21db1c11.

77. *Id.*

78. *See generally* U.S. ENVTL. PROT. AGENCY, EPA-420-R-17-001, FINAL DETERMINATION ON THE APPROPRIATENESS OF THE MODEL YEAR 2022-2025 LIGHT-DUTY VEHICLE GREENHOUSE GAS EMISSIONS STANDARDS UNDER THE MIDTERM EVALUATION (Jan. 2017) (discussing results of midterm evaluation).

79. *Id.* at 11.

80. *See generally* Notice of Intention To Reconsider the Final Determination of the Mid-Term Evaluation of Greenhouse Gas Emissions Standards for Model Year 2022-2025 Light Duty Vehicles, 82 Fed. Reg. 14,671 (proposed Mar. 3, 2017) (to be codified at 40 C.F.R. pt. 86) (proposed by the National Highway Traffic Safety Administration and the Environmental Protection Agency) (providing notice of intention to reconsider).

81. *See id.* (noting earlier midterm evaluation did not coordinate EPA and NHTSA standards).

proposed emissions standards for new vehicles after 2020.[82] Following the EPA's announcement of its intention to roll back the Unified Standard set in 2012, the state of California initiated a lawsuit challenging the administration's attempted revocation of their state's earlier California Waiver.[83] Vehicle manufacturers have reacted to the news in a variety of ways, including vocally opposing the move.[84] However, since the announcement, several manufacturers have opted to discontinue some small car, hybrid, or electric models and to focus instead on increased production of larger SUVs.[85]

The Trump Administration's aggressive push toward deregulation in the federal environmental space has exposed significant shortcomings in the nation's current approach to regulating new vehicle emissions. The absence of clear and certain emissions standards and the ease at which such standards can change based on election outcomes threatens to deter car manufacturers' investment in emission reduction research. This will ultimately slow progress in this important area of environmental regulation.

UNDER THE HOOD: EXPLAINING THE DYSFUNCTION IN FEDERAL VEHICLE EMISSIONS STANDARDS

The United States' unstable and inadequate regulatory structure for new vehicle emissions is at least somewhat more explainable when viewed in light of the imperfect circumstances surrounding it. Externality problems, irrational behavior, and interest group politics have unquestionably contributed to the problems that plague federal vehicle regulation. Recognizing these factors is a useful first step toward finding ways to address them. The following materials highlight specific factors that have contributed to the nation's regulatory challenges involving vehicle emissions and then

82. *Compare* The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Truck, 83 Fed. Reg. 42,986 (Aug. 24, 2018) (Proposal to amend 40 C.F.R. pts. 85,86) (lowering the emissions standards set in 2012), *with* 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 77 Fed. Reg. 62,624 (Oct. 15, 2012) (codified as 40 C.F.R. pts. 85,86) (creating a unified standard for light-duty vehicle emissions).

83. California v. Envtl. Prot. Agency, 940 F.3d 1342, (D.C. Cir. 2019); *see also* Letter from California Air Resources Board to Christopher Liseke, Office of Transportation and Air Quality & Rebecca Schade, Office of the Chief Counsel, National Highway Traffic Safety Administration (Oct. 5, 2017) (identifying the concerns CARB had over the rollbacks).

84. *See Carmakers React to Freezing of Fuel Efficiency Standards* (Aug. 4, 2018), https://www.npr.org/2018/08/04/635668375/car-makers-react-to-freezing-of-fuel-efficiency-standards (explaining car manufacturers were not in favor of such weak fuel efficiency standards).

85. *See* Marianne Lavelle, *U.S. Automakers Double Down on Trucks & SUVs, Despite Talk of a Cleaner Future* (Oct. 15, 2018), https://insideclimatenews.org/news/15102018/automakers-gm-ford-pickup-suv-electric-vehicle-emissions-standards-climate-change-industry-bailout (citing instances where manufacturers have discontinued EVs).

offer some insights on how policymakers might better mitigate these factors when designing future policies.

A. Externalities and Self-Interested Politics

Many of the greatest obstacles to establishing effective vehicle emissions standards are broader challenges also faced by other aspects of the nation's federal environmental regulatory scheme. In short, policymakers' tendencies to under-consider diffused and difficult-to-measure costs and to favor powerful industry interests over politically disadvantaged groups have contributed to the nation's chronic struggles in regulating vehicle emissions.

1. Bounded Rationality and America's Tailpipes

Several human tendencies commonly highlighted in the field of behavioral economics arguably contribute to the under-regulation of vehicle emissions in the United States. One such tendency is excessive optimism or optimism bias. Excessive optimism is the well-documented tendency for people to believe that the future holds better outcomes than reality suggests.[86] In the context of global warming and vehicle emissions, excessive optimism is visible. Many Americans still do not believe, despite extensive scientific evidence, that climate change is related to human action or is even occurring at all.[87] This excessively optimistic view about climate risks can cause voters and the politicians they elect to under-appreciate the potential environmental consequences of continued heavy reliance on petroleum for transportation, leading to sub-optimal, weak vehicle emissions policies.

Myopic behavior is closely related to optimism bias and has similar consequences in the context of vehicle emissions standards. Myopic behavior is the human tendency to excessively overvalue the short-term benefits of particular actions and under-consider their potential long-term costs.[88] Humans exhibit myopic behavior in everything from their food and exercise choices to their borrowing and spending habits. In the political sphere, myopic behavior attributes to problems ranging from the large federal

86. Ashley Hardy & Dontan Hart, *Policy Meltdown: How Climate Change is Driving Excessive Nuclear Energy Investment* (Symposium), 24–25 BUFF. ENVTL. L. J. 137, 137–138 (2018); Christine Jolls & Cass R. Sunstein: *Debiasing Through Law*, 35 J. LEGAL STUD. 199, 204 (2006).

87. *See* Gayathri Vaidynanthan, *Big Gap Between What Scientists Say and Americans Think About Climate Change* (Jan. 30, 2015), https://www.scientificamerican.com/article/big-gap-between-what-scientists-say-and-americans-think-about-climate-change/ (noting disparity between what scientists and the general public believe about climate change).

88. *See* Lynne L. Dallas, *Short-Termism, the Financial Crisis, and Corporate Governance*, 37 J. CORP. L. 264, 269 (2012) (discussing myopic behavior as favoring short-term results).

government debt to the chronic solvency problems facing the nation's social security system.[89]

There are relatively rare political moments when a majority of voters or their elected representatives are able to overcome myopic tendencies and make decisions that adequately account for future costs and benefits. Thus, the nation can make great progress in promoting important long-term goals, such as environmental protection. For instance, the benefits of overcoming myopic behavior are visible in the CAA itself. From 1970 to 2017, the national cumulative levels of six common air pollutants (including such pollutants as lead, carbon monoxide, nitrogen dioxide, and sulfur dioxide) in the U.S. decreased by an incredible 73%.[90] Moreover, between 1990 and 2017, concentrations of lead in the air decreased 80%, concentrations of carbon monoxide decreased 77%, and concentrations of sulfur dioxide decreased 88%.[91] Although the benefits of the CAA were not immediately felt, they undoubtedly continue to benefit millions of Americans. The potential gains from embracing more stable and aggressive vehicle emissions standards could be similar, but the full extent of those gains might not be visible for years or even generations after Congress enacts them. Since legislators are focused on getting reelected, they tend to over-value short term benefits to their constituencies and often under-consider the less-certain future costs.[92] This tendency can ultimately lead to inefficient policy decisions.

In today's vehicle emissions debates, myopic behavior is evident in the Trump Administration's weighing of the vehicle industry's short-term interests over long-term environmental goals. The Trump EPA's justifications for weakening emissions standards rely strongly on short-term private industry interests and arguably undervalue longer-term environmental concerns. For instance, the Trump Administration has argued that more fuel-efficient cars are more expensive, thus requiring them would

89. *See* Emeka Duruigbo, *Tackling Shareholder Short-Termism and Managerial Myopia*, 100 KY. L. J. 531, 535–536, 542 (2012) (explaining that investor and managerial myopia cause short-term thinking, resulting in negative impacts on corporations and society); *see also* Adrian Vermeule & John H. Watson, *The Atrophy of Constitutional Powers*, 32 OXFORD J. OF LEGAL STUD. 421, 428 (2012) ("A second mechanism involves myopic behaviour by *power*-holding institutions, who act as though they heavily discount the future, and thus fail to make the current political investments necessary to maintain their power in good working order.").

90. *Progress Cleaning the Air and Improving People's Health*, https://www.epa.gov/clean-air-act-overview/progress-cleaning-air-and-improving-peoples-health (last updated Aug. 14, 2019).

91. *Id.*

92. Jason S. Johnston, *Climate Change Confusion and the Supreme Court: The Misguided Regulation of Greenhouse Gas Emissions Under the Clean Air Act*, 84 NOTRE DAME L. REV. 1, 55 (2018).

harm American consumers.[93] Such short-sighted analyses of complex policy questions like vehicle emissions often lead to sub-optimally weak regulatory standards.

The idea of "Executive Punting" or "Political Punting" is another possible explanation for the California Waiver and current federal law concerning the CAA and the California Exception. "Political Punting" is the idea that legislators often save the tough decisions for future generations to deal with. [94] Out of 137 Congressional Counsel members that were interviewed, half agreed that legislators often leave ambiguous language present to essentially "punt" to the agency indicated.[95] Ninety-one percent of those interviewed agreed that statutory ambiguity, "is a desire to delegate decision making to agencies."[96] Often times, legislators and those who are supposed to be making potentially unpopular legislative decisions are reluctant because those decisions can make their reelection more difficult.[97] Balancing the needs of the state with the needs of the taxpayer can be an especially difficult song and dance, when those decisions might cause legislators to be unemployed every few years.

The idea of executive punting can also explain why the executive branch has consistently expanded the amount of power that it has over the years. During the Supreme Court confirmation hearings for Justice Brett Kavanaugh, Nebraska Senator Ben Sasse noted that, "for the past century, more legislative authority has been delegated to the executive branch every year" and "we write giant pieces of legislation that people haven't read, filled with terms that are undefined, and we say the secretary or administrator of such-and-such shall promulgate rules that do the rest of our jobs."[98] The EPA has never attempted to revoke the current California Exception to the CAA. Rather, the EPA has improved it several times instead of implementing a

93. Coral Davenport, *Trump Administration Unveils Its Plan to Relax Car Pollution Rules* (Aug. 2, 2018) https://www.nytimes.com/2018/08/02/climate/trump-auto-emissions-california.html.

94. *See* Abbe R. Gluck & Lisa Schultz Bressman, *Statutory Interpretation from the Inside—An Empirical Study of Congressional Drafting, Delegation, and the Canons*, 65 STAN. L. REV. 901, 997 (2013) (discussing the interviews of 137 Congressional Counsel that had responsibilities of drafting legislation).

95. *Id.*

96. *Id.*

97. *See* Lowell L. Kalapa, *But That's Their Job to Make Tough Decisions*, TAX FOUND. OF HAW. (Feb. 12, 2006), https://www.tfhawaii.org/wordpress/blog/2006/02/but-thats-their-job-to-make-tough-decisions/ (discussing the difficulty of local politicians in Hawaii to balance the needs to taxpayers, and the difficult decisions they need to make with increasing taxes to do so which could affect their reelection).

98. Ben Sasse, *Blame Congress for Politicizing the Court*, WALL ST. J. (Sept. 5, 2018), https://www.wsj.com/articles/blame-congress-for-politicizing-the-court-1536189015.

federal uniform standard.[99] This expansion of power also expands executive discretion—reducing certainty in the meaning and effect of legislation.

Path dependency is another type of irrational behavior that contributes to the nation's under-regulation of vehicle emissions. The term "path dependency" describes situations when past decisions or actions tend to excessively dictate or influence future actions.[100] Similarly, humans and institutions often tend to excessively resist deviations from the previous course of action, viewing them as more costly or uncertain.[101]

Path dependency problems can make it more difficult for humans and their governments to nimbly react to advancements in technological innovation. Ordinary gas-powered automobiles are ubiquitous in American life, with 95% of American households owning a vehicle and 85% of working Americans utilizing a car for their daily commute to work.[102] Consumers are accustomed to driving gasoline-powered vehicles with long ranges and having plenty of gas stations to refuel them. Accordingly, path-dependent tendencies can make it more difficult for consumers to switch to purely electric vehicles that must be plugged in and cannot be refueled at gas stations.

Path dependency problems have likely also affected automotive manufacturers themselves in ways that have slowed progress toward reducing automobile emissions in the U.S. Since Henry Ford introduced the Model T, gasoline has been vehicle manufacturers' preferred fuel.[103] The automotive industry has focused on building gas-powered cars for more than a century and has made substantial private investments related to those technologies.[104] Thus, it is understandable that many automobile manufacturers have been slow to embrace the transition to a different transportation energy strategy.

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99. *See* U.S. DEP'T. OF TRANSP. & U.S. ENVTL. PROT. AGENCY, 13873b-080218-v1, FACT SHEET-PROPOSED CALIFORNIA WAIVER WITHDRAWAL (discussing withdrawing prior positive emission standard programs).

100. Michael J. Gerhardt, *The Limited Path Dependency of Precedent*, 7 U. PA. J. CONST. L. 903, 905 (2005).

101. *See id.* at 991 (discussing institutionalism and path dependency).

102. ROBIN CHASE, U.S. DEP'T OF STATE, BUREAU OF INT'L INFO. PROGRAMS, DOES EVERYONE IN AMERICA OWN A CAR? (2010).

103. *See* Martin V. Melosi, *The Automobile and the Environment in American History*, http://www.autolife.umd.umich.edu/Environment/E_Overview/E_Overview3.htm (last visited Nov. 21, 2019) (discussing gasoline's rise in popularity following the Model T).

104. *See id.* (discussing historical changes to vehicle design).

2. Lobbying and Rent-Seeking Behavior

Rent-seeking behavior has also contributed to vehicle emissions regulatory challenges in the U.S. A corporation "lobbies" when it engages in activities aimed at influencing legislation or regulation. [105] In behavioral economics terms, lobbying to secure private benefits through the political process is typically called "rent-seeking" behavior.[106] Rent-seeking activities can interfere with the democratic process and jeopardize the efficiency of policymaking. [107] Such efficiency losses have likely occurred in vehicle emissions regulation. The automotive industry is one of the best-funded lobbying groups in the U.S. In 2018 alone, $69,787,786 was spent on lobbying for the automotive industry; General Motors, Toyota Motor Corp., Fiat Chrysler, and Ford Motor Co. were among the top ten lobbyists in the industry.[108] The oil and gas industry, steel companies, and other private stakeholders in the vehicle emissions regulation debate are also capable of and incentivized to lobby for their interests within this sphere. In contrast, the millions of ordinary citizens who stand to get small incremental gains from cleaner air tend to have difficulty assembling to combat the corporate concentrated interest holders in these debates.[109]

Corporate lobbying and its potential effects on American democracy and citizen welfare are well-documented. Rights to lobby government have long been protected by the First Amendment.[110] Additionally, the Supreme Court limited Congress' ability to regulate lobbying by holding that Congress cannot prohibit entities from spending money on speech with the intent to influence government.[111]

Making effective policy decisions amidst heavy lobbying can be a difficult task. For instance, it has been more than 50 years since the passage

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105. *See* Steve Blank, *Strangling Innovation: Tesla vs. 'Rent Seekers'* (June 24, 2013), https://www.forbes.com/sites/steveblank/2013/06/24/strangling-innovation-tesla-vs-rent-seekers/#5236b0d33981 (explaining how rent-seeking behavior has negative effects on regulatory agencies).

106. *See* Richard L. Hasen*, Lobbying, Rent-Seeking, and the Constitution*, 64 STAN. L. REV. 191, 197 (2012) (explaining the concept of rent-seeking).

107. *Id.* at 226–34.

108. *Industry Profile: Automotive* (2018), https://www.opensecrets.org/lobby/indusclient.php?id=M02&year=2018.

109. Thomas O. McGarity, *Administrative Law as Blood Sport: Policy Erosion in a Highly Partisan Age,* 61 DUKE L. J. 1671, 1674 n. 3 (2012).

110. Lloyd Hitoshi Mayer, *What is This "Lobbying" That We are so Worried About?*, 26 YALE L. & POL'Y REV. 485, 486 (2007).

111. Andrew P. Thomas, *Easing the Pressure on Pressure Groups: Toward a Constitutional Right to Lobby*, 16 HARV. J. L. & PUB. POL'Y 149, 163–66 (1993); Meredith A. Capps, *"Gouging the Government": Why a Federal Contingency Fee Lobbying Prohibition is Consistent with First Amendment Freedoms*, 58 VAND. L. REV. 1885, 1901–03 (2005).

of the National Traffic and Motor Vehicle Safety Act of 1966 (MVSA).[112] The MVSA's largest provision included requirements for new vehicle equipment safety, including safety regulations not commonly used by most manufacturers.[113] These new and innovative technologies included seatbelts, airbags, and shatterproof windshields.[114] At its introduction, this legislation was resisted by some in the industry, and industry advocates argued it would radically drive up prices of production and bankrupt the industry.[115] Yet once Ford Motor Company complied with the MVSA regulations, reports about their vehicles' new safety measures ultimately increased sales.[116] The dialogue shifted from an industry begrudgingly complying with new safety measures into an industry voluntarily seeking out more safety measures as a means of driving consumer interest.[117] This suggests that if policymakers are determined and able to resist private industry influence, they can potentially advance effective policies in the face of heavy lobbying activity.

3. Externality Problems

Externality problems, which often plague this area of regulation, are an additional source of inefficiency and dysfunction in current U.S. vehicle emissions policy. Microeconomic theory recognizes two basic kinds of externalities.[118] A positive externality exists when a person or entity taking an action is not able to capture or "internalize" all of the benefits of that action.[119] A negative externality exists when a person or entity's action does not incur all of the costs which might result from that action.[120]

Externalities result in suboptimal levels of engagement in the activity involved—a form of market failure that may warrant some form of government intervention to better address these issues.[121] The tax on retail

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112. *See* Jerry L. Mashaw & David L. Harfst, *From Command and Control to Collaboration and Deference: The Transformation of Auto Safety Regulation,* 34 YALE J. ON REG. 167, 170–72 (2017) (stating that the NHTSA was created in 1966 as a rulemaking body).

113. *Id.* at 172.

114. *Id.* at 201; 49 U.S.C. § 30127 (2018); Motorcoach Enhanced Safety Act of 2012, Pub. L. 112-141, § 32702, 126 Stat. 809.

115. Walter Rugaber, *Industry Resists Car-Safety Costs*, N.Y. TIMES, Apr. 6, 1975, at A1.

116. *See generally* Martin Albaum*,* INS. INST. FOR HIGHWAY SAFETY, *Safety Sells: Market Forces and Regulation in the Development of Airbags* (2005) (discussing Ford sales trends in relation to safety regulations).

117. *See generally id.* (explaining the history of automobile manufacturers first resisting, then accepting safety regulations imposed by the federal government).

118. EMMA HUTCHINSON ET AL., PRINCIPLES OF MICROECONOMICS 298 (2017).

119. *See* Lisa G. Sun & Brigham Daniels, *Mirrored Externalities*, 90 NOTRE DAME L. REV. 135, 137 (2014).

120. *Id.*

121. *Id.* at 136.

gasoline sales is one type of government intervention to address negative externalities.[122] Currently, the federal gas tax is 18.4 cents per gallon of gasoline, and the average state gasoline tax is 29.66 cents per gallon.[123] The combustion of gasoline in automobiles causes the environmental and health harms highlighted above, many of which are not ordinarily borne by an individual driver.[124] A gas tax helps to compel purchasers of gas to internalize some of those broader costs. In contrast, subsidies—such as tax credits—are a common means of enabling individuals or entities to internalize positive externalities.[125] An example of a subsidy is the current federal tax credit for purchasing an all-electric or plug-in hybrid vehicles highlighted above.[126] Unfortunately, gasoline taxes and limited tax credit programs alone do not fully address the externality problems associated with automobile emissions.

A BETTER ROUTE: IMPROVING U.S. VEHICLE EMISSIONS LAWS

There are a litany of approaches Congress could utilize to address the unique challenges facing vehicle emissions regulation in the U.S. Ideally, federal legislators would remove the California Waiver and create a new comprehensive federal statute thoughtfully designed to drive more stable and efficient regulation in this area. The following subsections elaborate on these strategies, and how each could substantially improve the nation's regulatory structure governing vehicle emissions.

A. Amending the Clean Air Act

Although the California Waiver has arguably provided a valuable one-way ratchet for advancing vehicle emissions regulation, a growing need for long-term clarity and uniformity in regulation warrants eliminating the Waiver in favor of a more democratic system. Currently, the CAA allows California to apply for waivers to establish more stringent vehicle emission regulations for new vehicles sold in the state.[127] For decades, the California Waiver allowed California to help push vehicle emissions regulations toward

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122. *See* Charles Komanoff, *Pollution Taxes for Roadway Transportation*, 12 PACE ENVTL. L. REV. 121, 143 (1994) (stating that gasoline taxes are an appropriate tool for offsetting the harms of petroleum vehicles).

123. *How Much Tax do We Pay on a Gallon of Gasoline and on a Gallon of Diesel Fuel?*, U.S. ENERGY INFO. ADMIN., https://www.eia.gov/tools/faqs/faq.php?id=10&t=10 (last visited Oct. 20, 2019).

124. Sun & Daniels, *supra* note 119, at 158 n. 82.

125. *Id.* at 171.

126. U.S. DEP'T. ENERGY, *Federal Tax Credits for All-Electric and Plug-in Hybrid Vehicles,* https://www.fueleconomy.gov/feg/taxevb.shtml (last visited Oct. 22, 2019).

127. 42 U.S.C. § 7543(b)(3) (2018).

more environmentally conscious standards.[128] The large auto market share following the waiver program made it effective.[129] As of 2009, California and the 13 other states that adopted the California standard comprised 35% of the national automotive market.[130]

The high costs associated with designing vehicles to meet two sets of standards ultimately enabled California to lead the nation in regulating vehicle emissions. Products that sell nationwide, like cars, benefit from economies of scale.[131] By reducing customization and differentiation, manufacturers are able to produce more products for less cost.[132] By producing vehicles to meet the more stringent California standards, manufacturers could benefit from economies of scale since meeting the standards of California meant, by default, meeting the federal standard.[133] Thus, for decades, California effectively set the emission standards for light-duty vehicles for the entire U.S.

A key concern regarding the California Waiver is the inherent federalism issue in allowing one state to lead the nation in regulating a national industry. Vehicle emissions regulation is an area of law which the federal government has reserved the right to regulate.[134] Whether a waiver for a single state to effectively override and set rules for the entire country is reasonable, desirable, or lawful is questionable.[135] Federalism, the distribution of power within the government, has taken many forms over the years, from dual federalism to cooperative federalism, to what some are now calling competitive federalism.[136] Despite the changes to federalism over time, and the ability of the federal government to delegate preemption to the federal agencies, it has never meant effectively giving federal preemption to a single

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128. Ann E. Carlson, *Iterative Federalism and Climate Change*, 4 UCLA J. SCHOLARLY PERSP. 1, 6 (2008) (providing more information on the unique system of "iterative federalism" and its development in the environmental space to empower certain states or regions to push for increased regulations).

129. *See* Megan Mahajan, *Trump Revoking California Emissions Waiver Will Cost Billions, Fracture U.S. Auto Market* (Sept. 19, 2019), https://www.forbes.com/sites/energyinnovation/2019/09/19/trump-revoking-california-emissions-waiver-will-cost-billions-fracture-us-auto-market/ - 72074e0e4467.

130. *Id.*; Notice of Upcoming Joint Rulemaking to Establish Vehicle GHG Emissions and CAFE Standards,74 FED. REG. 24,007, 24,008 (proposed May 22, 2009).

131. HUTCHINSON ET AL., *supra* note 118, at 438.

132. R.S. KHEMANI & D.M. SHAPIRO, GLOSSARY OF INDUSTRIAL ORGANIZATION ECONOMICS AND COMPETITION LAW DEFINITION: ECONOMIES OF SCALE 39–40 (last visited Oct. 19, 2019).

133. *See* 42 U.S.C. § 7543(e)(2)(B) (2018) (explaining emission standards).

134. *Id.* § 7543(a).

135. *See generally* Alexandra B. Klass, *State Innovation and Preemption: Lessons from State Change Efforts*, 41 LOY. L.A. L. REV. 1653, 1684–92 (2008).

136. *Federalism 101*, COUNCIL OF STATE GOV'TS, https://www.csg.org/pubs/capitolideas/2013_nov_dec/federalism101.aspx (last visited Oct. 20, 2019).

state.[137] Although the California Waiver is written to allow any state meeting certain criteria to propose standards for waiver consideration, the only state meeting the criteria is California.[138]

Some have argued that the California Waiver system provides a positive ratcheting system for improving emission standards and acts as a laboratory of democracy in this area.[139] While California Waivers for vehicle emissions regulation could act as a laboratory of democracy to test more stringent regulations for potential future rollout nationwide, this hasn't been the result. Instead, California's market power and the realities of high-volume manufacturing have made the California Waiver less of a laboratory and more of an untouchable regulating authority with nationwide impact.[140] Furthermore, the automotive industry has addressed the two standard methods, and the difficulties they cause, by building two separate vehicles to match the current federal and California standards.[141] However, this is not productive. Therefore, some automotive manufacturers choose to adhere to the higher California standard.[142]

Despite the weight of path dependency, both the industry and the government regulators understood the benefits of a Unified Standard. Overcoming path dependency is no easy task. To overcome path dependency two key things needed to happen. First, the regulated industry needed to self-identify as an industry for regulation under a Unified Standard.[143] Self-

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137. Jody Freeman, *The Obama Administration's National Auto Policy; Lessons From the "Car Deal*," HARV. ENVTL. L. REV. 343, 349 (2011).

138. *See* 42 U.S.C. § 7543(e)(2)(A) (describing California's authority to set emission standards).

139. *See*, *e.g.*, Nina Mendelson, *The California Greenhouse Gas Waiver Decision and Agency Interpretation: A Response to Professors Galle and Seidenfeld*, 57 DUKE L. J. 2157, 2170–74 (2008) (explaining that the California Waiver acts as an alternative means of nation-wide regulation that the EPA may not otherwise be able to accomplish); ANDREW AULISI ET AL., CLIMATE CHANGE POLICY IN THE STATE LABORATORY: HOW STATES INFLUENCE FEDERAL REGULATION AND THE IMPLICATIONS FOR CLIMATE CHANGE POLICY IN THE UNITED STATES 22–23 (2007) (describing the potential for the California Waiver to be used as a guide for federal regulations).

140. *See* Emma Foehringer Merchant, *Will Trump's Rollback of Auto Standards Hurt Electric Cars? Experts Offer Mixed Takes* (Aug. 23, 2018), https://www.greentechmedia.com/articles/read/will-trump-rollback-of-auto-standards-hurt-electric-cars (stating that revoking the California waiver could significantly impact the U.S. market).

141. *See* Karim Doumar, *How Trump is Targeting California's Air Pollution Standards* (July 31, 2018), https://www.citylab.com/transportation/2018/07/how-trump-is-targeting-californias-car-pollution-standards/566300/ (quoting Bruce Belzowski, the managing director of Automotive Futures Group, a think tank in Ann Arbor, Michigan, as stating that "[t]he auto industry does not want to build two sets of vehicles for the U.S. . . . [c]ompanies that are selling in those markets want economies of scale, not to do separate things in each country.").

142. Sean O'Kane, *Major Automakers Buck Trump's Emissions Rollback by Signing Deal with California* (July 25, 2019), https://www.theverge.com/2019/7/25/20727261/trump-emissions-rollback-ford-volkswagon-honda-bmw-california-deal.

143. *See, e.g.*, Amy L. Stein, *Breaking Energy Path Dependencies*, 82 BROOK. L. REV. 559, 569 (2017) (noting that the first watershed change in energy regulation came after legal scholars and industry identified that the monopoly justifications were overbroad and hindering development).

identification is uncommon and usually occurs in industries that benefit more from clarity in regulation than from the competition and interplay between states.[144] Without self-identification, the vehicle industry likely would have lobbied or even litigated against the regulation and made asserting federal authority more difficult. Second, by self-identifying, the industry encouraged the federal government to assert regulatory authority in the area.[145]

The regulation of light-duty vehicle emissions overcame the path dependence of the California Waiver when the government promulgated the Unified Standard.[146] In 2009, the government began developing a single set of regulations under a Unified Standard for new vehicle emissions.[147] This was a dramatic shift from the two-standard system used before. In 2012, CARB, along with the EPA and NHTSA, promulgated the joint rulemaking which created the 2017-2025 Model Year (MY) standards.[148] The Unified Standard allowed for the streamlining of regulation by creating regulations that were clear, unified, and decisive.[149] Clear benefits of this Unified Standard included yearly emissions requirements with increasingly stringent goals.[150] These goals allowed manufacturers to plan ahead when designing and building new vehicles, and rely on the set standards for investment in research and development to meet the goals.[151] Additionally, the Unified Standard provided the car manufacturers peace of mind in knowing competing standards would not be issued that would potentially sidetrack or surprise the industry after investing capital in following the outlined standards.[152]

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144. *See, e.g.*, Rana Foroohar, *Why We Need to Regulate the Tech Platforms*, FIN. TIMES (Nov. 5, 2017), https://www.ft.com/content/84f402ac-bfc0-11e7-b8a3-38a6e068f464 (arguing the technology would benefit from cohesive regulation); Brad Smith & Carol Ann Browne, *Tech Firms Need More Regulation* (Sept. 9, 2019), https://www.theatlantic.com/ideas/archive/2019/09/please-regulate-us/597613/ (requesting more uniform regulation for the technology industry, from the perspective of the industry itself).

145. *See, e.g.*, Stein, *supra* note 143 (indicating that, following identification, the federal government altered energy regulations to create a more effective regulatory structure).

146. Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 76 Fed. Reg. 57,106 (Sept. 15, 2011) (codified at 40 C.F.R. pts. 85, 86).

147. Freeman, *supra* note 137, at 344.

148. GEO. CLIMATE CTR., *supra* note 48.

149. *See* Introduction to the Unified Agenda of Federal Regulatory and Deregulatory Actions, 83 Fed. Reg. 57,804 (Nov. 16, 2018) (publication of the regulatory planning mechanism which was prescribed in Executive Order 12866, "Regulatory Planning and Review," Executive Order 13771, "Reducing Regulation and Controlling Regulatory Costs," and Executive Order 13777, "Enforcing the Regulatory Reform Agenda").

150. *See generally id.* at 57,931 (referring to a proposed rule that would amend certain existing emissions standards and establish new standards).

151. *See generally id.* (referring to proposed rules which will set manufacturers' goals).

152. *See* ASIA-PACIFIC ECON. COOPERATION, FEDERAL CHAMBER OF AUTOMOTIVE INDUSTRIES, EFFECTIVE AUTOMOTIVE POLICIES AND BARRIERS TO GROWTH (last visited Nov. 8, 2019),

With the recent federal changes under the Trump Administration, California and the 13 other states that adopted the same emission standards have made clear that they do not intend to budge when it comes to altering their more stringent emission standards.[153] California Governor Jerry Brown announced that California will do whatever it can to keep their exception and their increased standards, stating that "[p]ollutants coming out of vehicle[s] . . . [do] permanent lung damage to children living [near] well-traveled roads and freeways. The only way we're going to overcome that is by reducing emissions."[154] The disagreement between California and the Trump Administration concerns the standards themselves. The Trump Administration has argued that the standards which were set by the Obama Administration in 2012 are too stringent, too optimistic, and not capable of being met by car manufacturers.[155] California has argued that the car industry can indeed reach the standards, and that the Trump Administration's estimates were created without the most recent industry data.[156]

The California Waiver was a good compromise at the time it was created, but it is difficult to justify as a long-term regulatory strategy. The California Waiver effectively creates a system in which a single state is given the power of federal preemption in the regulation of vehicle emissions. The realities of the vehicle manufacturing industry require stability and clarity, which were lacking under the California Waiver system. The government took a step in the right direction when it overcame path dependence to create the Unified Standard. However, with the rollback of the 2017-2025 MY standards, the Trump Administration has once again brought confusion and disfunction to this area of regulation. In order to regain the benefits of the Unified Standard, while reducing the possibility of backsliding, the California Waiver should be removed from the CAA for good.

B. New Federal Legislation

New federal legislation of vehicle emission regulations would ensure the intended benefits of the California Waiver are retained while improving long-

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https://docplayer.net/20068740-Effective-automotive-policies-and-barriers-to-growth-joint-industry-report-for-apec-automotive-dialogue.html (discussing the APEC's recommendations to develop a healthy and sustainable automotive industry, including a stable national economic performance standard, consistent national economic policies, transparent economic and regulatory policies, a commitment by the individual country's leader, and improvements of automobile infrastructure).

153. Coral Davenport, *Trump Administration Unveils Its Plans to Relax Car Pollution Rules* (Aug. 2, 2018), https://www.nytimes.com/2018/08/02/climate/trump-auto-emissions-california.html.

154. Kathleen Ronayne, *California, Illinois Among 17 States Suing over EPA Plan to Scrap Car Emission Standards* (May 1, 2018), https://www.chicagotribune.com/news/nationworld/ct-california-lawsuit-car-emission-standards-20180501-story.html.

155. *Id.*

156. *Id.*

term clarity and stability. The legislative proposal includes several subparts which build upon each other. It creates a complete system to promote significant, long-term emission reductions in the transportation industry and provides the framework to entrench the policy, protecting it from the political whims of individual presidencies.

1. Changing Lanes: Why New Legislation is Needed

New legislation is a better method for regulating vehicle emissions than the unstable administrative rulemaking that the U.S. has often relied upon in the past to advance vehicle emission policies. Administrative rulemakings are comparatively easy to amend and difficult to defeat in the courts.[157] Establishing and entrenching stable, positive vehicle emission regulations requires enacted legislation.

Historically, regulators have sought to work within the parameters of existing legislation to regulate vehicle emissions through administrative rulemaking. This approach can unfortunately require regulators to juggle competing statutorily granted powers to different administrative agencies, and to effectively read regulatory authority into outdated legislation.[158] Although the Obama Administration was able to bring competing agencies together to develop a unified emissions standard during his administration, more recent developments have made clear that rules created from that type of approach have far less staying power than a clear statutory law.[159]

Arguably, the greatest weakness of the nation's current vehicle emissions regulatory system is its unpredictability and instability. To create or change administrative rules, agencies typically must only undertake notice and comment rulemaking.[160] Doing so is often a lengthy process but not an inherently difficult one, and once an agency changes or creates a rule it is difficult to overturn the rule through the courts.[161] The disadvantages of this

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157. *See generally* TODD GARVEY, CONG. RESEARCH SERV., R41546, A BRIEF OVERVIEW OF RULEMAKING AND JUDICIAL REVIEW 15 (Mar. 27, 2017) (explaining how judicial review of agency rulemaking works).

158. *See id.* at 1 (noting that agency action and regulation is limited by authority delegated by Congress).

159. *See generally* Coral Davenport & Hiroko Tabuchi, *Automakers, Rejecting Trump Pollution Rule, Strike a Deal with California* (July 25, 2019), https://www.nytimes.com/2019/07/25/climate/automakers-rejecting-trump-pollution-rule-strike-a-deal-with-california.html (explaining that the Trump administration attempted to eliminate the Obama-era emissions reduction policy).

160. *See generally* OFFICE OF THE FED. REGISTER, A GUIDE TO THE RULEMAKING PROCESS (2011) (describing rulemaking process).

161. *Id.*; *see also* DANIEL T. SHEDD & TODD GARVEY, CONG. RESEARCH SERV., R43203, *CHEVRON* DEFERENCE: COURT TREATMENT OF AGENCY INTERPRETATIONS OF AMBIGUOUS STATUTES 5–8 (Aug. 28, 2013) (explaining *Chevron* deference).

structure were made clear during the transition from the Obama administration to the Trump administration. Despite the long-term plans of the 2012 Unified Standard, the new Trump EPA and NHTSA began the process of enacting rule changes to rollback these standards shortly after President Trump took office.[162] And although there are challenges to these actions in the courts, it is unclear whether the challenging states will be able to stop the rollback.[163]

When compared to administrative rulemaking, legislative action produces relative stability.[164] Due to the inherent difficulties in amending federal legislation, once federal statutory laws are enacted they are less likely to be changed with shifts in political power.[165] Moreover, legislation, which goes through the process of passing both the House and Senate, as well as being signed by the President, is perceived by the public to be more legitimate and important than rules created by administrative agencies.[166] Accordingly, clearer legislation could potentially provide vehicle manufacturers greater certainty in the long-term stability of the regulations and thereby encourage greater private investment in research and development in this area.

Unquestionably, enacting federal legislation to better address vehicle emissions in the U.S. would be difficult. In the 115th session of Congress (spanning from January 3, 2017 to January 3, 2019), 443 Bills became enacted laws—just 3% of the total number of bills introduced.[167] Despite these challenges, recent events suggest that support for this type of legislation could be viewed favorably by the public if the electorate were well-informed about the deficiencies of the current emissions regulatory structure. In 2018, there were the lowest number of EPA criminal enforcements in 30 years, while executive orders signed by President Trump called for such things as increases in logging on public lands.[168] Meanwhile, there are signs that

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162. The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Truck, 83 Fed. Reg. 42,986 (Aug. 24, 2018) (proposal to amend 40 C.F.R. pts. 85, 86) (lowering the emissions standards set in 2012).

163. *See, e.g.,* California v. Envtl. Prot. Agency, No. 18-1114 (D.C. Cir. Oct. 25, 2019) (California's challenge to the Trump EPA's proposed rollbacks).

164. *See* McGarity, *supra* note 109, at 1744.

165. *See generally* ELIZABETH RYBICKI, CONG. RES. SERV., 98-696, RESOLVING LEGISLATIVE DIFFERENCES IN CONGRESS: CONFERENCE COMMITTEES AND AMENDMENTS BETWEEN THE HOUSES, (2019) (describing the process of passing a federal statute).

166. *See* McGarity, *supra* note 109, at 1722–23.

167. *Statistics and Historical Comparison,* https://www.govtrack.us/congress/bills/statistics (last visited Dec. 19, 2019).

168. Michael Greshko et al., *A Running List of how President Trump is Changing Environmental Policy* (May 3, 2019), https://www.nationalgeographic.com/news/2017/03/how-trump-is-changing-science-environment/.

American voters increasingly care about climate change and related environmental issues.[169]

Despite the potential difficulties of enacting comprehensive vehicle emissions legislation, it is likely the only means of effectively advancing regulatory strategy in this area. Without legislation, regulation over vehicle emissions will likely continue to face instability and its undesirable consequences. Indeed, new legislation that insulates emissions standards from the political whims of administrative rulemaking is the most promising approach to the long-term regulation of vehicle emissions.

2. Statutorily Established Standards and Goals

Creating stable and effective vehicle emissions legislation requires determining what activities require regulation and how to structure that regulation to produce its intended policy results. The following materials seek to address these questions, ultimately advocating for specific federal statutory standards that are less susceptible to agency changes.

a. Regulatory Inclusion

To be effective over the long term, vehicle emissions laws must be federally established and sufficiently insulated against political and industry pressures. In some ways, the Obama administration's 2012 Unified Standard rulemaking provided a solid foundation for emissions regulation. Key aspects of the rulemaking were its increasingly strict mile per gallon (MPG) standards and reductions in allowed emissions by vehicles each year, as well as its five-year review period designed to ensure that the regulations are both feasible and impactful.[170] The five-year review period was created primarily to follow the NHTSA restriction, which disallows final rulemaking for longer periods.[171] More specifically, the five-year review period was created to identify and define safety-related realities as related to vehicles through self-reporting of vehicle manufacturers.[172]

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169. Vaidynanthan, *supra* note 87.

170. *See* Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule, 75 Fed. Reg. 25,324; 25,330-25,331; 25,414; 25,451 (May 7, 2010) (to be codified at 49 C.F.R. pts. 531-538) (providing data for increased miles-per gallon standards under the rule and more stringent emissions standards, and explaining the efficient use of societal resources through the five-year review period and its relevancy to the redesign of vehicles).

171. *Id.* at 25,577.

172. *See* NHTSA Enforcement Guidance Bulletin 2015-01: Recommended Best Practices for Protective Orders and Settlement Agreements in Civil Litigation, 81 Fed. Reg. 13,026, 13,026 (Mar. 11, 2016) (explaining the large role that manufacturers' self-reporting plays in allowing the NHTSA to discover mot-vehicle defects).

Enforcement of the timely reporting of data by vehicle manufacturers became essential in obtaining accurate data. Auto manufacturers have been reluctant to provide the required information to the NHTSA.[173] The review periods are valuable because they provide a required system for reviewing the industry's progress in meeting the standards and for determining whether increasingly strict standards are feasible given improvements in technology or market acceptance.[174]

To achieve significant emissions reductions in the long term, market allocation on the federal level will be necessary. A current drawback of the 2012 Rulemaking is its flexibility in allowing manufacturers to determine how they will meet the ever-increasing standards.[175] While it is clear to academics and industry insiders that continuing to meet these standards will require increased market penetration of electric and hybrid vehicles, the general public is vastly unaware of the changes that are coming that will be necessary even under reduced standards.[176] Because of this, it will be necessary for the legislation to include significant clarifying terms to signal to the general public and industry that EV penetration will be required and will occur at levels beyond current understanding.[177]

Although creating legislation that requires increased MPG standards over time could help increase domestic sales of EVs, market allocation policies are a more direct and potentially faster means of achieving the same result.[178] A market allocation policy would cap the quantity of combustion engine vehicles sold by manufacturers as either a percentage or a number of vehicles sold. Decreasing the quantity of combustion engine vehicles sold each year would ultimately drive up prices for pure combustion engine

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173. *See id.* (stating that manufacturers do not always report information to the NHTSA in a timely fashion even though federal regulation may require them to do so).

174. Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, Final Rule, 75 Fed. Reg. 25,324; 25,418 (May 7, 2010) (to be codified at 49 C.F.R. pts. 531-538).

175. CTR. FOR CLIMATE AND ENERGY SOLS., *Federal Vehicle Standards*, https://www.c2es.org/content/regulating-transportation-sector-carbon-emissions/ (last visited Oct. 24, 2019) (discussing an increase in flexibility for manufacturers in meeting emissions standards).

176. *See* Renee Cho, *Will Electric Vehicles Take Over the World?,* EARTH INST. (Apr. 29, 2018), https://blogs.ei.columbia.edu/2018/04/23/will-electric-vehicles-take-world-just-green-really/ (showing EV cars need to be about 100 times more popular to meet goals and that car manufacturers are focusing on creating EVs).

177. John Thomas, *Vehicle Efficiency and Tractive Work: Rate of Change for the Past Decade and Accelerated Progress Required for U.S. Fuel Economy and CO2 Regulations*, 9 SAE INT'L J. FUEL & LUBRICANTS 290, 299 (2016).

178. *See Global EV Outlook 2019*, INT'L ENERGY AGENCY (May 27, 2019), https://www.iea.org/publications/reports/globalevoutlook2019/ (saying market regulation is an important element to supporting EVs).

vehicles and thereby decrease the demand for such vehicles.[179] Under such a policy, EV sales would likely increase to fill the gap in demand left by the reduction in combustion engine vehicles.

A type of market allocation regulation already exists in California under its Zero Emission Vehicle (ZEV) program.[180] Ten other states have followed California's lead and also adopted the ZEV program.[181] The ZEV program requires an increasing proportion of new vehicles sold in the participating state to be zero emission vehicles.[182] Additionally, by requiring zero emission vehicle sales, the program pushes manufacturers to invest in research and development in this area that would likely not happen otherwise.[183] California has seen a significant increase in zero emission vehicles sold since the program began, suggesting that market share allocation can be an effective means to increase penetration of zero emission vehicles in the marketplace.[184] Current sales requirements under the ZEV program are fairly low (only about 6% of sales by 2025).[185] A national program would be even more effective than the ZEV program at driving private investment in low-emission vehicle technologies and products.[186]

a. Legislating Vehicle Emissions Standards with Greater Specificity

Enacting more specific statutory standards that leave less discretion to agencies would create greater stability and predictability in vehicle emissions regulation. Specific legislation clearly outlines the meanings, purposes, and standards of statutory language to avoid ambiguity.[187] Several aspects of a more specific vehicle emissions law would set forth and define standards in greater detail to better ensure the intended results. Vehicle emission standards, timelines for changes in those standards, enforcement strategies

179. *See Are Electric Vehicles Affordable?*, https://www.coltura.org/electric-vehicle-affordability (last visited Dec. 19, 2019) (explaining how electric vehicles are becoming more affordable, in part because regulatory restrictions on the sale of gasoline vehicles will increase production of EVs, allowing for economies of scale that reduce the cost of EVs overall).

180. *Zero-Emission Vehicle Program*, CAL. AIR RES. BD. (Oct. 19, 2019), https://ww2.arb.ca.gov/node/2558/about.

181. *What is ZEV?*, UNION OF CONCERNED SCIENTISTS (Oct. 7, 2012), https://www.ucsusa.org/clean-vehicles/california-and-western-states/what-is-zev.

182. *Id.*

183. *Id.*

184. *Id.*

185. Herman K. Trabish, *Can California Hit 1.5M Zero-Emission Vehicles by 2025? (*Apr. 27, 2017), https://www.utilitydive.com/news/can-california-hit-15m-zero-emission-vehicles-by-2025/441020/.

186. DEP'T OF ENERGY, EV-READY CODES FOR THE BUILT ENVIRONMENT ELECTRIC VEHICLE SUPPLY EQUIPMENT SUPPORT STUDY 14 (Nov. 2012).

187. *See* Sean Farhang, *Legislating for Litigation: Delegation, Public Policy, and Democracy*, 106 CALIF. L. REV. 1529, 1563 (2018).

and mechanisms, penalties for failed compliance, and priorities and goals of the legislation would all benefit from greater legislative specificity.

A statute's degree of specificity can greatly influence which branch of government wields much of the ultimate policymaking power associated with the legislation.[188] Ambiguous statutes give administrative agencies significant power to interpret legislation.[189] When those interpretations are challenged, courts have the final word on the meaning of the statute.[190] However, under the *Chevron* doctrine, courts usually uphold administrative agency interpretations of ambiguous statutes even if they had historically been applied in opposite ways.[191]

The *Chevron* doctrine allows administrative agencies to determine the meaning of statutes when language is ambiguous; thus, clear language is required to ensure the legislation is interpreted as intended.[192] Under *Chevron*, courts often defer heavily to federal agencies on rulemaking matters.[193] The *Chevron* doctrine can effectively empower federal administrative agencies to reverse course in their interpretation of statutes when a new political party assumes control.[194] Paired with this broad deference, ambiguities in statutory language can easily engender confusion, instability, and conflict among those regulated by federal legislation. More specific and clear statutory language that constrains agency discretion is one means of limiting agency interpretive powers, thereby stabilizing regulatory standards in contexts where that stability is particularly valued.

b. Disclaiming Chevron Deference for Vehicle Emissions Standards

One way to reduce presidential influence and promote a clearer and more stable vehicle emission regulatory structure is through legislation that expressly instruct courts to refrain from applying *Chevron* deference in this narrow context.[195] Even when legislators seek to avoid uncertainty in their drafting of statutory language, ambiguities may still arise.[196] A provision in

188. *Id.* at 1539.
189. *Id.*
190. *Id.* at 1548.
191. Heidi Marie Werntz, *Counting on* Chevron*?*, 38 ENERGY L. J. 297, 300 (2017).
192. *Id.* at 302, 315.
193. *Id.* at 315–16.
194. William W. Buzbee, *The Tethered President: Consistency and Contingency in Administrative Law*, 98 B.U. L. REV. 1357, 1366–73 (2018).
195. *See generally* Jack M. Beermann, *End the Failed* Chevron *Experiment Now: How* Chevron *Has Failed and Why It Can and Should Be Overruled*, 42 CONN. L. REV. 779, 800–04, 809–10, 844 (2010) (discussing the drawbacks of Chevron deference and proposed solutions).
196. Werntz, *supra* note 191, at 315 (explaining that the *Chevron* test applies whether the legislature was explicitly or implicitly ambiguous).

a new vehicle emissions statute instructing courts not to apply *Chevron* deference principles to the legislation could help to ensure that courts applied a stricter standard of review to agency actions taken under the statute.[197] This would allow courts to act as another layer of insulation against political swings in the White House and could make vehicle standards more predictable and effective over the long term.

3. Encouraging Continued Innovation and Improvement

An effective vehicle emissions regulatory system must also ensure that regulations keep pace with technological innovation and market changes. One means of promoting that would be the integration of a "skip standard" system into the federal statute. Under such a system, if the enforcing agency determines that manufacturers could reasonably meet or exceed current standards, the standards are increased by skipping forward to the next viable legislated standard.[198] This process can help to ensure that regulation continues to encourage industry investment in emission-reducing research and development.

To discourage noncompliance with emissions regulations, vehicle emissions standards should impose penalties on manufacturers that fail to comply. Although regulatory "carrots" have gained popularity in recent years and have been used in the vehicle emissions context, "carrot" approaches are not well suited for these standards.[199] Some opponents of regulatory "stick" approaches, or penalties for noncompliance, have cited concerns about the financial burdens such approaches can place on regulated industry.[200] However, in the vehicle emissions area, regulatory "sticks" have been shown to be more successful in driving emissions reductions than "carrots."[201] The threat of civil penalties is more likely to deter wait-and-see approaches among auto manufacturers and encourage investment in new and better technologies.

197. *See generally* Skidmore v. Swift & Co., 323 U.S. 134, 140 (1944) (discussing when *Chevron* does not apply, courts often apply *Skidmore*, which allows courts to judge administrative agency interpretation rules based on persuasiveness).

198. *See* 5 U.S.C. § 553 (2018) (discussing general rulemaking proceedings).

199. *See generally* Gerrit De Geest & Giuseppe Dari-Marracci, *The Rise of Carrots and the Decline of Sticks*, 80 U. CHI. L. REV. 341, 343, 345–46 (2013).

200. Jason Scott Johnston, *Regulatory Carrots and Sticks in Climate Policy: Some Political Economic Observations*, 6 TEX. A&M L. REV. 107, 112 (2018).

201. Ian Ayres & Amy Kapczynski, *Innovation Sticks: The Limited Case for Penalizing Failures to Innovate*, 82 U. CHI. L. REV. 1781, 1783–84 (2015).

4. Promoting EVs and EV Infrastructure

One other potential means of reducing average vehicle emissions is through policies that encourage and facilitate the wider market adoption of EV technologies. In addition to continuing or expanding existing federal tax credit programs for EVs, Congress should promote greater EV use through policies that help advance the development of the nation's EV charging infrastructure.[202] One of the greatest hurdles that the EV industry faces is an insufficient number of EV charging stations.[203] Currently in the U.S., there are an estimated 168,000 gas stations, but less than 18,000 EV charging stations for consumer use.[204] The relative unavailability of charging stations can dissuade some consumers from purchasing EVs, due to possible "range anxiety"—the fear that their EV automobile's battery might run out of energy before reaching their destination.[205]

One potential way to address range-anxiety-based obstacles to EV adoption would be through greater federal tax credits for installations of EV charging stations in homes, workplaces, or retail shopping areas. Currently, there are two levels of tax credits, federal and state.[206] The current federal incentive for the installation of a qualified plug-in electric vehicle charging station is a tax credit of 30% of the cost of purchase and installation of a vehicle charging station.[207] In early 2018, Congress retroactively renewed the Alternative Fuel Infrastructure Tax Credit, which made the tax credit available for 2017 installations.[208] Additional state level tax credits vary from state to state.[209] Expanding these tax credits on the federal level could lead to

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202. *See generally* Alexandra B. Klass & Andrew Heiring, *Life Cycle Analysis and Transportation Energy,* 82 BROOK. L. REV. 485, 515–525 (2017) (noting that although increased use of EVs would reduce vehicle tailpipe emissions, it would also require more electricity generation. If the additional electricity to meet that increased demand were generated largely from coal or natural gas, the environmental and air quality benefits of increased use of EVs would be far less certain. Increasing the use of clean renewable energy resources such as wind and solar is thus critical to any plan to reducing emissions and improving air quality through the increased use of EVs).

203. Alexandra B. Klass, *Public Utilities and Transportation Electrification,* 104 IOWA L. REV. 545, 561 (2019).

204. Loren McDonald, *Stop Comparing the Number of Gas Stations to EV Charging Stations* (Mar. 7, 2018), https://cleantechnica.com/2018/03/07/stop-comparing-number-gas-stations-ev-charging-stations/.

205. CHARLES ZU & NICK NIGRO, PLUG-IN ELECTRIC VEHICLE DEPLOYMENT IN THE NORTHEAST 10 (2012).

206. *Electric Vehicles: Tax Credits and Other Incentives*, *supra* note 66.

207. *Advanced Technology Vehicle (ATV) and Alternative Fuel Infrastructure Manufacturing Incentives*, ALT. FUELS DATA CTR., https://afdc.energy.gov/laws/411 (last visited Dec. 19, 2019).

208. *Alternative Fuel Excise Tax Credit*, ALT. FUELS DATA CTR., https://afdc.energy.gov/laws/319 (last visited Dec. 19, 2019).

209. Kristy Hartman & Emily Dowd, *State Efforts to Promote Hybrid and Electric Vehicles*, NAT'L CONFERENCE OF STATE LEGISLATURES (Sept. 26, 2017), http://www.ncsl.org/research/energy/state-electric-vehicle-incentives-state-chart.aspx.

increased investment in EV charging stations as EVs gain increased market share.

An increase in the federal gas tax is another potential means of driving down vehicle emissions, and a portion of the additional revenue generated from such an increase could fund additional tax breaks for EVs. When the federal gas tax was first implemented in 1932, it charged just one cent per gallon of gasoline (equivalent to about 19 cents in 2019 dollars).[210] Today, the federal gas tax is just 18.4 cents, suggesting that it has barely increased in real terms at all over the past 87 years.[211] Further, current federal gas tax has not been increased since 1993.[212] The proceeds from the federal gas tax are used to fund shortfalls in the federal transportation trust fund, but in recent years the growing consumer demand for EVs and the rising cost of concrete, asphalt, and labor have depleted that fund.[213] Accordingly, over the past quarter century, numerous scholars have advocated for increases in the gas tax to address these problems.[214]

Although many academics consider a gas tax to be an effective way of reducing vehicle emissions, gas taxes also have drawbacks that have long made them unpopular.[215] The primary argument against gas tax increases is their potentially adverse effects on low-socioeconomic households. Britain has one of the highest gas taxes in the world, at an equivalent of more than $3.50 per gallon.[216] The British government has successfully defended the tax over the years as necessary to reduce carbon emissions, traffic congestion in cities, and their reliance on oil from Middle Eastern countries.[217] However, opponents of gas taxes argue that increasing the current average price of gasoline in the U.S. by any significant amount through a tax would likely have devastating effects on lower-income Americans.[218] Although a significant federal gas tax increase is unlikely in the near future, a modest

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210. Amy Fontinelle, *The History of Taxes in the U.S.*, https://www.investopedia.com/articles/tax/10/history-taxes.asp (last visited Dec. 19, 2019); *Inflation Calculator*, https://www.usinflationcalculator.com/ (last visited Dec. 19, 2019).

211. David M. Schizer, *Energy Subsidies: Worthy Goals, Competing Priorities, and Flawed Institutional Design*, 70 TAX L. REV. 243, 271 (2017).

212. David Schaper, *It's Been 25 Years Since the Federal Gas Tax Went Up* (Oct. 5, 2018), https://www.npr.org/2018/10/05/654670146/its-been-25-years-since-the-federal-gas-tax-went-up.

213. KEVIN SCHLEITH, IMPLICATIONS OF ELECTRIC VEHICLES ON GASOLINE TAX REVENUES 3–4, 8–9 (Dec. 2015).

214. Schaper,*supra* note 212*; see also* Robert Puentes & Adie Tomer, *Untangling Transportation Funding* (Feb. 26, 2009), https://www.brookings.edu/opinions/untangling-transportation-funding/.

215. J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: The Case of Climate Change*, 155 U. PA. L. REV. 1499, 1544–45 (2007) (explaining that industry would likely prefer federal regulation in the climate-change context in a cap-and-trade approach, not through taxes).

216. Andrew D. Appleby, *Pay at the Pump: How $11 per Gallon Gasoline can Solve the United States' Most Pressing Challenges*, 40 CUMB. L. REV. 3, 23 (2009).

217. *Id.*

218. Phil Ciciora, *Economists: Pros, Cons to Raising the Gas Tax in Illinois*, ILL. NEWS BUREAU (Apr. 20, 2015), https://news.illinois.edu/view/6367/204361.

increase aimed at funding and promoting EVs and charging stations could do much to strengthen market demand for more fuel-efficient gas-powered vehicles and to simultaneously accelerate the nation's transition toward EVs.

CONCLUSION

For decades, the federal regulation of automobile emissions has been disjointed, undemocratic, and unable to adequately protect urban air quality or reduce the nation's contributions to global warming and its consequences. Among other things, the existing federal regulatory system for vehicle emissions grants excessive influence on a single state's regulators and yet is also vulnerable to changing presidential administrations. As highlighted in this article, these regulatory shortcomings are slowing the advancement of low- or zero-emissions vehicle technologies in the U.S. in ways that are harming present and future Americans. Fortunately, it is possible to overcome these challenges through new legislation that addresses the federalism issues and deficiencies of the nation's current regulatory system for light-duty vehicles. Specifically, a new federal statute is needed to eliminate the California Waiver under the CAA, reduce agency discretion to modify vehicle emissions standards, create an adaptable yet aggressive schedule of emissions targets, and promote the greater use of electric vehicles. Collectively, such changes could finally put the U.S. on a route toward clean air, predictable markets, and a more sustainable transportation energy system.